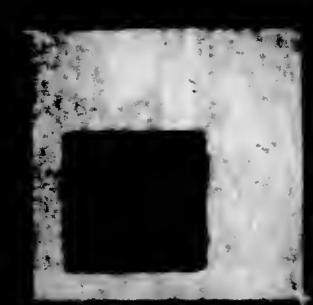


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UNITED STATES
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BELL & HOWELL

J/N

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Order No. 5318

Under the provisions of Section 32 of Title 35 of the U.S. Code and Rule 348 of the Rules of Practice of the Patent Office in Patent cases, George W. Wright, Jr. of Milwaukee, Wisconsin, whose Patent Office registration number is 18467, is hereby excluded beginning the 29th day of September, 1971 from further practice before the United States Patent Office.

Aug. 30, 1971.
ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

PATENTS AND TRADEMARKS

Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92-34.

Public Law 92-34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92-34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

- Applicant(s) for patent or trademark registration;
- Patentee(s) or trademark registrant;
- Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceedings in the Patent Office or in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statutory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 26, 1971 (882 O.G. 1842), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM B. SCHUYLER, Jr.,
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, Jr.,
Assistant Secretary for Science
and Technology.

[FR Doc. 71-10469; Filed 7-22-71; 8:52 am]

36 F.R. 13694; July 23, 1971

PRESIDENTIAL DOCUMENTS, TITLE 3— THE PRESIDENT

MEMORANDUM OF AUGUST 28, 1971

Government Patent Policy

Memorandum for Heads of Executive Departments
and Agencies

THE WHITE HOUSE,
Washington, August 23, 1971.

On October 10, 1968, President Kennedy forwarded to the Heads of Executive Departments and Agencies a Memorandum and Statement of Government Patent Policy for their guidance in determining the disposition of rights to inventions made under Government-sponsored grants and contracts. On the basis of the knowledge and experience then available, this Statement first established Government-wide objectives and criteria, within existing legislative constraints, for the allocation of rights to inventions between the Government and its contractors.

It was recognized that actual experience under the Policy could indicate the need for revision or modification. Accordingly, a Patent Advisory Panel was established under the Federal Council for Science and Technology for the purpose of assisting the agencies in implementing the Policy, acquiring data on the agencies' operations under the Policy, and making recommendations regarding the utilization of Government-owned patents. In December 1968, the Federal Council

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established the Committee on Government Patent Policy to assess how this Policy was working in practice, and to acquire and analyze additional information that could contribute to the reaffirmation or modification of the Policy.

The efforts of both the Committee and the Panel have provided increased knowledge of the effects of Government patent policy on the public interest. More specifically, the studies and experience over the past 7 years have indicated that:

(a) A single presumption of ownership of patent rights to Government-sponsored inventions either in the Government or in its contractors is not a satisfactory basis for Government patent policy, and that a flexible, Government-wide policy best serves the public interest;

(b) The commercial utilization of Government-sponsored inventions, the participation of industry in Government research and development programs, and commercial competition can be influenced by the following factors: the mission of the contracting agency; the purpose and nature of the contract; the commercial applicability and market potential of the invention; the extent to which the invention is developed by the contracting agency; the promotional activities of the contracting agency; the commercial orientation of the contractor and the extent of his privately financed research in the related technology; and the size, nature and research orientation of the pertinent industry;

(c) In general, the above factors are reflected in the basic principles of the 1963 Presidential Policy Statement.

Based on the results of the studies and experience gained under the 1963 Policy Statement certain improvements in the Policy have been recommended which would provide (1) agency heads with additional authority to permit contractors to obtain greater rights to inventions where necessary to achieve utilization or where equitable circumstances would justify such allocation of rights, (2) additional guidance to the agencies in promoting the utilization of Government-sponsored inventions, (3) clarification of the rights of States and municipal governments in inventions in which the Federal Government acquires a license, and (4) a more definitive data base for evaluating the administration and effectiveness of the Policy and the feasibility and desirability of further refinement or modification of the Policy.

I have approved the above recommendations and have attached a revised Statement of Government Patent Policy for your guidance. As with the 1963 Policy Statement, the Federal Council shall make a continuing effort to record, monitor and evaluate the effects of this Policy Statement. A Committee on Government Patent Policy, operating under the aegis of the Federal Council for Science and Technology, shall assist the Federal Council in these matters.

This memorandum and statement of policy shall be published in the Federal Register.

RICHARD NIXON.

STATEMENT OF GOVERNMENT PATENT POLICY

BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subject to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. Foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Government contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where (1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health, public safety, or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor are (i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others, the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract.

In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified where the head of the department or agency determines that the acquisition of such greater rights is consistent with the intent of this Section 1(a) and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or that the Government's contribution to the invention is small compared to that of the contractor. Where an identified invention made in the course of or under the contract is not a primary object of the contract, greater rights may also be acquired by the contractor under the criteria of Section 1(c).

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology, to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of Technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in Section 1(b) above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of Section 1(a) hereof, provided that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license.

(d) In the situations specified in Sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting

inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on the commercial use that is being made or is intended to be made of inventions made under Governmental contracts.

(f) Where the principal or exclusive rights in an invention remain in the contractor, unless the contractor, his licensee, or his assignee has taken effective steps within three years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty-free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable under the circumstances.

(g) Where the principal or exclusive rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a nonexclusive or exclusive license to a responsible applicant(s) on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by governmental regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the contract.

(h) Whenever the principal or exclusive rights in an invention remain in the contractor, the Government shall normally acquire, in addition to the rights set forth in Sections 1(e), 1(f), and 1(g),

(1) at least a nonexclusive, nontransferable, paid-up license to make, use, and sell the invention throughout the world by or on behalf of the Government of the United States (including any Government agency) and States and domestic municipal governments, unless the agency head determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and

(2) the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the agency head determines it would be in the national interest to acquire this right; and

(3) the principal or exclusive rights to the invention in any country in which the contractor does not elect to secure a patent.

(i) Whenever the principal or exclusive rights in an invention are acquired by the Government, there may be reserved to the contractor a revocable or irrevocable nonexclusive royalty-free license for the practice of the invention throughout the world; an agency may reserve the right to revoke such license so that it might grant an exclusive license when it determines that some degree of exclusivity may be necessary to encourage further development and commercialization of the invention. Where the Government has a right to acquire the principal or exclusive rights to an invention and does not elect to secure a patent in a foreign country, the Government may permit the contractor to acquire such rights in any foreign country in which he elects to secure a patent, subject to the Government's rights set forth in Section 1(b).

Sac. 2. Under regulations prescribed by the Administrator of General Services, Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing, either exclusive or non-exclusive, and shall be listed in official Government publications or otherwise.

Sac. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. The Federal Council for Science and Technology shall continue to

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) acquire data from the Government agencies on the disposition of patent rights to inventions resulting from federally

financed research and development and on the use and practice of such inventions to serve as bases for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents. Each agency shall record the basis for its actions with respect to inventions and appropriate contracts under this statement.

Sac. 4. Definitions: As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) *Government agency*—includes any executive department, independent commission, board, office, agency, administration, authority, Government corporation, or other Government establishment of the executive branch of the Government of the United States of America.

(b) *States*—means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam and the Trust Territory of the Pacific Islands.

(c) *Invention, or invention or discovery*—includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the Patent Laws of the United States of America or any foreign country.

(d) *Contractor*—means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(e) *Contract*—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(f) *Made*—when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(g) *To the point of practical application*—means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

[FR Doc. 71-12623; Filed 8-25-71; 10:41 am]

36 F.R. 16887-16892; Aug. 26, 1971

Trademark Application and Drawing Requirements, Interferences, and Inter Partes Procedure

[37 CFR Part 2]

Notice of Proposed Rule Making

Notice is hereby given that pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440, 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793, 35 U.S.C. 6), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revoking § 2.124a, adding §§ 2.83 and 2.117, and revising, amending and/or redesigning §§ 2.21-2.23, 2.27, 2.52, 2.56, 2.80-2.82, 2.91, 2.92, 2.98, 2.99, 2.101, 2.103, 2.104, 2.112, 2.116, 2.119, 2.120, 2.122-2.125, and 2.127-2.129.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231, on or before October 22, 1971, on which date a hearing will be held at 2:30 p.m., e.d.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

Trademark application and drawing requirements. Revised § 2.21 specifies the requirements for a complete application. The Patent Office proposes to reduce the requirements for a complete application, thereby making most applications entitled to a filing date when received. Informalities which require correction under present practice, however, would continue to require correction at an appropriate time.

Section 2.22 is amended by deleting the first sentence of the existing section and changing the title.

Section 2.23 provides for numbering of all applications as received, whether or not entitled to a filing date.

Section 2.52 requires the size of sheets on which drawings are made to be 8 inches wide and 11 inches long, in order to standardize drawing size and expedite handling in the Patent Office.

Section 2.56 is amended to make clear that five specimens must still be submitted, although not required in order to obtain a filing date under § 2.21.

Trademark interferences. Under section 16 of the Trademark Act of 1946, the Patent Office proposes to restrict interference practice to rare cases in which a party might be able to prove that he would suffer irreparable harm if his only recourse was to file an opposition or a petition for cancellation. It is believed that opposition and cancellation proceedings are the most expeditious means of determining the rights of parties with respect to conflicting marks. The proposed changes are expected virtually to eliminate interferences in trademark cases. The Patent Office is not presently aware of any interference situation in which the rights of the parties cannot be determined fairly in an opposition or cancellation proceeding. However, to provide an opportunity for a party to request an interference if such a situation should arise, proposed § 2.91 would provide for petitions to the Commissioner for the declaration of interferences under extraordinary circumstances.

Section 2.80, formerly § 2.81, is provided with a more descriptive title, and the reference to interferences in the last sentence is deleted.

New § 2.83 provides that when the marks in two or more applications are in conflict, the application with the earliest filing date will be published for opposition.

Section 2.91 provides that interferences will not be declared except upon petition to the Commissioner and upon a showing of extraordinary circumstances.

Existing § 2.92(b) is revoked, existing § 2.92(c) is redesignated as § 2.61(c), and part of the last sentence of existing § 2.98 is deleted, since interferences will no longer be instituted by the Examiner of Trademarks.

Trademark inter partes procedure. The changes in the sections concerning inter partes procedure are intended to reflect the current practice of the Trademark Trial and Appeal Board, and to expedite the handling of inter partes proceedings from institution to final hearing. They are designed, at the same time, to further incorporate into the inter partes proceedings the general principles embodied in the Federal Rules of Civil Procedure insofar as they may be applicable to Patent Office proceedings, and thereby provide a uniform practice and body of law as guidelines to both attorneys and the Patent Office. The amendments incorporate portions of the rules of practice in Patent Cases (37 CFR Part 1) pertaining largely to the procedure for taking testimony. In incorporating these provisions, those portions which are not applicable to the inter partes trademark proceedings have been deleted.

The proposed change in § 2.99 authorizes publication or allowance of applications for concurrent registration without a concurrent use proceeding when there has been a prior court determination of the rights of the parties.

Section 2.104 is changed to adopt language from the Federal Rules by requiring a "short and plain statement" showing why an opposer would be damaged. The change is intended to make clear that a lengthy pleading is not required. An analogous change is made in § 2.112 with respect to petitions for cancellation.

Section 2.116, formerly § 2.117, is amended to make clear that subsequent amendments to the Federal Rules of Civil Procedure will be applicable.

Proposed new § 2.117 would provide for proceedings before the Trademark Trial and Appeal Board to be suspended when the parties are engaged in a civil action which might be dispositive of the case.

Section 2.119 is changed by adding a paragraph identical to § 1.248, regarding manner of service of papers.

A number of amendments are proposed for § 2.120. The discovery provisions of the Federal Rules of Civil Procedure are adopted for inter partes trademark proceedings except where different provisions are contained in the Patent Office regulations.

Section 2.120(a) would permit discovery depositions either upon oral examination or upon written questions.

Section 2.120(b) concerning requests for admission is changed by increasing the period of 15 days for responding to requests for admission to 30 days in line with the amend-

ments to the Federal Rules of Civil Procedure effective July 1, 1970.

Section 2.120(c), as amended, specifies 11 subjects for written interrogatories, in lieu of the more general provision for interrogatories in Rule 33 of the Federal Rules of Civil Procedure.

Section 2.120(d) permits application to the Trademark Trial and Appeal Board for an order requiring discovery, and allows the Board to impose sanctions for failure to comply with such orders.

Section 2.122(b) provides for a registration pleaded in an opposition or petition for cancellation to be received in evidence and made part of the record if two status copies of the printed registration or an order for such copies is submitted.

Present § 2.123(c), relating to printed publications and official records, is redesignated as § 2.122(c) and revised to incorporate the substance of § 1.282 (Patent Rule 282).

New § 2.122(d) incorporates the substance of § 1.283 (Patent Rule 283).

New § 2.123 incorporates the provisions of §§ 1.273-1.281, 1.285, and 1.286 (Patent Rules 273 to 281, 285 and 286). In certain instances references are made to provisions of the Federal Rules of Civil Procedure. Portions of the Patent Rules which are not applicable to trademark practice have been omitted.

Section 2.124(b) is amended to require testimony by written questions to be prepared with each answer immediately preceded by its corresponding question. A requirement also is added for testimony under § 2.124 to be certified.

Section 2.124a, concerning testimony taken in foreign countries, is revoked. Testimony in foreign countries would be taken by depositions upon written questions in accordance with new § 2.124(d).

Reference numbers in § 2.125 have been changed in accordance with the renumbering.

Section 2.127(a) provides that the Trademark Trial and Appeal Board may treat a motion as conceded when a party fails to file a brief in opposition to the motion. Sections 2.127(b) and 2.129(c) are amended by adding a sentence requiring briefs in opposition to petitions for reconsideration to be filed within 15 days.

Section 2.128(b) includes certain changes with respect to the form required for briefs.

The proposed amendments are as follows:

1. Revise § 2.21 to read as follows:

§ 2.21 *Requirements for a complete application and filing date.*

(a) An application will not be considered complete unless all of the following elements are received:

(1) A name and address to which communications can be directed;

(2) A drawing or other identification of the mark sought to be registered;

(3) An identification of goods or services;

(4) At least one specimen of the mark as actually used;

(5) A date of first use of the mark in commerce, or a certification or certified copy of a foreign registration if the application is based on such foreign registration pursuant to section 44(e) of the act, or a claim of the benefit of a prior foreign application in accordance with section 44(d) of the act;

(6) The required filing fee for at least one class of goods or services.

Compliance with one or more of the rules relating to the elements specified above may be required before the application is further processed.

(b) The filing date of the application is the date on which the complete application is received in the Patent Office in acceptable form.

2. Revise § 2.22 to read as follows:

§ 2.22 *Incomplete application.*

If the papers are incomplete or so defective that they cannot be accepted, the applicant will be notified and the papers and fee held 6 months for completion. If the application is not completed within such time, the papers and fee will be returned to the applicant or otherwise disposed of; the drawing or fee of an unaccepted application may be transferred to a later application.

3. Revise § 2.23 to read as follows:

§ 2.23 *Serial number.*

Applications will be numbered as received and the applicant will be informed of the serial number and date of receipt of the application. When an application has been determined to be complete, the applicant will be informed of the filing date of the application.

§ 2.27 [Amended]

4. Amend § 2.27 by changing "2.81" in the second sentence of paragraph (a) to read "2.80."

5. Amend § 2.52 by revising paragraph (c) to read as follows:

§ 2.52 *Requirements for drawings.*

(c) *Size of paper and margins.* The size of the sheet on which a drawing is made must be 8 inches wide and 11 inches long. One of the shorter sides of the sheet should be regarded as its top. When the figure is longer than the width of the sheet, the sheet should be turned on its side with the top at the right. The size of the mark must be such as to leave a margin of at least 1 inch on the sides and bottom of the paper and at least 1 inch between it and the heading.

6. Revise § 2.56 to read as follows:

§ 2.56 *Specimens.*

The application must be accompanied by five specimens of the trademark as actually used on or in connection with the goods in commerce. The specimens shall be duplicates of the actually used labels, tags, or containers, or the displays associated therewith or portions thereof, when made of suitable material and capable of being arranged flat and of a size not larger than the size of the drawing.

7. Redesignate § 2.81 as § 2.80 and revise to read as follows:

§ 2.80 *Publication for opposition.*

If, on examination or reexamination of an application for registration on the Principal Register, it appears that the applicant is entitled to have his mark registered, the mark will be published in the OFFICIAL GAZETTE for opposition. The mark will also be published in the case of an application to be placed in concurrent use proceedings, if otherwise registrable.

§§ 2.81, 2.82 [Redesignated]

8. Redesignate §§ 2.82 and 2.83 as §§ 2.81 and 2.82, respectively.

9. Add a new § 2.83 to read as follows:

§ 2.83 *Conflicting marks.*

(a) Whenever an application is made for registration of a mark which so resembles another mark pending registration as to be likely to cause confusion or mistake or to deceive, the mark with the earliest effective filing date will be published in the OFFICIAL GAZETTE for opposition if eligible for the Principal Register, or issued a certificate of registration if eligible for the Supplemental Register. A notice will be sent, if practicable, to the later filed applicant informing him of the publication or issuance of the earlier filed mark.

(b) In situations in which conflicting applications are filed on the same date, the application with the earliest date of execution will be published in the OFFICIAL GAZETTE or issued a certificate of registration. A notice will be sent, if practicable to the applicant with the later date of execution informing him of the publication or issuance of the earlier executed application.

(c) The conflicting application which is not published in the OFFICIAL GAZETTE for opposition or not issued a certificate of registration will be suspended by the Examiner of Trademarks until the published or issued application is registered or abandoned.

10. Revise the heading for §§ 2.91—2.99 entitled "Interferences" to read "Interferences and Concurrent Use Proceedings."

11. Revise § 2.91 to read as follows:

§ 2.91 *Interferences.*

(a) An interference will not be declared between two applications or between an application and a registration except

upon petition to the Commissioner. Interferences will be declared by the Commissioner only upon a showing of extraordinary circumstances which would result in a party being unduly prejudiced without an interference. In ordinary circumstances, the availability of an opposition or cancellation proceeding to the party will be deemed to remove any undue prejudice.

(b) Registrations and applications to register on the Supplemental Register, registrations under the Act of 1920, and registrations of marks the right to use of which has become incontestable are not subject to interference.

12. Revise § 2.92 to read as follows:

§ 2.92 *Preliminary to interference.*

Before the declaration of an interference, the marks which are to form the subject matter of the controversy must have been decided to be registrable by each party except for the interfering mark.

§ 2.61 [Amended]

13. Redesignate § 2.92(c) as § 2.61(c).

14. Revise § 2.98 to read as follows:

§ 2.98 *Adding party to interference.*

If, during the pendency of an interference, another case appears involving substantially the same registrable subject matter, the Examiner of Trademarks may request the suspension of the interference for the purpose of adding said case. Such suspension will be granted as a matter of course if no testimony has been taken. If any testimony has been or is about to be taken, the case will not be added except upon approval of a member of the Trademark Trial and Appeal Board. If the case is not added, the Examiner of Trademarks may suspend action on such case pending termination of the interference proceeding.

15. Amend § 2.99 by adding a new paragraph (d) to read as follows:

§ 2.99 *Application to register as concurrent user.*

(d) When concurrent registration is sought on the basis of a court determination of the rights of the parties to use the marks in commerce, the application shall be examined by the Examiner of Trademarks. If the applicant is entitled to registration subject only to the concurrent lawful use of a party to the court proceeding, the Examiner of Trademarks may publish or allow the application, provided the court decree specifies the rights of the parties.

§ 2.101 [Amended]

16. Amend § 2.101 by changing "2.81" to read "2.80."

§ 2.103 [Amended]

17. Amend § 2.103 by changing "2.81" in the second sentence to read "2.80."

18. Revise § 2.104 to read as follows:

§ 2.104 *Contents of opposition.*

The opposition must set forth a short and plain statement tending to show why the opposer would be damaged by the registration of the opposed mark and state the specific grounds for opposition. A duplicate copy of the opposition including exhibits shall be filed.

19. Revise § 2.112 to read as follows:

§ 2.112 *Petition for cancellation.*

The petition to cancel, which must be verified, or include a declaration in accordance with § 2.20, must set forth a short and plain statement tending to show why the petitioner believes he is or will be damaged by the registration, state the specific grounds for cancellation, and indicate the respondent party to whom notice shall be sent. A duplicate copy of the petition, including exhibits, shall be filed with the petition. Applications to cancel different registrations owned by the same party may be joined in one petition when appropriate, but the fee for each application to cancel a registration must accompany the petition.

20. Redesignate § 2.117 as § 2.116 and revise paragraph (a) to read as follows:

§ 2.116 *Federal Rules of Civil Procedure.*

(a) Except as otherwise provided and wherever considered applicable or appropriate, procedure and practice in inter partes proceedings shall be governed by the Federal Rules of

Civil Procedure effective on July 30, 1970 or as subsequently amended.

21. Add a new § 2.117 to read as follows:

§ 2.117 *Suspension of proceedings.*

Whenever it shall come to the attention of the Trademark Trial and Appeal Board that parties to a pending case are engaged in a civil action which may be dispositive of the case, proceedings before the Board will be suspended until termination of the civil action.

22. Revise § 2.119 to read as follows:

§ 2.119 *Service of papers.*

(a) Every paper filed in the Patent Office in inter partes cases, including appeals, must be served upon the other parties except the notices of interference (§ 2.93), the notice of opposition (§ 2.105), the petition for cancellation (§ 2.113) and the notices of a concurrent use proceeding (§ 2.99), which are mailed by the Patent Office. Proof of such service must be made before the paper will be considered by the Office. A statement signed by the attorney or agent, attached to or appearing on the original paper when filed, clearly stating the time and manner in which service was made will be accepted as prima facie proof of service.

(b) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in either of the following ways: (1) By delivering a copy of the paper to the person served; (2) by leaving a copy at the usual place of business of the person served with someone in his employment; (3) when the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion; (4) transmission by first class mail, which may also be certified or registered. Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the OFFICIAL GAZETTE.

(c) When service is made by mail, the date of mailing will be considered the date of service. Whenever a party is required to take some action within a prescribed period after the service of a paper upon him by another party and the paper is served by mail, 5 days shall be added to the prescribed period.

23. Revise § 2.120 to read as follows:

§ 2.120 *Discovery procedure.*

The provisions of the Federal Rules of Civil Procedure relating to discovery, effective on July 30, 1970 or as subsequently amended, shall apply where appropriate in inter partes trademark cases except as otherwise provided in this section. The period in which discovery may be taken will be specified by the Trademark Trial and Appeal Board.

(a) *Depositions for discovery.*—(1) *Manner of taking.* Depositions may be taken upon oral examination in the manner prescribed by § 2.123 (c), (d) and (e), or upon written questions in the manner prescribed by § 2.124. The responsibility for securing the attendance of a proposed deponent other than a party or anyone who at the taking of the deposition was an officer, director or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a public or private corporation, partnership or association or governmental agency which is a party rests wholly with the interested party. See 35 U.S.C. 24.

(2) *Discovery of foreign party.* The discovery of a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure to testify on behalf of a party domiciled in a foreign country, may be taken in the manner prescribed by §§ 2.123 and 2.124.

(3) *Use of discovery depositions.* Discovery depositions may be used in accordance with Rule 32(a)(1); (2), (4), and (c) of the Federal Rules of Civil Procedure provided the party offering the deposition, or any part thereof, in evidence files the same before the close of his testimony period and also files a notice of reliance thereon. Objections, including any made during the examination, will be considered only if made or renewed at the hearing.

(b) *Request for admission.* (1) Any party to an opposition, interference, cancellation or concurrent use proceeding may, within the time specified for taking depositions for discovery,

serve upon any adverse party two copies of a written request for admission by the letter, of the genuineness of any relevant document described in and attached to the request (a photocopy may be attached provided the original thereof is made available for inspection), or of the truth of any facts which are material and relevant to the issues and which are believed to be within the knowledge of both the parties serving and the parties served. Each matter in respect of which an admission is requested shall be considered as admitted unless, within 30 days after service thereof, the party to whom the request is directed serves upon the party requesting the admission a sworn statement denying specifically the matter in respect of which admission is requested, or setting forth in detail the reasons why he cannot truthfully either admit or deny the same, or files objections thereto together with one copy of the request for admission. Any reply to such objection shall be due within 10 days after service thereof.

(2) No admission shall be considered as part of the record in the case unless a party files, before the close of his testimony period, a notice of reliance thereon and a copy of the admission and request therefor.

(c) *Interrogatories.* (1) Any party to an opposition, interference, cancellation or concurrent use proceeding may, during the period for discovery specified by the Trademark Trial and Appeal Board, serve upon any adverse party two copies of written interrogatories limited to inquiries with respect to the following:

- (i) The issues of abandonment, nonuse, title, or fraud.
- (ii) Date of first use of any mark involved in the proceeding.
- (iii) In a concurrent use proceeding, the geographical area by States in which the mark has been used.
- (iv) A description of all goods to which the mark has been applied.
- (v) Annual sales in units and dollars of all goods sold under the mark during the past 5 years.
- (vi) A description of advertising and promotion of the mark.
- (vii) Annual expenditure for advertising and promotion of the mark during the past 5 years.
- (viii) A description of channels of distribution by which all goods sold under the mark reach ultimate purchasers.

(ix) All known instances of actual confusion of goods or of source between the pleaded marks of adversary parties, stating as to each the date and place of such instance, the name and address of the confused person or organization, the names and addresses of all witnesses to such instance of confusion, and a statement of the particular circumstances.

(x) Representative samples of packaging, advertisements, and promotions of all goods sold under the mark.

(xi) Names and addresses of persons having knowledge of the facts contained in the pleading of the adverse party.

Answers to interrogatories may understate sales dollars and units and advertising and promotional expenditures by employing the form "in excess of . . ." but no evidence of greater amounts shall thereafter be offered by the answering party during the proceeding. The party upon whom the interrogatories have been served shall serve a copy of the answers, and objections if any, on the interrogating party within 30 days after the service of the interrogatories.

(2) Interrogatories and answers thereto shall not be considered as part of the record in the case unless the interrogating party files, before the close of his testimony period, a notice of reliance thereon, setting forth in said notice each interrogatory and answer thereto relied upon.

(d) *Failure to make discovery: Sanctions.* If any party fails or refuses to answer any proper question in taking discovery depositions or fails or refuses to answer any proper question propounded by interrogatories or fails or refuses to comply with an order to produce and permit the inspection and copying of designated things, the party seeking discovery may apply to the Trademark Trial and Appeal Board for an order compelling discovery. If a party or an officer, director, or managing agent of a party, or a person designated under Rule 30(b)(6) or 31(a) of the Federal Rules of Civil Procedure fails to obey an order to provide or permit discovery, the Trademark Trial and Appeal Board may strike out all or any part of any pleading of that party, dismiss the action or proceeding, or deny any part thereof, enter judgment as by default against that party, or take any such other action as may be deemed appropriate.

24. Amend § 2.122 by revising paragraph (b) and adding new paragraphs (c) and (d) to read as follows:

§ 2.122 *Matters in evidence.*

(b) A registration of the opposer or petitioner pleaded in an opposition or petition to cancel will be received in evidence and made part of the record if two status copies (showing title in the party) of the printed registration or an order for such copies accompany the opposition or petition.

(c) Printed publications, such as books and periodicals, available to the general public in libraries or of general circulation, and official records, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent Office a notice to that effect during the period for the taking of the testimony of the party (during the period for taking of testimony-in-chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages to be used, indicating generally its relevance, and accompanied by the record or authenticated copy or the printed publication or a copy. When a copy of an official record of the Patent Office is filed, it need not be a certified copy. The notice and copy of the record or publication must be served on each of the other parties.

(d) Upon motion duly made and granted, testimony taken in inter partes proceedings, or testimony taken in a suit between the same parties or those in interest, may be used in a proceeding, so far as relevant and material, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken, and to take other testimony in rebuttal of the testimony.

25. Revise § 2.123 to read as follows:

§ 2.123 *Testimony in inter partes cases.*

(a) *Manner of taking testimony.* Testimony of witnesses in inter partes cases may be taken (1) by depositions upon oral examination as provided by this section, or (2) by depositions upon written questions as provided by this section and § 2.124.

(b) *Stipulations.* If the parties so stipulate in writing, depositions may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions. By agreement of the parties, the testimony of any witness or witnesses of any party, may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated.

(c) *Notice of examination of witnesses.* Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 2.119(b), of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. Neither party shall take depositions in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other is not available.

(d) *Persons before whom depositions may be taken.* Depositions may be taken before persons designated by Rule 28 of the Federal Rules of Civil Procedure.

(e) *Examination of witnesses.* (1) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(2) The deposition shall be taken in answer to questions, with the questions and answer recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of Rule 28 of the Federal Rules of Civil Procedure) in the presence of the officer except when his presence is waived on the record by agreement of the parties. The testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise. In the absence of all opposing parties and their attorneys or agents, depositions may be taken in longhand, typewriting, or stenographically.

(3) The opposing party shall have full opportunity to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice,

and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice.

(4) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party, and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(5) When the deposition has been transcribed, the deposition shall be carefully read over by the witness, or by the officer to him, and shall then be signed by the witness in the presence of the officer unless the reading and the signature be waived on the record by agreement of all parties.

(f) *Certification and filing by officer.* The officer shall annex to the deposition his certificate showing:

(1) Due administration of the oath by the officer to the witness before the commencement of his deposition;

(2) The name of the person by whom the deposition was taken down, and whether, if not taken down by the officer, it was taken down in his presence;

(3) The presence or absence of the adverse party;

(4) The place, day, and hour of commencing and taking the deposition;

(5) That the deposition was read by or to the witness before he signed the same, and that he signed the same in the presence of the officer; and

(6) The fact that the officer was not disqualified as specified in Rule 28 of the Federal Rules of Civil Procedure.

If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he has such a seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribe upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package marked and addressed as provided in this section.

(g) *Form of deposition.* (1) The pages of each deposition must be numbered consecutively, and the name of the witness plainly and conspicuously written at the top of each page. The deposition may be written on legal-size or letter-size paper, with a wide margin on the left hand side of the page, and with the writing on one side only of the sheet. The questions propounded to each witness must be consecutively numbered and each question must be followed by its answer.

(2) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

(h) *Depositions must be filed.* All depositions, which are taken must be duly filed in the Patent Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

(i) *Inspection of depositions.* After the depositions are filed in the Office, they may be inspected by any party to the case, but they cannot be withdrawn for the purpose of printing. They may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

(j) *Effect of errors and irregularities in depositions.* Notice will not be taken or merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof. Rule 32(d) (1), (2), (3)(a) and (3)(b) of the Federal Rules of Civil Procedure shall apply to errors and irregularities in depositions.

(k) *Objections to admissibility.* Subject to the provisions of paragraph (j) of this section, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

(l) *Evidence not considered.* Evidence not obtained and filed in compliance with these sections will not be considered.

26. Amend § 2.124 by revising paragraphs (a) and (b) and adding a new paragraph (d) to read as follows:

§ 2.124 *Testimony by depositions upon written questions.*

(a) A party may take the testimony of a witness by written questions to be propounded by an officer before whom depositions may be taken. See Rule 28 of the Federal Rules of Civil Procedure. The questions shall be served upon the other party within 10 days after the opening date set for taking the testimony of the party submitting the questions, together with a notice stating the name and address of the person who is to answer them and the name or descriptive title and address of the officer before whom the deposition is to be taken. Within 10 days thereafter, a party so served may serve cross questions upon the party proposing to take the deposition. Within 5 days thereafter, the latter may serve redirect questions upon a party who has served cross questions. Within 3 days after being served with redirect questions a party may serve recross questions upon the party proposing to take the depositions. Written objections to questions may be served on the party propounding the questions, and in response thereto substitute questions may be served, within 3 days.

(b) A copy of the notice and copies of all questions served shall be delivered by the party taking the testimony to the officer designated in the notice, who shall proceed to take the testimony of the witness in response to the questions and to prepare each answer immediately preceded by its corresponding question, then certify, and file the deposition, attaching thereto the copy of the notice and the questions received by him. Such depositions are subject to the same rulings for filing and serving copies as other depositions.

(d) Testimony in foreign countries shall be taken only by depositions upon written questions unless the parties stipulate otherwise in writing. Rule 28(b) of the Federal Rules of Civil Procedure shall apply to the taking of testimony in foreign countries.

§ 2.124a [Revoked]

27. Revoke § 2.124a.

28. Revise § 2.125 to read as follows:

§ 2.125 *Copies of testimony.*

(a) One copy of the transcript of testimony (taken in accordance with § 2.123 (e) through (h) or § 2.124), together with copies of documentary exhibits, shall be served on each adverse party within 30 days after completion of the taking of such testimony. The original transcript and exhibits and one copy of the transcript shall be filed in the Patent Office as promptly as possible.

(b) Each transcript and the copies thereof shall comply with § 2.123(g) as to arrangement, indexing and form.

29. Amend § 2.127 by revising paragraphs (a) and (b) to read as follows:

§ 2.127 *Motions.*

(a) Motions shall be made in writing and shall contain a full statement of the grounds therefor. Any brief or memorandum in support of a motion shall accompany or be embodied in the motion. Briefs in opposition to a motion shall be filed within 15 days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended on request. Where a party fails to file a brief in opposition to a motion, the Trademark Trial and Appeal Board may treat the motion as conceded. Oral hearings will not be held on motions except on order of the Trademark Trial and Appeal Board.

(b) Any petition for reconsideration or modification of a decision, if it is not appealable, must be filed within 10 days after the decision or, if the decision is appealable, within the time specified in § 2.129(c). Any brief in opposition shall be filed within 15 days after service of the petition.

30. Amend § 2.128 by revising paragraph (b) to read as follows:

§ 2.128 *Final hearing and briefs.*

(b) Briefs may be submitted in typewritten form. They shall be the same in size and the same as to page and print

as is specified for printed copies of testimony. Typewritten briefs shall conform to the requirements for typewritten copies of testimony, except that legal-size paper may be used and the binding and covers specified are not required. Without leave of the Trademark Trial and Appeal Board, no brief shall contain more than 50 pages of argument and, in case of the reply brief, the entire brief shall not exceed 25 pages. Each brief shall contain an alphabetical index of cases therein.

31. Amend § 2.129 by revising paragraph (c) to read as follows:

§ 2.129 *Oral argument.*

(c) Any petition for rehearing, reconsideration, or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

Dated: August 26, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

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Published in 36 FR 18002, Sept. 8, 1971

Notice of Daylight Saving Time

Attention is called to the notice published in 885 O.G. 424, April 20, 1971, as to the operation of the Patent Office on Daylight Saving Time. This operation will terminate on October 31, 1971.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,773,359. (See 3,177,677.)

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3,177,677, Boren and Cronellid, ABSORPTION REFRIGERATION; 2,773,359, Kogel, Boren and Ostergren, ABSORPTION REFRIGERATION APPARATUS, filed Apr. 28, 1970, D.C., N.D. Ind. (South Bend), Doc. 70849, Aktiebolaget Electrolux v. Instamatic Corporation and Leon Shahnasarian, doing business as Instamatic Sales Company. Plaintiff is owner of above patents and defendants are permanently enjoined from infringement, May 4, 1971.

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3,206,623, A. E. Snowden, ELECTRIC SYNCHRONOUS INDUCTOR MOTOR, filed June 9, 1971, D.C. Conn. (Bridgeport), Doc. B-310, The Superior Electric Company v. Signa Instruments, Inc.

3,220,557. (See 3,407,080.)

3,226,953, Good and Good, TWO-FEED KNITTING MACHINE, filed Sept. 29, 1970, D.C., W.D.N.C. (Statesville), Doc. 626, Daniel H. Good and David S. Good v. Dave Baer Hosiery Mill, Inc. Consent judgment, defendant has infringed, May 21, 1971.

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3,277,541. Wilton and Fitzpatrick, PHOTOGRAPHIC METHOD OF MAKING A PATTERN FOR MOLDING; Reg. No. 844,318 (TAPER TIPPER), Wilton Brass Company; Reg. No. 867,028 (RWP), same; Reg. No. 867,174, same; Reg. No. 870-721 (ARMETALE), same; Reg. No. 870,890, same; Reg. No. 877,270 (FIGURE OF MOLDER AT WORK), same; Reg. No. 883,160 (ARMETALE), same; Reg. No. 884,447 (RWP), same, filed May 20, 1971, D.C., M.D. Pa. (Scranton), Doc. No. 71-204, *Wilton Brass Company v. Riverside Foundry Co., Inc. et al.*

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3,452,301. (See 3,452,300.)

3,502,933. Leimontas and Paradise, KINESCOPE SOCKET WITH SPARK GAP; 3,553,727, Leimontas, Grove and Paradise, same, filed Mar. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71-788, *Connector Corp. v. Permonite Mfg. Co.*

3,553,727. (See 3,502,933.)

Re. 26,521. (See 3,383,452.)

Reg. No. 844,318. (See 3,277,541.)

Reg. No. 867,028. (See 3,277,541.)

Reg. No. 867,174. (See 3,277,541.)

Reg. No. 870,721. (See 3,277,541.)

Reg. No. 870,890. (See 3,277,541.)

Reg. No. 877,270. (See 3,277,541.)

Reg. No. 883,160. (See 3,277,541.)

Reg. No. 884,447. (See 3,277,541.)

Certificates of Correction for the Week of Oct. 5, 1971

3,380,855	3,569,738
3,545,668	3,573,540
3,550,704	3,573,587
3,551,824	3,575,428
3,553,462	3,577,430
3,554,463	3,581,846
3,557,654	3,582,891
3,561,554	3,583,628

Disclaimer

3,575,909.—Allan E. Gluchrist, Westlake, Ohio. ELECTRO-DEPOSITION BATH COMPOSITION AND REPLENISHMENT COMPOSITION THEREFOR. Patent dated Apr. 20, 1971. Disclaimer filed July 26, 1971, by the assignee, *Ford Motor Company*.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 9, 1985.

Dedications

2,655,531.—Philip L. Southwick, Pittsburgh, Pa. METHOD OF MAKING NAPHTHALENEACETIC ACID. Patent dated Oct. 13, 1953. Dedication filed Jan. 7, 1970, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

2,689,585.—Lloyd R. Coster, Pine Bluff, Ark. MANUFACTURE OF CHLORAL. Patent dated Feb. 18, 1954. Dedication filed Jan. 7, 1970, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

2,717,907.—Edward F. Orwoll, Medina, N.Y. PREPARATION OF 2,4,5-TRICHLOROPHENOXY ACETIC ACID. Patent dated Sept. 13, 1955. Dedication filed Jan. 7, 1971, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

2,758,954.—Calvin M. Tidwell, Medina, N.Y. STABLE MIXTURE OF DIETHYLPARANITROPHENYLTHIOPHOSPHATE AND SOLID EXTENDER AND METHOD OF MAKING SAME. Patent dated Aug. 14, 1956. Dedication filed Jan. 7, 1970, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

2,784,071.—John A. Garman, Baltimore, Md., and Donald K. George, State College, Miss. SELECTIVE HERBICIDE. Patent dated Mar. 5, 1957. Dedication filed Jan. 7, 1970, by the assignee, *Food Machinery and Chemical Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

Patents Available for Licensing or Sale

D. 221,191. COPYHOLDER OR SIMILAR ARTICLE. Bonnie B. Nutt. Correspondence to: Benn Nutt, Andrews, Mich., 49104.

D. 221,400. FLOOR MAT. Thomas P. O'Donnell, 220 Highland Blvd., Brooklyn, N.Y., 11207.

3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Poincianna Drive, Martinez, Ga. 30907.

3,557,825. PILOT-CONTROLLED RELIEF VALVE. Carl Bischoff, Anlage, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,580,396. SILENT BUTLER. Johannes Dietz, Caracas, Venezuela. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,586,003. MEANS FOR SUPPORTING A FLAT FOOT. Duane C. Bowen, 2551 State St., Carlsbad, Calif., 92008.

3,589,825. TAP STARTING GUIDE. Frank A. Wojcik, 5417 E. 17th St., Indianapolis, Ind., 46218.

3,599,295. ATTACHABLY ADAPTED CLAMP AND WRITING PLATFORM THEREFOR. Thomas P. O'Donnell, 220 Highland Blvd., Brooklyn, N.Y., 11207.

3,601,315. POCKET SUPPORTABLE ATOMIZER DEVICE. George H. Montalbo, 1667 W. 208th St., Torrance, Calif., 90501.

3,603,592. APPARATUS FOR PLAYING A GAME UTILIZING THE PERCEPTION OF TELEVISION COMMERCIALS. Joe Bury, 400 S. 6th St., Worland, Wyo., 82401.

3,605,102. DIRECTABLE MULTI-BAND ANTENNA. Talmadge F. Frye. Correspondence to: Parrott, Bell, Seltzer, Park & Gibson, 1211 E. Morehead St., Charlotte, N.C., 28201.

Sam P. Wallace Company, Inc., is prepared to grant non-exclusive licenses under the following patent upon reasonable terms to any and all persons, firms, corporations and unincorporated associations.

Applications for licenses may be made to: Sam P. Wallace Company, Inc., 2102 Proctor St., P.O. Box 35328, Dallas, Tex. 75235.

3,376,916. ZONE AIR CONDITIONING APPARATUS.

Whirlpool Corporation is prepared to grant non-exclusive licenses at reasonable royalty rates to domestic manufacturers under the following patent.

Applications for license may be addressed to: Patent Counsel, Whirlpool Corporation, Benton Harbor, Mich., 49022.

3,379,039. INSTINCTIVE PRESSURE RELEASE FOR WRINGERS.

Borg-Warner Corporation is prepared to grant non-exclusive licenses upon reasonable terms under the following patent. Inquiries respecting licenses should be addressed to: Borg-Warner Corporation, 200 S. Michigan Ave., Chicago, Ill., 60604.

3,445,350. METAL PLATING OF PLASTIC MATERIALS.

The following 3 patents are available for licensing by the Department of Health, Education, and Welfare as provided by Title 45 C.F.R., Section 6.3.

Inquiries should be addressed to: Norman J. Latker, Chief, Patent Branch, National Institutes of Health, Room 5A03, Westwood Bldg., Bethesda, Md., 20014.

3,589,313. SOLID WASTE DISPOSAL METHOD AND APPARATUS.

3,596,104. METHOD AND APPARATUS FOR ANALYZING TRAVELING LIGHT WAVES.

3,596,614. FLUID BED REACTOR MATERIAL COMBUSTION APPARATUS.

General Electric Company is prepared to grant non-exclusive licenses under the following patent on reasonable terms to all manufacturers.

Applications for license under the following patent may be addressed to: Patent Counsel, Home Entertainment Business Division, General Electric Company, Bldg. 1, Electronics Park, Syracuse, N.Y., 13201.

3,122,610. CIRCUITRY FOR MULTIPLEX TRANSMISSION OF FM STEREO SIGNALS WITH PILOT SIGNAL.

General Electric Company is prepared to grant non-exclusive licenses upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: General Electric Company, Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

2,892,272. BALANCED PRESSURE STEAM IRON.

Applications for licenses under the following patent may be addressed to: Division Patent Counsel, Power Transmission Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,579,162. WINDING DUCT CONSTRUCTION FOR POWER TRANSFORMER.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Department, General Electric Company, Lynchburg, Va., 24502.

3,584,823. HOLDING DEVICE FOR A POT CORE.

Applications for licenses under the following 82 patents may be addressed to: Patent Counsel, Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio, 44112.

3,259,778. STARTING OF HIGH TEMPERATURE ELECTRODE LAMPS.

3,283,852.	METHOD OF GLASS BULB MANUFACTURE AND GLASS BULB.	3,408,719.	METHOD OF ASSEMBLING LAMP FILAMENT AND SUPPORT STRUCTURE.
3,303,674.	FLASH LAMP.	3,409,790.	ARC TUBE MOUNTING.
3,304,144.	FLASH LAMP MANUFACTURE.	3,418,024.	DIFFERENTIAL OUTPUT INCANDESCENT LAMP.
3,304,760.	PHOTOFLASH LAMP.	3,417,230.	ELECTRIC HEAT LAMP AND ELECTRIC DEVICES.
3,305,289.	ELECTRIC LAMP MANUFACTURE.	3,419,947.	COMPACT SOURCE DISCHARGE LAMP MANUFACTURE.
3,314,831.	PHOTOGRAPHIC PROJECTION SYSTEM AND LAMP.	3,420,944.	LEAD-IN CONDUCTOR FOR ELECTRICAL DEVICES.
3,315,112.	DUAL BEAM PROJECTION LAMP MOUNT CONSTRUCTION.	3,431,448.	BROMINE REGENERATIVE CYCLE INCANDESCENT LAMPS.
3,320,012.	METHOD OF MANUFACTURING PHOTOFLASH LAMPS.	3,435,180.	METHOD OF MAKING A MOLYBDENUM-TUNGSTEN THIMBLE SEAL.
3,325,635.	MOVIE LIGHT.	3,435,272.	TUBULAR HALOGEN CYCLE INCANDESCENT LAMP WITH INNER CYLINDER FOR UNIVERSAL OPERATION.
3,325,667.	ELECTRIC INCANDESCENT PROJECTION LAMP.	3,441,421.	CALCIA-MAGNESIA-ALUMINA SEAL COMPOSITIONS.
3,325,879.	ELECTRIC PROJECTION LAMP HAVING SPECIALLY CONFIGURATED ENVELOPE.	3,441,774.	HALOGEN CYCLE INCANDESCENT LAMP WITH PLANAR FILAMENT.
3,335,312.	FILAMENT SUPPORT FOR TUBULAR INCANDESCENT LAMPS.	3,448,319.	NIOBIMUM END SEAL.
3,343,021.	ELECTRIC INCANDESCENT PROJECTION LAMP WITH HEAT SHIELD.	3,448,320.	ELECTRIC LAMP AND METHOD OF MANUFACTURE.
3,346,767.	INTEGRAL LENS AND REFLECTOR PROJECTION LAMP.	3,448,321.	ELECTRIC INCANDESCENT LAMP AND METHOD OF MANUFACTURE.
3,346,768.	INCANDESCENT LAMP WITH A FUSE INTEGRAL WITH LEAD-IN STRUCTURE.	3,448,322.	DIRECT FILAMENT ENCLOSED INCANDESCENT LAMPS AND CONTACT MEANS THEREFOR.
3,379,968.	ELECTRIC DISCHARGE PROJECTION LAMP.	3,450,925.	MERCURY BISMUTH HALIDE PHOTOCHEMICAL ARC LAMP LIGHT SOURCES.
3,390,298.	ELECTRIC DISCHARGE LAMP ENVELOPE HAVING MOLTEN NINER SURFACE AT OPERATING TEMPERATURE.	3,453,476.	HALOGEN REGENERATIVE CYCLE INCANDESCENT LAMP.
3,403,280.	SINGLE-ENDED ELECTRIC INCANDESCENT LAMP FILAMENT SUPPORT.	3,453,477.	ALUMINA-CERAMIC SODIUM VAPOR LAMP.
3,409,342.	METHOD OF HEAT SEALING FLASHLAMPS CONTAINING COMBUSTIBLE GAS MIXTURES.	3,479,170.	METHOD OF SEALING ZIRCONIUM HYDRIDE COATED NIOBIUM END CAPS TO ALUMINA CERAMIC ENVELOPES.
3,441,772.	FILAMENT MOUNT STRUCTURE FOR ELECTRIC LAMPS AND MANUFACTURE THEREOF.	3,483,609.	INCANDESCENT LAMP MANUFACTURE.
3,441,776.	FILAMENT SUPPORT FOR INCANDESCENT ELECTRIC LAMPS.	3,484,640.	METAL HALIDE VAPOR PHOTOCHEMICAL LIGHT SOURCES.
3,445,713.	HALOGEN CYCLE INCANDESCENT LAMP.	3,485,343.	OXYGEN GETTER FOR HIGH PRESSURE SODIUM VAPOR LAMP.
3,470,410.	BROMINE REGENERATIVE CYCLE INCANDESCENT LAMPS WITH PROTECTIVE OVERWIND COILS ON COILED FILAMENT LEGS.	3,493,808.	ELECTRIC INCANDESCENT LAMP FILAMENT SUPPORT.
3,484,644.	TUNGSTEN POWDER BONDED FILAMENT CONNECTION FOR INCANDESCENT LAMPS AND METHOD OF MANUFACTURE.	3,497,754.	EFFICIENT INCANDESCENT LIGHT SOURCE INCLUDING LIGHT-ENHANCING METALLIC IODIDE VAPORS.
3,502,864.	RIM-REFERENCING LAMP-HOLDER AND PROJECTION LAMP WITH REFLECTOR.	3,502,931.	ELECTRIC INCANDESCENT LAMP MOUNT STRUCTURE.
3,516,042.	BASE-REFERENCING LAMP-HOLDER AND PROJECTION LAMP.	3,502,932.	INCANDESCENT LAMP AND METHOD OF MANUFACTURE.
3,521,107.	FLASHTUBE GETTER ELECTRODE.	3,510,719.	BENT END ELECTRIC LAMP.
D. 212,618.	JACKETED DISCHARGE LAMP.	3,515,420.	QUARTZ TO METAL SEAL FOR ELECTRICAL DEVICES.
3,320,352.	QUARTZ-TO-METAL SEAL.	3,515,928.	ONE-SHOT ARC LAMP WITH MASS OF VAPORIZABLE WIRE BETWEEN ELECTRODES.
3,325,662.	METAL VAPOR LAMP HAVING A HEAT REFLECTING COATING OF CALCIUM PYROPHOSPHATE.	3,515,930.	COMPACT BENT END ELECTRIC LAMP.
3,383,134.	ARC DISCHARGE LAMP HAVING POLYCRYSTALLINE CERAMIC ARC TUBE.	3,519,406.	DISCHARGE TUBE SEAL.
3,364,374.	COMPACT SOURCE LAMP HAVING ELECTRODE CONSTRUCTION PROVIDING ARC STABILIZATION.	3,521,108.	METALLIC VAPOR ARC LAMP HAVING HIGH INTENSITY SUNLIKE EMISSION.
3,364,375.	METAL VAPOR LAMP THORIUM COATED ELECTRODE.	3,521,109.	TUBULAR HALOGEN CYCLE INCANDESCENT LAMPS.
3,364,376.	IODINE CYCLE INCANDESCENT LAMP INCLUDING CARBON MONOXIDE.	3,521,110.	MERCURY-METALLIC HALIDE VAPOR LAMP WITH REGENERATIVE CYCLE.
3,374,377.	METAL VAPOR LAMP COATING.	3,521,112.	TUBULAR SUPPORT FOR TUBULAR LAMPS.
3,384,771.	REFLECTOR DISCHARGE LAMP HAVING FROSTED ENVELOPE AND ARC TUBE.	3,527,982.	DISCHARGE LAMP BALLASTING.
3,384,774.	DECORATIVE PULSATING FLAME INCANDESCENT LAMP.	3,530,329.	FILAMENT SUPPORT AND HEAT SHIELD CONSTRUCTION FOR ELECTRIC LAMPS.
3,384,775.	MERCURY METAL HALIDE DISCHARGE LAMP HAVING IODINE PRESENT IN STOICHIOMETRIC PROPORTIONS WITH RESPECT TO THE REACTIVE METALS.	3,544,188.	INCANDESCENT LAMP AND METHOD OF MANUFACTURE.
3,384,798.	HIGH PRESSURE SATURATED VAPOR SODIUM LAMP CONTAINING MERCURY.	3,545,639.	CERAMIC-METAL BONDING COMPOSITION AND COMPOSITE ARTICLE OF MANUFACTURE.
3,390,299.	FILAMENT SUPPORTS FOR TUBULAR INCANDESCENT LAMPS.	3,548,245.	QUARTZ-TO-METAL FOIL PINCH SEAL.
		3,551,722.	HALOGEN REGENERATIVE CYCLE INCANDESCENT LAMPS.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner

F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 7, 1971

PATENT EXAMINING GROUPS

Actual
Filing Date
of Oldest
New Case
Awaiting
Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	5-06-70
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	3-09-70
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	7-20-70
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	8-03-70
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director.....	4-01-70
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-29-70
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	
SECURITY, GROUP 220—R. L. CAMPBELL, Director.....	3-31-70
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	7-14-70
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	8-21-70
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
PHYSICS, GROUP 280—R. L. EVANS, Director.....	5-14-70
Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	8-17-70
Industrial Arts; Household, Personal and Fine Arts.	

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	7-06-70
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	5-15-70
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	6-04-70
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director.....	9-14-70
Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director.....	7-27-70
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	

Expiration of patents: The patents within the range of numbers indicated below expire during September 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 5, 1946 (60 Stat. 940) and Public Law 616, 83rd Congress, approved August 23, 1944 (58 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

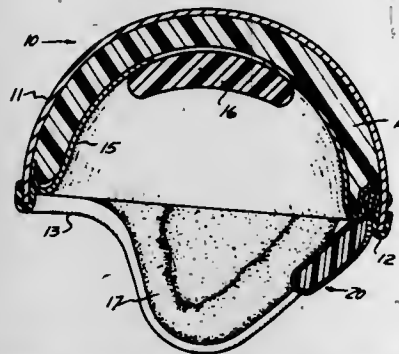
Patents..... Numbers 2,688,123 to 2,690,559, inclusive
Plant Patents..... Numbers 1,300 to 1,307, inclusive

PATENTS

GRANTED OCTOBER 5, 1971

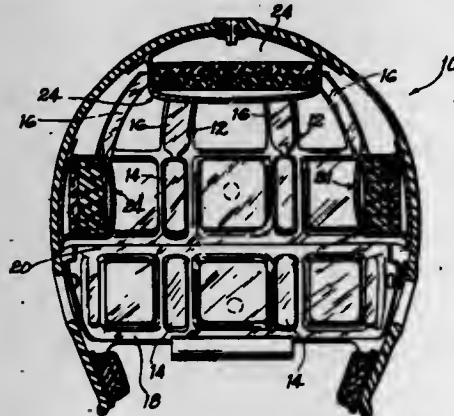
GENERAL AND MECHANICAL

3,609,763
RETAINER AND NECK GUARD FOR FULL COVERAGE SAFETY HELMET
 Dennis F. Raney, Walled Lake, Mich., assignor to American Safety Equipment Corporation of Michigan, Detroit, Mich.
 Filed June 5, 1970, Ser. No. 43,842
 Int. Cl. A42b 3/00
 U.S. Cl. 2—3 R 3 Claims



A safety helmet formed of a hard, outer shell shaped to cover the wearer's head, including the sides and ear portions of the head, with the rear of the shell being cut away to form an inverted U-shaped opening exposing the rear of the wearer's neck down from about the base of the skull, and a thick, soft, resiliently stretchable and compressible pad stretched across and covering the upper half of said opening and secured to the shell edge adjacent said opening to form a retainer for locking the helmet against movement relative to the head, as well as a neck guard.

3,609,764
ENERGY ABSORBING AND SIZING MEANS FOR HELMETS
 Gerard E. Morgan, Lake Forest, Ill., assignor to Riddell, Inc., Des Plaines, Ill.
 Continuation-in-part of applications Ser. No. 457,016, May 19, 1965, and Ser. No. 664,748, Aug. 31, 1967.
 This application Mar. 20, 1969, Ser. No. 808,800
 Int. Cl. A42b 3/02
 U.S. Cl. 2—3 34 Claims

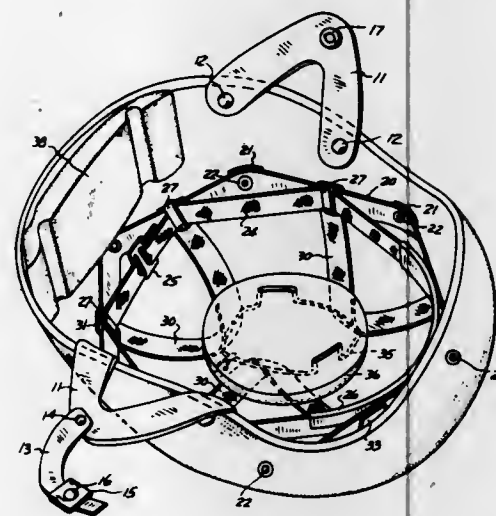


A system for absorbing energy to avoid the detrimental effects of impacts in protective equipment such as helmets comprising a plurality of first chambers located on the inside surface of the helmet for positioning adjacent the head of the wearer. A substantially non-compressible fluid is included within these first chambers, and conduits connect the first chambers with corresponding second chambers.

Upon impact, fluid is displaced to the second chambers, and, due to the design of the chambers, the displaced fluid is returned to the first chambers when the force of the impact is removed.

Sizing means useful with the energy absorbing means or in other applications are located on the interior of the helmet surface. The sizing means include expandable compartments, and valves are associated with these compartments whereby a user of the helmet can place the helmet on his head after which air is introduced into the compartments until a proper fit is achieved. Energy absorbing pads are preferably located within the compartments to serve as additional safeguards under high impact conditions.

3,609,765
PROTECTIVE HELMET HEAD SUSPENSION
 Stephen J. Molitoris, Farmington, Mich., assignor to American Safety Equipment Corporation of Michigan, Detroit, Mich.
 Filed Dec. 17, 1969, Ser. No. 885,688
 Int. Cl. A42b 3/00
 U.S. Cl. 2—3 A 1 Claim



A size adjustable suspension for protective helmets, formed of a horizontal outer band arranged within the helmet shell and fixedly secured thereto at the front, rear and two spaced side points to form a roughly hexagonal shape. An adjustable in length inner band secured to the outer band between its points of securement to the shell, with the side and rear securing means being in the form of loops through which the band extends. The lower ends of overhead looped suspension straps are connected to the loops so that the inner band may be adjusted for wearer head sizes.

3,609,766
METHOD OF MAKING A DRESS
 Janet R. Olive, 2520 E. Rose, Orange, Calif. 92667
 Filed Jan. 5, 1970, Ser. No. 664
 Int. Cl. A41d 1/22
 U.S. Cl. 2—74 3 Claims

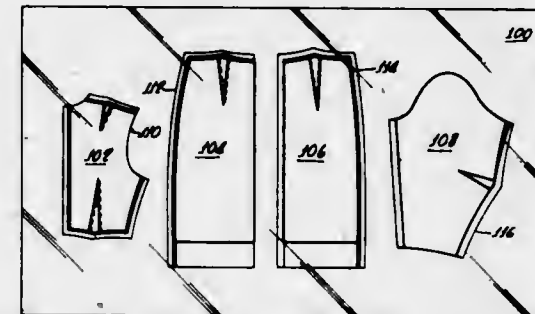
A method for perfecting a standard pattern to fit a non-standard figure is disclosed. A muslin test dress is made from a standard basic pattern and modified to fit

OCTOBER 5, 1971

GENERAL AND MECHANICAL

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an individual non-standard figure. Clear flexible plastic pattern elements are constructed showing the corrected seam, dart, and cut lines from the pieces of the test dress. The lines are formed on the clear pattern correction elements by removable and replaceable pressure sensitive tape strips so as to permit adjustment of the pattern perfecter elements to compensate for changes in the non-standard figure.



ment by removable and replaceable pressure sensitive tape strips so as to permit adjustment of the pattern perfecter elements to compensate for changes in the non-standard figure.

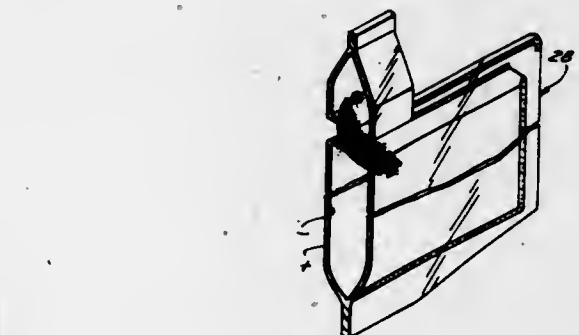
3,609,767
SURGICAL GOWNS
 Carl R. Grosz, 807 E. Carl Ave., Baldwin, N.Y. 11510
 Filed Oct. 29, 1969, Ser. No. 872,005
 Int. Cl. A41d 9/00
 U.S. Cl. 2—114 6 Claims



A wrap-around flap is joined to the front of a back overlap surgical robe along a substantially vertical seam to maintain the back of a surgical gown in a sterile condition. The flap includes arm holes adjacent the upper edge thereof through which the user's arms are inserted as the flap is wrapped about him. After a robe having a donning access opening secured by a closure means at its back is donned, the closure means is rendered effective by an assistant who is not sterile. The flap is subsequently wrapped about the user covering the contaminated back of the robe. While the flap is being wrapped about the user, he inserts his arms through the arm holes. The free vertical edge of the flap is then secured to the front of the gown. Thus, the flap serves to maintain the back of the gown in a sterile condition and provides two or more layers of material in the front.

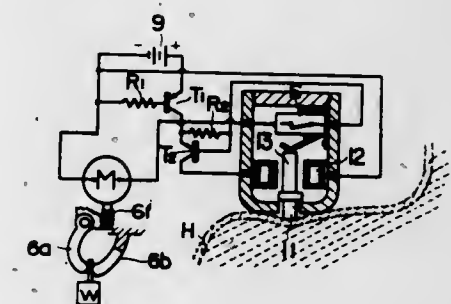
3,609,768
ANTICOAGULANT MATERIAL HAVING CHARGED ELECTROSTATIC SURFACES SUITABLE FOR USE IN PROSTHETIC DEVICES
 Waldemar A. Ayres, Rutherford, N.J., assignor to Becton, Dickinson and Company, Rutherford, N.J.
 Continuation-in-part of application Ser. No. 560,653, June 27, 1966. This application June 16, 1969, Ser. No. 833,657
 Int. Cl. A61f 1/00
 U.S. Cl. 3—1 10 Claims

An anticoagulant device for confining blood. The device includes a blood engaging wall with a surface for



charge providing a blood-engaging surface field of not less than approximately 0.3 volt negative.

3,609,769
CONTROL SYSTEM FOR ELECTRICALLY POWERED ARTIFICIAL LIMBS
 Tsutomu Suzuki, Shiga-ken, Fumio Hayakawa, Kyoto-fu, and Kouichi Yaida, Osaka-fu, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-fu, Japan
 Filed Apr. 2, 1969, Ser. No. 812,742
 Claims priority, application Japan, Apr. 2, 1968, 43/21,607; May 8, 1968, 43/30,699, 43/37,382, 43/37,383
 Int. Cl. A61f 1/00, 1/06
 U.S. Cl. 3—1.1 12 Claims

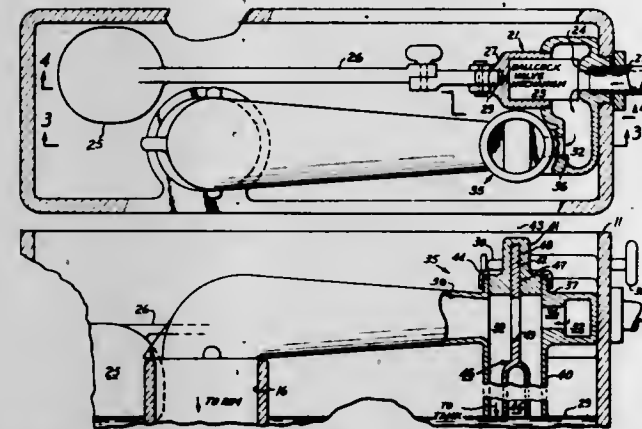
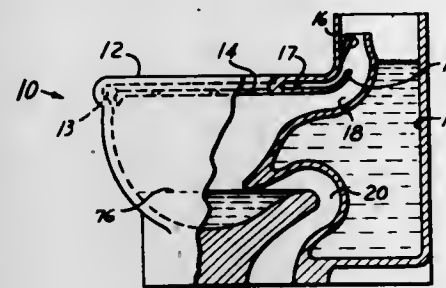


The artificial limbs of the invention are for use as mechanical limbs, and especially for those whose limbs are missing from the high positions, which take over functions similar to those of the living body, having a control system to control the drive of the motor for operating the artificial limbs in accordance with the user's own will while the driving conditions of the motor are sensed by himself.

3,609,770
TOILET SHUNT VALVE AND SYSTEM
 William T. Heyer, 225 Mohawk Road, and Dale F. Soukup, 318 Mohawk Road, both of Santa Barbara, Calif. 93105
 Filed Jan. 15, 1970, Ser. No. 3,184
 Int. Cl. E03d 1/36
 U.S. Cl. 4—41 16 Claims

A toilet shunt valve for use in flushing toilet commodes utilizing flow from a ballcock valve supplemented by water from a storage tank. The shunt valve includes an aspirator passage which passes over the mouth of an aspirator tube so as to draw water from the tank into the flow from the ballcock so as to supplement the same. Water from the aspirator is supplied as desired to the commode, such as for rinsing and flushing the same. The

aspirator tube encloses a float member which has a vane with a port that permits the flow of water for purposes



of augmented supply in one position, and diverts the flow to the tank to refill it in another position.

3,609,771
PARTIALLY DISPOSABLE INFLATABLE BEDPAN
Donald R. Avoy, 1012 Whiteoak Drive,
San Jose, Calif. 95129
Filed Oct. 27, 1969, Ser. No. 869,494
Int. Cl. A61g 9/00
U.S. Cl. 4-113 4 Claims

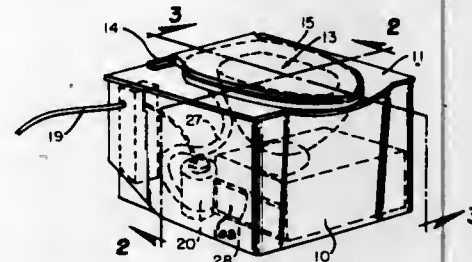


An inflatable partially disposable bedpan comprising a non-disposable inflatable U-shaped cushion and a disposable body waste receptacle removably secured within the extensions of the U-shaped cushion. The receptacle comprises, in addition to a waste bag, a perineal apron and an extended opposing flap or apron cover which, when laid on the top of the cushion, conforms to and protects the surface of the cushion from patient contact. The waste bag may be separated from the protection flap after use by breaking a perforation midway between the bag and apron cover, thereby permitting use and safe and sanitary disposal of the waste without moving the patient or contaminating the cushion.

3,609,772
VEHICLE FLUSH TOILET
Durrell U. Howard, 306 Krameria Drive,
San Antonio, Tex. 78213
Filed Aug. 7, 1969, Ser. No. 848,221
Int. Cl. A47k 11/02
U.S. Cl. 4-115 7 Claims

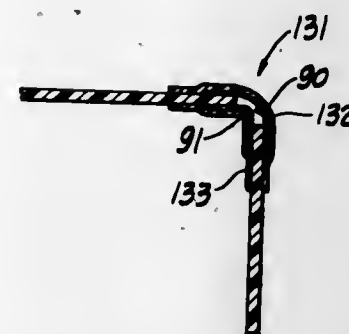
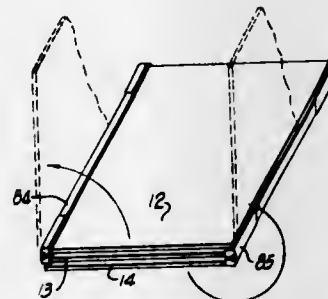
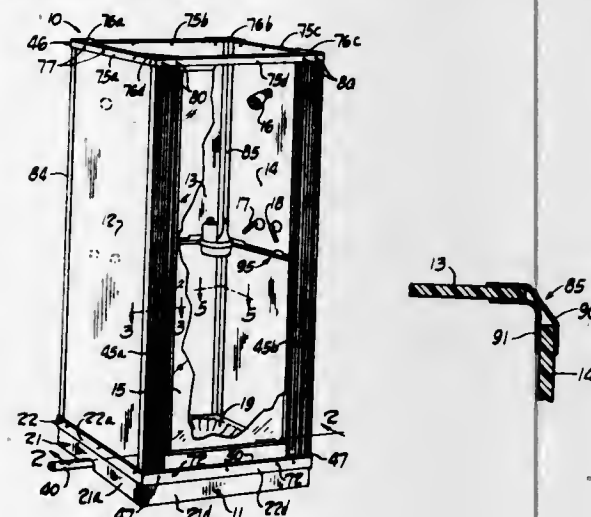
The disclosure relates to a flush toilet for vehicles or the like. A storage receptacle receives waste from a bowl with which it communicates when an intervening shutter is

open. During the flushing cycle, the shutter is closed and flushing fluid is pumped from a separate reservoir to the bowl and thence back to the reservoir, bypassing the receptacle. A cover for the flush toilet is openable and is mechanically coupled to the shutter so that the shutter is



opened when the cover is raised. A means is provided for latching the shutter in the closed position during the flushing cycle, and the mechanical interconnection between the shutter and the cover permits raising the cover even when the shutter is locked in the closed position.

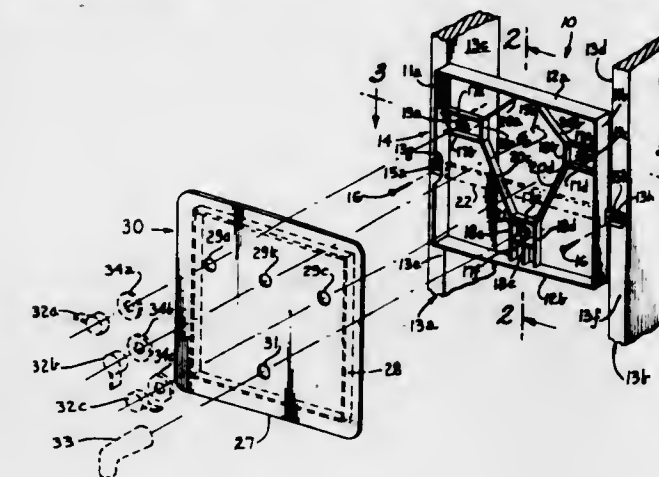
3,609,773
FREE-STANDING SHOWER STALLS
Bernard E. Mustee, Cleveland, Ohio, assignor to
E. L. Mustee & Sons, Inc.
Filed Oct. 8, 1969, Ser. No. 864,716
Int. Cl. A47k 3/23
U.S. Cl. 4-146 24 Claims



A free-standing shower stall including a base, wall panels joined to the base, a rail connected to the wall panels to impart rigidity to the stall, and a drain connection in the base which permits the shower stall to be placed in any desired location. A shower stall as described

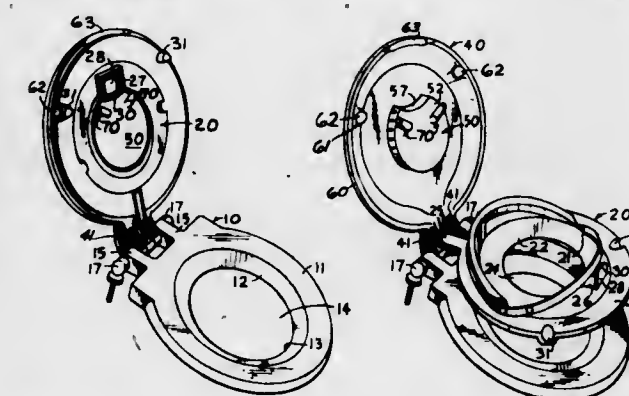
wherein the wall panels are plastic and are joined together by imperforate, water tight hinges which permit the panels to be folded for shipment in association with other parts of the stall and to be easily erected during assembly.

3,609,774
ROUGHING IN FRAME AND ACCESS PANEL TO TUB/SHOWER VALVES
Lewis V. Allgood, Rte. 2, Box 76AA,
Wills, Tex. 77378
Filed Apr. 30, 1969, Ser. No. 820,376
Int. Cl. F16l 5/00
U.S. Cl. 4-191 6 Claims



The disclosure is to two parts, a roughing in frame being first used by the plumber to extend in front of the forward edge faces of bathroom studs, to which the frame is affixed, the frame members being of approximately tile wall width, and hot, shower and cold water valve stems and mixed water conduit extending forwardly through the bracing within the rear part of the frame. Then a substantially rectangular panel plate of dimension to overextend the roughing in frame (and part of the tile therearound) is disposed with a rectangular frame extending inwardly therefrom in fit snugly within the forward part of the roughing in frame. The valve stems and conduit extend forwardly through holes in the panel plate, and when the respective valves and the mixed water spout are installed, the panel plate matches with the tile in finish while at the same time being removable in emergency, as to permit access to the mixing valve from which stems and conduit extend forwardly.

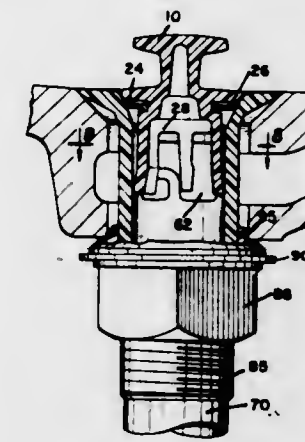
3,609,775
TOILET SEAT ASSEMBLY
Robert P. Leiter and Thomas G. Ware, Atlanta, Ga.,
assignors to Robert Paul Leiter and Thomas G. Ware,
both of Atlanta, Ga.
Filed Aug. 26, 1968, Ser. No. 755,137
Int. Cl. E03d 9/02
U.S. Cl. 4-230 6 Claims



Toilet seat assembly having a child's seat hingedly recessed into the cover of a toilet seat, there being provided a central ring in the cover for removably retaining

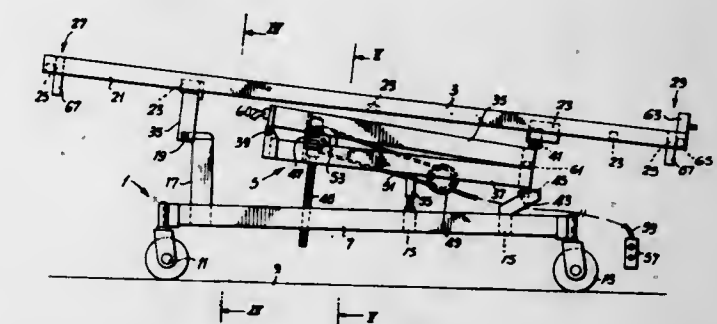
a deodorant. The child's seat portion has a splash guard and a harness including a back support and a retaining strap. Detents removably retain the child's seat recessed into the cover.

3,609,776
DRAIN STOPPER FOR PLUMBING FIXTURES
Ioakim Haldopoulos and James Edward Niemann, Louisville, Ky., assignors to American Standard Inc., New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,391
Int. Cl. A47k 1/14
U.S. Cl. 4-295 9 Claims



Covers a stopper mechanism for the drain port of a plumbing fixture, such as a lavatory. The stopper mechanism includes a skirt member having a plurality of arms, one or more of which have protruding fingers. The drain port of the plumbing fixture has a two-tier opening. By manipulating the stopper mechanism, the stopper mechanism may be inserted into the drain port so that the fingers of the stopper structure may be brought into position on a selected tier in the opening of the drain port so as to maintain the drain port open or closed as desired, or, if desired, the stopper mechanism may be removed from the drain port so that it may be cleaned.

3,609,777
BEDS
Kenneth Malcolm Agnew and Timothy Coward, London, England, assignors to National Research Development Corporation, London, England
Filed Aug. 26, 1969, Ser. No. 853,008
Claims priority, application Great Britain, Aug. 29, 1968, 41,364/68
Int. Cl. A61g 7/00
U.S. Cl. 5-62 12 Claims

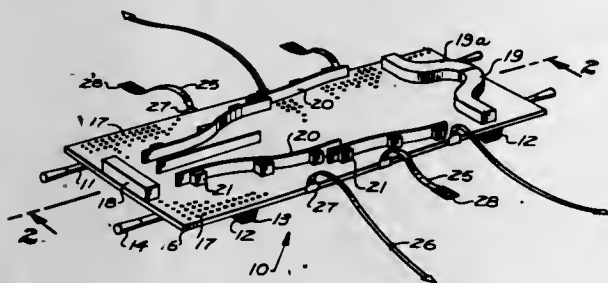


A bed capable of raising a patient from a supine to an upright position. The mattress-supporting deck is supported from a wheeled subframe by a hinged post and two arms. The arms are pivotally connected to one another and one is pivotally connected to the deck and the other to the sub-frame. The pivot axes are all parallel. An electrically driven screw jack or jacks serves to raise the deck by

pivoting it about the hinge in the post. A platform is provided on the foot end of the deck prior to raising to support the foot or feet of a patient as the deck is raised. When the deck is raised the platform is close adjacent the floor and the wheels at the foot end of the sub-frame are raised off the floor by reaction of the foot end of the deck with the floor.

3,609,778 RIGID LITTER

Eugene A. Zeiner, Monterey Park, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Mar. 7, 1969, Ser. No. 805,248
Int. Cl. A61g 7/10, 1/02; A47c 17/64
U.S. Cl. 5-82 11 Claims

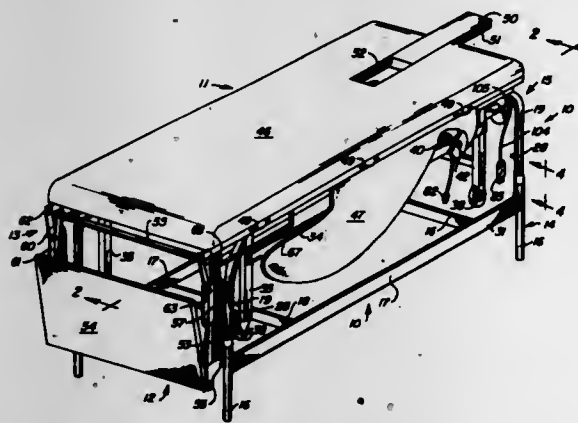


A personnel litter according to the present disclosure comprises a substantially rigid pallet. First rigid restraining means is provided for restraining the length of the torso of the personnel, and second restraining means restrains movement of the torso. Attachment means rigidly attaches the restraining means to the pallet. According to one feature of this disclosure, a canopy is provided for receiving the pallet and snare means is mounted to the canopy so that an aircraft is capable of snaring the snare means to evacuate the litter.

3,609,779 TILT APPARATUS

Carl W. Oja and Richard L. Scheuerman, Redwood Falls, Minn., assignors to Activeaid, Inc., Redwood Falls, Minn.

Filed June 16, 1970, Ser. No. 46,613
Int. Cl. A47l 5/12; A61g 7/00
U.S. Cl. 5-62 22 Claims



A tiltable platform unit supported on a base unit is taught. Both the platform unit and base unit are equipped with linear style tracks. A track follower is guided in a predetermined path by the track on one of the units and acts cooperatively with the track on the other unit to cause the tilting action.

The tiltable platform unit is capable of movement in a horizontal direction without tilting during a portion of the movement of the track follower. The combination of both horizontal movement and a tilting capability for the

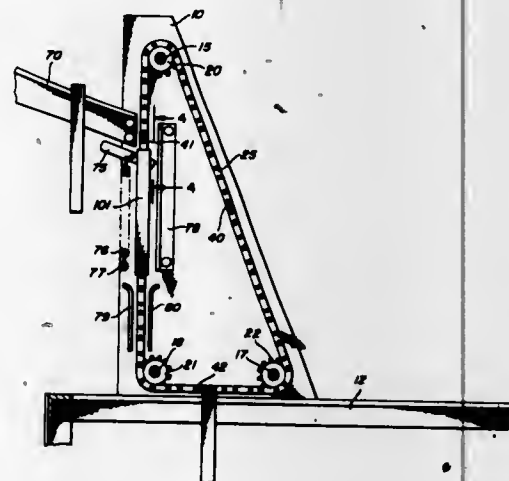
platform unit is accomplished by employing a special pivot assembly between the platform and base units. The pivot assembly includes a guide part, and a guide follower part cooperatively associated with the guide part. The guide part is fixed to one of the units (the base unit); and the guide follower part is fixed to the other unit (the platform unit).

The apparatus also includes a footboard assembly which is collapsible underneath the platform unit but movable into a foot support position at one end of the platform unit prior to tilting the platform from the horizontal to an approximately upright or vertical position. The footboard assembly is pivotally attached to the axis of the major pivot between the platform unit and base unit. An actuating member fixed to the tiltable platform unit cooperates with an actuating track on the footboard assembly for movement of the footboard to the foot support position and for withdrawal of it after the tiltable platform unit is returned to the horizontal from a tilted position.

3,609,780 HONEYCOMB DECAPPING APPARATUS

John F. Cowen, P.O. Box 206, Parowan, Utah 84761
Filed June 3, 1968, Ser. No. 733,901
Int. Cl. A01k 59/02

U.S. Cl. 6-12 A 8 Claims



A frame assembly is utilized to support a pair of end-less chains between which drive bars are connected. The drive bars are driven downwardly by the chains and contact the top of a honeycomb decapper and forces the honeycomb between a pair of reciprocating, heated, decapping knives. A platform supports a plurality of honeycombs in position to be fed into engagement with the drive bars; the honeycombs drop from the edge of the platform onto spring-biased support members and are held by the support members until a drive bar engages the upper portion of the honeycomb. Motion of the drive bar causes pivoting of the support members against the force of the bias spring.

3,609,781 CURING CONDITIONS DETECTOR

Peter Dunderdale, Hale, England, assignor to The Bradford Dyers' Association Limited, Bradford, Yorkshire, England

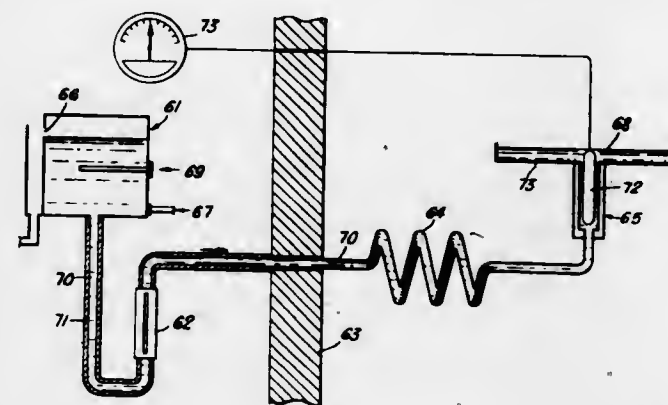
Filed July 28, 1969, Ser. No. 845,302
Claims priority, application Great Britain, July 26, 1968, 35,868/68

Int. Cl. B08b 3/00; D06c 1/00; D06f 37/00
U.S. Cl. 8-149.3 10 Claims

The curing conditions in a steaming chamber used in the curing of dyed materials are controlled by maintaining a body of liquid in the chamber in equilibrium with the conditions in the chamber, measuring the temperature of the body of liquid and the rate of evaporation from its

surface, and adjusting the rate of introduction of steam and the indirect heat input to the chamber in response

aperture in its side wall in the region extending beyond the outer tube, the second aperture having a non-return valve therein for allowing gas to escape from the inner tube to the surroundings.



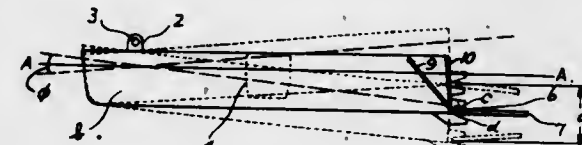
to the measurements obtained. Preferably the liquid will be water.

3,609,782 WATER WALKING APPARATUS

Seiichi Mabuchi, 11 24, 1-chome, Makami-cho, Takatsuki-shi, Osaka-fu, Japan
Continuation-in-part of application Ser. No. 637,234, May 9, 1967. This application Nov. 10, 1969, Ser. No. 875,102

Claims priority, application Japan, Oct. 13, 1966, 41/67,525

Int. Cl. A63c 15/04
U.S. Cl. 9-310 D 24 Claims



A water walking apparatus having boat-like bodies arranged parallel to each other. The front portions of said boat-like bodies are interconnected to each other in such a manner that they are capable of moving pivotally up and down alternately; the rear portions of which are provided with submerged, inclinable rigid plates associated with stop means which limits their movement to a small angle.

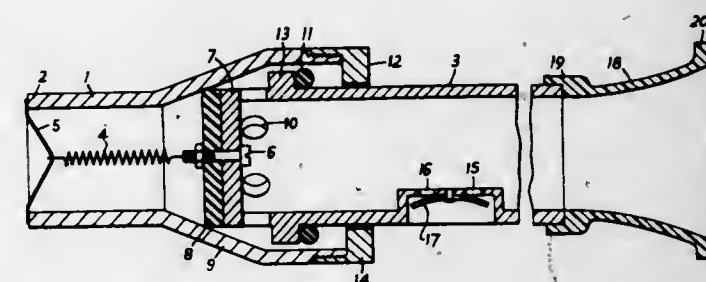
3,609,783 VALVE FOR AN INFLATABLE LIFE-JACKET

George W. R. Cooke, 12 Salisbury Grove, Mytchett, Camberley, Surrey, England

Filed Nov. 10, 1969, Ser. No. 875,241
Claims priority, application Great Britain, Nov. 18, 1968, 54,692/68

Int. Cl. B63c 9/24
U.S. Cl. 9-311 6 Claims

A valve comprises an outer tube, an inner tube extending thereto and having a first aperture in the region inside the outer tube, and a spring acting to urge the inner tube into the outer tube, the inner tube being axially movable against the action of the spring to a retracted position in which a first seal is formed preventing gas from escaping from the outer tube over the surface of the inner tube while allowing gas to pass from the outer tube to the inner tube through the first aperture and being axially returnable from the retracted position by the action of the spring to a forward position in which a second seal is formed preventing gas from escaping from the outer tube to the inner tube and the surroundings, the inner tube being provided with a second

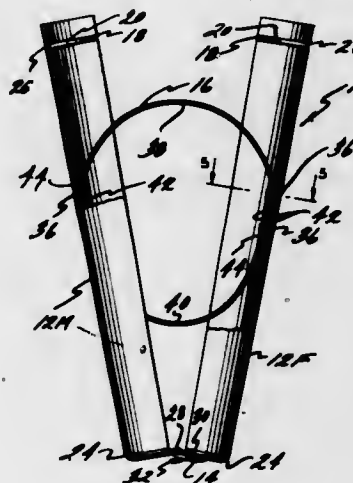


The valve is suitable for use with a diver's life jacket and enables the diver to breath from the inflated jacket in an emergency.

3,609,784 BOOT TREE

Norman P. Goldberg, 255 S. Hudson, Denver, Colo. 80222

Filed Mar. 6, 1970, Ser. No. 17,240
Int. Cl. A43d 5/00
U.S. Cl. 12-114.6 7 Claims



This invention relates to a boot tree characterized by a pair of hollowed out elongate generally semi-cylindrical half-shells arranged in face-to-face relation and hinged at the lower ends thereof while the mid-portion is biased apart by a spring bow. The upper ends of the half-shells are closed by centrally-apertured semi-circular discs that provide finger-holds for the thumb and forefinger to aid in squeezing the half-shells together so as to facilitate insertion and removal thereof.

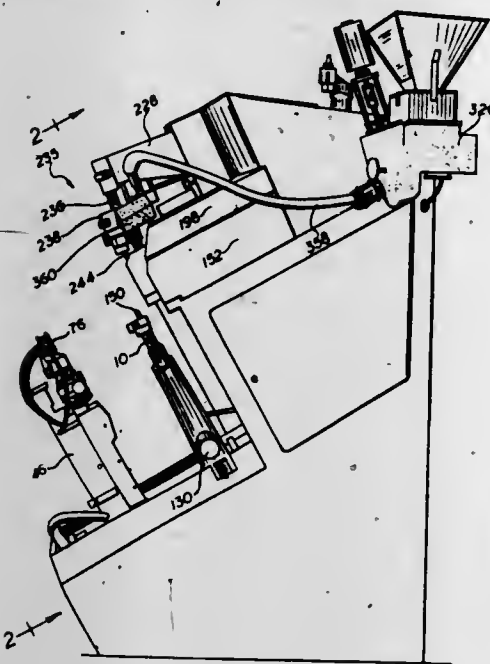
3,609,785 HEEL LASTING MACHINE

Karl F. Vornberger, Tewksbury, Mass., assignor to Jacob S. Kamborian, West Newton, Mass.

Filed May 28, 1970, Ser. No. 41,500
Int. Cl. A43d 21/00

U.S. Cl. 12-12.5 23 Claims
A heel lasting machine having a laterally shiftable last support for bringing the heel of a shoe assembly into proper relationship with respect to heel wipers, a toe rest that is movable into engagement with the vamp of the shoe assembly after the shoe assembly has been clamped between the last support and a hold-down at a level suitable for heel wiping, and a cement spraying nozzle that

is swingable through an adjustable arc to spray cement into the angle between the heel portion of an upper



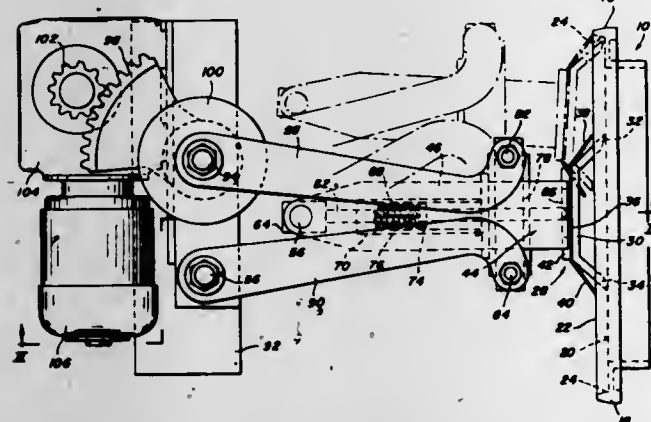
margin and an insole prior to wiping the upper margin against the insole.

3,609,786
APPARATUS FOR CLEANING THE SEALING SURFACES OF DOORS AND DOOR JAMBS OF BY-PRODUCT COKE OVENS

Walter Stanke and Gottfried Mertens, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschränkter Haftung, Essen, Germany
Filed Oct. 13, 1969, Ser. No. 865,637
Claims priority, application Germany, Oct. 26, 1968, P 18 05 388.8
Int. Cl. C10b 43/04

U.S. Cl. 15—93

8 Claims



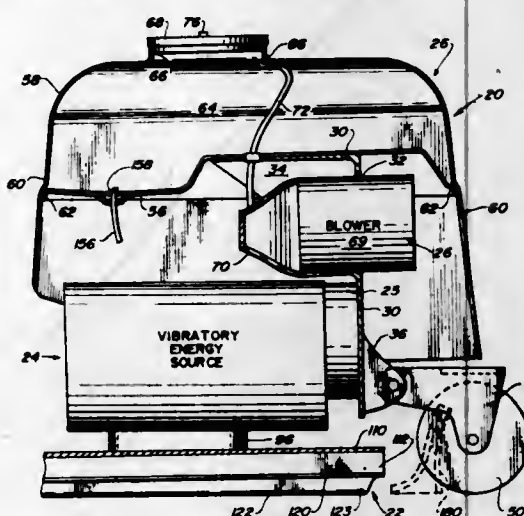
The cleaning apparatus includes a cleaning tool with a base portion having a pair of spaced scrapers extending therefrom in diverging relation to each other. An arm member extends rearwardly from the cleaning tool base portion. A rod member is pivotally secured to the rear end portion of the arm member and extends forwardly therefrom toward the cleaning tool base portion. An intermediate tubular support member is coaxially positioned on the rod member and has a transverse connecting portion adjacent the front end. A pair of levers are connected to the transverse connecting member and extend rearwardly therefrom and the other ends of the pair of levers are pivotally connected to a fixed frame member. A drive mechanism is provided to reciprocally move the cleaning tool along a sealing surface of a coke oven door or door jamb. A spring between the rod and tubular support member urges the cleaning tool against the sealing surface and the friction between the scraper portion of

the cleaning tool and the sealing surface pivots the cleaning tool and arm member relative to the lever members so that only one scraper contacts the sealing surface during the cleaning operation.

3,609,787
VIBRATORY CLEANING APPARATUS
Salvatore P. Aurelio, Chicago Heights, and Gordon C. Armstrong, Joliet, Ill., assignors to Sonastream Corporation, Peotone, Ill.
Filed July 18, 1969, Ser. No. 842,877
Int. Cl. B08b 7/00

U.S. Cl. 15—98

12 Claims

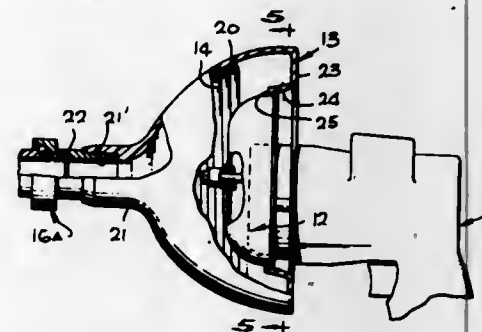


An improved apparatus designed to apply sonic energy to an object for cleaning purposes includes a source of sonic vibratory energy positioned in vibration-transmitting relation to a flat plate. A work chamber, formed by a pair of generally flat parallel disposed sheets of material arranged one above the other and joined substantially at their edges, is positioned below the flat plate, with a resilient vibration-dampening medium being interposed between the plate and the upper one of the parallel disposed sheets of material. Fluid communication is provided between a source of cleaning solution and the work chamber, and air under pressure is likewise introduced into the work chamber. When cleaning solution is introduced into the work chamber concurrently with air under pressure, and when vibratory energy is applied thereto, foamed cleaning solution is pumped outwardly through a plurality of orifices provided in the bottom sheet of material and the object to which the device is applied is subjected to vertical pulsating action by the vibratory energy and the foamed solution.

3,609,788
PLUMBERS' TOOL
Mark F. Mier, Sylmar, Calif., assignor to Lawrence F. Irwin/Sally J. Irwin, trust, doing business as Marco Products Company, San Fernando, Calif.
Filed Aug. 11, 1969, Ser. No. 856,242
Int. Cl. B08b 9/02

U.S. Cl. 15—104.3

9 Claims



The application discloses a basic container for a plumbers' flexible snake having a chuck through which the

snake passes in and out, an adapter shell means suitable for mounting on a motor or on a crank which releasably attaches to the rear of the container to afford a means for rotating the container, and a container adaptable for mounting various forms of chucks.

3,609,789
DISPOSABLE TOOTHBRUSH AND METHOD OF MAKING THE SAME

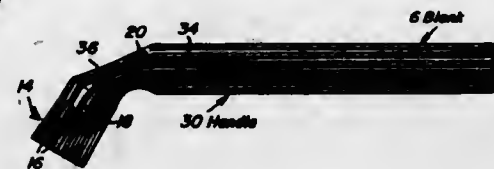
Frank W. Slater, 1126 E. Maryland, Phoenix, Ariz. 85014

Continuation of application Ser. No. 701,241, Jan. 29, 1968. This application Jan. 12, 1970, Ser. No. 1,978

U.S. Cl. 15—104.94

Int. Cl. A46b 5/02

10 Claims



A disposable toothbrush formed from a sheet of paper or plastic material rolled or folded into an elongated body and packed in a container similar to a cigarette package. A deformable pin is embedded in the sheet material to hold the bristles at one axial end of the elongated body at an angle to the handle portion when the body is bent at a location spaced from the bristles. The bristles may be coated with a normally dry dentifrice which is water soluble and activated when wetted.

3,609,790
MULTICALIBER AND MULTIGAUGE SECTIONAL GUN-CLEANING ROD CONSTRUCTION AND ASSEMBLY

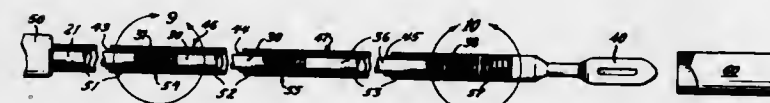
Frank J. Butch, % Frank J. Butch Co., 5629 Tulip Road, Philadelphia, Pa. 19124

Filed May 1, 1969, Ser. No. 821,038

U.S. Cl. 15—104.165

Int. Cl. B08b 9/02

12 Claims



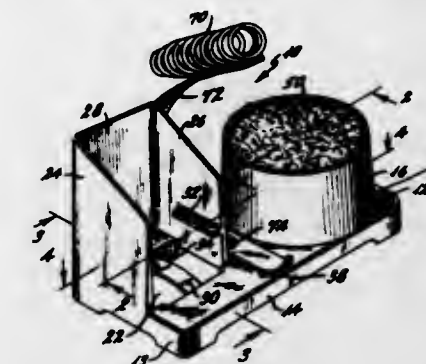
A multicaliber and multigauge sectional gun-cleaning rod construction and assembly comprising a sectional core-rod, the juxtaposed end of whose sections are screw-threadedly telescoped into each other, and handle swivelled to the rearmost core-rod section, and sets of sectional tubular sleeves telescopable over the core-rod and over each other, and interchangeable heads of different calibers and gauges corresponding to the core-rod diameter, the first sleeve diameter and the second sleeve diameter and arranged to be screw-threadedly secured to the front-most core-rod section and adapted to hold the sleeves assembled thereto.

3,609,791
CLEANING UNIT AND STAND
William Jordan Siegel, Silver Spring, Linus E. Wallgren, Rockville, and Loring E. Young, Frederick, Md.; said Wallgren and Young assignors to Pace, Incorporated, Silver Spring, Md.
Filed June 2, 1969, Ser. No. 829,302
Int. Cl. A47I 13/06

U.S. Cl. 15—114

6 Claims

The present invention relates to a cleaning unit and stand adapted for maintaining a soldering iron in clean condition and comprises an integral member formed with a base having thereon a cup and a brush mount. The cup

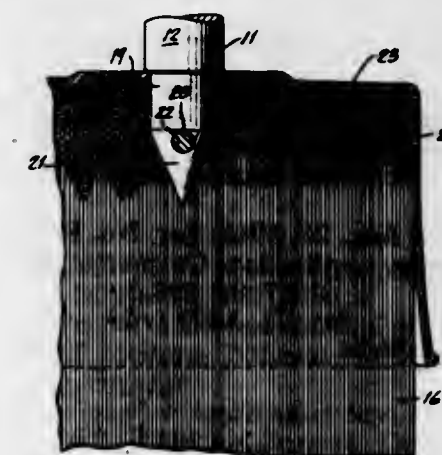


brush retained in the mount. Wiping a soldering iron forward against the brush bristles causes any solder spatter to be rearward against the rear and side walls.

3,609,792
PLASTIC SET CORN BROOMS AND THE LIKE
Albert H. Wiese, Chesterfield, Mo., assignor to National Industries for the Blind, New York, N.Y.
Filed Apr. 28, 1970, Ser. No. 32,617
Int. Cl. A46b 3/02

U.S. Cl. 15—193

11 Claims



The invention provides a brush or corn broom formed of fibers set in a plastic formulation which in set condition is stratified, the upper portion or stratum being substantially rigid and the lower portion or stratum from which the broom corn or other fibers project being substantially flexible.

The plastic formation consists of:

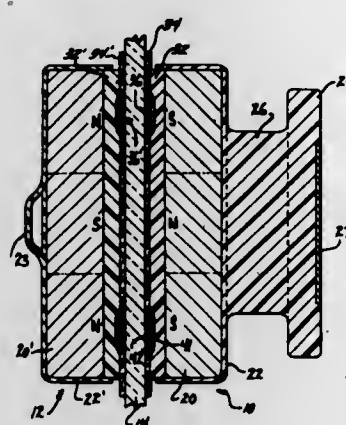
- 50 to 100 parts of a casting type of polyester resin;
- 10 to 20 parts of styrene monomer;
- 6 to 15 parts of a lightweight aggregate such as fine perlite, micro-balloons or vermiculite, and fillers such as pecan shell flour or corn meal; and
- ½% to 1½% of a curing agent.

A preformed hollow styrene or other type broom or brush cap in inverted position is used as the mold to form the finished brush or broom, the plastic formulation in liquid form being poured into the inverted cap, and brush or broom fibers being inserted into such cap and liquid. The gelation of the admixture is delayed for about five minutes and the gelation occurs within five minutes thereafter; so that the broom or brush can be handled thereafter without separation of the fibers and plastic. Instead of a cap, an open reusable mold may be employed to form the plastic set fibrous brush construction having two strata.

3,609,793
MAGNETIC WINDOW CLEANING APPARATUS
 John A. Kaftan, 330 W. Railroad, Marengo, Ill. 60152
 Filed Mar. 17, 1969, Ser. No. 807,524
 Int. Cl. A47l 1/08

U.S. Cl. 15—220

13 Claims

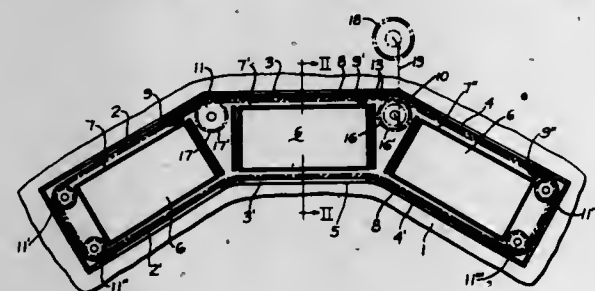


Master and slave units are provided and each unit has a one-piece, plural-polarized, permanent magnet. The magnet is illustrated with its poles with two different shapes—rectangular or triangular. A layer of resilient polyurethane is secured to the face of each magnet and a disposable sheet of cleaning material overlies this layer. A ferromagnetic fastener lies outwardly of the disposable sheet and is held by the magnet. The fastener also serves to reduce friction between the sheet and the window.

3,609,794
WINDSHIELD WIPER ARRANGEMENT
 Hans-Georg Schallehn, Kassel, Germany, assignor to Rheinmetall Henschel Aktiengesellschaft, Kassel, Germany
 Filed Aug. 26, 1969, Ser. No. 853,078
 Claims priority, application Germany, Aug. 27, 1968, P 17 80 290.3
 Int. Cl. A47l 1/03

U.S. Cl. 15—250.24

4 Claims



A windshield wiper, especially for two or more panes at an angle to each other, in which a blade for each pane is pressed toward the pane and moves in parallelism with itself back and forth across the pane. Endless drive elements at a pair of opposed edges of the panes engage the ends of the blades and are driven in oscillation to actuate the blades.

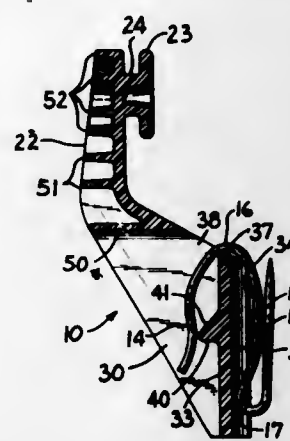
3,609,795
DRAPERY CARRIER FOR MAINTAINING DRAPERY HEADING IN UPRIGHT POSITION
 Henry Znamkowski, Ellicott City, and William V. Fielder, Jr., Frederick, Md., assignors to Eastern Products Corporation, Columbia, Md.
 Filed Oct. 20, 1969, Ser. No. 867,677
 Int. Cl. A47h 15/04

U.S. Cl. 16—87.4

3 Claims

A carrier for a drapery hook having an upper portion which engages the track of the drapery rod and having a

lower portion terminating in a front wall, the wall being in the form of a vertical trough having an upper edge so that when a hook is hung on the upper edge, the heel of

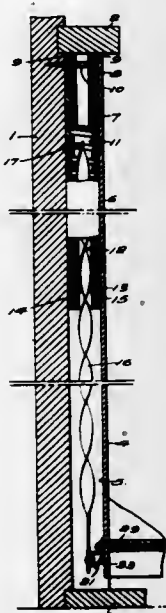


the hook is supported by the trough to overcome the tendency toward forward toppling and thereby to maintain the heading of the drapery upright.

3,609,796
WINDOW SASH BALANCES
 Phil Skolnik, P.O. Box 45558, Houston, Tex. 77845
 Filed Nov. 17, 1969, Ser. No. 877,411
 Int. Cl. E05d 13/10

U.S. Cl. 16—197

4 Claims



A window sash balance having a coiled spring and a spiral rod, one end of which is operatively connected with the spring and the other end is detachably connected with the sash by a bracket and pin. An anchor clip is provided, yieldably held in place to retain the pin and bracket connection.

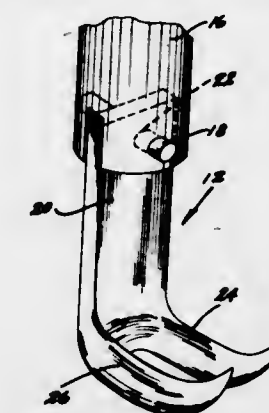
3,609,797
BONE HOLDING MECHANISM
 Theodore C. Zwiep, Grand Rapids, and Ferdinand Welts, Holland, Mich., assignors to Prince Corporation, Holland, Mich.
 Continuation-in-part of application Ser. No. 720,052, Apr. 10, 1968, now Patent No. 3,457,586, dated July 29, 1969. This application Apr. 28, 1969, Ser. No. 819,813
 Int. Cl. A22c 17/02

U.S. Cl. 17—1 G

5 Claims

This disclosure relates to a bone holding chuck for supporting a bone by an end thereof while stripping meat from the bone. The chuck has a body with side wall means spaced so as to permit insertion of a bone therebetween at a narrow portion of the bone. The side wall means are

so shaped so as to prevent rotation of the bone within the body. A seat is formed above the side wall means for an expanded end portion of the bone within the side



of the cylindrical opening. Relatively thin nylon discs are dropped into the press alternately with measured portions of hamburger to be pressed, and a nylon plunger is forced down upon the top of each meat portion as it is put into the press to form a layer of meat patties separated by the nylon discs. A cover is provided to enclose the top of the cylindrical opening, either when the plunger is stored in the body or when meat patties are therein.

3,609,800
CULINARY UTENSIL
 Ernest J. Rolland, Merrick, N.Y. (Green Acres Mobile Home Park, 3415 Slaterville Road, R.D. 1, Brooktondale, N.Y. 14817)
 Filed Apr. 27, 1970, Ser. No. 31,922
 Int. Cl. A22c 29/00

U.S. Cl. 17—73

6 Claims

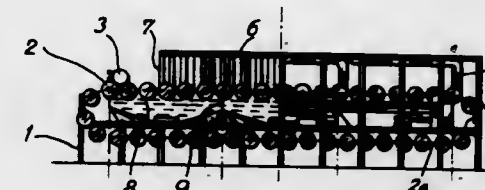
wall means. The side wall means form an opening at the outer ends thereof to permit insertion of a narrow portion of the bone between the side wall means.

3,609,798
MACHINE FOR SCALDING PIG CARCASSES
 Hans Edvard Frederiksen, 137 Islevdavej, 2610 Rodovre, Denmark
 Filed Feb. 4, 1969, Ser. No. 796,403
 Claims priority, application Denmark, Feb. 7, 1968, 422/68

U.S. Cl. 17—15

Int. Cl. A22b 5/08

3 Claims

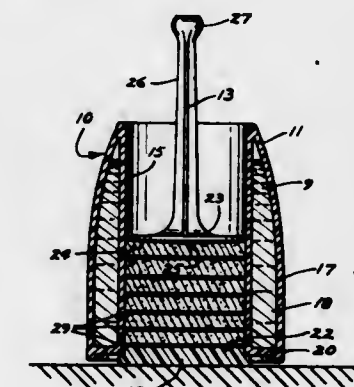


Scalding machine for treating the skin and the hairs of a pig carcass prior to removing the hairs in a following machine, the said scalding operation being performed while the carcass is moved in its lying position, preferably rotating about its longitudinal axis, along a path through the air, the carcass being showered with hot water, by which immersion of the pig carcass into water with consequent penetration of infected water into the lungs and other cavities is avoided.

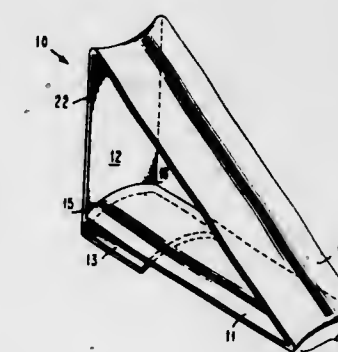
3,609,799
FOOD PATTY PRESS
 Richard D. Lee, St. Paul, Minn., assignor to Le Mark Industries, Inc., St. Paul, Minn.
 Filed May 1, 1969, Ser. No. 820,978
 Int. Cl. A22c 7/00

U.S. Cl. 17—32

8 Claims



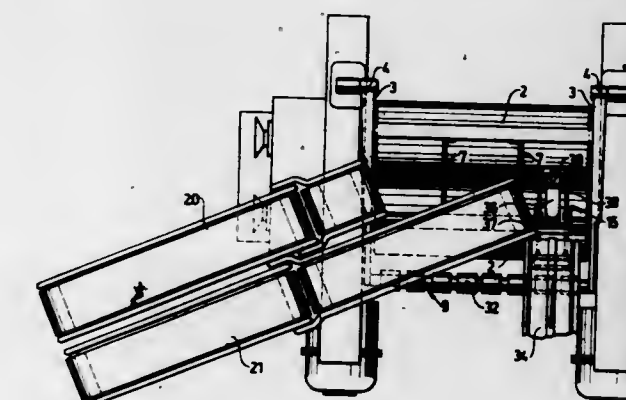
The body of a press for hamburger or the like is provided with a vertical cylindrical opening extending through it. A bottom closure plate completely closes the lower end



A culinary utensil consisting of a deltoidal-shaped frame having a hooked portion for the safe and easy removal of the dorsal shell of crustaceans, such as lobsters, is described.

3,609,801
ATTACHMENT TO A PREHEATING MIXING MILL FOR RUBBER
 Runo Henry Skarman, 1 Ulvögatan, 266 00 Raa, Sweden, and Stig Gustaf Hellmer Nilsson, 93 Birkagatan, 252 60 Helsingborg, Sweden
 Continuation-in-part of application Ser. No. 656,896, July 28, 1967. This application Dec. 2, 1969, Ser. No. 881,387
 Claims priority, application Sweden, Aug. 2, 1966, 10,449/66
 Int. Cl. B29h 1/00; B29c 15/00; B29d 7/14
 U.S. Cl. 18—2 C

5 Claims



A device for attachment to a rubber mill is provided which includes partition means at the roll engagement adapted to divide the roll nip into two outer zones for receiving the rubber to be milled and a middle preheating zone from which a strip of milled rubber is cut out for conveyance to the next processing station; adjustable

roller means parallel to but spaced from the roll engagement adapted to deflect the remaining cut apart webs towards the middle zone of the roll nip for preheating; and control means comprising a feeling means in said middle zone for determining the amount of rubber material therein, and linkage means connected to said feeling means which transmit to said roller means the amount of adjustment thereof needed to deflect an appropriate amount of said cut apart webs towards said middle zone for processing at the next station. The attachment may also include a cutting and jointing device which compensates for accumulation of milled rubber strip material during stoppages and delays at said next processing station.

3,609,802

INJECTION/BLOW MOULDING MACHINE

Michael G. Thorn and William G. Brackenridge, both of Canbury Works, Lower Ham Road, Kingston-on-Thames, Surrey, England

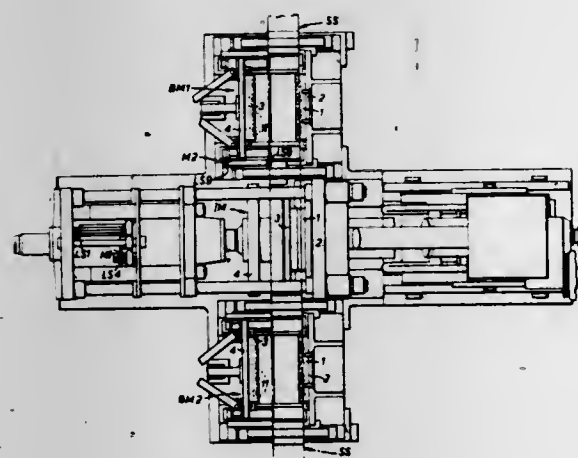
Filed Feb. 9, 1970, Ser. No. 9,826

Claims priority, application Great Britain, Aug. 25, 1969, 42,239/69

Int. Cl. B29d 23/03

U.S. Cl. 18—5 BJ

11 Claims



The present invention relates to an injection/blow moulding machine in which a transfer of the parison sticks respectively of the injection mould and a blow mould, is effected by a simultaneous switching of the parison sticks between the two moulds. The simultaneous switching is achieved by connecting the parison sticks to carriers which pass along a track; the track between the injection mould and each blow mould being branched to form a closed loop guarded by points or track switches to permit the simultaneous passage of carriers therealong in opposite directions. When this operation is completed, the parison sticks transferred are disconnected from the carriers so that the transfer mechanism is left free to effect a like transfer between the injection mould and a further blow mould.

3,609,803

APPARATUS FOR MANUFACTURING PLASTIC BOTTLES BY INJECTION AND BLOW MOLDING

Lazzaro A. Fattori, 84 Rose Ave., Woodcliff Lake, N.J. 07675

Filed Apr. 8, 1968, Ser. No. 719,384

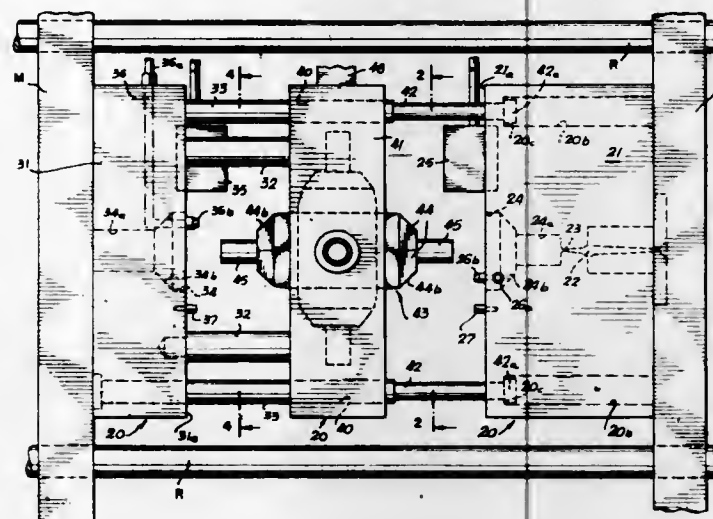
Int. Cl. B29d 23/03

U.S. Cl. 18—5

11 Claims

Plastic bottles are manufactured in four steps of injection molding a parison, blowing the bottle, cooling, and ejecting the blown bottle performed simultaneously at respective stations located at 90° intervals about a circle. Multiple parison cores are carried on a turret in four longitudinal rows radiating in right angular relation about an axis of rotation to register with each of the stations. A three part mold contains the four stations and

includes an intermediate mold member supporting the turret for rotation when the mold is open on an axis perpendicular to the axis of mold opening and closing. To satisfy requirements for neck rings molded to close tolerances, neck ring molds may be provided at the base of



the parison cores which retain the molded neck rings during the blowing and cooling steps. Temperature control is simplified by a controlled temperature gradient established between the turret and the molds at the blowing and cooling stations.

3,609,804
VEHICLE

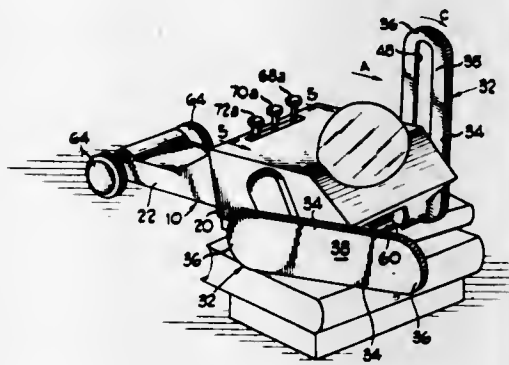
Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates

Filed Aug. 27, 1969, Ser. No. 853,291

Int. Cl. B62d 55/02, 55/00

U.S. Cl. 180—9

5 Claims



A vehicle which includes a frame, a drive means, and an elongated movable track mounted on the frame and driven by the drive means for movement relative to the frame to move the frame over the ground or other surface. The elongated track is a rigid structure having a pair of spaced, generally parallel elongated run portions joined by a pair of generally arcuate end portions. The track is mounted on the frame for pivoting movement relative to the frame about a horizontal axis, preferably through a full 360 degrees, so as to accommodate an irregular terrain. The track has an elongated, generally vertically disposed recess between the elongated run portions and arcuate end portions and extending longitudinally generally in the same direction as the elongated track means. The recess is bounded by a continuous rack gear structure and a driven gear wheel is mounted on the frame and moves along the rack gear, with the track pivotable about the gear wheel.

3,609,805

COOLING APPARATUS FOR EXTRUDED SYNTHETIC MATERIAL

Rudolf Paul Fritsch, Stuttgart-Weilimdorf, Germany, assignor to C. F. Scheer & Cie, Stuttgart-Feuerbach, Germany

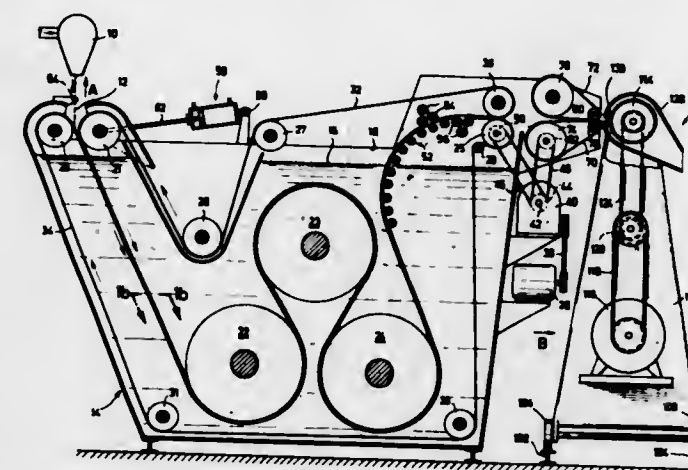
Filed Mar. 27, 1970, Ser. No. 23,328

Claims priority, application Germany, Mar. 29, 1969, P 19 16 222.2

Int. Cl. B29f 3/08

U.S. Cl. 18—12 TT

20 Claims



Extruded ropes are discharged by a supply nozzle along a downward path where they are gripped between a pair of transporting bands and first inlet rollers guiding the same above the level of a liquid in a container so that the ropes are transported into the liquid until gripped by superimposed portions of the transporting bands passing over a second inlet roller. Thereupon, an electromagnetic means, preferably under control of photoelectric means, retracts one of the first inlet rollers so that the ropes extend directly from the supply nozzle to the superimposed band portions and are transported by the same to following guide rollers in the cooling liquid.

3,609,806

ORIFICE PLATES AND WORM EXTRUDERS CONTAINING SAME

Heinz Schippers and Erich Lenk, Remscheid-Lennep, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

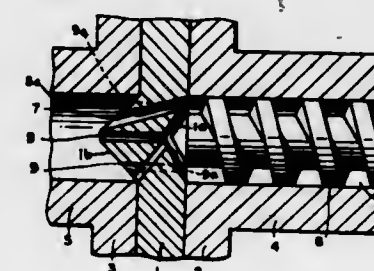
Filed May 5, 1969, Ser. No. 821,609

Claims priority, application Germany, May 4, 1968, G 67 52 197

Int. Cl. B29f 3/01

U.S. Cl. 18—12 B

17 Claims



Orifice plate for worm extruders and extruders containing same for the homogenization and temperature uniformity of the melt flow of thermoplastic materials discharged therefrom, characterized by flat, domed or conical orifice plate secured in or to the worm cylinder directly after the worm end and further characterized by orifices parallel to the axis of the worm cylinder with further oblique orifices extending axially diagonally, in which system the orifices axially parallel to the worm cylinder are arranged in each case in the zone of respective entrant and discharge ends of the axially diagonal orifices.

3,609,807

ROTARY PLATE EXTRUDING MACHINE

Bernard Neuville, Versailles, and Raoul Hem, Châtillon-sous-Bagneux, France, assignors to Stiel, Société Anonyme, Le Havre, France

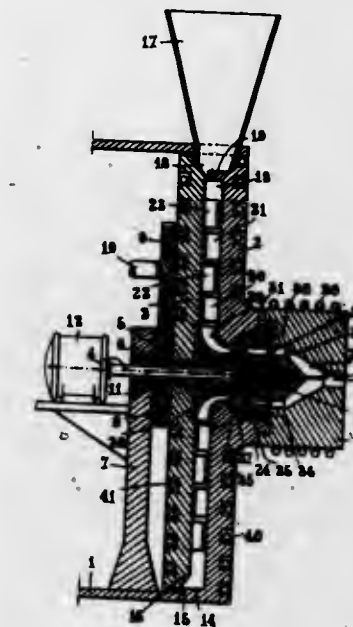
Filed Aug. 4, 1969, Ser. No. 847,355

Claims priority, application France, Sept. 2, 1968, 164,842

Int. Cl. B29f 1/02

U.S. Cl. 18—12 C

2 Claims



Extruder comprising a plate rotatably driven about its axis and registering with a stationary or stator plate, said rotary plate and said stationary plate carrying at least one circular set of blades and forming therebetween a gap into which the material to be worked is fed, a cavity formed in the central portion of said stator plate, said cavity registering with a central projection formed on said rotary plate, and a die mounted in said central cavity of the stator plate, characterized in that there is mounted in the central cavity of said stator plate at least one propeller comprising a plurality of blades which has the same axis as said rotor, and that means are provided for rotatably driving said propeller, the propeller blades being inclined with a view to force the material to be extruded towards said die during the rotation of said propeller.

3,609,808

EXTRUSION DIE

Hans-Rudolf Jacobi and Hans Eisenhardt, Mannheim, and Horst Hoyer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

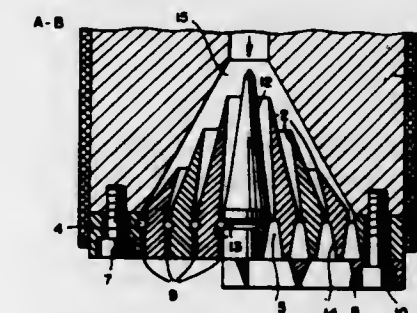
Filed Dec. 3, 1969, Ser. No. 881,736

Claims priority, application Germany, Dec. 6, 1968, P 18 13 010.4

Int. Cl. B29f 3/04

U.S. Cl. 18—12 DM

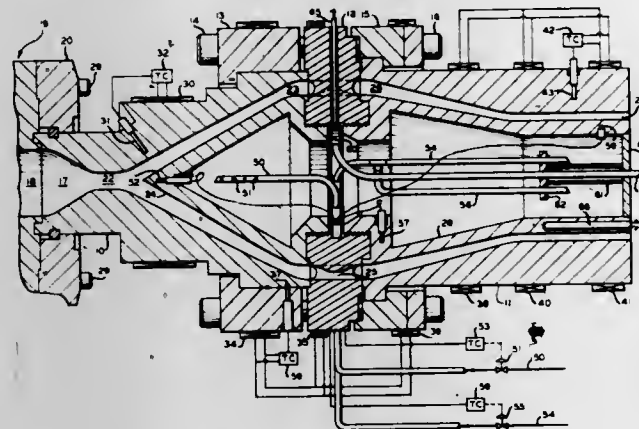
4 Claims



An extrusion die for feeding a compressed plastics melt into a zone of low pressure for the purpose of degassing which consists of a plurality of tubular dies arranged coaxially about a central pin, the said tubular dies being

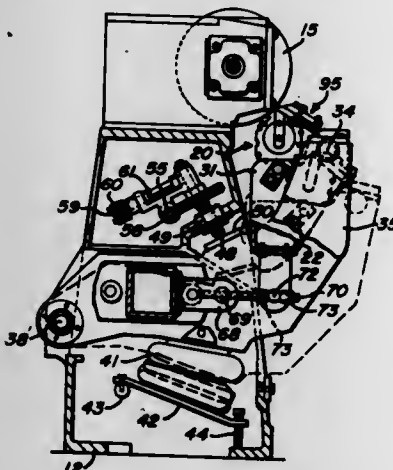
fitted into one another and being supported by one another, by the central pin and by the die casing via supporting means located in annular grooves in the tubular dies.

3,609,809
EXTRUSION DIE
Robert P. Slicker, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 6, 1968, Ser. No. 773,776
Int. Cl. B29d 23/04
U.S. Cl. 18—14 R 3 Claims



A die for the extrusion of hollow tubing comprises a housing with a longitudinal interior opening which diverges outwardly from the inlet and converges to the die outlet. A hollow torpedo is supported by a spider in the inlet section of the housing to define an annular passage; and a hollow core, also supported by the spider, is positioned in the outlet section of the housing to define an annular passage. Heat is supplied to the housing by a plurality of heating elements. A cooling medium is passed through the interior of the torpedo and the core to permit accurate control of temperature of the material being extruded.

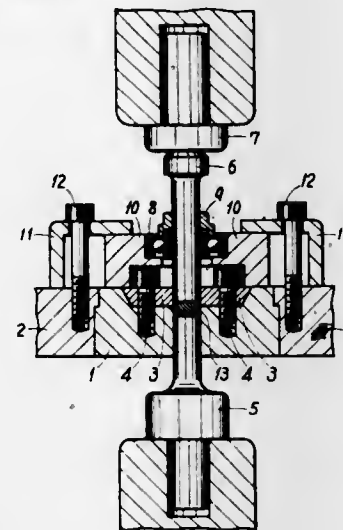
3,609,810
WEB COATING APPARATUS
James T. Coghil, Rochester, N.Y., assignor to The Black Clawson Company, Hamilton, Ohio
Filed Oct. 14, 1968, Ser. No. 767,159
Int. Cl. B29d 7/00
U.S. Cl. 18—15 R. 10 Claims



A hot melt coater employs a resilient backup roll and an extruder die with an off-running die lip in tapered running relation to the web for ironing onto the web surface a controlled amount of heated coating material. The die employs a narrow and short die orifice, and elastomeric plugs are inserted in each end of the die which are compressed to seal off the die cavity and the orifice to control the width of extrusion. The die is supported on a compound arm arrangement providing adjustment of knife pressure against the web, knife profile, and knife

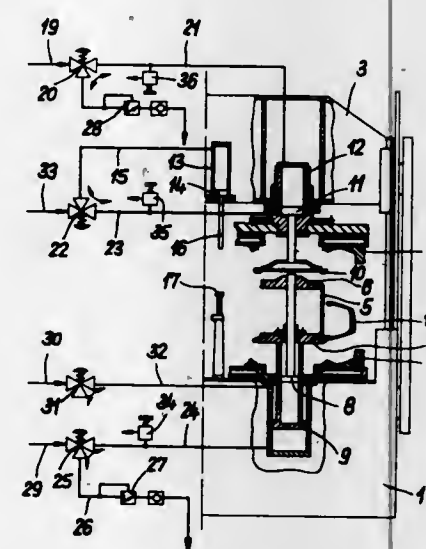
attitude control. Provision is included for rapidly opening up the die for cleaning without disturbing the adjustment of the knife applicator surface.

3,609,811
POWDER COMPRESSION MOLDING MACHINE
Yasuo Shimada, 104 Minamikamiai-cho, Nishinokyo, Nakakyo-ku, and Shun'ichi Naito, 35 Kamitorida-cho, Murasakino, Kita-ku, both of Kyoto, Japan
Filed Jan. 7, 1970, Ser. No. 1,213
Claims priority, application Japan, Apr. 18, 1969, 44/30,432
Int. Cl. B30b 11/00, 15/06
U.S. Cl. 18—16.5 4 Claims



A powder compression molding machine wherein the upper punch holding means and part of the die can be detached, each being split in two parts, whereby said upper punch, which has compression-molded the material of powder, and the periphery of the surface of contact between said upper punch and the mold goods can be released from the surrounding portion.

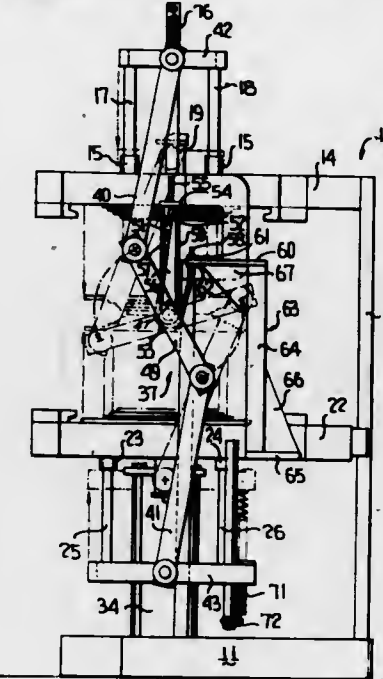
3,609,812
TIRE HEATING PRESS
Heinrich Baier, Hamburg, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany
Filed Mar. 24, 1969, Ser. No. 809,491
Claims priority, application Germany, Mar. 23, 1968, P 17 78 058.4
Int. Cl. B29h 5/02
U.S. Cl. 18—17 K 3 Claims



A press for shaping a raw tire and placing same into a multi-sectional mold for vulcanizing the tire, according to which the raw tire is inserted into the press so as to be substantially equally spaced from the mold sections while the equal spacing between said mold sections and

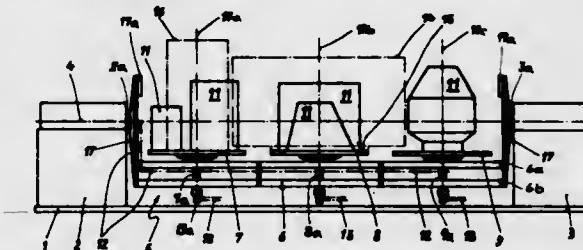
the tire is maintained during the closing i.e. mutual approaching operation of the mold sections by means of a preferably hydraulic control system.

3,609,813
BEAD ALIGNER CENTERING DEVICE
Kenneth T. MacMillan, Macon, Ga., assignor to MacMillan Mold Company Inc., Macon, Ga.
Filed Oct. 30, 1969, Ser. No. 872,649
Int. Cl. B29h 5/04
U.S. Cl. 18—18 F 13 Claims



This disclosure relates to an apparatus for assuring the exact position of a tire within a recap mold of the type including a matrix and oppositely opposed movable bead aligner wheels. The bead aligner wheels are connected by a pair of linkages, each of which includes a center-most link carrying a sprocket guided for movement along a path parallel to the bead aligner wheels. Each sprocket is entrained by a chain having ends connected to respective fixed and movable portions of the apparatus such that upon relative movement of the bead aligner wheels toward or away from each other the sprockets remain midway between the bead aligner wheels whereby a tire therebetween will be positioned exactly centrally of the matrix to assure that the center of the new tread will be at the center of the tire as measured from both beads.

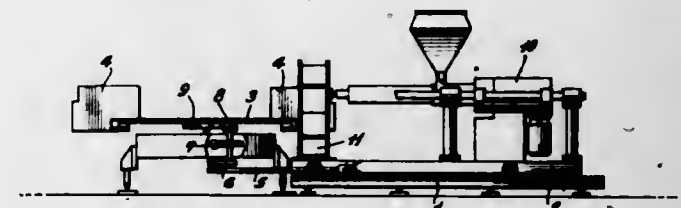
3,609,814
ROTATIONAL CASTING MACHINE FOR THERMOPLASTIC BODIES
Anton J. Vox, Ruit, and Adolf Bauer, Stuttgart-Bad Cannstatt, Germany, assignors to Firma Thermovox GmbH Kunststoffmaschinen, Ruit, Germany
Filed June 20, 1969, Ser. No. 835,178
Claims priority, application Germany, June 27, 1968, P 17 79 001.1
Int. Cl. B29c 5/04
U.S. Cl. 18—26 RR 7 Claims



A rotational casting machine for the production of thermoplastic bodies having an angularly oscillatable or rotatable frame carrying a plurality of mold turntables at

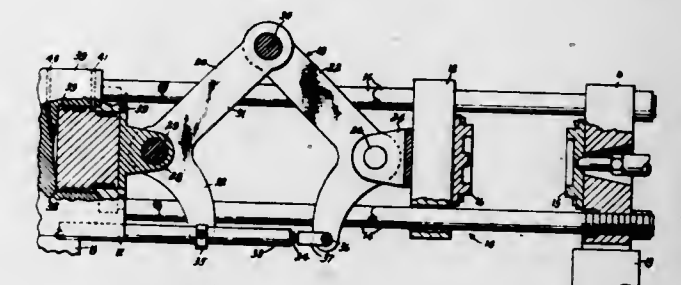
a location offset from the axis of angular displacement of the frame. The turntables, each of which can carry one or more molds, are provided with ducts for feeding a heating medium and/or a cooling medium to the molds in series, in parallel or individually.

3,609,815
INJECTION MOLDING MACHINES
Guy Rudolf, Vernon, and Claude Lebreton, Gannilly, Vernon, France, assignors to Bata Shoe Company, Inc., Belcamp, Md.
Filed Jan. 10, 1969, Ser. No. 790,376
Claims priority, application France, Jan 12, 1968, 135,834
Int. Cl. B29f 1/06
U.S. Cl. 18—30 LM 5 Claims



An injection molding machine particularly for producing footwear in which a rotatable table or turret carrying a plurality of molds is adapted to be indexed to bring a mold into cooperative alignment with at least one injection unit to allow melted plastic material to be injected into the mold. A locking press is rigidly connected to the injection unit for effecting a locking of the mold thereby assuring an air tight condition of the mold at the moment of the injection of the melted plastic material.

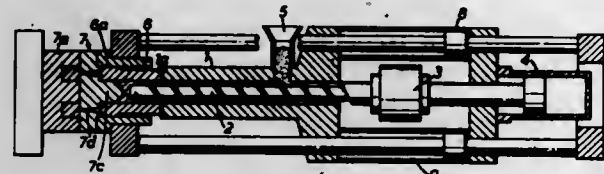
3,609,816
HYDRAULIC CLAMPING MECHANISM
David I. McDonald, Cincinnati, Ohio, assignor to The Cincinnati Milling Machine Co., Cincinnati, Ohio
Filed Feb. 20, 1970, Ser. No. 13,032
Int. Cl. B29f 1/00
U.S. Cl. 18—30 LT 6 Claims



A mechanism for bringing a movable platen of molding machine into cooperative engagement with a stationary platen and in which a pair of links is provided, one of which is attached to a substantially stationary structure and the other of which is attached to the movable platen. The links are joined at one end thereof and at their opposite ends one link is connected to a cylinder and the other link is connected to a piston rod so that upon application of hydraulic pressure to the cylinder, the piston is caused to move, thereby moving the movable platen toward or away from the stationary platen. The piston and cylinder are so disposed that the force thereby provided is in a direction substantially parallel to the path of travel of the movable platen. Additionally, one of the links can be pivotally connected to the end of a large clamping piston which serves to increase the force between the cooperating elements once the link system has reached the full extent of its travel.

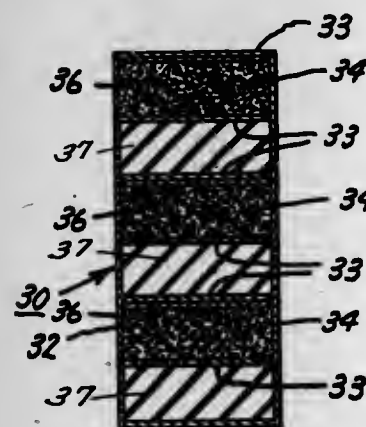
3,609,817
MOULDING APPARATUS FOR THERMOSETTING PLASTICS MATERIAL
 Rolf Deerberg, Berenbusch, and Hans-Lothar Kienbaum, Minden, Westphalia, Germany, assignors to Drabert Sohne, Minden, Westphalia, Germany
 Filed Sept. 24, 1969, Ser. No. 860,763
 Claims priority, application Germany, Apr. 16, 1969, P 19 19 262.2
 Int. Cl. B29f 1/06

U.S. Cl. 18—30 AH 2 Claims



Moulding apparatus for thermosetting plastics material comprises a plasticizing and feed screw movable axially within a cylinder. The plastics material is discharged by the screw from one end of the cylinder into an annular-section injection transfer chamber which communicates with a mould through a number of discharge nozzles. The end of the cylinder is arranged to enter the annular-section chamber to compress the plastics material therein and eject it through the discharge nozzles into the mould. Whilst the cylinder is within the annular-section chamber, the end of the cylinder is closed by a plug member that forms the inner wall of the annular-section chamber thus separating the plastics material within the chamber from the plastics material with the cylinder.

3,609,818
REACTION VESSEL FOR HIGH PRESSURE APPARATUS
 Robert H. Wentorf, Jr., Schenectady, N.Y., assignor to General Electric Company
 Filed Jan. 2, 1970, Ser. No. 144
 Int. Cl. B29c 1/00; B30b 11/32
 U.S. Cl. 18—34 R 4 Claims

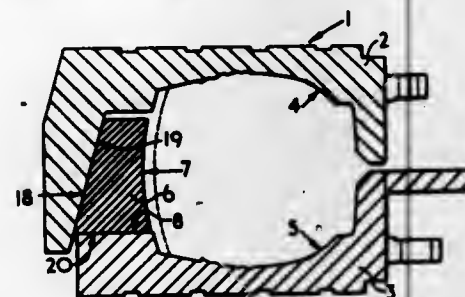


An improved reaction vessel construction for the compaction of a mass of dense, strong particles e.g. diamond is disclosed. This improved construction embodies a mechanically unstable structural system to prevent the formation of pressure-supporting geometries within or encircling the mass.

3,609,819
MOULDING APPARATUS
 Eric H. Searle, Sutton Coldfield, England, assignor to The Dunlop Company Limited, London, England
 Filed Nov. 4, 1968, Ser. No. 772,929
 Claims priority, application Great Britain, Nov. 8, 1967, 52,548/67
 Int. Cl. B29c 1/00

U.S. Cl. 18—42 T 9 Claims
 A multi-piece mould e.g. a segmented tire mould, having a plurality of mating surfaces for sealed engagement one with another when the mould is assembled, some

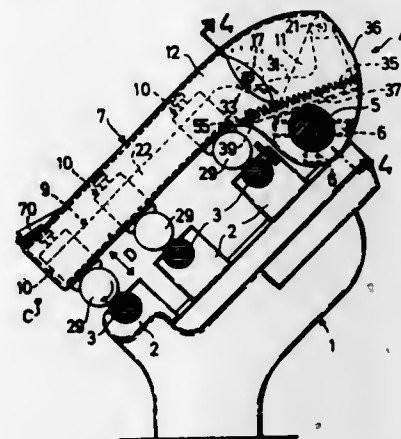
at least of said surfaces being relatively disposed at different angular relationships to one another and at least one of said surfaces being formed of a material of rela-



tively greater compressibility, and, perhaps additionally, of relatively smaller co-efficient of friction, than the material of the other mating surfaces.

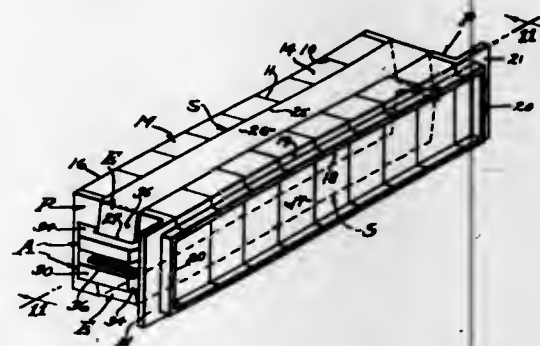
3,609,820
DRAWING DEVICE FOR TEXTILE MACHINES
 Kurt Hohloch, Ebersbach, Germany, assignor to Zinser-Textilmaschinen Gesellschaft mit beschränkter Haftung, Ebersbach, Germany
 Filed Dec. 9, 1968, Ser. No. 782,275
 Claims priority, application Germany, Dec. 9, 1967, P 17 10 058.2
 Int. Cl. D01h 5/46

U.S. Cl. 19—267 29 Claims



The housing arm of a drawing device is manually operated so that a pressure member thereon engages a camming surface of a presser arm and moves the same with the top rollers to an operative position in which the presser arm is locked by the pressure member engaging an arresting recess at the end of the camming surface of the presser arm.

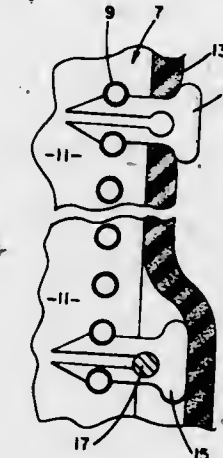
3,609,821
COUPLING MEANS FOR A STACK OF MODULES
 John T. McMillan, Jr., 9972 Petunia Ave., Fountain Valley, Calif. 92708
 Filed Dec. 10, 1969, Ser. No. 883,956
 Int. Cl. B65d 63/00
 U.S. Cl. 24—16 R 40 Claims



A prestressed strap adapted to extend coextensively of a multiplicity of modules and with an embracing end configuration having depressibly releasable engagement

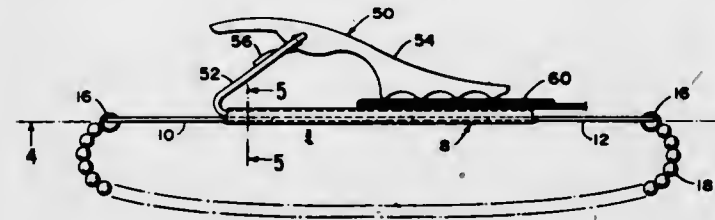
with an anchor at the endmost module, one or more such straps and end configurations being embraceably extended along a stack of modular bodies and each engageable with an anchor to join them into a composite and stable mounting condition. Accommodation of varied length assemblies is provided for in several forms of strap extensibility, combining both modular extension and infinitely variable tensioning. The straps are of specified length so as to embrace a predetermined modular stack length; or the straps are adjustably separable into tensionable sections; and/or the straps are modularly hooked onto sections reduced to required length by removal of expendable surplus length as circumstances require. The prestressing provides the bias for securement and ensures tight fitting embracement, thereby precluding separation of the strap and/or straps from the modular bodies embraced therein.

3,609,822
FASTENING DEVICE
 John K. Heidelberger, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
 Filed June 1, 1970, Ser. No. 42,101
 Int. Cl. A44b 21/00
 U.S. Cl. 24—73 PF 3 Claims



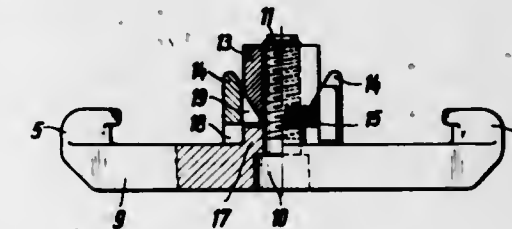
A clip for resiliently engaging two adjacent tubes in a plate fin evaporator coil on a self-contained air conditioning unit for securing filters and thermostat probes adjacent the face of the evaporator.

3,609,823
ADJUSTABLE TIE BAR
 William C. Boots, Providence, R.I., assignor to Electronic Engineering Company of California, Santa Ana, Calif.
 Filed Dec. 12, 1969, Ser. No. 884,504
 Int. Cl. A41d 25/04
 U.S. Cl. 24—49 CF 3 Claims



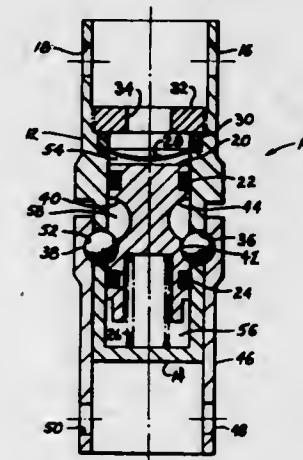
An article of men's jewelry comprising a chain tie bar which can be adjusted to fit ties of various widths. The ends of an ornamental chain, which extend across the front of the tie when the device is used, are attached to a pair of slide members which slidably fit into a holder adapted to be removably attached to the wearer's shirt behind the tie.

3,609,824
COUPLING
 Joseph H. van Riet, Hamburg-Blankenese, and Walter Krielt, Hamburg, Germany, assignors to Blohm & Voß AG, Hamburg-Steinwerder, Germany
 Filed Feb. 20, 1969, Ser. No. 801,024
 Claims priority, application Germany, Mar. 30, 1968, B 75,230
 Int. Cl. B65j 1/08; B66c 1/42
 U.S. Cl. 24—81 9 Claims



A coupling for rigidly but releasably connecting containers which are provided in the region of their edge faces with engagement apertures. A coupling member has at least two hook-shaped projections each of which is receivable in an aperture of one of the containers. A pair of jaws is provided on the coupling member and extends into the gap between the containers so that, when the jaws are spread, the containers will be urged away from each other so that each container will be rigidly held between the jaws and that one of the projections which is received in an aperture of the respective container.

3,609,825
UNDERWATER RELEASE
 Vlash A. Pullos, 1441 S. Loara, Anaheim, Calif. 92125
 Filed Jan. 21, 1969, Ser. No. 792,305
 Int. Cl. A44b 17/00
 U.S. Cl. 24—211 N 5 Claims

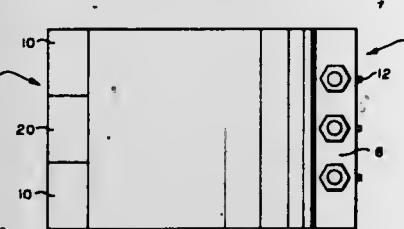


The disclosed embodiment of the present invention is a release device which is generally formed of a cylindrical housing having an open end and a closed end, a piston mounted for axial movement in the housing, a rupturable seal across the open end of the housing, a sleeve extending over the closed end of the housing, and releasable retaining balls extending through respective apertures in the housing and engageable with respective grooves in the piston and the sleeve. A pair of seals on the piston form a first closed chamber at the closed end of the housing and a second closed chamber with the rupturable seal at the open end of the housing. The intermediate portion of the piston includes a groove for receiving the retaining balls therein, which groove includes two adjacent lands. One land has a diameter which forces the retaining balls into engagement with the groove in the sleeve and the other land has a diameter which permits the retaining balls to disengage from the groove in the sleeve.

3,609,826
FASTENING MEANS
 Ed O. Seabourn, Stavanger, Norway, assignor to
 Phillips Petroleum Company
 Filed Oct. 22, 1969, Ser. No. 868,421
 Int. Cl. B65d 63/06

U.S. Cl. 24-279

8 Claims

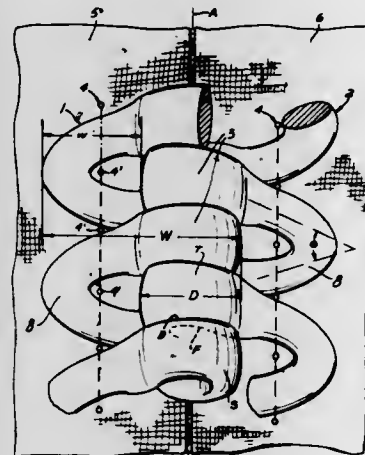


A fastening means having a fastener and holding elements for rapid installation and removal.

3,609,827
SLIDE-FASTENER STRINGER WITH HELICOIDAL COUPLING ELEMENTS
 Helmut Heimberger, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland
 Filed Apr. 20, 1970, Ser. No. 30,195
 Claims priority, application Germany, Apr. 22, 1969, P 19 20 443.4
 Int. Cl. A44b 19/12

U.S. Cl. 24-205.13 C

10 Claims



A slide-fastener stringer having a pair of generally helicoidal coupling elements with spaced-apart constant pitch coupling heads interfitting with one another and deformed from a circular-section monofilament. The heads, of elliptical section, are generally circular segments in projection in a plane perpendicular to the longitudinal axis to the coupling elements so as to define a pivot or hinge axis through the centers of the coupling heads.

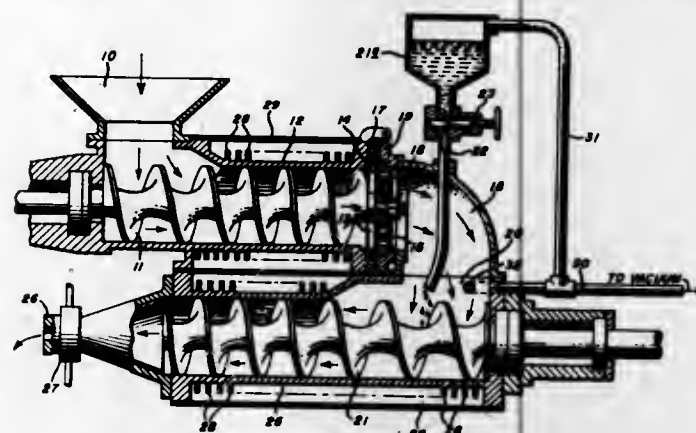
3,609,828
PLODDER FOR MAKING VARIEGATED SOAP
 Russell Edward Compa, Emerson, and Marvin Liebowitz, Edison, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
 Original application Feb. 17, 1967, Ser. No. 616,903, now Patent No. 3,485,905, dated Dec. 23, 1969. Divided and this application May 23, 1969, Ser. No. 841,175
 Int. Cl. C11d 13/18

U.S. Cl. 25-8

3 Claims

An improved plodder apparatus for making a variegated, streaked or striated milled and plodded cleansing agent, which comprises in combination with a double barrel vacuum plodder apparatus, a vessel, under a vacuum,

for holding a coloring fluid, a conduit for feeding coloring fluid into the vacuum chamber of the plodder,

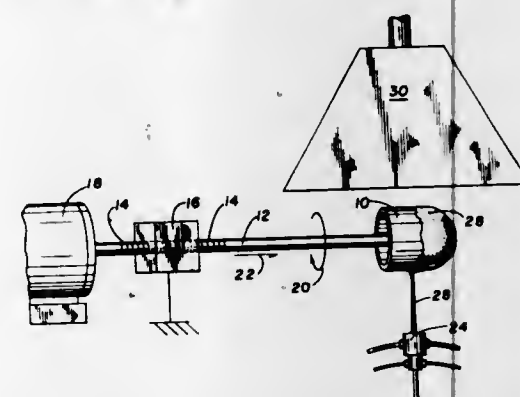


and a means for controlling the flow of the coloring solution from the vessel into the conduit.

3,609,829
APPARATUS FOR THE FORMATION OF SILICA ARTICLES
 Michael A. Carrell, Plano, Paul C. Goudry, Richardson, and Robert C. Post and Kenneth E. McNeill, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
 Filed July 12, 1968, Ser. No. 744,568
 Int. Cl. B29c 13/04

U.S. Cl. 25-1 R

2 Claims

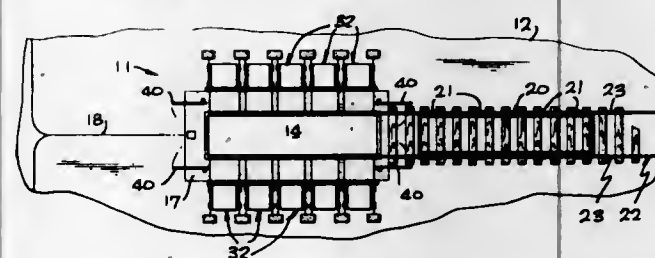


Gaseous streams of silicon tetrachloride and combustible reactants are directed toward a mandrel having an exterior coating of silicon carbide. When the gaseous streams are ignited, the silicon tetrachloride is decomposed and high purity silicon dioxide is deposited upon the silicon carbide surface. After cooling, the silicon dioxide article is easily removed from the silicon carbide surface.

3,609,830
METHOD AND APPARATUS FOR CASTING MONOLITHIC CONCRETE STRUCTURES
 William E. Myklebost, Corcoran, Calif. 93212
 Filed May 12, 1969, Ser. No. 823,709
 Claims priority, application Australia, Mar. 3, 1969, 51,354/69
 Int. Cl. B28b 7/04, 7/18, 7/22

U.S. Cl. 25-41 D

11 Claims



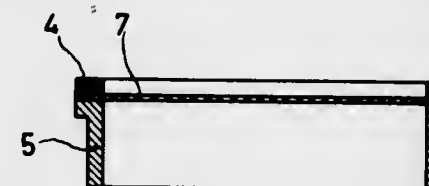
A method of casting hollow monolithic structures of concrete and apparatus therefor including a casting plant with a pit and track means to support a casting carriage

over the pit. Mobile means is provided around the pit for handling the outer form walls of the casting mold and means is provided in the pit for supporting and for raising and lowering inner form walls for the casting mold.

3,609,831
METHOD OF MANUFACTURING A GAUZE ELECTRODE FOR USE IN A VIDICON CAMERA TUBE AND CAMERA
 Johannes van Esdonk, Godefridus Henricus Broers, and Albertus Versteijne, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
 Filed May 14, 1969, Ser. No. 824,479
 Claims priority, application Netherlands, May 18, 1968, 6807091
 Int. Cl. H01j 9/18, 9/36

U.S. Cl. 29-25.15

6 Claims

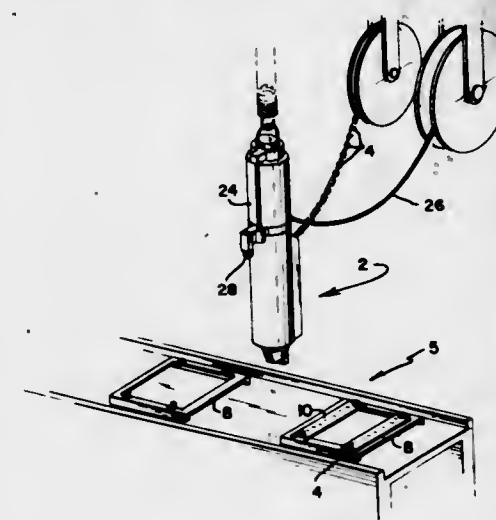


A gauze electrode for a vidicon ("Plumbicon") having a diameter of 15 mm. or smaller. A maximum light transmission of the gauze electrode is obtained by first etching copper gauze which is manufactured by electrodeposition to a light transmission of 70% and then securing it by diffusion at approximately 3/4 of the melting temperature of the material of the gauze between two copper-nickel rings. The width of the rings is smaller than 15% of their original outside dimension.

3,609,832
FASTENER ATTACHING APPARATUS
 Ronald Carl Brehm, Carlisle, Robert Graham Lundergan, Camp Hill, and William Roderick Over, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
 Filed July 22, 1969, Ser. No. 843,540
 Int. Cl. B23p 19/08

U.S. Cl. 29-212 R

6 Claims



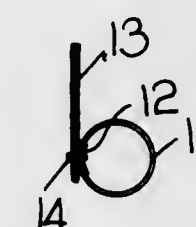
Fastener applying apparatus has means for feeding a strip of end-to-end connected fasteners along a predetermined path towards a post like projection which the fastener is to be applied. Upon actuation, the leading fastener of the strip is severed from the strip and a connecting tab or neck, which connects the leading fastener to the next adjacent fastener, is bent laterally. When the

leading fastener is applied to the post, the laterally extending neck functions to hold a plate-like member against the panel from which the posts extend.

3,609,833
METHOD OF MAKING IGNITION COILS
 William Lawrence Fry, Houghton, and Joseph Sidney Muddiman, Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
 Filed Oct. 3, 1969, Ser. No. 863,502
 Claims priority, application Great Britain, Oct. 14, 1968, 48,520/68
 Int. Cl. H01f 7/06

U.S. Cl. 29-605

5 Claims

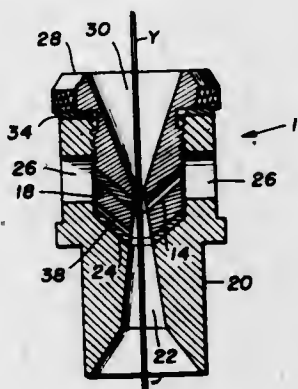


A method of manufacturing ignition coils. A first electrical conductor is positioned on the inner surface of a hollow insulating former, and a second electrical conductor is positioned on the outer surface of the former. The first and second conductors are secured to the former, and are electrically interconnected by means of an electrically conductive fastening device which engages both the first and second conductors and which passes through the wall of the former. A core is inserted into the former so that the core and the first electrical conductor are electrically interconnected. One end of a wire is electrically connected to the second conductor so that the wire and the core are electrically interconnected through the first and second conductors and the fastening device, and the wire is then wound onto the former to constitute one of the windings of the ignition coil.

3,609,834
FLUID JET DEVICE
 Douglas J. Lamb and Talmadge W. McWaters, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.
 Filed Mar. 11, 1970, Ser. No. 18,471
 Int. Cl. D02g 1/16

U.S. Cl. 28-1.4

6 Claims



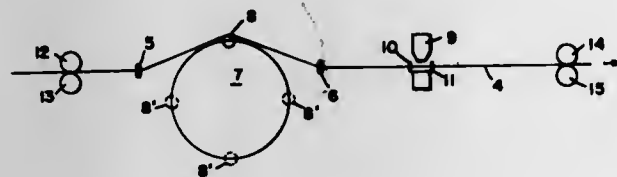
A continuous material, strand, or yarn fluid bulking and conditioning jet device having a superimposed, laminar structure of preferably shaped or non-planar plates with a transverse yarn passage therethrough and a plurality of intersticed orifices leading to the yarn passage

therebetween, and the method of manufacturing the jet device by scrolling or milling slots in the shaped plates initially before assemblage to provide precise and maximal reproduction of angled orifices.

3,609,835 METHOD AND APPARATUS FOR TEXTURIZING YARN

Edmund F. Boon, Wuppertal-Barmen, Germany, assignor to Glanzstoff AG, Wuppertal, Germany
Filed July 23, 1969, Ser. No. 844,054
Claims priority, application Germany, July 24, 1968, P 17 60 957.3
Int. Cl. D02g 1/16

U.S. Cl. 28—1.4 19 Claims



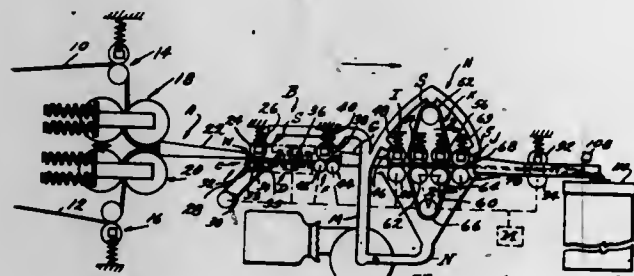
Method and apparatus for texturizing a multifilament yarn or thread by subjecting the yarn to the action of a fluid jet with a nozzle of open design while simultaneously subjecting the yarn to a fluctuating longitudinal tension in the zone of the jet treatment, thereby permitting a more accurate and improved control over the gap lengths of the texturized yarn.

3,609,836 TEXTILE DRAFTING SYSTEM

Elbert F. Morrison and Raymond D. Joy, Clarksville, Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed July 18, 1969, Ser. No. 842,865
Int. Cl. D01g 1/12

U.S. Cl. 28—1.6 7 Claims

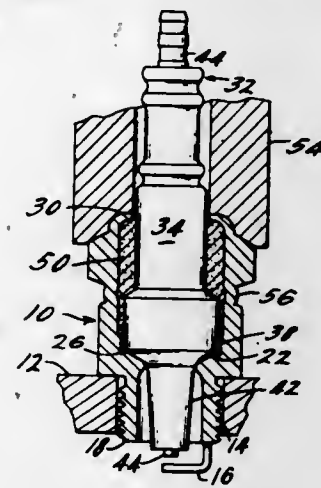


A textile system for debonding, combing and/or drafting a web of cut fibers into a homogeneous sliver, the sliver having the cut fibers randomized and parallel with little or no turnbacks whereby the sliver may be quickly coiled or utilized in a subsequent textile operation. The textile system comprises an in-line apparatus including a pin or gill drafting means for performing a gilling operation to debond the cut or fracture tow, straighten the turn back fibers, and randomize the same while also performing a drafting operation, and an apron drafting means for further drafting the fibers and straightening the fibers as they are removed from the gilling operation. The apron drafting means controls the fibers in such a manner that the fibers may be drafted at a higher draft than the drafting at the pin or gill drafting means with the fibers being capable of being drawn from the apron drafting means with pressure on substantially their entire length and without breaking of the fibers.

3,609,837 SPARK PLUG SEAT

Michael A. Bretsch, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio
Filed June 16, 1969, Ser. No. 833,467
Int. Cl. H01t 21/00

U.S. Cl. 29—25.12 9 Claims

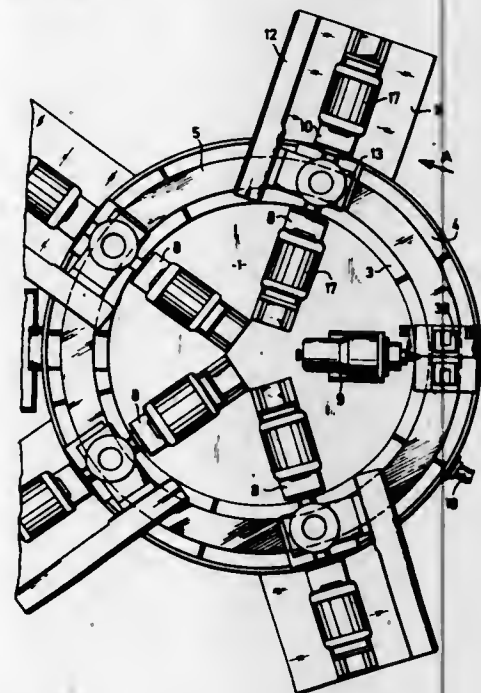


A gasketless seat for spark plugs. A ring-shaped recess is cut by machining or coining circumjacent an upwardly facing shoulder within the bore of a hollow spark plug shell. A spark plug insulator is then inserted into the shell until a downwardly facing shoulder on the insulator abuts the shell shoulder adjacent to the ring-shaped recess. In completing assembly of the spark plug, the insulator is forced into the shell to deform the shell shoulder by cold working it against the insulator shoulder, thereby forming a thermally conducting seal between the shell and the insulator.

3,609,838 MACHINE TOOL

Horst Wiest, 10 Lisztstrasse, 731 Plochingen (Neckar), Germany
Filed Sept. 23, 1968, Ser. No. 761,745
Int. Cl. B23q 7/02, 39/04

U.S. Cl. 29—38 15 Claims



A machine tool with a relatively large annular work table which is rotatable in steps from one work station to another and at the inside and outside of which several motor-driven tools may be mounted at each work station for machining several workpieces simultaneously. For compensating inaccuracies of the dimensions and movements of this work table, a plurality of work supports

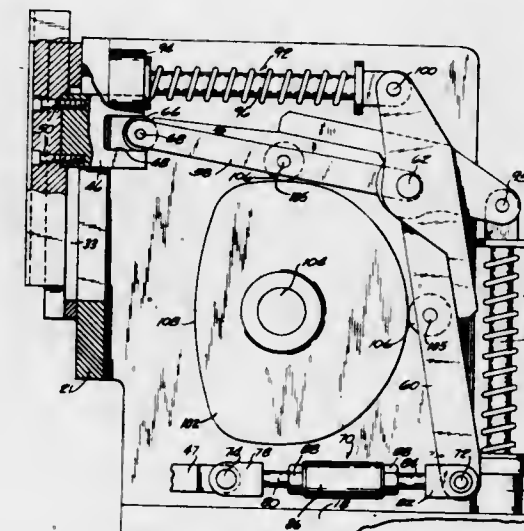
in accordance with the number of work stations may be adjustably mounted on the work table and each of these work supports carrying a workpiece may be adjusted at each work station to the accurate position required for the respective work.

3,609,839 DOUBLE MOTION UNIT

J Tim Gonzales, Rockford, Ill., and Thomas J. Griffin, Fort Atkinson, Wis., assignors to Rockford Automation, Inc., Rockford, Ill.

Filed May 19, 1969, Ser. No. 825,842
Int. Cl. B23q 39/04

U.S. Cl. 29—51 5 Claims

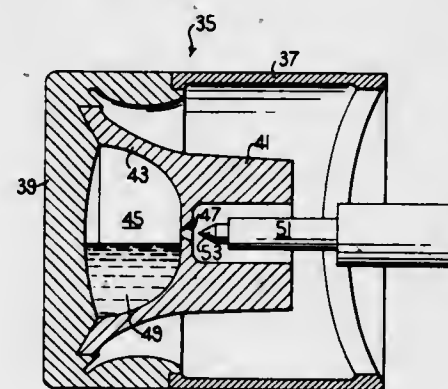


An apparatus for moving tools to perform an operation on a workpiece, said apparatus including a pair of tool holders for supporting tools, a pair of pivotally mounted lever arms operatively connected to move the tool holders through predetermined paths of motion, a pair of air springs operatively connected to said lever arms to provide the working force for the working stroke of each tool holder and a motor driven cam to control the motion of the lever arms, the motor driven cam being actuated in response to the movement of a workpiece to a work station adjacent the apparatus, or otherwise.

3,609,840 PROCESS FOR FRICTIONALLY WELDING AN INTERNALLY COOLED PISTON

Arthur R. Canady, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application Oct. 9, 1967, Ser. No. 673,824, now Patent No. 3,485,143, dated Dec. 23, 1969. Divided and this application June 12, 1969, Ser. No. 871,127
Int. Cl. B23p 15/10

U.S. Cl. 29—156.5 R 4 Claims

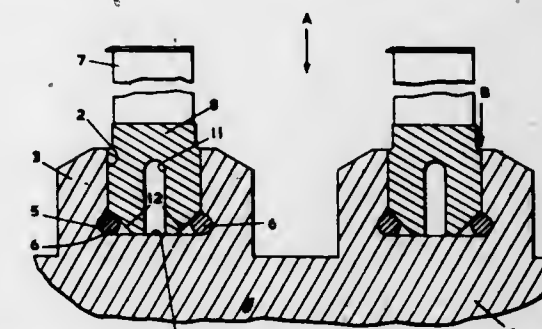


A process for sealing a piston cavity having a combustible coolant therein by frictionally welding two component portions of a piston together thereby avoiding any possibility of igniting the coolant.

3,609,841 METHOD OF MAKING BLADE RING ASSEMBLIES

Robert Hunter Telfer, George Wilson Wall, and Michael John Fletcher, Whetstone, England, assignors to The English Electric Company Limited, London, England
Filed Aug. 1, 1968, Ser. No. 749,476
Claims priority, application Great Britain, Aug. 2, 1967, 35,500/67

Int. Cl. B21k 3/04; B23p 15/02, 15/04
U.S. Cl. 29—156.8 R 9 Claims



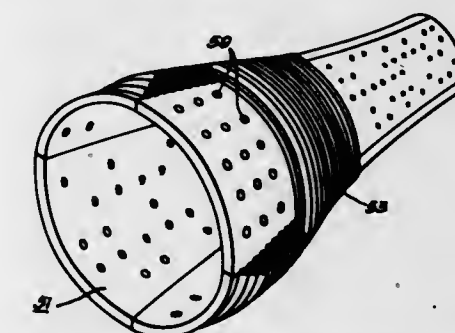
A method of manufacturing a blade ring assembly is disclosed in which the blade roots and the circumferential groove in the disc, rotor or like support member for the blades are of simple section.

In accordance with the disclosure, a circumferential groove having plane walls is formed in the support member and two opposed plane faces are formed on each blade root such that the latter is a close fit within the groove walls and holds its blade at the required setting angle. The blades of the ring are fitted into the groove with the required pitch between them and an electron beam is directed radially towards each joint between the groove and blade roots whereby to fuse said joint, the energy of the beam being selected to penetrate over the depth of the joint. Relative rotation is then provided between the beam and the support member to complete said fusing around the circumference of the latter.

3,609,842 TEMPERATURE AND STRESS RESISTANT BODY

Zalman M. Shapiro, Pittsburgh, Pa., assignor to Nuclear Materials and Equipment Corporation, Apollo, Pa.
Original application Jan. 8, 1963, Ser. No. 250,112. Divided and this application July 16, 1968, Ser. No. 745,230
Int. Cl. B22f

U.S. Cl. 29—157 11 Claims



A high temperature and stress resistant body of desired porosity is made by forming a green porous body (FIGS. 4, 5, 9, 10) of higher than the desired porosity by compacting different size fractions of spherical particles (A, 23, 27 FIGS. 4, 5) or by winding fine cold-drawn wire (53 FIG. 9) or mesh of fine cold-drawn wire (73 FIG. 10) on a mandrel (51 FIG. 7; 71 FIG. 10). The green body is cemented into a rigid body and at the same time its porosity is decreased to the desired magnitude by depositing cementing material (H5 FIG. 11, 61 FIG. 9, 77 FIG. 10) in the pores (25 FIGS. 5 and 6; 55 FIG. 9) from a gas. Typically a body of tungsten is formed by reducing a tungsten halide in the pores with hydrogen.

3,609,843 LOADING MACHINE FOR STRUCTURAL MEMBERS

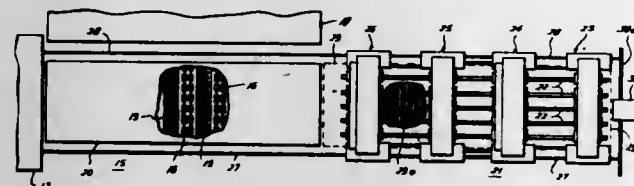
Harry J. Fiegel, Jr., Galveston, and Russell S. Thatcher, Dallas, Tex., assignors to Kelso Marine Inc., Galveston, Tex.

Filed Jan. 28, 1969, Ser. No. 794,687

Int. Cl. B23p 19/00

U.S. Cl. 29—200 A

15 Claims



A machine for loading a group of structural steel shapes onto a steel plate and then feeding the combined load to a welding machine or other stage in a manufacturing operation. Plate loading apparatus moves a steel plate onto a conveyor loading station and shape loading apparatus thereafter moves from a shape receiving position to a position above the loading station for simultaneously placing a plurality of structural steel shapes onto the steel plate. The shape loading apparatus includes a group of interconnected carriages riding on tracks which straddle the loading station. Each carriage includes a series of shape positioning units located in a side-by-side manner in a transverse direction with respect to the carriage tracks. Each shape positioning unit is adapted to receive and hold a structural shape. Means are provided for varying the spacings between the carriages as well as the spacings between the individual shape positioning units on each carriage. This enables shapes to be placed on different plates in different configurations.

3,609,844 AUTOMATIC MEANS FOR ERECTING A CASSETTE BOX

Yoshikazu Ichikawa, Tokyo, Japan, assignor to Aiwa Co., Ltd., Tokyo, Japan

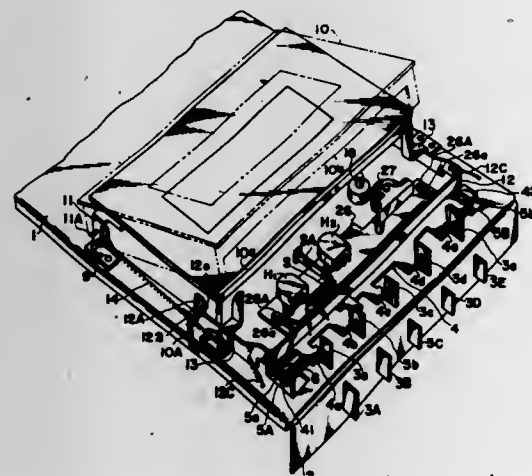
Filed Apr. 3, 1969, Ser. No. 813,179

Claims priority, application Japan, Apr. 8, 1968, 43/23,238, 43/23,239

Int. Cl. B23p 19/00

U.S. Cl. 29—200 R

8 Claims



An improved means for automatically erecting a cassette box for receiving a magnetic tape cassette of a mag-

azine type magnetic recording and playing apparatus or a film cassette of a photographic camera, in which means there is provided a mechanism for automatically erecting the cassette box when the carrier such as a tape is substantially completely recorded or played.

3,609,845 CRIMPING TOOL

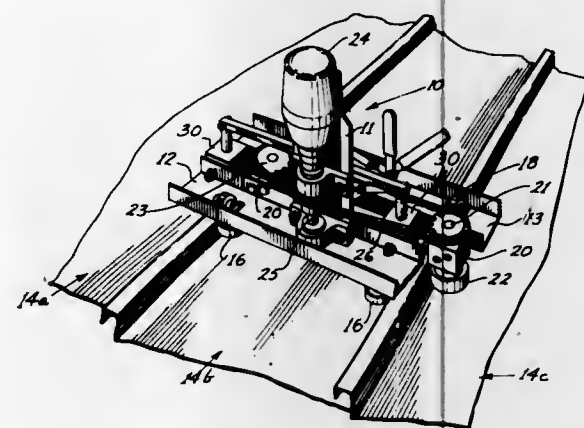
Donald M. Taylor, Hamilton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Dec. 29, 1969, Ser. No. 888,366

Int. Cl. B23p 19/00

U.S. Cl. 29—200

16 Claims



A tool for continuously following at least two adjacent rib joints formed by overlapping ribs of adjacent steel panels from end to end so that said ribs may be deformed or crimped continuously or intermittently as desired, by pivoting forming rolls, to effect continuous engagement, complete interlocking and resistance to disengagement of adjacent panels.

3,609,846 APPARATUS FOR FACILITATING ELECTRONIC ASSEMBLY

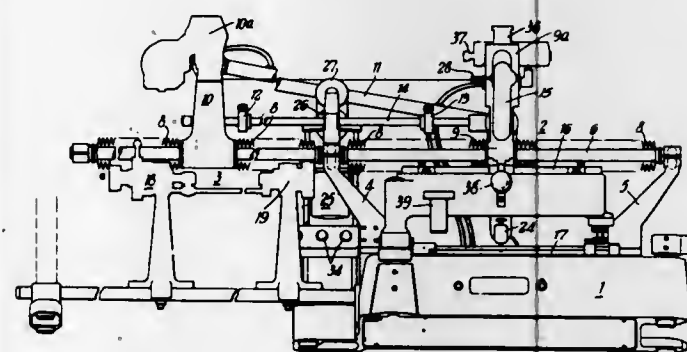
Robin John Freeman, Send Road, Send, Woking, Surrey, England

Filed Oct. 29, 1969, Ser. No. 872,119

Int. Cl. H05k 13/04; B23g 17/00

U.S. Cl. 29—203 B

4 Claims



The invention provides apparatus for facilitating the assembly of components into their correct position in printed circuit boards. The apparatus includes dummy circuit boards, one of which gives a visual indication of component positions and the other of which is employed in the signalling of appropriate component storage bins; and movement of styluses over the dummy boards causes simultaneous spot illumination of component positions on an actual board to be assembled.

3,609,847 APPARATUS FOR MECHANICALLY AND ELECTRICALLY CONNECTING ELECTRODE PLATES

Hellmut Engler, Frankfurt am Main, Germany, assignor to Societe Industrielle du Caoutchouc S.A., Fleurier, Switzerland

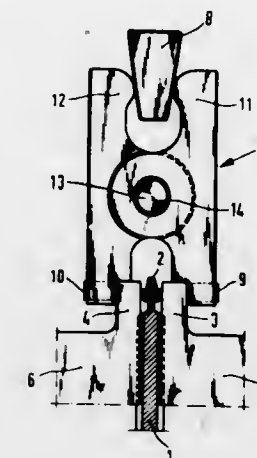
Filed May 1, 1969, Ser. No. 820,865

Claims priority, application Germany, May 6, 1968, P 17 71 319.8

Int. Cl. H01m 19/04

U.S. Cl. 29—204

7 Claims



For mechanically and electrically connecting electrode plates for storage batteries during the forming step, a gripper is provided, which is applicable to the lugs of the electrode plates so as to connect the plate lugs to a current-carrying terminal bar disposed between said lugs.

3,609,848 APPARATUS FOR COUPLING DIP TUBES TO EXTENSIONS OF VALVES FOR AEROSOL CONTAINERS AND THE LIKE

Glancarlo Giuffredi, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

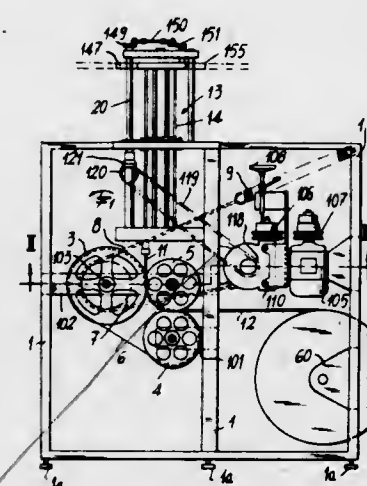
Filed July 25, 1968, Ser. No. 747,682

Claims priority, application Italy, Aug. 2, 1967, 19,125/67; Jan. 31, 1968, 12,232/68

Int. Cl. B23p 19/04

U.S. Cl. 29—208 F

2 Claims



Apparatus for coupling dip tubes to the extensions of valves for aerosol containers and the like. The apparatus includes a guide means for guiding a dip tube to an aerosol valve or the like. This guide means is adapted to communicate with a source of compressed air which drives the dip tube through the guide means to an aerosol valve or the like carried by a suitable support means which positions the valve in alignment with the guide means to receive the dip tube propelled by the compressed air. The dip tube guide means forms part of an intermittently rotated structure provided with a plurality of guide tubes

which initially receive the dip tube and with a plurality of grooves aligned with the guide tubes and receiving the dip tubes therefrom to continue the travel of the dip tubes to the aerosol valves. The intermittently rotatable structure moves the plurality of guide tubes and grooves aligned therewith past a series of stations one of which communicates with the source of compressed air.

3,609,849 FORMING ROLLS

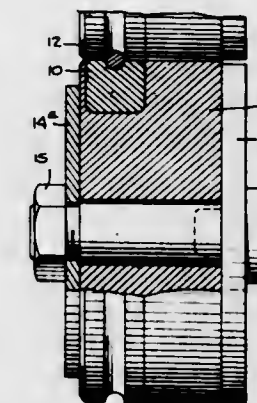
Jan M. Krol, 44 Gramercy Park, New York, N.Y. 10010

Filed Apr. 9, 1969, Ser. No. 814,763

Int. Cl. B21b 27/02

U.S. Cl. 29—132

9 Claims



This invention is directed to composite, bi-metallic forming rolls produced by powder metallurgical methods which are used to form steel bars. The composite, bi-metallic rolls are made up of a working part of cemented tungsten carbide which is metallurgically bound to a casing material of various metals or alloy compositions.

3,609,850 MACHINE FOR APPLYING REINFORCING RINGS TO CONTAINERS

Houston Rehrig, Pasadena, Calif.

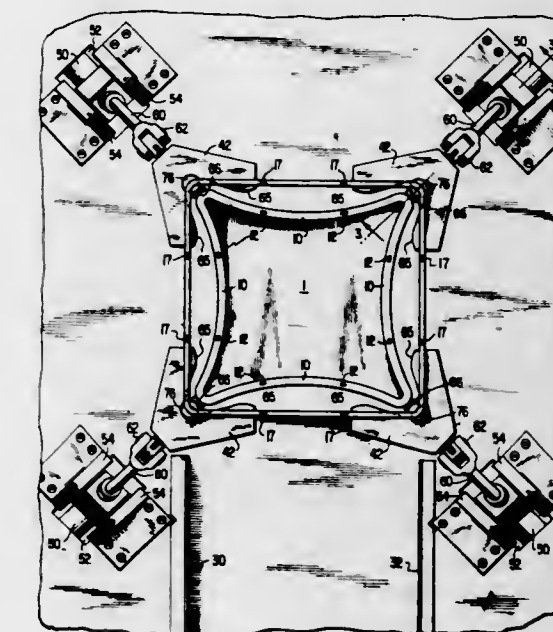
(4291 Bandini Blvd., Los Angeles, Calif. 90023)

Filed Oct. 24, 1969, Ser. No. 869,239

Int. Cl. B23p 19/04, 11/00

U.S. Cl. 29—208 B

25 Claims



Reinforcing rings are applied to exterior seat portions of containers of the type shown in U.S. Pat. 3,419,182 by a machine which operates on the containers when they are in a pliable condition. Initially, a container is collapsed by pressing its axially-aligned edges inwardly,

with four pivoted squeeze arms to bow the sidewalls inwardly until the outside dimensions of the ring-retaining rim on the container are less than the inside dimensions of the reinforcing ring. The ring is then placed on a supporting surface on the squeeze arm at a position where it is radially aligned with the seat portion of the container. The squeeze arms are released, thereby permitting the container to expand somewhat to hold the ring in position. Final expansion of the container is performed by a plunger which moves axially into the container to force the sidewalls outwardly.

When applying reinforcing rings which have upstanding tangs which are received in apertures in the rim of a container, there is a central plunger which moves into the container after release of the squeeze arms to hold the sidewalls in a given position. Upper arm assemblies then move toward the outer surfaces of the sidewalls to project fingers which raise the container rim in the vicinity of the tang-receiving openings. Further movement of the plunger presses the container walls outwardly until the tangs enter the rim apertures; and, finally, a surface on the plunger forces the rim downwardly in the vicinity of the tangs.

3,609,851

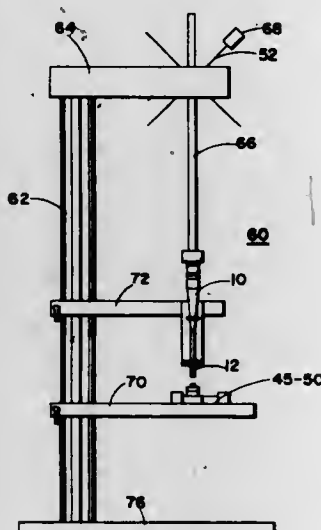
METAL WORKING APPARATUS AND PROCESS
Robert C. McMaster and Charles C. Libby, Columbus, Hildegard M. Minchenko, Reynoldsburg, and Fred A. De Saw, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Oct. 19, 1967, Ser. No. 676,550

Int. Cl. B23p 11/00; B21d 26/02

U.S. Cl. 29-243.54

8 Claims



This invention relates generally to the application of electromechanical transducer energy to a workpiece, and particularly to the utilization of a high Q electromechanical transducer capable of delivering extremely high-power outputs to a work surface for the deformation of metallic or non-metallic materials, such as, in riveting, cold heading, bonding, and swaging.

3,609,852

PROCESS FOR THE FABRICATION OF METAL PRODUCTS

Maurice Lachaussee, 360 Rue de l'Yser, Ans-lez-Liege, Belgium, and Andre Maigret, 4 Avenue de la Grange, Val de Mare, France

Filed Oct. 24, 1969, Ser. No. 869,262

Claims priority, application Belgium, Dec. 20, 1968, 42,035

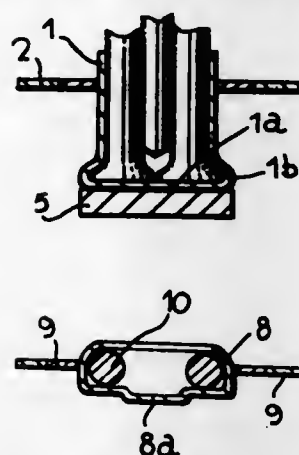
Int. Cl. B23p 17/00

U.S. Cl. 29-412

5 Claims

In a process for the fabrication of metal products by stamping out blanks made in a strip of metal and final

forming, there are provided the steps of stamping out a rough-shaping in the form of a cup, separating the rough-shaping from the strip, re-introducing said rough-shaping



into its former place in the strip where it is maintained and executing on said maintained rough-shaping the final forming operations and expelling the finished product.

3,609,853

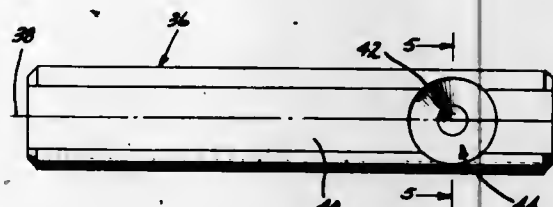
METHOD OF MAKING A BALL JOINT ASSEMBLY
Gilbert E. Davies, John M. Weston, and Gino L. Gasparini, Fort Wayne, Ind., assignors to Tuthill Pump Company, New Haven, Ind.

Original application Aug. 16, 1965, Ser. No. 479,860 now Patent No. 3,514,138, dated June 2, 1970. Divided and this application Aug. 18, 1969, Ser. No. 850,811

Int. Cl. B23p 11/00

U.S. Cl. 29-441

10 Claims



A method of making a ball joint assembly. A part-cylindrical metallic body is provided having a flat surface lying in a plane parallel with the body axis. The body has a cylindrical socket formed therein extending inwardly from the flat surface thereby forming an opening therein, the socket having an axis which is normal to the plane of the flat surface and also to the axis of the body, the diameter of the socket being greater than the width of the flat surface. An elongated ball stud is provided having a ball on one end thereof, the stud including an elongated shank having a longitudinal axis which coincides with a diameter of the ball, the ball being dimensioned substantially to fill the socket. The ball is inserted into the socket in a position in which the longitudinal axis of the shank coincides with the axis of the socket, and the ball is held in that position. The metal of the body is displaced into the socket by coining while the ball is held in its initial position, the coining operation being performed on the flat surface simultaneously on opposite sides of the socket spaced in a direction parallel to the body axis. The coining operation is performed along arcuate sections respectively having lengths longer than the width of the flat surface and also respectively having centers on a line which is parallel to the body axis and which intersects the socket axis. The coining operation is controlled to the extent of reducing the width of the socket opening in directions parallel with the body axis so as to prevent the ball from being withdrawn from the socket and to the extent of permitting the ball to pivot in the socket without frictional binding.

3,609,854

METHOD OF FRICTION WELDING

Atsushi Hasui, Tokyo, Japan, assignor to the Director of National Research Institute for Metals, Tomoyoshi Kawada, Tokyo, Japan

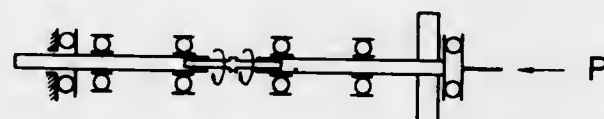
Filed July 30, 1968, Ser. No. 748,825

Claims priority, application Japan, Aug. 5, 1967, 42/49,977

Int. Cl. B23k 27/00

U.S. Cl. 29-470.3

2 Claims



The disclosure provides a method of and an apparatus for friction welding workpieces in which a first workpiece is secured to a first drive shaft and a second workpiece is secured to a second freely rotatable shaft, the first drive shaft is rotated at a constant speed, the free end of the second workpiece is contacted to the free end of the first workpiece by the axial force so as to freely rotate the second workpiece and accelerate the rotation of the second workpiece to reach the rotational speed of the first workpiece, and during which period a weld is completed, and simultaneously, flash forming at the joint of workpieces during friction welding can be removed.

3,609,855

PRODUCTION OF BERYLLIUM RIBBON REINFORCED COMPOSITES

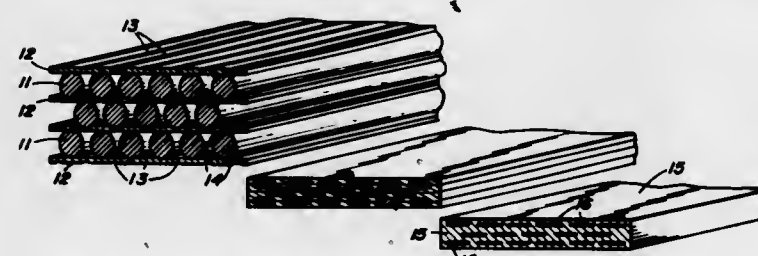
Richard Schmidt, McLean, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 25, 1969, Ser. No. 819,287

Int. Cl. B23k 31/02

U.S. Cl. 29-471.1

10 Claims



STRAIGHT ROLL BONDING

A process of producing a composite consisting in aligning a plurality of beryllium wires, rods or ribbons and covering the beryllium with a metal. Rolling with sufficient heat to convert the metal to a plastic state and the wires to flat ribbon strips and produce a metal composite having beryllium ribbon reinforcement.

3,609,856

BRAZING CARBON BODIES TO OTHER BODIES OF TEMPERATURE RESISTANT MATERIALS

Georg T. K. Eckert, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

No Drawing. Filed July 22, 1968, Ser. No. 746,244

Claims priority, application Germany, July 25, 1967, S 110,994

Int. Cl. B23k 31/02

U.S. Cl. 29-473.1

11 Claims

Brazing compositions and methods of utilizing the same to produce intimate vacuum-tight connections between carbon bodies and other bodies of temperature-resistant materials, such as high melting metals, ceramics, quartz

or carbon. The brazing compositions are metal borides per se, eutectic metal boride systems per se, mixtures thereof and mixtures thereof with metal carbides, such as molybdenum carbides. The metal borides are selected from the group consisting of borides of Ni, Fe, Co, V, Cr, Mo, Nb, Ta, Zr, Pd, Pt, and mixtures thereof. The methods include applying, as by spraying, immersion, or chemical reductive deposition, the brazing composition as a liquid phase onto the body surfaces to be joined and briefly heating the brazing composition thereat to a temperature slightly higher than the melting point of the brazing composition in a non-oxidizing atmosphere. The methods also include utilizing elementary boron particles intermixed with various metal particles in an organic suspension as the brazing composition and also includes utilizing the instant brazing compositions as support base for conventional brazing filler metals.

3,609,857

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Sakae Kikuchi, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

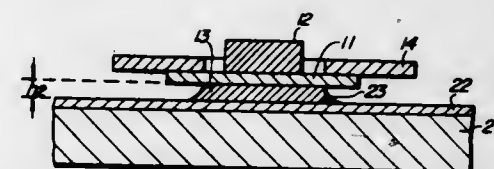
Filed Nov. 4, 1968, Ser. No. 772,911

Claims priority, application Japan, Nov. 6, 1967, 42/70,964

Int. Cl. B01j 17/00; H01l 7/02

U.S. Cl. 29-589

2 Claims



A method for manufacturing a semiconductor device, which comprises the steps of fusing an indium collector dot of an alloy type transistor on the surface of a metal support plated by tin, thereby fixing said transistor electrically and mechanically firmly on said metal support.

3,609,858

METHOD OF MAKING A PLANAR, SEGMENTED MEMORY UNIT

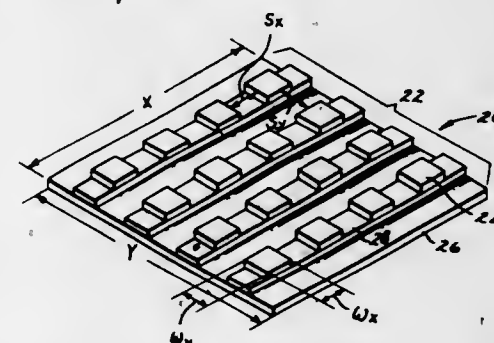
Everett Jesse Shaw, Pennington, N.J., and Daniel George Stetka, Fallston, Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,189

Int. Cl. H01f 7/06

U.S. Cl. 29-604

19 Claims



Briefly, the present disclosure contemplates a novel method of fabricating an article, such as a memory card, which comprises mounting a spaced matrix of workpieces, for example, magnetic elements, to a substrate, which may be a non-magnetic sheet. The substrate has given X and Y dimensions and each workpiece is spaced from adjacent workpieces by selected X and Y spacings.

A sheet of material, from which the workpieces are made, is slit to form a plurality of first strips. The first

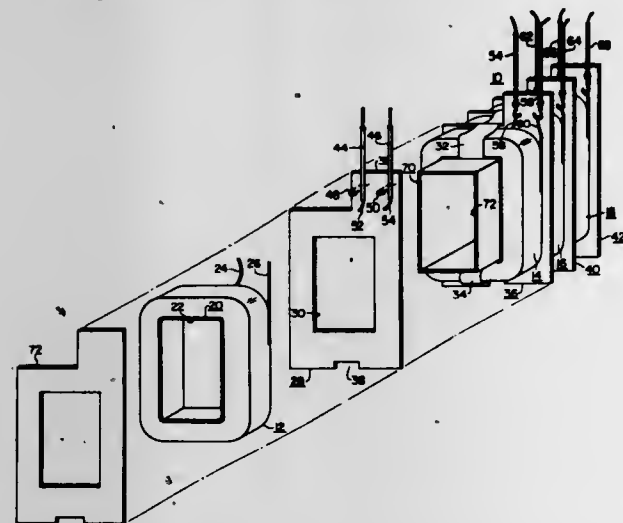
strips, separated by the desired X spacing, are adhered to a carrier. This separation is effected either by transversely separating the first strips or by adhering alternate first strips (e.g., every other strip, every third strip, etc.) to the carrier. The carrier is then slit transversely to the spaced first strips to form a plurality of second strips. This latter slitting step may be effected so that each of the second strips has a transverse dimension equal to the desired Y spacing. Lastly, the second strips are alternately adhered to the substrate. For example, every other second strip may be adhered to one substrate and then the remaining strips are adhered to another substrate. Alternatively, the second strips may be separated transversely to effect the desired Y spacing and adhered, as so spaced, to the substrate.

3,609,859 METHOD OF MAKING AN ELECTRIC TRANSFORMER

Clarence W. Hunt, Transfer, and Ralph W. Johnston and Donald S. Stephens, Sharpville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 20, 1969, Ser. No. 835,018
Int. Cl. H01f 7/06

U.S. Cl. 29—605

6 Claims



An electrical transformer and method of constructing same, wherein a plurality of electrical coils are wound on separate coil forms. The plurality of coils are each attached to a separate insulating washer member, with the coil leads also being fixed to the washer member. The coils and washer members are disposed on a common insulating tube in side-by-side relation, and a magnetic core is assembled about the coils, including a portion which extends through the opening in the common insulating tube. The coil forms and common insulating tube provide the coil to core insulation, while the insulating washer members provide barrier insulation between the coils.

3,609,860 METHOD OF FITTING A RESILIENT INSULATING SLEEVE ABOUT AN ELECTRICAL CONNECTOR AND MEANS FOR CARRYING OUT THE METHOD

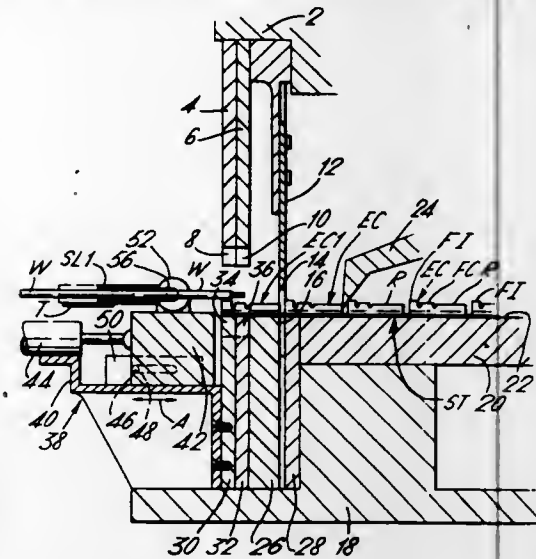
Bruce Walter Hills, Auburn, New South Wales, Australia, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 13, 1969, Ser. No. 865,846
Claims priority, application Australia, Oct. 14, 1968, 44,748/68

U.S. Cl. 29—630 F

7 Claims

An apparatus comprises means for expanding a front end of a resilient insulating sleeve through which an end of an electrical conductor is then passed. The end of the conductor is crimped via crimping means in alignment with the insulating sleeve onto a leading connector

of a strip of connectors whereafter the crimped connector is moved into the expanded insulating sleeve and the



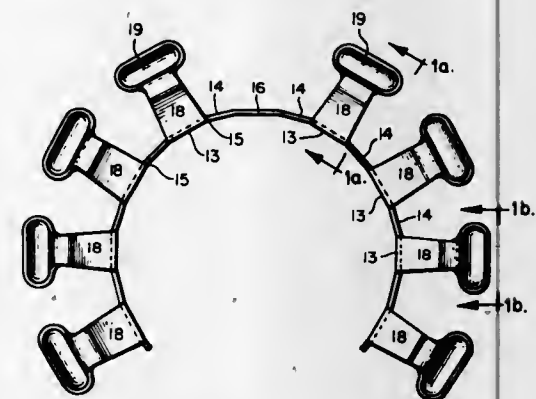
expanding means is released from the sleeve so that the crimped connector is completely insulated.

3,609,861 METHOD OF MANUFACTURING ROTARY SWITCH ROTOR CONTACT MEMBERS

Kenneth C. Allison, Crystal Lake, Ill., assignor to Kollsman Instrument Corporation, Elmhurst, N.Y.
Filed Oct. 21, 1969, Ser. No. 868,028
Int. Cl. H01r 9/00

U.S. Cl. 29—630

3 Claims



The production of rotary switch rotor contact members wherein a strip of metal potentially divisible into a series of successive sections is fed intermittently, step by step, in one direction along a fixed line of travel to produce from each section a flat band and a flat trunk in relation to which said band defines a pair of branches extending in opposite directions at right angles to the line of travel of the strip and integral fingers extending in opposite directions from said branches in paired aligned relation lengthwise of said line of travel are bent into contact jaw forming relation and the branches are thereupon curved about the arc of a circle to thereby position said jaws in radially outward relation to the convex side of said branches in selected spaced apart relation circumferentially of the arc of curvature of said branches, and thereupon severing the leading section of the strip from the sections of the strip in trailing relation thereto.

3,609,862 COMBINATION GUARD UNIT AND RAZOR MAGAZINE HOLDER

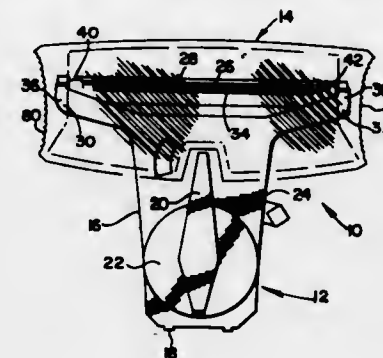
Alfred F. Ernstberger, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 28, 1969, Ser. No. 845,187
Int. Cl. B26b 21/40; B65d 85/54

U.S. Cl. 30—90

10 Claims

A combination unit for guarding the exposed edge of a blade held in a ribbon-type razor magazine during stor-

age, handling, and transport of the magazine, both before and after assembly thereof with a handle unit, and to facilitate assembly of the magazine with the handle. The unit includes means for engaging the laterally outer edges of the magazine, means for protecting a part of the front



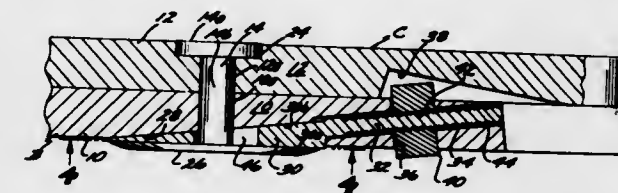
surface of the magazine, and for guarding the top surface thereof, and includes guide means for engaging the front edge of the top flange portion of a razor handle frame to prevent the edge of the flange from damaging the exposed blade edge during assembly of the handle with the magazine.

3,609,863 TRANSVERSELY ADJUSTABLE SCISSOR STRUCTURE

Mitchell J. Woodward, 9136 Artesia Blvd., Bellflower, Calif. 90706
Filed Jan. 2, 1970, Ser. No. 51
Int. Cl. B26b 13/28

U.S. Cl. 30—266

4 Claims



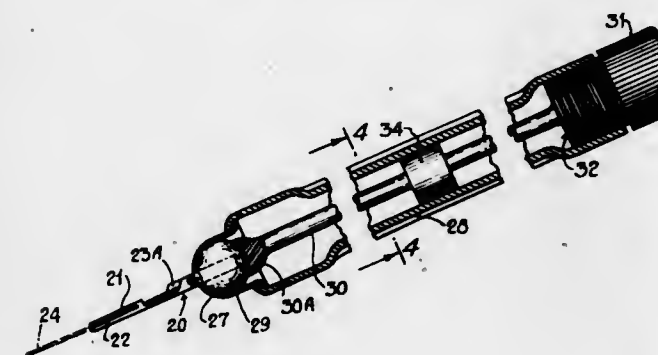
A scissor structure that has two elongate pivotally connected members on which cutting edges are defined, with the structure being characterized by manually adjustable means mounted thereon that force the cutting edges into desired pressure contact with one another to improve the cutting capability of the scissor structure.

3,609,864 SURGICAL BLADE HANDLE

Roy C. Bassett, P.O. Box 102, West Redding, Conn. 06896
Filed Aug. 27, 1969, Ser. No. 853,368
Int. Cl. B26b 1/04

U.S. Cl. 30—321

11 Claims



A surgical blade handle that can accept blades inserted by either a righthanded or a lefthanded person, and can rotate the blade at least 180° in the plane of its cutting

edge. One terminal end of the blade holding member is spherically shaped and is retained within a socket end of a handle tube which is slotted and has the form of a portion of a sphere. The blade is anchored firmly on the blade holder, and is held securely in position by a clamping rod which forces the spherical end of the blade holder into firm seated frictional engagement within the rounded spherically shaped socket end of the handle tube. The blade holding member may be of one piece construction on which the surgical blade snaps into place, or it can be of two-piece mating jaw construction with the surgical blade being clamped into place and being easily removed by having the mating jaws spring loaded to urge them apart.

3,609,865 FORK-LIKE FOOD UTENSIL

Boyd Golden, 7405 E. 22nd Ave., Denver, Colo. 80207
Filed Aug. 27, 1969, Ser. No. 853,313
Int. Cl. A47j 43/28

U.S. Cl. 30—322

8 Claims



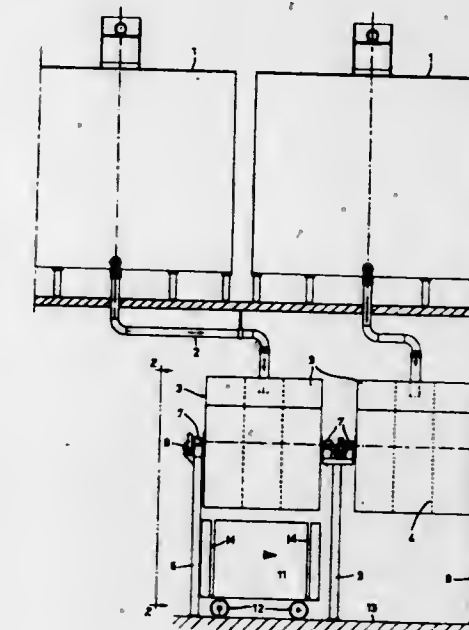
A novel food utensil has prongs with offset curved recessed sections along inner facing sides thereof to define food-receiving slots between the prongs whereby the prongs cooperate to prevent food such as spaghetti from slipping therebetween. The prongs are essentially flat and have a slight double curvature laterally and longitudinally thereof and terminate in blunt, V-shaped forward end portions.

3,609,866 DEVICE FOR MAKING CHEDDAR AND SIMILAR CHEESE VARIETIES

Joachim Max de Jonge, Leeuwarden, Netherlands, assignor to Jongia Ingenieursbureau N.V., Leeuwarden, Netherlands
Filed Mar. 10, 1969, Ser. No. 805,651
Int. Cl. A01j 25/00, 25/11

U.S. Cl. 31—46

4 Claims



A process and apparatus whereby a whey-and-milk curd mixture is made in a first tank means and the curd is

separated from the whey and cheddared in a different second tank means by an intermittent process whereby the second tank means is intermittently slowly rotated through approximately 90° about a raised, horizontal medial support axis for a predetermined period of time. The cheddared curds are then discharged onto a conveyor or into a conveying carriage adapted to move beneath said second tank, and having a raisable bottom which is subsequently lifted with the cheese pieces and cooperatively embodied at a combined agglomerating or compacting and grid-cutting or sizing station. This latter intermediate station has salt dosing or dispersion means operatively connected with the cutting operation whereby the salted and pre-sized pieces are collected and conveyed to a compartmented rotary mixing drum for further treatment. When this mixing treatment is completed, the processed cheese is discharged from the drum into adjoining weighing and molding apparatus to prepare predetermined size cheese blocks which are conveyed away for final disposition.

3,609,867

PLASTIC BONE COMPOSITION

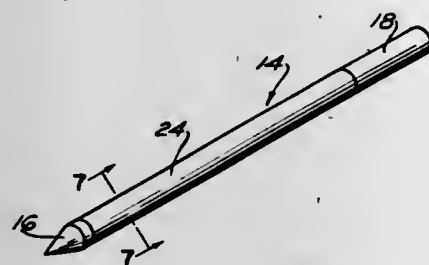
Milton Hodosh, Providence, R.I., assignor to Research Corporation, New York, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,400

Int. Cl. A61c 13/00

U.S. Cl. 32—10 A

2 Claims



A composition comprising as its basic ingredients a mixture of grated anorganic bone and an acrylic polymer, such as polymethacrylate, for use as dental implants, as well as for implants in other parts of the body, and as a coating for metals which may be implanted in the human body for dental purposes, orthopedic prostheses, neurosurgery and others.

3,609,868

MEASURING DEVICE AND TECHNIQUE

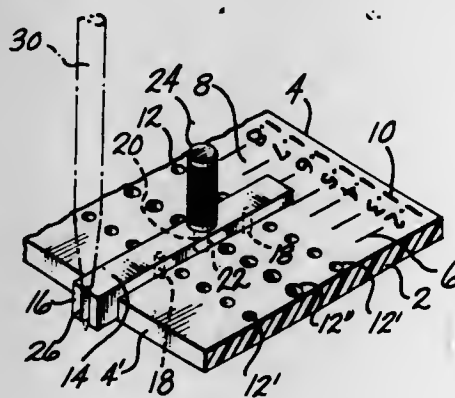
Walter Weglin, 10758 22nd Ave. SW., Seattle, Wash. 98146

Continuation of application Ser. No. 691,017, Dec. 15, 1967. This application Nov. 10, 1969, Ser. No. 871,640

Int. Cl. G01b 5/00

U.S. Cl. 33—125

10 Claims



A measuring device and technique are disclosed whereby dimensions in a small order of magnitude, such

as hundredths and thousandths of an inch, can be laid off from a scale, without assistance to the eye and without straining the eye in the process. A scale is used which has a series of intervals graduated to the next higher order of magnitude, say tenths, and a so-called adaptor is applied to the scale at a common point adjacent each interval to be subdivided into a fraction thereof. The adaptor has a locator thereon which registers with the site of the fraction when the body of the adaptor is disposed at a predetermined angle about the point of its application to the scale. To change to another fraction, the adaptor is maintained at the point of application while the body of the same is shifted in relation to the scale until the position of the locator registers with the site of the new fraction desired, there being intelligence on the adaptor to indicate the fraction corresponding to each position of the locator.

3,609,869

LINEAR MEASURING DEVICE HAVING A HANDLE THROUGH WHICH THE MEASURING TAPE EXTENDS

Andre Quenot, Besancon, France, assignor to Quenot & Cie S.a.r.l., Besancon, France

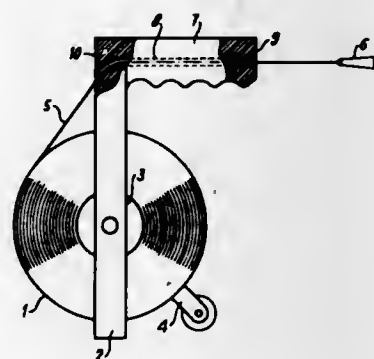
Filed Feb. 10, 1969, Ser. No. 795,154

Claims priority, application France, Mar. 8, 1968, 142,865

Int. Cl. G01b 3/02, 3/10

U.S. Cl. 33—138

2 Claims



A linear measuring device comprises a flexible measuring tape wound on a rotatable drum and a handle connected to the drum whereby the device may be hand-held during a measuring operation. The handle is provided with a bore through which the measuring tape passes and arcuate surfaces are provided within the bore to reduce the frictional resistance between the measuring tape and bore during winding and unwinding of the tape from the drum.

3,609,870

DIMENSIONAL GAGE WITH RADIALLY MOVABLE GAGING MEANS

Paul W. Johnson, Bloomfield, and Lowell C. Johnson, Gramby, Conn., assignors to The Johnson Gage Company, Bloomfield, Conn.

Filed Jan. 4, 1967, Ser. No. 607,329

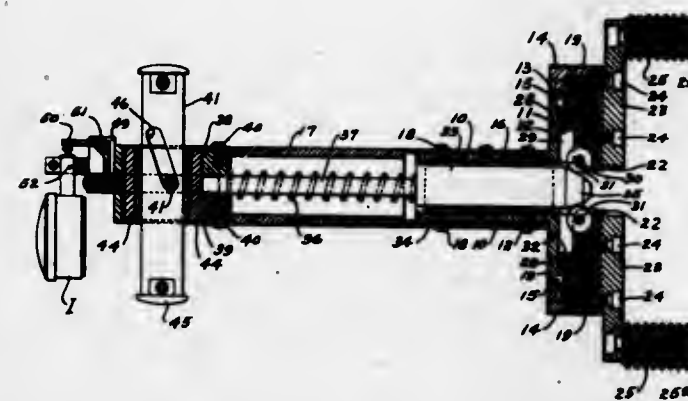
Int. Cl. G01b 5/08

U.S. Cl. 33—178 R

3 Claims

A gage is disclosed having radially movable gaging means comprising a slide and a carrier secured thereto with the carrier carrying a gaging element. A projection or radial abutting means is carried by the slide or carrier and engages the other for positive radial retention of the carrier with respect to the slide. The projection or radial abutting may be adjustable. Lateral retention means is also provided between the slide and carrier. For gaging means with an arcuate gaging element, one or more additional means are provided for adjusting each

gaging means in a lateral direction to bring the arcuate gaging element into arcuate alignment and in a planar



direction for an accurate planar relationship between gaging elements.

3,609,871

GAS PURIFICATION AND GETTER REGENERATION APPARATUS AND METHOD

John M. Ellison, 4907 Ethyl Ave.,

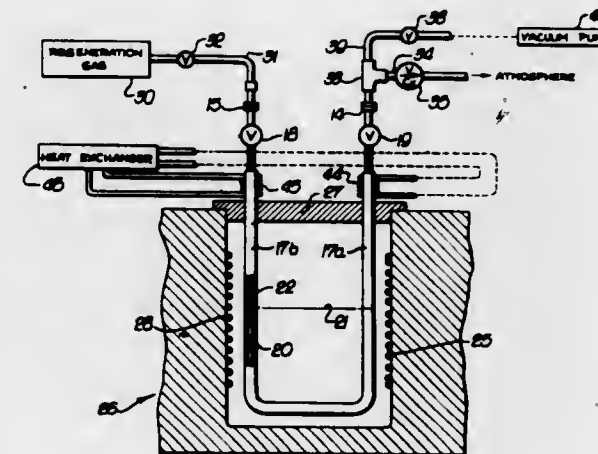
Sherman Oaks, Calif. 91403

Filed Feb. 27, 1970, Ser. No. 15,137

Int. Cl. F26b 7/00, 19/00

U.S. Cl. 34—13

14 Claims



Regeneration of a gas purifier comprising a bed containing an oxygen contaminated getter and a molecular sieve includes the steps of heating the bed containing the getter by means other than the purge gas; flowing through the bed a gaseous mixture of an inert gas and hydrogen characterized in that hydrogen and oxygen contaminant in the getter react to produce water or moisture that is purged; removing residual water from the sieve by subjecting the bed to evacuation; and supplying an inert fill gas to the bed for cooling same.

3,609,872

PROCESS AND APPARATUS FOR THE TREATMENT OF TEXTILE MATERIALS

Heinz Fleissner, Egelsbach, near Frankfurt am Main, Germany, assignor to Vepa AG

Filed Feb. 14, 1969, Ser. No. 799,224

Claims priority, application Germany, Feb. 14, 1968, P 17 29 499.4

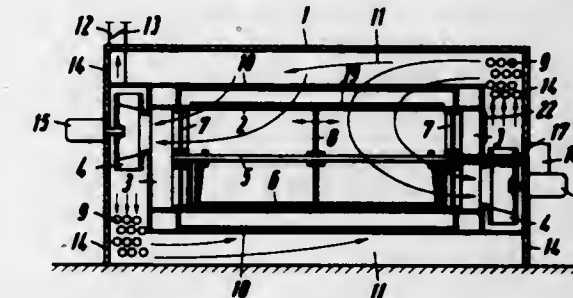
Int. Cl. F26b 3/00

U.S. Cl. 34—23

36 Claims

The present disclosure is directed to a process and apparatus for the treatment of textile materials which comprises a treatment chamber, at least one sieve drum

means subjected to a suction draft or a positive pressure rotatably mounted in the treatment chamber, inlet means for introducing the material to be treated to the treatment chamber, fan means provided at both faces of the sieve drum means for producing the suction draft or



positive pressure and for circulating the treatment medium, bottom means disposed inside the sieve drum means, said bottom means dividing the interior of said sieve drum means into two suction zones and outlet means for removing the material being treated.

3,609,873

CONTROL CIRCUIT TO DEACTIVATE AN APPLIANCE

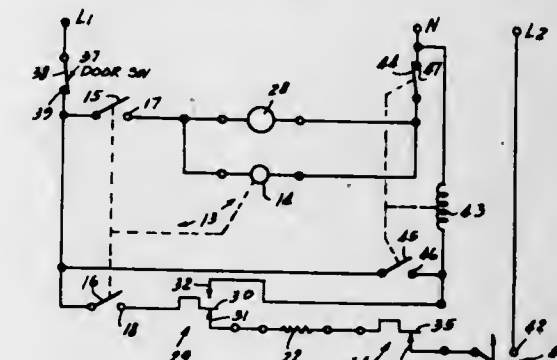
Ralph S. Odle, Jr., Michigan City, Ind., and Marvin G. Steffey, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 8, 1970, Ser. No. 35,609

Int. Cl. F26b 19/00

U.S. Cl. 34—48

6 Claims



A control circuit for a fabric drying appliance includes a relay which is operated in response to contact closure of a heat sensitive switch to deenergize the heater and the drive motor upon detection of a temperature greater than a predetermined temperature adjacent the heater or other machine area. The relay includes contacts which close to establish a holding circuit therefor to prevent energization of the heater and drive motor upon cooling below the predetermined temperature adjacent the heater. A switch is positioned for operation by the access door of the appliance and is serially connected in the holding circuit of the relay in order to promote visual inspection upon the occurrence of an overheated condition by insuring that the access door must be opened and reclosed in order to break the holding circuit and reset the control circuit for normal operation.

3,609,874

APPARATUS FOR FLUIDIZING AND DRYING PULVERANT MATERIALS

Jiyuichi Nara, 2-7-8 Higashi-ool, Shinagawa-ku, Tokyo, Japan

Filed Apr. 15, 1969, Ser. No. 816,335

Claims priority, application Japan, Apr. 17, 1968, 43/25,742; May 21, 1968, 43/34,221

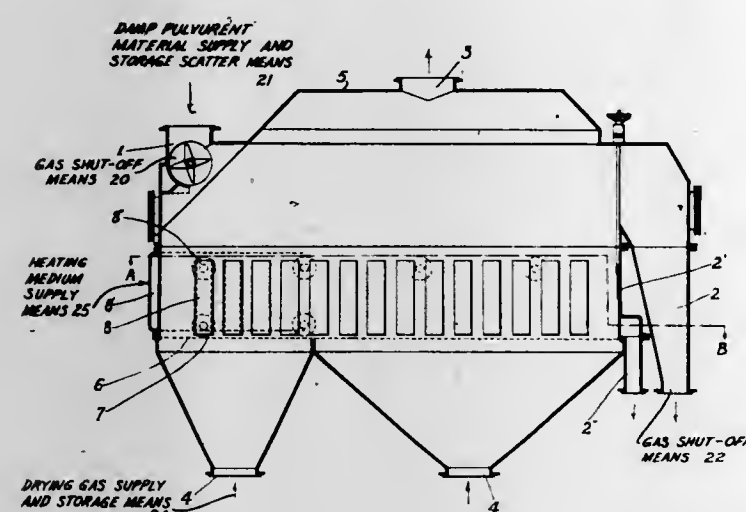
Int. Cl. F26b 17/16

U.S. Cl. 34—57 A

5 Claims

The disclosure is comprised to carry out heating and drying of pulverant materials efficiently and also

smoothen the flow of the powders thus dried, by installing heat exchanging means in a layer of a pulverant material fluidized by gas on a perforated plate in such a manner that a multiplicity of heat exchanging plates, hollow and corrugated in transverse section, are ar-



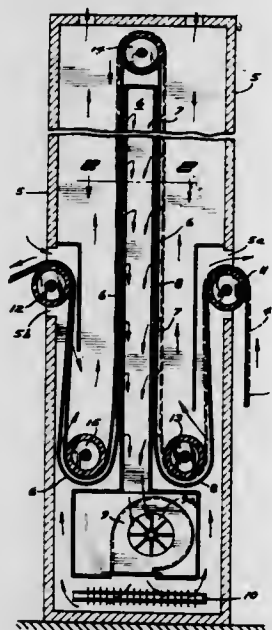
anged vertically in a longitudinal row and the pulverant material is fluidized among the hollow, transversely-corrugated heat exchanging plates without giving rise to any dead-angle space in which the fluidized powder may be kept from the contact with the gas by the configurations of the heat exchanging plates.

**3,609,875
DRYER FOR PROCESSED PHOTOGRAPHIC PAPER
AND METHOD OF TRANSPORTING PAPER
THERE THROUGH**

Norman C. Reid, Minneapolis, Minn., assignor to
Pako Corporation, Minneapolis, Minn.
Filed June 6, 1969, Ser. No. 831,017
Int. Cl. F26b 13/06

U.S. Cl. 34—159

4 Claims



The invention disclosed herein relates to a dryer for processed photographic paper and particularly to a dryer having a warm air circulating system which includes a hollow upstanding vacuum stack over which the paper to be dried travels (up one side and down the other) and into which the drying air is drawn by the intake of a circulating blower, the stack being provided with a

plurality of vent openings and paper engaging spacer and retarding elements to keep the paper spaced from said vents, the vent openings being designed so that the velocity of the air traveling into the stack is greater than the velocity of the moving air outside the stack to hold the paper against the spacer elements and frictionally retard the free end of the web at the end of each roll of paper to positively prevent said free end from falling away from the stack as it descends on the down side thereof.

**3,609,876
METHOD FOR DRYING A WET COATING
ON A SURFACE**

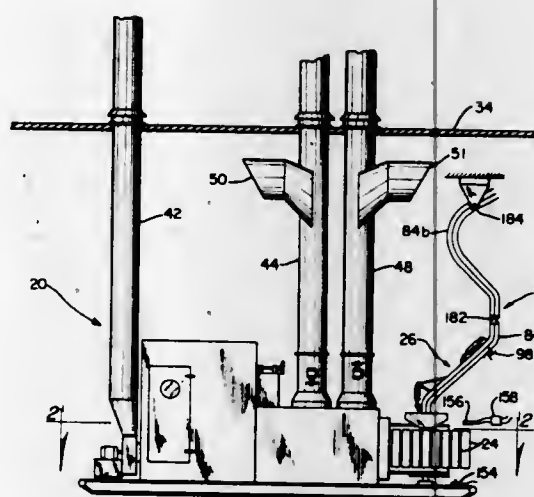
Erwin Bachrach, Denver, and Dan A. Gabrielson, Lakewood, Colo., assignors to Alpine-Western, Inc., Golden, Colo.

Original application Sept. 13, 1967, Ser. No. 667,705, now Patent No. 3,438,138. Divided and this application Feb. 24, 1969, Ser. No. 844,679

Int. Cl. F26b 19/00

U.S. Cl. 34—17

9 Claims



A process of removing solvent from a wet coating on the inside surface of a can body, such as a beer can, characterized by conveying the can body through a zone of heated air and passing high velocity air through the can body to remove solvent driven to the surface, the rate of solvent removal being so controlled to prevent premature drying or crusting of the wet surface which might subsequently be ruptured by remaining solvent therebeneath driven toward the surface. The cans are continuously conveyed across stationary air stream delivery stations and, since the air streams are of relatively high velocity tending to move the cans, they are restrained against such movement away from predetermined positions of orientation in their path of travel. As compared with prior art methods, the drying is effected within a considerably smaller space and with reduced residence time in same.

ERRATUM

For Class 34—99 see:
Patent No. 3,609,879

**3,609,877
EDUCATIONAL APPARATUS**
Harold Weinstein, 1820 Avenue V,
Brooklyn, N.Y. 11229

Filed Apr. 6, 1970, Ser. No. 26,018
Int. Cl. G09b 1/10

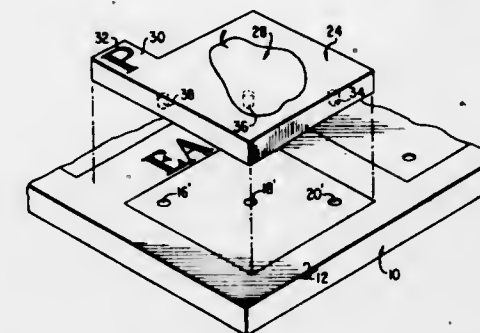
U.S. Cl. 35—9 R

5 Claims

Educational apparatus including a planar surface having groups of holes arranged in distinctive patterns. Adjacent each group of holes is indicia representing the incomplete name of a familiar object. A plurality of blocks

each carry an indicium for completing one set of indicia to form the name of a familiar object pictorially represented on the block. Pegs extend from the bottom surface of each block and match the pattern of one group of holes on the

the machine, a manually operable arrangement for moving the tape backwards and forwards and a switch mounted on the rear to turn the machine on whenever the child sits down.



planar surface so that if a correct association has been made between the indicium on one block and a set of indicia, the pegs on the block will fit into the holes indicating that a correct selection has been made.

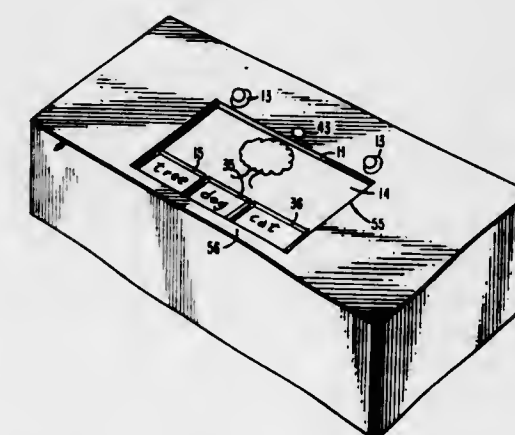
**3,609,878
TEACHING MACHINES**
Martin L. Bender, 384 Prospect Ave.,
Hackensack, N.J. 07601

Continuation-in-part of applications Ser. No. 131,515, Aug. 15, 1961, and Ser. No. 472,071, May 11, 1965. This application May 19, 1969, Ser. No. 830,573

Int. Cl. G09b 7/06

U.S. Cl. 35—9

75 Claims



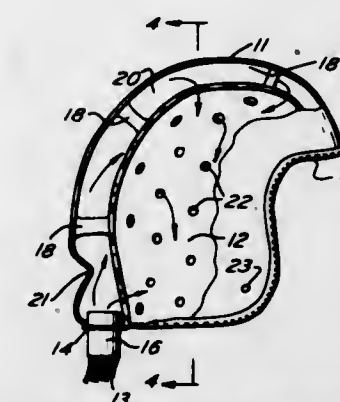
A teaching machine which is automatic and simple in operation and which, in one embodiment, provides a "reward" for a correct response and a "punishment" for an incorrect response. In one embodiment a series of frames on a tape, each comprised of an area posing a question and other areas with a number of answers to that question which can be chosen by the child, are presented sequentially and automatically to the child via a viewing window. The reward may be the automatic movement of the tape to a new position presenting a new question and a plurality of responses and the punishment the pressing of a reset button after each incorrect response. The response to the question can be made by pressing an appropriate button or transparent area or by audibly giving the answer, and either response causing the disclosed control circuit to perform the reward-punishment functions. Audio accompaniment for the tape and a control circuit for causing the tape to automatically present again a question to which the child made the incorrect response either with the same audio track or another audio track, are also disclosed. Other features include methods of using the tape, which has words extending along its length with multiple choices in certain locations, a cartridge tape which does not need to be manually threaded through

**3,609,879
HAIR DRYER BONNET**
Raymond Lewis Hanisco, Lansdale, Pa., assignor to Proctor-Silex Incorporated, Philadelphia, Pa.
Continuation of application Ser. No. 759,176, Sept. 11, 1968. This application June 1, 1970, Ser. No. 41,729

U.S. Cl. 34—99

Int. Cl. A54d 20/18

4 Claims



A self-supporting inflatable hair dryer bonnet of flexible material that in use does not require draw strings, elastic bands, chin straps or a support frame to maintain it on the head of the user. The bonnet is adapted to engage the frontal portion of the head of the user and freely exhaust expended air from its interior into the atmosphere through a loose fit that is maintained about the facial, neck and shoulder areas of the user. The bonnet is readily adjustable to accommodate various size heads.

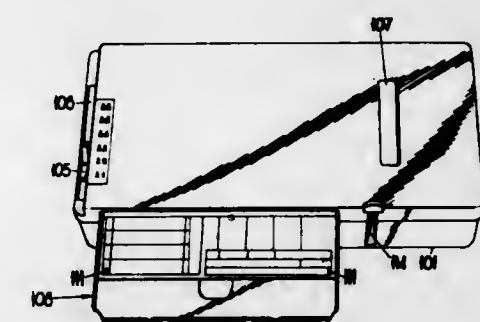
**3,609,880
IMPROVEMENTS IN OR RELATING TO DATA
PROCESSING DEVICES**
Robert Stanley Arbon, Watford, England, assignor to Structural Communication Systems Limited, London, England

Filed Oct. 14, 1969, Ser. No. 866,194
Claims priority, application Great Britain, Oct. 15, 1968, 48,939/68

Int. Cl. G09b 7/08

U.S. Cl. 35—9 R

13 Claims



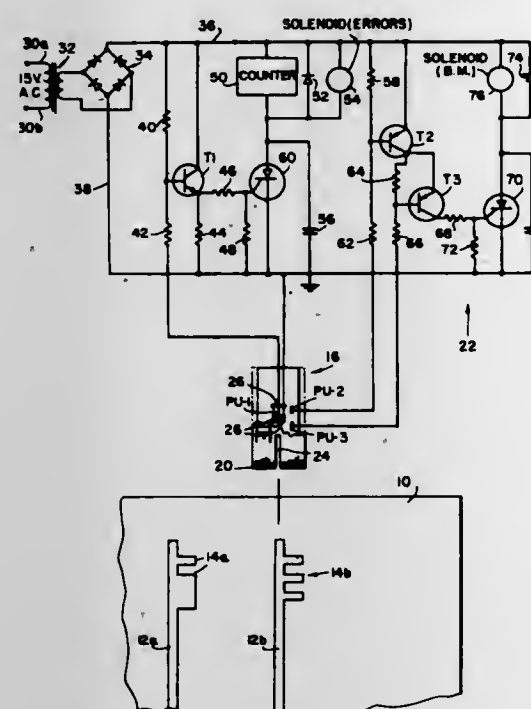
A data processing device having particular application as a teaching machine. A data card contains pre-punched control data for one question and a pre-scored response data field in which the student records an attempt at the question. This is done in a separate cardholder which identifies the pre-scorings with information items of an associated text. Having "punched" out a response the student inserts the card in the processor and operates an assessment lever. A control carriage scans the control data making a series of tests on the response attempt. An address for remedial or next-question information results from the overall assessment of the response attempt on the basis of the series of tests.

3,609,881

APPARATUS FOR TEACHING SEWING
Robert M. Green, Woodbury, N.Y., assignor to Industrial Teaching Systems Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,611
Int. Cl. G09b 25/02

U.S. Cl. 35—13

10 Claims



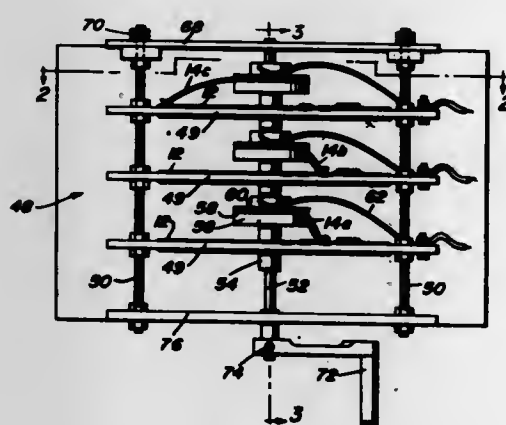
A method and apparatus for training sewing machine operators and for evaluating their performance includes paper sewing exercises of increasing difficulty and sensing apparatus for automatically monitoring the exercise to detect and record all errors made by the trainee. The apparatus automatically records the number of errors made, the location in the exercise of each error and the rate at which each significant portion of the exercise is performed. By analyzing the number, location, and frequency of various types of errors and the time required to perform each exercise, the present method and apparatus permits an instructor to guide an operator's training and evaluate a trainee's performance and abilities.

3,609,882

PHASE ANALYZING EDUCATIONAL AID
Andrew I. Muir, Rte. 1, Box 15A,
Coos Bay, Oreg. 97420
Filed July 9, 1969, Ser. No. 840,303
Int. Cl. G09b 23/18

U.S. Cl. 35—19 A

9 Claims



A multiple potentiometer assembly connected to a D.C. source of voltage and operating to generate plural

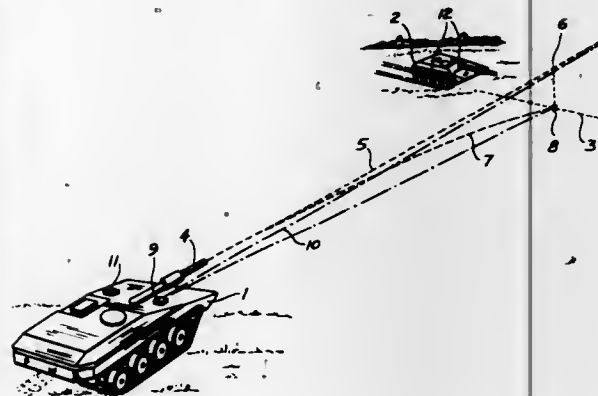
sinusoidal waveforms having a preselected phase relation. The output of each generating potentiometer is connected to a D'Arsonval movement which indicates the sinusoidal fluctuation. Also, the generator output is connected to separate switch means which become separately gated during positive and negative cycle portions. Indicating lamps provide visual indication during these cycle portions. Switch means are connected to the waveform generator to effect a rectified output when desired.

3,609,883

SYSTEM FOR SIMULATING THE FIRING OF A WEAPON AT A TARGET
Rune Torsten Isidor Erhard, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Dec. 23, 1969, Ser. No. 887,516
Int. Cl. F41g 3/26

U.S. Cl. 35—25

1 Claim



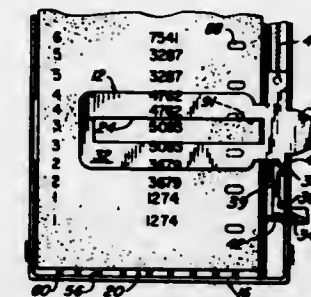
The invention concerns a system for simulating the firing of a weapon, in particular a weapon mounted on a movable weapon carrier, at a target, particularly a moving target. The simulator system includes a radiation transmitter for emitting a narrow beam of optical radiation, which is mounted on or coupled to the weapon so as to follow the aiming movements of the weapon in azimuth and elevation. The transmitter comprises a mirror or some similar optical member determining the emission direction of the transmitter and this mirror is rotatable so that the emission direction can be moved in azimuth as well as in elevation by corresponding rotation of the mirror. Before the instant when the firing of a projectile with the weapon at the target is simulated, the mirror is locked in a predetermined position such that the emission direction of the transmitter is parallel to the direction of fire of the weapon. At the instant of a simulated firing of a projectile this locking is released and the mirror becomes gyro-stabilized so as to be independent of any subsequent movements of the weapon. In its gyro-stabilized unlocked state the mirror is also coupled to a servomotor for rotation of the member in a direction causing a change of the emission direction of the transmitter in elevation. A computer unit in the system computes the proper gravity correction angle or superelevation angle of the weapon for the firing of a real projectile at the target and produces a signal proportional to this computed gravity correction angle. This signal is supplied to said servomotor so that the gyro-stabilized emission direction of the radiation transmitter is lowered in elevation through an angle equal to the computed gravity correction angle. The computer unit computes also the time of flight to the target for a real projectile and after a time interval equal to said computed time of flight after the instant of the simulated firing of a projectile the computer unit activates the radiation transmitter to emit a short pulse of radiation. On the target radiation sensitive receiving means are provided for detecting any radiation pulses received at the target from the radiation transmitter on the weapon.

3,609,884
FLASH RECOGNITION READING DEVICE WITH COMPARISON MEANS

Steven A. Warren, 480 Saundef's Road,
Lake Forest, Ill. 60045
Filed Mar. 21, 1969, Ser. No. 809,191
Int. Cl. G09b 17/04

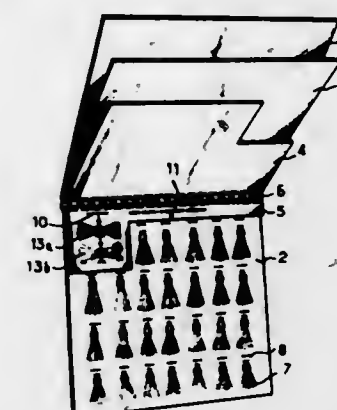
U.S. Cl. 35—35 B

5 Claims



A tachistoscopic device for use with a sheet of symbols to be recognized when momentarily exposed. The device includes a frame having a symbol viewing window, and a shutter is movable past the window to momentarily expose the symbol to be viewed. The sheet of symbols preferably includes a plurality of sets of symbols, each set including a symbol to be viewed and an evaluation symbol to be compared therewith. A latching mechanism is provided for releasably retaining the shutter in a comparison position exposing the evaluation symbol of a set of symbols after the viewable symbol has been exposed.

may be obtained with any of a group of products, and intermediate sheets, each carrying a natural hair color

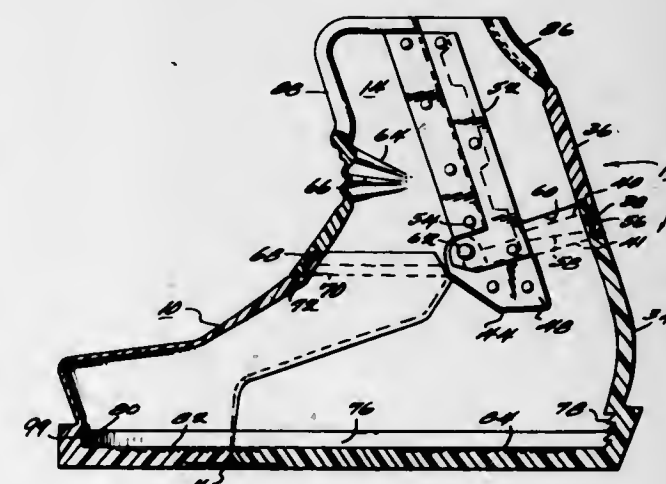


3,609,887

SKI BOOT CONSTRUCTION
Horst R. Hickmann, Cincinnati, Ohio, and Franz Herunter, Vienna, Austria, assignors to Head Ski Company, Inc., Timonium, Md.
Filed Mar. 18, 1970, Ser. No. 20,695
Int. Cl. A43b

U.S. Cl. 36—2.5 AL

13 Claims



A ski boot construction including a flexible inner boot portion separable from an outer boot portion. The outer boot comprises substantially rigid toe and heel shells hinged together and a closure member hinged to the heel shell. Buckles and clasps are provided so that the shells and the closure may be fastened in a unitary structure about the inner boot. Cooperating means are provided in the interior of the outer boot and the exterior of the inner boot to lock the inner boot with respect to the outer boot. The locking means includes a longitudinal recess in the outer boot which is formed to receive the molded sole of the inner boot, and mating serrations which are provided on the inner and outer boots within the recess and at the heel area of the boots.

3,609,886

FOLDER FOR DETERMINING IN ADVANCE THE EFFECT WHICH A COLOR-CHANGING PRODUCT WILL HAVE ON NATURAL HAIR

André Vincent Vien, Villeneuve le Roi, France, assignor to L'Oreal, Paris, France
Filed Aug. 28, 1969, Ser. No. 853,660
Claims priority, application France, Oct. 10, 1968, 169,336

Int. Cl. G09f 5/04

U.S. Cl. 35—59

6 Claims

Folder for determining in advance the effect which a color-changing product will have on natural hair comprising a back cover sheet carrying all the colors which

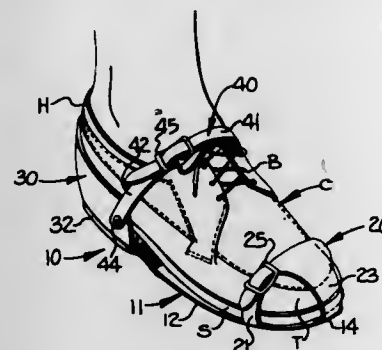
3,609,888
BOWLING OVERSHOE
Jimmy G. Rickman, 128 Castle Rock Drive, Rte. 3,
West Asheville, N.C. 28806
Filed Feb. 13, 1970, Ser. No. 11,209
Int. Cl. A43b 3/10

U.S. Cl. 36—7.5

4 Claims

A bowling overshoe for wearing over conventional shoes characterized by providing a slipping surface and a braking surface. The bowling overshoe comprises a sole

portion providing a floor engaging surface having a relatively low coefficient of friction, a toe portion for supporting the toe of a conventional shoe, a heel portion for supporting the heel of the conventional shoe and providing a floor engaging surface having a relatively high coefficient



of friction, and a strap portion for securing the bowling overshoe in operative position on the conventional shoe. The floor engaging surfaces cooperate so that a bowler may slide freely and easily upon the sole portion while controlling and braking the slide by the heel portion.

3,609,889 SPIKED GOLF SOLE

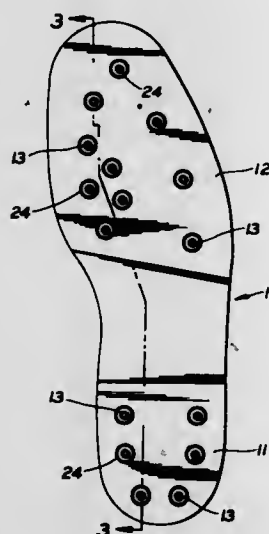
Timothy D. Calvin, Akron, and Edward Gulbis, Barberton, Ohio, assignors to Bearfoot Corporation, Wadsworth, Ohio

Filed July 14, 1969, Ser. No. 841,378

Int. Cl. A43c 15/00

U.S. Cl. 36—67 R

13 Claims



An elastomeric golf shoe sole having frusto-conical spikes of titanium-coated aluminum oxide with their bases molded into the sole and their tapered end portions projecting therefrom, the sole surface areas surrounding said projecting portions being relieved so as to transfer flexing caused by forces applied to said projecting portions radially outward thereof, said spikes being bonded to said elastomeric material by a combination of compatible cements which when subjected to molding heat make a permanent bond between the titanium coating of the spikes and the elastomeric material.

3,609,890 ELECTRIC STEAM IRON

Carlos Solomon Abraham, Bellario Dominquez 64-409, Mexico City 1, Mexico

Filed Dec. 12, 1969, Ser. No. 884,532

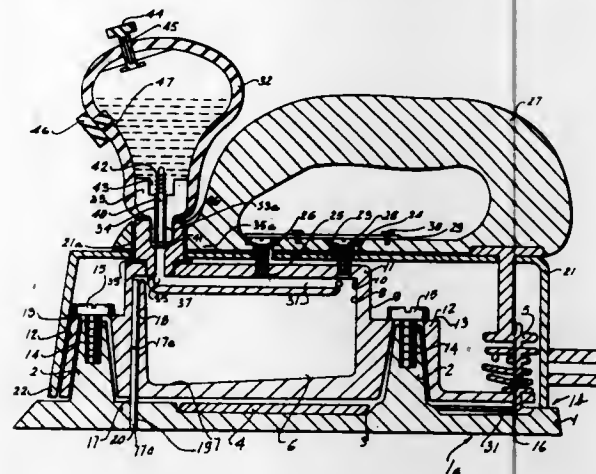
Int. Cl. D06f 75/06

U.S. Cl. 38—77.83

24 Claims

A vaporizing chamber for the production of steam communicates, on the one hand, with the ironing surface of a

metallic slab and, on the other hand, with a water-containing flexible reservoir operative to supply a predetermined amount of water to the vaporizing chamber in response to exterior pressure exerted on the reservoir. The reservoir comprises interacting first and second valves with the first valve movable between an open and a closed position for establishing and interrupting communication between the interior of the reservoir and the ambient temperature, and



with the second valve operative to normally close the passage between the reservoir and the vaporizing chamber but permitting seepage of water when the first valve is open, and operative to fully open the passage between the reservoir and the vaporizing chamber in response to compression of the former with the first valve in closed position. A removable plug on the reservoir permits easy refilling of the same.

3,609,891 METHOD AND APPARATUS FOR PRESSING OF TEXTILE FABRIC CONTINUOUSLY

Kazutomo Ishizawa, Osaka-shi, Akira Fukuoka and Akiyoshi Kawabata, Tokyo, and Yasunori Nagata and Yoshiaki Uematsu, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

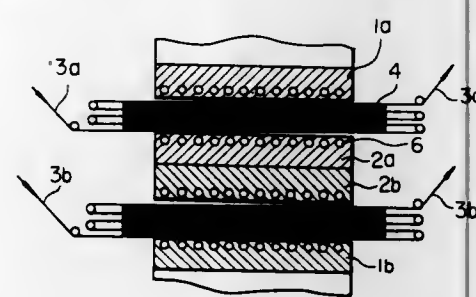
Filed Dec. 19, 1969, Ser. No. 886,413

Claims priority, application Japan, Dec. 29, 1968, 44/96,481

Int. Cl. D06f 71/00, 73/00

U.S. Cl. 38—17

15 Claims



An improved method and apparatus for carrying out the continuous pressing of textile fabrics without creating "pressing belt marks" upon the fabrics. During the pressing operation, the intermediate portions of the particular length of fabric being pressed is pressed under a uniform high temperature while the end portions of the length of fabric are subjected to a decreasing temperature gradient progressively decreasing from the temperature of the intermediate portion to a much lower temperature. The end portions of each length of fabric are then similarly reheated during the next pressing cycle and the cumulative heating and pressing of the end portions substantially equals that applied to the intermediate portion so that no "belt marks" are created. Several different means for heating the pressing plates of the invention are illustrated.

3,609,892 TELESCOPING IRONING BOARD

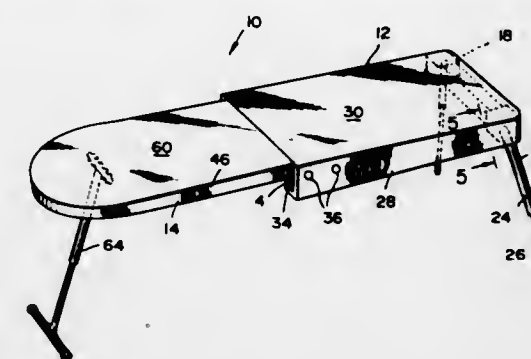
Arlene L. Calre, 305 E. 40th St., New York, N.Y. 10016

Filed Aug. 22, 1969, Ser. No. 852,258

Int. Cl. D06f 81/00, 81/02

U.S. Cl. 38—138

9 Claims



The invention comprises an extensible ironing board in which a plurality of sections are telescopically stored one within the other. Latched means is provided at the side of a fixed section of the telescopically extensible board to permit the expansion of the sections and to hold the expanded section in rigid relationship with the fixed section. Legs are provided to elevate the telescopically expanded portions to permit a continuity of flat surface over the various extended sections of the ironing board top.

3,609,893 ADVERTISING AND DISPLAY HOLDER

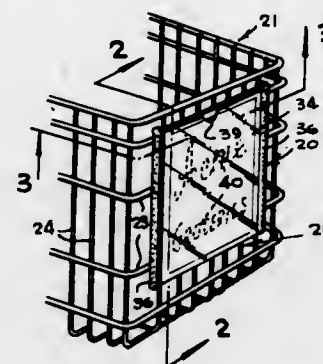
William S. Routzahn, 614 Marshall Road, Glen Burnie, Md. 21061, and Denis S. Moeser, 1301 Centerville Ave., Belleville, Ill. 62231

Filed Aug. 13, 1969, Ser. No. 849,662

Int. Cl. G09f 3/18

U.S. Cl. 40—10 R

1 Claim



An advertising holder for mounting on shopping carts wherein advertisements, printed matter and the like can be conveniently displayed and mounted on shopping carts, and wherein there is provided a means for mounting the device on a shopping cart so that the printed matter can be readily observed or viewed. In addition, there is provided resilient bumpers for the device.

3,609,894 FLEXIBLE BANNER DISPLAY

Harmon B. Miller III, Atlanta, Ga., assignor to Miller-Zell, Inc., Atlanta, Ga.

Filed Sept. 4, 1969, Ser. No. 855,341

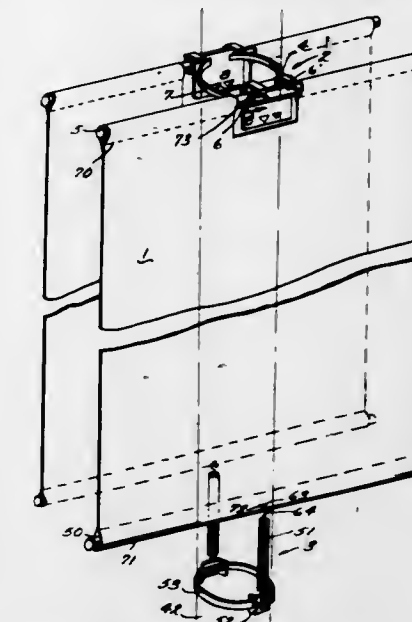
Int. Cl. G09f 7/18

U.S. Cl. 40—145 R

12 Claims

A display comprising a flexible banner hemmed or otherwise formed into tubes at spaced points along it, rods or the like being inserted through these tubes, a first

support clamped around and extending along one of the rods, and fastened to a pole in such a way as to prevent pivoting of the banner around the pole, and a second



support attached to both the pole and to the other rod which applies tension to the portion of the banner between the rods.

3,609,895 CREDIT CARDS

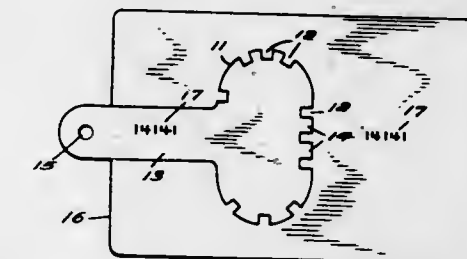
Nicholas Wyckoff, Rapid City, S. Dak. (6823 Avenida El Alba, Paradise Valley, Ariz. 85253)

Filed May 19, 1969, Ser. No. 825,710

Int. Cl. G09f 3/02

U.S. Cl. 40—2.2

2 Claims



This invention pertains to credit cards, each of which consists of at least two separable portions. The portions are irregularly shaped in a pre-selected manner to provide numerous combinations of interfitting parts so that it is possible to produce credit cards no two of which are duplicated.

3,609,896 DESK APPOINTMENT CALENDAR

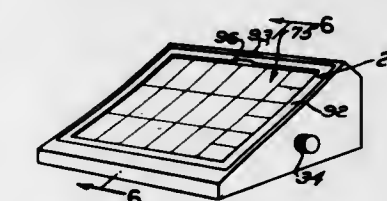
Joseph P. Hussar, Weymouth, Mass., assignor to Robert W. Pratt, Greene, R.I.

Filed Mar. 12, 1970, Ser. No. 18,840

Int. Cl. G09d 3/10

U.S. Cl. 40—117

5 Claims



A calendar having a permanent base with a motor and manual mechanism mounted therein and a disposable unit removably positioned in the base and carrying a pair of reels and a part of the driving mechanism therefor with a web of paper which may be written upon extending from one reel to the other, both of which reels are rotated in

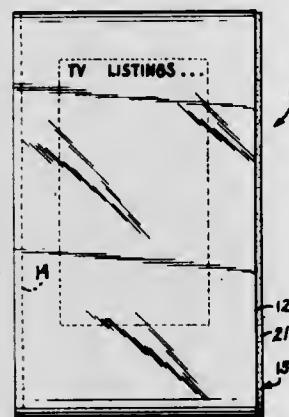
one direction or the other by either the manual or motor means in the base to wind the web in one direction or the other.

3,609,897 VIEWER FOR TELEVISION PROGRAM LISTINGS AND THE LIKE

William M. Bartlett, Minneapolis, Minn., assignor to Willis C. Butterfield and Edward M. Carlin, both of Minneapolis, Minn., fractional part interest to each
Filed May 28, 1969, Ser. No. 828,660
Int. Cl. G09f 11/24

U.S. Cl. 40—82

3 Claims



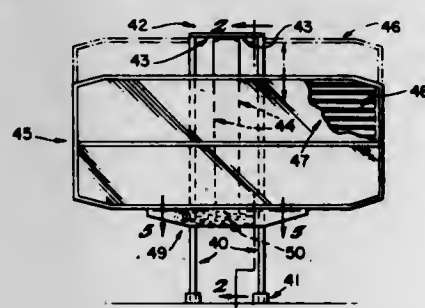
A viewer is disclosed that is constructed to store and display a roll-strip of television program listings and the like. The viewer is formed from spaced sheets of transparent plastic material connected along one edge and terminating in a cylindrical magazine that receives and enables the roll-strip to be forwarded to the space between the sheets.

3,609,898 VERTICALLY ADJUSTABLE SIGN

Donald W. Brown, 218 E. Curling Drive, Boise, Idaho 83702
Filed Apr. 29, 1968, Ser. No. 724,975
Int. Cl. G09f 7/18

U.S. Cl. 40—125 H

3 Claims



An outdoor advertising sign that can be vertically adjusted to change the display and incorporating a cable and winch mechanism for sign elevating, safety devices to prevent accidental lowering, and an internal illuminating means. Both single and double vertical pole signs employing several pole shapes are disclosed, as are several methods changing the position of the signboard.

3,609,899 DAY-NIGHT PRISM DISPLAY DEVICE

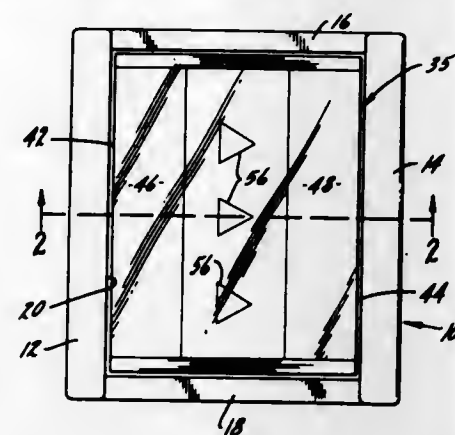
James C. Alexander, Crystal Lake, Ill., and Peter J. Van Benschoten, Rancho Santa Fe, Calif., assignors to Oak Electro/Netics Corp., Crystal Lake, Ill.
Filed Mar. 17, 1970, Ser. No. 20,211
Int. Cl. G09f 3/00

U.S. Cl. 40—331

10 Claims

An indicating device including an open-ended outer housing with light producing means within the housing. A cap is axially movable within the housing and covers the

light producing means. There are indicia bands along the inner sides of the housing and a reflecting surface adjacent each of the indicia bands for directing interior light to the indicia. The movable cap is transparent and includes prism areas. The indicia bands are illuminated both from the interior light source and from ambient light passing



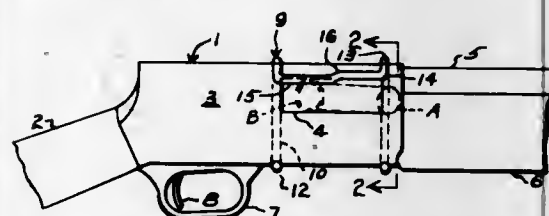
through the transparent cap. In one position of the cap the indicia bands will be visible at the exterior of the cap which is the image surface of the prism area. In the second position of the cap, in which it is positioned away from the indicia bands, there will be no indicia display at the cap outer surface.

3,609,900 RIMMED SHELL RESTRAINT

William Bernocco, Jr., 3555 Parker, Dearborn, Mich. 48124
Filed Aug. 11, 1969, Ser. No. 856,241
Int. Cl. F41c 27/00

U.S. Cl. 42—1 R

7 Claims



A device removably applicable to the receiver of a semi-automatic firearm, and movable thereon between a shell restraint position and a non-restraint position, and having a portion thereof disposed in the restraint position in close parallel proximity to the shell ejection slot of such a firearm, so that said portion obstructs a marginal area of the ejection slot to co-act with the lip or edge of the slot in said marginal area, to engage the rim of an ejecting shell and interrupt the ejection of said shell, and further having a section of said portion offset, and disposed to clear said ejection slot to afford manual extraction of the restrained shell.

3,609,901 OPERATING MECHANISM FOR EXPLOSION-OPERATED DEVICES

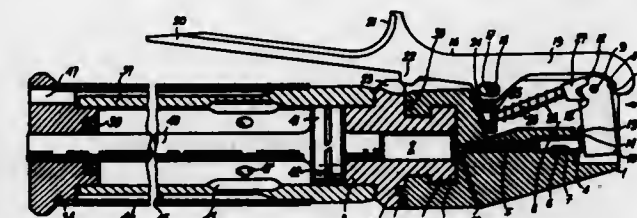
Augustin Necas, Praha, Czechoslovakia, assignor to Zbrojovka, narodni podnik, Brno, Czechoslovakia
Filed Mar. 21, 1969, Ser. No. 809,181
Claims priority, application Czechoslovakia, Mar. 25, 1968, 2,263/68
Int. Cl. F41c 19/00

U.S. Cl. 42—69 R

2 Claims

An operating mechanism for an explosion-operated device, such as, for example, an animal-slaughtering device. The control mechanism includes a breech body in which a firing pin is guided for longitudinal movement. A swingable hammer coacts with the firing pin to drive the latter when the hammer is released to the force of a driving

spring. The hammer itself is provided with a cocking tooth, and a catch tooth coacts with this cocking tooth to cock the hammer until the catch tooth releases the cocking tooth. This catch tooth forms part of a swingable operating lever which has an arm projecting laterally therefrom. A spring assembly is located between this lat-



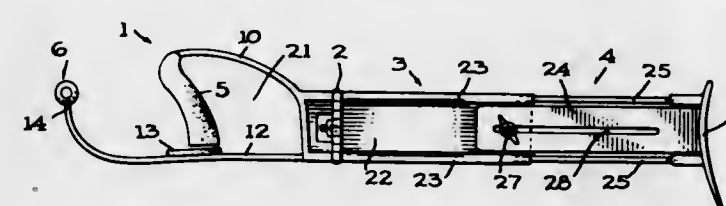
ter arm and the hammer and as a result of its compression between these components acts to maintain the catch tooth in engagement with the cocking tooth until the lever is turned to compress the spring assembly to an extent sufficient to drive the hammer. At this time, the catch tooth automatically moves away from the cocking tooth.

3,609,902 HANDGUN SUPPORT

Richard J. Casull, 3270 Del Mar Drive, Salt Lake City, Utah 84109
Filed Mar. 17, 1970, Ser. No. 20,373
Int. Cl. F41c 23/00

U.S. Cl. 42—72

10 Claims



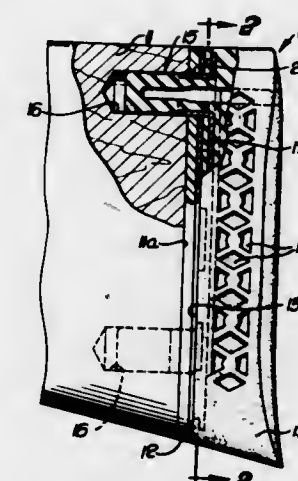
A handgun support is provided with a saddle member within which is cradled a gun grip while a steady rest is rigidly supported forward of the saddle to engage the gun immediately forward of the trigger guard. The operator's hand then grasps the gun grip and saddle to provide an interlocking of the gun and support.

3,609,903 RECOIL PAD WITH INTEGRAL ATTACHING BOSSSES AND METHOD OF MOUNTING

Frank A. Pachmayr, Los Angeles, and Jack R. Farrar, Whittier, Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.
Filed Mar. 13, 1970, Ser. No. 19,252
Int. Cl. F41c 23/00

U.S. Cl. 42—74

17 Claims



A firearm recoil pad having a rubber body is mountable to a gunstock by means of tubular rubber bosses receiv-

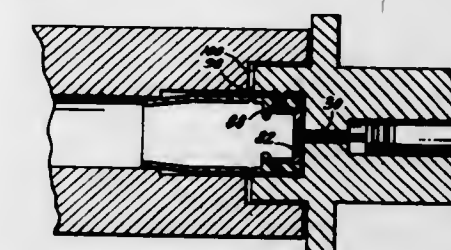
able within holes in the gunstock and radially deformable by movable rods extending through the pad body into the bosses.

3,609,904 EXTRACTABLE PLASTIC CARTRIDGE

John J. Scanlon, Monroe, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed May 7, 1969, Ser. No. 822,498
Int. Cl. F42c 21/12; F42b 5/30

U.S. Cl. 42—76

2 Claims



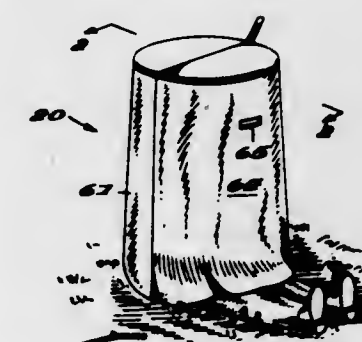
A portion of a deformable cartridge casing is permanently deformed by the explosive gas pressure of the cartridge at firing to form rim means on the outer periphery thereof. This rim means can be utilized to function as a positive gas seal, to extract the cartridge from the chamber, depending on the recess into which the rim is deformed, and/or to prevent the cartridge casing from being explosively expelled from the chamber.

3,609,905 HUNTER'S BLIND

Michael J. Fuhrman, 409 Euclid Ave., Lorain, Ohio 44052, and George Y. Miller, 458 Sunset Drive, Amherst, Ohio 44001
Filed Aug. 1, 1969, Ser. No. 846,827
Int. Cl. A01m 31/02

U.S. Cl. 43—1

6 Claims



A portable hunter's blind which completely encompasses the upper torso of the hunter and is strapped to his body so as to be carried easily from place to place. The blind includes a drop front which can be lowered when shooting and is arranged with the hunter in a seated position with the blind giving the appearance of a stump or other non-human form. The blind is formed of tubular lightweight material covered with a cloth of a nature which permits the hunter visibility while not permitting him to be seen by the hunted game.

3,609,906 SOLID FERRULE CONSTRUCTION

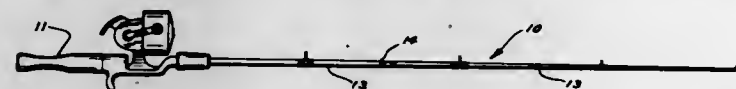
Paul C. Johnson and Thomas E. Grein, Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Feb. 7, 1969, Ser. No. 797,527
Int. Cl. A01k 87/02

U.S. Cl. 43—18 GF

4 Claims

A fishing rod having a flexible shaft tapering continuously from the butt end to the tip end and comprising a plurality of individual segments coupled together by means of coupling ferrules. The individual ferrules are formed

to have a prong portion extending from the forward end of the rod segment, the exterior contour and dimensions of the prong portion substantially matching the contour and dimensions of the inner wall of the segment to receive the prong portion; the flexural characteristics of the ferrule being substantially the same as those of the individual



shaft segments. The prong portion is solid, resilient, and compressible, and is in the form of a tapered plug of generally frusto-conical form, with an outer diameter providing an interference fit with the inner diameter of the shaft segments, when the prong is inserted at its final insertion depth.

3,609,907

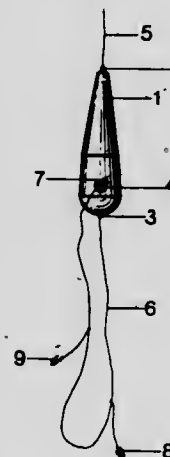
CASTING FLOAT FOR FLY FISHING

Sondre Wiig, 25 Dyrefaret, 1340 Bekkestua, Norway
Filed Jan. 16, 1969, Ser. No. 791,734
Claims priority, application Norway, Jan. 20, 1968, 247/68

Int. Cl. A01k 93/00

U.S. Cl. 43—43.15

3 Claims



A sport fishing casting float for fly fishing comprises a tear-drop shaped buoyant body provided with one attachment for the fishing line and one for the leader whose free end has a fly in the form of a steel hook attached thereto. The buoyant body is furnished with a releaseable attachment means for the fly, the attachment means being in the form of a magnetic body able to hold the steel hook with appropriate attractive force. Release of the fly is effected by reeling in the line.

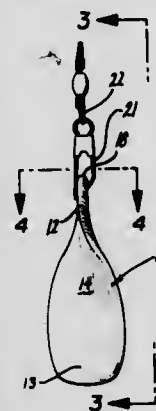
3,609,908

FISHING LINE SINKER

Lloyd J. Martin, 764 S. 5th St., 2, Elko, Nev. 89801
Filed Dec. 18, 1969, Ser. No. 886,219
Int. Cl. A01k 95/00

U.S. Cl. 43—44.97

2 Claims



A fishing line sinker having a relatively narrow flattened leading end portion and a relatively broad flattened trailing end portion and a smooth continuously twisted curved

midsection disposing the end portions in substantially perpendicular-related planes and having a surface configuration and mass distribution providing automatic gravitational orientation of the body to a stable rest position with the leading end portion disposed in a substantially vertical plane for swivel threading action through narrow crevices which would otherwise foul the sinker.

3,609,909

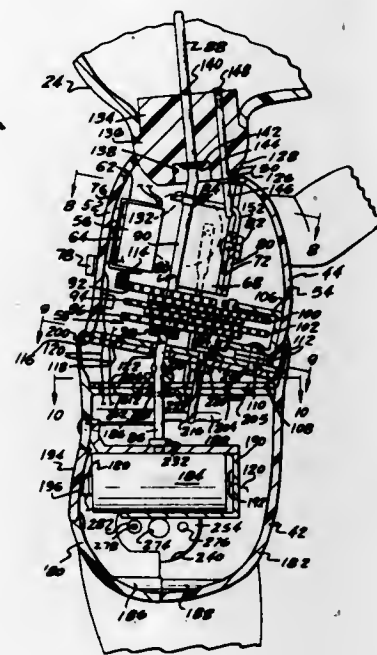
ANIMATED DOLL

Robert Gardel, New York, N.Y., and Egon Gorsky, Westfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 16, 1969, Ser. No. 866,953

Int. Cl. A63h 11/14

U.S. Cl. 46—150

12 Claims



A doll having animated torso, leg, arm and head movement. The torso is comprised of an upper and lower portion the upper portion of which gyrates with respect to the lower portion. The arms and the head of the doll move as the torso of the doll gyrates. The legs are adapted to move the doll as the movement of the torso shifts the weight of the doll from one leg to the other leg.

3,609,910

TOY VEHICLE, PARTICULARLY A MODEL LOCOMOTIVE

Wolfgang Richter, Nuremberg, Germany, assignor to Ernst Paul Lehmann, Patentwerk, Nuremberg, Germany

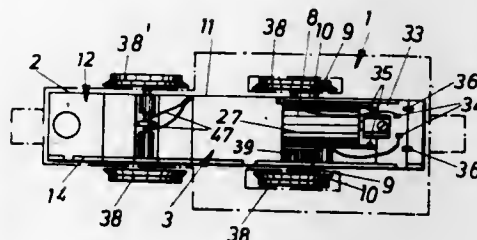
Filed Dec. 27, 1968, Ser. No. 787,473

Claims priority, application Germany, June 26, 1968, P 17 03 670.3

Int. Cl. A63h 19/10

U.S. Cl. 46—243 M

10 Claims



A toy vehicle, particularly a model locomotive, having a driving motor associated with a gearing, including in

the vehicle chassis a mounting block, forming a self-contained housing for the gearing and serving as a supporting frame for the motor, and closed by a detachable side panel containing the bearings for one end of the axle pins of gearwheels.

3,609,911

FLEXIBLE LIMB FOR A CHILD'S DOLL

Wilhelm Hanf, Viernheim, and Gunther Wilbring, Leutershausen, Germany, assignors to Firma Schildkrot AG, Mannheim-Neckarau, Germany

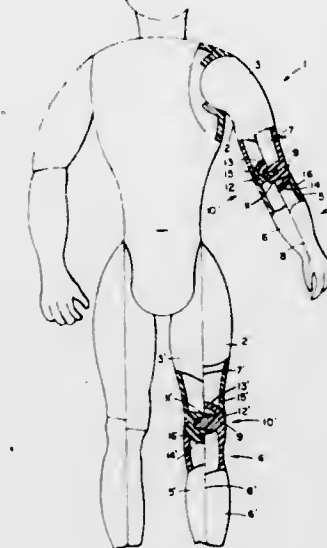
Filed Apr. 16, 1969, Ser. No. 816,760

Claims priority, application Germany, Apr. 18, 1968, P 17 03 214.3

Int. Cl. A63h 3/46

U.S. Cl. 46—163

19 Claims



A doll's limb featuring a movable joint therefor capable of being assembled in an axial direction and limb halves comprising a plurality of rigidly interconnected members, one of which members forms the joint element for its respective limb portion while another member axially encloses the member carrying the complementary joint element for the other limb half in such a manner that the joint forming elements cannot be disassembled in an axial direction.

3,609,912

BOGIE FOR VEHICLES OF TOY AND MODEL RAILROADS

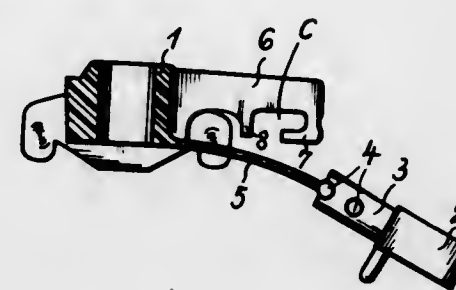
Max Ernst, 14 Lohengrinstrasse, 85 Nuremberg, Germany
Filed July 28, 1969, Ser. No. 845,172

Claims priority, application Germany, Aug. 9, 1968, P 17 03 993.9

Int. Cl. A63h 19/18

U.S. Cl. 46—216

2 Claims



A bogie for vehicles of toy and model railroads with a movable coupling part which is insertable into the coupling bearing and with a spring for holding the movable coupling part in its central position, said coupling part and said spring member forming a single piece with

the bogie and being made of synthetic material, while the coupling part, the coupling bearing and the spring member are so designed and arranged that the coupling part will spring into the coupling bearing in response to the tensions of the spring member.

3,609,913

MAGNETIC MEMORY CONTROL

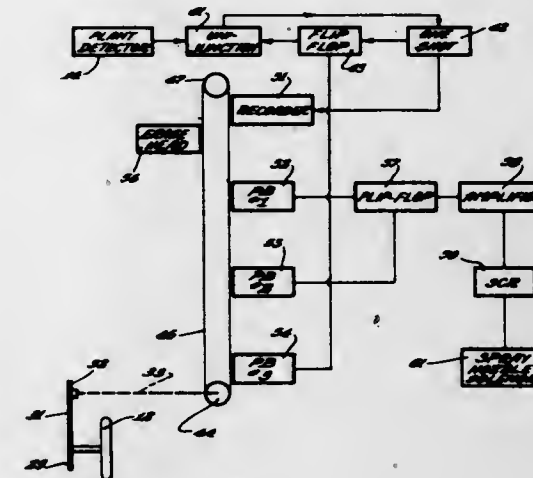
Gilbert M. Rose, Nampa, Idaho, assignor to International Electric Fence Company Inc., Albert Lea, Minn.

Filed July 24, 1969, Ser. No. 844,555

Int. Cl. A01b 41/00

U.S. Cl. 47—1.43

6 Claims



An agricultural machine which is moved along the ground over a row of plants and which has a plant detecting means for sensing the presence of plants and which controls a herbicide sprayer so as to selectively destroy plants in the row. An electronic control system detects the output of the plant detecting means and controls the herbicide sprayer to allow selective spacing of the plants.

3,609,914

GATES

Bernard Berl, Paris, France, assignor to Etablissements Georges Klein

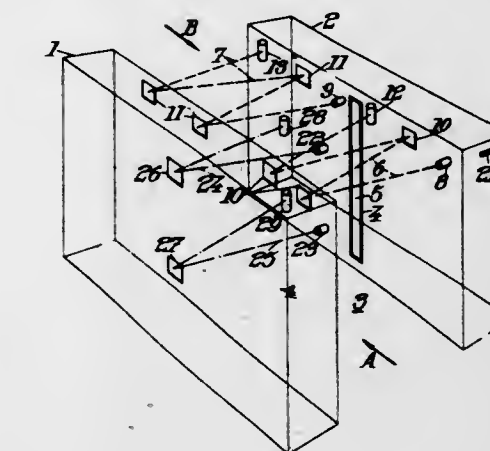
Filed Sept. 5, 1969, Ser. No. 855,551

Claims priority, application France, Sept. 6, 1968, 165,263

Int. Cl. E05f 15/20

U.S. Cl. 49—35

18 Claims



Apparatus of the free passage gate type for providing access through passages at which payment is to be made. The passage is constituted by a space between two boxes which carry gate members adapted to close the passage,

and a circuit is provided for operating the gate. This circuit is arranged so as to leave the gate open when a user has obtained a ticket for entry, and to close the gate when a user tries to pass without having obtained this right of entry, and to leave the gate closed when at least one user, not having paid, is in the passage and one user is getting his own ticket, the gate remaining closed until the passage is vacated.

3,609,915

REMOVABLE WINDOW SASH

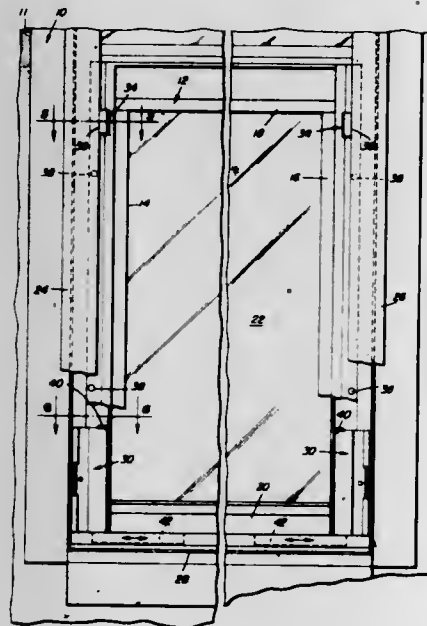
Thomas J. Metzger, 1720 2nd St. SE.,
Moultrie, Ga. 31768

Filed Nov. 24, 1969, Ser. No. 879,184

Int. Cl. E05d 13/08

U.S. Cl. 49—451

10 Claims



A slidable window sash removable from a window frame for purposes of cleaning and repair. The sash is maintained in alignment with, and guided in the frame, by a pair of removable camming guides positioned at the lower corners of the sash and a pair of spring-loaded restraining guides positioned near the upper corners of the sash. Removal of the window sash is accomplished by manipulating the camming guide and the restraining guide on one side of the window sash. The camming guides further serve the function of holding the window sash in any desired vertical position relative to the window frame.

3,609,916

APPARATUS FOR TREATING SURFACES OF SHIPS' HULLS OR THE LIKE

Paul Hammelmann, 17 Zum Sundern,
474 Oelde, Westphalia, Germany

Filed Mar. 26, 1969, Ser. No. 810,738

Claims priority, application Germany, Oct. 24, 1968,
P 18 04 806.7

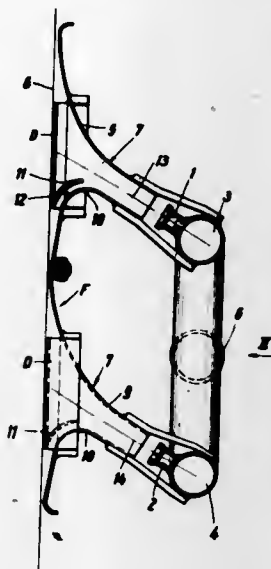
Int. Cl. B24c 3/06

U.S. Cl. 51—8

18 Claims

A cleaning apparatus for surfaces of ships' hulls or the like wherein one or more working nozzles discharge jets of highly pressurized water through intercepting nozzles which direct the jets against the surface to be cleaned in such a way as to create therein suction which counteracts the reaction forces and causes rollers or like distancing elements of the apparatus to bear against the surface and to maintain the latter at a predetermined minimum distance from the outlets of the intercepting nozzles. A turbine which is driven by pressurized water can be employed

to drive a distributor for one or more jets of granular material which impinge against the surface to be treated in the interior of a large intercepting nozzle and to re-



bound into the jets of pressurized water to be thereby propelled for the second time against the surface in order to assist the cleaning action of water.

3,609,917

WORK HANDLING AND REGULATING WHEEL FOR CENTERLESS GRINDER

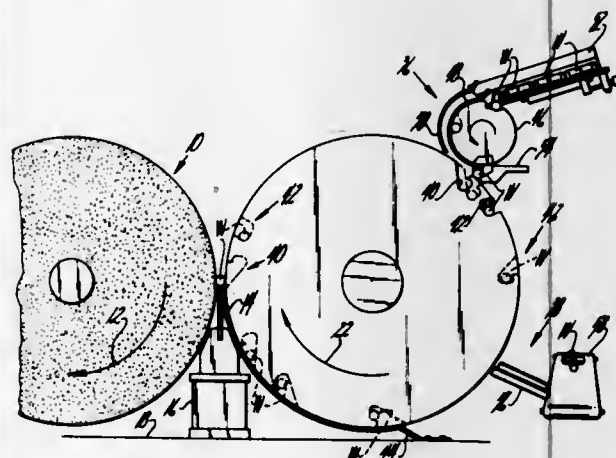
Rudolph A. Mattson, Springfield, and Frederick F. Groll,
West Springfield, Mass., assignors to Universal American Corporation, Springfield, Mass.

Filed Jan. 16, 1969, Ser. No. 791,689

Int. Cl. B24b 5/18

U.S. Cl. 51—103 WH

5 Claims



A centerless grinder has a grinding wheel and associated work regulating wheel for urging the workpiece being ground against the periphery of the grinding wheel, and a work rest blade between these wheels for supporting the workpiece as it is ground. The regulating wheel has a peripheral insert which defines an infeed notch for carrying one workpiece to the work rest blade and an outfeed notch for carrying the preceding workpiece away from said plate at least once per revolution of the regulating wheel. The workpieces are fed serially in timed relationship into the infeed notch at a station adjacent the upper surface of the continuously rotating regulating wheel, and are released from the outfeed notch at a station adjacent the lower surface of the regulating wheel.

3,609,918

SPHERE GRINDING AND POLISHING APPARATUS

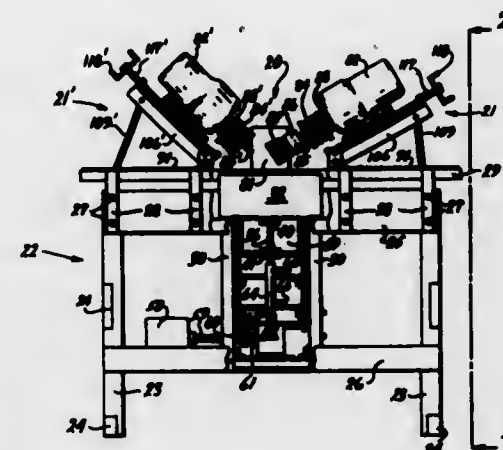
Harold F. Hillman, Wa Keeney, Kans. 67672

Filed Mar. 9, 1970, Ser. No. 17,527

Int. Cl. B24b 11/02

U.S. Cl. 51—117

6 Claims



Grinding, lapping, and smoothing apparatus to produce a precision spherical object. The apparatus generally comprises a work piece holding and grit applying station and a pair of grinding stations mounted on a supporting frame. The work piece station is centrally disposed within the supporting frame and includes a rotatable, spring relieved, grit application pan which can be elevated with respect to the frame. Each grinding station has a spring relieved grinding head assembly which is laterally, longitudinally, and tiltably movable with respect to the work piece station.

3,609,919

BUFFING MACHINE FOR FLEXIBLE MATERIAL SUCH AS LEATHER

Cornelius van Dorst, Rijen, Netherlands, assignor to
Badische Maschinenfabrik G.m.b.H., Karlsruhe-Durlach, Germany

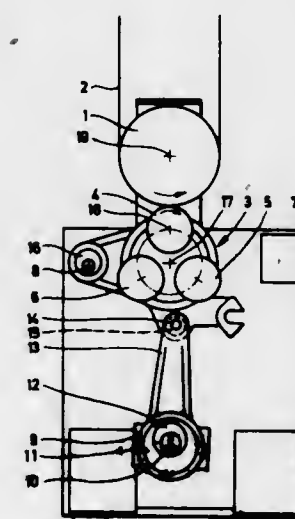
Filed Jan. 16, 1970, Ser. No. 3,376

Claims priority, application Netherlands, Jan. 20, 1969,
6900944

Int. Cl. B24b 21/00

U.S. Cl. 51—139

10 Claims



A buffing machine for flexible material, such as leather, having one or more buffing rolls or one or more rolls providing with buffing belts or strips, at least one remote con-

trollable counter pressure roll, and a plurality of counter pressure rolls arranged on a carrier with a counter pressure roll which is disposed opposite the buffing roll co-operating with the buffing roll and being adapted to be put into an adjustable working position or displaced out of the working position.

3,609,920

SONIC POLISHING APPARATUS

Howard E. McKinney, La Jolla, Calif., assignor to

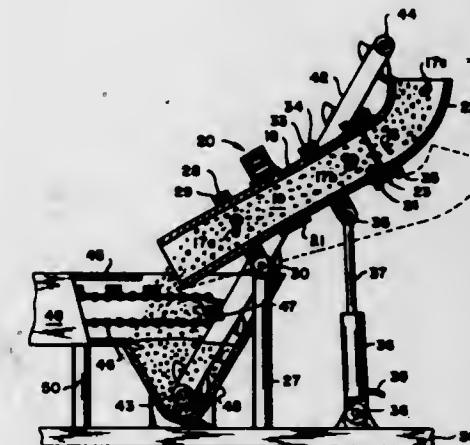
Shell Oil Company, New York, N.Y.

Filed Mar. 6, 1968, Ser. No. 710,993

Int. Cl. B24b 31/00

U.S. Cl. 51—163

1 Claim



Industrial metal parts are finished by passing them in a continuous flow process through a sonically activated chamber containing suitable grit medium.

3,609,921

TUMBLING MILL

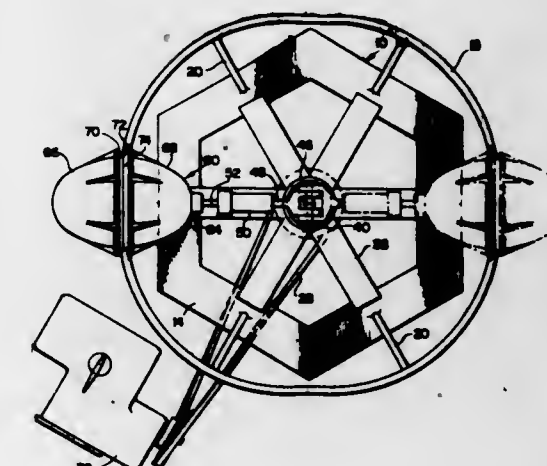
Cecil A. Foster, 25 Fairmount Ave., Johnston, R.I. 02919, and George W. Booth, West Main St., West Barnstable, Mass. 02630

Filed Jan. 9, 1970, Ser. No. 1,585

Int. Cl. B24b 31/02

U.S. Cl. 51—164

8 Claims



A tumbling mill is provided for use in grinding, pulverizing and polishing various materials. The mill is adapted to generate a multiplicity of motions. A mill chamber rotates about a horizontal axis around a closed, undulating track, moving radially in and out with respect to a vertical driving axis, which driving axis itself reciprocates vertically causing the chamber to tilt about its horizontal axis.

3,609,922

ORBITAL SANDER

Albrecht Schnizler, Nürtingen, and Hermann Kieser, Oberensingen, Germany, assignors to Metabowerke KG, Closs, Rauch & Schnizler, Nürtingen, Württemberg, Germany

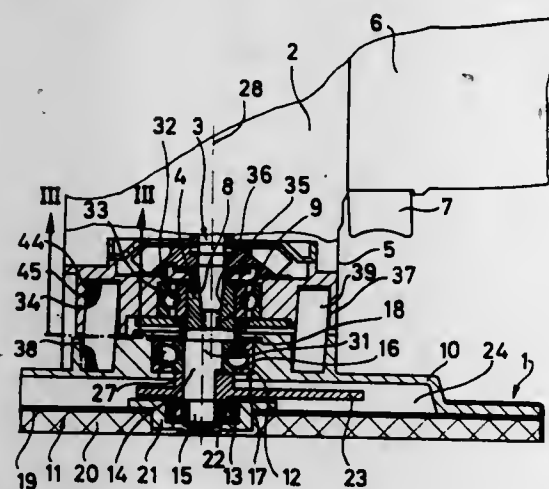
Filed Feb. 17, 1969, Ser. No. 799,792

Claims priority, application Germany, Feb. 20, 1968, P 16 52 131.6

Int. Cl. B24b 7/00, 23/02

U.S. Cl. 51—170 T

24 Claims



An orbital sander wherein the output shaft of a motor carries an eccentric intermediate shaft connected with a disk-shaped counterweight which rotates in a compartment defined by two sections of the sanding pad. Each section of the pad is provided with an antifriction bearing for the intermediate shaft. The pad is articulately connected with the housing of the sander by several elastic pins which extend into registering recesses tapering in directions away from each other and respectively provided in the upper section of the pad and in a closure for the motor.

3,609,923

GRINDING WHEEL TRUING COMPENSATOR FOR GRINDING MACHINES

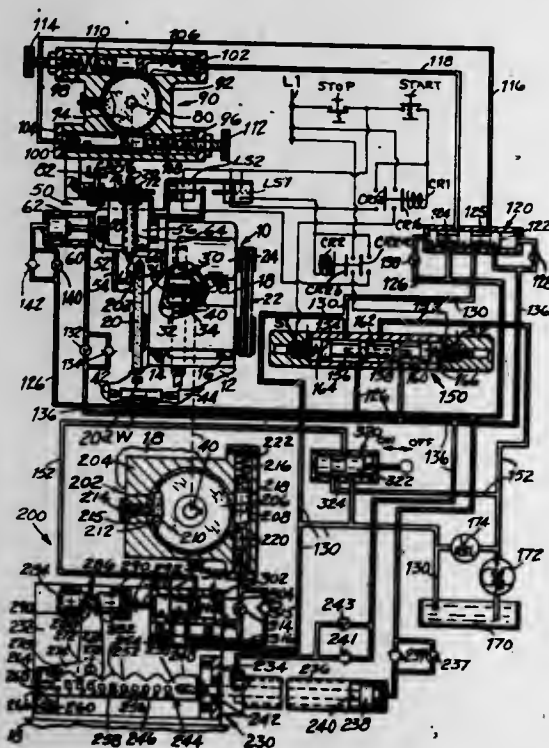
Winfred T. Hocking, Northboro, Mass., assignor to Norton Company, Worcester, Mass.

Filed Aug. 5, 1969, Ser. No. 847,624

Int. Cl. B24b 7/00

U.S. Cl. 51—5

5 Claims



A grinding machine having a grinding wheel truing compensating mechanism which advances the grinding

wheel support in succeeding equal increments of the total amount of the truing tool feed, one increment at a time, until the truing tool feed is fully compensated for and the original final size position of the grinding face is re-established. The compensating mechanism includes a fluid motor traversing a camming bar with plurality of equally spaced cams thereon. The cams pivot a bell crank lever to actuate a valve which allows fluid pressure to actuate a ratchet mechanism with a non-adjustable fixed stroke which in turn rotates a worm and worm gear mechanism to advance the grinding wheel support a fine fixed increment. A removable stop pin is inserted into one of a plurality of equally spaced holes in the camming bar which limits the stroke and provides the required number of actuations of the ratchet mechanism necessary to equal the total predetermined amount of truing tool feed. The truing tool feed being a preset amount equal to or a multiple of the fine fixed increment.

3,609,924

MACHINES HAVING ROTARY TOOLS

Jean Favot, 20 Rue Charles Martel, 54 Nancy, France, and Rene Willaume, 163 Bis, Rue de Vaugirard, 75 Paris 15eme, France

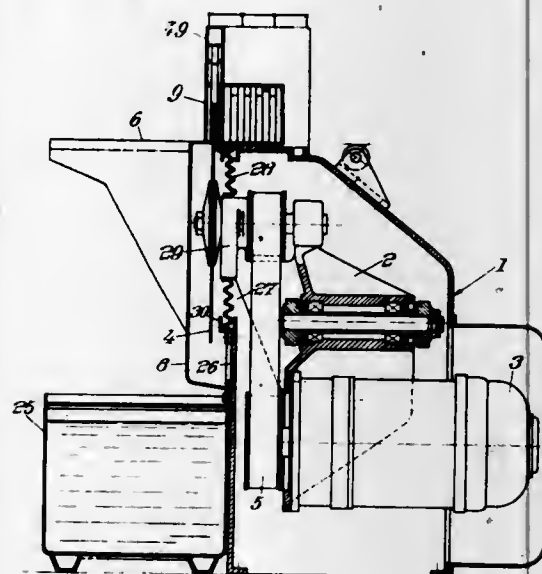
Filed Feb. 6, 1969, Ser. No. 797,050

Claims priority, application France, Feb. 8, 1968, 139,200

Int. Cl. B24b 55/02

U.S. Cl. 51—267

7 Claims



The machine comprises a rotary tool such as a grinding wheel or a milling cutter, having a peripheral work surface adapted to work a piece by relative movement between the tool and the piece in a direction perpendicular to the axis of rotation of the tool. A device for producing a flow of liquid at least onto the piece is provided; this device produces two curtains of liquid flowing parallel to the axis of rotation of the tool, these two liquid curtains being disposed on opposite sides of the tool. In addition to cooling the piece, these two curtains intercept projections of liquid and of particles caused by the tool.

3,609,925

GRINDING DISC

Manuel Comella-Riera, Barcelona, Spain, assignor to Telas y Papeles Abrasivos, S.A., Barcelona, Spain

Filed July 22, 1969, Ser. No. 843,332

Claims priority, application Spain, July 20, 1968, 140,683

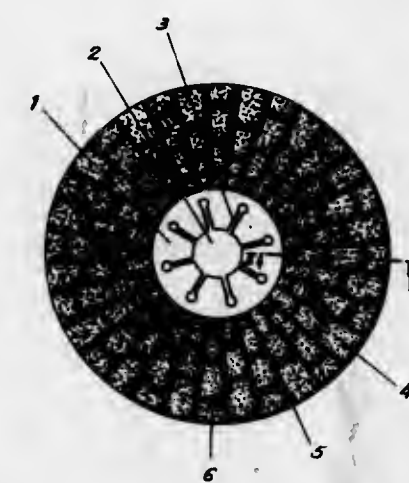
Int. Cl. B24d 11/00; B24b 55/02

U.S. Cl. 51—402

1 Claim

A grinding disc composed of a number of layers of abrasive material bonded to each other and to the carrier, the layers being divided into section by uniformly

distributed radial channels intersected by transverse channels that do not meet each other at a radial channel, thus



providing a multiply connected network of channels for the circulation of the cooling fluid.

ERRATUM

For Class 51—267 see:
Patent No. 3,609,931

3,609,926

BLOCK STRUCTURE

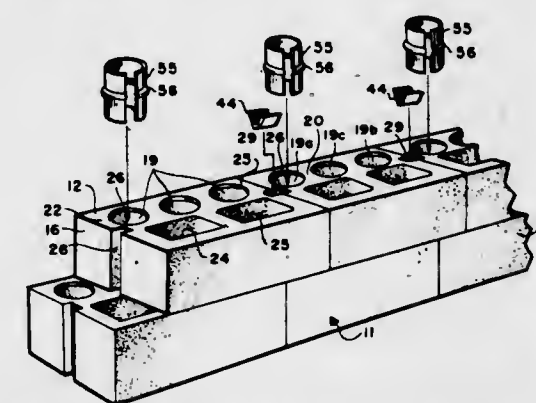
George B. Muse, Hillcrest Drive, Calhoun, Ga. 30701
Continuation-in-part of applications Ser. No. 658,524, Aug. 4, 1967, and Ser. No. 730,727, May 21, 1968.

This application Feb. 26, 1969, Ser. No. 802,450

Int. Cl. E04b 1/48

U.S. Cl. 52—438

17 Claims



A building block defining a series of apertures extending therethrough from the top wall surface to the bottom wall surface, and vertically extending grooves defined in each end wall surface. Expandable positioning sleeves are insertable into each aperture so as to project from the block, and a similar block is positionable on top of the first block with its apertures inserted over the positioning sleeves. The end grooves of abutting blocks mate with each other to form slots, and wedge members are insertable into the slots to positively align the abutting blocks. Mortar is poured down through the aligned apertures and sleeves of the blocks to positively lock the blocks together to form a rigid structure.

3,609,927

ARCHITECTURAL MOLDING STRIPS

Robert I. Wine, 303 Greenwood, Birmingham, Mich. 48009

Filed June 27, 1969, Ser. No. 837,049

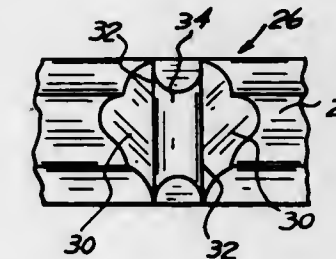
Int. Cl. E04f 19/04

U.S. Cl. 52—100

1 Claim

A decorative thin-wall moulding strip is provided with transverse notches at regular intervals along its length, each notch having 45° beveled surfaces. To carry the

moulding around an inside or outside corner, the strip is severed at a notch, and the severed ends abutted at the corner. If the material permits, bending rather than severing at the notch is possible. A first modification has a supplementary contour at the notch, which is removed



to form a corner. A second modification comprises a series of beveled blocks bonded to a flexible elongated backing sheet, so that a corner is formed at the point where two blocks meet simply by bending the backing sheet around the corner.

3,609,928

JAMB STRUCTURE

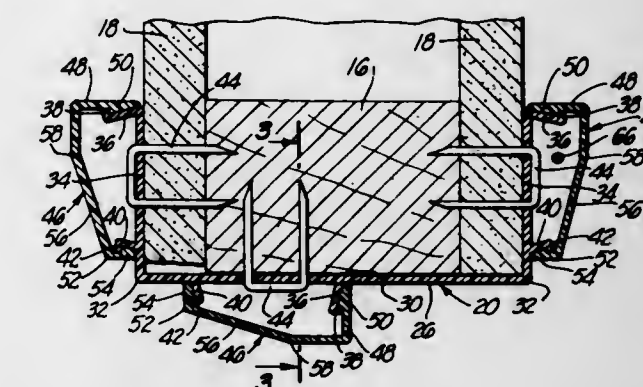
Donald E. Mock, Covina, Calif., assignor to Anjac Plastics, Inc., El Monte, Calif.

Filed Oct. 13, 1969, Ser. No. 865,619

Int. Cl. E06b 1/04, 1/02

U.S. Cl. 52—210

2 Claims



A jamb structure is disclosed which includes an elongated, extruded central channel having parts which are adapted to overlie the width of an opening and to cover the walls adjacent to the opening. Holding means for "snap" connection to trim channels are provided on the parts of the central channel so that such trim channels may be easily secured in place to cover fastenings securing the central channel to the wall containing the opening.

3,609,929

PREFABRICATED BUILDING

Russell B. Brown and Ronald M. Wood, Newport, R.I., and Robert J. Farren, Hicksville, N.Y.; said Brown and said Wood assignors to Robert J. Kerr II, Newport, R.I., and George L. Rogers, Wilton, Maine, fractional part interest to each

Filed July 25, 1969, Ser. No. 844,937

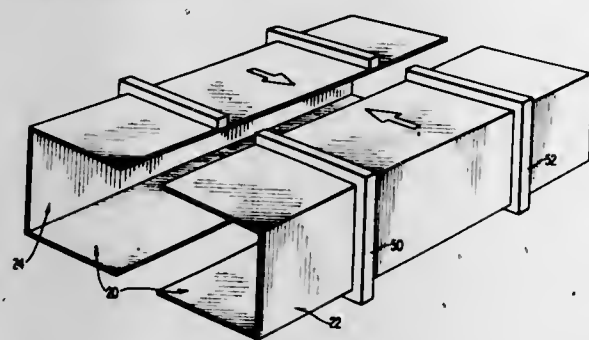
Int. Cl. E04h 1/04

U.S. Cl. 52—236

4 Claims

A prefabricated, modular, box-shaped half segment in the form of a rectangular parallelepiped is provided which has as basic elements a floor, a single side wall, two end walls and a roof, these elements being rigidly fixed in position by a pair of spaced external C-frame members which are transversely connected to the floor, side wall, and roof. By connecting two half segments together through their respective C-frame members, an enclosed unit is produced. The four vertical legs of the C-frames of each unit define the corners of upper and lower horizontally disposed squares, the basic of a square grid sys-

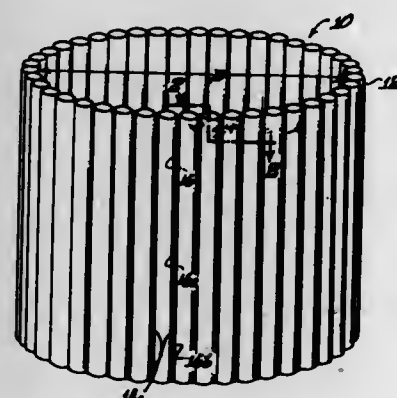
tem which enables vertical stacking of units with a choice of the four quadrant attitudes for alignment of the units in the grid system.



The weight of each unit is carried by the C-frame member system with the side walls serving as a strengthening beam. Various cantilever arrangements can be provided.

3,609,930
PLASTIC TANK STRUCTURE
Edwin L. Crandal, 435 Via Lido Soud,
Newport Beach, Calif. 92660
Filed Feb. 24, 1970, Ser. No. 13,841

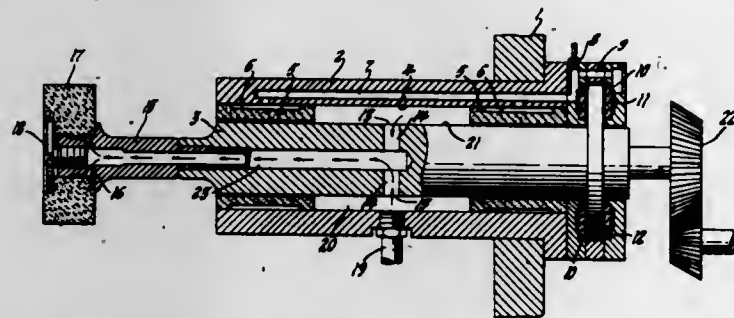
Int. Cl. E04b 1/56; E04c 1/16; E04h 7/02
U.S. Cl. 52-245 8 Claims



A plastic tank structure comprising a plurality of vertical tubular members. The tubular members can be hollow plastic tubes which are preferably placed around the circumference of a circle. Each tube is placed vertically adjacent another tube and a curable elastomeric sealant is imposed between the walls of adjacent tubes. The plastic tubes are attached together by joining means, such as bolts. The bottom end of each tube is firmly embedded in a base such as concrete. The enclosure formed by the perimeter of vertical plastic tubes is capable of storing liquids or solids. It is particularly useful for oil storage.

3,609,931
COOLANT SYSTEM FOR HIGH SPEED SPINDLES
Donald A. Voorhies, Wauwatosa, Wis., assignor to
General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1970, Ser. No. 11,521
Int. Cl. B24b 55/02

U.S. Cl. 51-267 4 Claims

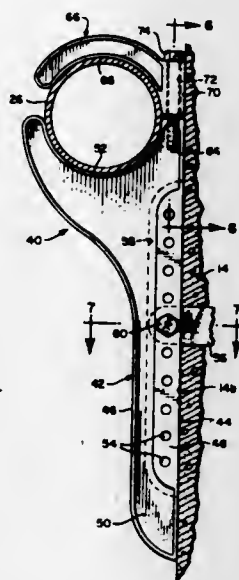


An abrasive wheel spindle is supported in a pair of spaced externally pressurized gas bearings mounted in the

spindle housing. The gas bearings also provide a sealing function for a transition chamber for delivering coolant to a conduit in the rotating spindle.

3,609,932
CONDUCTOR SUPPORTING BRACKET AND WALL CONSTRUCTION
Edmund P. Di Firro, 56 Kohler St.,
Tonawanda, N.Y. 14150
Continuation-in-part of application Ser. No. 735,072,
June 6, 1968. This application Nov. 3, 1969, Ser.
No. 873,763

Int. Cl. E04h 14/00; F16l 3/10
U.S. Cl. 52-27 5 Claims



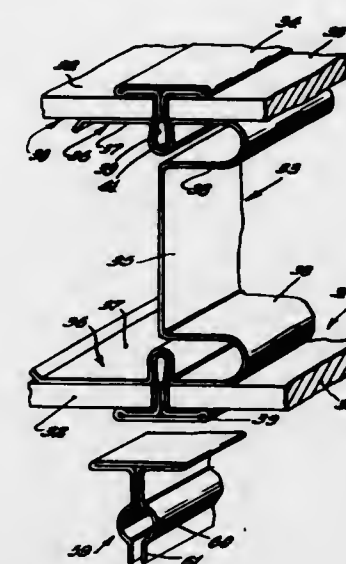
A series of conductor supporting brackets are severally removably mounted on the horizontally perforated outer end portions of a series of transverse tie members secured at horizontally spaced intervals to a foundation wall having a vertical exterior side from which such outer end portions project, for adjustment of the brackets generally vertically along such exterior wall side laterally of the tie members, to thereby support and adjust the pitch of an elongated conductor such as an underground drain pipe extending along the exterior side of the wall transversely of the brackets and tie members. The brackets include vertically elongated support members each provided at their upper end with an upwardly open conductor receiving cradle portion and along their inner side with a vertical slot between two wing portions having a series of vertically spaced perforations selectively mating with that in the outer end portion of the corresponding tie member for receiving a fastener. The bracket also may include a clamp member for clamping the conductor in such cradle portion and/or electrical power cable, telephone line, television cable and the like, as well as for receiving and attaching such clamp members.

3,609,933
SPACED PANEL WALL CONSTRUCTION
Martin D. Jahn, Chicago, and Reinhardt H. Jahn, Riverside, Ill., assignors to Chicago Metallic Corporation,
Chicago, Ill.

Filed Nov. 22, 1968, Ser. No. 778,058
Int. Cl. E04b 2/60

U.S. Cl. 52-461 18 Claims
An assembly for mounting spaced parallel wall panels by studs that space the panels from one another and by battens that releasably clamp the sections of the panels to the studs. Each stud is formed of a single piece of sheet metal folded so as to have a central web and end flanges and lies entirely between the panels without projecting between the sections of either panel. Each batten

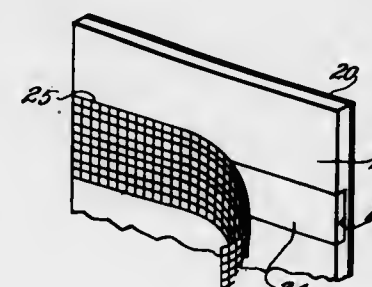
is also formed of folded sheet metal, overlies adjacent panel sections at the outside, projects between the ad-



acent panels, and is releasably engaged by a stud at a recess therein formed in a flange of the stud.

3,609,934
WALL COVERINGS
Michael P. O'Carroll, 4312 W. 99th Place,
Oaklawn, Ill. 60453
Filed Apr. 21, 1969, Ser. No. 817,972
Int. Cl. F04b 1/56

U.S. Cl. 52-511 2 Claims

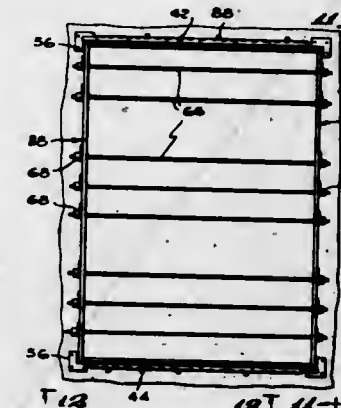


This invention comprises ferrous strips laid in the inner surface of plasterboard erected in buildings, and panels applicable to the plasterboard with magnetic inlays to hold the panels to the plasterboard. The latter has a surface-covering sheet to retain and conceal the ferrous strips; and the panels are mainly slabs of sound-proofing material, and have grooves in the side of application seating the magnetic inlays. Strips of thin plastic netting are secured on the applicable side of the slabs over the grooves to retain the magnetic inlays therein; and the slabs carry wallpaper or other covering material on the exposed side.

3,609,935
PERMANENT FORM FOR PRECAST TILT-UP CONCRETE MODULES AND PROCESS
Delmar L. Thomas, Los Angeles, Calif.
(13449 Branford St., Arleta, Calif. 91331)
Continuation-in-part of application Ser. No. 803,534,
Mar. 3, 1969. This application May 1, 1969, Ser.
No. 826,771

Int. Cl. E04b 1/35; E04g 21/12
U.S. Cl. 52-745 7 Claims
A special permanent form member serves as the form for a precast tilt-up concrete module as it is poured on a curing floor. The form member remains in place during tilt-up and serves as a joint against the pilaster. The form member serves as the concrete module form and as the

finished concrete module edge and is formed with a plurality of webs which extend along the edge of the concrete module. The edges of the form member are folded in to be locked into the concrete of the precast module. The form member is used as a form for the sides, top and bottom of the concrete module. Knockouts are provided for transverse reinforcing bars so that the form members can be clamped in place to resist pouring deformation and the rebars extend into the pilasters when

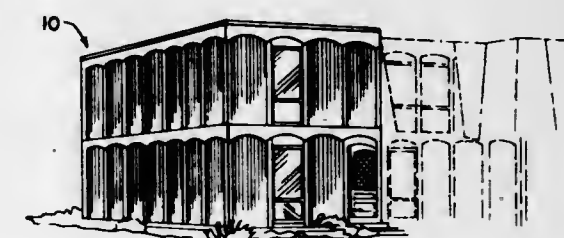


the finished concrete modules are erected. Reinforcement of the top and bottom form members is managed by exterior strongbacks. Corners are employed on the curing floor to aid in initial setup. Special rebar clamps are preferably employed to transfer pouring load to the rebars. By employment of the permanent form member, forms can be more quickly produced, precast tilt-up concrete modules can be more closely spaced upon the pouring floor, and cleanup minimized for a quicker setup into building configuration.

3,609,936
METHOD FOR CONSTRUCTING LOW COST HOUSING UNITS

Joseph J. Toscano, 510 E 52 Bypass W.,
West Lafayette, Ind. 47906
Filed Feb. 20, 1970, Ser. No. 13,059
Int. Cl. E04h 1/04

U.S. Cl. 52-741 5 Claims

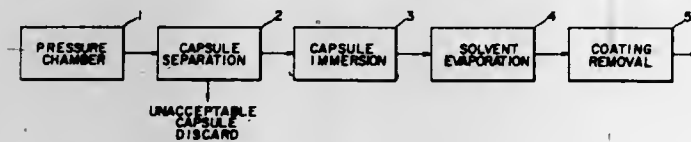


A method of construction for low cost housing units in which a plurality of preassembled transverse post and beam frame units are erected on a foundation to provide the support for a complete housing module. The frame units are spaced to facilitate the use of commercially available sizes of pre-cut panels to form interior and exterior walls.

3,609,937
METHOD FOR FILLING CAPSULES
Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estlin, Leonard W. Cronkhite, Jr., and William W. Wolbach, trustees of The Charles River Foundation
Filed Sept. 23, 1969, Ser. No. 860,195
Int. Cl. B65b 43/00

U.S. Cl. 53-29 14 Claims
Capsules having a cross-linked, permeable, elastomeric, flawless, continuous shell whether hollow or containing a porous core or a core consisting of polymeric matter

incapable of escaping through the shell, are filled with solid or liquid material by immersing the capsules in a solution of the material to effuse the solution into the capsule and countereffuse gas or vapor from the capsule, or to effuse the solution into the capsule so that it dissolves in a core of polymeric matter. The solvent used to prepare the solution is evaporated from the interior of the capsule. The capsules can be tested for wall



integrity prior to being immersed by subjecting them to high pressure to effuse an inert gas into the capsule and subsequently reducing the pressure on the capsules to cause inflation of the acceptable capsules and deflation or explosion of unacceptable capsules, or by causing sudden vaporization of solid or liquid vaporizable material within the core, which inflates only the acceptable capsules. This process is useful for filling a hollow or partially filled capsule with a drug.

3,609,938

DEVICE TO PACK ARTICLES IN BOXES

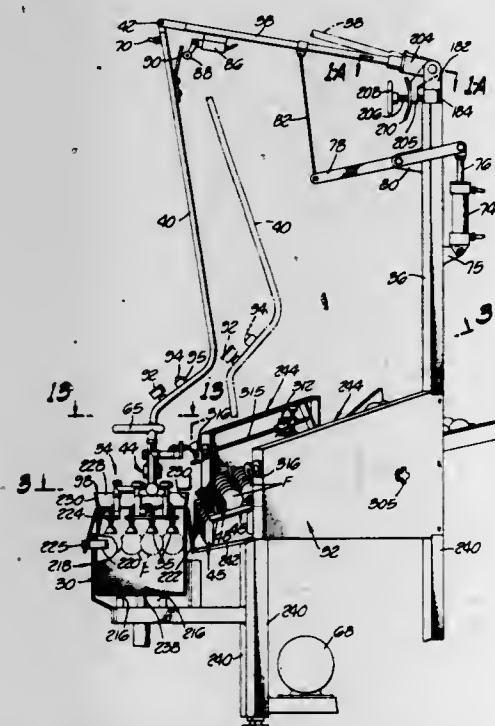
Paul F. Paddock, Riverside, Calif., assignor to Sunkist Growers, Inc., Los Angeles, Calif.

Filed Dec. 18, 1968, Ser. No. 784,820

Int. Cl. B65b 5/08, 57/10; B66c 1/02

U.S. Cl. 53—61

22 Claims



A pickup assembly having vacuum cups to pick up a layer of fruit has two handles for manual movement between a pickup position at a supply station and a depositing position at a box. The pickup assembly is suspended from an overhead boom which acts as counterbalance means and is powered for boosting action at certain points in the operating cycle. Since proper nesting of fruit in a box requires layers of alternate patterns, the pickup assembly comprises a main pickup head with multiple rows of vacuum cups, a first single row auxiliary head cooperative with the main head to pick up a layer of one of the alternate patterns and a second single row auxiliary head for cooperation with the main head to pick up the other pattern, the two auxiliary heads being mounted on an auxiliary frame that is manually operable to move the two auxiliary heads to their cooperative positions alternately. With the pickup assembly poised to pick up a new layer of

fruit, it is boosted downwardly into engagement with the fruit. If all of the vacuum cups engage fruit, means responsive to the consequent drop in air pressure boosts the pickup assembly upwardly to initiate movement toward the box. As the empty pickup assembly is lifted from the box, the operator manually shifts the auxiliary frame in preparation for picking up a layer of the alternate pattern.

3,609,939

APPARATUS FOR THE METERING AND LOADING OF ARTICLES OF SUBSTANTIALLY UNIFORM SIZE AND SHAPE

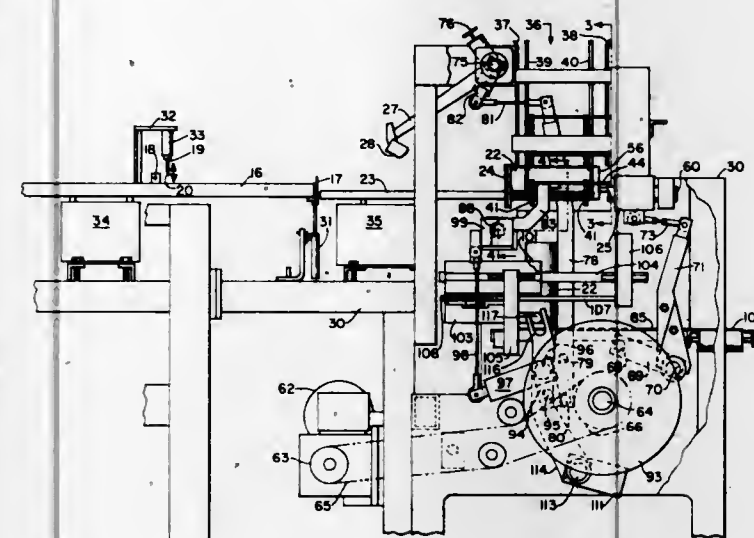
Leonard C. Hooper, Springfield Township, Hamilton County, Howard E. Mathes, Blanchester, and Richard A. Schaeffer, Wyoming, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 2, 1970, Ser. No. 42,655

Int. Cl. B65d 5/06, 35/34

U.S. Cl. 53—159

16 Claims



An apparatus for metering and loading uniformly shaped, chip-type snack food products, e.g. potato chips, by forming a stack of predetermined length which is subsequently conveyed into a suitable container. The product is received and fed into shingled relationship on a vibratory metering trough. The chips are held back by a feed stop until a sufficient number have been accumulated to form a metered stack as sensed by a photocell. An overhead metering stop is lowered into the accumulated articles to isolate a predetermined metered stack between the metering stop and the feed stop. The feed stop is lowered whereupon the metered stack is fed forward to a vibratory loading trough and subsequently into a container held against the end thereof. A sweep arm having a resiliently mounted head is activated to push the last several articles from the loading trough into the container in order that the entire metered stack is placed in the container which is then removed for further handling and processing.

3,609,940

CONTAINER FORMING AND ASSEMBLY APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of application Ser. No. 621,502, Mar. 8, 1967. This application Jan. 23, 1968, Ser. No. 699,922

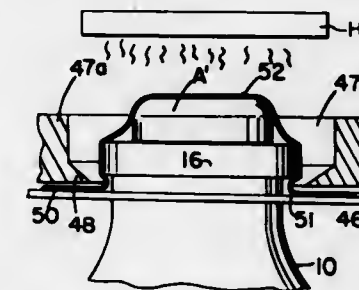
Int. Cl. B67b 5/00

U.S. Cl. 53—290

6 Claims

An apparatus and method are provided for forming container assemblies of components, one of which comprises a closure or cap made of sheet-like material. The closure is predeterminedly disposed in alignment with the end of a container such as the open neck of a bottle or a

container having a closure or end wall already assembled therewith. The container and closure are brought together and the closure is deformed in situ against the container in such a manner as to retain it in assembly therewith. The closure may also be welded or sealed to the side wall of the container or a separate closure preassembled with the container.



In one form, closures are formed in a mold or die and are retained against the wall of the cavity thereof for assembly with a container employing the mold or die as a prepositioning device. In another form, closures for containers are formed in situ against the open end of the container or a closure assembled with the container so as to form a sheet-like sealing and protecting means for the container of material disposed against the end wall of the container.

3,609,941

ANIMAL MASK

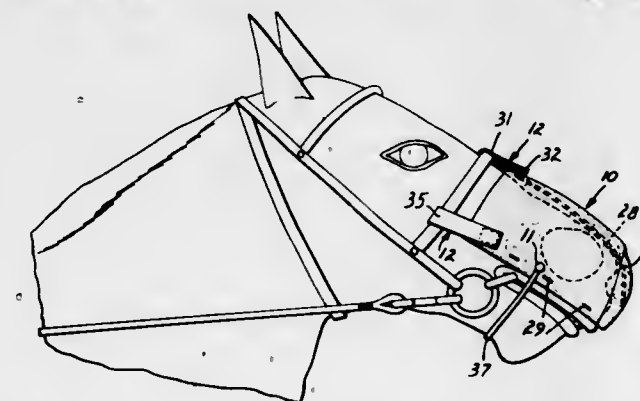
Charles L. Eldredge, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 26, 1970, Ser. No. 5,643

Int. Cl. B68b 5/00; B68c 5/00

U.S. Cl. 54—80

6 Claims



A mask for warming air breathed by a horse is formed from mask material supported on a frame peripherally contoured to fit snugly in the area adjacent the horse's nostrils and above the mouth. The preferred frame is formed of a coarse plastic mesh.

3,609,942

HIGH PRESSURE GAS DEHYDRATION WITH LIQUID DESICCANT

Carl E. Alleman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 18, 1968, Ser. No. 760,581

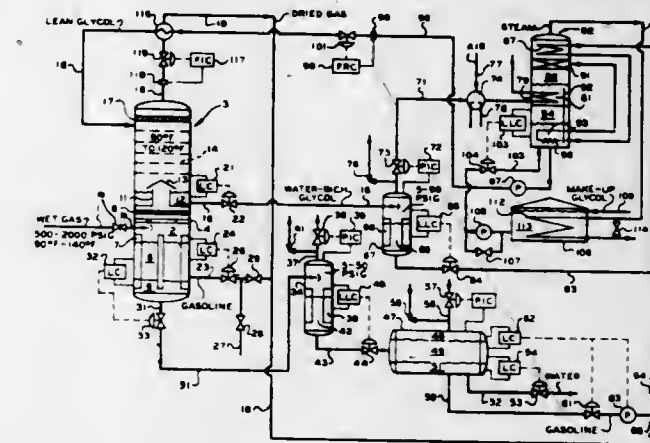
Int. Cl. B01d 53/14

U.S. Cl. 55—31

7 Claims

Process and apparatus for dehydrating wet, high-pressure, essentially hydrocarbon gas with liquid desiccant in a conventional desiccant-contacting and desiccant-regenerating cycle, in which a drop in gas pressure occurs in a separator having a vertical axis cylindrical portion into which the wet gas is injected tangentially and horizontally with a lower noncylindrical portion to dampen swirling of the separated liquid. There may be controls on the gas and liquid outlets of the separator and heat exchange between the steam from the desiccant regenerator and the make-up desiccant. Hydrocarbon gas flashing from the

liquid in a separator may be used as fuel for heating and regenerating the liquid desiccant. Hydrocarbon liquids



3,609,943

SEPARATOR AND PROCESS FOR THE FRACTIONAL DESUBLIMATION OF POLYCARBOXYLIC ACID ANHYDRIDES

Günther Richter, Gladbeck, Germany, assignor to Gelsenberg Benzin Aktiengesellschaft, Gelsenkirchen, Germany

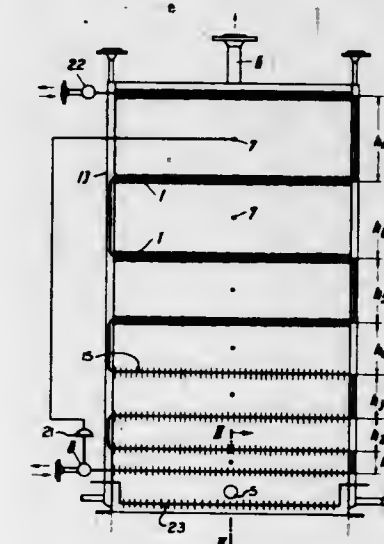
Filed Dec. 9, 1968, Ser. No. 784,284

Claims priority, application Germany, Dec. 9, 1967, P 16 68 161.1

Int. Cl. B01d 59/08; F28t 13/08

U.S. Cl. 55—82

14 Claims



For the desublimation of acid anhydrides, a heat exchange is provided characterized in that the residence time during the later part of the desublimation is long relative to the residence time during the first part of the desublimation.

3,609,944

WASTE REMOVAL APPARATUS FOR SPINNING MILLS

Rudolf Wildbolz and Max Meier, Winterthur, Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed June 17, 1969, Ser. No. 833,947

Claims priority, application Switzerland, June 19, 1968, 9,459/68

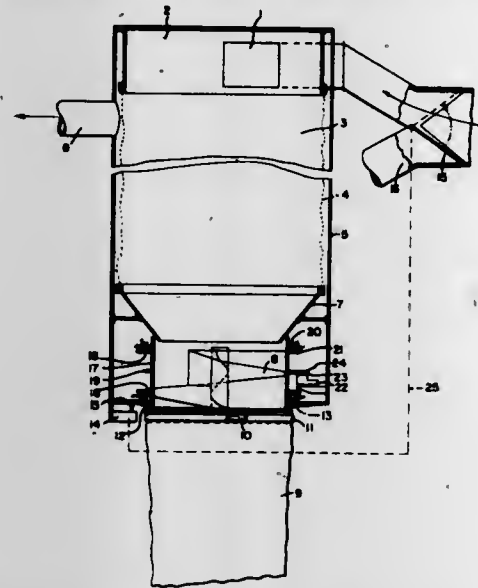
Int. Cl. B01d 50/00

U.S. Cl. 55—215

8 Claims

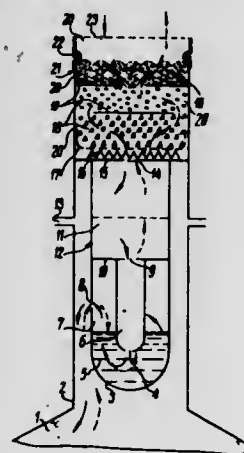
The waste separator includes a separator which consists of a fabric filter to filter out the waste into a helical worm which rotates between the separator and detachable waste container. The helical worm transfers the waste into the container and thereafter compresses the waste in the container. The container can be mounted

on an elastically deformable plate which permits the waste weight in the container to activate a switch below



the plate for shifting the air flow into another waste separator.

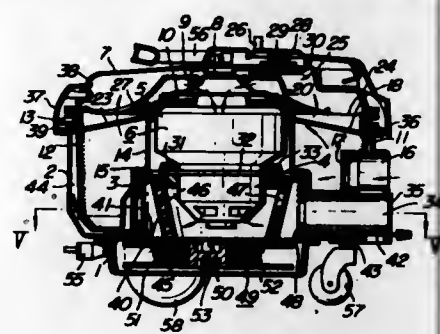
3,609,945
SHUT-OFF FILTERING DEVICE TO BE USED IN VESSELS FOR STORING SUBSTANCES, MAINLY HIGH-PURITY AND DECOMPOSABLE SUBSTANCES
Lev Vaagovich Saradzhev, 3 Parkovaya ul. 50, korp. 3, kv. 52, Moscow, U.S.S.R.
Filed Sept. 12, 1969, Ser. No. 857,465
Int. Cl. B01d 50/00
U.S. Cl. 55—250 19 Claims



A vessel for storing high-purity and decomposable substances comprises two intercommunicating receptacles, the first of which communicates with the ambient medium and is filled with filtering and sorbing materials, preferably solids, while the second receptacle is filled with a liquid sorbent and communicates with the interior of the vessel. The second receptacle is divided by an overflow means into at least two intercommunicating chambers so that the liquid sorbent flows over from chamber to chamber when the pressure inside the vessel is balanced with respect to the outside pressure.

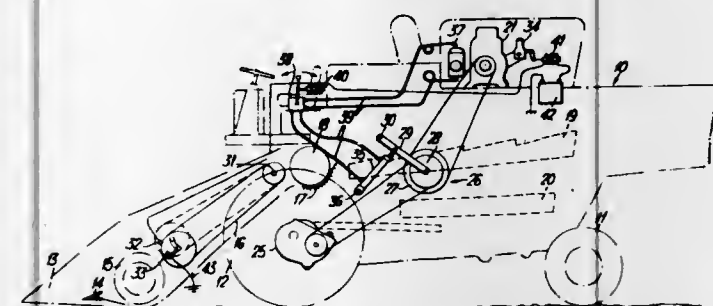
3,609,946
ELECTRIC SUCTION CLEANER
Hisashi Nakagawa, Hajime Mizuno, Hideya Koshiyama, and Goro Sasai, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 28, 1968, Ser. No. 741,170
Claims priority, application Japan, July 5, 1967, 42/42,782, 42/42,784
Int. Cl. A47I 9/14
U.S. Cl. 55—296 6 Claims
An electric suction cleaner which is so designed that the dust collected in a dust case from a dust-containing air

flow is compressed by the energy of the dust-containing air flow so as to increase the dust collecting capacity of the dust case, the dust case being composed of substantial-



ly non-air permeable walls except for the portions where inlet means for the dust-containing air and filter means for collecting the dust from the dust-containing air are provided.

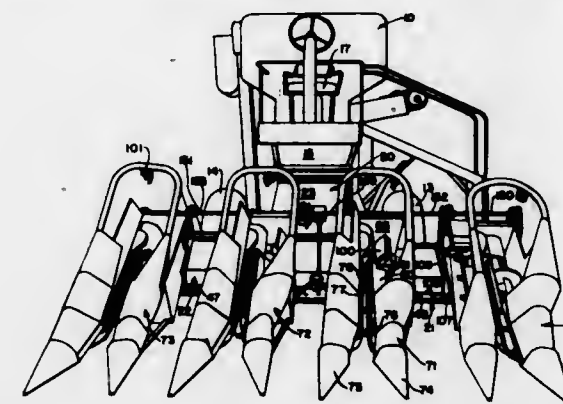
3,609,947
COMBINE GROUND SPEED AND DRUM SPEED AUTOMATIC CONTROL
Franz Joseph Herbsthofer, Kassel-Herleshausen, Germany, assignor to Massey-Ferguson G.m.b.H., Staendepfatz, Germany
Filed Oct. 7, 1969, Ser. No. 864,474
Claims priority, application Great Britain, Oct. 11, 1968, 48,206/68
Int. Cl. A01d 41/02
U.S. Cl. 56—10.2 2 Claims



A combine harvester thresher with driven ground wheels, a crop-treating assembly, an engine to drive the ground wheels and the crop-treating assembly, and crop gathering means which includes an elevator assembly in an elevator housing for conveying crop material to the crop-treating assembly. The drive for the driven ground wheels includes a variable V-belt drive. The crop-treating assembly is driven by belt drives from the engine. When an excessive amount of crop material enters the elevator housing, the elevator assembly is deflected upwardly causing the electrical contacts of a sensor to make contact. This causes current to pass through a circuit and to energize a pair of solenoids. One of the solenoids reduces the ground speed of the machine by actuating the control for the variable V-belt drive. The other solenoid switches the two-stage governor on the engine from one stage to another to run the crop-treating assembly at a faster speed.

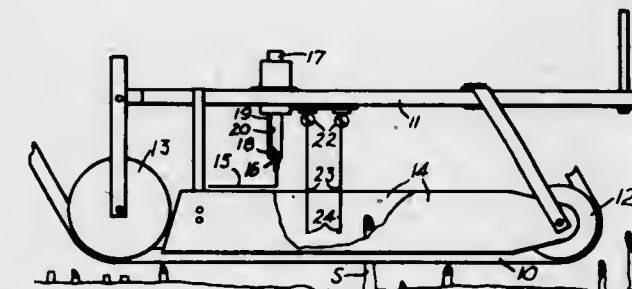
3,609,948
CROP HARVESTER
Frank D. Jones, Moline, James D. Wilkins, Geneva, and Charles S. Morrison, Moline, Ill., assignors to Deere & Company, Moline, Ill.
Continuation of application Ser. No. 333,263, Dec. 19, 1963, which is a continuation of application Ser. No. 86,934, Feb. 3, 1961. This application June 8, 1966, Ser. No. 562,416
Int. Cl. A01d 45/02
U.S. Cl. 56—14.2 52 Claims
A row crop harvester adapted to be mounted on a crop treating unit and including a transverse supporting structure extending across a plurality of crop rows and a

transverse conveyor feeding harvested crops inwardly to the treating unit, a plurality of crop harvesting units adapted for support on the transverse structure at different transverse locations and having drive mechanism



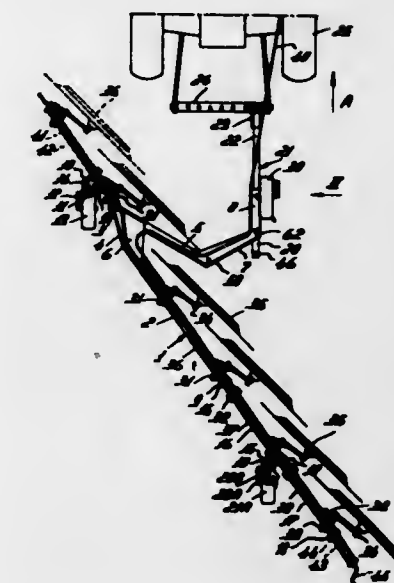
connected to and shiftable axially with respect to a main transverse drive shaft, with at least one of the units being supported on a transverse horizontal pivot and having an hydraulic cylinder connected thereto for vertically adjusting the unit.

3,609,949
CONTROL APPARATUS FOR ASPARAGUS HARVESTER
Archie E. Neal, Garfield, Wash., assignor to J. E. Love Company, Garfield, Wash.
Filed Apr. 9, 1970, Ser. No. 26,908
Int. Cl. A01d 45/00
U.S. Cl. 56—327 A 4 Claims



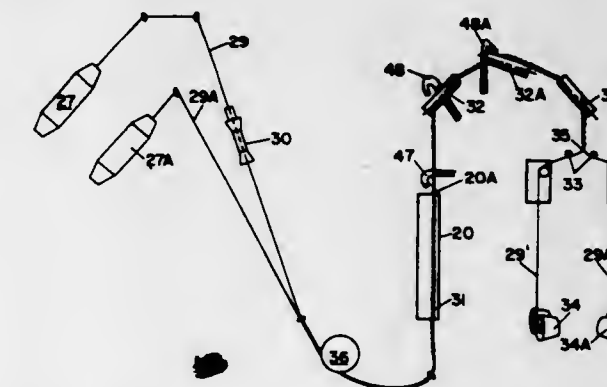
This disclosure relates to a selective asparagus harvester having a cutting knife that is moved between an inoperative position clear of the field crop and an operative position for cutting selected spears within a converging machine channel. The improved control arrangement comprises a pair of switches located immediately forward of the knife mechanism and protruding oppositely across the channel. The switches are operatively connected in parallel to make the total time of switch operation substantially constant, regardless of the transverse position of a particular spear across the width of the channel.

3,609,950
IMPLEMENTS FOR THE LATERAL DISPLACEMENT OF CROP LYING ON THE GROUND
Albert Auguste Louis Remy, Senonches, Eure-et-Loir, France, assignor to C. van der Lely N.V., Maasland, Netherlands
Filed Oct. 8, 1968, Ser. No. 765,878
Claims priority, application Netherlands, Oct. 12, 1967, 6713828
Int. Cl. A01d 77/06
U.S. Cl. 56—377 19 Claims
A rake implement having frame beams at least one of which has rake wheels mounted thereon. The beams can be detached and rearranged so that the implement can be pushed or pulled by a prime mover. With rearrangement of the beams, the implement can function as a side delivery rake or a swath turner. The beams can also be positioned to place the implement in transport arrange-



the rod connected to cranks supporting the rake wheels to lift or exert pressure on same.

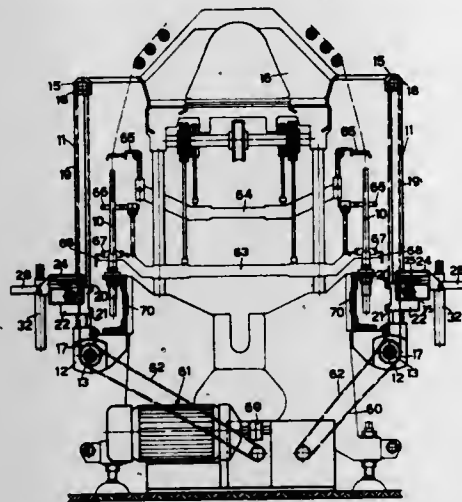
3,609,951
FUME AND VAPOR COLLECTING APPARATUS FOR FALSE TWISTING MACHINES
Allen Reese Hunter, 2624 Woodlyn Way, Greensboro, N.C. 27407
Filed Dec. 17, 1969, Ser. No. 885,814
Int. Cl. D01h 11/00, 13/28
U.S. Cl. 57—34 7 Claims



A suction system including strategically positioned nozzles for collecting fumes and vapors entrapped within a pair of twisted yarns passing through the heat-setting chamber of a false twist machine and released at subsequent processing points due to the flexing and bending of the pair. The system further includes a shield covering the open side of the heat-chamber to prevent escape of the fumes and vapors to the atmosphere.

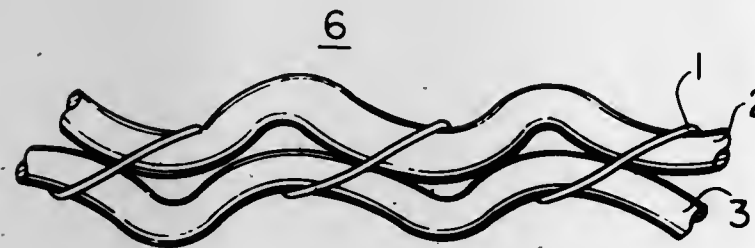
3,609,952
AUTOMATIC MECHANICAL DEVICE FOR DOFFING AND LOADING SPUN YARNS IN SPINNING FRAMES, DOUBLING FRAMES AND THE LIKE
Natale Chiari, Valerio Calabria, and Giuseppe Invernardi, Cologne Bresciano, Italy, assignors to Edera S.p.A., Officina Meccanica Tessile, Milano, Italy
Filed July 8, 1969, Ser. No. 839,893
Claims priority, application Italy, July 8, 1968, 18,706/68
Int. Cl. D01h 9/00
U.S. Cl. 57—52 12 Claims
A doffing and discharging device for the supporting members carrying yarn wound on bobbin in a spinning or doubling frame is disclosed, the characteristic feature

being that each doffing and slipping member (to slip bobbins on spindles) comprises two portions, the first of which engages the periphery of the supporting member by grasping it, and the second portion of which engages a diametrically opposite portion of the supporting mem-



ber aforesaid. Resilient gasket members are provided on the active surfaces so as to avoid any damage to the yarns wound on the bobbin. Means are also provided to facilitate the discharge of the full bobbins into a receptacle and to position the empty tubes on the spindles.

3,609,953
ELASTIC COMPOSITE YARN AND PROCESS FOR MANUFACTURING THE SAME
Tohru Kitawaza, Osaka-shi, Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed June 2, 1969, Ser. No. 829,592
Claims priority, application Japan, June 3, 1968, 43/45,997, 43/45,998, 43/45,999, 43/46,000, 43/46,001; June 17, 1968, 43/50,572
Int. Cl. D02g 3/04, 3/38
U.S. Cl. 57—152
21 Claims

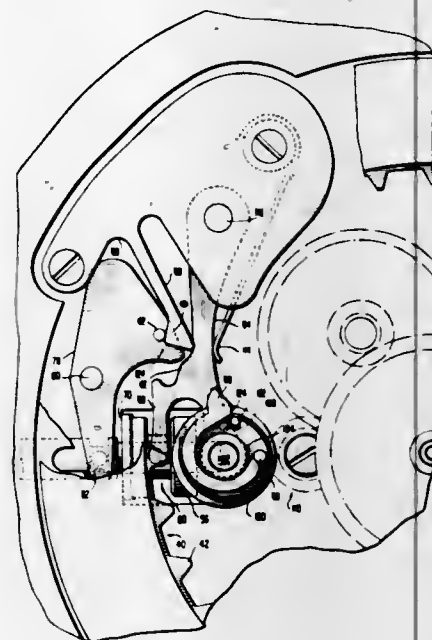


An elastic composite yarn is provided, in which at least one high elastic filamentary binding yarn of at most 15% by weight consisting essentially of polypivalolactone is combined helically around a ground yarn of at least 85% by weight containing at least one bulked yarn, the bulked yarn extends outwardly in an arc form between adjacent points bound by the binding yarn.

The elastic composite yarn is manufactured by combining the ground yarn containing at least one low heat shrinkable fiber yarn with the binding yarn which is composed of non-elasticized filament and has a shrinkage of at least 10% greater than that of the low heat-shrinkable fiber yarn at a temperature from 100° C. to 220° C. so that the binding yarn is coiled around the

ground yarn without elongation, and by heating the resultant composite yarn at a temperature from 100° C. to 220° C.

3,609,954
RAPID SET MECHANISM FOR CALENDAR TIMEPIECES
Cleon W. Hougendobler, East Petersburg, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed Feb. 19, 1970, Ser. No. 12,210
Int. Cl. G04b 19/24
U.S. Cl. 58—4
5 Claims

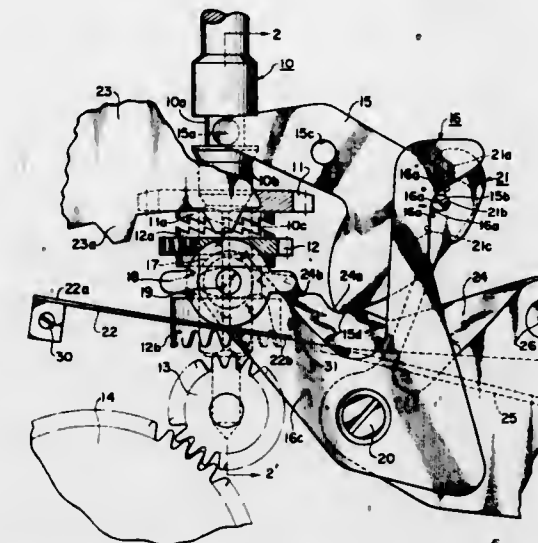


The mechanism of this invention provides manual adjustability for a date-bearing indicia member in a timepiece. The mechanism incorporates a setting stem movable into at least two positions, a normal running position and a hand-setting position, having a biased clutch slidably mounted thereon which engages a setting wheel. In the normal running position, the stem carries a biased pawl mounted on the setting wheel for rotation responsive to the rotation of the stem within the peripheral confines of the teeth on said date-bearing indicia member for manual adjustment thereof. The biasing member carried by the pawl permits displacement of said pawl by the teeth of the date-bearing indicia member when the calendar indicia mechanism advances said member. A friction washer engages said clutch for preventing inadvertent rotation of the stem, but said washer is adapted to yield to permit manual rotation thereof. When the setting stem is displaced longitudinally to the hand setting position, the setting wheel engages the dial train, said clutch is disengaged from the friction washer, and said pawl is displaced without the peripheral confines of the teeth on said date-bearing indicia member.

3,609,955
QUICK CALENDER CORRECTION MECHANISM OF TIMEPIECE
Choken Suzuki, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Feb. 18, 1970, Ser. No. 12,314
Claims priority, application Japan, Feb. 20, 1969, 44/14,282
Int. Cl. G04b 19/24
U.S. Cl. 58—4
3 Claims

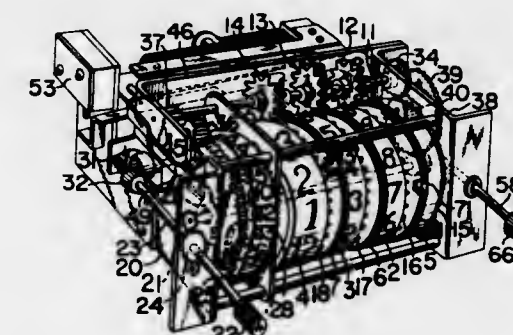
A quick calendar correction mechanism for a calendar timepiece, comprising a rotatable date ring having rack teeth and rotatably mounted on the conventional plate of the movement of the timepiece; a slidable and rotatable stem mounted in said movement; a clutch wheel slidably mounted on said stem and rotatable in unison with the stem; and motion transmitting means provided operatively

between said stem and said ring, the improvements comprise the provision of additional tooth means directly formed on said clutch wheel as a first member for transmitting calendar correcting torque from said stem to said ring; and a correction wheel means rotatably mounted



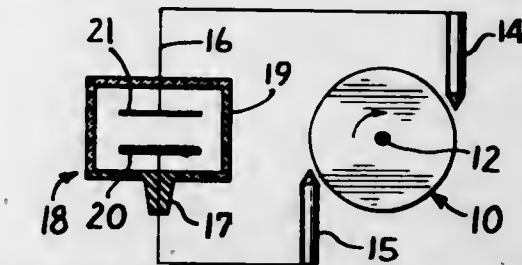
on a correction lever means and acting a second member in the above sense, said means comprising a finger wheel and a gear wheel united with each other for performing unitary rotational movement with each other, said gear wheel being adapted for engagement with said tooth means on said clutch wheel.

3,609,956
NUMERICALLY INDICATING TIMEKEEPER ATTACHED WITH TIMER AND/OR ALARM
Takashi Funaki, Shimotsuwa-machi, Suwa-gun, Nagano-ken, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimotsuwa-machi, Suwa-gun, Nagano-ken, Japan
Filed July 28, 1969, Ser. No. 845,147
Claims priority, application Japan, July 27, 1968, 43/53,275
Int. Cl. G04c 21/28
U.S. Cl. 58—20
3 Claims



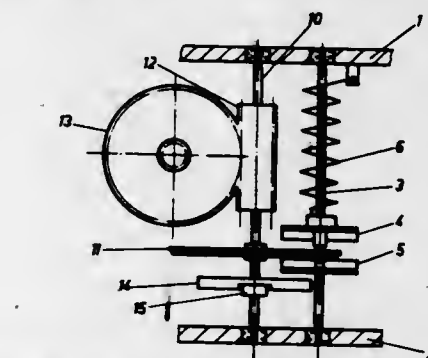
A timekeeper provided with a timer, or alarm, or both indicates time with numerals on a plurality of time indicating wheels. The wheels are rotatably mounted on a main shaft except one which is fixed to the main shaft. The timekeeper includes locking discs formed integrally with the time indicating wheels, a plurality of pinions freely rotatable around a separate shaft, a time setting wheel and a cam plate engageable therewith after a preset time, a time adjusting knob also operable for setting time on the time setting wheel, a control knob cooperating with a control lever, and a spring plate disengaging one arm of the control lever for operating a timer switch and also an alarm at a preset time. The timekeeper in another aspect of the invention is further provided with another control lever which is operated by a cam wheel rotatable by the time adjusting knob, whereby the duration of an "AUTO" period may be determined by the time adjusting knob.

3,609,957
DRIVE ARRANGEMENT FOR TIMEKEEPING SYSTEM
Frank W. Emerson and Lincoln J. Gostling, Peterborough, Ontario, Canada, assignors to General Time Corporation, Stamford, Conn.
Filed Mar. 27, 1969, Ser. No. 811,115
Int. Cl. G04c 3/00
U.S. Cl. 58—23
8 Claims



An improved drive arrangement for a timekeeping system. The drive arrangement includes an electrostatic motor including a rotor having a dielectric circumferential surface and a pair of electrodes operatively associated with the rotor for driving the rotor in response to D-C potential applied across said electrodes. A nuclear battery is connected to said electrodes for applying a D-C potential across said electrodes to drive said rotor. The torque generated by the rotor is utilized to drive a conventional mechanical time indicating means.

3,609,958
MAGNETIC DEVICE FOR TRANSFORMING AN OSCILLATORY MOTION INTO A ROTARY MOTION
Hanns F. Bertsch and Horst Graf, Schwenningen, Germany, assignors to Friedrich Mauthe G.m.b.H., Schwenningen, Germany
Filed Mar. 9, 1970, Ser. No. 17,796
Claims priority, application Germany, Mar. 7, 1969, P 19 11 651.9; Feb. 13, 1970, P 20 06 549.0
Int. Cl. G04c 3/00
U.S. Cl. 58—23 D
14 Claims

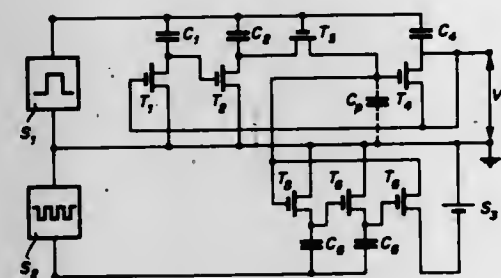


An oscillating magnet moves along radial armature portions of a wheel which are slanted to the plane of oscillation and to the path of the magnet to form air gaps of different width so that the wheel is stepwise rotated while the magnetic coupling between the magnet and an armature portion is established at the beginning of a stroke and interrupted at the end of the stroke where the air gap is widest, whereupon the next following armature portion is magnetically coupled with the magnet.

3,609,959
ELECTRONIC WATCH
Jakob Luscher, Carouge, Geneva, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere S.A., Geneva, Switzerland
Filed Aug. 26, 1969, Ser. No. 853,025
Claims priority, application Switzerland, Aug. 26, 1968, 12,785/68
Int. Cl. G04c 3/00
U.S. Cl. 58—23
6 Claims

An electronic watch with a timebase producing high frequency electrical pulses, an electronic scaler for this

frequency, and a time-indicating device controlled by the electrical pulses of scaled frequency produced by the scaler. The scaler is an integrated circuit and comprises several scaler stages arranged in cascade. Those stages intended for scaling low frequency pulses each comprise, on the one hand, a first elementary voltage amplifier having an insulated gate field-effect transistor and adapted either to allow the pulses received from the preceding stage to pass to the following stage when the transistor is blocked, or to block said pulses when the said transistor is conductive. The control voltage of said transistor is the voltage across its input capacitance. The stages for scaling the low frequency pulses comprise, on the other hand, means for alternately charging and discharging said input capacitance with the frequency of the pulses to be scaled. The watch further comprises, for each scaler stage intended for the scaling of low frequency pulses, a device adapted to periodically recharge the input capacitance of the transistor of said amplifier, at a frequency higher than that of the pulses being scaled, to



maintain the voltage across said capacitance at a level corresponding at least to the threshold voltage of said transistor despite the energy losses of said capacitance as a consequence of leakage currents. The aforesaid device comprises a periodic voltage source which delivers signals of frequency higher than that of the pulses being scaled. There is, further, a second elementary voltage amplifier having an insulated gate field-effect transistor, supplied from said source and connected with its input to the gate of the transistor of said first amplifier. Also provided are an electrical power source and an electronic switching circuit for periodically connecting said electrical power source to the gate of the transistor of said first amplifier which circuit is connected by its input to the output of said second amplifier. The arrangement is such as to provide recharging of said input capacitance by said electrical power source as long as the voltage across said capacitance is higher than the threshold voltage of the transistor of said second amplifier, at a frequency corresponding to that of the signals delivered by said periodic voltage source.

ERRATUM

For Class 58—39 see:
Patent No. 3,610,753

3,609,960 TIMEPIECE DIAL

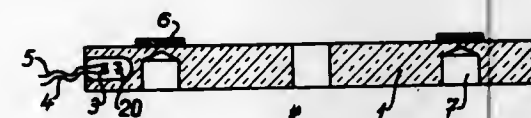
Charles Huther, La Chaux de Fonds, Switzerland, assignor to Alduc, S.A., La Chaux de Fonds, Switzerland
Filed Nov. 28, 1969, Ser. No. 880,570
Claims priority, application Switzerland, Nov. 28, 1968, 17,713/68; July 17, 1969, 10,929/69
Int. Cl. G04b 19/30, 19/06, 19/34

U.S. Cl. 58—50

5 Claims

A timepiece dial of translucent material has a light source such as an incandescent electric light in the mate-

rial of the dial which is illuminated to show the hour markers in relief. The dial preferably has internal re-



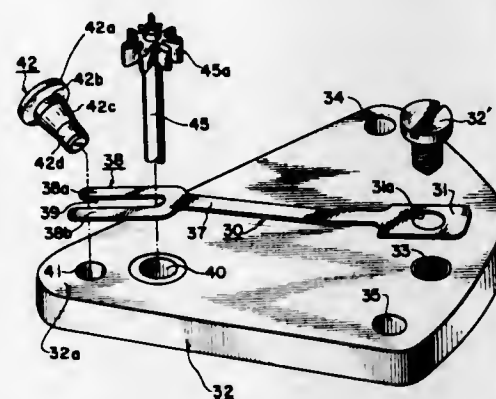
fracting surfaces to refract light through the part bearing the hour markers.

3,609,961 POSITIONING MECHANISM FOR PRESSURE SPRING MEANS IN TIMEPIECES

Akira Tazuki, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Feb. 16, 1970, Ser. No. 11,604
Int. Cl. G04b 19/02

U.S. Cl. 58—125

3 Claims



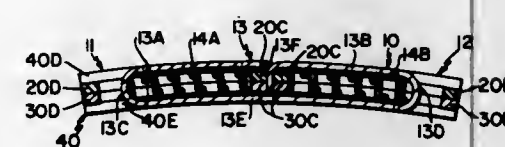
This invention concerns with a positioning mechanism for a pressure spring provided in a timepiece movement for exerting an axial resilient pressure onto a second hand arbor so as to subject the latter to a frictional rotation in compensation of unavoidable backlash existing in the related gearing. The positioning mechanism is provided with a positioning stationary pin or the like pressure-limiting means provided on a mounting plate or an upper plate which means is so designed and arranged that it mechanically cooperates with the free end of said spring for limiting the freely movable range of the spring end, as well as the pivotally movable range thereof in advance of fitting the second hand arbor in position in the timepiece movement, said pressure-limiting means being, however, normally kept out of mechanical contact with the spring during the regular operation of the timepiece movement.

3,609,962 LINK FOR A BUCKLE, WATCH BRACELET, WATCH STRAP OR SIMILAR ARTICLE

Kurt A. Rieth, 67 Ann Mary Brown Drive,
Warwick, R.I. 02888
Filed Jan. 23, 1970, Ser. No. 5,436
Int. Cl. F16g 13/22

U.S. Cl. 59—79 R

18 Claims



A link for a buckle, a watch bracelet, a watch strap or similar article. The link includes a first and second substantially rectangular frame member superimposed upon each other. Longitudinally curved sides of the frame

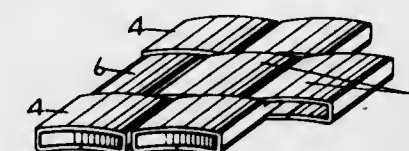
members are held together by connecting members secured by soldering, welding or by mechanical means. An inner link is positioned between the sides of the frame members and biased by a spring to a contracted position. In one embodiment the link is not expansible. In another embodiment it is expansible and is adapted to automatically expand and contract so that the bracelet or strap can be used with wrists of different sizes without discomfort to the wearer.

3,609,963 METAL BANDS AND CHAINS, e.g. FOR WRIST WATCHES

Minoru Ichinose, 1-32, 4-chome, Taito, Taito Ward,
Tokyo, Japan
Filed Nov. 25, 1968, Ser. No. 778,412
Int. Cl. F16g 13/00

U.S. Cl. 59—80

9 Claims



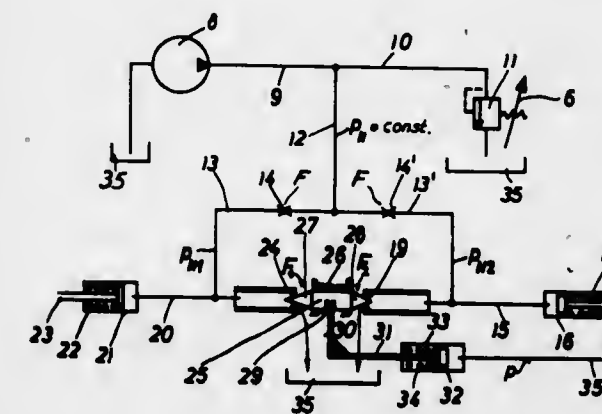
A wrist watch band or chain is formed of a plurality of composite metal bars each including a curved holding metal bar having a rectangular ring at each end and a curved metal bar having an indentation or slot on one side inserted into the holding metal bar to form an aperture with the holding bar, through which a link is extended to connect the adjacent solid metal bars.

3,609,964 REGULATED HYDRAULIC DRIVE

Walter Kobald, Stuttgart-Feuerbach, Germany, assignor to Robert Bosch, G.m.b.H., Stuttgart, Germany
Filed Apr. 14, 1970, Ser. No. 28,424
Claims priority, application Germany, Apr. 24, 1969, P 19 20 859.4
Int. Cl. F02b 73/00

U.S. Cl. 60—19

14 Claims



A hydraulic drive comprises a combustion engine, a hydraulic transmission whose pump is driven by the engine, and a regulating apparatus including an auxiliary pump discharging through a main conduit, whose pressure is regulated by a pressure-regulating valve under the control of an operator, and through two variable throttles whose throttle cross-sections are simultaneously increased and decreased, respectively, by throttle control means responsive to the pressure in the transmission pump. The different throttled pressures are applied to a first servo motor controlling the rotary speed of the combustion engine, and to a second servo motor controlling the transmission pump to vary the piston stroke and output of the same. When the operator adjusts the pressure-regulating

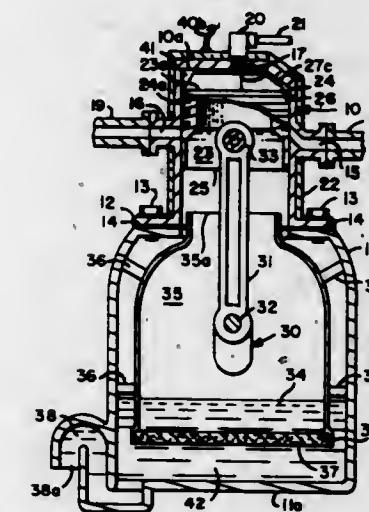
valve, the transmission motor operates at different rotary speeds, and any selected rotary speed is maintained by the regulating apparatus constant and independent of the load, while the regulated hydraulic drive operates at optimal efficiency.

3,609,965 INTERNAL STEAM GENERATING ENGINE

Leroy E. Hercher, 311 Meridian Road,
San Jose, Calif. 95126
Filed July 20, 1970, Ser. No. 56,300
Int. Cl. F01k 21/02

U.S. Cl. 60—27

11 Claims



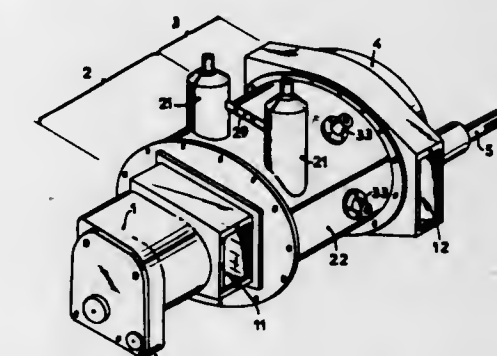
The internal steam generating engine includes a cylinder with inlet and outlet ports and a reciprocating piston connected by a rod to a crankshaft to produce rotary motion, wherein water rather than steam is injected into the working chamber of its cylinder. Its piston has an air friction producing unit with an elongated pocket and a plurality of narrow elongated passageways to cause the compressed and expanding mixture in the working chamber of the cylinder to produce heat to assist electrical heating elements in converting the injected water into expanding steam and also to maintain the steam pressure in the cylinder during the power stroke of the piston. Its crankcase includes a circumferential liner to direct escaping water to the bottom of the crankcase below its oil reservoir for removal thereof.

3,609,966 GAS TURBINE HAVING AN INLET AND OUTLET ARRANGEMENT SUITABLE FOR AUTOMOTIVE VEHICLES

Jack Guillot, Blanc-Mesnil, France, assignor to Etablissements Benne Marrel, Saint Etienne (Loire), France
Filed June 10, 1969, Ser. No. 831,901
Claims priority, application France, July 8, 1968, 50,194
Int. Cl. F02c

U.S. Cl. 60—39.16

3 Claims

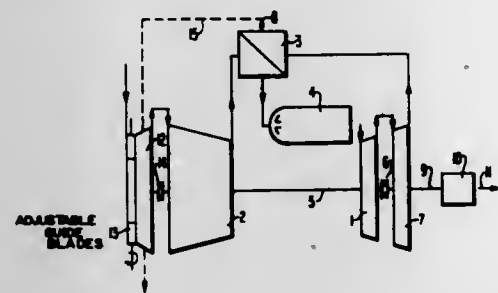


A gas turbine is provided with a pair of diametrically opposed radially extending air inlet ducts adjacent the

compressor and a pair of diametrically opposed, radially extending exhaust ducts adjacent the power turbine rotor means to adapt the turbine for automotive installation. A pair of parallel, cylindrical combustion chambers are disposed normal to the diametrically opposed inlet ducts and a bypass channel having a suitable control valve extends from a point intermediate the high pressure turbine rotor and the low pressure turbine rotor to the exhaust ducts.

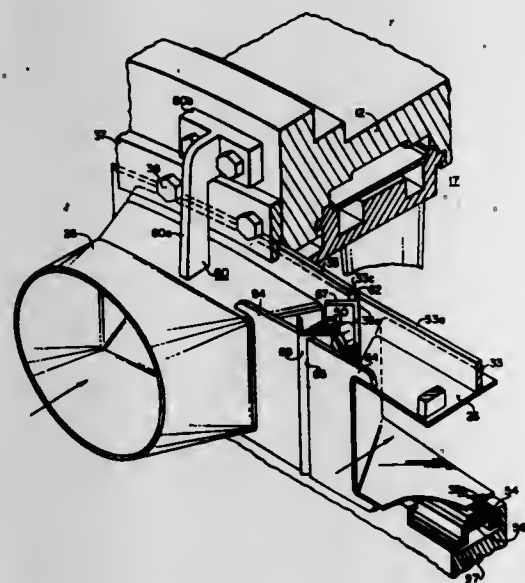
3,609,967
GAS-TURBINE DRIVE UNIT HAVING AN EXPANSION TURBINE WITH ADJUSTABLE GUIDE BLADING

Emil Waldmann, Stuttgart-Wangen, Germany, assignor to Daimler-Benz Aktiengesellschaft
Filed Aug. 7, 1969; Ser. No. 848,190
Claims priority, application Germany, Aug. 7, 1968, P 17 51 845.5
Int. Cl. F02c 1/06, 9/08, 7/02
U.S. Cl. 60—39.18 C 4 Claims



A gas turbine drive unit for vehicles in which an expansion turbine with an adjustable guide blading is connected to the input of the compressor to permit practically instantaneous power output increases of the drive unit by adjustment of the guide blading.

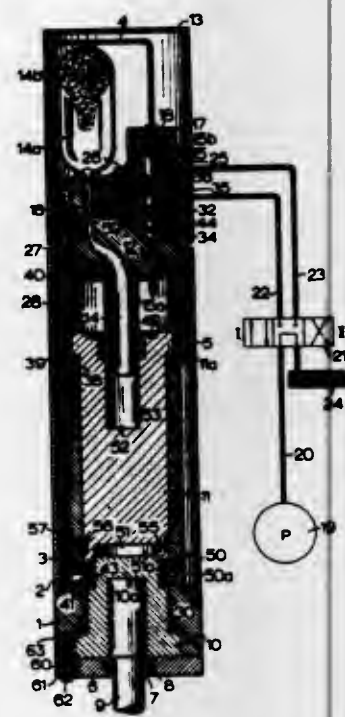
3,609,968
SELF-ADJUSTING SEAL STRUCTURE
George M. Mierley, Sr., Wilmington, and Thomas J. Rahaim, Claymont, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 29, 1970; Ser. No. 32,926
Int. Cl. F02c 7/20, 7/28; F01d 9/04
U.S. Cl. 60—39.32 12 Claims



A self-adjusting seal structure to prevent leakage of high-pressure compressor air between the transition portions of annularly spaced combustion chambers to the first stage of a gas turbine. The combustion chambers are cylindrical in cross-section and the transition members are arcuate in cross section at their outlets. The outlets are in closely spaced annular relation and jointly define a substantially continuous annular outlet for the hot combustion gases for motivating the turbine. The sealing structures are disposed between each pair of adjacent transition members and are provided with a pair of V-shaped members, axially aligned, and oppositely spring biased into wedging sealing relation with the support structures extending from the transition members, to thereby seal the spaces between the adjacent transition members.

tions of annularly spaced combustion chambers to the first stage of a gas turbine. The combustion chambers are cylindrical in cross-section and the transition members are arcuate in cross section at their outlets. The outlets are in closely spaced annular relation and jointly define a substantially continuous annular outlet for the hot combustion gases for motivating the turbine. The sealing structures are disposed between each pair of adjacent transition members and are provided with a pair of V-shaped members, axially aligned, and oppositely spring biased into wedging sealing relation with the support structures extending from the transition members, to thereby seal the spaces between the adjacent transition members.

3,609,969
HYDRAULIC IMPACT DEVICE
Jurgen Gerber, Dortmund-Bodelschwingh, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Berlin, Germany
Filed June 27, 1969; Ser. No. 837,064
Claims priority, application Germany, July 3, 1968, P 17 03 727.3
Int. Cl. F01l 15/02
U.S. Cl. 60—51 4 Claims

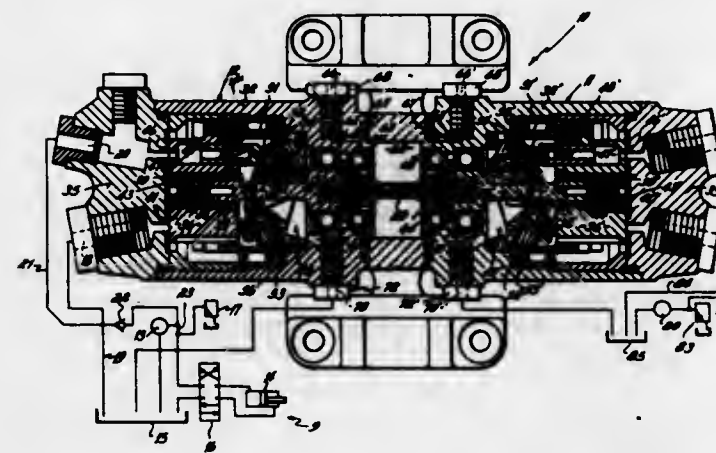


A hydraulic impact device with an alternately pressure fluid actuated piston and with a control valve for controlling the impact and return stroke of the impact piston, and with an impact force storing hydraulic accumulator, in which the impact piston is provided with a central blind hole in fluid communication with a hydraulic accumulator adapted instantaneously to release stored fluid into said blind hole.

3,609,970
HYDRAULIC POWER TRANSFER METHOD AND APPARATUS
William J. Benson, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.
Filed Mar. 6, 1970; Ser. No. 17,254
Int. Cl. F15b 15/18
U.S. Cl. 60—52 HC 15 Claims

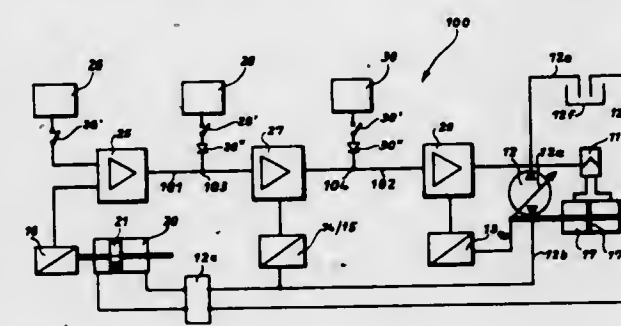
A method and apparatus for maintaining slow continuous rotation of an auxiliary power transfer unit when there is very little or no demand for fluid flow from the

pump of the unit. This slow continuous rotation of the unit is accomplished by inducing internal pump leakage,



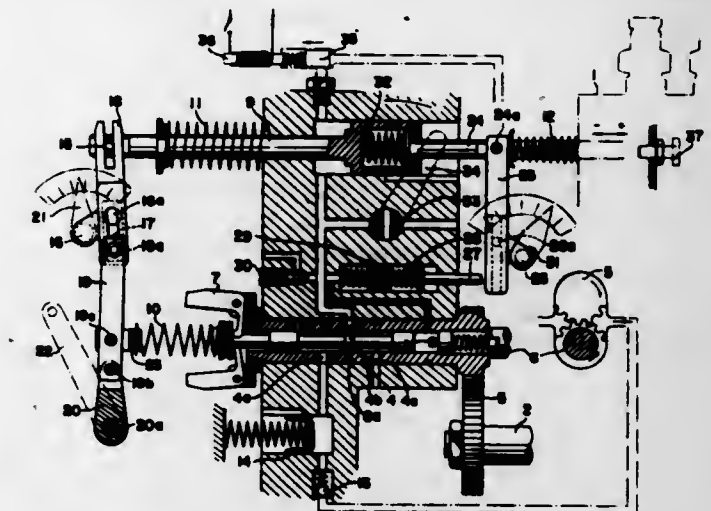
which leakage is sufficient to maintain continuous rotation of the pump. Thereby intermittent starting and stopping or so-called "chugging" of the unit is avoided.

3,609,971
METHOD AND APPARATUS FOR CONTROLLING THE DRIVE OF PRESSURE-FLUID ACTUATED MACHINE ELEMENTS
Ludwig Maurer, Emmendingen, Baden, Germany, assignor to Firma Ludwig Maurer & Co., Zug, Switzerland
Filed Feb. 25, 1969; Ser. No. 802,129
Claims priority, application Germany, Feb. 27, 1968, P 16 50 785.0
Int. Cl. F15b 15/18
U.S. Cl. 60—52 VS 13 Claims



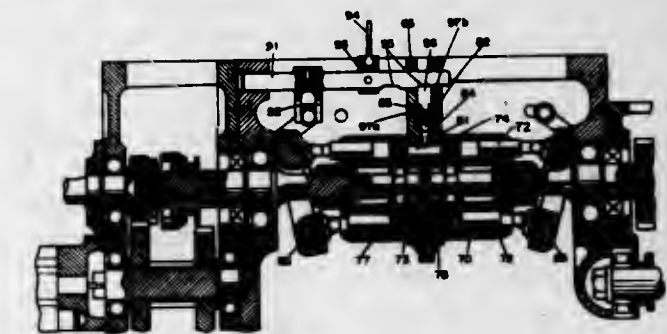
A method and apparatus for controlling the operation of machine elements driven by a fluid under pressure. A pump controls the flow of fluid under pressure and is itself adjusted by a valve-controlled adjusting unit. The latter unit includes an electrically operable valve connected into an electrical circuit which includes primary control and at least one secondary control connected in series with the primary control and connected electrically with this unit for controlling the latter. Reference and actual values of a primary control parameter are transmitted by suitable signal transmitter devices to the primary control while an actual value of a second parameter is transmitted to the secondary control to be combined there with the output of the primary control. In addition a signal transmitter for transmitting a reference value signal of the second parameter is provided, and this latter reference value is connected into the circuit by a limit switch connected to the output of the primary control so as to be combined with this output before it reaches the secondary control.

3,609,972
HYDRAULIC GOVERNOR
Noritoshi Tanaka, Higashi-Matsuyama-shi, Japan, assignor to Diesel Kiki Kabushiki Kaisha
Filed Oct. 13, 1969; Ser. No. 865,699
Int. Cl. F15b 15/18; F02c 9/04
U.S. Cl. 60—52 SR 5 Claims



A hydraulic centrifugally operated governor wherein a power piston is operated only by oil pressure in the fuel increasing direction and only by return springs in the fuel decreasing direction. A floating lever is engaged with the power piston and a slider, connected to a link, is engaged to a movable fulcrum of an eccentric shaft and a speeder spring is disposed between the link and fly weights of the governor. A compensator piston operatively connected to the power piston includes two equal springs acting on a push rod in a chamber which is in communication with an oil reservoir through a needle valve, and also with a pilot valve which controls the flow of oil to the power piston chambers.

3,609,973
HYDRAULICALLY DRIVEN VARIABLE SPEED POWER TRANSMISSION ASSEMBLY
Rihei Nagano, Higashi-Osaka, and Yoshinobu Murayama, Sakai, Japan, assignors to Kubota Tekko Kabushiki Kaisha
Filed Sept. 8, 1969; Ser. No. 856,053
Claims priority, application Japan, Sept. 14, 1968, 43/66,364; Nov. 15, 1968, 43/83,934
Int. Cl. F16h 39/46
U.S. Cl. 60—53 A 4 Claims



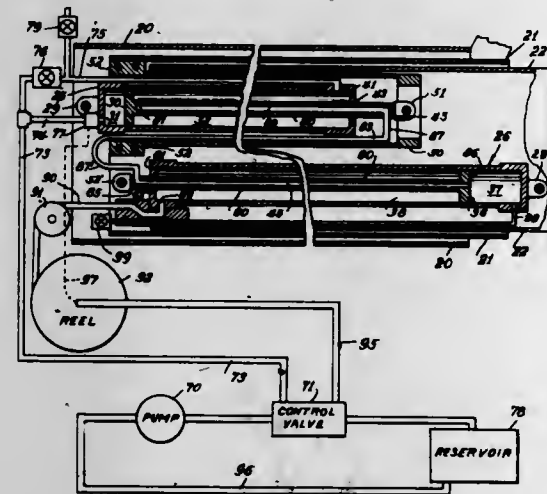
The present invention is characterized in that in a hydraulically driven tractor for agricultural or construction work, means is provided whereby resistance to the outflow of oil from an oil discharge path for pressure regulation communicating with a high pressure-side oil path establishing fluid connection between a hydraulic pump and a hydraulic motor is automatically increased in

response to a decrease in the rate of supply of oil to the hydraulic motor.

The invention eliminates the prior art disadvantage that the maximum horsepower that can be developed during low speed running is smaller than the maximum horsepower possessed by the engine itself, and the invention makes it possible to use with a minimum loss the maximum horsepower possessed by the engine itself during low speed running as well as during high speed running.

3,609,974
TELESCOPIC BOOM WITH MOVEMENT PROPORTIONED BY CYLINDERS IN SERIES
William J. Lado, Rome, N.Y., assignor to Pettibone Corporation, Chicago, Ill.
Filed June 5, 1969, Ser. No. 830,673
Int. Cl. F01b 1/00; F15b 7/00
U.S. Cl. 60—54.5

4 Claims



In a telescopic boom of three or more sections, the stages of telescopic action are made to keep pace with one another by powering the telescopic movements by cylinders which are connected in series so that the discharge from one powers the next. With a preferred three-section system, using two cylinders, both piston rods are connected to the intermediate section, the rearmost of the two telescoping sections, and the hydraulic connection between the cylinders is made via the piston rods. Hence, the cylinders are hydraulically connected together by a fixed length conduit. A single hose reel is sufficient, the reeled hose extending to the most forward moving cylinder. The boom section controlled by this cylinder telescopes rearwardly within the other sections, but around both of the cylinders, the piston of the non-advancing cylinder being connected to the boom part which it advances by a sleeve or frame which telescopes about the cylinder. A smaller diameter of cylinder is used for each succeeding advancing cylinder to equalize the telescopic movements. Lines for charging and bleeding extend to the forward ends of the cylinders and are provided with accessible manual gate valves.

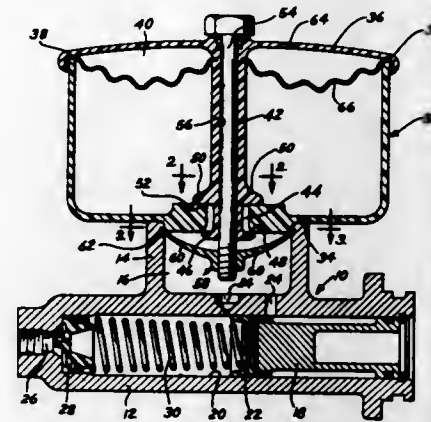
3,609,975
THROWAWAY MASTER CYLINDER RESERVOIR
Richard L. Lewis, South Bend, and Nicholas C. Blume, Auburn, Ind., assignors to The Bendix Corporation
Filed Feb. 27, 1970, Ser. No. 15,171
Int. Cl. F15b 7/00

U.S. Cl. 60—54.6 R

7 Claims

A replaceable fluid reservoir for a brake master cylinder has a fluid outlet communicating with a master cylinder bore. A resilient closure for the reservoir normally biases a valve stem toward a position closing the

outlet. A bolt securing the reservoir to the housing opposes the resiliency of the closure to urge the valve stem

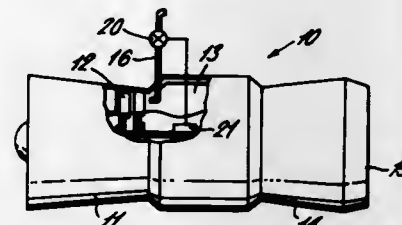


toward a position allowing fluid communication between the reservoir and the bore.

3,609,976
TEMPERATURE CONTROL BY MASS FLOW CONTROL OF GASES IN A GAS TURBINE ENGINE
Kenneth Reginald Kelly, Hinckley, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England
Filed Oct. 15, 1969, Ser. No. 866,492
Claims priority, application Great Britain, Oct. 16, 1968, 49,129/68
Int. Cl. F02k 3/02

U.S. Cl. 60—226

6 Claims

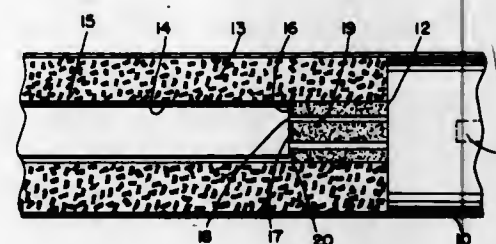


A gas turbine engine comprising sensor means responsive to a function of engine rotational speed, and control means, which are brought into operation by the sensor means only when the said speed does not exceed idling speed, the control means, when operated, increasing the gas temperature in a region downstream of the upstream end of the combustion equipment of the engine to substantially eliminate the presence of unburnt fuel in the exhaust gases leaving the engine.

3,609,977
GAS GENERATOR
Joseph B. McCormick, Willingboro, N.J., assignor to the United States of America as represented by the Secretary of the Army
Filed June 8, 1970, Ser. No. 44,488
Int. Cl. F02k 9/06

U.S. Cl. 60—245

3 Claims



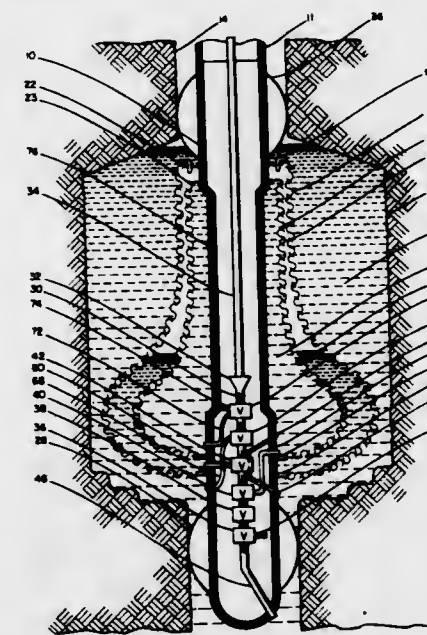
A lightweight multi-phase gas generator having a single pressure chamber defining tube containing a rocket propellant grain. A booster grain is concentrically integral with the propellant grain rearward end and has bonded thereto an end portion of a frangible and flexible boot that

lines the central longitudinal passage of the propellant grain. Aligned apertures in the booster grain and boot end portion place the igniter in fluid communication with the boot interior, such that upon booster grain ignition developed pressure gas will expand the boot wall outwardly to protect the inner surface of the rocket propellant grain from premature ignition before substantial completion of the initial booster phase.

3,609,978
METHOD OF REMOTELY CONSTRUCTING A ROOM
Jarvis D. Michie and Robert C. De Hart, San Antonio, Tex., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 7, 1970, Ser. No. 1,088
Int. Cl. B65g 5/00

U.S. Cl. 61—5

10 Claims

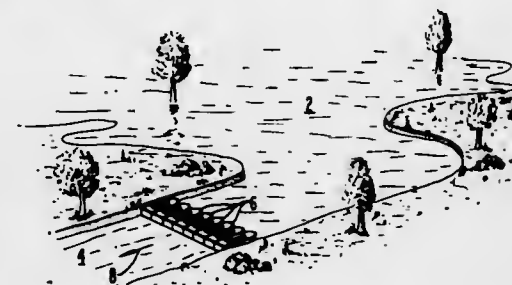


A method of constructing a room deep within the earth by personnel at the surface. A dual wall bladder of a water-tight, pliable fabric material is lowered down a shaft into a selected position. The bladder is filled with a concrete grout while a heavy fluid having essentially the same density as the grout is maintained on both sides of the bladder to facilitate complete deployment of the bladder by the grout to form a room of desired configuration.

3,609,979
FLOOD CONTROL METHOD AND APPARATUS
Michael Lukawsky, 871 N. 22nd St., Philadelphia, Pa. 19130
Filed Nov. 21, 1969, Ser. No. 878,818
Int. Cl. E02b 3/02

U.S. Cl. 61—2

11 Claims

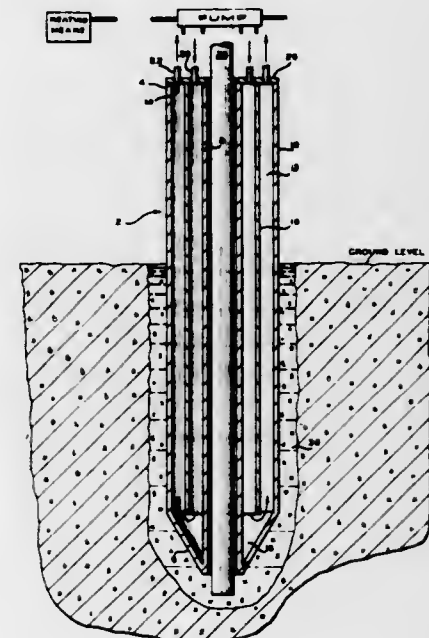


Flood control method and apparatus utilize tubular bodies with centrally located impellers which are placed in a waterway in the vicinity of a flooded location where the impellers promote the flow of water away from the flooded location.

3,609,980
METHOD AND APPARATUS FOR INSTALLING SUPPORTING ELEMENTS IN PERMAFROST
John R. Bowers, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Dec. 29, 1969, Ser. No. 888,654
Int. Cl. E02d 7/00

U.S. Cl. 61—53.5

6 Claims

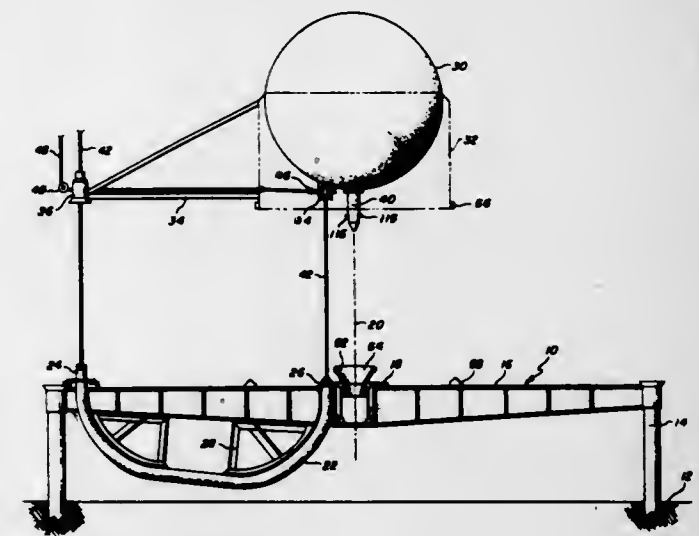


A method and apparatus for thawing permafrost and installing an elongated supporting element therein.

3,609,981
OCEAN DESCENT SYSTEM METHOD AND MEANS
Robert G. Cook, San Pedro, Calif., assignor to North American Rockwell Corporation
Filed July 8, 1969, Ser. No. 839,993
Int. Cl. E02b 17/02

U.S. Cl. 61—69

7 Claims

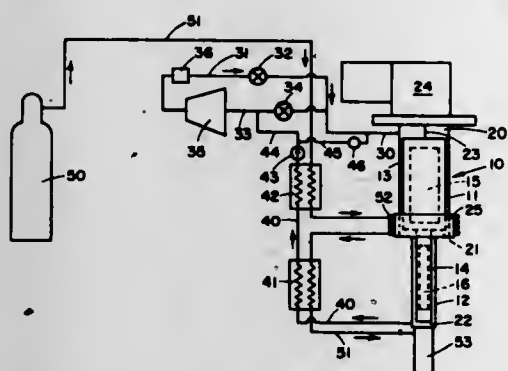


In offshore oil production operations, a platform is initially secured to the ocean floor, and a submersible housing is thereafter hauled down from the ocean surface in precise directional orientation with respect to the platform, as required for mating of structural attachment connections therebetween. Orientation is achieved by use of a U-shaped hawsepipe on the platform, through which the haul-down hawser is threaded, the pipe ends being spaced apart a fixed distance. A guide arm system mounted on

the housing engages the hawser at two locations spaced apart a distance coinciding with the mentioned pipe ends. Locking connection elements on the platform and housing interengage automatically due to precise orientation therebetween as the housing moves into mating relationship with the platform.

3,609,982 CRYOGENIC CYCLE AND APPARATUS FOR REFRIGERATING A FLUID

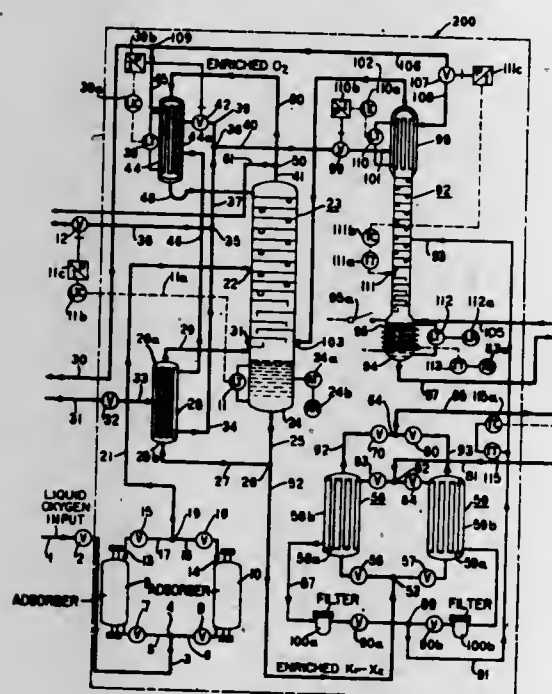
James A. O'Neill, Bedford, and Robert W. Stuart, Wakefield, Mass., assignors to Cryogenic Technology, Inc.
Filed May 18, 1970, Ser. No. 38,444
Int. Cl. F25b 9/00; F25j 1/00
U.S. Cl. 62-9 16 Claims



Method and apparatus for cooling and liquefying a refrigerated fluid such as hydrogen. A small amount of cold refrigerating fluid, bled off from a cryogenic refrigerator or liquefier, is used to cool the refrigerated fluid over a temperature range. Final cooling and liquefaction if desired is then accomplished at essentially constant temperature. The result is more efficient use of the refrigerating fluid.

3,609,983 KRYPTON-XENON RECOVERY SYSTEM AND PROCESS

Antony Lofredo, Springfield, and Francis J. Daly, Whitehouse Station, N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed May 16, 1968, Ser. No. 729,675
Int. Cl. F25j 3/02, 3/08
U.S. Cl. 62-22 18 Claims

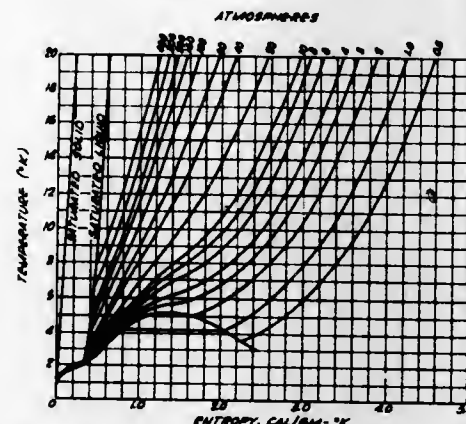


A krypton-xenon mixture is recovered from the oxygen stream of an air separation plant in a gravity flow two-stage distillation process. Hydrocarbon contaminants are

removed by adsorption and catalytic combustion, the resultant water and carbon dioxide being frozen out in heat exchangers. The final krypton-xenon product includes about 1 percent oxygen and about 0.15 percent hydrocarbon impurity.

3,609,984 PROCESS FOR PRODUCING LIQUEFIED HYDROGEN, HELIUM AND NEON

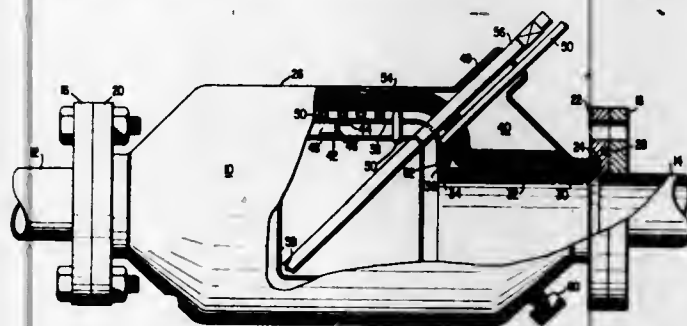
Leo Garwin, 1512 Camden Way, Oklahoma City, Okla. 73116
Filed Apr. 25, 1969, Ser. No. 819,242
Int. Cl. F25j 1/01, 1/02
U.S. Cl. 62-22 9 Claims



A process for liquefying hydrogen, helium and neon more efficiently and economically than by methods previously practiced, which process includes the steps of compressing the gas (hydrogen, helium or neon) to a pressure such that, upon isobarically cooling the thus compressed gas, a temperature above the critical temperature of the gas is reached at which the gas can be isentropically expanded to yield substantially a single liquid phase at atmospheric pressure; then isobarically cooling the gas at this pressure to such temperature; and finally isentropically expanding the gas to substantially atmospheric pressure through a work engine.

3,609,985 VACUUM COLD TRAP

James R. Dehaan, Boulder, Colo., assignor to Cryogenic Engineering Co., Denver, Colo.
Filed Dec. 5, 1968, Ser. No. 781,371
Int. Cl. B01d 5/00
U.S. Cl. 62-55.5 16 Claims

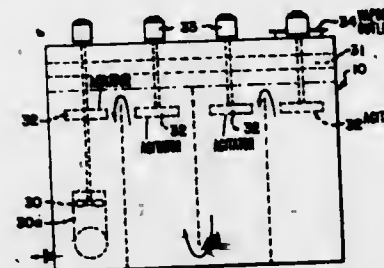


A cold trap having a cryogen reservoir is located in a vacuum line between a pump and the evacuated system, so that gases from the system are drawn past the reservoir on the way to the pump. A fill tube enters the reservoir at a 45° angle to the vacuum line.

The reservoir is surrounded by a separately evacuated vacuum jacket which has a vent tube from the reservoir coiled about the inner wall thereof and includes a laminated bulk insulation. In addition, the cold trap's inlet and fill tubes are comprised of low conductive material to conserve the trap's cold and maintain cold trapping surfaces.

3,609,986 METHOD AND APPARATUS FOR FREEZING, UTILIZING A CONTINUOUS FLOW THROUGH MULTIPLE CHAMBERS

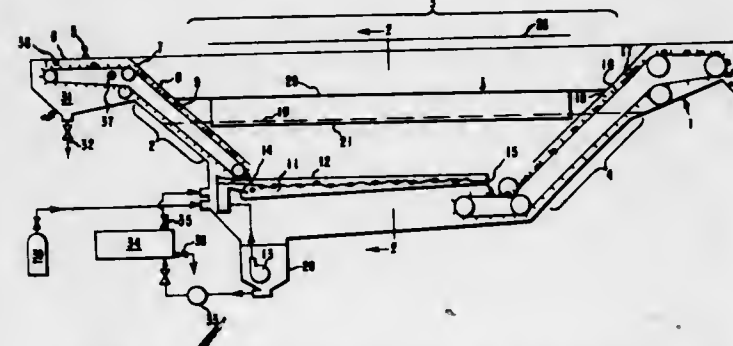
George B. Karnofsky, Mount Lebanon, Pa., assignor to Blaw-Knox Company, Pittsburgh, Pa.
Filed Jan. 17, 1968, Ser. No. 698,635
Int. Cl. B01d 9/04
U.S. Cl. 62-58 10 Claims



This specification discloses a system for partial freezing of solutions including improvements in freezing apparatus and method, to produce a solid crystallized product and a concentrated solution product, either or both of which may be the desired end product of the apparatus or the method. In particular, it relates to the technique of effecting partial freezing by the vaporization of liquid in, or mixed with, the solution being frozen, using a multi-compartmented freezing vessel in which the top of each compartment is open to a vapor space from which vaporized liquid is evacuated and the compartments are arranged in series to provide overflow of liquid from alternate compartments into the intervening compartments and underflow from the intervening compartments into the overflowing compartments. The method of partial freezing is to cause a recirculating flow of slurry of crystals and solution through an endless series of such alternate overflow, underflow compartments of substantial depth, vaporizing liquid at the surface of the slurry in the compartments to extract heat therefrom and undercool the solution in process, and retaining the undercooled solution in contact with the crystals in the lower parts of the compartments to effect crystallization and crystal growth therein.

3,609,987 METHOD AND APPARATUS FOR EXTRACTING HEAT FROM ARTICLES WITH AN EBULLIENT LIQUID FREEZANT

Vincent H. Waldin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 1, 1970, Ser. No. 24,532
Int. Cl. F25d 13/06
U.S. Cl. 62-63 10 Claims

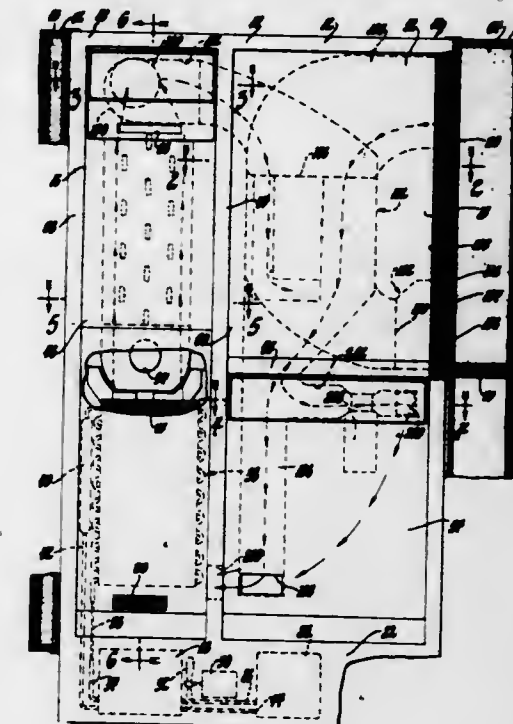


In an improved method, and apparatus, for extracting heat from articles by directly contacting the articles, in the heat extraction zone of an open vessel, with an ebul-

lient liquid freezant, while producing and maintaining a non-condensable gas-freezant vapor interface in the vessel by means of a vapor condensing means in the vessel, said condensing means being operated at a temperature below the normal boiling point of the freezant, the level of the interface being below the level of all paths to the outside atmosphere but above the level at which the articles come in direct contact with the liquid freezant, said articles being introduced into and removed from the vessel without substantially disturbing the interface and without introducing any significant amount of non-condensable gas below the interface, the improvement comprising, while utilizing a suitable apparatus, producing and maintaining interfaces in the heat extraction zone and in an adjacent, vapor communicating, vapor condensing zone of the vessel by means of a vapor condensing means located in the vapor condensing zone, condensing substantially all the freezant vapor generated in the heat extraction zone and communicated to the vapor condensing zone, and recycling condensed freezant from the vapor condensing zone to the heat extraction zone.

3,609,988 SIDE-BY-SIDE REFRIGERATOR FREEZER WITH HIGH HUMIDITY COMPARTMENT

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 25, 1970, Ser. No. 40,214
Int. Cl. F25d 17/04
U.S. Cl. 62-187 5 Claims



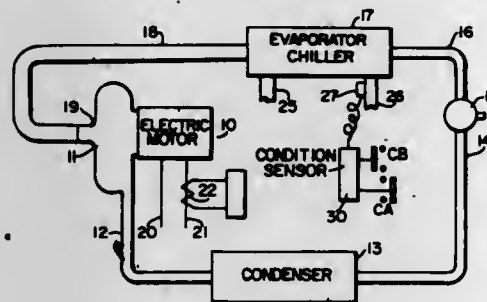
In preferred form, a side-by-side refrigerator freezer having a vertical partition separating a freezer compartment from an above freezing compartment which is divided into a high humidity space and a low humidity space. All of the compartments are cooled by air flow across a single evaporator located within a plenum in a freezer compartment. A parallel flow heat exchanger directs cold dry air into an envelope for cooling the high humidity space and thereafter receives the return air from the envelope to recool it prior to passage into the low humidity compartment for return flow to the evaporator plenum. A by-pass duct from the parallel flow exchanger returns part of the recool air to a low point in the low humidity space to direct excess air from the parallel exchanger back into the cooling plenum.

3,609,989 CONTROL FOR REFRIGERATION SYSTEM CENTRIFUGAL COMPRESSOR

Douglas K. Richardson, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 15, 1970, Ser. No. 28,678
Int. Cl. F25b 41/04

U.S. Cl. 62—202

9 Claims



A refrigeration system is provided with a centrifugal refrigerant gas compressor having movable capacity control means in its inlet and a fluid pressure responsive piston is movable to move the capacity control means accordingly. First and second solenoid operated fluid valves are arranged to be normally deenergized in a system to supply fluid pressure equally to both sides of the piston and maintain the capacity control immovable at a particular capacity position. When a respective one of the valves is energized, the piston will be moved in a respective direction to change the position of the capacity control and increase or lower the capacity control, accordingly. A refrigeration system condition sensing control responds to provide a respective electric energizing signal to the respective valve solenoid in the form of an intermittent signal increasing in frequency and/or duty cycle to a continuous signal as the sensed condition lowers or rises from a preset condition, respectively, thus increasing capacity control sensitivity without instability about the preset condition.

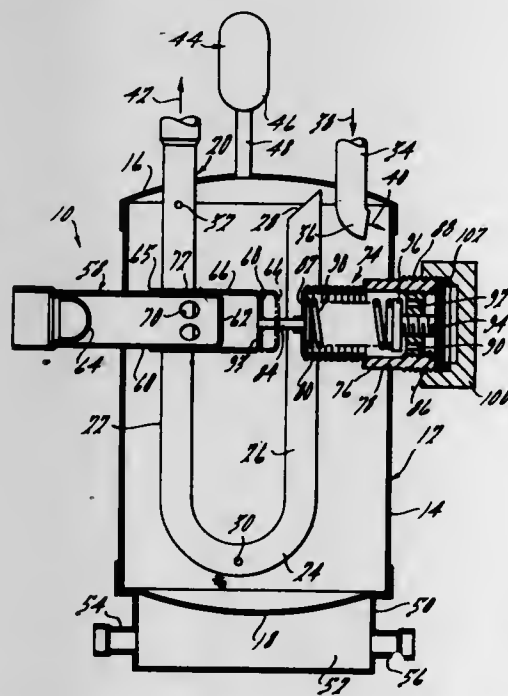
3,609,990 REFRIGERATION ACCUMULATOR

Edward W. Bottum, 9357 Spencer Road, Brighton, Mich. 48116

Filed Jan. 22, 1970, Ser. No. 5,005
Int. Cl. F25b 43/00

U.S. Cl. 62—217

9 Claims



A suction accumulator is provided for the compressor of a refrigeration system. The accumulator includes inlet

means for connection to the output of the compressor for injection of the relatively high temperature, high pressure output gases of the compressor into the accumulator casing when the pressure within the accumulator casing falls below a predetermined level. A valve is provided on the inlet for controlling the injection of compressor gases into the accumulator. The valve is automatically actuated to open when the pressure within the accumulator falls below the predetermined level and is automatically actuated to close when the pressure within the accumulator rises to the preselected value.

3,609,991 COOLING SYSTEM HAVING THERMALLY INDUCED CIRCULATION

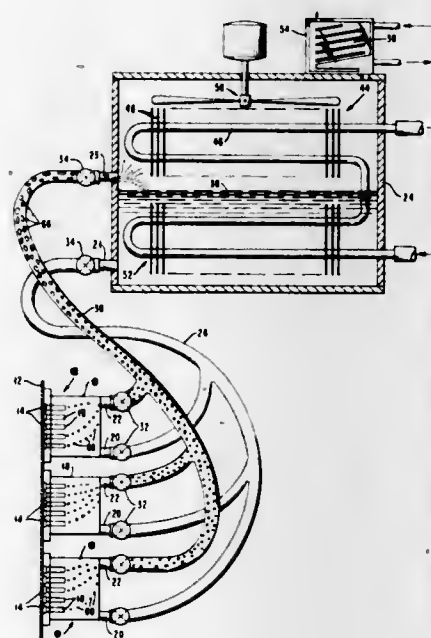
Richard C. Chu and Un-Pah Hwang, Poughkeepsie, N.Y., assignors to International Business Machines Corporation

Filed Oct. 13, 1969, Ser. No. 865,710

Int. Cl. F25d 17/00

U.S. Cl. 62—333

7 Claims



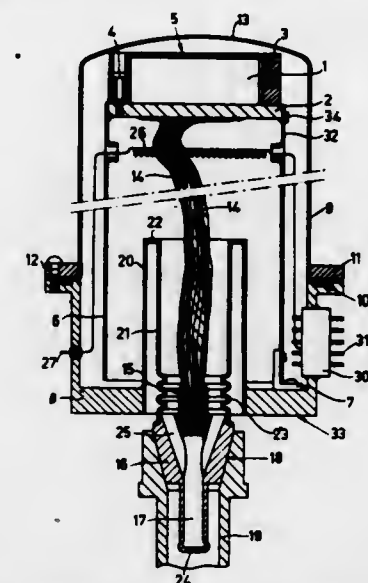
A plurality of modular packaged heat generating electronic components are cooled so as to remain within predetermined operating temperature limits. Each of the modular units contains a chamber having a bottom inlet and a top outlet. The outlet at the top of each module is connected to an inlet of a reservoir of cooling liquid above the liquid level and below a condensing unit. The inlet of each modular unit is connected to the reservoir below the liquid level. A subcooler is provided within the liquid in the reservoir for maintaining the coolant liquid below a desired temperature. As heat is generated at the components, nucleate boiling takes place wherein the vapor bubbles rise and set up a two-phase flow within the connection between the top of the module and the reservoir. The vapor, upon entering the reservoir, rises and condenses on the condenser while the fluid falls into the liquid within the container. This two-phase flow sets up a pumping action which induces the natural circulation within the system. The system is self-regulating in that as the heat generation increases, the nucleate boiling increases, thus increasing the pumping action to thereby increase the cooling.

3,609,992 HERMETICALLY SEALED BOX FOR MAINTAINING A SEMICONDUCTOR RADIATION DETECTOR AT A VERY LOW TEMPERATURE

Jean Antoine Cacheux, Caen, France, assignor to U.S. Philips Corporation
Filed Aug. 12, 1969, Ser. No. 849,447
Int. Cl. F25b 19/00

U.S. Cl. 62—514

11 Claims

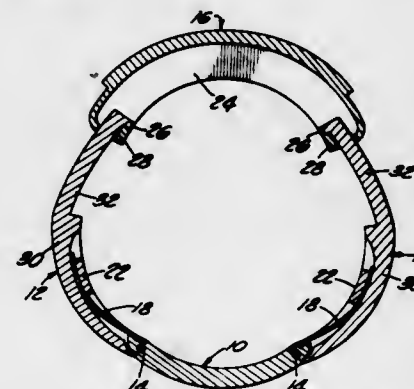


Hermetically closed box for accommodating a semiconductor device, such as a radiation detector which is maintained in a vacuum and at low temperature by connection to a cryostat by a flexible cold conductor, with additional means in the box for improving the vacuum.

3,609,993
EXPANDABLE FINGER RING
Paul Graf, 1167 Gallaway St., Pacific Palisades, Calif. 90272
Continuation of application Ser. No. 498,534, Oct. 20, 1965. This application July 25, 1969, Ser. No. 847,806
Int. Cl. A44c 9/02

U.S. Cl. 63—15.65

3 Claims



A ring which is adjustable in size to accommodate different size fingers and to readily pass over the knuckles when placed on or removed, having a top inner recessed portion, side pieces slidably engaging the top portion, spring members mounted in the side members, these side members hinged to a bottom member so that the spring members will urge the side members into the recessed portion of the top member and thus control the circumference of the ring.

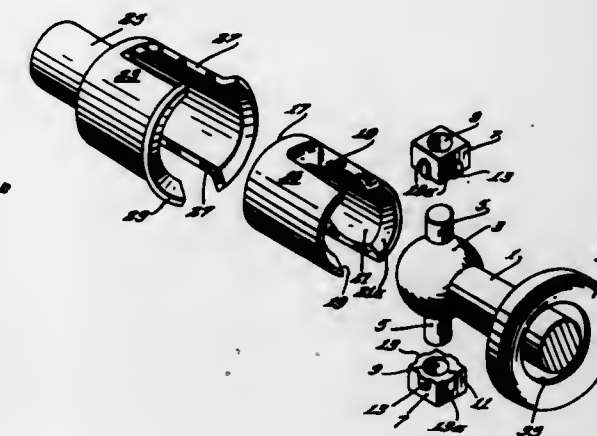
3,609,994
UNIVERSAL JOINT
John B. Colletti, Grosse Pointe Park, and Leonard J. Zukowski, Detroit, Mich., assignors to TRW, Inc., Warren, Mich.
Filed Oct. 1, 1969, Ser. No. 862,756
Int. Cl. F16d 3/16

U.S. Cl. 64—8

10 Claims

A universal joint coupling accommodating transmission of rotating forces through shafts in angular relation to

each other, and especially useful in steering columns of vehicles, including vehicles equipped with tiltable or swiveling steering wheels. The joint coupling has a plastic bearing mounted in a housing at the end of one shaft which forms the bearing surface for a ball mounted at the end

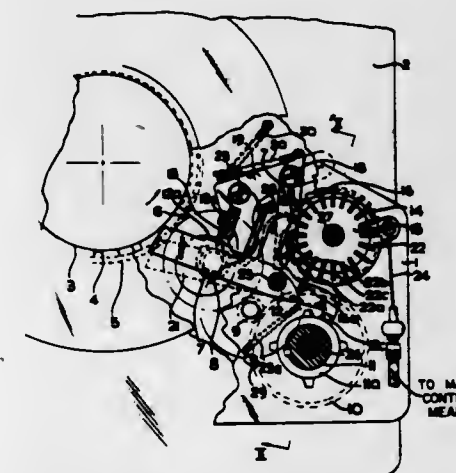


of a second shaft. The ball has oppositely-extending projections rotatable and slidable in opposite slots in the housing. The structure not only transmits rotation of the shafts, but accommodates axial displacement of the shafts through sliding movement of the projections in the slots of the housing.

3,609,995
PATTERNING MECHANISM FOR
KNITTING MACHINES
Denis John Harris, Leicester, and Peter Michael Findlay, Leicester Forest East, England, assignors to The Bentley Machine Development Company Limited, Leicester, England
Filed Feb. 6, 1969, Ser. No. 797,168
Claims priority, application Great Britain, Feb. 10, 1968, 6,724/68
Int. Cl. D04b 15/74

U.S. Cl. 66—50

6 Claims

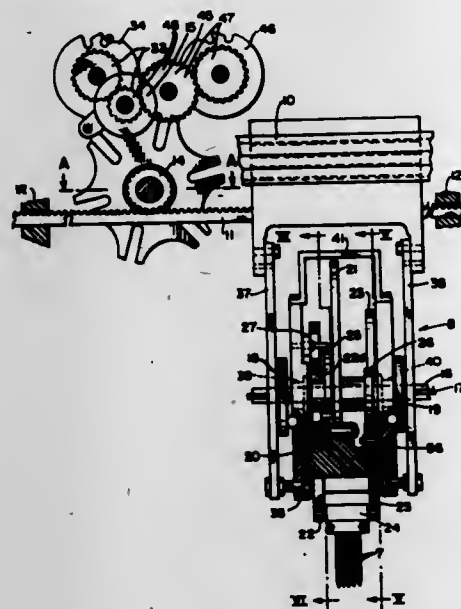


A patterning device in a circular knitting machine having a rotary pattern controlling member fitted with interchangeable patterning means and driven at a constant speed suitably related to the speed of rotary knitting, selector levers associated with the said patterning means to act on butts of instruments associated with the needles, and means for bluffing different groups of selector levers as and when required, said bluffing means being selected for actuation at appropriate times from a control drum or chain of the machine.

3,609,996 **METHOD OF AND APPARATUS FOR MAKING NARROWED KNITWEAR ON FLAT-BED KNITTING MACHINES**

Helmut Irmscher and Harald Kuhnrich, Karl-Marx-Stadt, Germany, assignors to VEB Fahrradwerk Elite-Diamant, Karl-Marx-Stadt, Germany
 Filed Dec. 17, 1968, Ser. No. 784,411
 Int. Cl. D04b 7/10
 U.S. Cl. 66—70

5 Claims



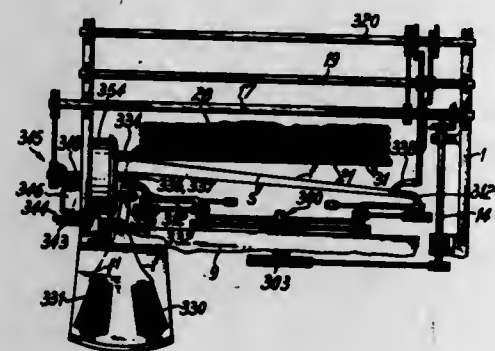
A method of making narrowed knitwear on a flat bed knitting machine in which the entire narrowing operation takes place during a retarded return stroke of the knitting carriage, and a narrowing device for a flat-bed knitting machine with a plurality of narrowing housings fixedly mounted on the thread guide bridge of the knitting machine, grooved shafts, cam discs and eccentrics slidably mounted on the grooved shafts, and a drive including a slide and a series of connecting links for drivingly connecting the discs and eccentrics to the narrowing needles in the narrowing housings for respectively lifting and lowering and laterally offsetting the needle.

3,609,997 **WARP KNITTING MACHINE**

Stefan Furst, Monchen-Gladbach, Germany, assignor to Stefanie Furst and Hans Joachim Furst, both of Monchen-Gladbach, Germany, heirs of said Stefan Furst, deceased, assignors to Walter Reimers, Monchen-Gladbach, Germany

Filed Sept. 3, 1969, Ser. No. 854,974
 Claims priority, application Germany, Sept. 4, 1968, P 17 85 269.6
 Int. Cl. D04b 23/12
 U.S. Cl. 66—84

11 Claims



Warp knitting machine having a zone wherein needles are disposed and means for supplying warp threads to the needles includes a device for filling a weft having holder

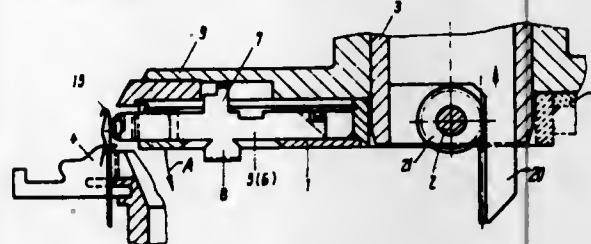
members for making the weft ready outside the needle zone, the holder members being disposed in the vicinity of weft reversal locations and being rotatable in closed paths, means for guiding the weft to the warp threads, the holder members having a thread guide cooperating therewith for making the weft ready, the thread guide being displaceable in the closed travel path of one of the holders, and means for feeding a plurality of wefts selectively to the thread guide for entrainment thereby in the closed travel path thereof.

3,609,998 **CIRCULAR KNITTING MACHINE WITH A PIVOTABLE HALF DIAL**

Fritz Heinz Mutze, Karl-Marx-Stadt, Kurt Gerhard Barth, Dittersdorf, and Claus Gottfried Willy Kertzacher, Zachopan, Germany, assignors to VEB Wirkmaschinenbau Karl-Marx-Stadt

Filed Sept. 8, 1969, Ser. No. 855,931
 Int. Cl. D04b 15/02
 U.S. Cl. 66—95

4 Claims



The invention relates to circular knitting machines with a pivotable half dial in which transfer jacks are slidable inwardly and outwardly by means of a cam plate. To avoid that a hole and bulge remains in the tip of a stocking, the transfer jacks adjacent to the edge zone of the half dial are retracted to a lesser extent than all the remaining transfer jacks. This is accomplished by providing the transfer jacks in said edge zones with recessed shoulders for cooperation with said cam plate.

3,609,999 **DOUBLE KNIT FABRIC UTILIZING TUCK, KNIT AND WELT STITCHES**

James H. Blore, Greenville, S.C., assignor to Phillips Fibers Corporation
 Filed Mar. 16, 1970, Ser. No. 19,755
 Int. Cl. D04b 9/08
 U.S. Cl. 66—196

8 Claims

	C1	D1	C2	D2	C3	D1	C1	D2	C2	D1	C3	D2
1	K	W	K	T	W	W	K	T	K	W	W	T
2	W	K	W	W	K	K	W	W	K	K	W	W
3	K	T	K	W	T	K	W	K	T	W	W	W
4	W	W	W	K	K	W	W	W	W	W	K	K
5	K	W	T	W	W	K	T	W	W	W	T	W
6	W	T	W	W	K	T	W	W	W	T	K	W
7	K	W	K	K	W	W	K	K	W	W	K	W

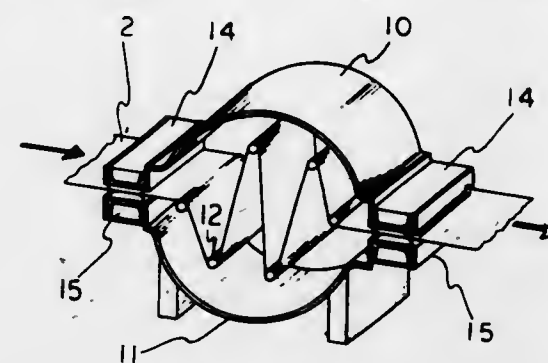
A double knit fabric has a first set of alternating wales forming the face of the fabric and a second set of wales forming the reverse side of the fabric. Each course has at least first and second yarns. In the front wales, one of the yarns in each course will have a knit stitch in a given wale and the other yarns in that course will have a welt stitch

for that wale. Each of the reverse side wales has a repeating stitch pattern of a knit stitch, at least one welt stitch, and a tuck stitch, with the stitch pattern of adjacent pairs of reverse side wales being offset with respect to each other.

3,610,000 **SEAL MEANS**

Karl Peter Lopata, Krefeld-Gartenstadt, Germany, assignor to Joh. Kleinschmidt & Söhne, Krefeld, Germany
 Filed July 29, 1970, Ser. No. 59,237
 Claims priority, application Germany, July 29, 1969, P 19 38 406.6
 Int. Cl. D06c 1/10
 U.S. Cl. 68—5 E

8 Claims

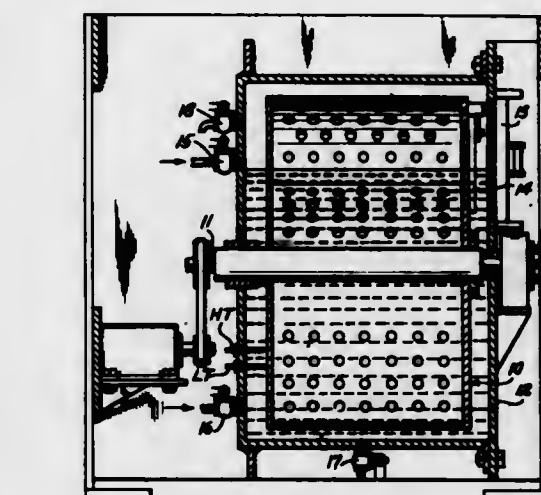


An improvement for sealing devices for continuous web processing tanks which have a slot for passage of the web in and out of the tank, with the slots including a pair of membrane foil means positioned about the slot so that the web passes between the membrane means, the improvement comprising a spring means fixedly mounted at one end on the means forming the slot and positioned to contact one of the membrane foil means under spring compression at a point urging that one membrane means towards the other means.

3,610,001 **WASHING MACHINE WITH SLOW COOLDOWN FEATURE**

Norvin L. Pellerin, New Orleans, La., assignor to Pellerin Minor Corporation, New Orleans, La.
 Filed May 5, 1969, Ser. No. 821,861
 Int. Cl. D06f 33/02, 39/02, 39/08
 U.S. Cl. 68—12 R

6 Claims

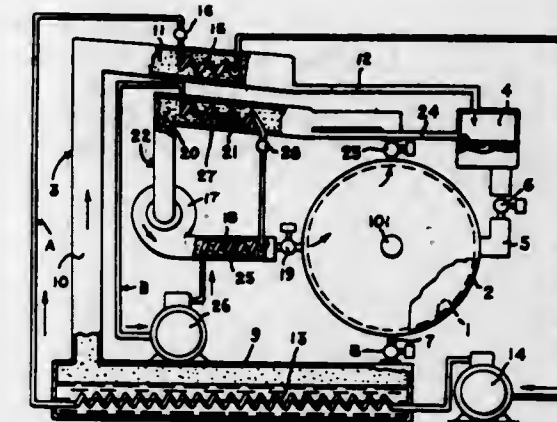


The contents of a washing machine which are normally drained after a cycle using a hot liquid are instead cooled gradually by adding cold water from the bottom while the resulting mixture is withdrawn from the top.

3,610,002 **WEARING APPARELS DRY CLEANING MACHINE**

Pierio Carpijani, 14 Via Cairoli, Bologna, Italy
 Filed Feb. 11, 1970, Ser. No. 10,453
 Claims priority, application Italy, Feb. 13, 1969, 6,805/69
 Int. Cl. D06f 43/08; B01d 5/00
 U.S. Cl. 68—18 C

5 Claims



A dry cleaning machine employing low boiling point solvents comprises a cleaning chamber containing a revolving drum connected through a pair of valved ducts to a clean solvent tank and to a soiled solvent receiver and still; said soiled solvent still being connected with said clean solvent tank by means of ducts; said cleaning chamber being further connected to a valved drying air circuit including an air-inlet duct and an air outlet duct and an a pair of heat pumps, based on the vapor compression refrigerating cycle and each comprising a heat-evolving condenser and a heat-absorbing evaporator; the condenser of one of said heat jumps being fitted in the soiled solvent still while the corresponding evaporator is inserted in the distillation duct leading to the clean solvent tank; while the condenser of the other of said heat pumps is inserted on the delivery duct of a blower blowing air into the cleaning chamber, the corresponding evaporator being inserted in the air outlet duct of said chamber said air outlet duct being connected to a liquid solvent return duct opening in said clean solvent tank.

3,610,003 **DIAPER RINSE AND WRINGING DEVICE**

Donald E. Ferrin, 1802 Broadway Ave., and Hugh W. Wolchek, 616 Oak Lane, both of Albert Lea, Minn. 56007, and William E. Wolchek, Rte. 2, Monticello, Minn. 55362
 Filed Oct. 3, 1969, Ser. No. 863,581
 Int. Cl. D06f 5/02
 U.S. Cl. 68—214

6 Claims



A diaper rinser and wringing device is disclosed that enables soiled diapers to be both rinsed and wrung out manually without touching the diaper, the toilet bowl or toilet water. The device consists of a hollow housing or

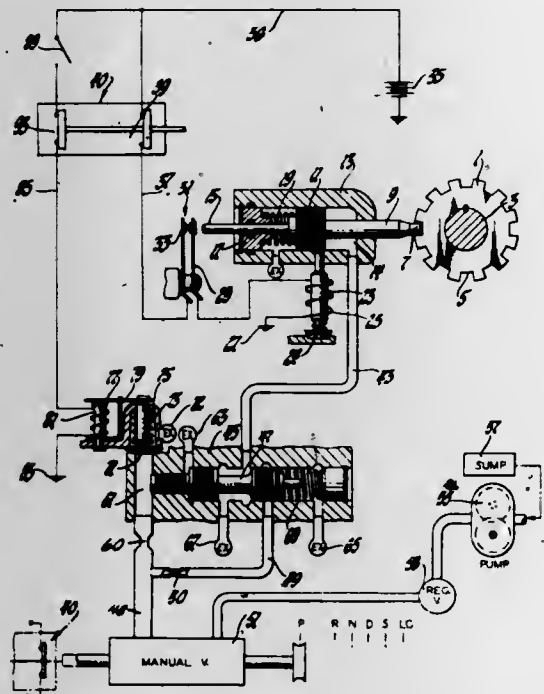
casing in combination with a diaper holder that extends through the housing to grasp the soiled diaper. After rinsing, one embodiment wrings out the diaper by drawing it through a restricted portion in the casing. Another embodiment draws the entire diaper into the casing and by means of a plunger compresses it against the toilet bowl side.

3,610,004

PARKING LOCK FOR TRANSMISSIONS

Philip C. Neese, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 30, 1969, Ser. No. 862,380

Int. Cl. B60r 25/06; E05b 51/02; E05c 1/12
U.S. Cl. 70—248 7 Claims



The parking lock has a piston with a rod that engages and locks a locking wheel fixed to a transmission output shaft. For unlocking the output shaft, a hydraulic control valve is operative to direct pressure fluid to the piston to move the rod from engagement with the locking wheel to an unlock position. When this position is reached a blocker pin automatically moves to keep the piston in the unlock position until there is a transmission lock signal. Electric controls are energized to effect the shift of the hydraulic valve to dump the unlock pressure fluid and also to withdraw the blocker pin from its blocking position. A spring device then effects reengagement of the piston rod and the locking wheel.

3,610,005

ROLL POSITIONING SYSTEM CALIBRATION METHOD AND APPARATUS

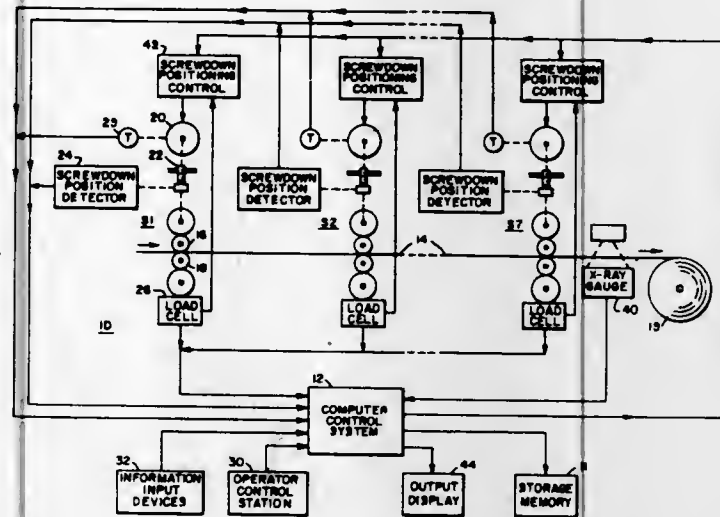
Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 27, 1969, Ser. No. 828,265

Int. Cl. B21b 37/00 15 Claims

There is described a control arrangement to periodically check the operation of the screwdown control system of a rolling mill stand, including the roll force sensing apparatus and the screwdown positioning apparatus for each stand of a rolling mill. A programmed digital computer, or central processing unit, controls the calibration operation and determines when it is desired to calibrate the screwdown control system. This may be several times a day, including each time that one or more rolls of a given roll stand are changed.

This calibration operation is accomplished by sensing the corresponding initial screwdown position indication

ISD for each such stand (N) at a predetermined initial calibration roll force ICF, and then moving the given mill stand (N) a known distance SD and reading the final calibration roll separating force FCF and corresponding final screwdown position indication FSD for the purpose of determining the mill spring modulus MSK(N) or slope of the resulting mill spring curve for that respective stand (N). The so determined mill modulus MSK(N) can now be compared to a previous



known value of the mill modulus, as now stored in the memory of the central processing unit for the stand (N). Any error or difference in these respective mill modulus values can be compared with predetermined limits to determine if a multiplying factor FADJ(N) should be used when the stand load cell sensed roll force signal F(N) is fed into the central processing unit or computer for the purpose of determining the subsequent roll force gauge control operation of the given mill stand (N).

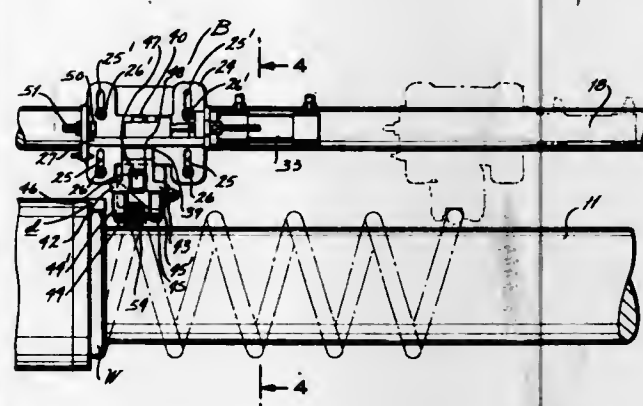
3,610,006

COIL SPRING WINDING MACHINE WITH BAR TRANSFER MEANS

William A. Schenblein, Jr., Ballwin, Louis P. Flater, St. Louis, James A. McNeely, Manchester, and Jay W. Talmage, Berkeley, Mo., assignors to Moog Industries, Inc., Westboro, Mo.

Continuation-in-part of application Ser. No. 611,210, Jan. 3, 1967. This application Sept. 8, 1969, Ser. No. 855,833

Int. Cl. B21j 7/26, 3/10
U.S. Cl. 72—22 9 Claims



In a coil spring winding machine having a mandrel rotatable at a constant speed and a rod stock guide adapted for linear travel longitudinally of said mandrel at variable speeds for pitch control of the spring to be formed, a bar transfer assembly carried by said rod stock guide

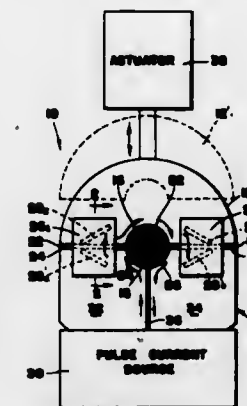
and being movable with respect thereto for regulating the helical angle or angles on which the spring is formed. A roller is provided on said guide for travel therewith to engage the stock as fed to the machine to control transition pitches.

3,610,007

ELECTROMAGNETIC FORMING COIL

Paul Wildt, San Diego, Calif., assignor to Gulf General Atomic Incorporated, San Diego, Calif.
Filed June 30, 1969, Ser. No. 837,464

Int. Cl. B21d 26/14 14 Claims
U.S. Cl. 72—56



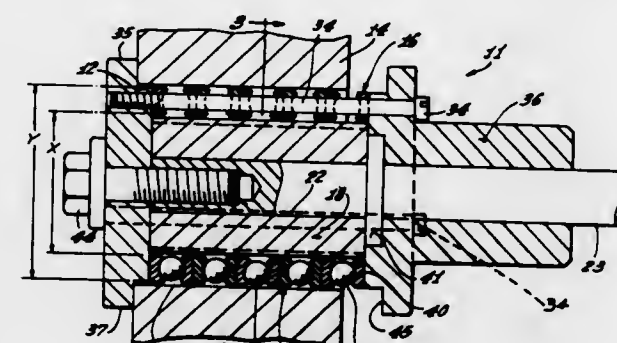
Magnetic pulse forming apparatus includes an electromagnetic forming coil with means for connection to a pulse-source of electrical energy, separable portions having an open and closed position, and a contactor for providing a plurality of parallel current paths of substantially equal inductance across non-interfacing surfaces of the separable coil portions when in the closed position. Means are also provided to produce equal contact resistance at all contact points of the contactor so that, overall, a uniform current distribution is produced over the plurality of paths when the coil is pulsed.

3,610,008

PEENING TOOL

Alfred K. Foedisch, Los Angeles, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.
Continuation-in-part of application Ser. No. 698,478, Jan. 17, 1968. This application June 27, 1969, Ser. No. 837,039

Int. Cl. B21c 37/30; B21b 5 Claims
U.S. Cl. 72—76



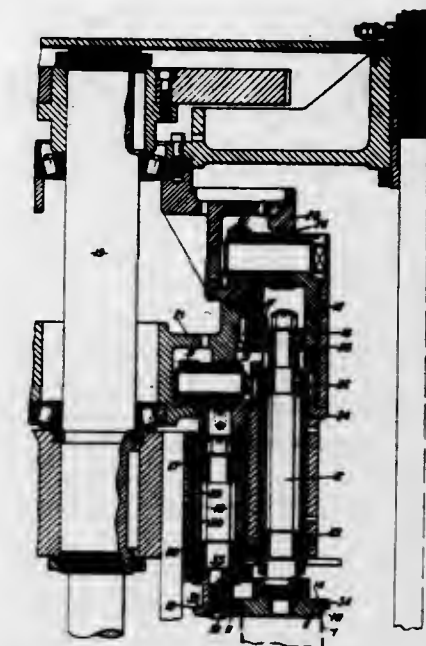
Apparatus for effecting a peening operation in which the peening elements are confined in structure as compared to conventional "free throw" methods. Specifically the subject apparatus is adapted to peen the surface of a circular bore or passageway in which reciprocal movement is imparted to the peening elements by rotation of an actuating member of novel construction. Complete coverage (peening) of the aforementioned bore is insured in that rotational and lengthwise movement of the housing or casing is manually imparted thereto.

3,610,009

FLANGING THIN METAL CYLINDERS

Jozef Tadeusz Franek, Chorleywood, England, assignor to The Metal Box Company Limited, London, England
Filed Oct. 23, 1969, Ser. No. 868,876

Int. Cl. B21d 19/04 10 Claims
U.S. Cl. 72—84



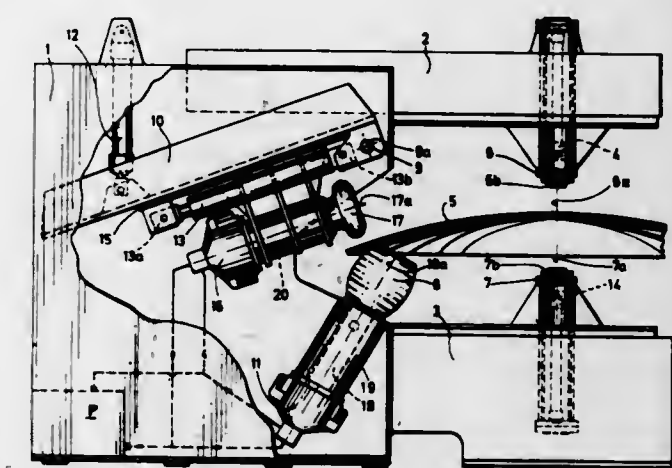
A laterally extending flange is cold-formed at an end of a thin metal cylindrical body by respectively providing a circular flanging die and a swaging roller with cooperating female and male peripheral radiused corners, and while an end of the body is axially aligned with the flanging die rotating the die and roller about parallel axes and moving them in opposite axial directions into engagement with the inner and outer sides of the body in a manner such that the flange is formed by the simultaneous application to the body of tensile and compressive forces.

3,610,010

FLANGING MACHINE FOR FLANGING BOILER ENDS

Fritz Henz, Reinach, and Hans Zeuglin, Neuenesch, Switzerland, assignors to Christian Hauser, Aesch, Switzerland
Filed Jan. 6, 1969, Ser. No. 789,207

Claims priority, application Switzerland, July 26, 1968, 7,632/68
Int. Cl. B21d 19/06 6 Claims
U.S. Cl. 72—85

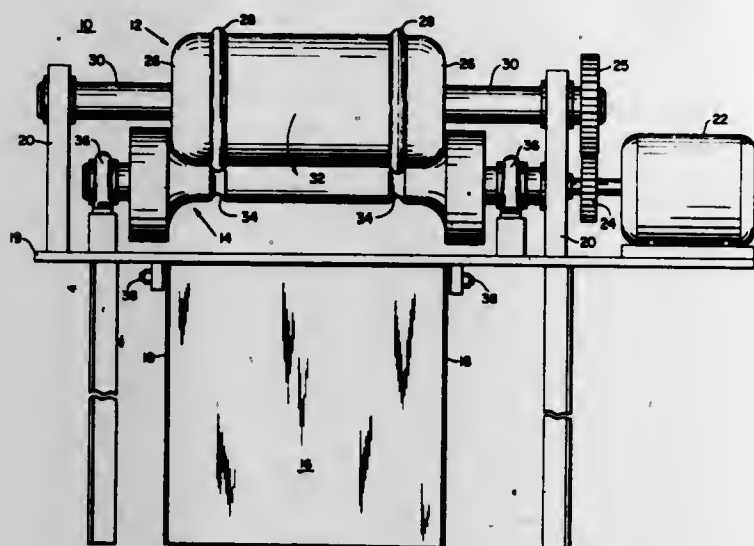


The invention relates to a flanging machine for flanging boiler ends and similar machines comprising a centering device for securing the workpiece in a freely rotatable manner and shaping and smoothing rollers driven by hydraulic motors supplied from a common fluid pressure generator, the shaping roller being preferably pivotally

adjustable and the smoothing roller being pivotally and axially adjustable for pressing the workpiece against the shaping roller.

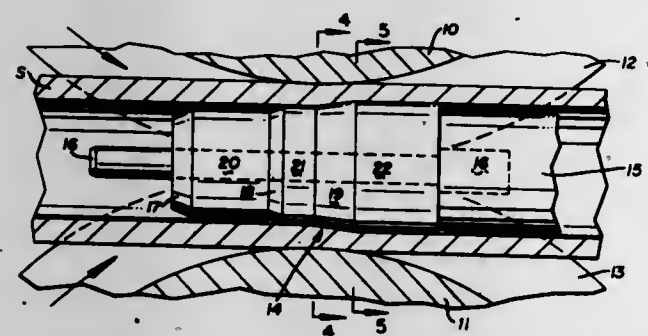
3,610,011
UNITARY ROLL FORMED VEHICLE FENDER AND APPARATUS AND METHOD FOR PRODUCING THE SAME

Clark J. Valentine, 15741 Gundry Ave., Paramount, Calif. 90723
Original application May 2, 1968, Ser. No. 726,073.
Divided and this application June 2, 1969, Ser. No. 843,262
Int. Cl. B21h 7/00; B21d 5/14, 53/88
U.S. Cl. 72-177 8 Claims



This disclosure relates to a novel unitary fender construction for vehicles such as trucks with dual or tandem wheels providing, in particular, ease of attachment, durability and effective splash protection. The construction includes an arcuate portion conforming to the circumference of the vehicle tire and has longitudinal reinforcing ribs as well as integral side skirts or returns. The arcuate portion has a planar cross section except for the reinforcing ribs allowing ease of installation with flat brackets. The ribs are so positioned as to absorb the excess metal from the skirt or return formation. The disclosure also includes a two-roller roll forming machine which forms the entire fender including transverse and longitudinal bends. Also disclosed is a two-pass method for producing fenders of a variety of diameters or designs for dual or tandem wheels.

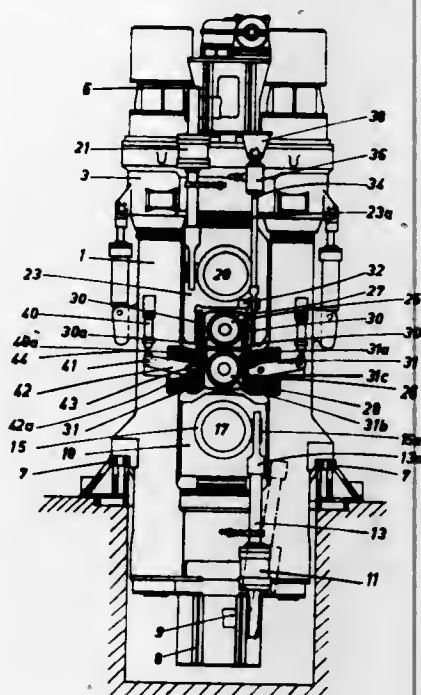
3,610,012
ONE PASS ROLLING MILL PLUG AND ROLLING PLUG MILL
Andrew E. Delans, 7859 South Ave., Youngstown, Ohio 44512
Filed June 10, 1969, Ser. No. 831,885
Int. Cl. B21b 17/10
U.S. Cl. 72-209 3 Claims



A rolling mill plug for use in a seamless rolling plug mill to reduce and elongate the pierced shell being formed into seamless pipe and consisting of a cylindrical body

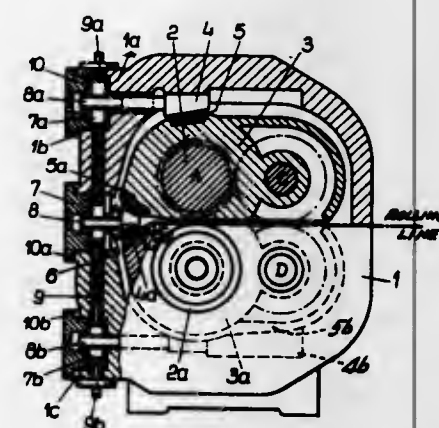
having a plurality of sections of different diameters some of which sections are of uniform diameter and some of which are frusta-conical.

3,610,013
CROWN CONTROL FOR ROLLING MILLS
Horst Pilon, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann G.m.b.H., Ingbert-Saar, Germany
Filed July 14, 1969, Ser. No. 841,387
Claims priority, application Austria, July 19, 1968, A 6,978/68
Int. Cl. B21b 31/08, 31/32
U.S. Cl. 72-238 6 Claims



In a four high rolling mill comprising crown control means for bending the work rolls the forces engaging at the chucks of the work rolls are conducted over pairs of beams extending on both sides of the chucks and having lugs reaching behind projections of the chucks. The lugs constitute simultaneously interrupted slide rails for removing the work rolls.

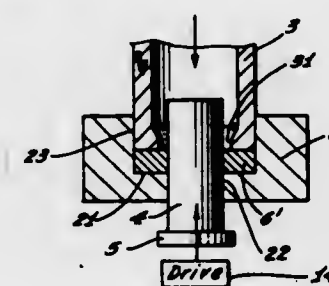
3,610,014
ROLLING MILL CONSTRUCTION
Hans Weber, Duisburg, Germany, assignor to Demag A.G., Duisburg, Germany
Filed Apr. 1, 1969, Ser. No. 811,792
Int. Cl. B21b 31/30
U.S. Cl. 72-244 8 Claims



A rolling mill, especially a wire rolling mill having overhung roll disks includes drive shafts which are arranged at 90° to each other on a stand in which the mountings extend 45° above the horizontal and 45° below

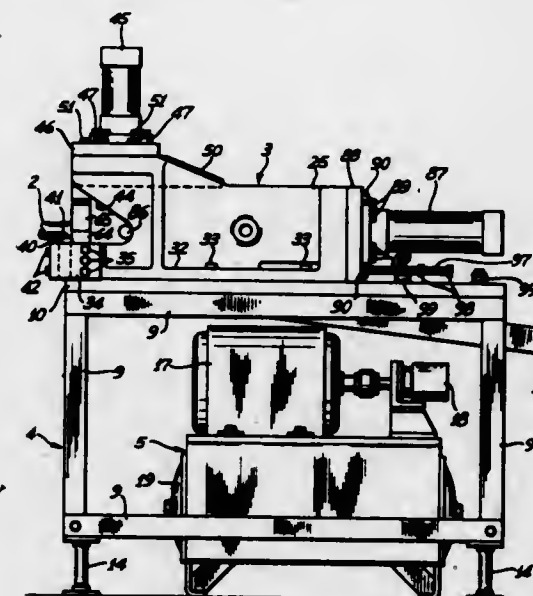
the horizontal and thus provides a compact arrangement which permits easy exchange of the roll disks without obstruction. The shafts which carry the roll disks are mounted in rocker arms which are positioned by setting members in the form of interengageable wedge elements. The wedge elements are each mounted on a control member which may be moved simultaneously to provide a symmetrically acting means for adjusting the roll gap between the roll disks.

3,610,015
APPARATUS AND METHOD FOR EXTRUSION MOLDING
Franz Bollmann, Holzhausen, and Hermann Kroger, Osnabrück, Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hannover, Germany
Filed Mar. 19, 1969, Ser. No. 808,535
Claims priority, application Germany, Mar. 20, 1968, P 17 52 007.9
Int. Cl. B21c 23/04, 25/00
U.S. Cl. 72-264 17 Claims



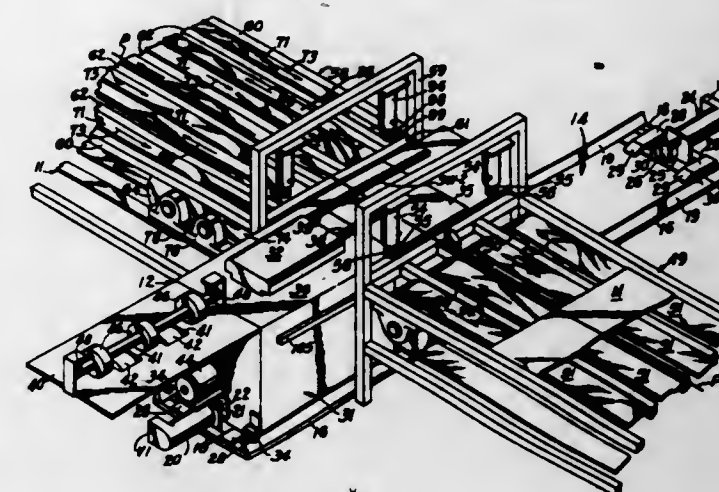
Extrusion molding by causing the forming and extrusion flow directing die member to flow with the extruded material.

3,610,016
UNITIZED TUBE END FORMING MACHINE
Frederick H. Baltman, Racine, Wis., assignor to Tenneco Inc., Houston, Tex.
Filed Aug. 12, 1969, Ser. No. 849,804
Int. Cl. B21d 39/02
U.S. Cl. 72-317 7 Claims



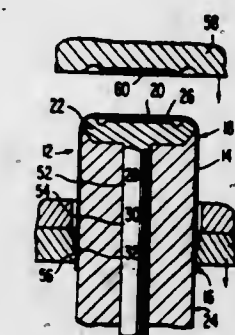
A machine for performing a wide variety of forming operations on the end of a metallic tubular article. The machine comprises a frame for receiving and holding various unitized assemblies which may be assembled in various combinations in order to permit a variety of end forming operations to be accomplished by the same basic machine.

3,610,017
APPARATUS FOR FORMING METAL
Robert A. Harris, 1660 Clay Road, Mableton, Ga. 30059
Filed Apr. 24, 1969, Ser. No. 818,983
Int. Cl. B21d 11/04, 43/02
U.S. Cl. 72-307 5 Claims



Apparatus for forming the edges of lengths of sheet metal including a metal forming machine for forming the edges of the lengths of sheet metal, a first transfer table for successively moving the lengths of sheet metal along a prescribed path toward the machine to a first predetermined position, a second transfer table for successively moving the lengths of sheet metal along the prescribed path away from the machine and back toward the machine to a second predetermined position, hold-down means for maintaining the lengths of sheet metal in the first or second predetermined positions, and traversing means for moving the metal forming machine across the prescribed path to form the lengths of sheet metal in the first and/or second predetermined positions.

3,610,018
REINFORCED WALL-IRONED CONTAINER AND MANUFACTURE
William D. Swanson, Cornopolis, Pa., and Edward P. Spencer, Steubenville, Ohio, assignors to National Steel Corporation
Filed Jan. 31, 1969, Ser. No. 795,428
Int. Cl. B21c 1/00
U.S. Cl. 72-348 38 Claims



Reinforcing ribs are produced on the side walls of a container during an ironing operation by plastic flow of metal of the side walls into circumferential grooves in the ironing punch. The container is stripped from the punch with radial expansion of the side walls. In multiple-ring ironing, ribs formed by passage of a first ironing ring are moved out of the grooves in which formed, along the punch, and into other grooves, by passage of a second ironing ring which effects elongation and thickness reduction of the side walls. The ribs are received in the

other grooves before being overtaken by the second ironing ring, to prevent their destruction by the second ring. The reinforcing ribs produce a marked increase in buckling resistance with a minimal amount of material.

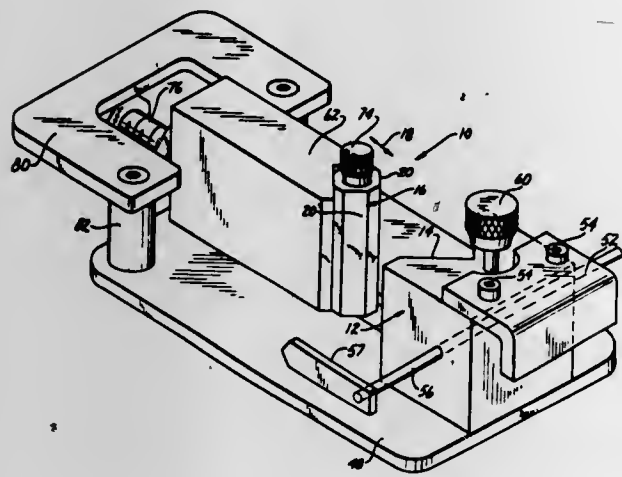
3,610,019

BENDING BRAKE

Walter Denninger, 63 Central Ave.,
North Babylon, N.Y. 11703
Filed Feb. 16, 1970, Ser. No. 11,545
Int. Cl. B21j 13/02

U.S. Cl. 72—386

8 Claims



A bending brake in a hand manipulated tool for bending metal stock and particularly sheet metal stock to produce V-bends in the stock with predetermined radii of curvature at the bends. The female die member of the bending brake comprises an anvil having a V-shaped channel and the male die member comprises a mandrel having one or a plurality of V-shaped surfaces each corresponding to the V-shaped channel of the anvil, the V-shaped surface or surfaces of the mandrel each being formed with a truncated apex, the extent of truncation of which determines the radius of curvature produced in the bend of the stock. Other novel effects are produced as a result of this construction of the mandrel.

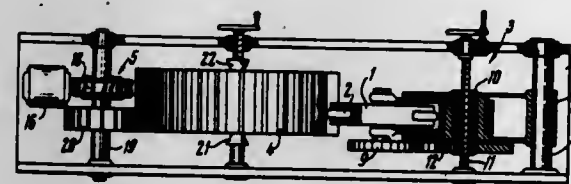
3,610,020

DEVICE FOR COLD HARDENING THE TEETH OF A GEAR WHEEL

Veniamin Markovich Braslavsky, Ulitsa Frunze 65,
kv. 21, Sverdlovsk, U.S.S.R.
Filed July 31, 1968, Ser. No. 749,159
Int. Cl. B21j 7/02

U.S. Cl. 72—434

4 Claims



A gear wheel is driven in intermittent rotation and a disk with a plurality of radial punches circumferentially arranged thereon meshes with the gear wheel such that the radial punches apply force to the teeth of the gear wheel and produce local plastic deformation thereof to achieve cold hardening of the teeth. The disk is urged against the gear wheel by means of a resilient system and the punches are so spaced on the disk to provide varying

center to center distances between the wheel and disk during rotation such that the resilient system is periodically deformed and produces impact of the punches against the teeth when the punches enter the spaces between the teeth. By means of a nut and screw connection the disk can be displaced parallel to the axis of rotation of the gear wheel in order to insure operation throughout the entire width of the wheel.

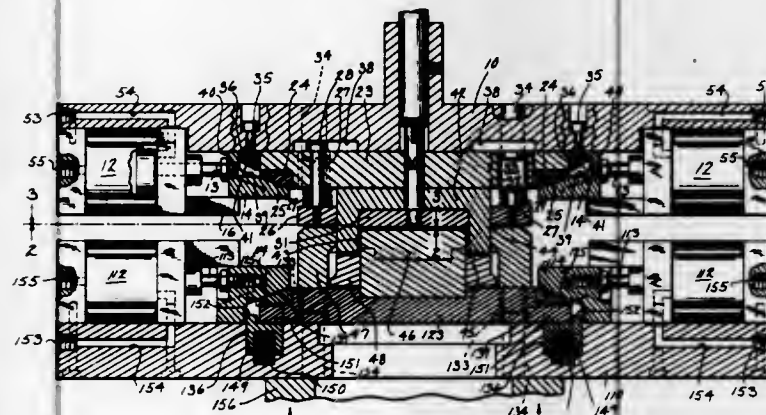
3,610,021

UNIVERSAL DIE SET WITH QUICK CHANGE DIE PLATES

Duane C. Hopper, Lake Geneva, Wis., assignor to Albert Trostel Packings Ltd., Lake Geneva, Wis.
Filed Mar. 7, 1969, Ser. No. 805,266
Int. Cl. B21j 13/02

U.S. Cl. 72—446

8 Claims



A press has an upper shoe and a lower shoe and there are oppositely-disposed air cylinders on each shoe which operate straight line clamps to move the latter horizontally toward and away from each other, each clamp having a tapered surface for coaction with similarly tapered surfaces on opposite sides of the die plate to move the latter vertically into operative position on its shoe and to hold it tightly clamped in said position, the plates being supported for sliding movement into and out of the shoe when the clamps are in non-clamping position.

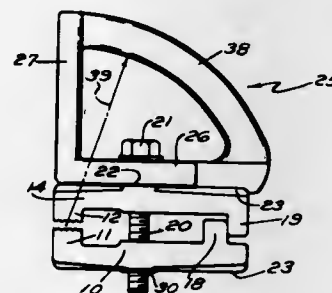
3,610,022

PULL CLAMP DEVICE

William R. Lincourt, 138 Coggeshall Ave.,
Newport, R.I. 02840
Filed July 31, 1969, Ser. No. 846,360
Int. Cl. B21j 13/08

U.S. Cl. 72—457

3 Claims



A member having generally right-angulantly extending portions, one of which may be secured to clamping jaws while the other portion is provided with arcuate means for attaching a pulling device such as a flexible chain or cable to direct a pull through an arc whose radial center is at the clamping jaw. An arcuate arm means extends

between the two right-angulantly extending portions serving as another location for attachment of a chain or cable which may have a pull directed variously through an arc whose radial center also lies at the clamping jaws.

3,610,023

GAS ANALYSIS, A METHOD OF AND A GAS ANALYZER FOR ACCOMPLISHING SAME

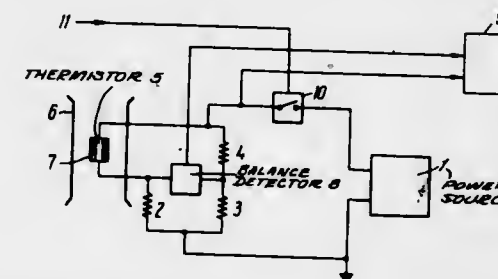
Dmitry Ivanovich Agelkin, Belyaev-Bogorodskoe, kvartal 46-47, korpus 48, kv. 68; Ekaterina Nikolaevna Kostina, Leninsky prospekt 101, korpus 135, 65; Vadim Fedorovich Zhuravlev, Lazarevskaya ulitsa 4, kv. 1; Jury Tovlevich Knopov, Olonetskaya ulitsa 38a; and Vladimir Vasilievich Dorofeev, Leninsky prospekt 81, kv. 56, all of Moscow, U.S.S.R.; and Alexei Nikolae-vich Chernichin, Ulitsa Popova 16, kv. 73; Igor Petrovich Mityashin, prospekt Gagarina 3, kv. 22; Arkady Shavich Katsnelson, Ulitsa Kirova 26, kv. 17; and Alexandr Alexeevich Golubev, Ulitsa Kozlova 5, kv. 18, all of Smolensk, U.S.S.R.

Filed Nov. 14, 1969, Ser. No. 876,957

Int. Cl. G01n 27/18

U.S. Cl. 73—27

6 Claims



A method and a facility for measuring gas composition based on the measurement of time required to heat a sorbent introduced into the gas mixture to be analyzed up to a specified temperature at which intensive desorption of the mixture component sorbed by the sorbent takes place.

The sorbent coats the thermistor incorporated into an arm of a measuring bridge whose supply circuit includes a key and the measuring diagonal includes a balance detector. The thermistor heating time is measured between the moment of power supply to the bridge and of the signal reception from the balance detector. The modifications of the facility include differential connection of two thermistors coated with different sorbents, and stabilization of the initial temperature of the thermistors.

3,610,024

NONCONTACT DISPLACEMENT MEASURING APPARATUS

Teruo Honjo and Hideo Takafuji, Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Continuation-in-part of application Ser. No. 660,736,
Aug. 15, 1967. This application Aug. 12, 1969, Ser.
No. 858,238

Claims priority, application Japan, Aug. 19, 1966,

41/54,591

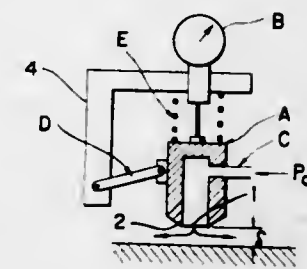
Int. Cl. G01b 13/12

U.S. Cl. 73—37.5

4 Claims

Apparatus for precisely measuring displacement of running or rotating objects without bringing the measuring piece into contact with the objects and includes body part preferably having a uniform cross-section interior fluid channel terminating in a small jetting orifice within a nozzle part devoid of any substantially effective exterior fluid pressure receiving or reaction surface adjacent the orifice. The unit of a fluid jetting body nozzle is supported in a floating state such that it may closely follow the surface to be measured, while a fixed clearance is

maintained between the nozzle and the surface to be measured due to the reaction force of pressure fluid fed under



constant pressure from the nozzle onto the surface to be measured, and further due to fluid reaction internally against a reaction surface opposite the orifice.

3,610,025

TUBE LEAK DETECTOR

Alfred Brunner, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Mar. 12, 1969, Ser. No. 806,627

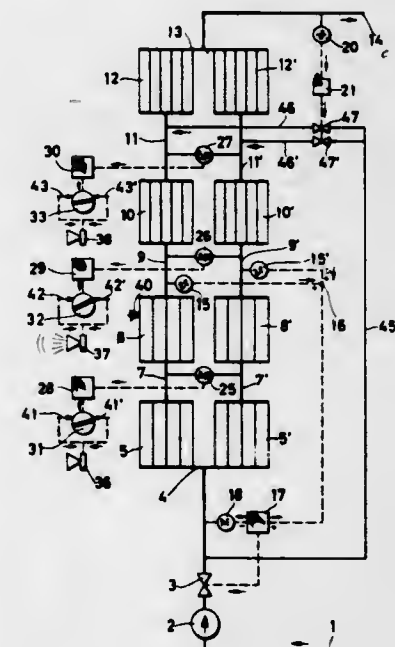
Claims priority, application Switzerland, Mar. 15, 1968,

3,921/68

Int. Cl. G01m 3/28

U.S. Cl. 73—40.5

5 Claims



The tube leak detector system compares the values of an operating variable of the working medium, such as pressure or temperature, at corresponding points in the parallel flow paths to determine the existence of differences in the values which would indicate a leak in a flow path. The difference is used to activate an indicating instrument to signal the presence of a leak.

3,610,026

HYDRAULIC RESISTANCE

William Henry Topham, Rochester, Kent, England, assignor to The British Petroleum Company Limited, London, England

Filed Aug. 6, 1969, Ser. No. 847,943

Claims priority, application Great Britain, Sept. 9, 1968,

42,793/68

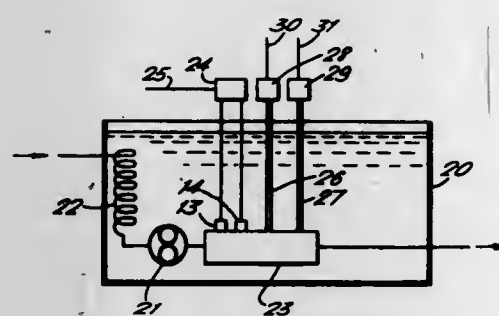
Int. Cl. G01m 11/08

U.S. Cl. 73—55

7 Claims

An on-stream viscometer consists of a plurality of resistive elements connected either in series or in parallel

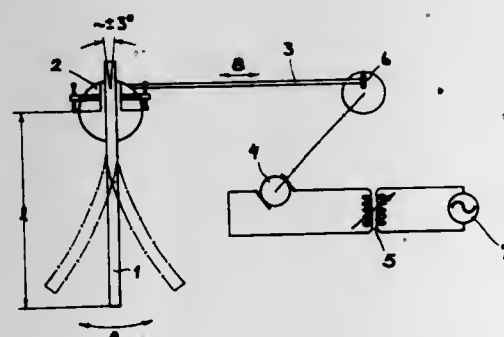
and at least one valve for varying the effective flow path through the resistance. The pressure drop, as measured



across the resistance, is a measure of the viscosity of the fluid flowing through the system.

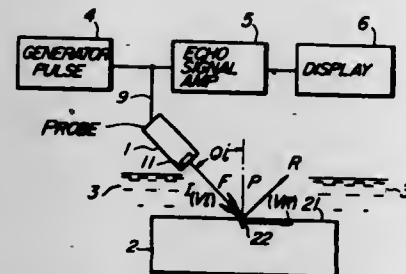
3,610,027
METHOD OF DETERMINING FLEXIBILITY OF ELONGATE BODIES
Walter Wobodtich, Berlin-Kopenick, Germany, assignor to VEB Kabelwerk Oberspree, Berlin-Oberschöneweide, Germany

Filed July 30, 1968, Ser. No. 748,812
Int. Cl. G01n 24/00
U.S. Cl. 73-67.2 2 Claims



To determine the flexibility of an elongate body, the latter is clamped in a fixed support so as to leave a depending portion of a given free length, this portion being then subject to forced oscillations to ascertain its natural frequency whereupon the flexibility is calculated as the reciprocal of the product of natural frequency times the square of the free length.

3,610,028
ULTRASONIC FLAW DETECTOR
Soji Sasaki, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed July 17, 1969, Ser. No. 842,542
Claims priority, application Japan, July 19, 1968, 43/50,528
Int. Cl. G01n 29/04
U.S. Cl. 73-67.7 4 Claims

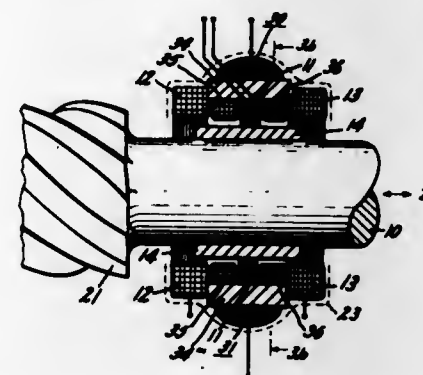


An ultrasonic flaw detector in which an ultrasonic beam is directed onto the surface of an object through an ultra-

sonic wave transmission medium at an angle of incidence satisfying the condition of total reflection and the ultrasonic wave sensing section for sensing the echo coming from the surface of the object is so sized as to meet a predetermined condition thereby to detect a flaw with high sensitivity.

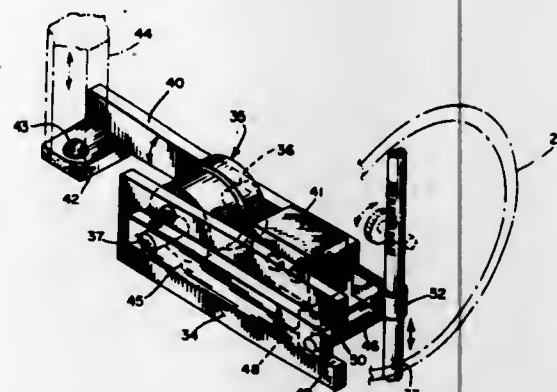
3,610,029
VIBRATION TRANSDUCER FOR ROTATING SHAFT USING A DIFFERENTIAL TRANSFORMER

Gerald J. Carlson, Scotia, N.Y., assignor to General Electric Company
Filed Jan. 8, 1969, Ser. No. 789,900
Int. Cl. G01h 11/00; H04r 29/00
U.S. Cl. 73-71.4 5 Claims



A vibration transducer for sensing vibration of a rotating shaft includes a special differential transformer and electronic circuitry connected across the transformer secondary windings for developing a voltage proportional to a characteristic of the vibration such as displacement amplitude, velocity and acceleration. The differential transformer includes an annular core of high permeability material rigidly fastened on the shaft subject to vibration, and the primary and secondary windings are arranged in an annular coil form mounted on a fixed support. The annular coil form is positioned around the core forming a small air gap therebetween, and the core is displaced relative to the coil form in response to vibration of the shaft. An alternating-current (A.C.) excitation voltage of constant frequency is applied across the primary winding to induce alternating voltages of the same frequency in the secondary windings. The electronic circuit filters out the excitation frequency component voltage and processes the remaining vibration frequency component voltage signal.

3,610,030
MEASURING SYSTEM FOR BRINELL HARDNESS TESTERS
Robert S. Strimel, Penlynn, Pa., assignor to Tinius Olsen Testing Machine Company, Willow Grove, Pa.
Filed July 14, 1969, Ser. No. 841,268
Int. Cl. G01n 3/32
U.S. Cl. 73-83 3 Claims

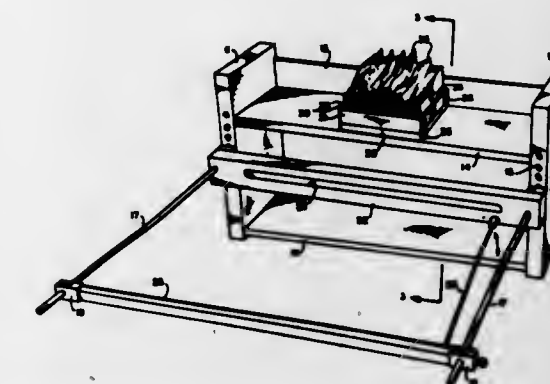
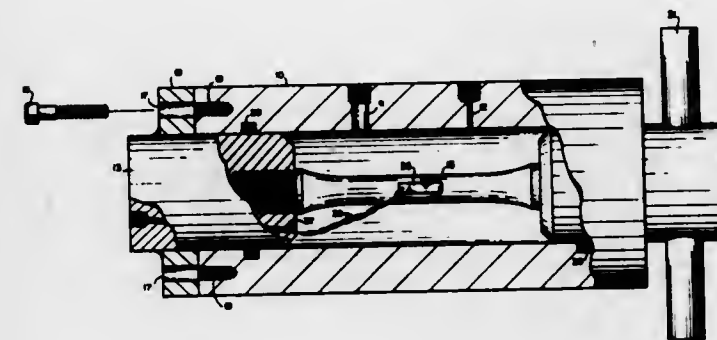


Brinell depth sensing equipment comprising a lever connected to follow the motion of the Brinell indenter

and a lever connected to drive indicating means together with mechanism operable after the indenter has made contact with the specimen surface for establishing a point of reference for depth measurement to interconnect the levers so that the amount of indentation is reflected by the indicator means.

3,610,031
COMBINED LOAD TESTING DEVICE
Austin B. J. Clark, Oxon Hill, Md., and Whai-Sang Fu, Columbus, Ohio; said Clark assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 19, 1970, Ser. No. 3,697
Int. Cl. G01n 3/10
U.S. Cl. 73-97 3 Claims

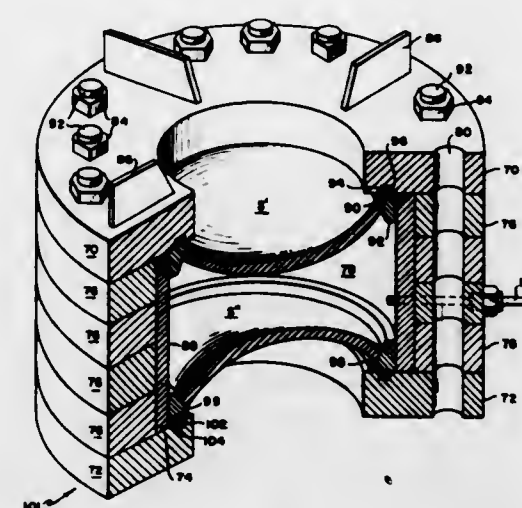


3,610,033
SKEWABLE 3-D CONSIDÈRE COMPUTER
Joseph M. Kraft, 1709 Oakcrest Drive, Alexandria, Va. 22302
Filed May 5, 1970, Ser. No. 34,660
Int. Cl. G01n 21/00
U.S. Cl. 73-88 A 8 Claims

This invention makes use of an optical shadowing device for tangential scanning of a skewable, three-dimensional empirical surface of true stress vs. strain vs. strain rate data curves to determine instability conditions of a material brought about by working of the metal.

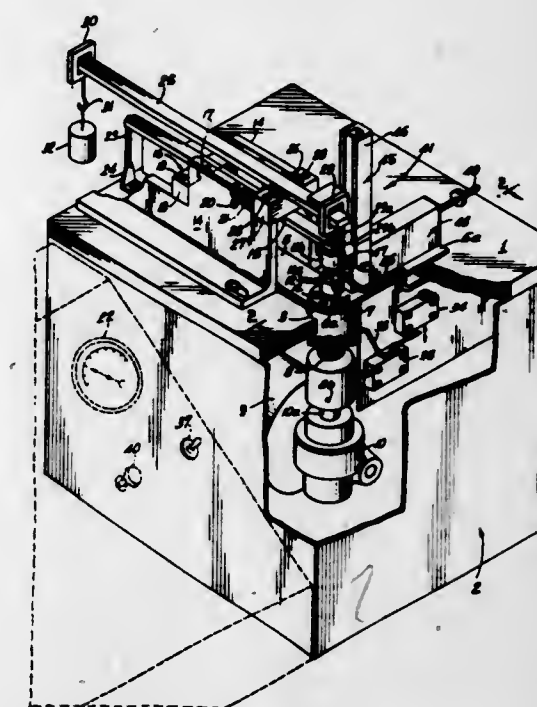
This disclosure is directed to a testing machine for studying the mechanical behavior of materials by use of a fluid under pressure applied to a material for determining stress-strain relationship, under uniaxial loading, torsion, and external pressure or combinations of the above.

3,610,032
TRIAXIAL STRESS TEST APPARATUS
Joseph S. Di Crispino, 4030 Raleigh Road, Baltimore, Md. 21208
Filed Feb. 26, 1970, Ser. No. 14,419
Int. Cl. G01n 3/10
U.S. Cl. 73-88 R 9 Claims



Apparatus for testing spherical tank critical sections exposed to external fluid pressure in which triaxial stresses are induced in full size representative samples of hard structure containments for use in fuel cell applications in deep submergence environments.

3,610,034
COMPRESSION RESISTANCE TESTING MACHINE FOR PELLETIZED MATERIAL
Kenneth M. Gumm and Matthew H. Fuller, Richmond, Va., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,854
Int. Cl. G01n 3/08
U.S. Cl. 73-94 7 Claims

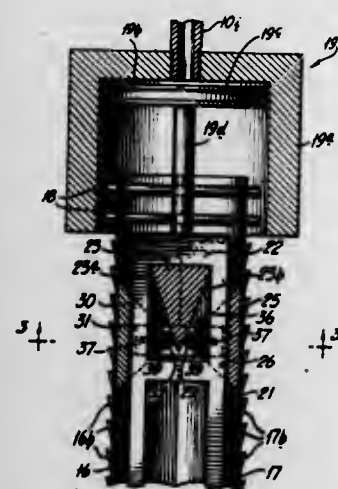


An apparatus which gauges the compression resistance of a pellet supported between a pair of pressure plates movably disposed so that one of the pressure plates is urged toward the second pressure plate which is affixed to a cantilevered sensing beam which flexes from the compressive force and the amount of flexure caused thereby is measured and correlated as a means of measuring compressive force.

3,610,035
SYSTEM FOR DETERMINING SHEAR STRENGTH OF SOIL INCLUDING EXPANDABLE PROBE
 Richard L. Handy, Des Moines, Iowa, assignor to Iowa State University Research Foundation, Inc., Iowa State University, Ames, Iowa
 Filed Dec. 29, 1969, Ser. No. 888,734
 Int. Cl. G01n 3/24

U.S. Cl. 73—101

6 Claims

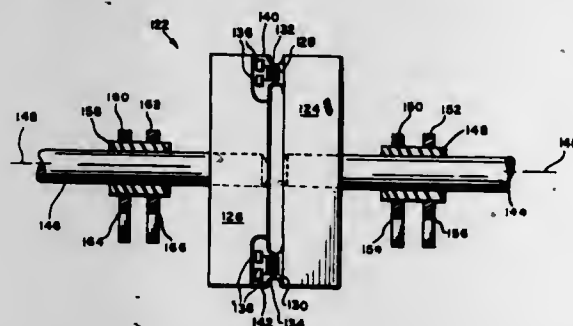


A probe having elongated, separable side pressure plates is inserted into the soil under test, separating the soil as it penetrates. After the probe is inserted, a lateral force is applied to the pressure plates to compress and consolidate soil engaged by them with a known lateral contact pressure. The exterior surfaces of the pressure plates are provided with metal barbs or teeth to cause shearing within the soil as the probe is removed under force. As the probe is removed, measurements are recorded of the resisting force required for shearing and the displacement of the probe. The segments of the pressure plates extending above the surface of the soil relax so that the entire lateral force causing expansion of the plates is exerted on that section which is embedded in the soil. The probe is pulled out in increments, thus decreasing the area of the pressure plates in contact with the soil. However, the lateral pressure exerted on the soil increases correspondingly—thus forming a new shear plane and allowing independent determination of the cohesion and internal friction of the soil without having to form a bore hole.

3,610,036
PRECISION LOAD CELL
 Erwin J. Saxl, P.O. Box 185, Harvard, Mass. 01451
 Filed Dec. 18, 1969, Ser. No. 886,129
 Int. Cl. G011 1/18

U.S. Cl. 73—141 A

17 Claims



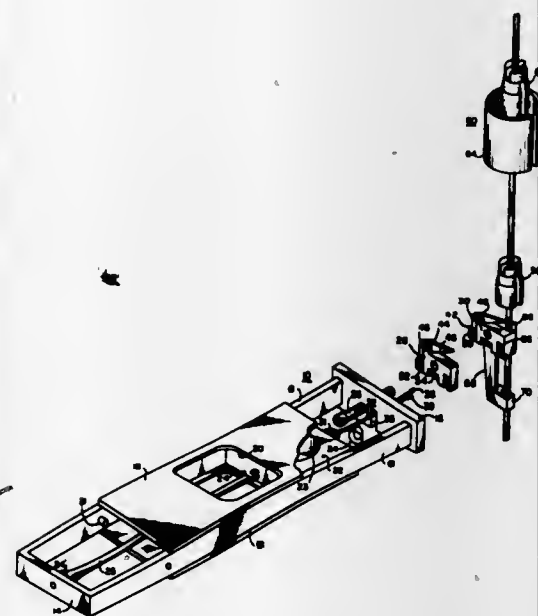
A load cell having two spaced apart, parallel, web-like, high gain stress concentration elements connecting a rigid body and rigid load sensing head, all formed of a single piece of homogeneous, high heat conductivity, high strength metal which thereby virtually prevents twist or side loading effects on strain gages at the web-like stress concentration elements and resulting in a

highly linear and repetitively precise load measuring capability at even very low loads such as in the order of one fifth of a gram.

3,610,037
SEA WATER CESIUM SAMPLER
 Michael L. Greene, Hillcrest Heights, Md., and Joseph Richard Jadamec, Woodbridge, Va., assignors to the United States of America as represented by the Secretary of the Navy
 Filed Mar. 26, 1970, Ser. No. 22,943
 Int. Cl. G01n 1/10

U.S. Cl. 73—170 A

3 Claims



A water sampling device having a rectangular frame to which is attached on the top and bottom thereof a pair of centrally apertured parallel plates. A shuttle is slideably mounted between the centrally apertured plates within the frame and biased toward one end thereof by an elastic band attached to one end of the shuttle. The shuttle is restrained from movement by a pair of lanyards attached to the other end thereof, one of which connects to a first latch and the other of which connects to a second latch. The first lanyard holds the shuttle out of alignment with the apertures in the parallel plates but may be released from the latch by a messenger sliding down the cable to which the frame is attached. The shuttle is then free to move under the influence of the elastic band until it is stopped by the second lanyard in alignment with the apertures in the parallel plates and thus is fully exposed to contact with the sea water. A second messenger having a tubular portion is later dropped down the wire to telescope with the first messenger and open the second latch which releases the second lanyard and allows the shuttle to be moved by the elastic band out of alignment with the apertures in the parallel plates. The shuttle is again isolated from contact with the sea water and secure from contamination by the water column through which the device is hoisted back aboard the surface vessel.

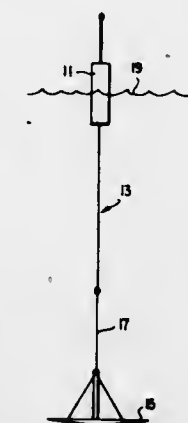
3,610,038
WAVE METER
 Robert D. Joy and Russell F. Colton, Cedar Rapids, Iowa, assignors to J-Tec Associates, Incorporated, Cedar Rapids, Iowa
 Filed June 30, 1970, Ser. No. 51,222
 Int. Cl. B63b 21/52

U.S. Cl. 73—170 A

16 Claims

A wave meter comprises a surface float, an inter-connecting cable that is elastic along a portion of its length and a reference plate. The inter-connecting cable connects

the surface float to the reference plate which is suspended below the surface deep enough so that it is immune to water particle motion caused by surface waves. The reference plate operates on an umbrella principle whereby it expands at its deep location to create a relatively large virtual mass. Inside of the surface float, the

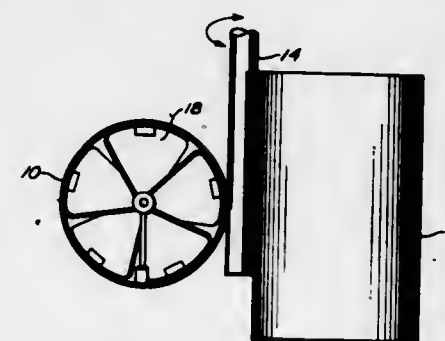


inter-connecting cable is attached to a strain gage. The strain gage modifies a DC voltage which is converted into a frequency variable signal that is then transmitted to a remote receiver by a transmitter located inside of the surface float, via an antenna located on top of the surface float.

3,610,039
DUCTED WAVE METER
 Jack Althouse, Escondido, Duane E. Maddux, Santee, and Noel B. Plutchak, San Diego, Calif., assignors to The Bendix Corporation
 Filed Apr. 28, 1969, Ser. No. 819,866
 Int. Cl. G01w 1/00; G08b 21/00; G01d 3/44

U.S. Cl. 73—189

7 Claims



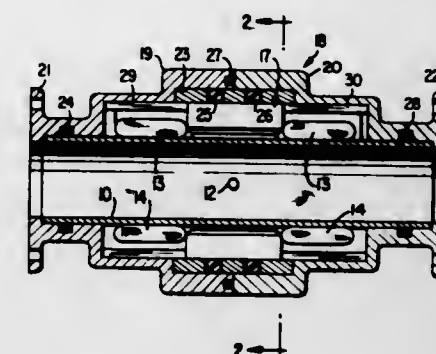
A meter for measuring wave characteristics is disclosed in which a pair of orthogonally positioned sensors are carried in the water on a pivotable shaft, each meter including an impeller contained in a shroud which prevents its responding to wave motion components other than those substantially parallel to its axis. Typically these meters are positioned to sense horizontal and vertical components of wave motion, and each produces an electrical pulse output whose frequency and pulse timing relationship varies with the velocity and direction, respectively, of the flow past the impeller. The pulse outputs are connected to amplification and gating circuits and time constant circuits producing an output which may consist of a series of pulses whose polarity and frequency are directly proportional to the direction and velocity of the impeller rotation, or which may be a substantially uniform direct current voltage whose polarity varies with direction of flow and whose magnitude is proportional to the average velocity of flow through the impeller integrated over a significant period, depending upon whether short term instantaneous peak values are desired, or longer term average

values. The output signal may be utilized by any of a number of output devices such as a strip chart, a digital counter, etc.

3,610,040
ELECTROMAGNETIC FLOWMETER
 Ichiro Wada, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
 Filed Mar. 31, 1970, Ser. No. 24,158
 Int. Cl. G01p 5/08

U.S. Cl. 73—194 EM

11 Claims

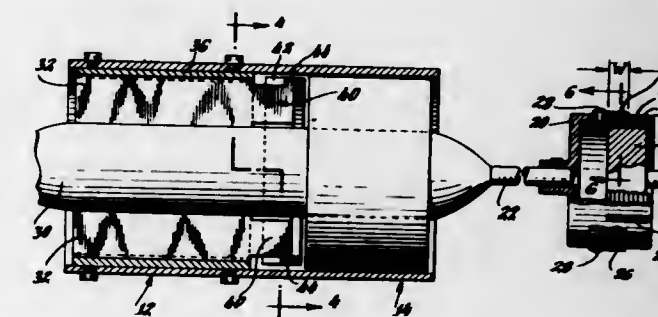


An electromagnetic flowmeter includes a conduit for passing therethrough a fluid, the rate of which is to be measured. The conduit includes a pair of electrodes and exciting coils surrounding the conduit for creating a magnetic flux in a core assembly formed of a pair of symmetrically matched core elements, the poles of which are joined at a substantially centered position along the excitation axis. Magnetic shielding is placed around the exciting coils. An outer casing is provided and includes flange elements at the ends thereof for enabling connections to a pipeline to be made. An electromotive force will be generated in the pair of electrodes within the conduit and the same will be proportional to the rate of flow of the fluid passing through the conduit.

3,610,041
CRYOGENIC MASS FLOWMETER
 Alf Lindsay Carroll, Jr., Saugus, Calif., assignor to The Foxboro Company, Foxboro, Mass.
 Filed Dec. 3, 1969, Ser. No. 881,689
 Int. Cl. G01b 1/00

U.S. Cl. 73—194 E

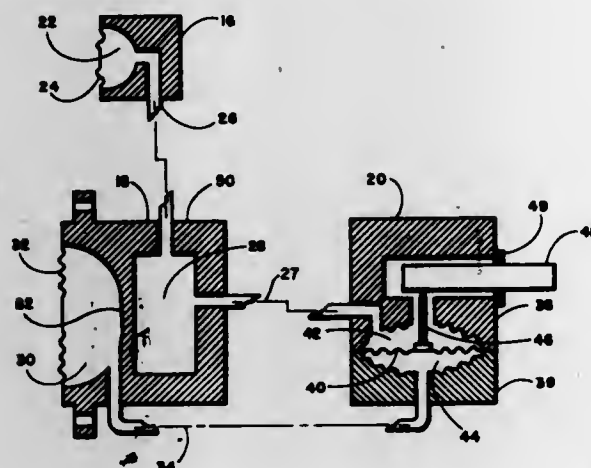
9 Claims



A mass flowmeter of the angular momentum type having a flow straightener assembly consisting of a plurality of straightening vanes arranged radially about a supporting hub, with the trailing edges of the vanes coupled to an adjusting ring which is rotatable to displace circumferentially the trailing edges so as to bend the downstream portions of the vane and thereby alter correspondingly the flow pattern of the fluid to obtain zero angular momentum. The flowmeter includes a rotor driven by a constant-torque hysteresis clutch the magnetic material of which is placed under a carefully controlled temperature-responsive stress to minimize changes in clutch torque with variations in temperature.

3,610,042
LIQUID LEVEL MEASURING DEVICE WITH TEMPERATURE COMPENSATOR
 William R. Brookes, Jr., Fairport, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
 Filed Aug. 22, 1969, Ser. No. 852,372
 Int. Cl. G01f 23/16; G01l 19/04
 U.S. Cl. 73—299

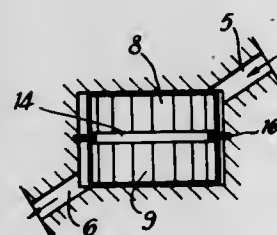
2 Claims



Device for measuring liquid level in which the high and low side pressures are hydraulically transmitted through silicone filled chambers to a primary diaphragm common to both chambers wherein deflection of the diaphragm responsive to the differential pressure is representative of the depth of the liquid. Pressure differentials caused by thermal expansion of the silicone are compensated by having the chambers in a heat exchange relationship so that heat can be transferred from one to another to maintain the silicone in both chambers at substantially the same temperature.

3,610,043
LIQUID FLOWMETERS AND MOTORS
 William Alexander Wemyss, Harefield, England, assignor to B. Rhodes & Son Limited, Essex, England
 Filed Sept. 24, 1969, Ser. No. 860,691
 Claims priority, application Great Britain, Sept. 27, 1968, 45,994/68
 Int. Cl. G01f 1/06
 U.S. Cl. 73—229

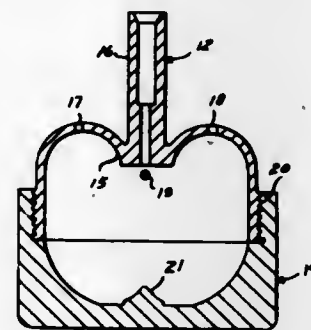
9 Claims



This invention relates to a flowmeter for liquids having a rotor in a chamber, the rotor having radially extending vanes. There is a circumferential gap in the median plane of the vanes. The inlet to the chamber is tangentially directed and opens into the chamber at the greater radius of an involute formed part at one side of the median plane whilst the outlet from the chamber leads from a similar involute formed part at the other side of the plane. A baffle is fixed in the casing and extends inwards so as to protrude into the gap and so to separate the involute and involute parts of the chamber. Thus the liquid is compelled to pass from the inlet to the outlet through the channels between the vanes whilst flowing helically along the chamber.

3,610,044
PNEUMATIC TEMPERATURE SENSING DEVICE
 Charles E. Bentz, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force
 Filed June 21, 1968, Ser. No. 740,827
 Int. Cl. G01k 11/22
 U.S. Cl. 73—339 A

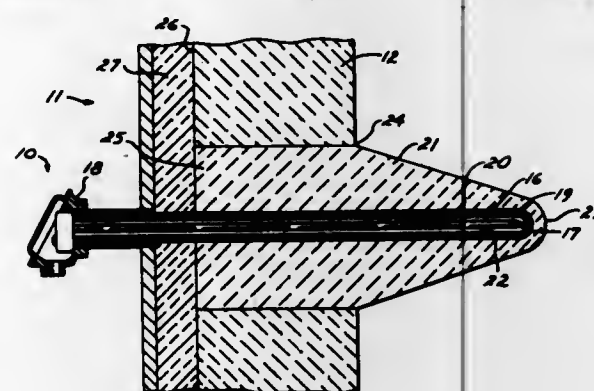
8 Claims



A pneumatic temperature sensing oscillator has a gas, for which the temperature determination is desired, fed through a nozzle to impinge on a blunt beam splitter within a cavity. The reflection of acoustic signals off the blunt beam splitter and cavity walls results in the propagation of a predominant cavity frequency which varies sinusoidally with time that is a function of the square root of gas temperature within the cavity. Flow directing means are provided within the cavity.

3,610,045
THERMOCOUPLES
 Wilbur E. Shearman, Bazetta Township, Trumbull County, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
 Filed Apr. 1, 1965, Ser. No. 444,648
 Int. Cl. H01r 1/02; G01k 1/14
 U.S. Cl. 73—343

2 Claims



A temperature measuring device particularly for a bath of molten iron. A thermocouple is disposed within a hollow ceramic refractory protective sheath placed in a wall of the furnace. The thickness of the sheath at its intersection with the surface furnace wall is greater than the thickness at the tip of the sheath which contains the thermocouple junction.

3,610,046
ALL-FLUID DIFFERENTIAL PRESSURE GAUGE
 Frederic Lisan, Forest Hills, N.Y., assignor to Liquidomics, Inc., Westbury, N.Y.
 Filed Mar. 27, 1970, Ser. No. 23,220
 Int. Cl. G01l 7/08
 U.S. Cl. 73—407

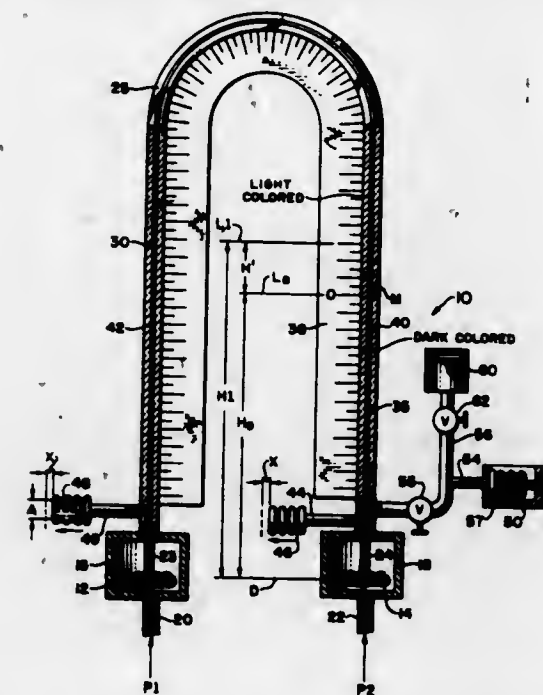
10 Claims

A differential pressure gauge includes a U-shaped transparent tube having legs at its ends connected to two identical closed pressure responsive elements enclosed in casings to which conduits from two different pressure sources are connected. The tube and pressure responsive

elements are filled with two different fluids meeting at a meniscus in the tube. A scale adjacent to the tube indicates the position of the meniscus and provides a reading of any change in position due to change in relative pressures applied to the two elements. Two identical closed expansible pressure responsive members are con-

3,610,048
TELESCOPING SAMPLE PROBE
 Frederick G. Weeks, Richmond, Mich., assignor to Heath Consultants Incorporated, Wellesley Hills, Mass.
 Filed May 5, 1970, Ser. No. 34,697
 Int. Cl. G01n 1/22
 U.S. Cl. 73—421.5 R

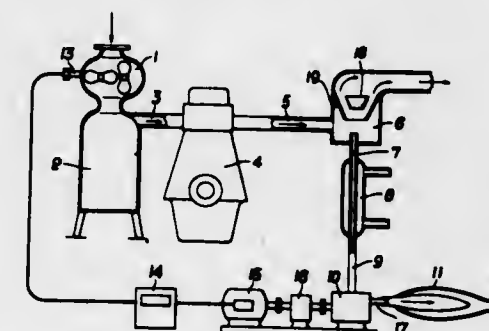
14 Claims



ected to the two legs of the tube to expand and contract equally when pressure in the tube changes. Volume adjustment means may be connected to the tube for adjusting relative volumes of the fluids in the tube in accordance with any difference in thermal coefficients of expansion of the fluids in the tube.

3,610,047
WASTE GAS SAMPLER
 Hans List, 126 Heinrichstrasse, Graz, Austria, and Erich Schreiber, Graz, Austria; said Schreiber assignor to said List
 Filed Mar. 18, 1970, Ser. No. 20,756
 Claims priority, application Austria, Mar. 20, 1969, A 2,803/69
 Int. Cl. G01n 1/24
 U.S. Cl. 73—421.5 R

3 Claims

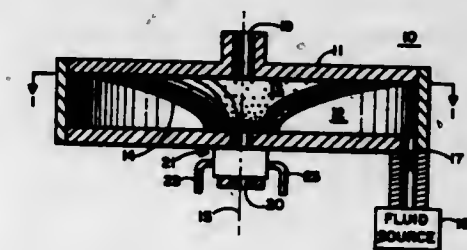


Device for the removal of waste gas samples from the exhaust pipe of internal combustion engines having a chamber connected to the exhaust pipe together with a pump and a motor drivingly connected with the pump. A sampling pipe has one end connected with the chamber and the other end connected to the suction side of the pump. A container connected to the delivery side of the pump receives the waste gas sample. A suction pipe is connected to the combustion engine with an equalizing tank communicating with the suction pipe. An air meter is series-connected with said equalization tank and a synchronizer is interposed between the air meter and the pump motor which regulates the speed of the pump motor proportionately to the speed of said air meter.

A telescoping gas sample probe including, an elongated rigid tube having a sealing means in the form of a conical shaped rubber bellows attached to the lower end of the elongated tube, said bellows having an open lower end, means for centering the bellows on the elongated tube, a flexible tube having one end connected to the upper end of the elongated tube and the other end thereof provided with a fitting for connecting the flexible tube to a gas analyzing and indicating apparatus, a filter means disposed in said elongated tube for filtering an air sample drawn through the elongated tube from a test hole or from the atmosphere directly above a venting surface and, a tubular handle slidably mounted on said elongated tube.

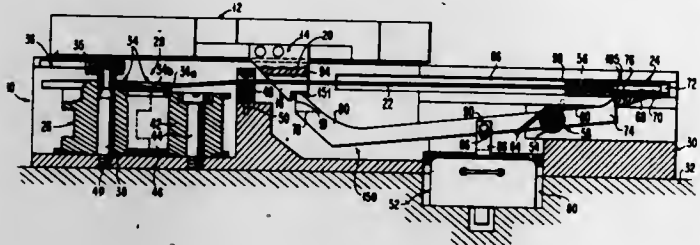
3,610,049
FLUID VORTEX DEVICE
 Walter M. Posingles, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
 Filed Oct. 14, 1969, Ser. No. 866,309
 Int. Cl. G01p 3/26
 U.S. Cl. 73—505

10 Claims



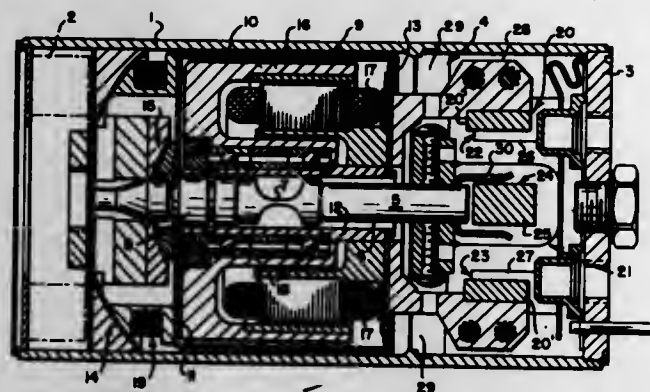
Fluid vortex apparatus including a vortex chamber, a characterized coupling element for introducing fluid into the vortex chamber at its periphery, and a central fluid outlet. The coupling element is characterized so that different portions of the fluid are introduced into the vortex chamber at different distances from the outlet, and are thus subject to different transfer characteristics in traversing the vortex chamber. A sensor in the outlet passage produces a signal indicative of a summation of the modifications to rotational velocity of flow about the axis of the outlet, thereby resulting in a characterized response to input stimuli.

3,610,050
MECHANICAL INTERLOCK MECHANISM FOR A CARRIAGE ASSEMBLY
 Ivan Pejcha, Santa Clara, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Jan. 19, 1970, Ser. No. 3,695
 Int. Cl. G05g 17/00
 U.S. Cl. 74—2 12 Claims



A solenoid operated, spring biased, pivotable arm prevents a magnetic head carriage from leaving a home position when the power is off but frees movement of the same when power is on. Additionally, in case of electrical power failure, the pivotable arm is released by the solenoid to permit the carriage to be driven to the home position through stored energy.

3,610,051
TRANSDUCER PICK-UP MECHANISM
 Elliott J. Siff, Westport, Irving Schaffer, Fairfield, and Noboru Kondo, Weston, Conn., assignors to Varo Inertial Products, Inc., Garland, Tex.
 Filed Jan. 3, 1969, Ser. No. 788,716
 Int. Cl. G01c 19/28
 U.S. Cl. 74—5 6 Claims

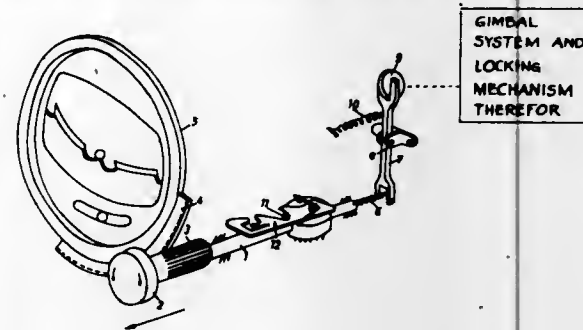


An improved pick-off mechanism for a transducer such as an accelerometer or gyroscope comprising a flexible cantilevered shaft mounted on a support, a follower on the unsupported end of the shaft, a sensing device for sensing movement of the follower upon flexing of the shaft, and connecting means for fixing the sensing device to the support independently of other structure.

3,610,052
DEVICE FOR LOCKING THE GIMBAL SYSTEM OF GYROSCOPE ASSEMBLIES
 Bernhard Strittmatter, Nussdorf (Bodensee), and Werner Hantusch, Überlingen (Bodensee), Germany, assignors to Bodenseewerk Geratetechnik G.m.b.H., Überlingen (Bodensee), Germany
 Filed Jan. 9, 1970, Ser. No. 1,809
 Claims priority, application Germany, Jan. 14, 1969, P 19 01 572.6
 Int. Cl. G01c 19/26
 U.S. Cl. 74—5.1 6 Claims

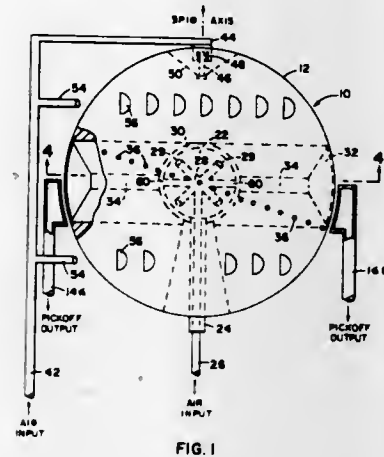
In one longitudinal position of a drawbar, a locking mechanism restrains the gimbal system, with the gimbal system being free in a second longitudinal position. A click-stop device is used to hold the drawbar alternatively

in the two positions. This device comprises a pivoted plate having two indentations extending from one edge, which indentations are joined by a tapered edge. These indentations are spaced from each other along the line of movement of the drawbar. A spring resiliently urges the plate in the direction at which said edge is forwardly. A pin on the drawbar bears against the one edge and when seated in one indentation holds the drawbar in one



position and when seated in the other indentation holds the drawbar in the second position. When the drawbar is pulled once the pin moves along the tapered edge, pivoting the plate, to transfer from one indentation to the second. When the drawbar is pulled a second time, a pin release on the plate disengages the pin from the plate so that the pin is free to return to said one indentation from the second.

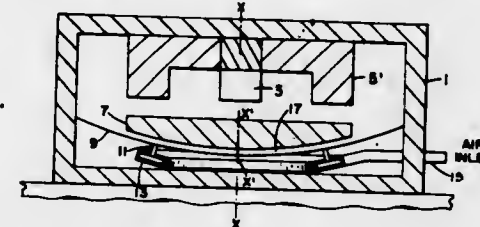
3,610,053
MULTIPLE JET PNEUMATIC PULSE DURATION MODULATION GYRO
 William W. Stripling and David L. Jones, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
 Filed Feb. 25, 1970, Ser. No. 14,126
 Int. Cl. G01c 19/28
 U.S. Cl. 74—5.6 7 Claims



A pulse duration modulation gyro system for sensing attitude deviations of a missile from a preselected trajectory. The gyro system includes a space oriented rotor that spins on a hydrostatic air bearing about the stator therefor. To provide the air bearing, a gas is introduced into a plenum chamber within the stator housing. The gas is dispersed through passages radiating from the chamber to the spherical surface of the stator, terminating adjacent the inner spherical surface of the rotor or spinning wheel. The exhaust of the air bearing is fed into a pickoff chamber within the rotor and exhausts air from a multiple of air ports spaced symmetrically around the circumference of the rotor at an angle to the rotor equator. Four evenly spaced pickoffs provide an output signal in response to gas escaping through the air ports, periodically impinging on the pickoff inputs. When the gyro is subjected to an input rate, the rotor and stator are changed in reference to each other, changing the number of ports rotating past

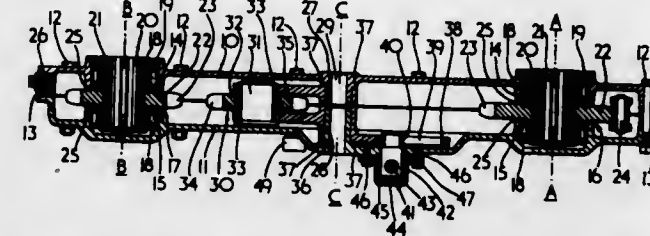
each pickoff and thereby changing the period that the gas impinges on the pickoffs. Thus, a variable output signal indicating the direction of change in trajectory is provided.

3,610,054
LEVELING DEVICE
 James V. Johnston, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army
 Filed July 23, 1969, Ser. No. 844,125
 Int. Cl. G01c 19/20, 19/28
 U.S. Cl. 74—5.6 2 Claims



A leveling device for a vehicle for providing the balancing rotation of a housing around an axis without disturbing the settled position of a ballast. The housing enclosing the ballast has an axis, a lower portion provided with ducts connected to a cavity and a pressurized air inlet.

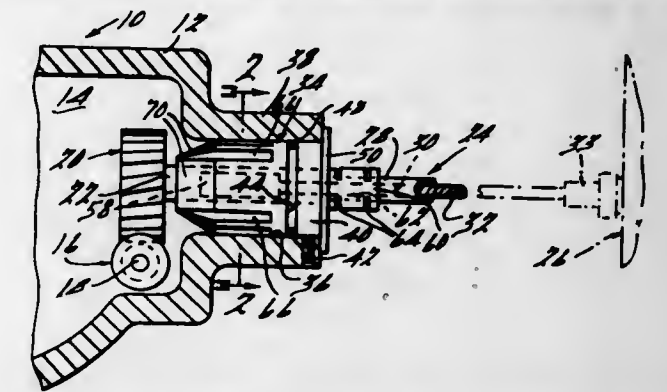
3,610,055
CHAIN DRIVE ASSEMBLY
 David Reginald Parris, West Horndon, England, assignor to Rotary Hoes Limited, West Horndon, Essex, England
 Filed Apr. 30, 1970, Ser. No. 33,267
 Claims priority, application Great Britain, May 10, 1969, 23,922/69
 Int. Cl. F16h 7/10, 37/00, 37/02
 U.S. Cl. 74—11 8 Claims



A chain drive assembly particularly for use in transmitting drive to a rotor carried on an agricultural implement includes chain sprockets which are interconnected by a drive chain. The sprockets and chain are located in a sealed casing and the sprockets have different numbers of teeth. The casing is mounted on the implement and can be turned about its mounting point to engage one or other of the sprockets with a driving shaft and thereby vary the relative speeds of the driving and driven shafts.

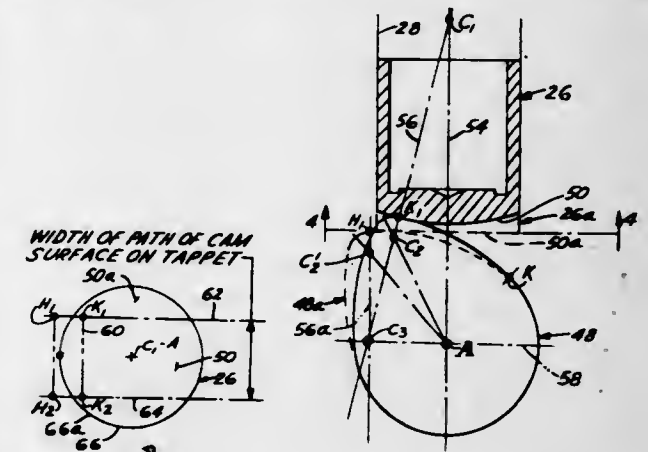
3,610,056
CONNECTOR MEMBER FOR ROTARY DRIVE CABLE
 Donald D. Bartholomew, Utica, Mich., assignor to Merit Plastics, Inc., East Canton, Ohio
 Filed Mar. 16, 1970, Ser. No. 19,646
 Int. Cl. F16c 1/06; F16h 37/00
 U.S. Cl. 74—12 15 Claims

In combination with a vehicular transmission including a housing, a remotely located indicating device, a rotary drive cable for actuating the indicating device in response to operation of the transmission, and means defining a generally cylindrically-shaped access opening in the transmission housing, a connecting member disposed within the opening for maintaining one end of the drive cable in operative relation to the transmission, the member de-



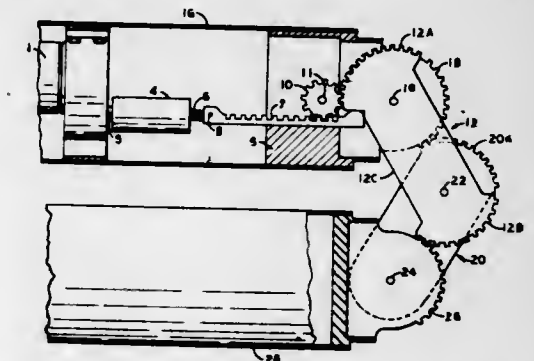
like elements interposed between the periphery of the opening and the passage defining means for orienting the member within the opening.

3,610,057
SLIDING CONTACT CAM AND TAPPET
 Edward J. Repen, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
 Filed June 4, 1969, Ser. No. 830,233
 Int. Cl. F16h 25/08; F01I 1/00
 U.S. Cl. 74—55 4 Claims



A reciprocally mounted tappet adapted to be intermittently actuated by a rotatable cam has a non-flat cam-contacting surface contoured as to achieve both desired tappet lift velocity and a full cam width contact thereacross.

3,610,058
EXTENSIBLE FOLDABLE MANIPULATOR
 Fritz Kurt Mueller, Robert Cherry Martin, and John Roland Loyd III, Huntsville, Ala., assignors to Astro-Space Laboratories, Inc., Huntsville, Ala.
 Filed July 14, 1969, Ser. No. 841,324
 Int. Cl. F16h 27/02; B05h
 U.S. Cl. 74—89.17 8 Claims



A manipulator for extending a tool, person or other load out from a base in a controlled direction and to a controlled extent, comprising elongated spacers and a multiple-lever connector, oppositely hingeable, between

each pair of the spacers. Each varying-angle connector has a controlled motor and an interacting system of levers, the outermost extent of which falls within a circle of approximately the same size as the maximum diameter of the spacers. Optionally, the levers may be of the bellcrank type or they may have segmental gears at their ends. Each link of the manipulator may be separately angled by its connector in either of two opposite directions and then locked in its adjusted position. In folding the manipulator for storage each adjoining pair of the links are compactly folded in opposite directions.

3,610,059

ARRANGEMENT AT KEYBOARD

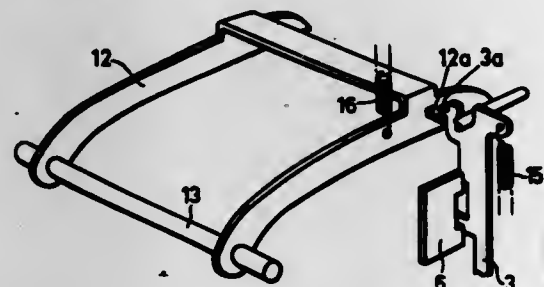
Stig Gustaf Fredrik Norrman, Goteborg, Sweden, assignor to AB Original-Ödner, Goteborg, Sweden
Filed Oct. 27, 1969, Ser. No. 869,678

Claims priority, application Sweden, Oct. 30, 1968, 14,675/68

Int. Cl. F16h 21/00; B16j 19/00

U.S. Cl. 74—102

2 Claims



Arrangement at keyboard which overcomes the factor of uncertainty caused by mechanical vibrations in conventional keyboards of forced magnet carrier motion by providing a spring means eliminating rebound of the magnet carrier.

3,610,060

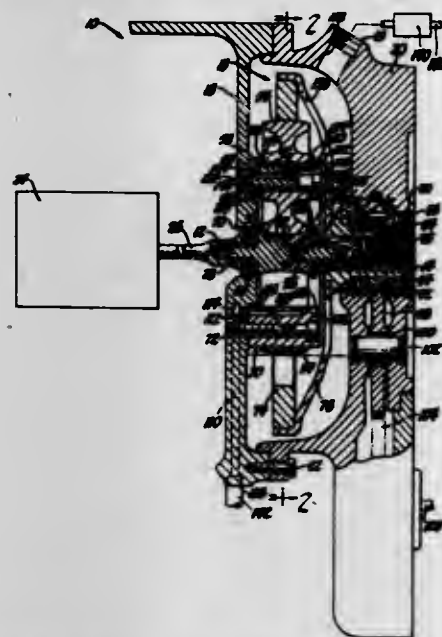
FRICTION DRIVE MECHANISM

Labomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 21, 1970, Ser. No. 39,271

Int. Cl. F16h 13/02; F16h 7/26

U.S. Cl. 74—208

10 Claims



A friction drive mechanism including a housing, input and output shafts, spaced-apart inner sun members mounted on one of said shafts, an outer ring member, a fixed carrier member intermediate the ring and sun members rotatably supporting barrel-type planet pinions frictionally contacting both the ring and sun members, a flange member interconnected between the ring member and one of the shafts, and a lubrication system for providing lubricant to the bearing supports and to all contacting surfaces, particularly accomplishing the cooling of the sun members which, generally, become the hottest components of the planetary unit, with the rotating ring and flange members serving as an impeller for pumping the fluid therefrom, through a cooler and back to the fluid inlet of the friction drive mechanism for recirculation therethrough.

viding lubricant to the bearing supports and to all contacting surfaces, particularly accomplishing the cooling of the sun members which, generally, become the hottest components of the planetary unit, with the rotating ring and flange members serving as an impeller for pumping the fluid therefrom, through a cooler and back to the fluid inlet of the friction drive mechanism for recirculation therethrough.

3,610,061

IDLER DRIVE WHEEL AND THE METHOD OF ITS MANUFACTURE

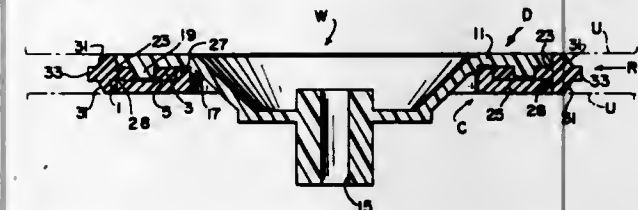
Walter H. Holzboog, Olivette, Mo., assignor to Design International, Inc., St. Louis, Mo.

Filed May 14, 1970, Ser. No. 37,266

Int. Cl. B21d 53/26; B23k 1/06; F16h 55/34

U.S. Cl. 74—215

11 Claims



An annular premolded elastomeric ring is formed with a rim of comparatively thick rectangular cross section and a perforated inward flange. A driving ring of a thermoplastic material is formed as a cone with an integral sleeve forming a bearing at the smaller end of the cone and an integral radial flange at its larger end. Between the radial flange and the cone is an annular step. Outside of the step the radial flange carries on its inner face axially directed integral drive fingers which extend through the perforations in the flange of the elastomeric ring. Flat ends of the fingers lie flush with the far side of the elastomeric flange but before final assembly carry central small conical protrusions therebeyond. Another flat thermoplastic clamping ring is formed with an internal axial flange having an axial slip fit around the step. An inner small peripheral axially directed circular bead before assembly extends from this internal axial flange. The elastomeric ring is sandwiched between the plastic rings. Upon final assembly under axial application of pressure and ultrasonic vibrations the protrusions on the drive fingers of the driving ring spot weld to the clamping ring and the inner peripheral bead of the clamping ring circularly welds to the driving ring around said step. The circular weld lies within the ambit of the spot-welded drive fingers. Each of the driving and clamping rings is also formed with small edgewise annular beads for gripping (without welding) on the opposite outer parts of the central elastomeric flange of the driving ring. This occurs outside of the ambit of the spot-welded driving fingers and with minimum distortion of the outermost portion of the rectangular section of its elastomeric outer rim. Finally the outer circular face of the latter is shaped by grinding to form a stepped circularly accurate thin cylindrical friction driving edge from which flashing occasioned by its premolding is removed.

3,610,062

AUTOMATIC MINI-BIKE TRANSMISSION

Stephen J. Hoff, Richmond, Ind., assignor to Comet Industries, a division of Hoffco, Inc., Richmond, Ind.

Filed Dec. 3, 1969, Ser. No. 881,665

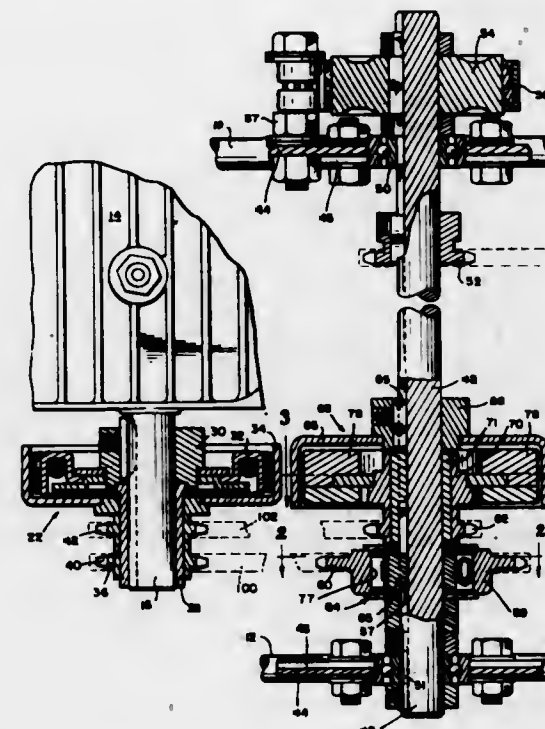
Int. Cl. F16d 23/10; F16h 9/00

U.S. Cl. 74—217 C

3 Claims

An automatic two-speed transmission for mini-bikes and other light-weight vehicles. A first centrifugal main clutch on the engine shaft drives parallel chains to high- and low-speed sprockets on a jack shaft which is chain-connected to the drive-wheel. The low-speed sprocket drives the jack shaft through a one-way, roller "low"

clutch of sturdy 4-roller construction, which allows the jack shaft to overrun when the high drive engages. The high-speed sprocket drives the clutch shoes of a second centrifugal "high" clutch which has its clutch drum fixed to the jack shaft. The high-clutch shoes are primarily centrifugally responsive, but are arranged to have limited self-energizing action and thereby to maintain smooth engagement and release as transition changes occur during shifts. The combination gives reliably predictable shifts in response to driver control of engine speed, and smooth transitions between low drive and high drive.



The jack shaft assembly comprises a continuously slotted shaft on which the clutches, sprockets, a brake drum, and supporting bearings are mounted in axially adjustable relation to adapt such assembly for versatile application to different bike structures and for use as a modification kit on existing bikes.

3,610,063

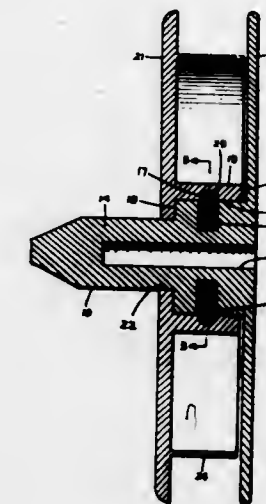
SPRING DETENT HUB

Harry L. Hart, Fort Wayne, Ind., assignor to Lincoln Logotype Co., Inc., Fort Wayne, Ind.
Filed Nov. 7, 1969, Ser. No. 874,827

Int. Cl. F16h 55/36

U.S. Cl. 74—230.01

5 Claims



A spring detent for telescoping elements which comprises a perimetral groove in the outer surface of the inner element, a perimetral groove in the inner surface of

the outer element, said grooves being in registry when said elements are in optimum assembled relation, and a perimetally-elastic torse engaging in the registering grooves to latch the telescoped elements in such relation, each of the grooves having a mouth dimension, measured in an axial direction relative to said elements, substantially equal to the cross-sectional diameter of the torse, one of the grooves having a dimension, measured in a radial direction relative to said elements, substantially equal to one-half the cross-section diameter of the torse, and the other groove having a dimension, measured in a radial direction relative to said elements, at least equal to the cross-sectional diameter of the torse.

3,610,064

PRINTING POSITION ADJUSTING DEVICE FOR ROTARY PRESS

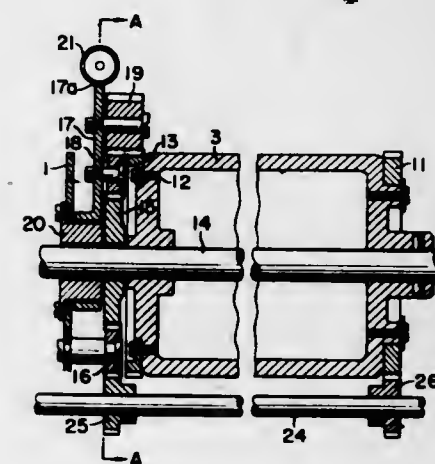
Tamaki Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 22, 1969, Ser. No. 852,202

Claims priority, application Japan, Aug. 27, 1968, 43/61,293

Int. Cl. F16h 35/06; B41f 13/24

U.S. Cl. 74—397

1 Claim



A printing position adjusting device for a rotary press comprising a toothed wheel fixedly secured to one printing cylinder, a pinion carrier by a shaft in coaxial relation with said toothed wheel and adapted to revolve around said toothed wheel in mesh therewith, a movable arm supported in coaxial relation with said one printing cylinder, a planetary gear carried by said movable arm and in engagement with said fixedly secured toothed wheel an intermediate gear in mesh with both of said planetary gear and said pinion and carried by said movable arm, a gear train for connecting said pinion with another printing cylinder, and means for rocking within a predetermined range of angle said movable arm from the exterior of the printing press. By suitably rocking the movable arm, the position of the plate cylinder in the direction of the rotation thereof relative to the blanket cylinder is varied, thereby adjusting the printing position of the paper in the longitudinal direction thereof.

3,610,065

POWER TRANSMISSION GEAR SYSTEM

Teru Hayashi, 4-413 Minami Tsunajima-cho, Kitaku, Yokohama (Kanagawa Prefecture), Japan, and Takashi Takahashi, 1-458 Sochiyaya, Setagaya-ku, Tokyo, Japan
Filed Oct. 23, 1969, Ser. No. 868,951

Int. Cl. F16h 57/00; F16c 7/04

U.S. Cl. 74—410

1 Claim

In power transmission gear system consisting driving pinion, driven gear and two intermediate gears, the

shaft of the driving pinion is supported by bearings which enable said shaft to displace in an inclined plane making

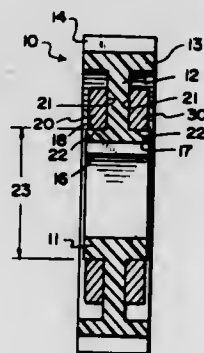


an angle α (mesh pressure angle) with the plane including the axial lines of the driving pinion and the driven gear.

3,610,066
REINFORCED PLASTIC GEAR
Frank J. Rychlik, 3484 Whirlaway Drive
Northbrook, Ill. 60062
Filed Nov. 3, 1969, Ser. No. 873,169
Int. Cl. F16h 55/04, 55/30

U.S. Cl. 74-434

4 Claims

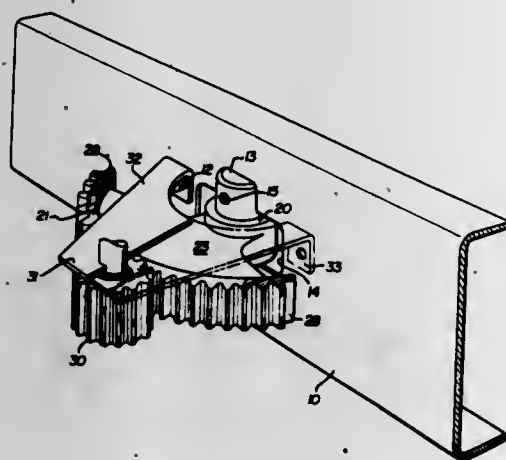


A molded plastic gear or drive wheel having its hub reinforced under compression with metal rings or washers to prevent cracking at the splines or keyway.

3,610,067
STEERING GEAR FOR TRACTORS
Paul H. Stibbe, Neenah, Wis., assignor to
J. I. Case Company, Racine, Wis.
Filed Apr. 15, 1970, Ser. No. 23,104
Int. Cl. B62d 3/12; F16h 57/00

U.S. Cl. 74-498

4 Claims



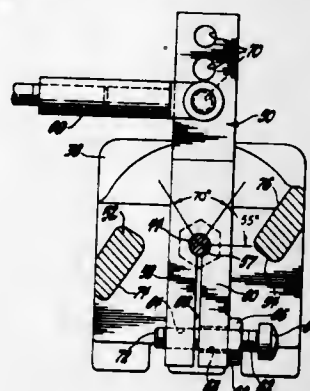
A steering apparatus of the pinion gear and sector gear type, with double adjustment mountings on a frame rail

of a vehicle and journaling the sector gear and a cantilever bracket for supporting the pinion gear; the pin and bracket are adjustably mounted on the frame rail to provide universal adjustment of the various parts.

3,610,068
CONTROL SYSTEM
Robert H. Schaefer, Westfield, and Clifford H. Fleetwood, Beech Grove, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 17, 1969, Ser. No. 877,157
Int. Cl. G05g 5/04, 5/16

U.S. Cl. 74-526

8 Claims

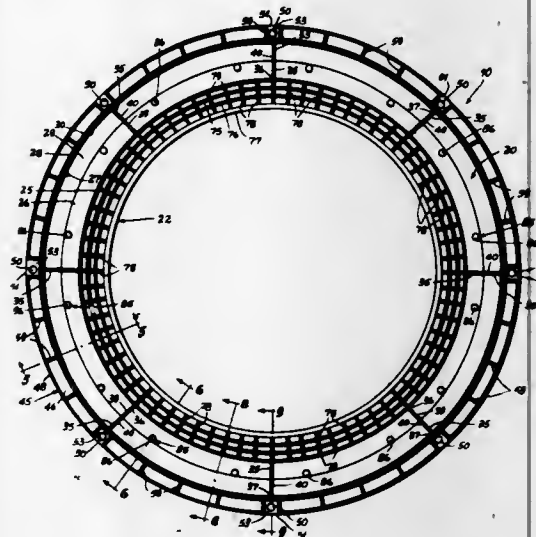


A control system including improved means for protecting, mounting and adjusting a control mechanism, including a housing for a specific control device, a shaft extending from the control device through the housing, a lever mounted on the shaft exterior of the housing, a boss formed on an outside surface of the housing, and a bolt and nut arrangement mounted on the lever, the bolt being in contact with the boss when the lever and shaft are in predetermined rotary positions, and the nut serving to secure the lever on the shaft and fix the rotary positions of the shaft relative to the boss.

3,610,069
MOLDED ONE-PIECE BALANCING RING
Robert G. Tanner, St. Charles, and David N. Tanner, Kirkwood, Mo., assignors to Arundale Manufacturers, Inc., St. Louis, Mo.
Filed Nov. 14, 1969, Ser. No. 876,651
Int. Cl. F16f 15/22

U.S. Cl. 74-573

18 Claims

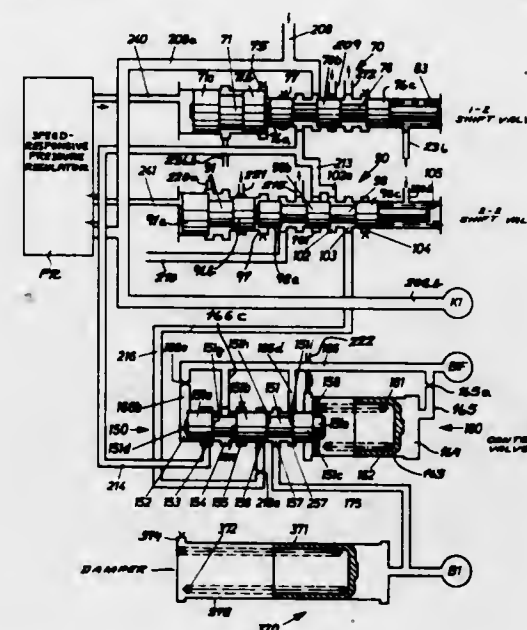


A balancing ring for use in balancing the tub of a washing machine having a channel portion for receiving a weighting material and a vertical grill extending downward from the channel portion which allows liquid to pass, but not the articles being washed. The entire balancing ring is molded as one piece. Means are also provided for mounting the balancing ring to the tub.

3,610,070
HYDRAULIC CONTROL SYSTEM FOR BRAKES, CLUTCHES AND THE LIKE
Hansjorg Dach, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany
Continuation-in-part of application Ser. No. 785,687, Dec. 20, 1968. This application Feb. 17, 1970, Ser. No. 12,112
Claims priority, application Germany, Feb. 19, 1969, P 19 08 162.0

Int. Cl. B60k 21/00; F16h 57/10
U.S. Cl. 74-753

10 Claims

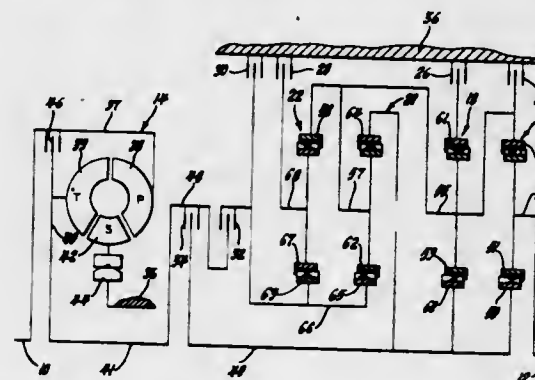


A pair of hydraulic loads in the form of clutches and/or brakes are controlled by a common valve having separate inlet ports for high-pressure fluid and associated outlet ports respectively connected to these loads, each inlet port communicating with its associated outlet port in an initial position of a slider which, in response to pressure buildup in the first outlet port, shifts into an alternate position in which the fluid supply to the first load is reduced and the two loads are interconnected via a path only only in the alternate slider position; this shift occurs against a biasing force of a spring bearing upon a piston which is displaceable by hydraulic fluid from the first outlet port, delivered through a constricted passage, to augment the biasing force so as to re-establish the initial position after a further pressure rise at the first load, thereby admitting fluid to both loads at substantially the pressure prevailing at the two inlet ports.

3,610,071
TRANSMISSION
Robert M. Tuck, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 6, 1970, Ser. No. 35,009
Int. Cl. F16h 57/10, 5/10

U.S. Cl. 74-759

2 Claims



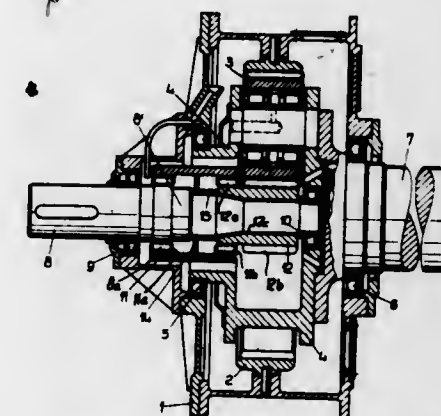
A transmission having four planetary gear sets and six friction drive establishing devices combined to provide at least five forward speed range drives and a reverse

drive with the lowest forward speed range drive being provided by only one of the gear sets and the remaining forward drives provided by this one gear set combining input drive with four different speed ratio drives from the remaining gear sets. Sequential upshifting and downshifting is provided by releasing only one friction drive establishing device and engaging only one other friction drive establishing device.

3,610,072
POWER GEAR TRANSMISSION CONSTRUCTION
Karl Grimpe, Duisburg, Germany, assignor to Demag A.G., Duisburg, Germany
Filed Oct. 22, 1969, Ser. No. 868,364
Claims priority, application Germany, Nov. 25, 1968, P 18 10 768.1

Int. Cl. F16h 1/28, 57/00
U.S. Cl. 74-801

6 Claims



A power gear transmission construction includes a drive shaft which is positioned within a sun gear with radial play and which includes axially spaced bearings for rotatably supporting a planet gear carrier and planetary gears. A non-rotatable main gear with internal gear teeth is mounted around the planetary gears carried by the planet carrier and is in meshing engagement with the planetary gears. The arrangement includes a double joint clutch sleeve having a gear formation at one axial end in meshing engagement with a gear extension on the sun pinion and a gear portion at another axially extending end which is in meshing engagement with a gear defined on the drive shaft. The double clutch is mounted for some axial play and to permit universal movement of the drive shaft but is prevented from moving beyond a predetermined point by a shaft collar and a shaft bushing which are arranged in spaced location along the shaft axis. A secondary shaft is connected to the carrier for the planetary gears and is rotatably supported within the fixed housing mounting the main planet gear.

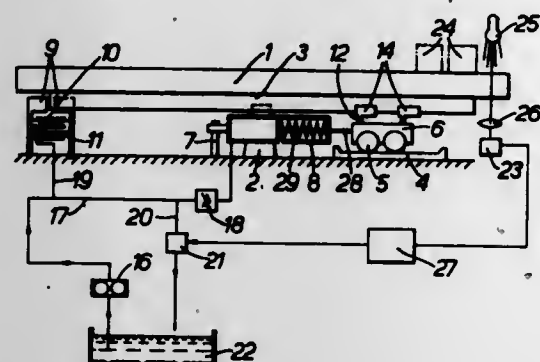
3,610,073
DRIVE ARRANGEMENTS FOR A ROTARY TURNTABLE
Bernd Zippel, Langenhain, and Alfred Schlieckmann, Eschwege, Germany, assignors to Richard Zippel & Co. KG, Eschwege, Germany
Filed Feb. 20, 1970, Ser. No. 12,985
Claims priority, application Germany, Feb. 27, 1969, P 19 09 787.1

U.S. Cl. 74-822

12 Claims

A pressure fluid operated drive arrangement for a rotary turntable, especially a rotary turntable carrying moulds in a mould filling plant, is disclosed. The arrangement comprises an endless belt, which is mounted on or otherwise coupled to the turntable and, by means of which, a succession of angular displacements are imparted to the turntable. The belt is displaced in synchronism with the forward displacement of a spring

loaded piston in a cylinder. The piston is displaced in response to pressure fluid introduced into the cylinder and, during such forward displacement, the piston is coupled to the belt by means of pairs of pivotably displaceable clamps. These clamps are mounted on a trolley which is displaced under the influence of the piston, along a path substantially parallel to a portion of the belt engaged by the clamps. The clamps of each pair are mounted on either side of the belt and are so pivotally arranged and orientated that they are self-lockingly ap-

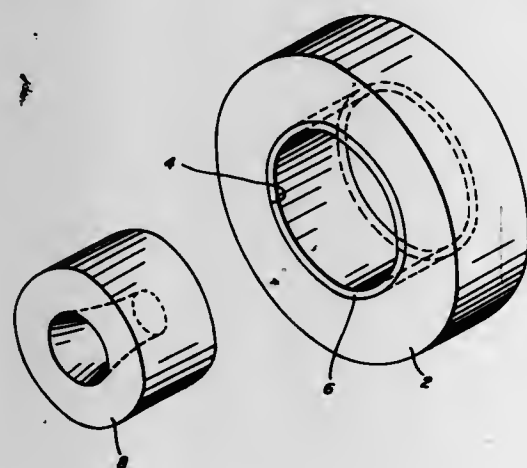


plied to the belt whilst the piston is displaced by the fluid pressure. After each forward stroke of the piston, the piston returns under the influence of its spring loading and, during this return movement, the clamps slide freely on the belt. Preferably, hydraulic braking means operate on the turntable, either directly or via the belt. The braking means are arranged to be so responsive to the fluid pressure for displacing the piston as to release the turntable prior to the forward stroke of the piston and to lock the turntable against rotation during the return stroke of the piston.

3,610,074 CERAMIC DIE ASSEMBLY

Adelard J. Charpentier, New Castle, and Harry E. Deverell, Craigdell Gardens, Pa., assignors to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
Filed Mar. 21, 1969, Ser. No. 809,344
Int. Cl. B21k 5/20; B05b 7/20
U.S. Cl. 76—107 A

8 Claims

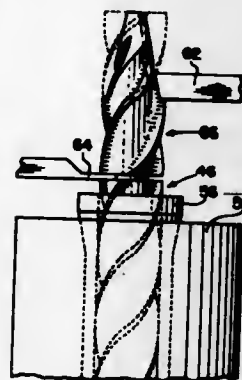


A ceramic die assembly and method for making same for metal forming operations such as drawing and extruding including a ceramic die body, a supporting retainer ring and a lining interposed between the die body and the retainer ring, where the properties of modulus of elasticity, compressive strength and the hardness of the lining are substantially greater than those similar properties of the retainer ring.

3,610,075 METHOD OF PRODUCING A PLURALITY OF CUTTING TOOLS FROM A SINGLE FLUTED BAR

Edward F. Fabish, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Original application July 1, 1966, Ser. No. 741,415, now Patent No. 3,483,605, dated Dec. 16, 1969. Divided and this application Sept. 12, 1969, Ser. No. 857,444
Int. Cl. B21k 21/00
U.S. Cl. 76—108 T

5 Claims

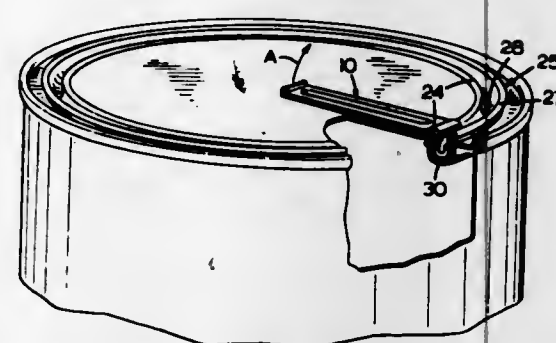


A plurality of blanks for a "throw-away" cutting tool such as an end mill having a short, tapered shank adapted to be held in a correspondingly tapered holder can be produced from a single length of bar material by first forming at least three flutes in the bar and then tapering and cutting off individual blanks in an automatic screw machine. The cutter blanks are finished by hardening them and then sharpening their cutting surfaces while holding them in a tapered holder.

3,610,076 CAN OPENER

Garry W. A. Martens, 1118 Regent Crescent,
Calgary 61, Alberta, Canada
Filed Jan. 7, 1969, Ser. No. 789,527
Int. Cl. B67b 7/12
U.S. Cl. 81—3.46

12 Claims



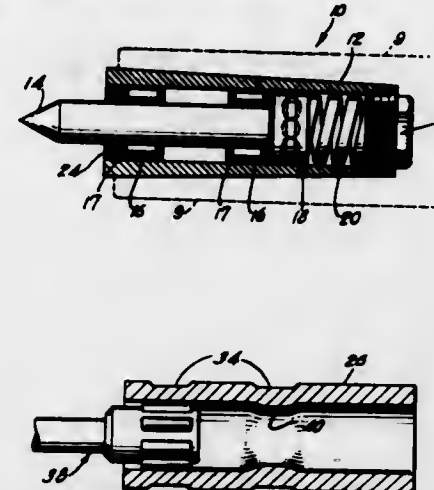
The disclosure of the present application describes the lever type can opener device adapted to be stably mounted on the lid of a can of the type commonly known as a double-seal can and used frequently as a paint can lid. The opening device is formed from a substantially rectangular blank and consists of a substantially planar body portion which is formed with a tongue at one end adapted to engage the circumferentially extending groove formed in the can lid such that it may be mounted on the can lid in a position wherein the body portion extends radially inwardly of the can lid. The tongue means is formed by bending one end of the substantially rectangular blank upon itself to form a U-shaped projection adapted to fit within the U-shaped groove of the can lid. The U-shaped portion is connected to the body portion by an arch-shaped position which is adapted to provide clearance for the circumferentially extending ridge normally formed adjacent to the U-shaped channel of a double seal paint can lid. A lip means is preferably

formed at the other end of the body and adapted to be inserted between the rim of the can lid and the can when the lid is in use.

3,610,077 LATHE CENTER DEVICE AND METHOD

Claus Staplemann, Dover, N.J., assignor to Climax Engineering Co., Goleta, Calif.
Filed July 11, 1969, Ser. No. 840,958
Int. Cl. B23b 23/04
U.S. Cl. 82—33

12 Claims

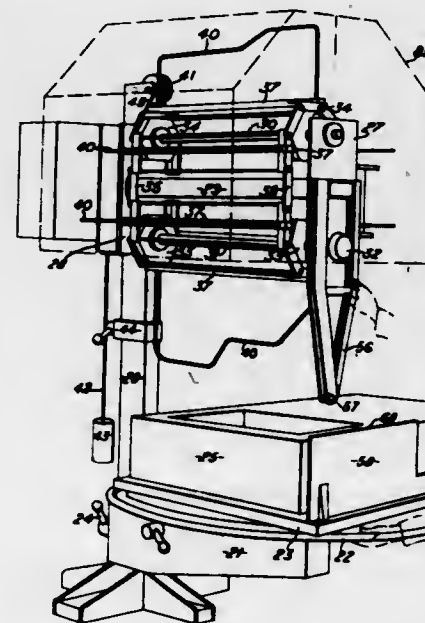


The lathe center device is composed of an outer housing, a spindle for supporting a work piece, and at least one set of bearings which support the spindle within the outer housing. During fabrication of the center device, the housing is swaged so as to indent the housing sections where the bearings are to be seated. The indented portions are then roller-burnished so as to form improved bearing seats which increase bearing stability and prolong the life of the center device.

3,610,078 SHAPING BLOCKS OF NONMETALLIC MATERIAL

Arwyn Rowlands, Filton, Bristol, England, assignor to Rolls-Royce Limited, Derby, England
Continuation of application Ser. No. 680,908, Nov. 6, 1967. This application Sept. 4, 1969, Ser. No. 855,120
Claims priority, application Great Britain, Nov. 11, 1966, 50,733/66
Int. Cl. B26f 3/12
U.S. Cl. 83—1

6 Claims

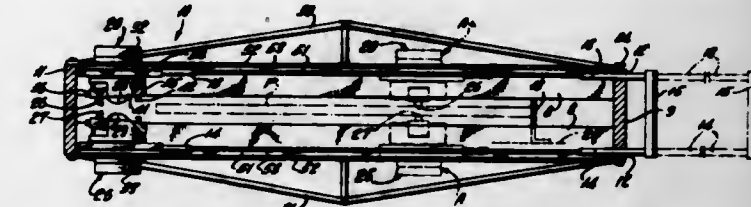


An apparatus adapted to form complex three dimensional recess within a block of meltable material through use of a heated bent wire type shaping tool.

3,610,079 PORTABLE PANEL SCORING AND CUTTING APPARATUS

Frederick R. Ashby, Carmel, N.Y., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,335
Int. Cl. B26d 3/08
U.S. Cl. 83—11

6 Claims

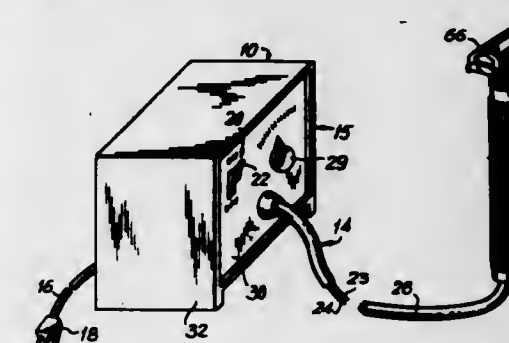


The present disclosure covers a unique, portable, cutting or scoring device for panels, particularly for large cement-asbestos type panels or their equivalent such as Glasweld, and Transite panels and similar products. The portable device or apparatus, in essence, comprises an open, elongated box structure comprising four parallel cross elements rigidly affixed to one another at the ends thereof by suitable means. This skeleton, elongated, box-like structure is designed to support between two upper cross members an upper movable slide having an upper cutting element while the two lower cross elements are designed to support a lower movable slide having a lower scoring or cutting element. The panel to be scored or cut is positioned by suitable means between the upper cutting element and the lower cutting element which are drawn by suitable means across the panel being processed thus scoring the top and bottom surfaces of the panel simultaneously.

3,610,080 ULTRASONIC METHOD AND APPARATUS FOR SHAVING

Arthur Kuris, Riverdale, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed Oct. 31, 1969, Ser. No. 872,927
Int. Cl. B26b 21/38
U.S. Cl. 83—13

38 Claims



A shaving instrument having a cutting blade that is ultrasonically vibrated to substantially reduce the frictional resistance of the movement of the shaving instrument relative to the skin, and the method of shaving accordingly.

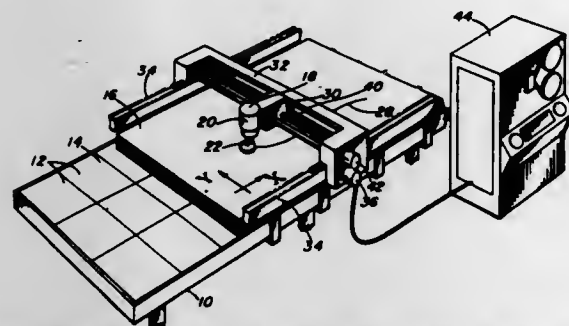
3,610,081 AUTOMATIC SHEET MATERIAL CUTTER WITH CUTTING TOOL ANGLE CHECKING MEANS

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, East Hartford, Conn.
Filed Feb. 9, 1970, Ser. No. 9,569
Int. Cl. B26d 5/30
U.S. Cl. 83—62

8 Claims

An automatically controlled cutter for cutting sheet material, such as layups of garment fabrics, includes a cutter which is driven in two coordinate directions relative to the material being cut in order to follow a desired line of cut. The cutting tool is a reciprocating blade which is automatically rotated about its cutting axis in

order to maintain it tangent to the line of cut at all points therealong. To prevent injury to the material being cut in the event the cutting blade is not positioned tangentially to the line of cut, the device includes an encoder for measuring its actual angular position. The signal produced by this encoder is compared with another derived



tool angle signal obtained from the signals used to move the cutter along the line of cut. If the actual tool angle signal does not agree favorably within certain predetermined limits with the derived tool angle signal a stop signal is produced which inhibits further cutting of the material by the cutter.

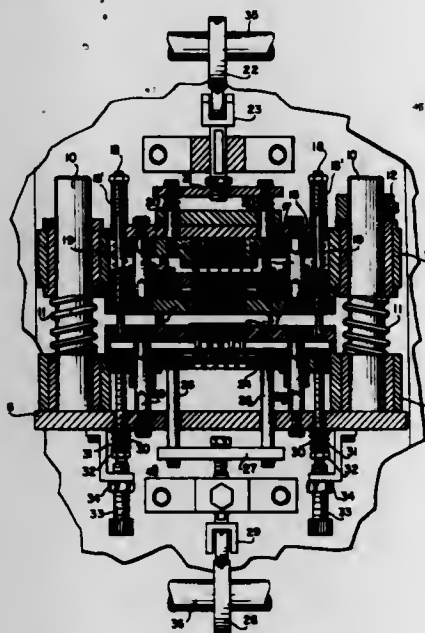
3,610,082 TAPE CORE PRESS

Michael Riggi, Downey, and Maximilian Bruckner, Compton, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 16, 1970, Ser. No. 11,576
Int. Cl. B26f 1/02

U.S. Cl. 83-108

5 Claims



A press for punching memory cores from a ferrite impregnated tape wherein the core center is first removed from one side of the tape and in a continuous motion the core is removed from the other direction. The core is returned to its position in the tape and the tape advances to a new position.

3,610,083 VERTICAL SHEARING MACHINE OF THE INTER-CHANGEABLE KNIFE ASSEMBLY TYPE

Tetutaru Yasuda and Tameo Nakamichi, Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 12, 1969, Ser. No. 857,422
Claims priority, application Japan, Sept. 13, 1968, 43/65,566, 43/65,567

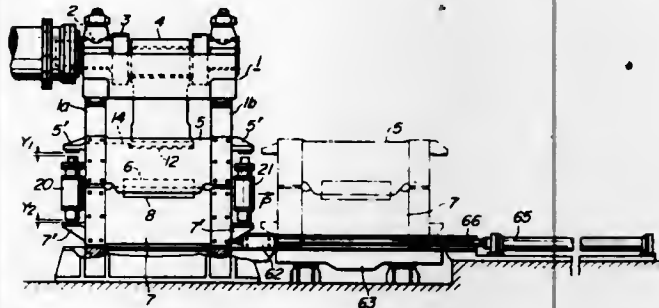
Int. Cl. B26d 7/26

U.S. Cl. 83-390

11 Claims

A vertical shearing machine of the interchangeable knife assembly type comprising a knife assembly including a movable upper knife and a fixed lower knife

mounted on respective holders and adapted to be mounted in a shearing position in a housing and removed therefrom by itself for replacement by another knife assembly. The housing is formed with an opening therethrough and



the inner sides of the housing defining said opening serve as guide surfaces for the knife assembly when the latter is mounted or removed and as sliding surfaces along which the upper knife holder moves in sliding motion when a shearing operation is performed.

3,610,084 STRING FOR STRINGED INSTRUMENTS AND METHOD OF MAKING SAME

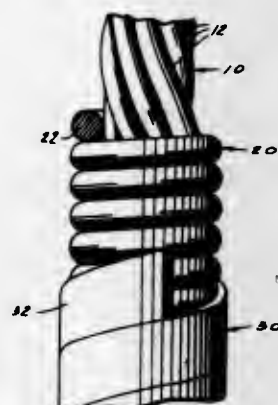
Wigbert Behringer, 14 Schulstrasse, 7753 Allensbach, Germany

Filed Aug. 28, 1969, Ser. No. 853,658
Claims priority, application Austria, Aug. 28, 1968, A 8,346/68

Int. Cl. G10d 3/00

U.S. Cl. 84-297 S

11 Claims



A string for stringed instruments having equal torsion rigidity in both directions of rotation includes an elastically resilient coarse-pitch tension bearing rope-shaped core composed of synthetic continuous filaments of plastic material rope core which is provided with at least one less pitched covering layer composed of round wires or flat bands. The rope consists of threads with a breaking elongation in the range of 9 to 15 percent, a tensile strength in the range of 80 to 110 kg./mm.², and a modulus of elasticity in the range of 1150 to 1350 kg./mm.². The rope is covered with each covering layer while it is stretched under a tension corresponding to at least its expected subsequent tension on the instrument.

3,610,085 MUSICAL INSTRUMENT CONSTRUCTION

James B. Wilson and Fred Kaz, Chicago, Ill., assignors to Voice of the Flower, Ltd., Chicago, Ill.

Filed Oct. 1, 1969, Ser. No. 862,828

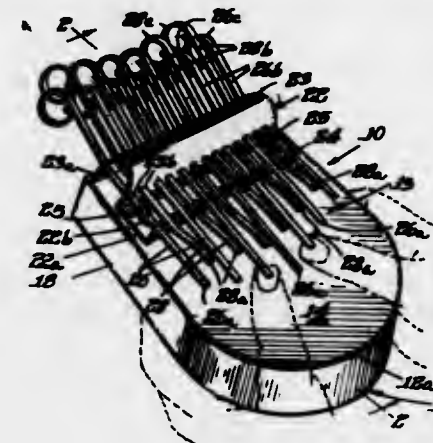
Int. Cl. G10d 13/08

U.S. Cl. 84-402

7 Claims

A hand held musical instrument including a contoured sound resonating box which comfortably and easily fits

into the hands of a user thereof. A plurality of sound producing wires or rods extend forwardly from a bridge secured to one end of the sound resonating box, the distance the wires or rods extend from the bridge determines the musical tone quality of each wire or rod. Each wire or rod has a portion thereof extending rearwardly from the bridge into and through a channel shaped holder and



has formed at the rear end thereof, behind the holder, a finger gripping portion to enable the user quickly and easily to adjust the extent to which of a particular wire or rod projects forwardly beyond the bridge. The wires or rods are adjusted to provide an interleaving inner and outer grouping thereof so sounds about an octave apart can be produced by a single plucking operation.

3,610,086 TEACHING APPARATUS FOR KEYBOARD INSTRUMENT

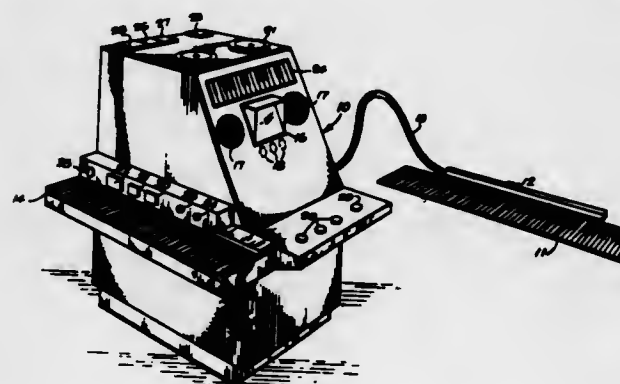
Tom W. Decker, Mobile, Ala., assignor to Humanics, Inc., Dallas, Tex.

Original application Nov. 28, 1967, Ser. No. 686,121, now Patent No. 3,482,480, dated Dec. 9, 1969. Divided and this application Dec. 8, 1969, Ser. No. 883,278

Int. Cl. G09b 15/02

U.S. Cl. 84-470

8 Claims



This application discloses teaching apparatus for use with a keyboard instrument, the apparatus including a visual display such as a slide projector along with a tape playback, the tape being at least two channels of recorded information so that the audio presented to the student may be switched depending upon the student's answers to questions. The correct answers to the questions are contained in coded light patterns on the photographic slides, these patterns falling on photocells adjacent the visual display screen. A keyboard light strip is positioned above the keyboard of the musical instrument, and the lights are selectively actuated by an instructor's keyboard. Adjacent the visual display, a graphic keyboard is provided which contains lamps which may be selectively actuated by the instructor's keyboard or by a programmed stepping switch.

891 O.G.-4

3,610,087 STAPLE WITH INHERENT MEANS FOR MANUALLY DETACHING THE SAME

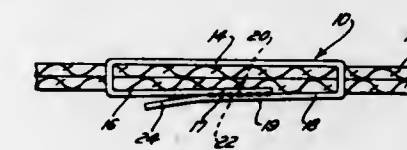
Arthur Dritz, 171 Beach 125th St., Rockaway Park, N.Y. 11694

Filed July 7, 1969, Ser. No. 839,161

Int. Cl. A43d 69/06; F16b 15/00

U.S. Cl. 85-49

1 Claim



A staple for uniting together sheets or layers of paper, fabric or like substrates, the staple being made of a flexible material, the staple being provided with inherent or integral means for manually detaching the staple from its sheet uniting condition. The staple is disclosed as embodied in a wrap-around type and in a bar-lock type of staple provided with lapping sections which are bonded together, the bond of which is broken for staple detachment by the manual operation of the inherent detaching means.

3,610,088 APPARATUS AND METHOD FOR MIXING AND PUMPING FLUID EXPLOSIVE COMPOSITIONS

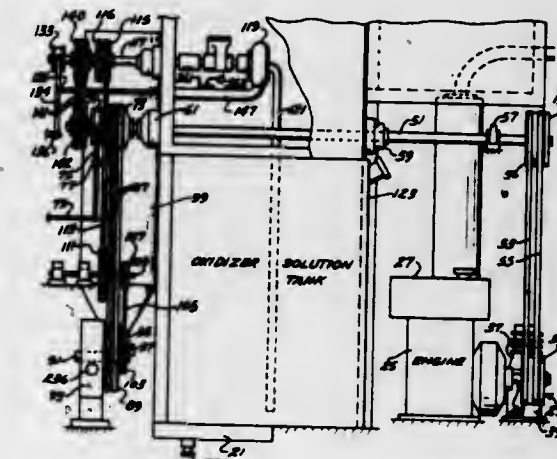
Calvin E. Christensen, Salt Lake City, and Robert B. Clay and Gary M. Thornley, Bountiful, Utah, assignors to Intermountain Research and Engineering Company, Inc.

Filed May 31, 1968, Ser. No. 733,707

Int. Cl. F42b 3/00; C06b 21/02

U.S. Cl. 86-20

21 Claims



A relatively small, mobile system for mixing and pumping slurry explosives includes a vehicle and demountable unitized equipment for metering, mixing and pumping to a point of use, a slurry of liquid and non-dissolved solid particulate ingredients. The product is a suspension of particles in a liquid medium of viscous gel form. Apparatus includes multiple supply sources and feeders for particulate ingredients and a pump for liquid, all emptying into a mixing zone, the individual feeders being driven at selectively or variably controlled rates. Operation of the feeder elements may be mechanical or by fluid pressure. The desired volume of liquid is adjustable, being metered by mechanical pump and/or timer means; product slurry delivery is by a variable output pump. The system is designed to carry the separate ingredients safely to sites often inaccessible to prior art equipment, there to prepare the explosive slurry or gel on site and deliver it promptly to the point of use, whether on mountain sides or in underground tunnels, excavations, etc.

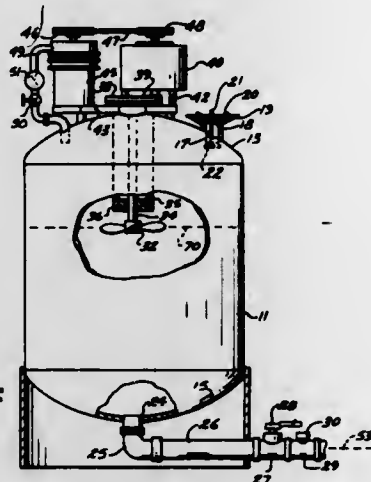
3,610,889 APPARATUS AND METHOD FOR BLASTING OR DEMOLITION

Melvin A. Cook, Salt Lake City, Robert B. Clay, Bountiful, and Lex L. Udy, Salt Lake City, Utah, assignors to Intermountain Research and Engineering Company, Inc.

Filed July 22, 1968, Ser. No. 746,656
Int. Cl. F42d 7/00

U.S. Cl. 86—20

9 Claims



A length of expandable tubing is distended and filled with a sensitive easy flowing liquid or plastic explosive blasting or demolition slurry. By unrolling a tube as it is filled it may be protected across inaccessible terrain, e.g. for blasting a long path or removing obstacles, destroying enemy installations in military operations, etc. Portable mechanical or manual equipment is included for preparing the slurry and extruding it into the tube. Pumpable aqueous slurries of ammonium nitrate and other oxidizer salts are well sensitized with fuels which include small amounts of finely divided aluminum, carbonaceous materials, etc.

3,610,890 CASING FEEDING APPARATUS FOR AMMUNITION RELOADING

Lyle S. Corcoran, 730 N. Mariposa Ave., Los Angeles, Calif. 90029

Filed Oct. 27, 1969, Ser. No. 869,736
Int. Cl. F42b 33/10

U.S. Cl. 86—45

9 Claims



A plurality of ammunition shells or cartridge cases are supported in a vertical column in a feed tube by engagement of the rim of the lowermost shell against a retractable detent in a feed throat at the lower end of the tube. The detent is controlled by a plunger which retracts it upon being contacted by an upwardly moving work holder

slide which receives the shell as the latter is released by the retraction of the holding detent, and transfers it to a reloading tool.

3,610,891 BALLISTIC DEVICE COMPRISING A PROJECTILE AND ITS LAUNCHER

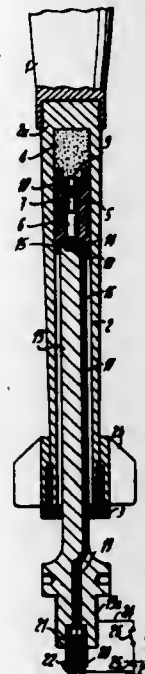
Robert Bornand, Meyrin, Geneva, Switzerland, assignor to Transurvey Holding Company Inc.

Filed Feb. 10, 1969, Ser. No. 794,058
Claims priority, application Switzerland, Feb. 8, 1968, 2,075/68

Int. Cl. F41f 1/06

U.S. Cl. 89—1 F

8 Claims



A ballistic device comprises a projectile and a launcher therefor, the projectile having a tube at its rear end in the forward end of which a propulsive charge is compressed by a piston. The piston is backed by a guide rod on the launcher which extends into the tube, so that upon firing, the tube is driven forwardly relative to the piston while the piston bears against the guide rod. The charge is electrically fired, and the electrical connections extend through the piston and along the guide rod.

3,610,892 LOCKING RING FOR STORE ARMING DEVICE

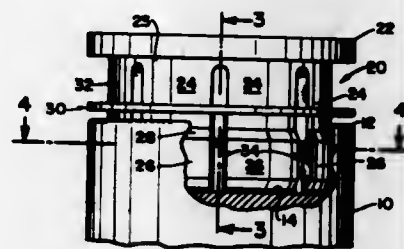
Matthew N. Miller, Topanga, Calif., assignor to Fairchild Industries, Inc., Germantown, Md.

Filed Nov. 29, 1968, Ser. No. 784,077

Int. Cl. F41f 5/02

U.S. Cl. 89—1.5 D

9 Claims



A safety locking ring for a store having a reentrant lip on one of its ends to which is held a detachable insert cap having a plurality of spaced, resilient, movable arms. The ring has a plurality of fingers which extend into the spaces between the cap arms to engage the arms and prevent their inward movement and detachment of the cap from the store when the ring is in a first position.

3,610,893 RECOILLESS GUN

Hans-Georg Mobus, Delsenhofen, near Munich, Germany, assignor to Bolkow Gesellschaft mit beschränkter Haftung

Filed June 4, 1964, Ser. No. 372,721

Claims priority, application Germany, June 22, 1963, B 72,388

Int. Cl. F41f 3/02, 15/00

U.S. Cl. 89—1.7

1 Claim



1. A recoilless gun including a launching tube from which a rocket-projectile can be fired, an expansion nozzle at the rear end of the tube, said nozzle being rigidly connected with the tube, a cylindrical jacket surrounding said nozzle, said jacket being rigidly connected to the nozzle, a solid-propellant charge for expelling the rocket-projectile out of the launching tube, said solid-propellant charge being accommodated in the annular space between the nozzle wall and the jacket surrounding the nozzle, discharge openings for the combustion gases of the solid-propellant charge, said openings being arranged in the wall of the nozzle at the beginning of the convergent part equidistant to each other and on a circumference, the axes of said discharge openings lying on a lateral area of a cone and intersecting the longitudinal axis of the launching tube, a cartridge-case base being arranged in the launching tube behind the rocket-projectile, and a fuse located at the centre of said cartridge-case base for igniting said solid-propellant charge, said cartridge-case base with said fuse being arranged in the launching tube at such a distance from the discharge openings that, when igniting the ignition charge, the explosion flames of said ignition charge leak through said discharge openings and ignite said solid-propellant charge.

3,610,894 EJECTOR RELEASE UNITS FOR USE IN AIRCRAFT

Samuel W. Craigie, Maidenhead, England, assignor to M. L. Aviation Company Limited, Slough, England

Filed Apr. 21, 1969, Ser. No. 817,750

Claims priority, application Great Britain, Aug. 8, 1968, 38,614/68

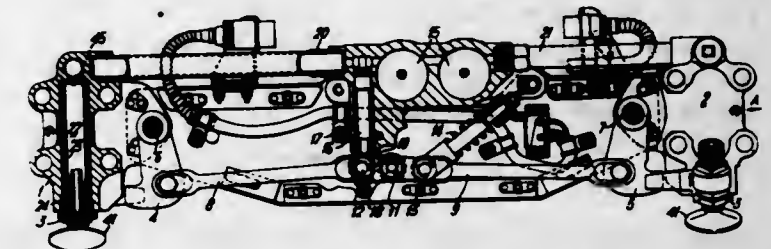
Int. Cl. B64d 1/04

U.S. Cl. 89—1.5 F

3 Claims

An ejector release unit for releasing and projecting a heavy object, for example a bomb, from an aircraft includes a releasable latching mechanism for supporting the object, a pair of telescopic ejection guns for projecting the object from the aircraft, a holder for one or more car-

tridges, and means for conducting high pressure gas produced on ignition by the cartridges to the latching mechanism and to the ejection guns. Thus cartridge ignition causes the object to be released and projected away from the aircraft. The projection force is controlled by one or



two interchangeable throttles located in the gas conducting means. The or each throttle vents a proportion of the gas to atmosphere unlike conventional throttles. In consequence very small thrusts can be obtained from the ejection guns.

3,610,895

ROCKET MEANS FOR DRIVING A FREE PUNCH
Donald V. Black, Santa Monica, Albert D. Jamnias, Los Angeles, Ross T. Radey, Palos Verdes, and John K. Wall, Los Angeles, Calif., assignors to the United States of America as represented by the Secretary of the Army

Application Aug. 10, 1965, Ser. No. 480,248, which is a division of application Ser. No. 196,854, May 18, 1962. Divided and this application June 29, 1967, Ser. No. 650,132

Int. Cl. F41f 3/04

U.S. Cl. 89—1.8

10 Claims



Rocket launching and drive means for driving a free punch by a rocket that is mounted inside a cylindrical launching tube by segmented sabot means and has a spin turbine secured to the rocket to rotate the rocket as it is being launched. The segmented sabot means and spin turbine are secured to the rocket so as to be separated from the rocket by centrifugal force as the rocket leaves the launching tube.

3,610,896

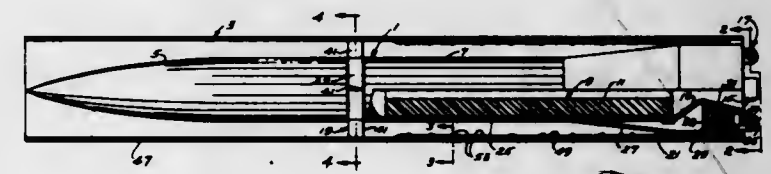
SPIN AND FIN STABILIZED ROCKET
Robert E. Bauman, St. Charles, and James R. Christenson, Creve Coeur, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 22, 1969, Ser. No. 792,958

Int. Cl. F41f 3/04

U.S. Cl. 89—1.808

13 Claims



A rocket weapon system in which the rocket is spin stabilized along its flight path by rotation of the rocket

about its longitudinal axis and is aerodynamically stabilized by a forward fin ring and a rearward flared skirt. The rocket is spun-up in a launch tube having plural bearing supports at one end for supporting the rearward end of the rocket, while the forward end of the rocket is supported by fins on the fin ring, the latter being rotationally free of the rocket body. After spin-up, a boost propellant is ignited to propel the rocket from the tube without tip-off and the usual debris (sabot fragments) associated with the launch of such weapons.

3,610,097

TOOL FEEDING DEVICE FOR MACHINE TOOLS
Giorgio Ollearo, Via Cascinette 35/R, and Elio Pagella, Via Monteferrando 12, both of 10015 Ivrea, Turin, Italy

Original application July 29, 1968, Ser. No. 748,402.

Divided and this application June 25, 1970, Ser. No. 49,769

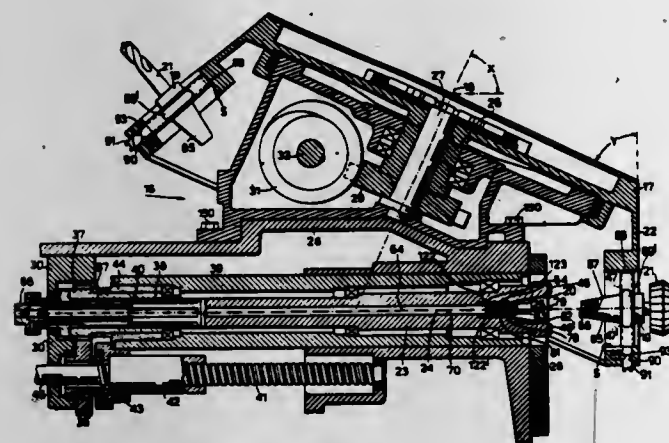
Claims priority, application Italy, July 29, 1967,

52,600/67

Int. Cl. B23c 1/02; B23b 7/04

U.S. Cl. 90—14

3 Claims



A machine tool arrangement having a device for controlling the chuck thereof, comprising a base, a headstock mounted thereon, and a sleeve axially slideable within the headstock, the chuck being rotatable within the sleeve. The chuck is arranged to be rotatable by a shaft disposed parallel and non-coaxially thereto by a train of gear wheels displaceable together with the sleeve, relative to the shaft. The sleeve is arranged to be shifted axially by means of a mechanism arranged parallel and non-coaxially with the shaft to apply rotational force to the chuck in a manner such that the torsional deformation thereof remains constant throughout the entire chuck stroke.

3,610,098

APPARATUS FOR REMOVING SURPLUS MATERIAL FROM THE SURFACE OF WORKPIECES OF ELONGATED FORM

Derek W. R. Walker, Four Gates, Hopstone, Claverley, near Wolverhampton, England

Filed Nov. 7, 1968, Ser. No. 774,068

Claims priority, application Great Britain, Nov. 16, 1967,

52,150/67

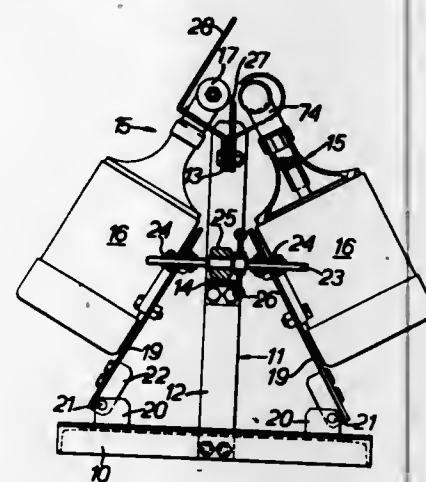
Int. Cl. B23c 3/04; B24b 5/36

U.S. Cl. 90—15

12 Claims

This invention relates to apparatus for removing surplus material from the surface of bars, tubes and other elongated workpieces, and in particular the weld flash from a joint between two lengths of material. The apparatus comprises a support and two or more power driven rotary milling cutters which are so mounted on the support that the cutters are in juxtaposition but can be adjusted relative to each other and brought into contact

with opposed faces of a workpiece which is placed between them. Relative bodily movement of the cutters



3,610,099

FLUERIC DIODE

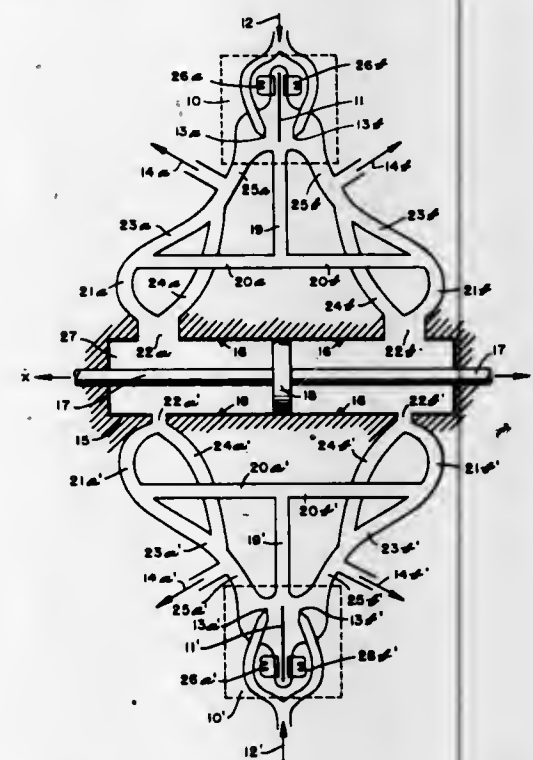
Dewey P. Ankeney, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed June 30, 1969, Ser. No. 837,530

Int. Cl. F15b 13/04; F01b 25/02

U.S. Cl. 91—3

3 Claims



A flueric diode responsive to electronic digital command wherein the position of a piston within a cylinder is controlled. A flueric interface shifts fluid flow and by adding or subtracting digital information the flow rate can be increased or decreased thus changing the rate of piston movement.

3,610,100

TELESCOPIC ACTUATOR

Robert L. Hoffman, St. Joseph, Mich., assignor to Koehring Company

Filed June 12, 1969, Ser. No. 832,613

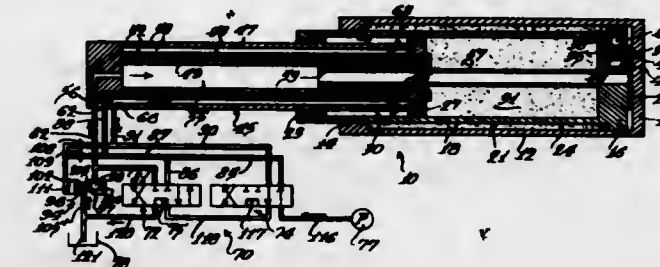
Int. Cl. F01b 7/20; F15b 11/08

U.S. Cl. 91—167

15 Claims

A hydraulic actuator of the type having multiple pistons and cylinders with porting and passages being provided

so that each telescopic section may be independently extended with respect to the other, with a pilot operated check valve in one of the pistons providing selective com-



munication between the fluid chambers and an external pilot operated check valve for recirculating fluid under low pressure to an extending portion of the actuator assembly.

3,610,101

SAFETY DEVICE FOR HYDRAULIC BRAKE BOOSTER

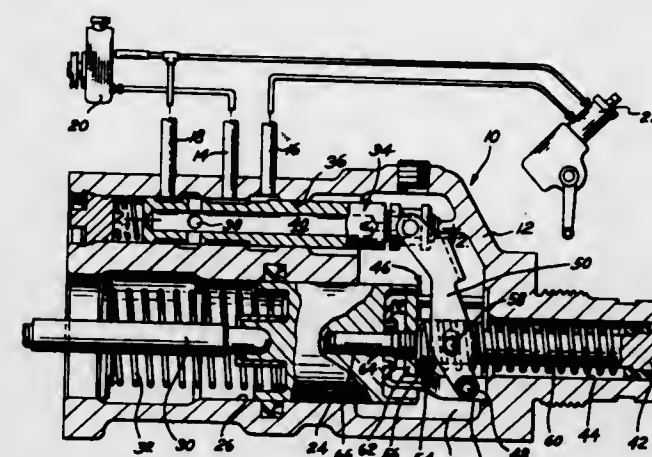
Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation

Filed Mar. 9, 1970, Ser. No. 17,486

Int. Cl. F15b 11/08, 13/04, 13/10

U.S. Cl. 91—391 R

10 Claims



A hydraulic boost device is disclosed which includes a housing having a fluid inlet, an outlet, a bore communicating the inlet with the outlet, and a chamber in fluid communication with the bore. A spool valve is slidable in the bore from a position in which substantially all of the fluid flow into the inlet is directed to the outlet to a position in which a portion of the fluid flowing into the inlet is communicated to the chamber through a fluid passage in the valve means. The fluid in the chamber slides a piston to assist the vehicle operator in applying the brakes. A control rod which is actuated by the vehicle operator when the vehicle's brakes are applied is connected to a sleeve that is slidably mounted on the spool valve. A spring normally prevents relative movement between the sleeve and the spool valve, but permits the sleeve to move relative to the valve to close the passages if a malfunction prevents the spool valve from moving. This feature prevents a sudden surge of fluid from being communicated to the chamber during a manual brake application.

3,610,102

SAFETY DEVICE FOR HYDRAULIC BRAKE BOOSTER

Arthur K. Brown, Jr., South Bend, Ind., assignor to The Bendix Corporation

Filed May 18, 1970, Ser. No. 38,087

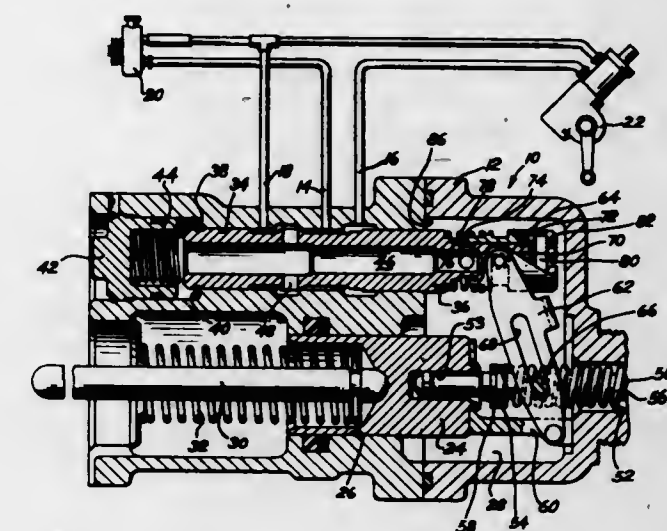
Int. Cl. F15b 7/00, 13/10

U.S. Cl. 91—391

6 Claims

Fluid communication between a source of fluid pressure and the power chamber of a vehicle hydraulic brake

booster is controlled by a spool valve that is operated by the vehicle operator. The spool valve is provided with internal passages through which the fluid flows. A sleeve is slidably mounted on the valve for closing the passages



when a malfunction prevents movement of the valve. Movement of the sleeve is initially retarded during a brake application to prevent the sleeve from closing the passages when the vehicle operator abruptly applies his brakes.

3,610,103

HYDRAULIC POWER LIFTING DEVICE

Heribert Adams, Rommsh, and Franz Heldjann, Oettinghausen, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Feb. 11, 1970, Ser. No. 10,430

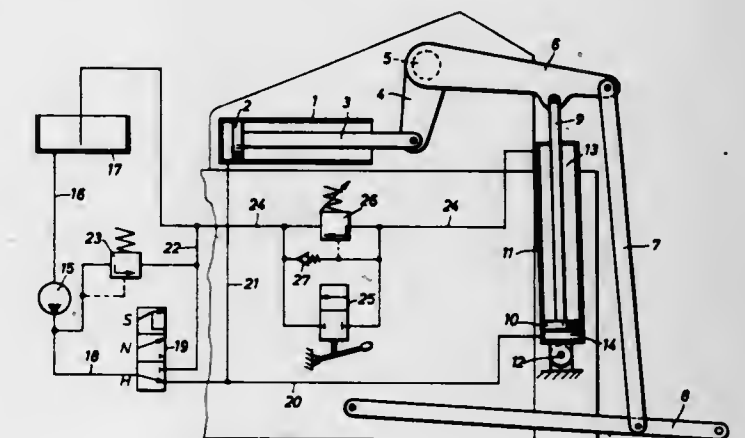
Claims priority, application Germany, Feb. 12, 1969,

P 19 06 881.6

Int. Cl. F15b 11/16

U.S. Cl. 91—411 R

4 Claims



A hydraulic power lifting device for use in connection with an agricultural tractor for lifting an implement connecting device, which comprises a main lift cylinder piston system which through the intervention of a linkage system is operable to actuate the implement connecting device and which is aided in its lifting action by at least one double-acting auxiliary cylinder piston system which latter has its cylinder divided by the piston into a first chamber adapted to receive pressure fluid for aiding the main cylinder piston system in the lifting of the implement connecting device, and a second chamber which is

adapted to communicate with a fluid reservoir while control means are provided for interrupting said communication.

3,610,104 POWER ASSISTED STEERING SYSTEMS FOR ROAD VEHICLES

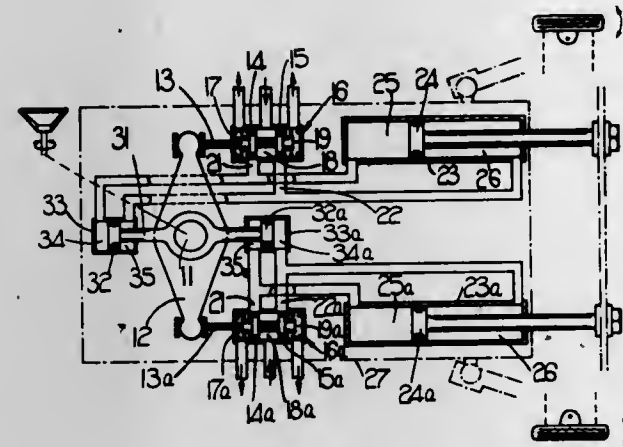
William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 27, 1969, Ser. No. 837,029

Claims priority, application Great Britain, July 2, 1968, 31,456/68

Int. Cl. F15b 11/00

U.S. Cl. 91—411

1 Claim



A power assisted steering system for a vehicle has two independently operated servo systems operating the steering mechanism of the vehicle and a feedback network for providing feel to the steering wheel, the feel when the wheel is turned clockwise being provided principally by one of the servo systems and the feel when the wheel is turned anti-clockwise being provided principally by the other servo system. In this way a warning is given if either servo system fails because it becomes more difficult to steer the vehicle in one direction than the other.

3,610,105 POWER STEERING APPARATUS

Tamaki Tomita, Asahi-machi, Kariya, Aichi, Japan, assignor to Toyota Koki Kabushiki Kaisha (trading as Toyota Machine Works, Ltd.)

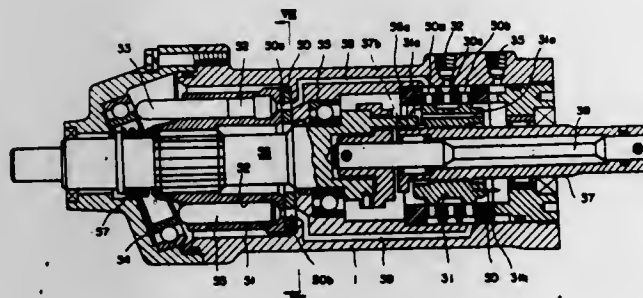
Filed Apr. 22, 1969, Ser. No. 818,209

Claims priority, application Japan, Apr. 28, 1968, 43/28,083

Int. Cl. F01b 3/02, 13/04; F15b 9/10

U.S. Cl. 91—503

6 Claims



The present invention relates to power steering apparatus in which the operation of a spool valve is rendered easy by preventing the steering force or the reaction therefrom acting on the spool valve. In this apparatus the spool valve is screwed onto a steering shaft connected to

the steering wheel; the rotating shaft for deflecting the steerable front wheels is connected to the steering shaft by resilient coupling means; the hydraulic pressure circuit is controlled by the displacement of the spool valve; and the steering torque is boosted by hydraulic pressure.

3,610,106 RADIAL VARIABLE DISPLACEMENT HYDRAULIC MOTOR OF THE SLOW TYPE

Riccardo Cavallieri, 29 Viale Pola, Rome, Italy

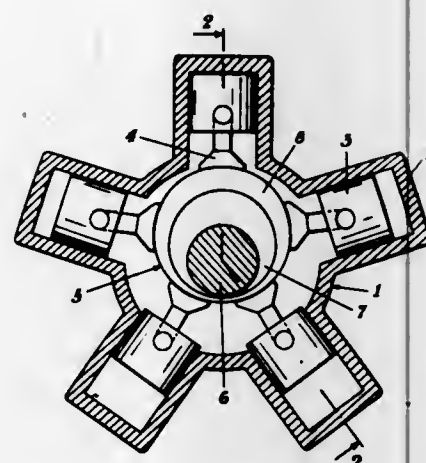
Filed Apr. 21, 1969, Ser. No. 817,733

Claims priority, application Italy, Apr. 30, 1968, 36,660/68; July 6, 1968, 38,246/68; Dec. 21, 1968, 42,152/68

Int. Cl. F01b 1/06

U.S. Cl. 92—12.1

8 Claims



A radial variable displacement hydraulic motor of the slow type is disclosed, in which the change of the effective displacement is obtained through a change of the stroke of the pistons within the cylinders by a change of the eccentricity of the eccentric controlling the connecting rods of said pistons, said change being obtained by the eccentricity of the eccentric controlling the connecting relative change of position of mounting of two coaxial eccentrics coupled to the engine shaft.

3,610,107 TORQUE CYLINDER

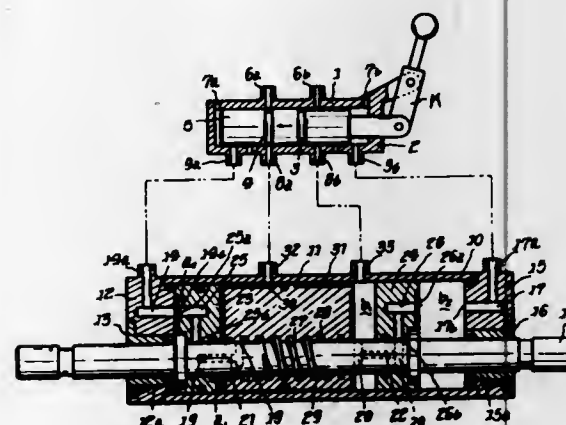
Seiji Kawaguchi, Yokohama-shi, Japan, assignor to Daiichi Kogyo-sha Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1969, Ser. No. 850,836

Int. Cl. F01b 3/00

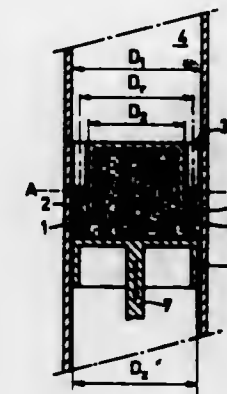
U.S. Cl. 92—33

2 Claims



The torque cylinder is operated by fluid under pressure, and comprises a primary member which is moved by fluid

pressure and is guided for substantially rectilinear movement in the cylinder. An operating shaft has a reversible helical driving connection with such member. Two secondary members are located on opposite sides of the primary member and are moved by fluid under pressure. They are arranged to drive the operating shaft axially, and a passage is provided for conducting fluid past each of the secondary members. Two valve-controlled exhaust ports are provided, each connected to the space in one end of the cylinder beyond one of the secondary members. Two valve-controlled inlet ports are provided for admitting fluid under pressure selectively at either end of the primary member while the exhaust port at the adjacent end of the cylinder is closed, in order to rotate the shaft by moving the primary member into engagement with one of the secondary members and to translate the shaft by moving all three members in unison.



portioned such that the mass inertia forces of the first piston are compensated.

3,610,108 PRESTRESSED PRESSURE RESPONSIVE DIAPHRAGMS AND METHODS FOR MAKING THE SAME

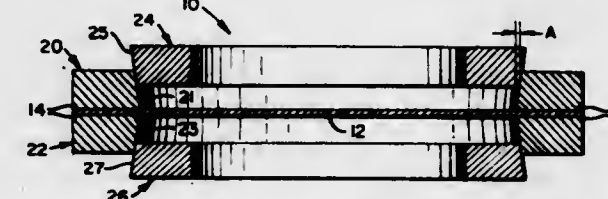
Johannes Sorteberg, Darien, Conn. (% Sorteberg Controls Corp., 540 Connecticut Ave., South Norwalk, Conn. 06854)

Filed Oct. 6, 1969, Ser. No. 864,120

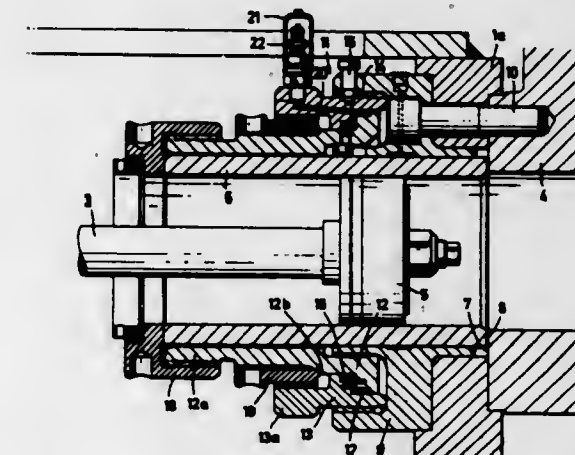
Int. Cl. F16j 3/00

U.S. Cl. 92—98

11 Claims



A prestressed diaphragm assembly is formed by welding the peripheral edge of a diaphragm to a metal ring to form a closed flange. The flange is then permanently tensionally stressed by forcing inside the flange a ring having an unstressed outside diameter slightly larger than the unstressed inside diameter of the flange, thereby simultaneously imparting a stressed condition to the flange and diaphragm. Various configurations and combinations of stressing flanges and rings are disclosed. A prestressed diaphragm assembly constructed according to this method is biased to a single neutral position, assuring more accurate response to small variations of pressure, assuring return to the original neutral position when pressure is removed, and eliminating buckling or the so called "oil can" effect.



A piston pump for liquids, in particular a high pressure pump, with means for clamping the cylinder liner or cylinder liners against a supporting face, the cylinder liner being surrounded by a pressure medium actuated clamping device and there is provided at least one mechanical means for maintaining the clamping force after the pressure medium has been released.

3,610,111 PISTON ARRANGEMENT FOR WORK TRANSMITTING MACHINE

William F. Dilks, Jr., Salem, N.J., assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Oct. 16, 1969, Ser. No. 866,985

Int. Cl. F16j 1/00, 1/16

U.S. Cl. 92—190

11 Claims

A piston assembly includes a two piece piston head having a ring retaining section and a skirt section. Fastening means which are accessible from the lead face of the ring retaining section holds both sections together in face to face contact in such a manner that the ring retaining section can be detached and removed from the cylinder without the necessity for removing the skirt section. A rota-

3,610,109 HOT GAS ENGINE

Hendrik Jozef Verbeek, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,159

Claims priority, application Netherlands, Nov. 2, 1968, 6815662

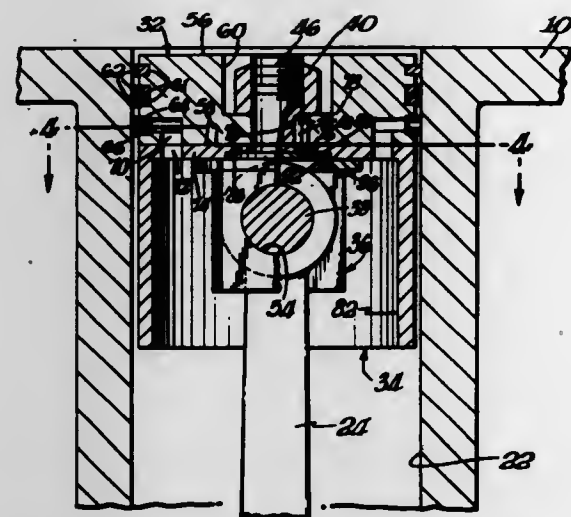
Int. Cl. F01b 19/00

U.S. Cl. 92—98

4 Claims

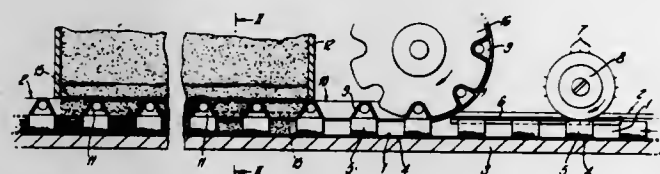
Apparatus with first and second pistons of different diameters axially spaced and movable in a cylinder with a spring disposed between and engaging the pistons, a rolling diaphragm seal between adjacent walls of the first

tion prevention means is mounted between the fastening means and the two piston head sections. The opposite end



of the fastening means is adapted for securement to a connecting rod.

3,610,112
MANUFACTURE OF FILTERS FOR CIGARETTES AND LIKE SMOKERS' ARTICLES
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, London, England
Filed June 26, 1969, Ser. No. 836,922
Claims priority, application Great Britain, June 28, 1968, 31,163/68
Int. Cl. A24c 5/50
U.S. Cl. 93—1 C 18 Claims

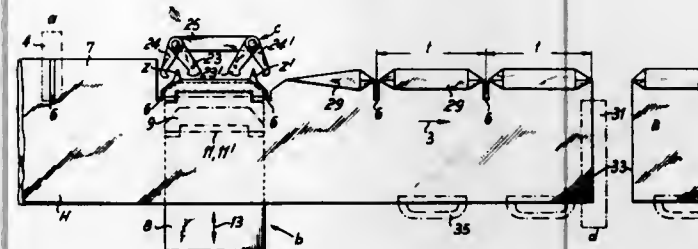


In a method of making a continuous filter rod for cigarettes which involves depositing loose filter material into spaces between a continuous stream of spaced apart plugs, suction is applied to draw the loose filter material into the spaces.

3,610,113
METHOD AND APPARATUS FOR MAKING FLAT BAGS HAVING RECTANGULAR BASES FROM A TWO-PLY WEB OF THERMOPLASTIC FILM
August Schwarzkopf, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Filed Feb. 3, 1970, Ser. No. 8,329
Claims priority, application Germany, Feb. 3, 1969, P 19 06 214.7; Aug. 11, 1969, P 19 40 860.7
Int. Cl. B31b 1/00
U.S. Cl. 93—8 R 9 Claims

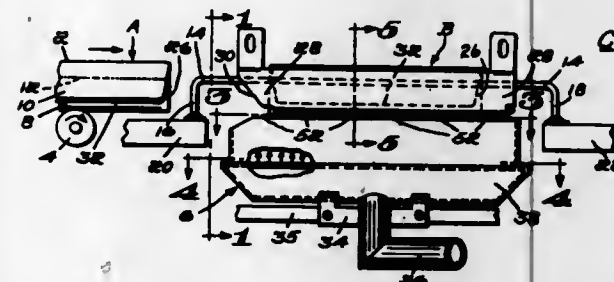
Method and apparatus for making flat bags with rectangular bases from a two-ply web of thermoplastic material, the two plies being joined along one longitudinal edge of the web and unconnected along the other edge. The method comprises the steps of: applying separating weld seams to the web at intervals corresponding to the widths of the flattened bags to be made, the seams extending from one longitudinal edge at right angles thereto but only across a part of the web width so as to define

the bottom of one bag between each pair of adjacent separating seams; spreading the plies apart from within the web between the separating seams in a direction substantially normal to the web to an extent corresponding to the desired width of each rectangular bag base so that outwardly projecting triangular pockets are formed at each bag bottom adjoining the base; nipping off the triangular pockets by means of further weld seams extending transversely to the separating seams across the remaining part of the web width up to the other longitudinal edge so as to define the full height of the bags and to sever each bag from the web. The apparatus comprises conveying means for intermittently feeding the web in steps equivalent to the width of each bag and a first separating and welding beam reciprocable with respect to the web, the first separating and welding beam being



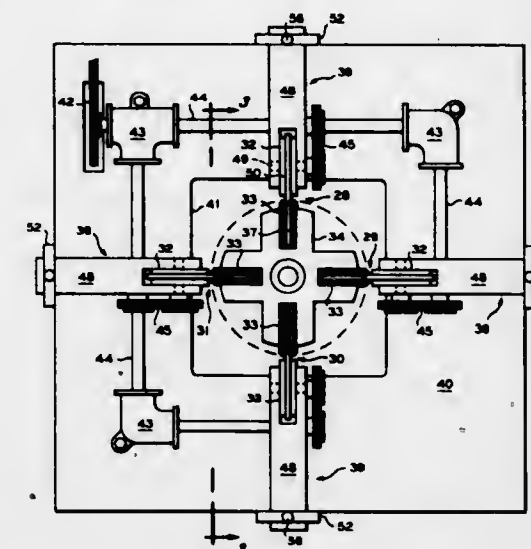
adapted to apply bag bottom defining separating seams to the web when the web is stationary. An expansible former is positioned downstream of the first beam and is adapted to spread the plies apart between the separating seams when the web is stationary. The former is carried by a flat supporting arm that is reciprocable transverse to the longitudinal web edges to move the former in and out of each bag bottom. A pair of separating and welding jaws are movable towards and away from the web and are actuable to nip off the pockets of each bag bottom when the former is located therein. A second separating and welding beam is located downstream of the former and welding jaws, is movable to an from the web and is adapted when the web is stationary to extend each of the separating seams and sever each bag from the web.

3,610,114
MECHANISM FOR HEATING CONTAINER SEALING SURFACES
Stanley J. Kaminsky, 619 Neponset St., Norwood, Mass. 02062
Filed July 24, 1969, Ser. No. 844,496
Int. Cl. B31b 1/36; B65b 51/20
U.S. Cl. 93—52 6 Claims



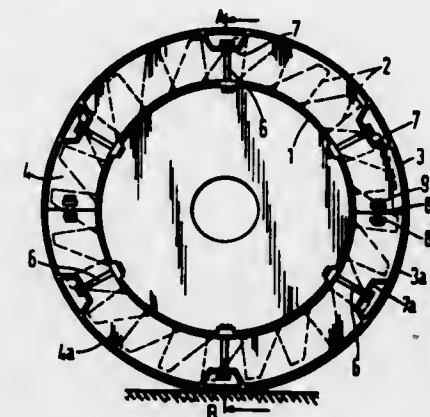
Means for holding a box or container flap whose inner side is coated with a sealing material activated by hot air at a predetermined angle while the box is advancing on a conveyor and simultaneously directing a flow of sufficiently hot air at the area covered with the sealing material just prior to applying sealing pressure against the flap.

3,610,115
METHOD AND APPARATUS FOR SCORING AND FLATTENING TUBES
Earl E. Rose and Frank P. Richards, Kansas City, Mo., assignors to Phillips Petroleum Company
Filed July 18, 1969, Ser. No. 843,157
Int. Cl. B31c 3/04; B31b 1/88, 43/00
U.S. Cl. 93—80 2 Claims



Tubes composed of fiber material are passed sequentially through a scoring apparatus wherein longitudinally extending score lines are formed in the tube, and a compression zone wherein the scored tubes are flattened.

3,610,116
ROAD AND LIKE ROLLERS
Paul Viefhaus, Konz, near Trier, Germany, assignor to Hubert Zettelmeyer, Konz, near Trier, Germany
Filed Mar. 6, 1968, Ser. No. 710,825
Claims priority, application Germany, Mar. 10, 1967, P 16 34 686.4
Int. Cl. E01c 19/24 4 Claims

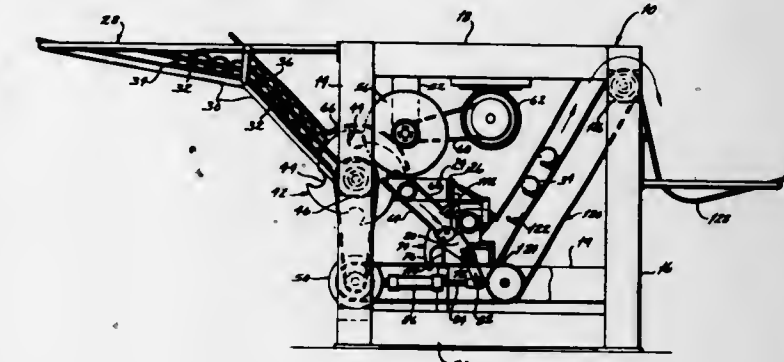


The specification describes a rolling body for a road roller which has an inner part provided with tines or the like and a casing which can be fixed around the inner part for smooth rolling.

3,610,117
TUBE SIZING AND CHAMFERING MACHINE
John J. Nash, Ferguson, Mo., assignor to Alcoa, Inc., St. Louis, Mo.
Filed May 5, 1969, Ser. No. 821,677
Int. Cl. B31c 11/00 12 Claims

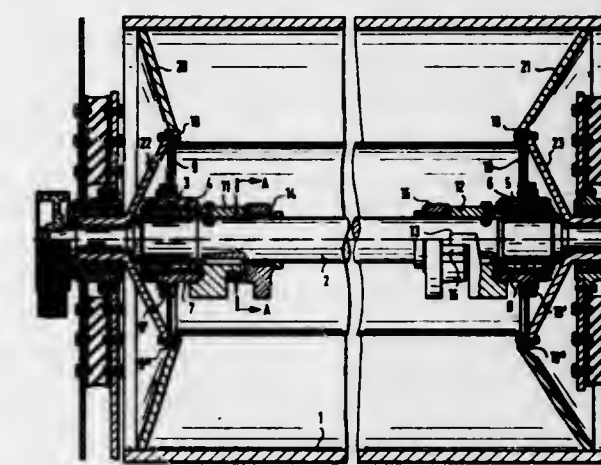
A machine for sizing and chamfering cylindrical tubes includes a frame, a tube feeder rack for holding a plurality of tubes, mechanism for moving the tubes through

a predetermined path to an output rack, and sizing and chamfering stations positioned along the path. The sizing station includes a saw for cutting the tubes to a predetermined



mined length, and the chamfering station includes a movable chamfer head adapted to chamfer the ends of the tubes.

3,610,118
VIBRATORY ROAD-ROLLER
Heinz Engelhard, Hameln-Auf dem Anger, Germany, assignor to ABG-Werke GmbH, Hameln-Am Damme, Germany
Filed Apr. 16, 1969, Ser. No. 816,512
Claims priority, application Germany, Apr. 19, 1968, P 17 59 301.0
Int. Cl. E01c 19/28 3 Claims



A vibratory road-roller has an improved vibrator shaft mounting along the operation of the machine with high inertia-forces. This is effected by mounting the vibrator shaft bearings in annular plates permitting axial movement of the shaft without radial movement.

3,610,119
PHOTOEXPOSURE DEVICE
Heinz Joseph Gerber and Ronald B. Webster, West Hartford, Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.
Filed Apr. 25, 1969, Ser. No. 819,146
Int. Cl. G03b 27/00 13 Claims

A device for exposing lines on a sheet of photosensitive material consists of a projector which projects a moving spot of light onto the material. Correct exposure, despite variations in the speed of the spot, is maintained by producing two signals related, respectively, to the velocity of the spot and its intensity and by combining these two signals to produce an error signal used to control the spot intensity. The intensity control consists of a means

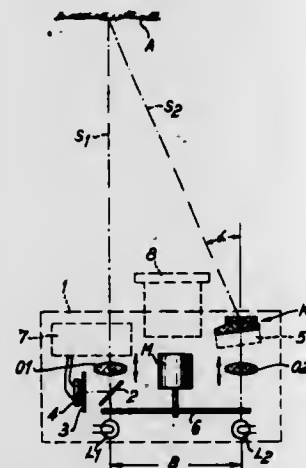
3,610,127

DISTANCE ADJUSTING MEANS FOR CAMERA OBJECTIVES

Hans Rühle, Stuttgart, Germany, assignor to Zeiss Ikon Aktiengesellschaft, Stuttgart, Germany
 Filed Feb. 12, 1970, Ser. No. 10,932
 Claims priority, application Germany, Feb. 22, 1969, P 19 08 913.5
 Int. Cl. G03b 3/00

U.S. Cl. 95-44

5 Claims



A distance adjustment for photographic objectives employing the autocollimation principle, in which in addition to an autocollimation path of light rays a second path of light rays is used which is laterally spaced from the autocollimation path of rays and has disposed therein an adjustable optical wedge for deflecting the path of rays so that both path of rays coincide on the object to be photographed. The autocollimation rays also energize a photoelectric converter which in turn operates a servomotor for adjusting not only the optical wedge, but also the adjusting device of the camera objective in relation to the algebraic sum of two modulations produced by a rotary apertured disc in said two path of rays.

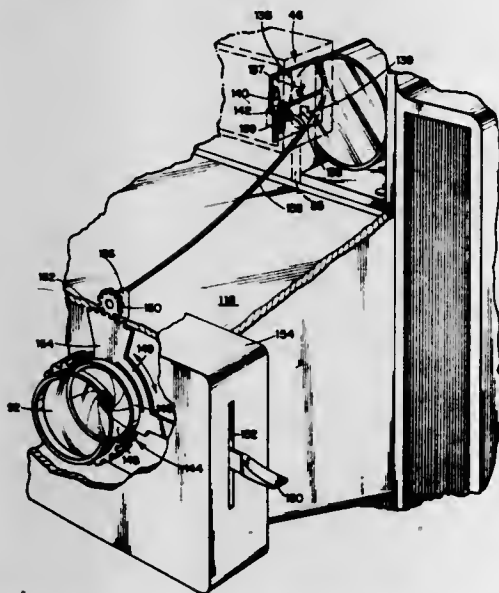
3,610,128

STEREO RANGEFINDER

Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
 Filed Apr. 30, 1970, Ser. No. 33,246
 Int. Cl. G03b 3/00; G01c 3/14

U.S. Cl. 95-44 C

7 Claims



A photographic camera incorporates a stereo rangefinder responsive to focus and aperture adjustments of the camera objective lens. The rangefinder includes stereoscopically related left and right reticles and means for projecting virtual images of the reticles a like distance along convergent left and right stereo axes to create a binocularly observable three-dimensional reticle image which appears to be located at the point of convergence

of the stereo axes. Means are shown for selectively causing the stereo image to recede or advance in the viewed field in correspondence with changes in the focused distance of the camera objective lens. The near and far limits of the stereo image embrace those objects in the viewed field which are in focus; the separation of the near and far limits indicates the depth of field of the objective. The magnitude of the depth-wise extension of the stereo image, i.e., the apparent separation of the near and far limits of the stereo image, is caused to vary with adjustments of the lens effective aperture such that the depth of field indicated by the stereo image takes into effect depth of field changes induced by lens aperture adjustments. The variation in the apparent magnitude of the depth-wise extension of the stereo image is accomplished by adjusting the relative stereo viewpoints represented by the left and right stereo reticles.

3,610,129

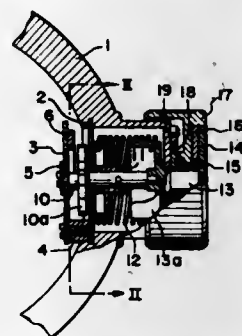
DIAPHRAGM OPERATING DEVICE FOR CAMERA

Takeshi Muryol, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
 Filed July 7, 1969, Ser. No. 839,359
 Claims priority, application Japan, July 11, 1968, 43/48,111

Int. Cl. G03b 9/07

U.S. Cl. 95-64 B

7 Claims



An improved diaphragm operating device for a camera and more particularly a driving device for an interchangeable objective with a spring-controlled preselection diaphragm actuated in cooperation with the shutter mechanism of a single lens reflex camera comprises a spring member for storing power for operating the diaphragm, one winding of the spring member being sufficient for a number of shutter operations; an escapement wheel rotated by the spring member; an anchor rocked by the movement of the escapement wheel and arresting the latter at the two extreme positions of the anchor, the anchor being interconnected to the diaphragm setting member of the objective for operating the diaphragm; and an actuator responsive to the shutter operation signal of the camera for releasing the escapement wheel.

3,610,130

APPARATUS FOR DEVELOPING FILMS

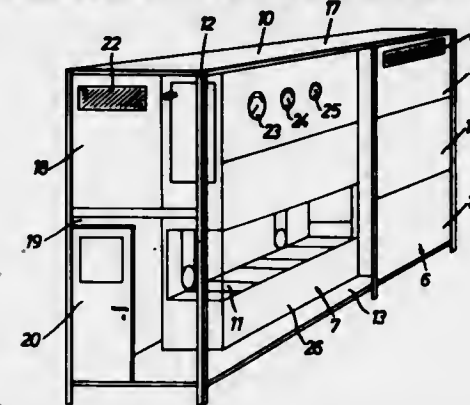
Herbert Reinhold Langkopf, Dusseldorf, Germany, assignor to Color-Studios Dusseldorf Th. H. Langkopf & Co., Dusseldorf, Germany
 Filed Apr. 9, 1969, Ser. No. 810,654
 Claims priority, application Germany, Aug. 2, 1968, C 17,873; Sept. 6, 1968, C 17,998, C 17,999
 Int. Cl. G03d 3/10

U.S. Cl. 95-89 D

6 Claims

An apparatus for developing still picture films, particularly colour films, of various sizes comprises a transportable housing which fully encloses a dark section and an illuminated section containing the necessary processing tanks for developing films, and a drying section. The housing does not include a section for illuminating the developed images on the films. Each section is equipped with a conveyor for carrying the films through that section and a mechanism for transferring the films from the dark section to the illuminated section and from the illuminated section to the drying section. Preferably the

conveyors in the dark section and illuminated section are arranged to immerse the films in each tank a number of times before carrying them to the next tank, the films being completely removed from each tank between successive immersions. A substantial portion of at least one



of the walls of the housing is transparent so that a watch can be kept on those processes which do not have to be carried out in darkness. The housing is preferably air conditioned and its atmosphere controlled, and instruments may be provided for monitoring the environments in the apparatus.

3,610,131

MACHINE FOR LIQUID TREATMENT OF PHOTOGRAPHIC FILMS OR THE LIKE

Hans-Dieter Frick, Hans-Peter Huber, and Peter Dawidowitsch, Munich, Germany, Ferdinand Leonhard Schouteden, Wilrijk, Antwerp, Belgium, and Franz Kocourek, Gerhard Posch, and Wolfgang Vlehrig, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

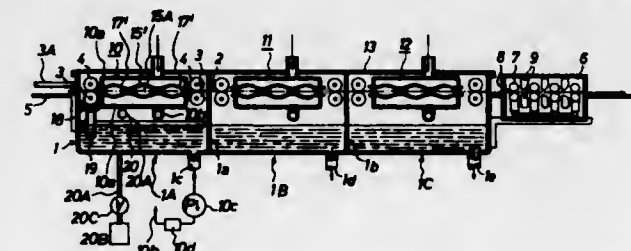
Filed June 17, 1968, Ser. No. 737,561

Claims priority, application Germany, June 30, 1967, A 56,132; Mar. 22, 1968, P 17 72 042.2

Int. Cl. G03d 3/12

U.S. Cl. 95-94

8 Claims



A developing machine for exposed photographic films has a series of tanks each of which accommodates a chamber consisting of upper and lower containers defining between themselves a channel wherein the films advance during travel through the respective tank. The containers have orifices which discharge liquid into the respective channels in such a way that the liquid flows counter to the direction of film travel and forms streams at both sides of films. The orifices are circular holes or elongated slits and their cross-sectional area may be fixed or adjustable. The orifices are adjacent to the film discharging ends of the respective channels.

3,610,132

FUNNEL FOR RECEIVING PREPACKAGED GROUND COFFEE

John C. Martin and Edward J. Knierly, Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation-in-part of application Ser. No. 878,861, Nov. 21, 1969. This application July 29, 1970, Ser. No. 59,225

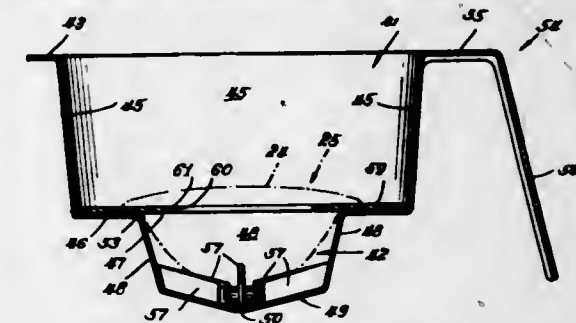
Int. Cl. A47j 31/00

U.S. Cl. 99-295

14 Claims

A funnel has upper and lower large and small wells with a bottom wall of the upper well extending horizon-

tally between the wells and having an opening through which a membrane of a package containing ground coffee can droop into the lower well and with the periphery of which the membrane has sealing engagement. An adapter plate can overlie the bottom wall of the upper well and has an opening of lesser area than the opening therein to accommodate different sizes of coffee containing packages. A handle extends laterally from a side wall of the upper well. When the funnel is formed of injection molded plastic, the handle is formed integrally with the side wall of the upper well and the bottom wall of



the lower well has integral upstanding ribs to prevent the membrane from drooping far enough to close the discharge opening in the bottom wall of the lower well. To improve the seal with the membrane the bottom well is connected to the walls of the lower well by an inclined wall having a relatively large contact area with the membrane. Vertical flanges interconnect the underside of the bottom wall and outer sides of the lower walls to provide a support. A support flange extends laterally from the upper edges of a pair of opposite upper walls which have offset upper portions to stiffen the support flanges.

3,610,133

APPARATUS FOR COOKING CHICKEN

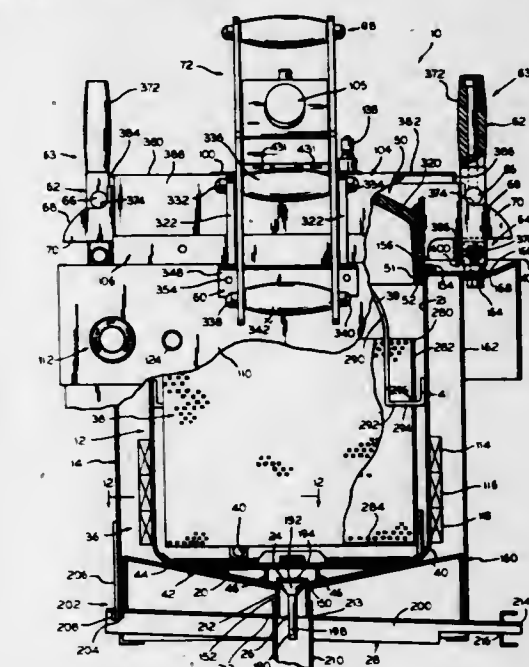
Carl P. Miles, Jr., Louisville, and Winston L. Shelton, Jeffersonton, Ky., assignors to Miles Filter Products, Incorporated

Filed May 14, 1969, Ser. No. 824,430

Int. Cl. A47j 37/12

U.S. Cl. 99-337

24 Claims



The disclosure pertains to a deep fat fryer and a method of cooking chicken using same in which the chicken and cooking oil are employed in a ratio on the order of one to two, respectively, and are placed in a smooth walled generally cylindrical chamber of the fryer with the fryer being provided with band type electric heaters adjacent to but spaced from the lower end of the chamber and outside of same that establish a convection flow in the cooking oil which rises adjacent the chamber wall and

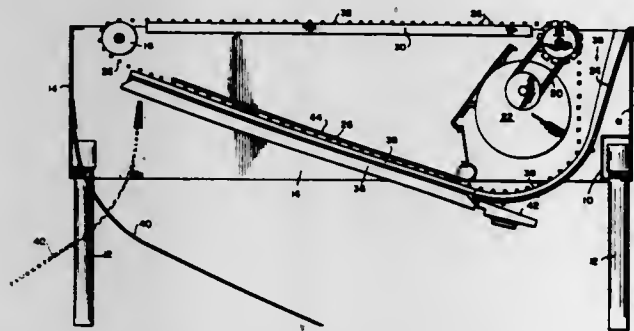
falls adjacent the mid portion of the chamber. The chicken is applied to the chamber in a basket that seats on the chamber bottom above the special filter unit that also seats on the chamber bottom in a relatively cool area of the chamber. The chamber is closed by a cover hinge at one edge of the chamber and is clamped in place for cooking under pressure conditions. The cover hinge includes a lost motion arrangement so that when the cover clamping means is released, the cover seal is partially released so that fluids under pressure within the fryer escape in a direction away from the operator. The fryer includes a drain at the bottom of its chamber through which the cooking oil may be periodically drained under pressure through the filter unit to separate out the solids, after which the filtered cooking oil is returned to the chamber with enough new cooking oil to restore the original volume thereof. Associated with the cover is a novel pressure regulator that limits the pressure build up within the fryer, providing for both automatic and manual release of same, and directs release of fluids under pressure away from the operator.

3,610,134 AUTOMATIC BUN GRILL

Fred W. Morley, % Rotomation, Inc., 1450 N. Pershing, Indianapolis, Ind. 46222
Filed May 15, 1970, Ser. No. 37,743
Int. Cl. A47J 37/08

U.S. Cl. 99-352

3 Claims



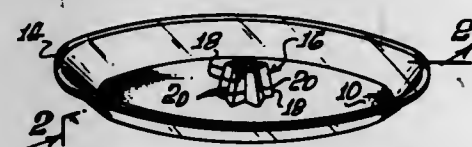
An automatic bun grill. A heavy chain conveyor belt formed of linked transverse rods runs continuously in a horizontal stretch to form a loading station where bun halves are deposited face up, then over a roller and in a depending stretch spaced from a slide, where the buns are caught there-between, then in an inclined return stretch over a coated grill plate, where the heavy chain presses the buns against, and conveys them across the grill, which toasts them. At the end of the grill the toasted buns drop away from the chain onto a slide which deposits them either beneath or beyond the belt area.

3,610,135 PIE PAN

Paul E. Sheridan, Ontario, Calif.
(605 E. Ontario Ave., Corona, Calif. 91720)
Filed Dec. 15, 1969, Ser. No. 884,824
Int. Cl. A47J 37/01

U.S. Cl. 99-430

6 Claims



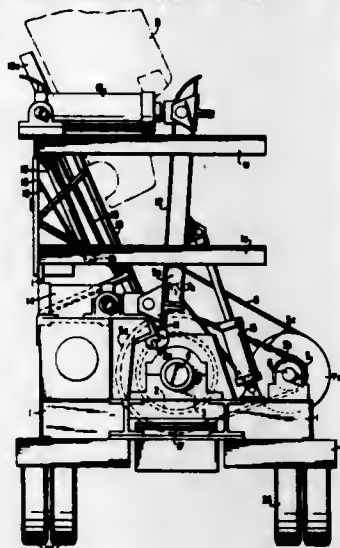
A pie pan is formed with a central flue for balanced baking and the flue is of a non-circular cross section with equally spaced ridges and equally spaced grooves for guidance in cutting the pie into equal segments.

3,610,136 AUTO CRUSHING AND CHOPPING MACHINE

Alvin F. O'Hara, 163 Kerr Lane, Reynoldsville, Pa. 15851
Filed Dec. 1, 1969, Ser. No. 881,135
Int. Cl. B30b 9/32

U.S. Cl. 100-95

8 Claims



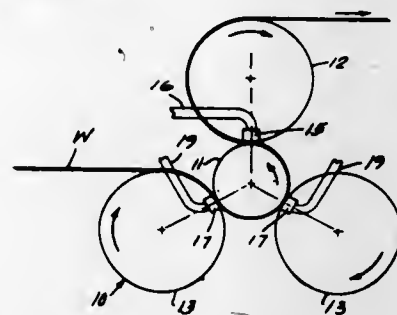
The auto body crushing and chopping machine includes a frame in which a driven rotor assembly having a shaft is journaled, the rotor assembly carrying cutter knives therearound. A fixed wall in the frame has its lower end disposed above the rotor assembly, the wall sloping upwardly and outwardly with respect to the frame. A movable wall in the frame cooperates with the fixed wall, the movable wall converging towards the fixed wall. A cutter bar is provided on the lower end of the fixed wall cooperating with the cutter knives of the rotor assembly. Power means are provided for moving the movable wall laterally towards the fixed wall. Other power means are provided for moving the movable wall vertically with respect to the fixed wall, so that when an auto body is dropped between the walls the first power means will act to crush the body between the walls, and the second power means will act to pull the crushed body downwardly between the cutter bar and cutting knives to chop the crushed body into small scrap pieces.

3,610,137 CALENDER FOR PAPER AND THE LIKE

Donald A. Bradford, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
Filed Nov. 22, 1968, Ser. No. 778,290
Int. Cl. B30b 3/04

U.S. Cl. 100-161

7 Claims



Calender in which a small diameter center roll has pressure nip cooperation with a series of outer larger diameter controlled deflection rolls at equal spacings about said center roll. The top roll of the series of outer rolls is loaded to control the nip pressure level. A second center roll may have pressure nip cooperation with two of the controlled deflection rolls and may be engaged by a controlled deflection roll at its bottom in equally spaced relation with respect to the nips between the first mentioned center roll and the two bottom calender rolls of the series of calender rolls.

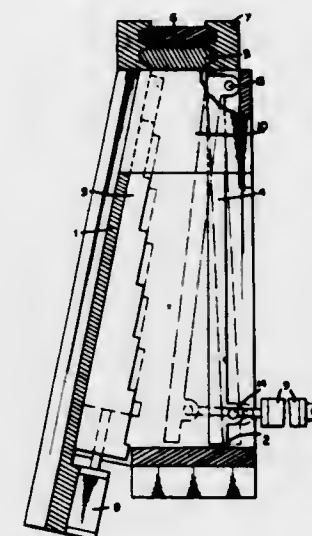
3,610,138

SCRAP CUTTER

Helmut Gatter, Kassel, Germany, assignor to Rheinmetall Henschel Aktiengesellschaft, Kassel, Germany
Filed Nov. 18, 1968, Ser. No. 776,694
Claims priority, application Germany, Dec. 28, 1967, Nov. 17, 1967, R 47677 Ib/49c; R 47381 Ib/49c
Int. Cl. B30b 7/00, 15/06

U.S. Cl. 100-218

6 Claims



At least one wall portion is movable with respect to a fill box for precompression of scrap supplied thereto adjoining a cutter. Vertical pivot means journal the wall portions at a location transverse to direction of scrap supply. Fluid actuator means move at least one wall portion to swing about the axis of the pivot means. Fluid actuator means are also provided at each of opposite ends of at least one wall portion movable with respect to an opposite wall portion. Only a partial cover transverse to the wall portions is provided for facilitating supply of scrap between the wall portions of the fill box.

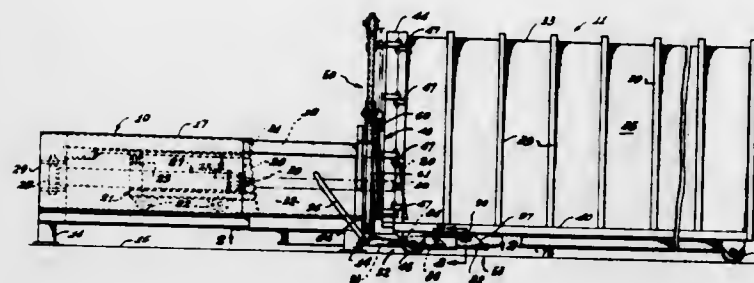
3,610,139

REFUSE PACKING SYSTEM

Samuel Vincen Bowles, 12039 Branford St., Sun Valley, Calif.
Filed Mar. 13, 1969, Ser. No. 806,895
Int. Cl. B30b 15/06

U.S. Cl. 100-229

23 Claims



A refuse-packing system including a stationary packer with a ram reciprocable toward and away from a side outlet opening to pack refuse into an enclosed container having a loading opening aligned with the opening. The packer has a vertically reciprocating, fluid-actuated door-operating mechanism engaged with a guillotine-type door on the container as an incident to the positioning of the container, and latched to the door as an incident to the initial raising of the door, and also has a guide and an automatic latch for aligning and holding the container relative to the packer. For closing of the door, the ram is positioned at the loading opening and the door slides along the face of the ram to the closed position.

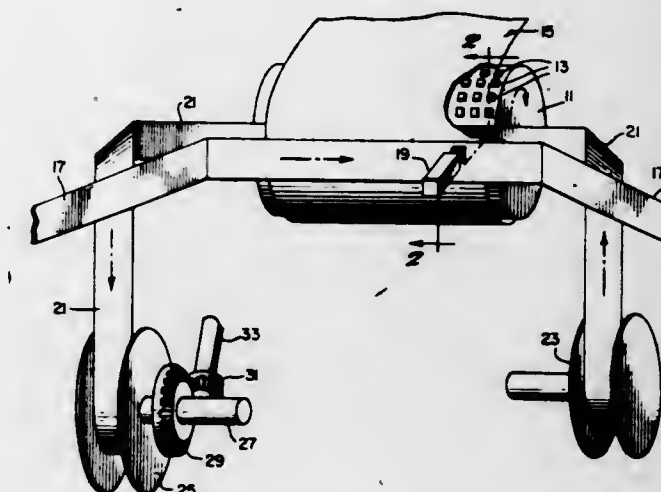
3,610,140

METHOD AND APPARATUS FOR INHIBITING NOISE IN A HIGH-SPEED DRUM PRINTER

Nicholas Jr. Kondar, Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed July 17, 1969, Ser. No. 842,543
Int. Cl. B41J 25/26

U.S. Cl. 101-93

4 Claims



A method and apparatus for reducing high-frequency noise in a high-speed drum printer caused by frictional forces induced in a paper web situated between the type characters on a continuously revolving high-speed drum and a linearly moving inking ribbon. A thin tape of material having a low coefficient of friction, such as Mylar, is interposed between the drum and the paper web so that, when a hammer strikes the ribbon and drives the paper web against the tape and drum, the revolving type characters on the drum will slide over the tape surface thereby attenuating the induced vibrations in the paper web. The secondary lower frequency noise generated by the impact of the hammer against the inking ribbon, paper web, and drum is also reduced since the tape cushions the impact.

3,610,141

SILK SCREEN PRINTING MACHINE

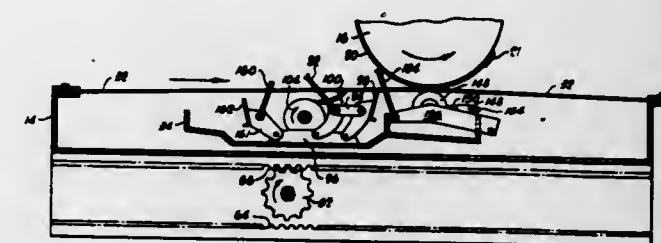
Stancil I. Ramsey, 4009 Harvey Parkway, Oklahoma City, Okla.

Continuation-in-part of application Ser. No. 697,232, Jan. 11, 1968, now abandoned. This application May 4, 1970, Ser. No. 34,187

Int. Cl. B41J 27/34

U.S. Cl. 101-124

10 Claims



A silk screen printing machine which includes an inking blade having a concave trowel configuration for more efficiently applying ink to a silk screen stencil, and a pressure roller which cooperates with a paper-carrying drum to force ink through the stencil onto paper carried by the drum. A solvent feeding porous wiper, which continuously feeds a cleaning solvent by capillary action, bears against the periphery of the pressure roller to clean residual ink from this roller after it has pressed ink through the silk screen onto the paper.

3,610,142

HEAT-SENSITIVE STENCIL PAPER

Keishi Kubo, and Kiyoshi Sakai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 16, 1968, Ser. No. 762,352
Claims priority, application Japan, Oct. 6, 1967, 42/64083
Int. Cl. B41n 1/24

U.S. Cl. 101—128.2

2 Claims

A heat-sensitive stencil paper comprising a film made of a vinylidene chloride-vinyl chloride copolymer and adhesively lined with a support sheet consisting of a porous thin sheet of paper by the use of a polyvinyl acetate adhesive which is applied thereto in amount ranging from about 0.5 to about 5.0 gr./m.² in terms of the solid weight of adhesive, and being adapted to form a printing image consisting of perforations in said film when exposed to infrared light.

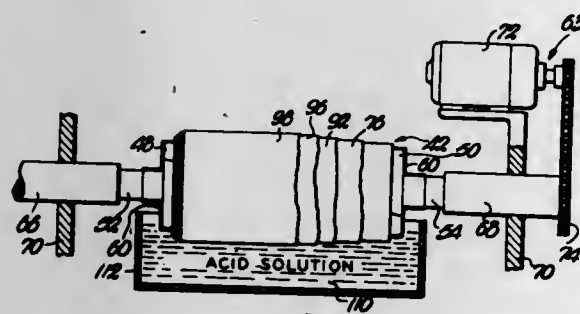
3,610,143

METHOD OF PREPARING ROTARY SCREEN PRINTING CYLINDER

Aaron O. Greenwood, Greenwood; Ramon J. Magee, Independence, and Stanley W. Otto, Platte City, all of Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed July 25, 1969, Ser. No. 844,777
Int. Cl. B41n 1/24; B41c 1/14

U.S. Cl. 101—128.2

15 Claims



A rotary screen printing stencil is produced by etching techniques. A cylindrical base member is first provided with a layer of etchable material on the outer surface thereof. An etch-resistant coating is provided over selected portions of the etchable material corresponding to the area surrounding the design to be printed and the grid pattern of the printing stencil. The etchable material is then removed in those areas thereof not protected by the etch-resistant coating. The resulting stencil having a foraminous design area with a grid pattern therein and an imperforate section surrounding the design area is then separated from the base member.

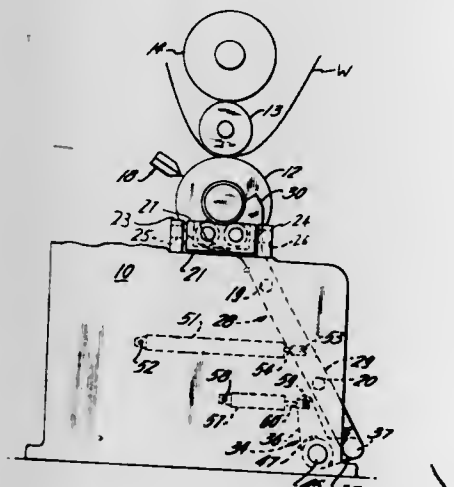
3,610,144

DESIGN-CYLINDER-LOADING MECHANISM

Richard Woessner, Fairlawn, and Jack Bryer, Paramus, both of N.J., assignors to Wood Industries, Inc., Plainfield, N.J.
Filed Oct. 29, 1969, Ser. No. 872,259
Int. Cl. B41f 9/18

U.S. Cl. 101—153

7 Claims



A mechanism for loading and unloading the design cylinder in a rotogravure press unit including support

bearings mounted in a pivotally supported housing in the side frames of the unit so as to be self aligning with the shaft of the design cylinder for freely supporting therebetween the design cylinder. A pair of supporting members having bifurcated heads for cradling therebetween the design cylinder, are pivotally secured to a pair of cranks mounted for pivotal movement adjacent the inside surfaces of the side frames. Pivotal movement of the support arms and cranks is controlled by a mechanism for pivoting the support arms away from the press unit thereby lifting the design cylinder off its bearing and swinging it away from the press.

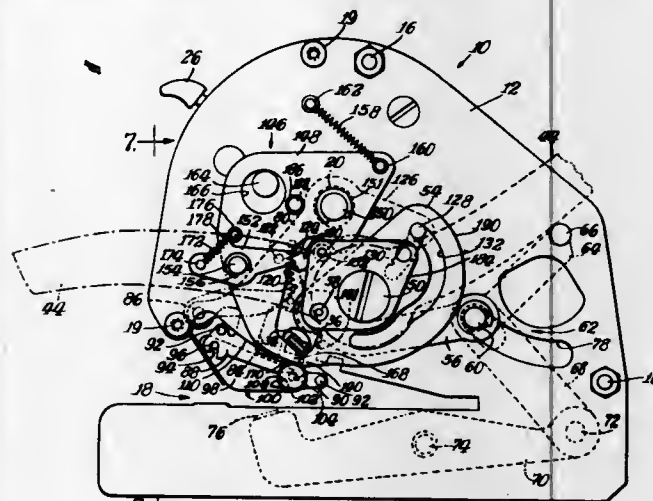
3,610,145

CHECKWRITER INKING ROLL MEANS

Ardath A. Gopperton, Mount Prospect, Ill., assignor to Theodore B. Hirschberg, Jr., Chicago, Ill.
Filed Apr. 28, 1969, Ser. No. 819,924
Int. Cl. B41j 1/24, 27/12

U.S. Cl. 101—95

9 Claims



A machine for printing money orders and like instruments including a frame, means supported by the frame defining a printing line, type segment members supported by the frame and having printing characters positionable on the printing line, an ink box including an inking roller yieldingly urged toward the printing characters and movable into contact therewith, platen means adapted for cooperation with the printing characters, an operating member supported by the frame and movable to effect movement of the inking roller over the printing characters and movement of the platen into pressure contact with an instrument disposed between the platen and the printing characters, and a trip plate and trip pawl associated with the operating handle and adapted to prevent contact of the inking roller with the printing characters upon return movement of the inking roller to its normal position and until a subsequent printing operation is effected.

3,610,146

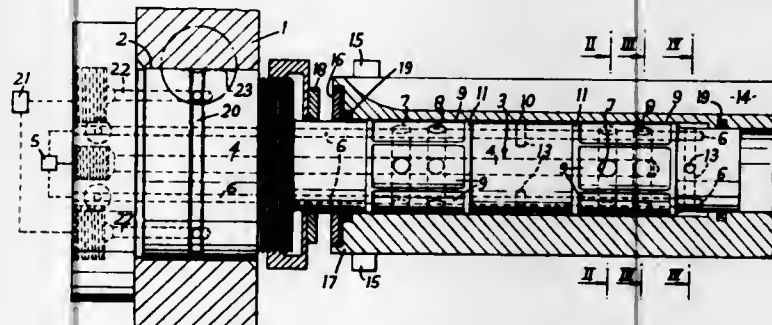
PRINTING MACHINE CYLINDER MOUNT

Graham J. Willmott, Birkenhead, England, assignor to Victory-Kladder Printing Machine Company Limited, Birkenhead, England
Filed May 21, 1968, Ser. No. 730,845
Claims priority, application Great Britain, May 25, 1967, 24313/67

Int. Cl. B41f 13/14, 13/20

U.S. Cl. 101—216

7 Claims



A printing machine disclosed here has a cylinder mounted in a frame by a compound bearing having inner and outer

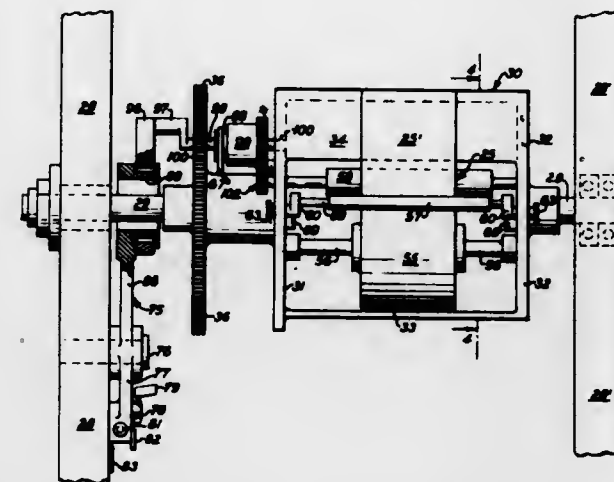
3,610,147

OFFSET PRINTING WEB FEED CONTROL

Robert J. Crisay, Caldwell; John F. Spano, Cresskill, and Edwin K. Wolff, Stockholm, all of N.J., assignors to New Jersey Machine Corporation, Hoboken, N.J.
Filed Dec. 2, 1968, Ser. No. 780,387
Int. Cl. B41f 7/04

U.S. Cl. 101—228

22 Claims



Means are provided to intermittently feed sheet material under positive control relative to a continuously rotating blanket cylinder in an offset printing press so as to enable the imprints to be made on the sheet material at controlled, given distances apart irrespective of the lengths of the gaps between the ends of the plate or blanket of the offset printing press.

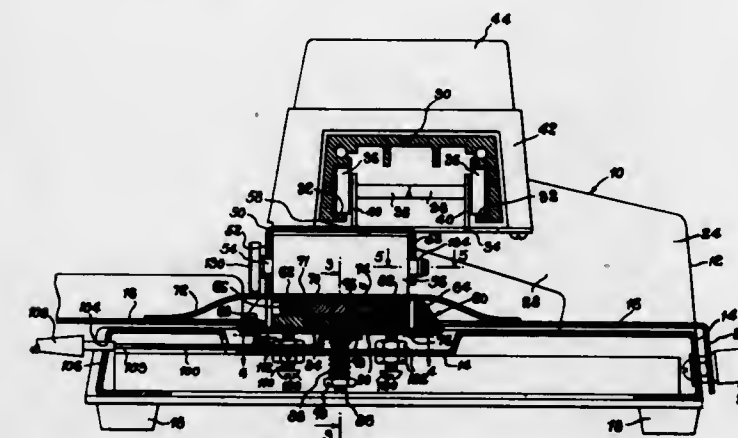
3,610,148

BED AND CYLINDER PRINTING MECHANISM WITH MEANS FOR ADJUSTING ANVIL HEIGHT

William A. Penakawa, Pinole, Calif., assignor to Dymo Industries, Inc., Emeryville, Calif.
Filed Dec. 23, 1968, Ser. No. 786,035
Int. Cl. B41f 3/20

U.S. Cl. 101—269

1 Claim



Imprinting apparatus in which a movable platen traverses a path of travel passing over an anvil and the anvil is selectively positioned with respect to the path of travel by a slide member having an inclined surface which is complementary to a corresponding inclined surface on the anvil and which engages the corresponding inclined surface of the anvil to raise or lower the anvil in response to lateral movement of the slide member. The platen is removably mounted upon a bracket carried by a carriage which traverses a guide track raised above the anvil and the bracket and platen are offset

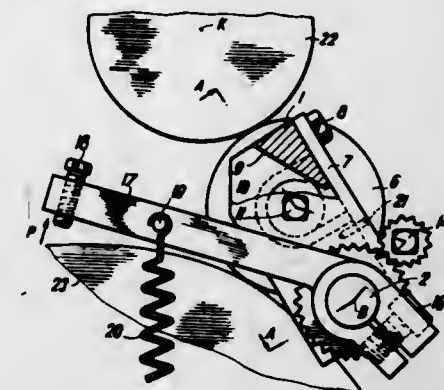
3,610,149

ARRANGEMENT FOR ADJUSTMENT OF THE POSITION OF AN INK SPREADER ROLL

Josef Jurny, Sebrance, and Jaroslav Jancsek, Brno, both of Czechoslovakia, assignors to Adamovskí strojířny, národní podnik, Adamov, Czechoslovakia
Filed Apr. 22, 1969, Ser. No. 818,337
Claims priority, application Czechoslovakia, Apr. 25, 1968, 3053-68
Int. Cl. B41f 31/34

U.S. Cl. 101—352

4 Claims



Spreader rolls of ink arrangements, particularly for offset printing machines must not remain in contact with form cylinders in the course of short printing intervals. They equally must not remain in contact with rubbing-down rollers if the machine is put out of operation for a longer period. The spreader roll is mounted on a holder, pivotally supported by a carrier bolt which itself is mounted by means of an adjustable eccentric sleeve in the sidewall of the printing machine. A control bolt is supported substantially coaxial with the spreader roll by the sidewall of the printing machine. The control bolt is provided with a spiral shaped cam engaging with a face on the holder perpendicular to the connecting line of centers of the spreader roll and of the form cylinder.

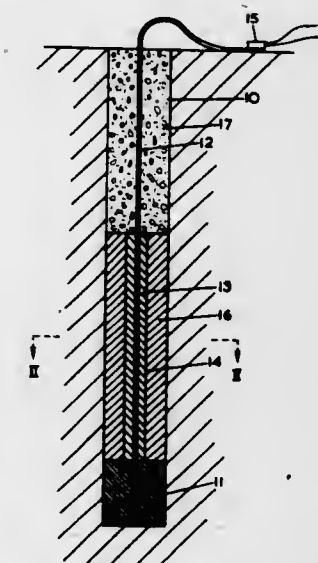
3,610,150

BLASTING METHOD

Gordon Alger Teichmann, Colchester, England, assignor to Imperial Chemical Industries, Limited, London, England
Filed Dec. 20, 1968, Ser. No. 785,704
Claims priority, application Great Britain, Jan. 1, 1968, 118/68
Int. Cl. F42d 1/00

U.S. Cl. 102—23

25 Claims



Auxiliary explosive charge may be used to mix the ingredients of a shothole charge. Detonating fuse cord may thus be used to distribute fuel oil through ammonium nitrate which is loaded separately into the shothole.

3,610,151

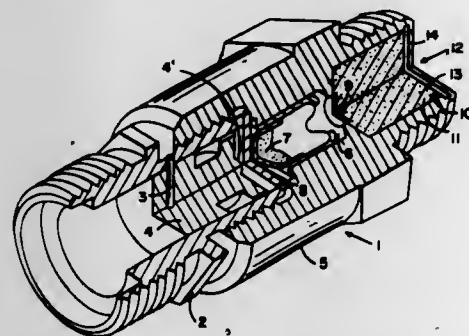
NONELECTRIC SQUIB ASSEMBLY

Rudolph E. Nett, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed May 9, 1969, Ser. No. 823,351
Int. Cl. F42c 15/06

U.S. Cl. 102-29

1 Claim



A nonelectric squib assembly consisting of a squib body and a firing mechanism housing. The squib body includes a metallic seal separating a firing mechanism in the housing from a percussion primer in the squib body. The primary feature of the metallic seal is that it prevents missile motor pressure from producing a path for gases to flow back through the entire assembly. The metallic seal is dented by the firing mechanism to activate the primer thereby permitting primer gases to ignite a charge of boron-potassium nitrate carried in the squib body, which in turn is used to initiate the motor ignitor.

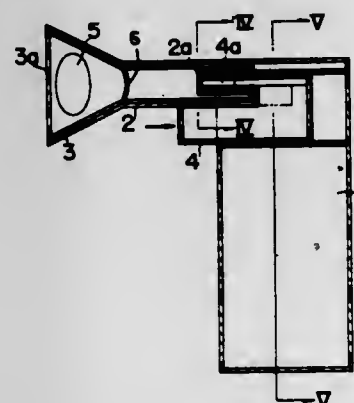
3,610,152
CRACKER

Nobutomo Kaneko, 3-1-58, Ware Higashi-cho, Uwajima-shi, Ehime-ken, Japan

Filed Dec. 12, 1969, Ser. No. 884,497
Int. Cl. A63h 5/04

U.S. Cl. 102-37.2

1 Claim



A cracker for use in a congratulatory banquet is shaped into a poled flag which comprises a flag portion, pole portion, stand portion and trigger. In said pole portion is disposed a hollow cylinder made of a wound tape, the surface of which is coated with an explosive consisting of, for example, potassium chlorate, antimony trisulfide and red phosphorus. A rod attached to said trigger is movably inserted into said hollow cylinder in frictional engagement therewith. Colored paper tapes and/or flakes are contained in said stand portion.

3,610,153

SELF-CONTAINED DELAY SQUIB

Robert E. Betts; David R. Dreitzler, and Nathan P. Williams, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

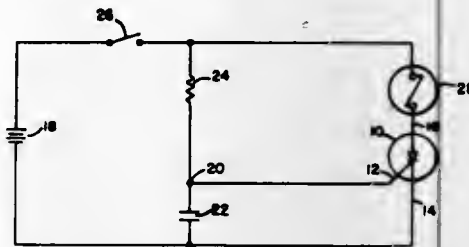
Filed Jan. 8, 1969, Ser. No. 789,670
Int. Cl. F42c 11/06, 11/00, 19/06

U.S. Cl. 102-70.2 A

5 Claims

An electronic delay squib or initiator which contains the electronic delay circuit and the power supply as an integral

part of the device. Starting time for the delay circuit is controlled by a switch which may be mechanical, electrical, or chemical as convenient or required. For convenience, the delay circuit, battery and switch arrangement may be made



as an adapter and placed on existing electroexplosive devices. Closing of the associated switch places the power supply across a resistance-capacitance timing delay circuit which triggers a solid state electron device to place the power source across the explosive load.

3,610,154

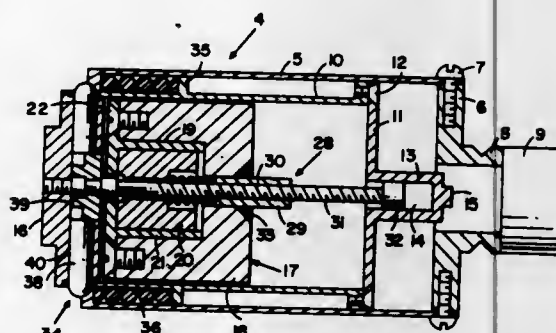
ACCELERATION-ACTUATED MECHANISM

David B. Brown, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 27, 1968, Ser. No. 787,524
Int. Cl. F42c 9/04, 15/20

U.S. Cl. 102-82

5 Claims



A mechanism for driving a striker means and igniting a missile second motor responsive to acceleration forces. The acceleration forces act on a first latching means to unlatch a rotor assembly which operates a time delay mechanical movement connected to the rotor. Operation of the time delay mechanical movement releases a second latching means, and force moving means of the second latching means provides the power to drive the striker means against the second motor igniter.

3,610,155

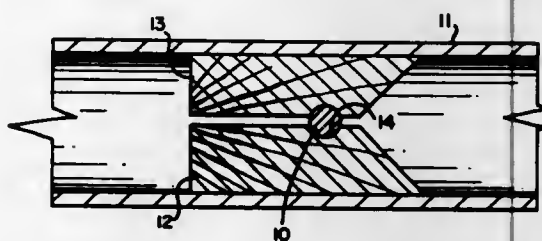
PROJECTILE-KEYED SPLIT SABOT

Edward R. Selbert, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 15, 1969, Ser. No. 866,536
Int. Cl. F42b 13/16

U.S. Cl. 102-93

2 Claims



This invention is directed to a projectile-keyed split sabot which will permit a slender projectile to be launched from a gun barrel so that its longitudinal axis is perpendicular to its trajectory. This permits the gun to be aimed so that the projectile strikes a target with a preselected orientation.

3,610,156

APPARATUS FOR PROTECTING NUCLEAR-WARFARE SHELTERS AND INDUSTRIAL AREAS

Brano Szyfter, Kathe-Dorsch-Ring 12, 1 Berlin 47, Germany
Filed June 24, 1968, Ser. No. 739,514

Claims priority, application Germany, June 29, 1967, P 15 78 354.7

Int. Cl. B61b 1/00; F41h 3/00, 13/00

U.S. Cl. 104-1

8 Claims

A system for protecting geographical regions against rocket attack from rockets automatically controlled by photographic representations of the region wherein the surrounding area is varied from a pictorial point of view by continuously movable colored surfaces carried by conveyors, carriages or moving rods.

3,610,157

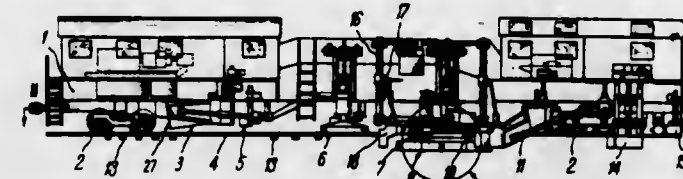
MACHINE FOR CONSTRUCTING AND REPAIRING RAILWAY TRACKS

Mikhail Antonovich Plokhotsky, Leningradsky prospekt, 1, kv. 37; Evgeny Romanovich Ivanov, Trifonovskaya ulitsa, 51, korpus 5, kv. 92, and Alexandr Nikolaevich Gorbachev, Otkrytoe shosse, 3, korpus 86, kv. 35, all of Moscow, U.S.S.R.

Filed June 11, 1969, Ser. No. 832,339
Int. Cl. E01b 27/00

U.S. Cl. 104-12

3 Claims



A machine for constructing and repairing railway tracks in which a frame carried by bogies is provided at each side thereof with compacting devices for compacting ballast by vibration pressing in a horizontal direction from the tie faces during travel of the machine along the track. Each compacting device is equipped with unbalancers and at least two compacting components mounted in a stepwise manner one after the other at the side facing the track, and with the components having operating surfaces disposed at an acute angle relative to the longitudinal axis of the machine.

3,610,158

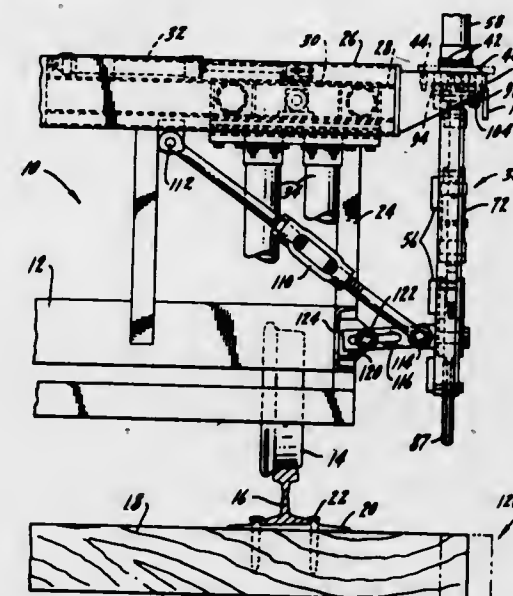
NIPPER STRUCTURE FOR SPIKE DRIVERS AND THE LIKE

Gunars Eldemans, Milwaukee, Wis., assignor to Nordberg Manufacturing Company, Milwaukee, Wis.

Filed Apr. 9, 1969, Ser. No. 814,674
Int. Cl. E01b 29/26

U.S. Cl. 104-17

3 Claims



A nipper assembly for use with a spike-driving machine for driving spikes into the ties of railroad track. The assembly is

constructed to be applied to existing machines or with new equipment. The nipper assembly can be used with various sizes and lengths of ties and insures movement of the nipper assembly at right angles to the tie, regardless of the size and length of the ties.

3,610,159

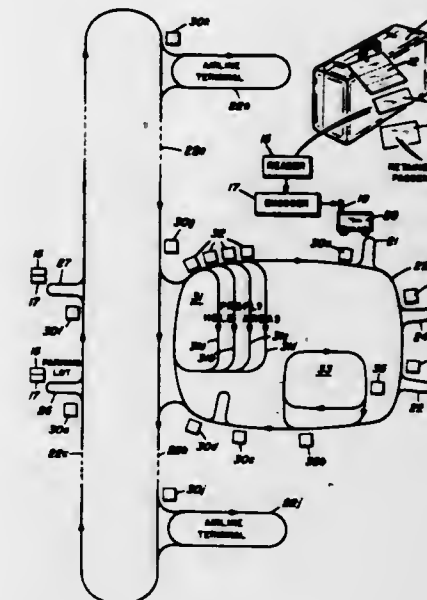
AUTOMATIC BAGGAGE-HANDLING SYSTEM

William E. Fickenscher, Baltimore, Md., assignor to The Bendix Corporation

Filed June 6, 1968, Ser. No. 735,132
Int. Cl. B61b 13/00

U.S. Cl. 104-88

33 Claims



An automatic baggage-handling system utilizing individually powered baggage carts designed to carry luggage or other material at airports, railroad stations, and the like. Baggage-handling information is converted into an electrical binary train of bits prepared by an optical ticket reader which scans a precoded, specially prepared baggage ticket and converts the data thereon into binary form. Baggage associated with the particular baggage ticket is loaded onto the baggage cart and a low power transmitter transfers the digital data to an escort memory in the form of a transceiver on the baggage cart. The loaded self-propelled baggage cart then moves along a track, with its escort memory being read by track readers located at critical, switching portions of the track, the track being switched in response to information contained in the baggage cart escort memory so that the baggage cart is transported expeditiously to a predetermined point on the track which may be a final destination or an intermediate holding area. Means are also provided for changing the information contained in the escort memory of identified carts in the holding area so as to encode a message therein identifying the desired final destination of the cart. The cart is then released from the holding area and delivered to the desired final destination, the aforementioned track readers reading the escort memory and switching the track in accordance with the information read.

3,610,160

TRANSPORT SYSTEM

Mihai Alimanestianu, 70 West 40th St., New York, N.Y.

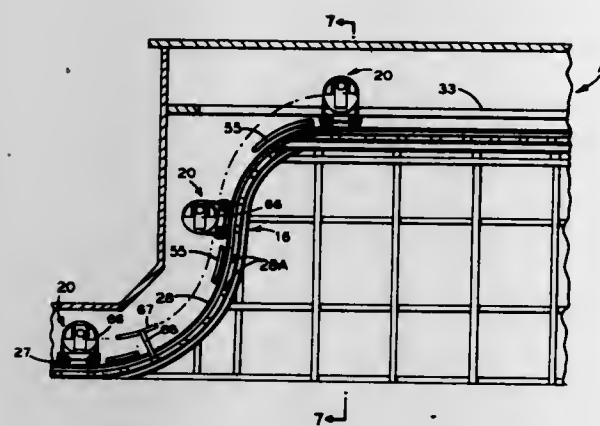
Filed Aug. 18, 1969, Ser. No. 850,939
Int. Cl. B61b 13/12; B65g 17/42

U.S. Cl. 104-88

3 Claims

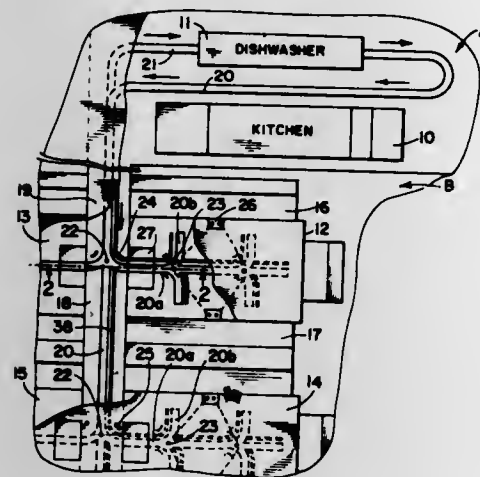
A system for transporting passengers and freight through areas of high-density traffic including loading and unloading stations at street or other convenient approach level, the transporting means moving basically on a main line level displaced from the station level, together with spur means for

connecting the two levels for high-speed switching of the transportation means between the levels; and improved propulsion means for the transport system.



transportation means between the levels; and improved propulsion means for the transport system.

3,610,161
MAGNETIC FOOD DELIVERY AND RETURN SYSTEM
Randell J. Wishart, and Joseph L. Wishart, both of 303 Prospect Drive, Oak View, Calif.
Filed Nov. 7, 1969, Ser. No. 874,770
Int. Cl. B65g 17/46; B61b 13/08; E04h 3/04
U.S. Cl. 104-88

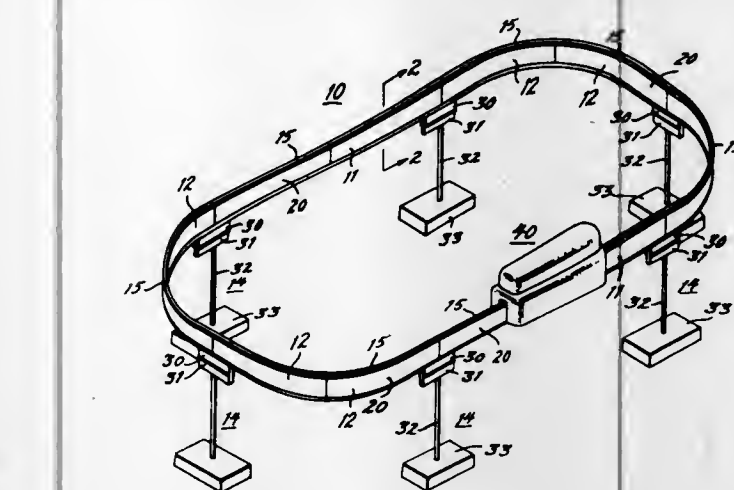


A system is provided for delivering food from a kitchen area to an eating area and returning dishes from the eating area back to the kitchen area. The food is delivered on a tray or in some instances a dinner dish magnetically moved from the kitchen area to a particular place at a table by a powered dolly running along guide means in the form of a track or elongated slot beneath a smooth surface supporting the tray or dish. Magnetic coupling is effected through the surface by magnets on the dolly and magnets incorporated in the tray or dish. A return track or slot structure is provided extending from the table back to the kitchen area. The guides may include branch guides so that a plurality of different tables may be served automatically by causing the dollies to switch from the main track or guide to selected ones of the various branches in accord with a given program.

Programming of the system is effected by a person working in the kitchen area. The return of empty dishes on the tray or certain dishes themselves without a tray is under control of the customer or waitress.

3,610,162
MONORAIL SYSTEM
Raymond J. Lawrence, 831 W. Gillam Ave., Langhorne, Pa.
Filed July 10, 1969, Ser. No. 840,757
Int. Cl. B61b 13/04, 13/06; E01b 25/08
U.S. Cl. 104-118

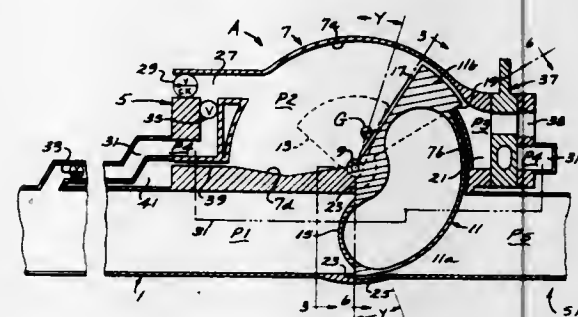
A monorail system is provided whereby the track is elevated, of multipiece construction with a single metal sup-



horizontal stabilizing wheels engaging each side of the central panel, and a collector resting on one flange of the metal contact rail at the bottom of the panel.

3,610,163
HIGH-SPEED GROUND TRANSPORTATION SYSTEM
Lawrence K. Edwards, and Bruce E. Skou, both of Palo Alto, Calif., assignors to Tube Transit Corp., Palo Alto, Calif.
Continuation-in-part of application Ser. No. 710,582, Mar. 5, 1968, now abandoned. This application Feb. 18, 1970, Ser. No. 12,233
Int. Cl. B61b 13/10; F16k 1/20
U.S. Cl. 104-156

21 Claims



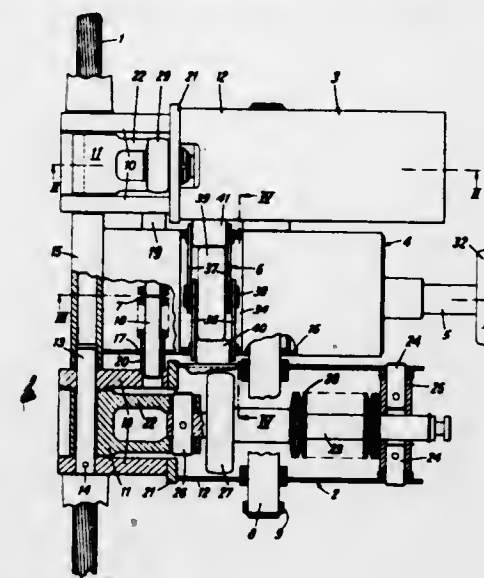
A high-speed ground transportation system comprising a tube through which a vehicle is adapted for propulsion from a first station to a second station, the tube having an entrance valve adjacent the first station and an exit valve adjacent the second station adapted, when closed, to block off an evacuated section of the tube from valve-to-valve. Each valve comprises a toroidal cylinder and a gate constituted by a piston movable between a closed position blocking the tube, in which the piston extends out of an open end of the cylinder, and an open position clearing the tube, in which the piston is withdrawn into the cylinder. The gate of the entrance valve is actuated by vacuum derived from the tube; the gate of the exit valve is automatically opened and is closed by action of atmospheric air.

3,610,164
ARRANGEMENT FOR CLAMPING AN AERIAL CABLEWAY CABIN TO THE HAULAGE ROPE AND FOR CHECKING THE HOLD
Fritz Feuz, Bern, Switzerland, assignor to Von Roll AG, Werk Bern, Bern, Switzerland
Filed July 7, 1969, Ser. No. 839,608
Claims priority, application Switzerland, July 8, 1968, 10157/68
Int. Cl. B61b 7/20

An elbow lever operated by a wheel pulls the spaced grips together, a compression spring in the tensioning arrangement

incorporating this lever exerting a force to push the grips apart once the jaws of the grips seize the haulage rope. If the jaws seize too weakly, enabling the spring to push the grips

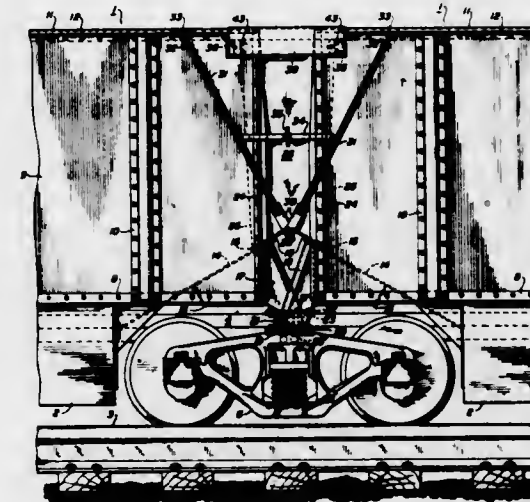
terized by universal extension and interengagement of platform sections that are rendered firm and stable through the operation of hydraulically operated bungees having restric-



apart, the wheel is moved to a position in which it operates a feeler positioned along the path of the ropeway to release an alarm and to stop the ropeway.

3,610,165
ARTICULATED CONNECTION FOR RAILWAY HOPPER CAR
Kenneth A. Browne, Lakewood, Ohio, and James T. Brown, Johnstown, Pa., assignors to Bethlehem Steel Corporation
Filed Dec. 10, 1969, Ser. No. 883,717
Int. Cl. B61d 7/00; B61f 3/12; B65g 67/22
U.S. Cl. 105-1 R

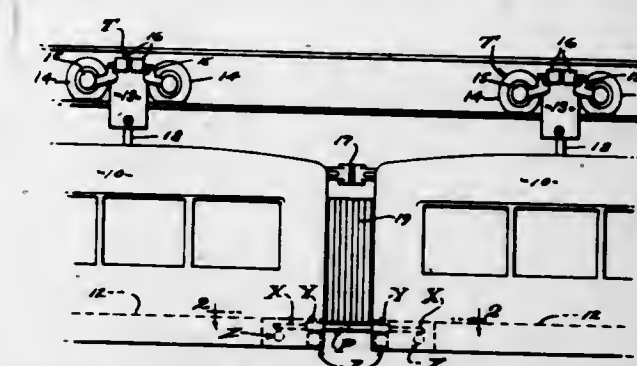
5 Claims



An intermediate structure for efficiently joining adjacent ends of a pair of coupled open-top hopper car bodies for carrying bulk materials such as coal, and thereby forming a single articulated hopper car of large capacity. The car is continuously loadable from end to end, is exceptionally stable in transit even when fully loaded and at normal speeds, and is substantially leakproof at joints even while negotiating sharp curves in track.

3,610,166
FLUID-STABILIZED CAR VESTIBULE
Floyd P. Ellzey, 2301 Marshallfield Lane, Redondo Beach, Calif.
Filed Jan. 5, 1970, Ser. No. 526
Int. Cl. B61b 3/00; B61d 17/20; B61g 11/12
U.S. Cl. 105-150

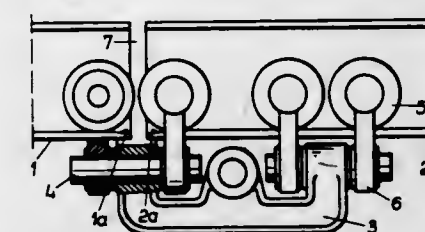
An intercar platform of the retractile type for use especially with suspended monorail trains and the like, wherein sway and general misalignments are involved, and charac-



tive damping and positioning effect upon the extended platform sections, and all to the end that the platform is stabilized while permitting the normal sway and misalignments between next adjacent and opposed car ends.

3,610,167
TANDEM TROLLEY CARRIAGE
Heinz Hasselmann, Hagen, and Fred Wiggershaus, Silebode, both of Germany, assignors to Demag-Zug GmbH, Wetter am Ruhr, Germany
Filed Sept. 29, 1969, Ser. No. 861,769
Claims priority, application Germany, Nov. 2, 1968, P 18 06 681.4
Int. Cl. B61b 3/00; E01b 25/22, 25/26
U.S. Cl. 105-154

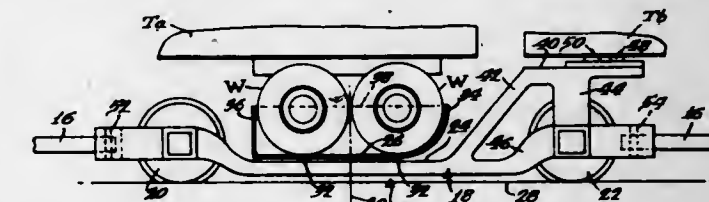
8 Claims



A carriage for overhead cranes and trolleys, traveling from a first track to a second track which is movable transversely relative to the first track, has at least a pair of wheels, arranged in tandem, at each point of support of the carriage on a track. Wheel-mounting means at each support point connect the wheels at the support point to the carriage and maintain all the tandem wheels at the support point at the same level. Each pair of wheels at the support point is mounted on a common bolt whose axis extends parallel to the direction of travel of the carriage. The bolts may be disposed in a rocker and resilient shock-absorbing means may be associated with the bolts. The spacing between each pair of wheels mounted on a respective bolt is at least equal to the spacing between the two tracks plus the length of the two terminating ramps of the tracks.

3,610,168
APPARATUS FOR PIGGYBACK RAIL TRANSPORTATION
Franklin S. Macomber, Park Ridge, Ill., assignor to A. T. Kearney & Company, Inc., Chicago, Ill.
Filed Sept. 12, 1968, Ser. No. 759,465
Int. Cl. B61d 3/10; B65j 1/14
U.S. Cl. 105-368 B

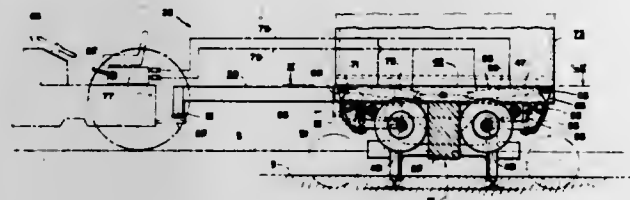
3 Claims



An improved "piggyback" train comprising a plurality of elongated rail trucks connected by push-pull tubes or beams

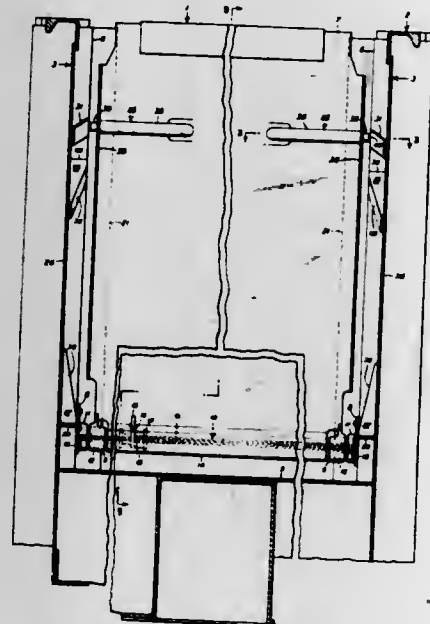
or the like and designed so that each truck will support the wheels of one highway trailer and also the nose of another trailer, the rail trucks having a dropframe design so as to support the trailers in close proximity to the tracks.

3,610,169
ROAD-RAIL TRANSPORT APPARATUS
Montague W. Shannon, P.O. Box 1720, Memphis, Tenn.
Filed Nov. 5, 1968, Ser. No. 773,470
Int. Cl. B65J 1/14, 1/22
U.S. Cl. 105-368 B 10 Claims



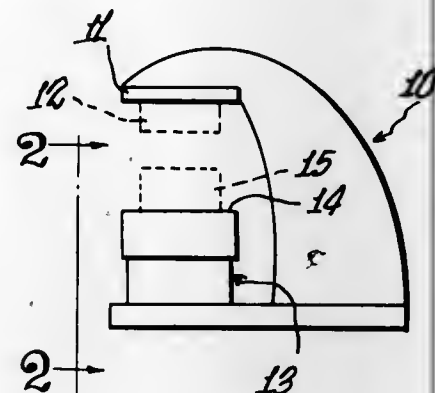
Compound mode load-transporting apparatus including a railway vehicle having a longitudinally extending frame and a roadway vehicle having front and rear wheels tandem arranged and operative upwardly convergingly and downwardly divergingly wheelbasewise. The roadway vehicle is adapted to be loaded on the railway vehicle by: (a) operating the front and rear wheels downwardly divergingly to a lengthened wheelbase configuration; (b) positioning the roadway vehicle crosswise of the rail vehicle rail track; (c) moving the rail vehicle on the rail track to a disposition positioning the rail vehicle between the front and rear wheels of the roadway vehicle; and (d) retracting the front and rear wheels of the roadway vehicle upwardly convergingly to a contacted wheelbase configuration embracing the frame of the railway vehicle.

3,610,170
COUNTERBALANCED DROP END DOOR ASSEMBLY
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Feb. 27, 1969, Ser. No. 802,825
Int. Cl. B61d 17/00, 25/00
U.S. Cl. 105-406 A 8 Claims



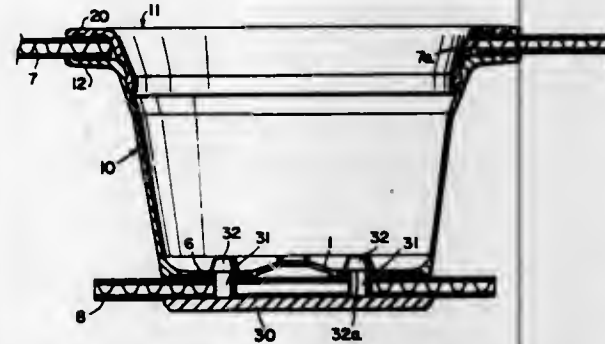
A counterbalanced drop end door assembly for railway gondola cars combining a spring-counterbalanced, bottom-hinged drop end door and laterally acting latches mounted on the upper portion of the door and engageable with pluralities of ramped stops fixed to opposite sides of the car body along their paths of movement for selectively holding the door in any of a plurality of angularly related positions.

3,610,171
LIFT TABLE ASSEMBLY FOR A WELDING PRESS
Robert Soman, Warren, Ohio, assignor to Wesco Industries, Inc., Youngstown, Ohio
Filed July 9, 1969, Ser. No. 840,431
Int. Cl. A47b 9/00
U.S. Cl. 108-20 8 Claims



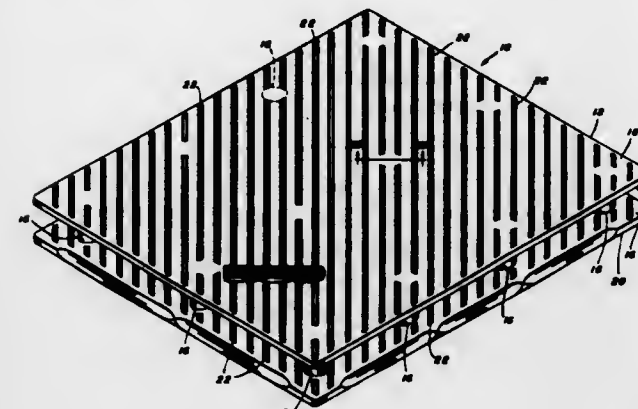
A self-contained, portable lift table assembly adapted to form part of a welding press. Such assembly includes a base structure with upstanding walls and a top structure overlying the base structure and vertically movable relative thereto. Link means extend between the base and top structures to effect movement aforesaid of the latter and guide means are in part provided by the base structure and in part provided by the top structure to guide such top structure movement. The link means and the guide means are enclosed within the base structure walls as well as means for effecting movement of the link means and consequent movement of the top structure. A refinement of the invention provides means for varying the total amount of movement of the top structure without changing one of the extreme positions between which the top structure is moved.

3,610,172
PALLET CONSTRUCTION
Thomas P. Wharton, Neenah, Wis., assignor to Menasha Corporation, Neenah, Wis.
Filed Aug. 21, 1969, Ser. No. 852,028
Int. Cl. B65d 19/00, 19/38
U.S. Cl. 108-51 4 Claims



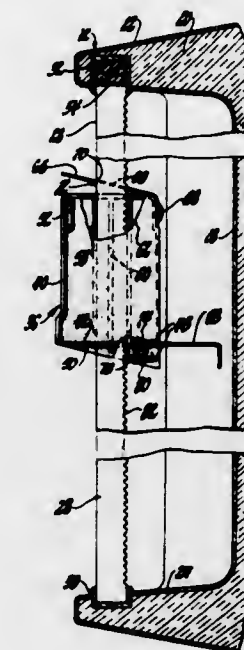
The pallet construction comprises a single platform supported on spaced molded plastic pallet feet mechanically secured to the platform. Each pallet foot consists of two separate components adapted for packing and shipping comprising: (1) a circular tapered cup portion having a flange extending outside of the cup; and (2) an open circular locking ring consisting of a flange of the same size as that on the cup with a downwardly depending body portion rim which extends into the cup and which has a locking means cooperating with the locking means inside the cup. A variation utilizes means for attaching a second board or runner to the bottom of the pallet feet by having holes in the bottom of the feet with matching holes in the bottom board or runner, and using retaining fasteners therethrough.

3,610,173
PLASTIC PALLET
John W. McIlwraith, 121 Hazekroft Ave.; David W. Case, 40 Sunset Drive, and Roger C. Eddy, 1511 Jackson Ave., all of New Castle, Pa.
Filed Apr. 4, 1969, Ser. No. 813,552
Int. Cl. B65d 19/38
U.S. Cl. 108-57 10 Claims



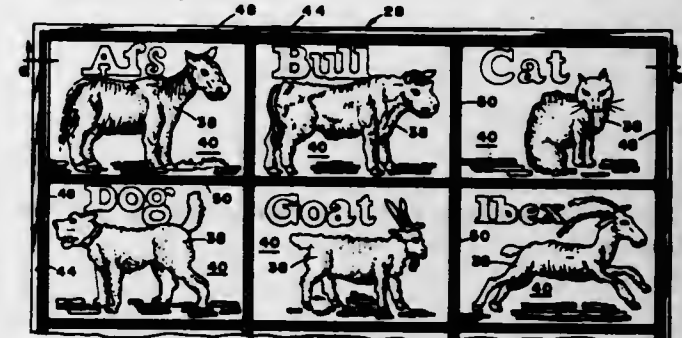
A plastic load-bearing pallet is disclosed. The pallet is formed of individual, thermoplastic top and bottom deck members which are releasably assembled together in spaced apart relation by a plurality of spaced column members arranged so as to allow for four way entry of forklift apparatus between the top and bottom deck members.

3,610,174
INFINITE ADJUSTABLE DOOR SHELF
Keith K. Kesling, Vandalla, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 8, 1969, Ser. No. 864,615
Int. Cl. A47b 57/06
U.S. Cl. 108-146 1 Claim



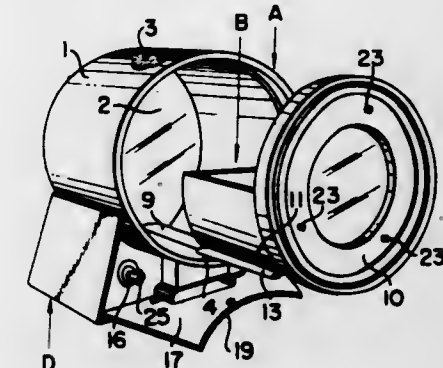
In preferred form, a vertically adjustable self-leveling door shelf for a domestic refrigerator having a horizontal surface between end members which move vertically along parallel guide bars. Identical gears fixed to opposite ends of a leveling rod which is supported for rotation by the end members coast with gear teeth on the guide bars to align the shelf horizontally and to prevent binding between the end members and the guide bars. Cantilevered spring steel locks on the end members contact the guide member when in a normal lock position to hold the shelf in a preset vertical location along the guide members. The locks move out of contact with the guide bars when depressed to free the shelf for vertical movement.

3,610,175
PLAQUELIKE COVERING MEMBERS FOR SERVING PIECES
Ralph P. Wilton, Wrightsville, and John J. Fitzpatrick, Hellam, both of Pa., assignors to Wilton Brass Company, Columbia, Pa.
Filed June 5, 1969, Ser. No. 830,598
Int. Cl. A47b 13/00, 96/18
U.S. Cl. 108-161 2 Claims



A combination ornamental and impervious protective cast metal plaque-like covering members for the top surface of serving pieces such as tables, bars and the like, and having an intaglio design of uniform height. Said members having a rim extending around the perimeter thereof. At least two opposite parallel edges of said members being adapted to abut each other, said edges being bevelled to receive plastic sealing material therebetween to render the assembly of members liquid-proof, and said members also being bowed upwardly at opposite edges.

3,610,176
SAFE
Yu Fujiki, Tokyo, Japan, assignor to Ricoh Watch CO., Ltd., Nagoya-shi, Aichi-ken, Japan
Filed Apr. 15, 1970, Ser. No. 28,612
Claims priority, application Japan, Apr. 18, 1969, 44/35615
Int. Cl. E05g 3/00
U.S. Cl. 109-31 5 Claims

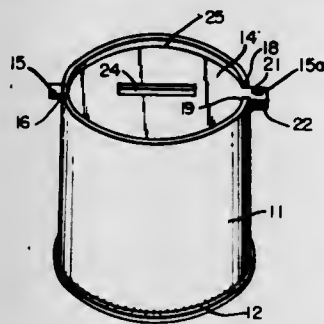


A valuable container, having a fireproof door is slidably fitted into a cylindrical fireproof chamber of a safe. A dial and cylinder locks are affixed to a pedestal upon which the cylindrical chamber rests, rather than being affixed to the door so that no flame enters into the container through the locks in case of fire, whereby the resistance to fire of the safe is much improved.

3,610,177
SECURITY ENCLOSURE
Leroy H. Shapiro, Baltimore, Md., assignor to Cambridge Iron and Metal Co., Inc., Baltimore, Md.
Filed Sept. 12, 1969, Ser. No. 857,327
Int. Cl. E05g 1/00
U.S. Cl. 109-50 1 Claim

The specification discloses a security enclosure having a cylindrical wall with a base member permanently attached to close one end of the cylinder. A removable second closure member with two tabs is fitted within the other end of the

cylinder with one tab extending through the opening of the wall of the cylinder and the other tab aligned with a matching



lug formed by the wall of the cylinder. The tab and lug are secured together by means of a lock, padlock or other secure means.

3,610,178

APPARATUS FOR SUPPLYING BURNABLE FLUID AND ENTRAINED AIR TO A BURNER

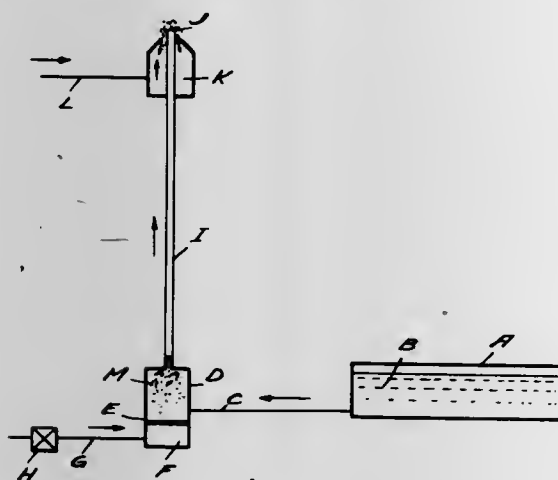
Eugene W. Hines, Saline, Mich., assignor to Prencos Manufacturing Co., Royal Oak, Mich.

Filed July 26, 1968, Ser. No. 748,105

Int. Cl. F23g 7/04

U.S. Cl. 110-7 S

1 Claim



Combustible fluid, which may or may not contain particulate solid material, has a large amount of air homogeneously dispersed throughout a stream of such fluid, whereby it is air-lifted as a stream from a source thereof to an incinerator burner nozzle as a light froth.

3,610,179

INCINERATOR

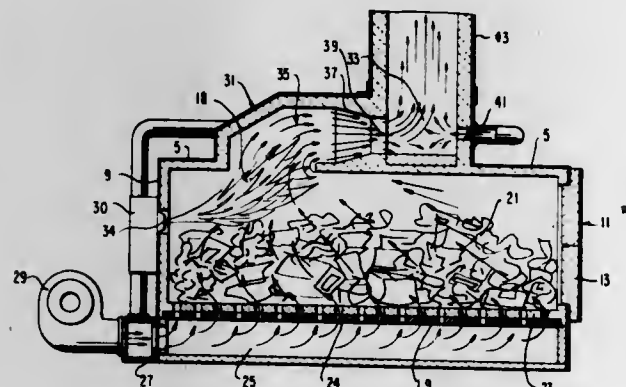
Alexander Shaw, Jr., Box 391, Route 8, and Paul D. Lowry, Box 440, Route 7, both of Frederick, Md.

Filed Feb. 27, 1970, Ser. No. 15,074

Int. Cl. F23g 7/00

U.S. Cl. 110-8 A

8 Claims



An incinerator comprising a primary combustion chamber having a combustion gas outlet communicating with a second

ary combustion chamber, an exhaust outlet from said secondary combustion chamber, burner means positioned to provide both heat of combustion to said primary combustion chamber and auxiliary heat in the vicinity of the gas outlet of said primary combustion chamber such that combustion gasses passing from the primary combustion chamber through said gas outlet must pass through auxiliary heat, an air supply to said primary combustion chamber and a secondary air supply in the said secondary combustion chamber.

Combustion of gasses escaping from the primary combustion chamber is completed by compressing the gasses into a highly concentrated form and ramming them under pressure into the secondary combustion chamber for burning. Advantageously, the air supply to the secondary combustion chamber is opposite to the entering concentrated gasses so that a reverse airflow is provided.

3,610,180

INCINERATOR AND METHOD OF BURNING COMBUSTIBLES

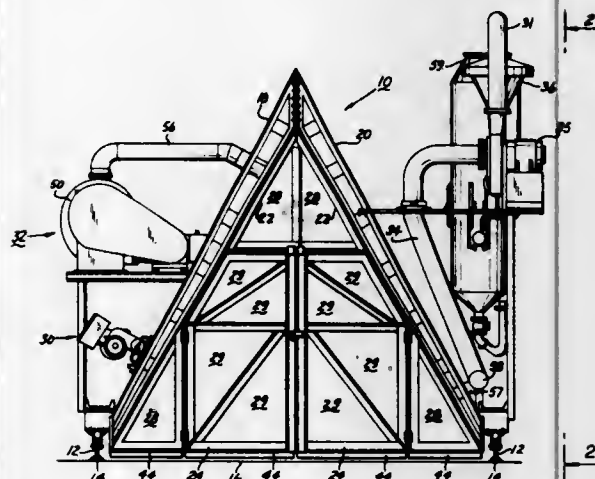
Harold W. Scott, Ridgefield, and Stefan Gudmundson, Madison, both of Conn., assignors to Environmental Control Sciences Corporation, Bethel, Conn.

Filed Apr. 1, 1970, Ser. No. 24,577

Int. Cl. F23g 5/12

U.S. Cl. 110-8 C

18 Claims



A method of burning and an incinerator using a semiclosed system including an enclosure having a thin covering of thermal conductive, substantially nonporous and abrasion resistant glass-ceramic material so that part of the heat generated within the incinerator may be transferred through the covering to the atmosphere and part of the heat is reused within the system to heat makeup air being added to the system to support the burning with the enclosure.

3,610,181

MATERIAL LEVEL CONTROL MEANS FOR INCINERATORS

Sheldon H. Lazan, Hauppauge, N.Y., assignor to Pyro Industries Inc., Mineola, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,380

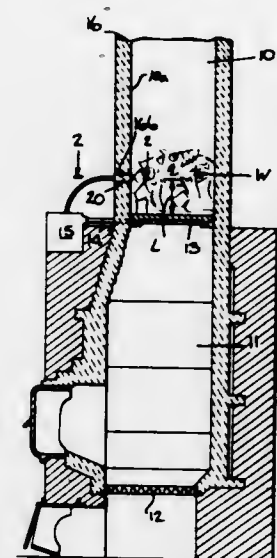
Int. Cl. F23g 3/00

U.S. Cl. 110-18 A

13 Claims

Apparatus for controlling the level of buildup of rubbish in the chute above the charging gate of a flue-fed incinerator. A freely rotatable spherical member is guided for axial sliding movement along a cylindrical sleeve extending through the wall of the chute a given distance above the charging gate. The movable member normally protrudes into the interior of the chute and is at least partially retractable into the sleeve in response to out-thrusting pressure of the rubbish in the chute acting on the protruding portion. The movable member is

permanently urged into protruding position and actuates, when moved into retracted position, a mechanism which



opens the charging gate so as to release the built-up rubbish into the combustion chamber of the incinerator.

3,610,182

SAWDUST FEEDER FOR INCINERATOR

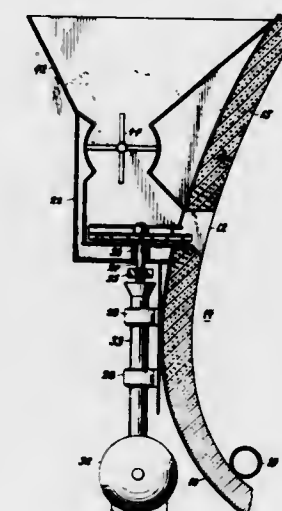
Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Oct. 3, 1969, Ser. No. 867,763

Int. Cl. F23k 3/18

U.S. Cl. 110-102

2 Claims



Feeding means for an incinerator that continuously injects particle sized combustible material into an incinerator without permitting the uncontrolled flow of air from the ambient atmosphere into the incinerator or the reverse flow of gas and smoke therefrom.

3,610,183

DIRECTIONAL DEVICE FOR AN ORIFICE MEMBER

Lambert J. Kilboy, Evergreen Park, and Fred S. Della Rose, Chicago, both of Ill., assignors to United States Steel Corporation

Filed May 12, 1970, Ser. No. 36,539

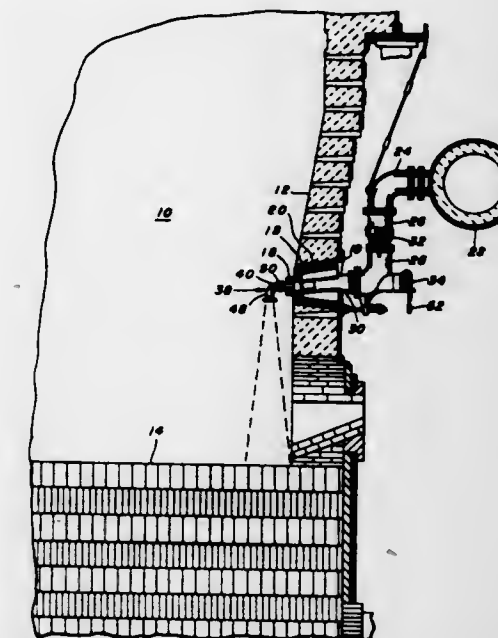
Int. Cl. F23j 5/00

U.S. Cl. 110-182.5

16 Claims

A directional device for an orifice member having a minimum orifice diameter and an orifice outlet end is disclosed. The orifice member conducts the fluid in an outward direction through the orifice outlet end. The directional device directs the fluid in a predetermined direction toward a work area and has a longitudinal member provided with an outlet end and an inlet end. The inlet end of the longitudinal member has an inlet end diameter equal to or less than the

minimum orifice diameter. Packing means are disposed between the inlet end and the orifice outlet end. The packing means has a bonding strength sufficient to secure the inlet end of the longitudinal member to the orifice member during the transmission of the fluid through the directional device



but insufficient to prevent the removal of the directional device from the orifice member into the work area without damage to or movement of the orifice member. A directional member is connected to the outlet end of the longitudinal member for directing the fluid in the predetermined direction into the work area.

3,610,184

APPARATUS FOR DEPOSITION OF LIQUID BELOW THE SURFACE OF THE EARTH

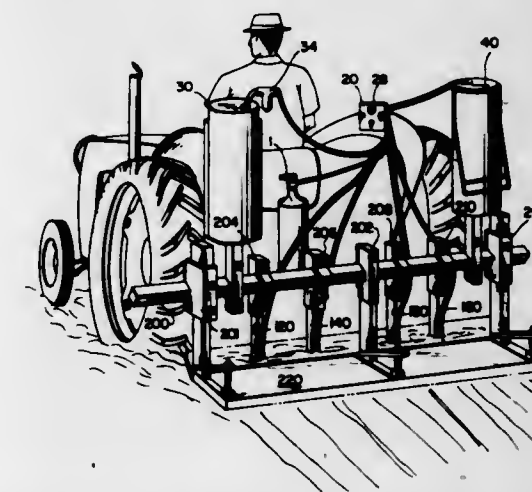
William J. Carroll, West Lafayette, Ind., and Frank S. Mizusawa, Garden Grove, Calif., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Filed Nov. 25, 1969, Ser. No. 879,871

Int. Cl. A01b 49/06; A01c 23/02

U.S. Cl. 111-7

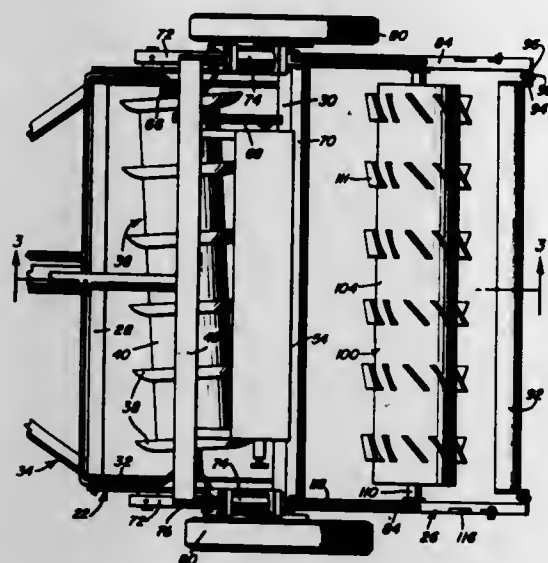
4 Claims



An apparatus for depositing a gelled liquid below the surface of the soil having a plurality of earth-penetrating tools each having a gelled liquid depositing conduit and a bypass conduit attached to the rearward side of the tools terminating below the soil surface. A series of pipes and valves connect containers of gelled liquid, water and inert gas under pressure to the conduits and are positioned so as to withdraw a gel obstruction from a depositing conduit, with a venturilike sucking action by passing water through the bypass line associated herewith, thereby depositing the withdrawn obstruction below the soil surface.

3,610,185
PLANTING MACHINE
 Troy Scarborough, 201 South May Ave., Brooksville, Fla.
 Filed Dec. 20, 1968, Ser. No. 785,537
 Int. Cl. A01c 5/06; A01b 63/00
 U.S. Cl. 111-61

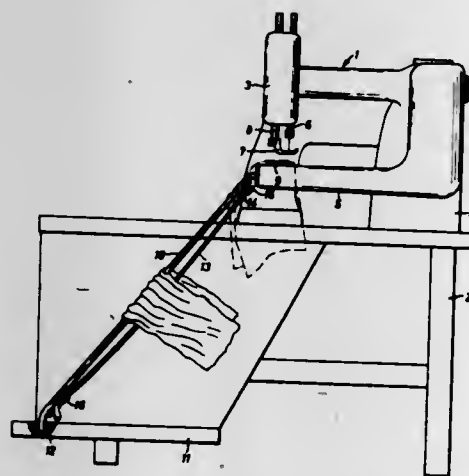
13 Claims



A planting machine or seeder including three pivotally interconnected frames, a main frame supporting a power-driven coulters, a level control frame supporting ground-engaging traveling wheels, and a trailing frame supporting a ground-driven cover roller. Power means are engaged between the main frame and the level control frame for varying the angular relationship therebetween and hence the effective depth to which the coulters disks on the main frame plow, the trailing frame automatically angling relative to the level control frame so as to maintain a constant ground-engaging orientation of the cover roller. A seed-dispensing unit is mounted on the main frame and driven directly from the plow or coulters roller, and lock means is provided between the level control frame and the trailing frame for selectively locking the cover roller in an elevated position relative to the ground-engaging wheels, the plow roller also being positionable in an elevated position whereby only the traveling wheels contact the ground for highway travel of the machine.

3,610,186
ARRANGEMENT ON SEWING MACHINES FOR STACKING THE SEWN WORK BLANKS
 Gerhard Murdter, Balingen, Germany, assignor to Firma G.M. Pfaff GA, Kallerslautern/Pfalz, Germany
 Filed Oct. 2, 1969, Ser. No. 863,179
 Claims priority, application Germany, Dec. 19, 1968, G 68 12 124.4
 Int. Cl. D05b 33/00
 U.S. Cl. 112-121.29

2 Claims

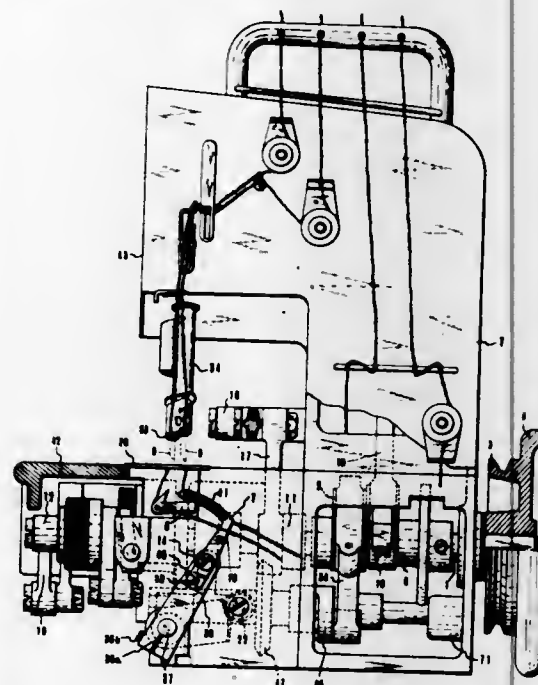


Arrangement on sewing machines having a carrier arm and including a carrier bar for receiving work blanks astride after

they leave the stitch-forming location on the carrier arm of the machine in downward direction, said bar extending parallel to and being connected to the machine arm.

3,610,187
OVEREDGE SEWING MACHINE APPARATUS
 Susumu Fukutomi, 6-32, 3 chome, Minamimagosaki Toshima-ku, and Masayoshi Koseki, Karasuyamajutaku No. 831, 818 Karasuyomamachi, Setagaya-ku, both of Tokyo, Japan
 Filed Feb. 19, 1969, Ser. No. 800,391
 Claims priority, application Japan, July 23, 1968, 43/53216
 Int. Cl. D05b 1/20
 U.S. Cl. 112-162

3 Claims



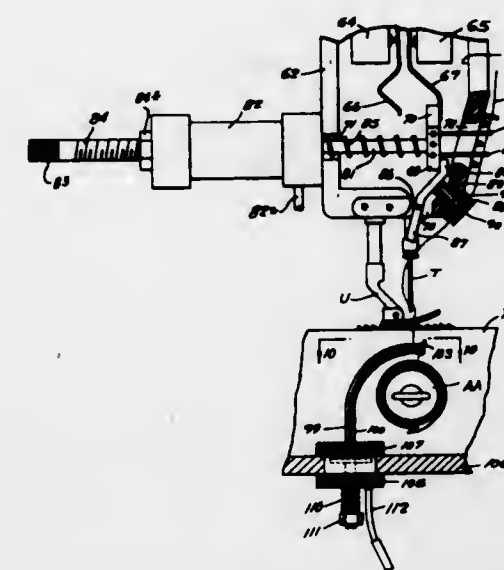
A looper, bent in a direction crossing a sewing needle and having a special thread-catching part in a bent tip part, is fitted to a crank fitted to an oscillating looper shaft of a sewing machine. A middle part of the looper performs a vertical oscillating motion to make an overedge stitch and seam sewing on the side edge of a needle plate with a link mechanism borne on a swinging rod pivoted at one end. Means for oscillating the shaft of a sewing looper for making a seam and means for reciprocating the shaft and looper in the axial direction are fixed directly to a flywheel shaft without using any universal joint or the like, so that a seam may be made. The shaft of a driving gear for driving the shaft of the looper for the seam sewing is extended to be a shaft for the overedge stitching looper so that overedge stitching and seaming may be made with one flywheel shaft.

3,610,188
AUTOMATIC CONTROL AND THREAD CUTTER FOR SEWING MACHINES
 Robert F. Miller, Camp Hill, and Roy E. Miller, Mechanicsburg, both of Pa., assignors to The Reece Corporation, Waltham, Mass.
 Division of Ser. No. 725,529, Apr. 19, 1968, Pat. No. 3,528,379, which is a continuation-in-part of Ser. No. 432,721, Feb. 15, 1965, abandoned. Filed Sept. 11, 1969, Ser. No. 856,967
 Int. Cl. D05b 65/00
 U.S. Cl. 112-252

1 Claim

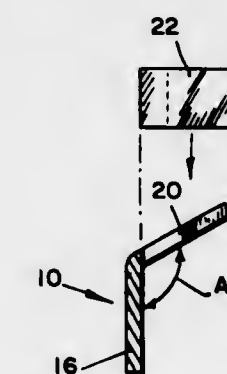
The present attachment for sewing machines automatically positions the needle, raises and lowers the pressure foot, properly tensions the sewing thread, and severs said sewing thread and includes a control for starting, speeding up, slowing down, or stopping the operation of the sewing machine. The attachment also permits the operator thereof to put a plurality of stitches or single stitch at a time into the workpiece before automatically severing the thread therefrom and also provides means for automatically positioning the needle in its top position or lowermost position as well as means for stopping the sewing machine when the needle is in its up

position opening said positioning means so that the operator and comprises standing rigging shrouds connected to cross-trees pivoted to the mast, running rigging stays connected at



can down-position the needle and lift the pressure foot for turning the workpiece around the needle.

3,610,189
METHOD OF MAKING A MITER JOINT
 Division of Ser. No. 796,043, Feb. 3, 1969, abandoned. Filed Jan. 5, 1970, Ser. No. 761
 Original application Feb. 3, 1969, Ser. No. 796,043, now abandoned. Divided and this application Jan. 5, 1970, Ser. No. 761
 Int. Cl. B21d 53/74
 U.S. Cl. 113-116



A mitered corner for a strip of molding in which the edges of the said corner closely abut each other. A strip of L-shaped molding, as is used for example in covering the edge of a table or counter top, is notched so that it can be bent at the corners of said top, and the notched faces are undercut to cause said edges to closely abut each other at their upper surfaces. In the method of making said mitered corner, the normally vertical leg of the molding is held in a vertical plane, with the other leg projecting therefrom at an angle of about 120°. The miter cut is then made in said other leg in the vertical direction to yield a notch which is effectively undercut when the legs of the molding are bent from their included angle of 120° to an included angle of 90°.

3,610,190
SAILING CRAFT
 Geoffrey Charles Palmer, 8 Salisbury Close, Salisbury Road, Moseley, Birmingham, 13, England
 Filed June 23, 1969, Ser. No. 835,648
 Claims priority, application Great Britain, June 26, 1968, 30436/68
 Int. Cl. B63b 35/00; B63h 9/00
 U.S. Cl. 114-39

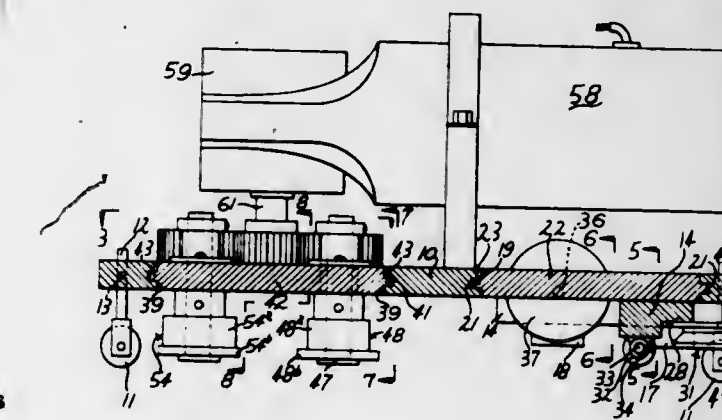
28 Claims

A mast of a sailing craft is pivotally mounted so that it can heel independently of the craft, and is supported athwartship by apparatus which automatically controls heel of the mast

one end to the cross-trees and passed around pulleys at the upper part of the mast, and fixed tensioning mean to which the opposite ends of the running rigging stays are connected.

3,610,191
APPARATUS FOR FORMING STANDING SEAMS ALONG THE EDGES OF SHEET MATERIAL
 Ralph N. Harris, Jr., 901 East 6th St., Jacksonville, Ala.
 Filed May 8, 1969, Ser. No. 823,113
 Int. Cl. B21d 39/02
 U.S. Cl. 113-55

2 Claims



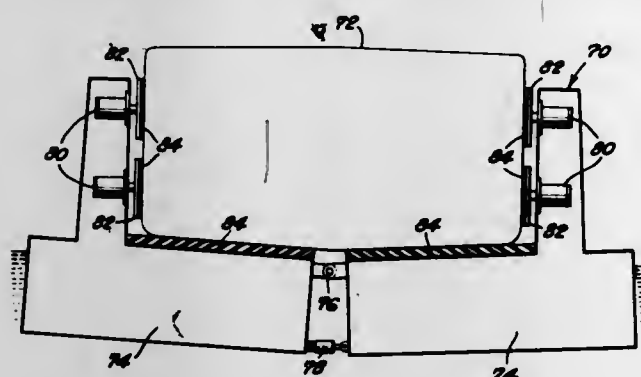
Powered apparatus equipped with a forward set of cooperating forming rolls disposed to engage initially overlapped portions of sheets of material such as metallic roofing, together with driving and seam finishing rolls at the rear of the apparatus disposed to engage the seam and to propel the apparatus along the seam. At least one of the rearmost resilient surfaced rolls is driven, although preferably both of the resilient surfaced rolls of the rear sets are driven.

3,610,192
SYSTEM OF MOVING LADEN SHIPS THROUGH SHALLOW DRAFT-LIMITED WATERS
 Hans W. Mauritzsen, New York, N.Y., assignor to John J. McMullen Associates, Inc., New York, N.Y.
 Filed Jan. 31, 1969, Ser. No. 795,587
 Int. Cl. B63c 1/02
 U.S. Cl. 114-45

5 Claims

A method of lifting laden ships through shallow draft-limited waters comprising moving a specially constructed buoyant carrier capable of lifting a fully laden ship into position relative to fully laden ship, forming an assemblage by relatively moving the ship into the carrier so that the carrier

bottom forms the assemblage bottom, for example, by flooding tanks of the carrier, reducing the draft of the assemblage by pumping water from the flooded carrier tanks until the as-



semblage draft is less than that of the full laden ship and within the safe draft limits of the waters through which the assemblage is to be moved and moving the assemblage through the shallow draft-limited waters.

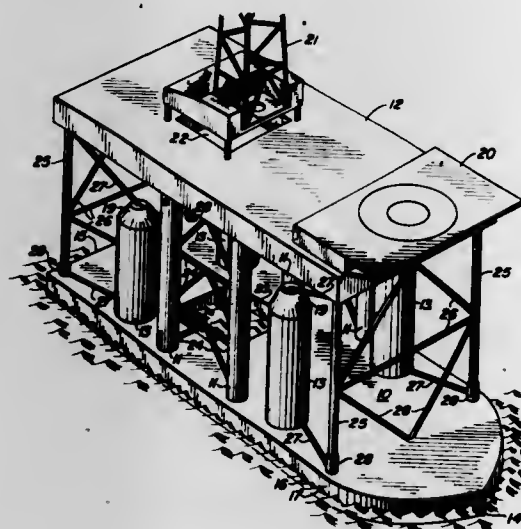
3,610,193

OFFSHORE DRILLING STRUCTURE

Ray S. Lacy, Beaumont, Tex., and James E. Steele, Quakertown, Pa., assignors to Bethlehem Steel Corporation
Filed July 29, 1969, Ser. No. 845,867

Int. Cl. B63b 35/00, 35/44

U.S. Cl. 114-0.5



An offshore-drilling structure capable of being floated for movement to a drilling site and then being semisubmerged or submerged for drilling has a hull, a working platform, fixed vertically elongated stabilizing members extending between the hull and the working platform, and movable vertically elongated stabilizing members which are arranged to swing outboard in a horizontal plane to provide added stability to the structure, to be fixed in the outboard position by means of a hinge assembly and brace members, and to swing inboard to provide a structure with a reduced beam. To reduce the resistance of the floating structure during movement through the water, the hull has a pointed bow and the stabilizing members are located above the load water line of the hull.

3,610,194

SUBMERGED OFFSHORE FLUID STORAGE FACILITY

Gilbert Siegel, 12282 Moana Way, Garden Grove, Calif.
Filed July 17, 1969, Ser. No. 842,590

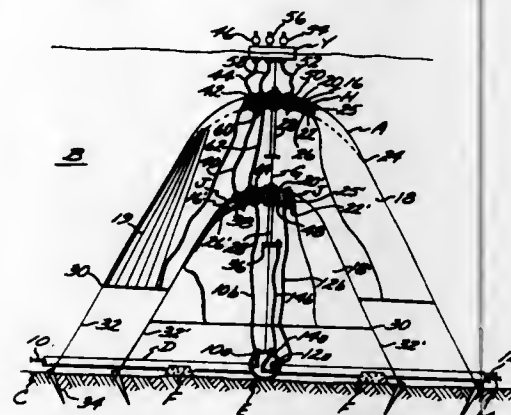
Int. Cl. B63b 35/00

U.S. Cl. 114-0.5

9 Claims

A prefabricated offshore fluid storage facility for one or more fluids that may be moved in a collapsed condition to a desired location on a body of water, and then expanded and anchored beneath the surface of the water to store one or more fluids therein, the specific gravities of which are less than that of the water in which the facility is submerged. The

facility of the present invention may also be used to protect submerged storage tanks. Also, if the facility is anchored



above fissures, cracks or portions of faults in a submerged land area, it will capture and retain hydrocarbon products escaping therefrom.

3,610,195

DEFOULING OF SHIP'S HULLS

Peter Desmond Ropner Talbot Willcox, Rodwell House, Middlesex St., London, E.I., England
Filed Feb. 28, 1969, Ser. No. 803,239

Claims priority, application Great Britain, Mar. 1, 1968, 10089/68

Int. Cl. B63b 59/00; B08b 3/00

10 Claims U.S. Cl. 114-222

4 Claims



This invention relates to a method of, and apparatus for defouling the hull of a ship while afloat by lowering into the water a pad having a liquid, permeable dispensing face, moving the pad to bring the dispensing face into intimate contact with the hull, and feeding to the pad steam or a poisonous liquid composition which passes through the dispensing face to attack the adjacent marine growth.

3,610,196

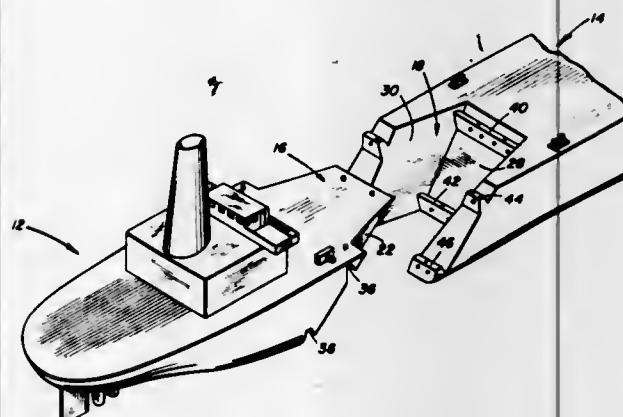
HYDROLOCK SEGMENTED SHIP SYSTEM

Robert Lowry, 6720 Van Fleet Drive, McLean, Va.
Filed Mar. 19, 1969, Ser. No. 808,450

Int. Cl. B63b 21/00; B63h 28/00

U.S. Cl. 114-235

6 Claims



A segmented ship and including a simple and reliable system for joining the cargo section of said ship with the

propulsion section thereof. The connection is made by floating a tongue, forming a part of the power unit, into a slot, forming a part of the cargo unit. The connection is then secured by ballasting the power unit and simultaneously deballasting the cargo unit so that the two units wedge securely into place. The two units are then secured in the connected position by means of securing pins or the like. The present invention further relates to a method for joining the separate units of a segmented ship.

3,610,197

MOTORBOAT

Gregor Sporri, Basel, Switzerland, assignor to Emil Wartmann, Basel, Switzerland, a part interest

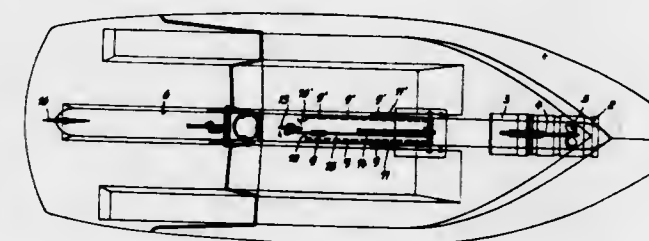
Filed July 17, 1969, Ser. No. 842,469

Claims priority, application Switzerland, July 19, 1968, 11054/68

Int. Cl. B63h 11/00; B63b 39/00

U.S. Cl. 115-12

3 Claims



A stabilizing tube, fixed to the hull of a boat below the waterline thereof with an inlet and an outlet respectively at the bow and the stern of the boat, has its midsection provided with water-expulsion holes which can be obstructed by a slider and open into the surrounding water to facilitate transverse steering. A rudder is mounted near the outlet end of the tube while a propeller in the tube at its inlet end serves to drive the boat forward or backward. The flow of water through the tube can be blocked by a valve just rearwardly of the expulsion holes.

3,610,198

OUTBOARD MOTOR SHROUD

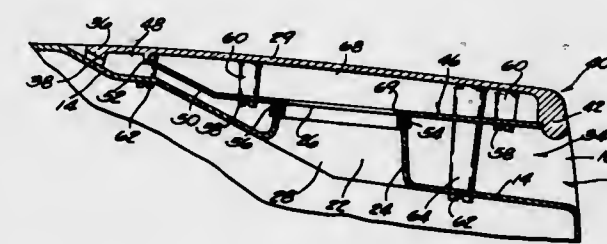
Norman J. Alexandrowicz, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Aug. 19, 1969, Ser. No. 851,328

Int. Cl. B63h 21/26

U.S. Cl. 115-17

6 Claims



Disclosed herein is a shroud for the engine or power head of a marine propulsion device, which shroud has a rearwardly sloping channel provided with an upstanding annular flange defining an air inlet throat. A cover located over a recessed wall portion and spaced from the inlet throat cooperates with the channel to define a passage which is open both forwardly and rearwardly for supplying air to the inlet throat. An intermediate apertured partition separates the passage into upper and lower passage portions. The apertures in the partition permit air to communicate from the lower passage portion to the upper passage, but prevent spray and rain from entering the inlet throat. A rearwardly sloping wall in the channel affords rearward drainage of water through the lower passage portion. The rear edge of the cover is provided with an enlarged smooth, arcuate edge which forms a grip or handle for tilting the propulsion unit.

3,610,199

UNIDIRECTIONAL SENSOR

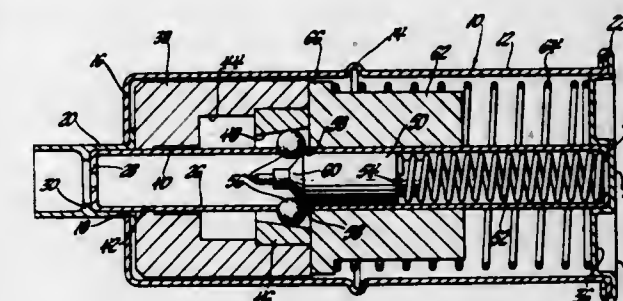
Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1970, Ser. No. 32,834

Int. Cl. G01p 15/00

U.S. Cl. 116-114 AH

4 Claims



A unidirectional sensor which includes an operator mounted within a tubular guide for movement to an actuated position under a resilient bias. Primary and secondary seismic mass members surround the guide for movement axially thereat. A spring engages the secondary member to bias the secondary member into engagement with the primary member and hold the primary member in engagement with a stop to fix the weight members in a predetermined axial position. A plurality of balls are freely received within respective apertures in the guide and engage a radially tapered annular shoulder of the operator and an axially tapered internal annular wall of the primary member. Upon the application of an acceleration pulse of predetermined amplitude for a predetermined time to both weight members, the weight members move axially as the annular tapered wall forces the balls inwardly of the guide and along the operator shoulder until the balls pass through the narrower opening of the wall and release the operator for movement to actuated position. At lesser amplitude pulses, but above a minimum amplitude pulse, the secondary member moves axially of the guide while the primary member will remain stationary or move slightly axially of the balls and guide. Upon the cessation of the pulses of lesser amplitude, the secondary member moves in an opposite axial direction to impact the primary member and ensure its return to the predetermined axial position if it has moved.

3,610,200

PLACE-MARKING DEVICE

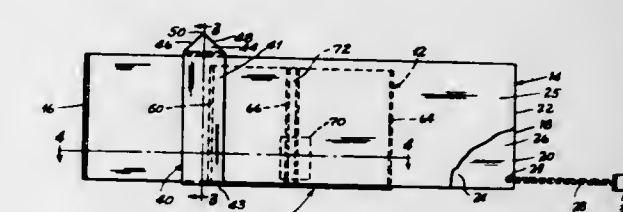
Wilma K. Gibbon, 7309 Kingsburg, University City, Mo.

Filed Mar. 4, 1970, Ser. No. 16,500

Int. Cl. B42d 9/00

U.S. Cl. 116-119

5 Claims



This invention comprises a place mark for knitting instructions, the place mark having holding means for holding a sheet of instructions, base means for maintaining the holding means in an upright position, and marking means for marking a selected place on the knitting instruction sheet.

3,610,201

VISCIOUS MATERIAL SPREADER

Alfred L. Meyer, Wood Dale, Ill., assignor to Anetsberger Brothers, Inc.

Filed Apr. 21, 1969, Ser. No. 817,684

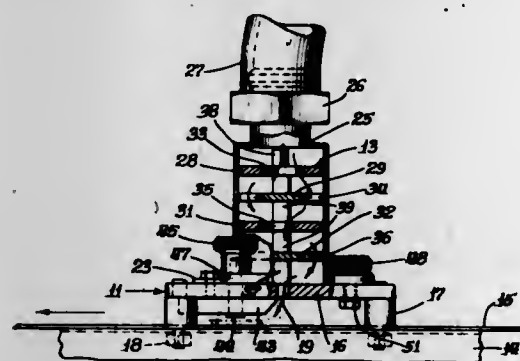
Int. Cl. B05c 5/00

U.S. Cl. 118-24

5 Claims

Device for spreading butter or other viscous material uniformly across full width of dough sheet on belt conveyor,

comprising a base removably mounted above conveyor with elongate, centrally disposed and laterally extending delivery slot therethrough, a casing removably attachable at lower end to the base and having an inlet at upper end, a labyrinth removably supported on the base within the casing, whereby removal of casing, labyrinth and base may readily be effected to facilitate cleaning the labyrinth being formed by a plurality of horizontal plates extending the full interior lateral length of the casing and spaced vertically from each other, with two apertures through the transverse centerline of the uppermost plate spaced on opposite sides of the inlet on centers one-fourth of the length of the plate from its ends, four slots



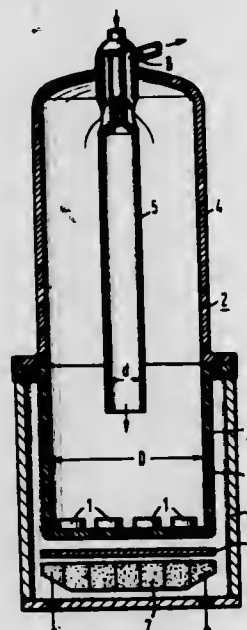
spaced one-fourth the length of the plate from each other along both front and rear edges of the next lowermost or second plate, and eight apertures through transverse centerline of third plate spaced one-eighth the length of the plate from each other to provide uniform misaligned lateral spacing of all apertures and slots in the three upper plates, and a bottom plate narrower than the casing to insure equal distribution of material along doubly reversed paths between the center and the front and rear walls of the casing and successive plates from inlet to delivery slot, and a metering plate slidably mounted on the base for selective manual adjustment horizontally relative to the delivery slot to determine the rate of delivery of material therefrom.

3,610,202 EPITACTIC APPARATUS

Erhard Sussmann, Pöng, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Division of Ser. No. 515,304, Dec. 21, 1965, Pat. No. 3,486,933.
Filed May 23, 1969, Ser. No. 847,757
Int. Cl. C23c 11/00

U.S. Cl. 118-48

6 Claims



Apparatus for epitactic precipitation of semiconductor wafers. The apparatus comprises a reaction chamber with the disc to be processed arranged on the bottom of said reaction

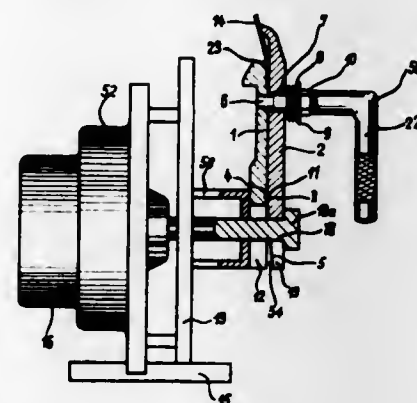
chamber. A gas inlet and outlet are arranged concentrically in the top of said reaction chamber. The wafers are heated to processing temperature by an electric heating device located beneath the bottom of the reaction chamber. This device extends areally to the upper surface parallel to the disc to be treated. A sleeve encloses the electric heating device and the lower portion of the reaction chamber and structurally connects the electric heating device with the reaction chamber.

3,610,203 DEVICE FOR HOLDING DOCTOR BLADES

Max Muller, Zurich, Switzerland, assignor to Maschinenfabrik Winkler Fallert & Co. AG, Bern, Switzerland
Filed Feb. 4, 1970, Ser. No. 8,597
Claims priority, application Sweden, Feb. 12, 1969, 1937/69
Int. Cl. B05c 11/04

U.S. Cl. 118-100

9 Claims



A device for holding doctor blades which are employed for example, in printing, paper coating, textile and similar machines includes first and second clamping members which together define a receiving recess for accommodating a doctor blade. The clamping members are held together in a clamped position by spring means in the form of disc plates or spring plate members. The clamping pressure may be removed by engaging one of the members at a location spaced from the holding springs and spaced from a pivot member which is disposed between the two plates so as to cause one of the members to pivot in respect to the other. For this purpose, one of the members is provided with a bevel on a surface leading away from the pivot so that it may be pressed at its outer end to cause separation of the upper end for the reception of a doctor blade. A device for effecting the pivotal movement of doctor blade clamping members includes a clamping bolt which is engageable through a slot of one of the members into a recess adjacent the bevelled surface of the other and it includes a widened head to engage behind the pivotal member. A fluid pressure-operated piston is connected to the member for the purpose of applying a compressive force to open the clamping elements defined by the first and second members to permit insertion of the doctor blade. The doctor blade, itself, advantageously includes handle means associated therewith to permit it to be lifted and positioned over the movable bolt of the opening device in a position such that it can be operated upon to open the elements to receive the doctor blade.

3,610,204 APPARATUS FOR ACCRETING MOLTEN COPPER ON A MOVING CORE MEMBER

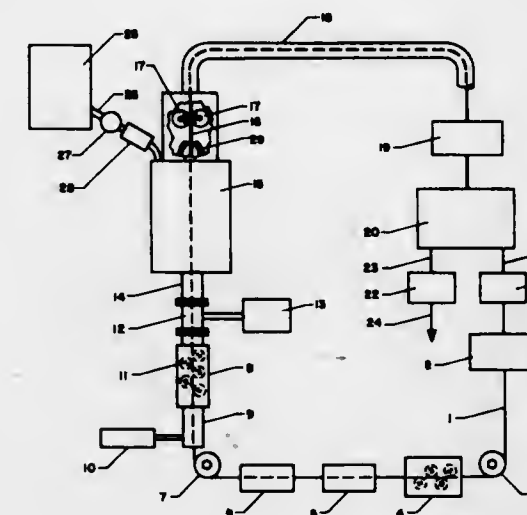
Donald A. Corrigan, Marblehead; Italo S. Servi, Lexington, and Chih-chung Wang, Lexington, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,770
Int. Cl. B05c 3/12

U.S. Cl. 118-405

2 Claims

This patent relates to an improvement in the apparatus for a continuous casting dip-forming process. In the dip-forming process for making wire rod a core member is passed up-

wardly through a crucible containing a molten metal. The crucible contains a nozzle or bushing through which the core



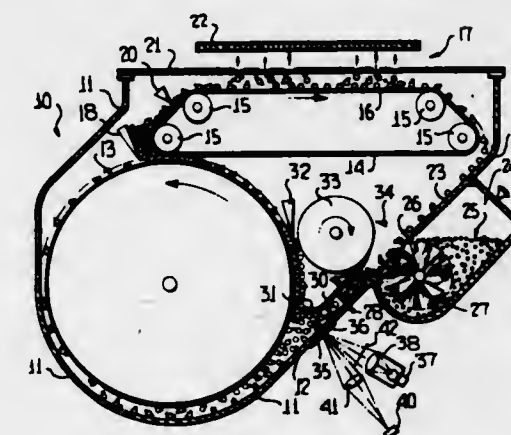
3,610,205 APPARATUS FOR MEASURING AND CONTROLLING MIXTURE CONTENT

Kenneth W. Rarey, South Holland, and John B. Kennedy, Jr., Oak Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 17, 1968, Ser. No. 768,377
Int. Cl. B05b 11/00; B05c 5/02

U.S. Cl. 118-637

14 Claims



Apparatus for detecting the ratio of component particles in a mixture wherein the quantity of one of the component particles is continually decreased, as in an electrostatic printing operation, includes the provision of a window adjacent the path of movement of the mix of component particles and contacting particles in transit therepast, illumination of the mix through the window and detection of light reflected from the mix through the window. Replenishment of the depleted component may be electrically controlled in accordance with the light reflected and optical filter provisions may be employed to limit the spectrum of the light with which the mix is illuminated where the components of the mix differ in color. Diversion of a quantity of mix to bypass an area wherein depletion of one component occurs effects mixing in the direction of flow and crossflow mixing effects greater consistency in the mix transverse to the direction of flow.

A shop assembled waste heat recovery boiler in which water tubes are subjected to a hot process gas flow. The tubes are vertically oriented and arranged in an annular gas passage encompassing a relatively large diameter vertically oriented cylindrical drum to which the tubes are connected. The drum is baffled to provide a riser space and a relatively large diameter downcomer for efficient natural circulation, and the type of tube surface in the gas passage is varied around the periphery of the drum to provide for optimum heat pickup. An enlarged diameter section of the drum extends above the elevation of the gas passage casing and constitutes the vapor space for the drum, and also a means for obtaining high quality steam. The boiler is characterized as being economical in construction, reliable, and adaptable in design to different applications.

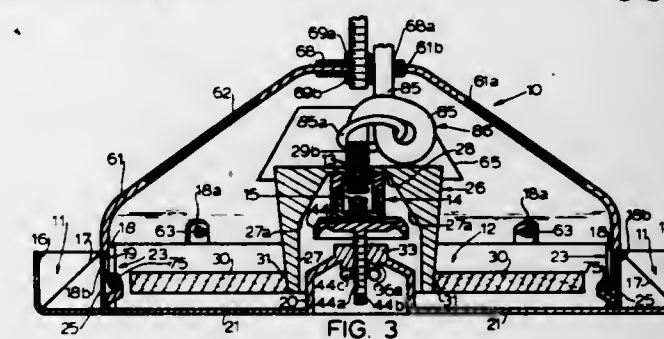
3,610,206 POULTRY DRINKER VALVE CONSTRUCTION

Albert W. Davis, Bunker, N.C., assignor to Poly-Matic Fountain, Inc., Silver City, N.C.

Filed Nov. 20, 1969, Ser. No. 878,328
Int. Cl. A01k 7/00, 7/02

U.S. Cl. 119-78

3 Claims



A poultry drinker incorporates a float-supported valve operable from a connected overhead water supply and which controls water level in a drinking trench in cooperation with buoyant ball valves positioned adjacent the trench.

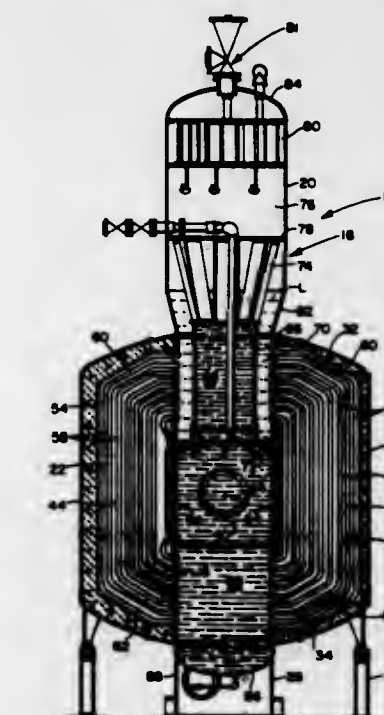
3,610,207 VERTICAL DRUM WATER TUBE WASTE HEAT RECOVERY BOILER

Anthony Ruhe, Fonthill, Ontario, Canada, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 12, 1969, Ser. No. 875,990
Int. Cl. F22b 1/02

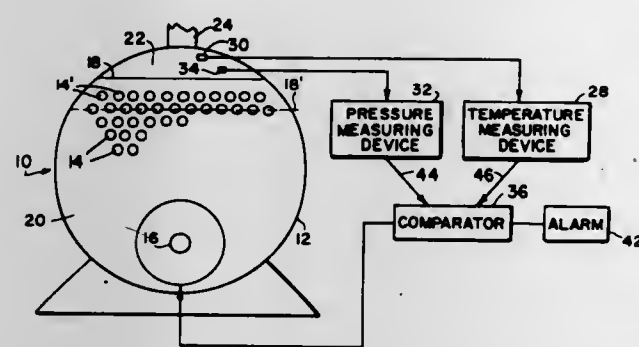
U.S. Cl. 122-7 R

17 Claims



3,610,208
BOILER PROTECTIVE SYSTEM
 Douglas E. Penning, Dublin Road, Southbury, Conn.
 Filed July 25, 1969, Ser. No. 844,806
 Int. Cl. F22b 9/18, 35/18; G01k 3/00
 U.S. Cl. 122-504.2

6 Claims

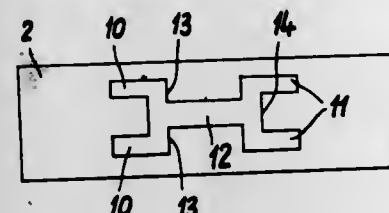


A safety device for indicating when the water level is critically low in a steam boiler makes use of the fact that steam in a boiler becomes superheated when the boiler water level falls below the boiler's uppermost fire tubes. The present apparatus measures the steam temperature and the steam pressure and compares the two to determine whether they are related to one another in accordance with the temperature-pressure characteristic of saturated steam. If the measurements are not so related, the safety device initiates appropriate corrective action to prevent damage to the boiler.

3,610,209
ROTARY PISTON INTERNAL COMBUSTION ENGINE
 Erwin Heijl, Essen, Germany, assignor to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany
 Filed Mar. 4, 1969, Ser. No. 812,524
 Claims priority, application Germany, Mar. 6, 1968, P 10 821.6
 Int. Cl. F02b 55/14

U.S. Cl. 123-8.09

1 Claim



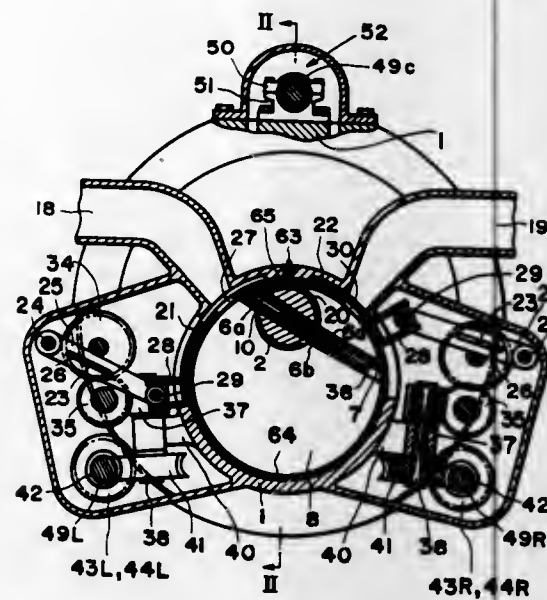
A circular piston internal combustion machine with trough-shaped depressions in the circumferential direction of the piston, in which fuel flow deflecting means are provided in said trough-shaped depressions for deflecting the fuel flow in the axial direction of the piston which is rotatable relative to the housing.

3,610,210
MACHINE OF THE ROTARY BLADE TYPE
 Daisaku Odawara, No. 520 Ueno Shiba-cho 5-cho Sakai-shi, Osaka, Japan
 Filed Mar. 4, 1970, Ser. No. 16,311
 Claims priority, application Japan, Apr. 28, 1969, Mar. 5, 1969, 44-33070; 44-16188
 Int. Cl. F02b 55/02, 53/06; F01c 19/10
 U.S. Cl. 123-8.35

11 Claims

A machine of the rotary blade type in which a rotor having discal members fixed mounted on its opposite end surfaces is rotatably and eccentrically mounted in a casing. At least a telescopic blade comprising a plurality of blade portions is mounted for sliding motion in a blade groove formed to extend through the rotor and the discal members are formed with grooves for supporting and guiding the telescopic blade. Support means are arranged in two rows on the outsides of

the discal members for positioning respective blade portions, the support means being parallel to each other and mounted



rotatably. Two telescopic blades can be disposed in two parallel blade grooves formed to extend through the rotor.

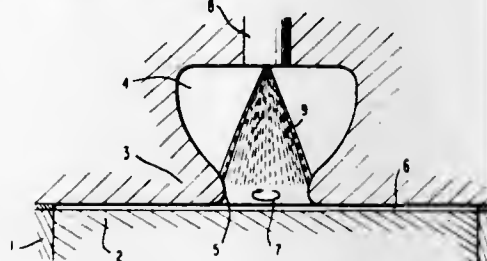
3,610,211
COMBUSTION PROCESS OF AN AIR-COMPRESSING, AUTOIGNITING INJECTION-TYPE INTERNAL COMBUSTION ENGINE WITH PRECHAMBER AS WELL AS INTERNAL COMBUSTION ENGINE FOR CARRYING OUT SUCH PROCESS

Heinrich Hoffmann, Stuttgart-Gerokruhe, and Horst Hardenberg, Stuttgart-Unterturkheim, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
 Filed June 13, 1969, Ser. No. 833,065
 Claims priority, application Germany, June 15, 1968, P 17 51 542.3-13

Int. Cl. F02b 19/00

U.S. Cl. 123-30 D

10 Claims



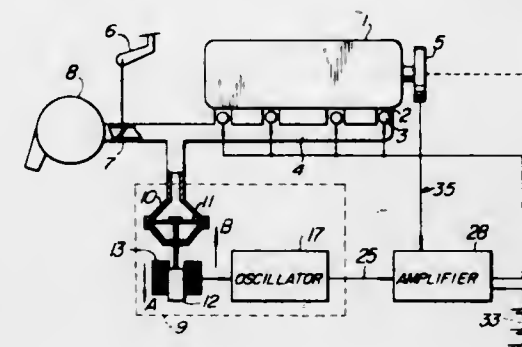
A combustion process for an air-compressing, autoigniting injection-type internal combustion engine as well as an internal combustion engine for carrying out such process, in which fuel is injected from an injection nozzle arranged in the prechamber in such a manner that the fuel jet is injected in a direction opposite the swirling, in-flowing combustion air so that the fuel and combustion air cross one another, a portion of the fuel is torn up by the in-flowing vortexing combustion air while another portion of the fuel is applied film-like against the wall of the prechamber discharge channel, from which it is detached in vapor form by the in-flowing air and by the charge flowing out of the prechamber.

3,610,212
NEGATIVE PRESSURE DETECTOR IN INTERNAL COMBUSTION ENGINE
 Kunio Endo, Anjo-shi, Japan, assignor to Nippon Denso Company Limited, Kiriya-shi, Japan
 Filed May 1, 1969, Ser. No. 820,975
 Claims priority, application Japan, July 12, 1968, 43/49373
 Int. Cl. F02m 51/00

2 Claims

Negative pressure detector in an internal combustion engine in which a detecting section for the negative pressure is

formed of an oscillation coil converting the negative pressure into a variation in inductance and an oscillator detecting the variation in inductance of the oscillation coil as a variation in

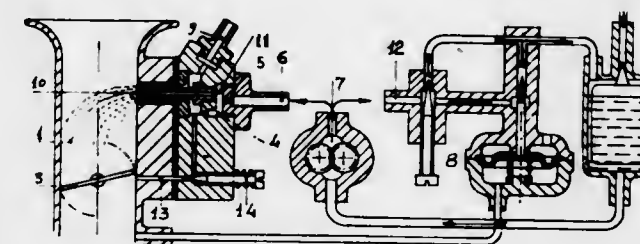


frequency, said detecting section for the negative pressure is arranged in the vicinity of an inlet manifold and consequently the negative pressure in the engine can be detected exactly with a good signal to noise ratio S/N.

3,610,213
FUEL INJECTION SYSTEM
 Giovanni Gianini, Via Monte Pelmo, 10 Roma, Italy
 Continuation of application Ser. No. 720,924, Apr. 12, 1968, now abandoned. This application Mar. 9, 1970, Ser. No. 17,024
 Int. Cl. F02m 67/00

U.S. Cl. 123-33 E

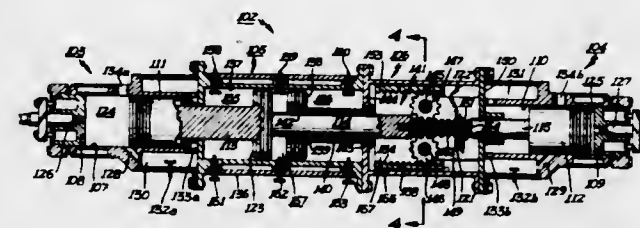
4 Claims



A fuel injection system for internal combustion engines including an injector having a fuel reservoir connected to the intake opening of at least one cylinder and to a fuel pump for supplying fuel to the reservoir. The reservoir collects fuel therein and a second pump or the exhaust gases from the cylinder with which the injector is associated intermittently forces the collected fuel into the cylinder during the intake cycle of the cylinder.

3,610,214
UNSYMMETRICAL, DOUBLE-ACTING FREE PISTON ENGINE
 Anton Braun, 6421 Warren Ave., Minneapolis, Minn.
 Filed Jan. 30, 1970, Ser. No. 7,020
 Int. Cl. F02b 71/00; F02d 39/10; F16h 21/44
 U.S. Cl. 123-46

26 Claims



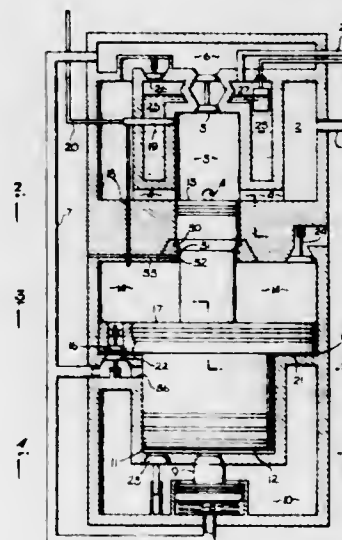
An unsymmetrical, synchronized, balanced, free piston engine is disclosed which includes two oppositely directed, interconnected, alternately acting, coaxial power piston portions positioned for translational reciprocatory movement as a unit along their common axis, as part of a power assembly. The engine also includes a synchronizer-balancer assembly

having a movable first portion attached to move as part of the power assembly and having a movable counterbalancing second portion arranged for translational reciprocatory movement in an opposite direction during each movement of the power assembly. In the engine embodiment shown, a first movable member of an energy absorbing device, e.g., a first compressor piston, is attached to move with the power assembly, and a second movable member of the same or a different energy-absorbing device, e.g., a second compressor piston, is attached to move with the movable counterbalancing second portion of the synchronizer-balancer assembly in opposite directions to the power assembly. The movable counterbalancing second portion of the synchronizer is designed to be of such a weight that the absolute value of the product of all the weight associated to move with the second portion of the synchronizer in one direction (i.e., the sum of the weight of the counterbalancing movable second portion itself plus the weights of any additional elements or members moving as a unit with it, including the second movable member of an energy-absorbing device) times the length of its stroke, is equal to the absolute value of the product of all the weight associated to move with the power assembly (i.e., the sum of the weights of the power piston portions and the movable first portion of the synchronizer-balancer assembly plus the weights of any additional elements or members moving as a unit with the power assembly, including the first movable member of an energy-absorbing device) times the corresponding length of stroke of the power assembly. Also shown are alternate embodiments of the alternately acting interconnected power piston portions, in one of which the power piston portions are interconnected as parts of one double-acting piston in a single double-acting cylinder or power section. In another embodiment, the power piston portions are spaced from each other in two separate single-acting cylinders or power sections at opposite ends of the engine.

3,610,215
GAS GENERATOR
 James S. Carter, 1937 Grace Ave. Apt. #4, Hollywood, Calif.
 Filed Nov. 21, 1969, Ser. No. 878,787
 Int. Cl. F02b 71/00

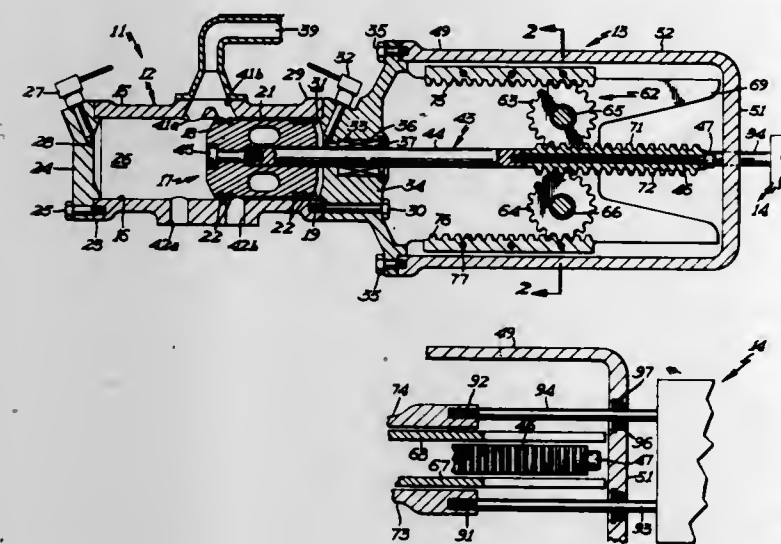
U.S. Cl. 123-46 R

13 Claims



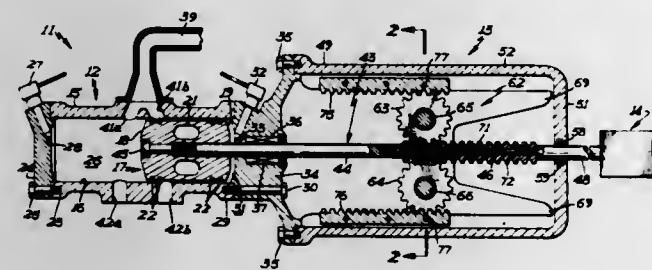
A gas generator in the form of a self-starting two cycle free piston internal combustion engine which generates hot exhaust gases and steam as required by the load. A reciprocating piston assembly comprised of three-coupled pistons compresses air in a combustion cylinder to the point of fuel ignition, pumps scavenging air, and compresses and stores a volume of air for recycling the generator. A novel valve arrangement responsive to gas consumption activates the cycling of the piston assembly.

3,610,216
BALANCED-FREE PISTON ENGINE
 Anton Braun, 6421 Warren Ave., Minneapolis, Minn.
 Filed Nov. 14, 1969, Ser. No. 876,704
 Int. Cl. F02b 71/04; H02k 35/00; F04b 35/00
 U.S. Cl. 123-46 R 21 Claims



Unsymmetrical, synchronized, balanced, free piston engines are disclosed in which a synchronizer-balancer assembly provides balanced operation of the engine by connection to both the engine and a movable member of an energy-absorbing device to be driven by the engine, in order to transmit the reciprocating power output from the engine to the energy-absorbing device through the synchronizer-balancer assembly. Power within the engine is provided in one embodiment by an alternately acting double-acting power section including a double-acting power piston. The power piston is connected to move with a first portion of the synchronizer-balancer assembly to cause the oppositely directed translational movement, with respect to the engine housing, of a counterbalancing second portion of the synchronizer-balancer, and a movable driving member or other movable member of the energy-absorbing device is connected to move with the counterbalancing second portion in alternating opposite directions from the power piston and first portion. Engines incorporating energy-absorbing devices in the form of a pump, an electrical generator, and a double-acting reciprocal compressor are shown. Also shown are alternate embodiments in which the alternately acting double-acting power section and its double-acting power piston are replaced by a pair of alternately acting single-acting power sections with a pair of single-acting power pistons, one in each such section.

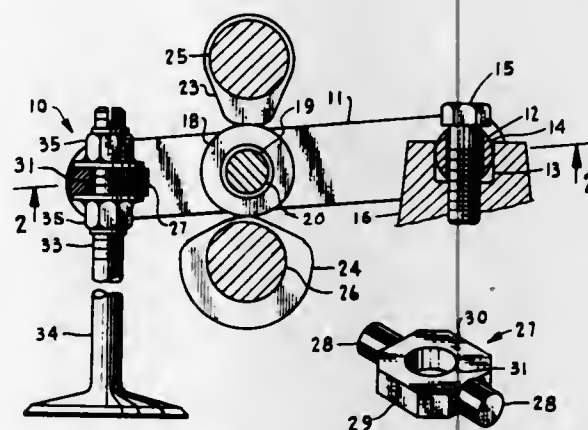
3,610,217
BALANCED-FREE PISTON ENGINE
 Anton Braun, 6421 Warren Ave., Minneapolis, Minn.
 Filed Oct. 21, 1969, Ser. No. 868,008
 Int. Cl. F02b 71/00; H02p 9/04; F04b 35/00
 U.S. Cl. 123-46 14 Claims



Unsymmetrical, synchronized, balanced, free piston engines are disclosed in which a pair of alternately acting power pistons are interconnected to form a double-acting power

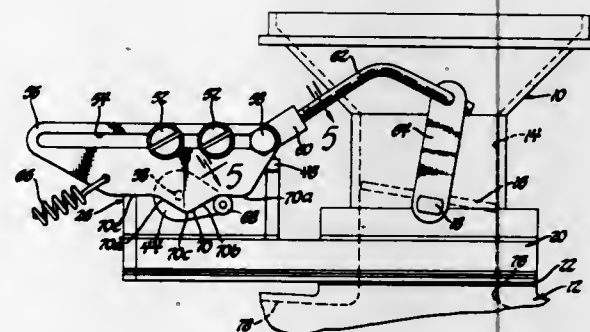
piston, in which the power piston is connected to the movable member of an energy absorbing device to be driven by the engine in order to provide the reciprocating power input to that energy absorbing device, the double-acting power piston, the movable member, and the connection between them defining a power assembly, and in which the movement of the power assembly in the engine is balanced by the oppositely directed translational movement, with respect to the engine housing, of a counterbalancing movable weight associated with a synchronizer-balancer. Engines incorporating energy absorbing devices in the form of a pump, an electrical generator, and a double-acting reciprocal compressor are specifically shown. Also specifically shown are two single-acting power sections which may be used together in place of the one double-acting power section.

3,610,218
DESMODROMIC VALVE ACTUATOR
 Roger Owen Durham, 415 E. North Naranja Drive, Glendale, Calif.
 Filed Apr. 13, 1970, Ser. No. 27,760
 Int. Cl. F01l 1/30, 1/18 F16h 25/08
 U.S. Cl. 123-90.25 10 Claims



A threaded valve stem extends through a central clearance hole in a trunnion yoke member. Opposed flanged stop-nuts on the valve stem slidably engage opposite surfaces of a flat central yoke. Journaled ends of the trunnion yoke pivotally engage bearing surfaces at one end of a pair of rocker arm side plates. The rocker arm side plates are pivotally supported. Coacting camshaft lobes, acting on a cam-follower supported by the rocker arm side plates, impart an oscillation to the rocker arm assembly.

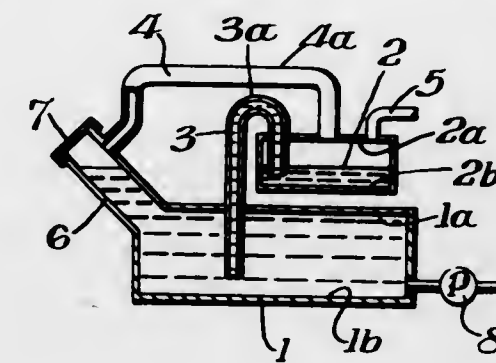
3,610,219
EXHAUST GAS RECIRCULATION CONTROL
 Francis A. Scabica, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.
 Filed May 22, 1970, Ser. No. 39,663
 Int. Cl. F02n 25/06
 U.S. Cl. 123-119 A 2 Claims



In an internal combustion engine, exhaust gas is recirculated from the intake manifold exhaust gas crossover passage

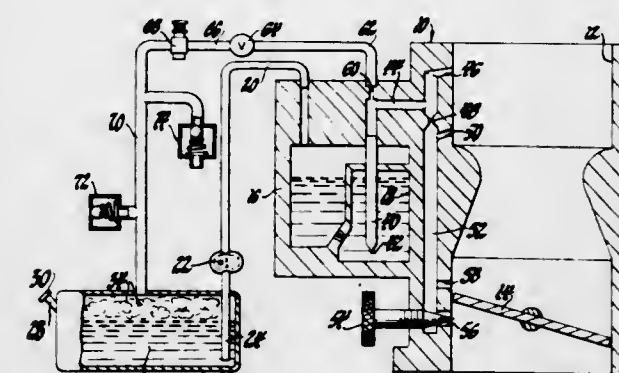
to the induction passage. An exhaust gas recirculation control valve is positioned by the throttle to proportion exhaust gas recirculation flow to induction airflow. In one embodiment, the exhaust gas recirculation passages are cast integrally in the intake manifold. Fuel metering in a timed fuel injection system responsive to manifold absolute pressure is compensated for exhaust gas recirculation.

3,610,220
FUEL TANK CONSTRUCTION
 Mitsumasa Yamada, Sunto-Gun, and Mikio Minoura, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan
 Filed May 4, 1970, Ser. No. 34,111
 Claims priority, application Japan, May 29, 1969, 44-49555
 Int. Cl. F02m 59/00; B65d 8/12
 U.S. Cl. 123-136 3 Claims



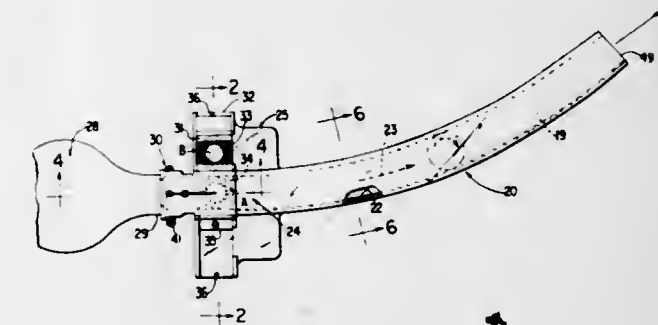
Fuel tank construction comprises fuel tank with fuel pipe connected thereto. Fuel reclaim vessel has bottom portion positioned at higher elevation than top of fuel tank. Siphon tube has one end adjacent bottom of fuel tank and other end adjacent bottom of fuel reclaim vessel. Intermediate peak portion of siphon tube is positioned at higher elevation than filling port of fueling pipe. Pressure equalizing tube is between top of fueling pipe and fuel reclaim vessel, and an exhaust pipe is connected to fuel reclaim vessel in order to exhaust air and fuel vapor in the vessel.

3,610,221
FUEL TANK PURGE SYSTEM AND METHOD
 Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.
 Filed Oct. 6, 1969, Ser. No. 863,955
 Int. Cl. F02m 21/00, 13/08
 U.S. Cl. 123-136 9 Claims



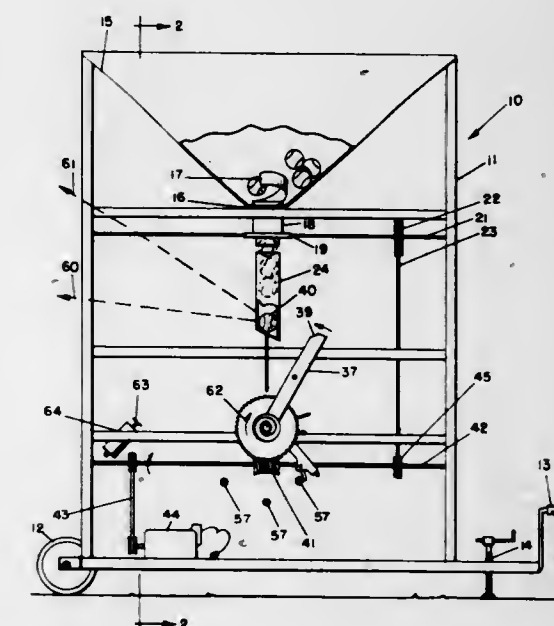
A fuel tank purge system and method in which fuel vapor stored in a nonvented fuel tank is released and conveyed to a vapor compensated idle system of a carburetor whereby the air-fuel mixture ratio at idle and off-idle will be the same curve whether fuel is coming from the carburetor bowl as liquid fuel or whether a portion of the fuel is coming from the fuel tank as fuel vapor.

3,610,222
COMPRESSED FLUID OPERATED TARGET PROJECTING DEVICE
 Robert B. Hartman, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
 Filed Oct. 25, 1968, Ser. No. 770,772
 Int. Cl. F41b 11/00, 11/06
 U.S. Cl. 124-11 1 Claim



A clay target throwing trap for skeet and trap-shooting wherein the target is projected through a curved barrel passage by pressurized air. The air is supplied to the curved passage through a quick acting valve and propels the target along the passage. As the target travels along the passage the target is caused to spin due to frictional engagement of the target with a frictional rib in the passage.

3,610,223
AUTOMATICALLY OPERATED SPRING-TYPE PROJECTILE PROJECTING DEVICE
 Wallace V. Green, 1253 B East Nocta St., Ontario, Calif.
 Filed Mar. 2, 1970, Ser. No. 15,752
 Int. Cl. F41b 7/00 8 Claims



A tennis ball launcher described wherein one ball at a time is selected from a hopper containing a supply of balls and positioned in a ball feed mechanism on a pair of spaced parallel supports. A mounted rotatable cylinder through which the balls pass from the hopper to the ball feed assembly has a spiral selector fixedly connected thereto. The selector extends into the hopper. The ball feed assembly is mounted independently of the rotatable cylinder and is vertically adjustable. A spring-loaded striker is released from a cocked position and passes between the parallel supports to impact the ball and propel the ball from the launcher. The striker is moved to a cocked position by a striker trigger assembly having a trigger actuator which engages a pin on the striker to move the trigger to a cocked position where the striker is released by the trigger actuator being cammed out of contact with the pin.

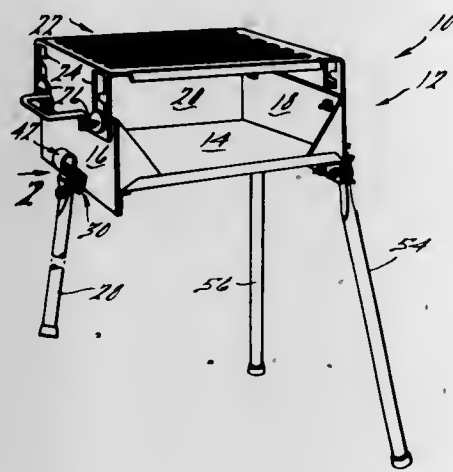
3,610,224 PORTABLE GRILL

John T. Marshall, 2484 Worcester Road, Orchard Lake, Mich.

Filed May 21, 1969, Ser. No. 826,606
Int. Cl. F24b 3/00; F24c 1/16

U.S. Cl. 126-9 R

1 Claim



A hinge having a U-shaped spring for holding the legs of a portable grill or the like in both the extended and folded positions.

3,610,225 COLLAPSIBLE SELF-EXTINGUISHING BARBECUE UNIT

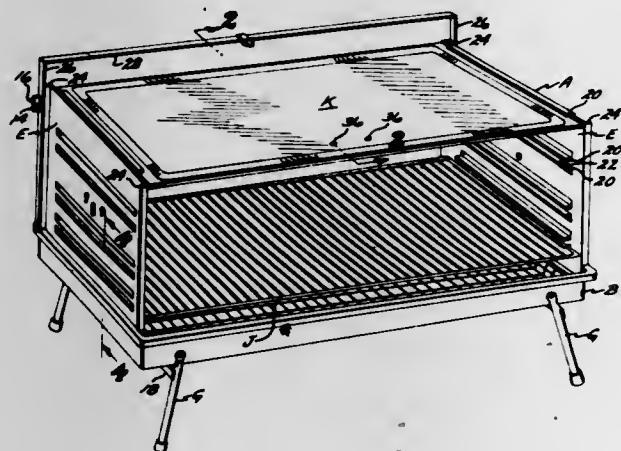
Merle J. Schwantes, 723 Ginger Drive, Long Beach, Calif.

Filed Mar. 31, 1970, Ser. No. 24,107

Int. Cl. A47J 37/00; F24b 3/00; F24c 1/16

U.S. Cl. 126-25 R

6 Claims



A lightweight portable barbecue unit that may be transported to a desired location in a compact collapsed condition, and at the location expanded to provide a barbecue unit that serves not only that function, but by use of conventional accessories may be transformed to a rotisserie, or if desired the unit may be used for the smoking of fish or meats.

The unit includes a metal heat conducting plate that may be so adjustably mounted thereon as to provide either a grill or warming surface, and the plate after the barbecue operation is completed being so disposable on the unit as to automatically extinguish the briquettes or other fuel used in the operation thereof, with the extinguished briquettes or fuel capable of being used in a future barbecuing operation.

3,610,226 A DOUBLE LUMEN CANNULA FOR BLOOD SAMPLING

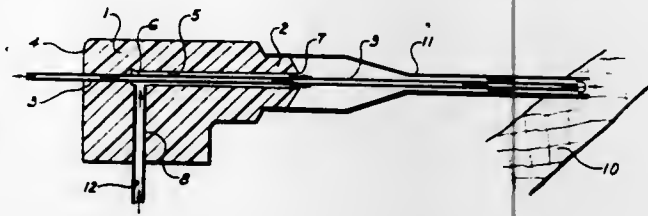
Anthony M. Albisser, 52 Wendover Road, Toronto, 18, Canada

Filed Feb. 27, 1968, Ser. No. 708,668
Int. Cl. A61b 5/00

U.S. Cl. 128-2

A double lumen cannula instrument for use in withdrawing blood from a patient and having an outer lumen for providing

an anticoagulant diluent and an inner lumen for withdrawing blood plus diluent, the body portion of the instrument being approximately one inch long and made of a silastic material.



A method and apparatus for separating red cells from plasma in whole blood is also provided in which a diluent is added to whole blood to produce separation of the red cells.

3,610,227 MEANS FOR RECORDING ORAL PROPRIOCEPTION

Clifford John Griffin, Sydney, New South Wales, Australia,

assignor to The University of Sydney, Sydney, New South Wales, Australia

Filed June 16, 1969, Ser. No. 833,301

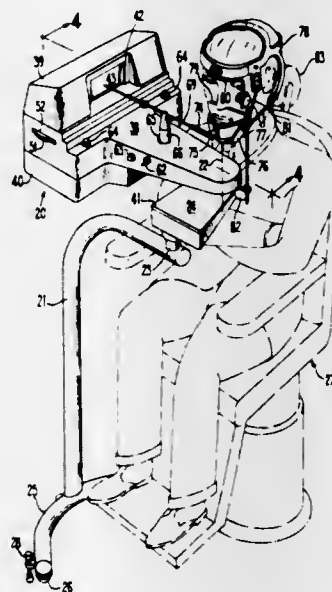
Claims priority, application Australia, June 20, 1968,

39470/68

Int. Cl. A61b 5/10

U.S. Cl. 128-2 R

4 Claims



The invention is directed to an apparatus for recording oral proprioception (i.e. for recording the reflex ability and sensitivity of the mouth opening and closing muscles.) The apparatus comprises a frame which is pivotable from a frontal to a lateral position relative to a patient under test and a drive arrangement for feeding a strip of recording paper, which is disposed in a vertical plane, in a horizontal direction across and in contact with a guide frame which is fixed to the pivotable frame. A recording stylus is pivotably mounted to the pivotable frame; such stylus being adapted for connection with the patient's mandible and for marking the recording paper such that movement of the patient's mandible is represented graphically on the recording paper.

3,610,228 APPARATUS FOR MEASURING BODY FLUID PRESSURE

Eugene Temkin, Long Beach, Calif., assignor to The Birtcher Corporation, Los Angeles, Calif.

Filed Jan. 6, 1967, Ser. No. 607,767

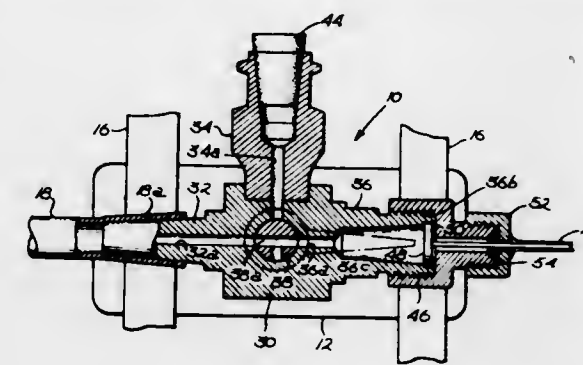
Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 D

The apparatus for measuring body fluid pressure consists of a three-way stopcock in which any two of the three arms may be connected together at any one time. One arm of the stopcock is connected to body pressure through a tube and a second arm is connected to a chamber containing a small pressure-sensitive transducer. A third arm is connected containing a sealable passage through which sterile saline solu-

1 Claim

tion is introduced to the tube and chamber and which also connects atmospheric pressure to the chamber for calibration method of using same. A balloon seals the upper end of the manometer and serves as an atmospheric pressure trans-



purposes. The third passage can be closed by a self-resealable plug which permits the injection of an anticoagulant into the apparatus.

3,610,229 ELECTROCARDIOGRAPH ELECTRODES WITH CONDUCTIVE JELLY SUPPLY MEANS

Ilias Zenkich, 5156 North Monterey Drive, Norridge, Ill.

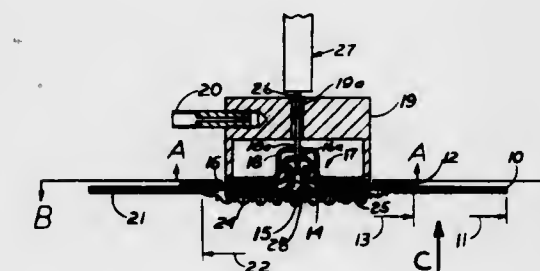
Continuation-in-part of application Ser. No. 785,481, Dec. 20,

1968. This application Mar. 7, 1969, Ser. No. 805,199

Int. Cl. A61b 5/04; A61n 1/04

U.S. Cl. 128-2.06 E

7 Claims



An electrode for an electrocardiograph comprising a reinforced base sheet having the underside thereof coated with a pressure-sensitive adhesive and protected by a thin layer of removable paper. A snap fastener comprising a male and female portion extends through the center of the base sheet with the male portion of the snap fastener being firmly attached to the base sheet. The contacting surfaces of the male and female portion of the snap fastener are provided with a plurality of alternating grooves and ridges to increase the contact area and to prevent relative rotation of the respective male and female portions. A screen or sponge is attached to the underside of the male portion of the fastener and may be impregnated with an electrically conductive jelly. The female portion of the fastener is mounted into a housing designed for easy gripping with the fingers. The male and female portion and the housing have central openings defining a passage for receiving a syringe needle for flow of a conductive jelly and a ball check valve is preferably provided.

3,610,230 MANOMETER WITH A BALLOON SEALING THE UPPER END THEREOF AND METHOD OF USING SAME

Harold Willids Andersen, Oyster Bay, N.Y., assignor to H. W. Anderson Products, Inc., Oyster Bay, N.Y.

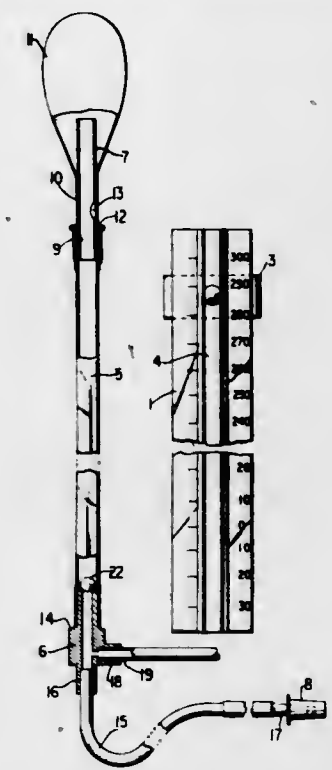
Filed Mar. 20, 1967, Ser. No. 624,522

Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 D

A manometer for measuring and indicating venous pressure in the human body by observation of the height of a column of liquid in continuous fluid communication with the interior of a vein, combined with means for rapid transfusion or infusion, whenever needed, without interrupting the continuous fluid path between the column and the vein; and the

4 Claims



mitter while isolating the manometer from atmospheric contamination.

3,610,231 ENDOSCOPE

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

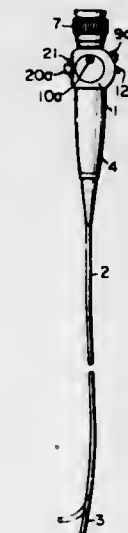
Filed July 17, 1968, Ser. No. 745,472

Claims priority, application Japan, July 21, 1967, Sept. 22, 1967, 42/62666; 42/81013

Int. Cl. A61b 1/06

U.S. Cl. 128-6

4 Claims

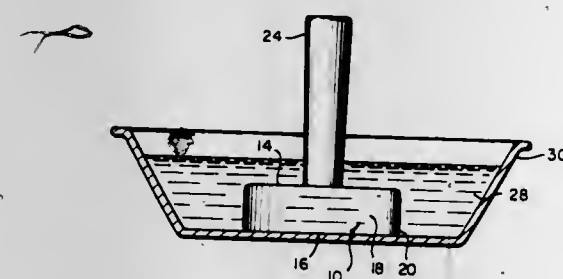


An endoscope especially adapted to inspect the bronchi of a human body or the like and having a forward end portion and a control housing connected to the forward end portion through an elongated flexible tube. The forward end portion can be flexed by the control from the control housing so that it can be smoothly inserted into the bronchi. The endoscope is provided with an observation optical system, an illuminating optical system and a control mechanism for flexing the forward end portion together with a pharmaceutical liquid injecting tube, a forceps conducting tube and a suction tube for sucking unwanted matter in the bronchi therefrom all in combination in compact form in the forward end portion without increasing the outer diameter of the forward end portion.

To ensure positive and exact flexing of the forward end portion, a stay means made of a resilient, relatively stiff wire is provided longitudinally adjacent to the inner wall of the flexible tube section of the forward end portion. The both ends of the stay means are fixedly secured to the inner wall of the flexible tube section at its forward and rearward ends so that the stay means serves as a backbone to prevent the flexible tube section from being unduly contracted as a whole while the flexibility of the flexible tube section is maintained. To effect the bending of the flexible tube section, string means extend from the control mechanism through the elongated tube, the forward ends of the string means are secured to the inner wall of the flexible tube section so that the flexible tube section can be flexed by pulling the string means by the operation of the control mechanism.

3,610,232 SKIN-MASSAGING DEVICE

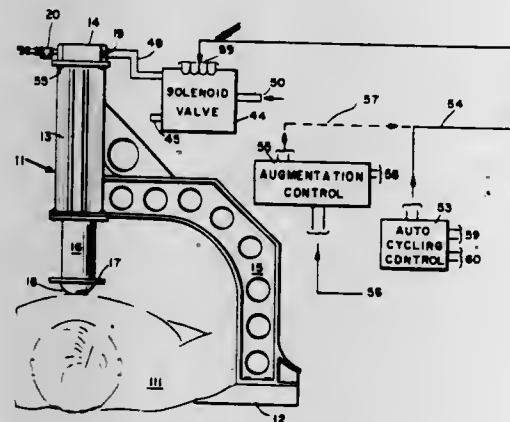
Karla Aisenstadt, 2385 Barker Ave., Bronx, N.Y.
Filed Mar. 25, 1970, Ser. No. 22,516
Int. Cl. A61h 29/00
U.S. Cl. 128-24.1



A massaging device consisting of a solid-trapezoid-shaped body having a smooth, flat surface on one side and a manipulating hand on its opposed side, and formed of heat-retaining material having noncorrosive surfaces and adapted to be heated in a fluid; the corners and edge of the body being rounded.

3,610,233 MASSAGE APPARATUS

Clare E. Barkalow, Comstock Park, Mich., assignor to Michigan Instruments Incorporated, Comstock Park, Mich.
Filed Apr. 26, 1961, Ser. No. 105,786
Int. Cl. A61h 7/00
U.S. Cl. 128-53



Apparatus for use exteriorly of the human body for massaging and reactivating a heart by rhythmic depression of the breastbone, comprising: rigid support means including a base member having a platform for placing beneath the back of patient's body; a vertically reciprocable, breastbone-engaging, pressure application means spaced from said platform and oriented toward said platform to reciprocate toward and away from it; said base member including portions adjacent one end of said platform; upright means securely mounted to said portions of said base, and extending over said platform at a spacing therefrom to enable a patient to be positioned therebetween, said upright means mounting said pressure ap-

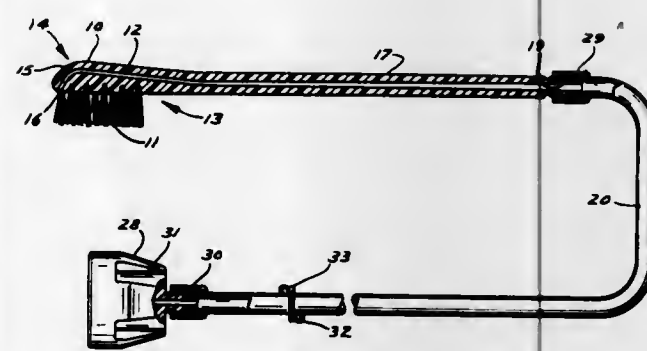
plication means on said base and over said platform; pressure-supplying means operably connected to said pressure application means to move it repeatedly toward said platform for depressing the breastbone and heart of a patient on said platform and then release to allow the rib cage of the patient to elastically expand again for expansion and filling of the heart to provide a massaging action on the heart; control means operably connected with said pressure application means for causing rhythmic cyclic movement of the pressure application means alternately toward and away from the heart at approximately the normal rate of heartbeat; and an augmentation control device for cyclically supplying output signals in response to heartbeat detection signals comprising a first electrical circuit adapted to transmit electrical power, a first switch means and a second switch means in said first electrical circuit, a second electrical circuit having a first relay means adapted to actuate said first switch means and a second relay means adapted to actuate said second switch means, a signal-receiving means adapted to receive electrical signals corresponding to said heartbeat detection signals and having a first signal input means and a first output means, a signal delay means, having a second input means and a second output means, said first output means connected to said second input means and to said first relay means whereby said first relay means is activated by an output of said signal-receiving means to thereby activate said first switch means, said second output means being connected to said second relay means whereby said second relay means is activated by an output of said signal delay means to thereby actuate said second switch means, and a feedback means connecting said second output means to said signal-receiving means, where through an output of said signal-receiving means is fed back to said signal-receiving means to terminate the output of said signal-receiving means, at a period of time after the initiation thereof substantially equivalent to the physiological delay in the systolic cardiac contraction.

4 Claims

3,610,234 WATER-JET TOOTHBRUSH

Dennis G. Oates, 4251 Ingraham St., San Diego, Calif.
Filed Feb. 9, 1968, Ser. No. 704,339
Int. Cl. A61h 9/00
U.S. Cl. 128-66

19 Claims



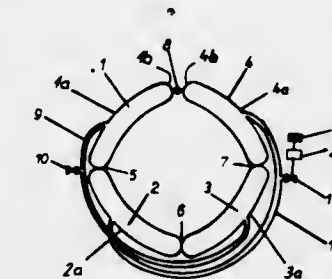
A water-jet toothbrush equipped with a water passage extending longitudinally within its bristle-holding elongated head portion. This water passage has critical dimensions at its discharge orifice in the anterior portion of the head. It is also curved within the head of the toothbrush. The curvature, plus the critical orifice dimensions, act together at the anterior end of the head to form a water-jet exit orifice which directs water in a stream essentially free of contact with bristle-tufts of the head of the toothbrush and at a forward angle between about 95° and 160° from the elongated head of the toothbrush. Preferably, the handle part of the toothbrush is integrally united with the head, with the water passage of the head continuing through the handle. Walls of the water passage may be preformed to consist of a material different from remaining material employed in forming the head or handle, or both. Connectors and clamps are taught for channelling or controlling waterflow.

3,610,235 INFLATABLE RAPIDLY APPLICABLE BANDAGE OR THE LIKE

Hannes Vagacs, Vienna, Austria, assignor to Semperit Österreichisch-Amerikanische Gummiwerke AG, Vienna, Austria

Filed May 29, 1969, Ser. No. 828,976
Claims priority, application Austria, May 30, 1968, A5185/68
Int. Cl. A61f 5/04
U.S. Cl. 128-87 R

3 Claims



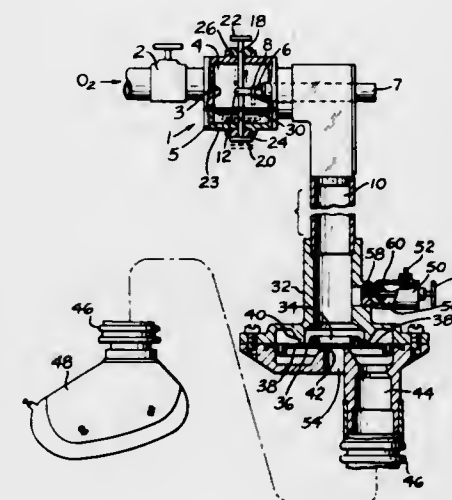
There is disclosed an inflatable rapidly applicable bandage or the like for splinting arms and legs which incorporates an even number, but at least four hose-like compartments. These hose-like compartments extend in the direction of the limb or body to be splinted. According to the invention there is provided means for the pressure equalization of each two oppositely situated compartments.

3,610,236 RESUSCITATOR DEVICE

Benjamin Smilg, Dayton, Ohio, assignor to Globe Safety Products, Inc., Dayton, Ohio
Continuation-in-part of application Ser. No. 518,365, Jan. 3, 1966, now abandoned. This application Nov. 22, 1966, Ser. No. 596,284

Int. Cl. A61m 16/00
U.S. Cl. 128-145.8

15 Claims



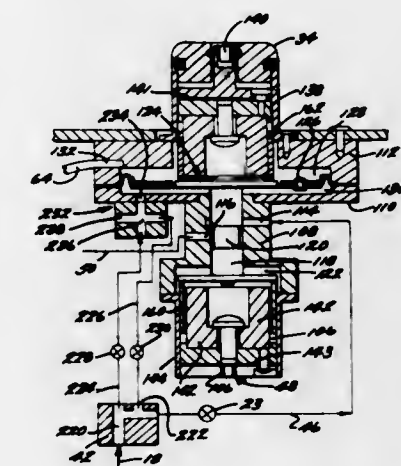
A resuscitation valve connected to receive oxygen under pressure and alternately exhaust same to atmosphere or deliver same through a conduit to an exhalation valve; the latter having a valve member operating to interconnect the conduit to a passageway directed to the lungs of a patient to permit positive pressure thereof and alternately to permit interconnection of the last named passageway to ambient for exhalation of the patient. A time-delay valve means including a one-way valve and a throttling valve is connected to the conduit to permit transfer of ambient pressure to the resuscitation valve to delay its cycling on the exhausting cycle thereof, i.e. the exhalation cycle for the patient, thereby to maintain peak positive pressure in the patient's lungs for a period selected by the setting of the throttling device.

3,610,237 INHALATION POSITIVE PRESSURE BREATHING APPARATUS

Clare E. Barkalow, Comstock Park, and Ilden R. Folkerth, Sparta, both of Mich., assignors to Michigan Instruments, Inc., Grand Rapids, Mich.

Filed Oct. 7, 1968, Ser. No. 765,468
Int. Cl. A62b 7/00
U.S. Cl. 128-145.8

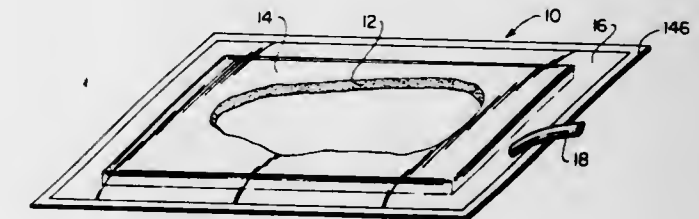
13 Claims



This disclosure relates to an inhalation positive pressure breathing apparatus adapted to operate from a source of compressed oxygen-containing gas such as air or oxygen. A main control valve opens and closes with the pressure of the gas in a patient adapter such as a mask or mouthpiece, which adapter supplies oxygen-containing gas for use. A throttle valve is positioned in a supply line to the patient adapter to control the maximum flow rate of gas passing to the adapter and to control the acceleration of gas flow to the adapter. A spring-biased piston cylinder operates the throttle valve responsive to gas passing through the main control valve. An adjustable bleed valve in the piston cylinder enriches the air drawn by a venturi into the supply line to the patient adapter.

3,610,238
WOUND INFECTION PREVENTION DEVICE
Edward Rich, Jr., College Park, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare
Filed Apr. 28, 1970, Ser. No. 32,636
Int. Cl. A61m 13/00
U.S. Cl. 128-184

10 Claims



A wound infection prevention device, for the treatment of burns, skin lesions, etc., comprises a cellular-foam plastic pad encased by impervious plastic sheets and to which air under pressure may be fed to an annular space about the periphery of the foam plastic pad. In use the device is removed from a sterile package, the physician cuts a hole in the center entirely through the material and of sufficient size to surround the wound, and air is then fed under pressure into the annular space and then passes through the body of the porous pad onto the wound and then passes upwardly to prevent the settling of bacteria-bearing dust on the wound.

3,610,239

DETACHABLE HOLLOW GUIDE NEEDLE

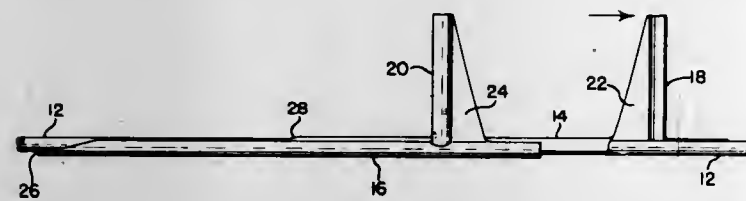
James A. Huggins, Racine, Wis., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 19, 1970, Ser. No. 12,648

Int. Cl. A61m 5/00

U.S. Cl. 128-214.4

6 Claims



A hollow guide needle for venipuncture to introduce a flexible catheter into a body vein for withdrawing or introducing fluids relative to the body, and which includes telescoped parts which may be separated into detachable sections after use and thus completely separated from the inserted catheter initially associated therewith.

3,610,240

INTRAVENOUS CATHETER APPARATUS WITH CATHETER TELESCOPED INSIDE PUNCTURING CANNULA

Andrew Harautuneian, Gardena, Calif., assignor to American Hospital Supply Corporation

Filed June 13, 1967, Ser. No. 645,715

Int. Cl. A61m 5/00

U.S. Cl. 128-214.4

21 Claims



An intravenous catheter assembly in which a separable gripping hub integrates a rigid cannula within which a flexible catheter is telescopically disposed; the gripping hub including hinged jaws and a circumferential pressure band, one jaw including an abutment shoulder against which the proximate end of the cannula is abuttingly disposed during administration of the cannula for a catheter insertion procedure; the clamping means including a baseplate and separate clamp parts and a longitudinal and transverse clamp plate; means for gripping a rearwardly disposed flexible protective sheath; and a protector disposed within the protective sheath and protecting the cannula therein to prevent rupture of the catheter when the gripping hub is removed from the assembled parts.

3,610,241

SYRINGE GUIDE AND INDICATOR

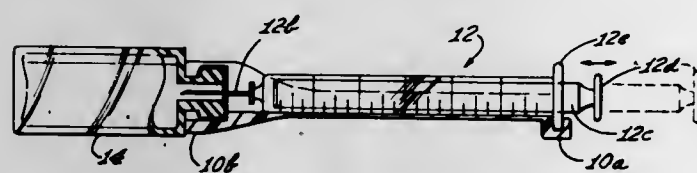
Romeo LeMarie, 400 South Bullis Road, Compton, Calif.

Filed Aug. 15, 1969, Ser. No. 850,465

Int. Cl. A61j 1/06; A61m 5/18

U.S. Cl. 128-272

3 Claims



An improved guide is provided for use with hypodermic syringes so as to facilitate the loading of the syringe from a bottle containing a drug, medicine, or other liquid. The improved guide has utility for both sighted and blind persons,

since it permits the syringe to be held in proper relationship with the neck of the bottle containing the liquid, and since it serves to guide the needle part of the syringe through the cap and into the bottle a proper distance so as to assure the correct dosage. The guide may also include an adjustable stop member which serves to limit the loading stroke of the plunger part of the syringe so that a predetermined amount of the liquid is drawn into the syringe without the need for the careful reading of scales, calibrations or the like.

3,610,242

MEDICO-SURGICAL SUCTION SYSTEMS

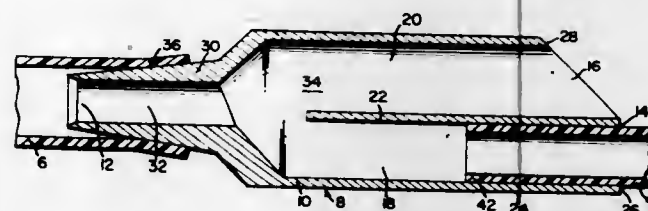
David S. Sheridan, Argyle, and Isaac S. Jackson, Greenwich, both of N.Y., assignors to David S. Sheridan, Argyle, N.Y., by said Sheridan

Filed Feb. 28, 1969, Ser. No. 803,258

Int. Cl. A61m 1/00

U.S. Cl. 128-276

4 Claims



Medico-surgical suction systems capable not only of aspiration of body fluids from patients, but also precise collection of mucus samples, all under controlled vacuum conditions, include, as separate units, a fingertip-operated vacuum controller and liquid-sampling unit. The vacuum controller provides accurate regulation of suction during aspiration while isolating the operator's control finger from the suctioned fluid stream.

3,610,243

RETICULATED PAPER TAMPON

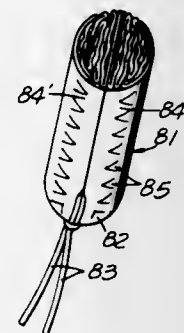
John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

Filed Apr. 11, 1968, Ser. No. 720,501

Int. Cl. A61f 13/20

U.S. Cl. 128-285

2 Claims



This invention teaches a new menstrual tampon having a multiplicity of tissue paper layers, plurally folded into a narrow rectangular web length, having multiple hinged leaf perforations formed in the web of tissue paper. The rectangular web length is folded in a U-type fold midway of its length, secured with a withdrawal string at the U-type fold, and compressed into a cylindrical form.

3,610,244

INTEGRAL DIAPER WAISTBAND FASTENERS

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

Filed Oct. 20, 1969, Ser. No. 867,505

Int. Cl. A61f 13/16

U.S. Cl. 128-287

7 Claims

This device relates to a single-use, rectangular area, pressure-sensitive adhesive waistband securing means suitable for holding the diaper on a baby's torso without pins. A first face

of a thin, flexible, nonextensible first waistband is permanently, completely secured to the exterior fluid-resistant diaper membrane, and is disposed completely across the first diaper end normal to the diaper sides, forming two first waistband terminus areas at the diaper sides. On the face of the first waistband terminus areas opposed to the absorbent diaper pad, each one of the pair of first waistband terminuses can have an adhesive securing means. Each adhesive securing means comprise a pressure-sensitive adhesive coating area permanently secured to a first waistband terminus area, and the coating area is completely covered with a removable, protective release paper sheet area. A first face of a thin, flexible, nonextensible, second waistband is permanently secured to the fluid-resistant diaper membrane, disposed completely across and bonded to the second diaper end, nor-

conventional sewerage systems. The wrapper comprises a nonwoven fiber web bonded by dialdehyde starch alone or in combination with cold-water-soluble binders. A web of such structure retains significant strength during use in the presence of moisture given off by body fluids, but is readily disintegrated after short exposure to excess water, as in the sewerage system, for easy disposal.

3,610,246

SURGICAL KNIFE BLADE

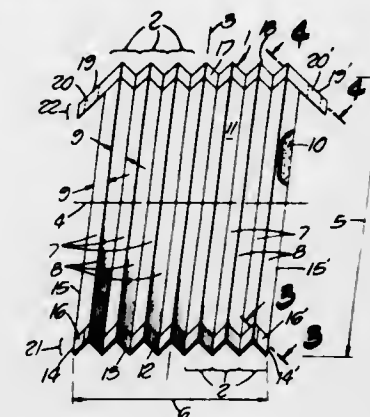
James H. Salmon, 3200 Vine St., Cincinnati, Ohio

Filed Sept. 18, 1969, Ser. No. 859,050

Int. Cl. A61b 17/32

U.S. Cl. 128-305

1 Claim



mal to the diaper sides. The second waistband adhesive securing means has a pair of integral, nonextensible band short extensions, each one of the pair oppositely extending beyond each one of the pair of diaper sides. Each of the band short extensions has a pressure-sensitive adhesive coating area permanently secured to the band short extension face which is adjacent to the fluid-absorption side of the diaper. Each of the adhesive coating areas are completely covered by removable, protective release paper sheet areas. The pressure-sensitive adhesive waistband securing means are formed from sheet stock components, which are formed into individual waistbands, and then bonded to a diaper web being continuously formed on an assembly line. The first and second waistbands are both positioned and bonded to the diaper web prior to cutting the diaper web into individual diapers, each diaper then having a pair of waistbands.

A surgical knife blade having a head portion provided with a generally hook-shaped cutting edge on a front edge, and sideways protuberances behind the cutting edge, the blade being constructed to cut a membrane with a cut edge of the membrane riding on the protuberances as the cut advances.

3,610,247

SURFACE-ANESTHETIZING MEDICAL APPLIANCE

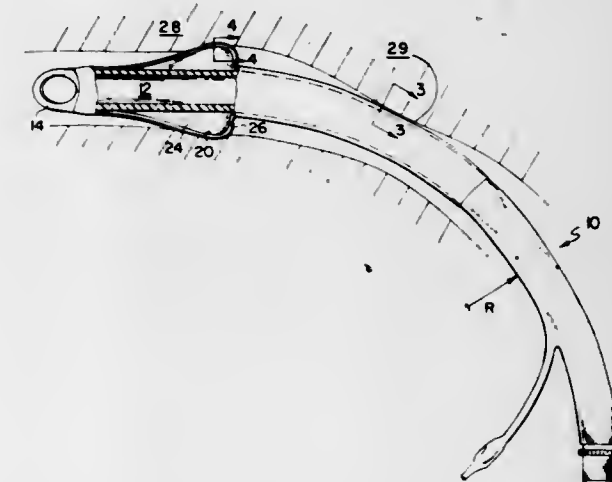
Richard R. Jackson, 8 Trinity Road, Marblehead, Mass.

Filed Mar. 3, 1969, Ser. No. 803,717

Int. Cl. A61m 25/00; 31/00; A61j 1/00

U.S. Cl. 128-351

15 Claims

**FLUSHABLE WRAPPER FOR ABSORBENT PADS AND PAD COVERED THEREWITH**

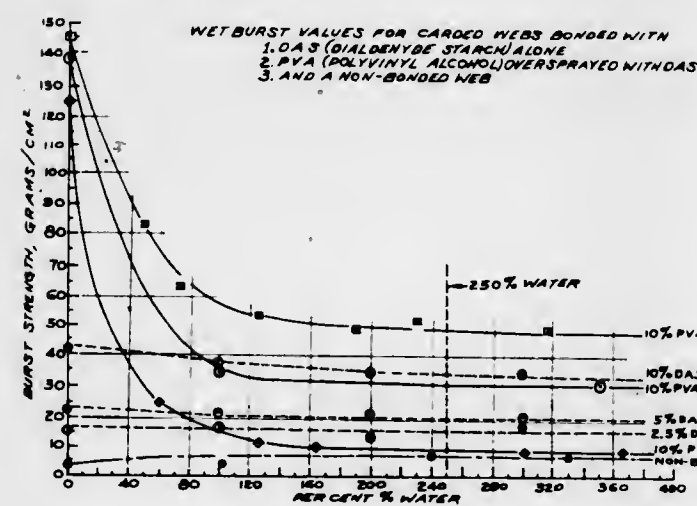
Leo J. Bernardin, Appleton, and John F. Champaigne, Jr., Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 10, 1969, Ser. No. 814,917

Int. Cl. A61f 13/16

U.S. Cl. 128-290

18 Claims

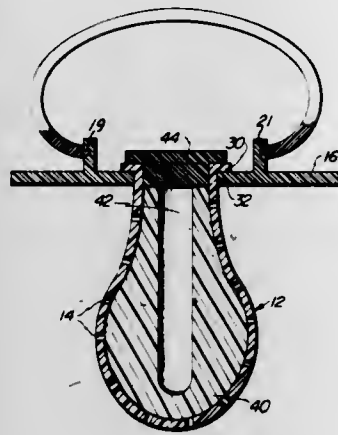


An improved wrapper for sanitary napkins and other absorbent pads, adapted for easy disposal by flushing down

Medical devices, endotracheal tubes, having on outside a solid layer comprised of surface-effective anesthetic and solid substance physically securing the anesthetic. The outer surface of the layer has a prolonged anesthetizing effect. Semipermeable flexible adhesive film and semipermeable sheet film across which the anesthetic travels are specifically shown.

3,610,248
GUM EXERCISE DEVICE
 Samuel L. Davidson, Bethesda, Md., assignor to Woodstream-Hydron Corporation, Littleton, Pa.
 Filed Apr. 16, 1969, Ser. No. 816,584
 Int. Cl. A61J 17/00, 7/00, 11/00
 U.S. Cl. 128—360

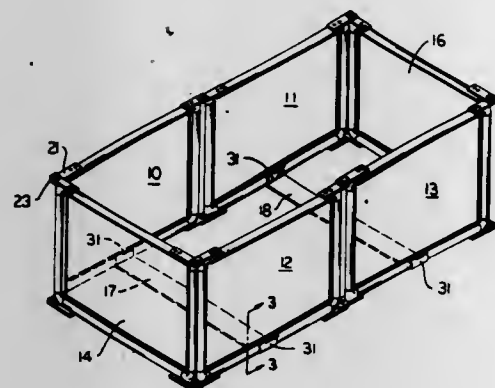
7 Claims



A gum exercise device, such as a pacifier which is formed at least in part of a hydrophilic plastic and which has a material receiving cavity therein so that medicaments, flavors or the like can be conveniently released from the device upon normal chewing action.

3,610,249
SUN REFLECTOR BOOTH
 Janice H. Baker, 5771 N. Ewing St., Indianapolis, Ind., and Arthur G. Howard, 4130 Englewood Drive, Indianapolis, Ind.
 Filed Sept. 10, 1969, Ser. No. 856,590
 Int. Cl. A61h 33/06
 U.S. Cl. 128—372

1 Claim



A reflective booth or enclosure for sunning formed by attached, identical panels which can be conveniently assembled from detached, stacked condition to fully setup condition. The booth is locked in setup condition by means of adjustably positioned holddown members or bars which utilize the weight of a cot or chaise and its occupant to provide stability for the enclosure.

3,610,250
ELECTRICAL CONTACT-CARRYING GARMENT FOR MUSCLE STIMULATION
 Robert I. Sarbacher, 2503 Tracy Place N. W., Washington, D.C.

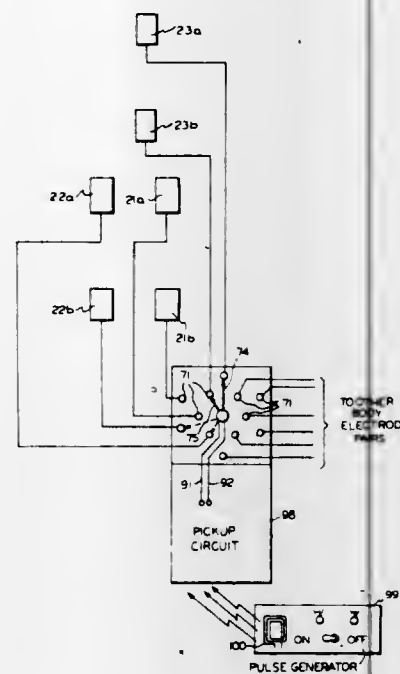
Filed Jan. 10, 1967, Ser. No. 608,317
 Int. Cl. A61n 1/08

U.S. Cl. 128—379

1 Claim

Electrical muscle stimulation is effected by means of a body garment having a plurality of body contact electrodes secured in it. The garment is wired to provide a single contact area for all the electrodes. The electrodes are selectively

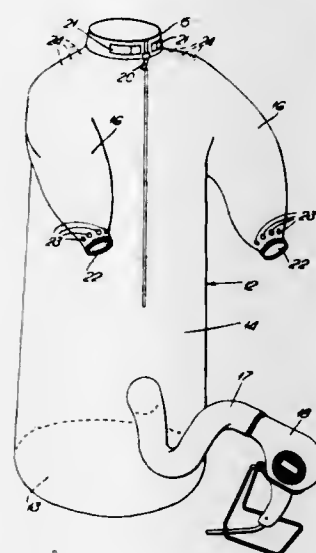
energized through a multiple contact switch associated with said contact area, so that the electrical muscle stimulating



pulse output of a generator may be applied to a desired electrode pair through the switch.

3,610,251
APPLIANCE FOR THE HEAT TREATMENT OF A HUMAN BEING
 Albert Charles Sanderson, Ilford, Essex, England, assignor to Riveril Trading Company Limited, London, England
 Filed July 14, 1969, Ser. No. 841,484
 Claims priority, application Great Britain, July 25, 1968, 35673/68
 Int. Cl. A61n 1/00
 U.S. Cl. 128—379

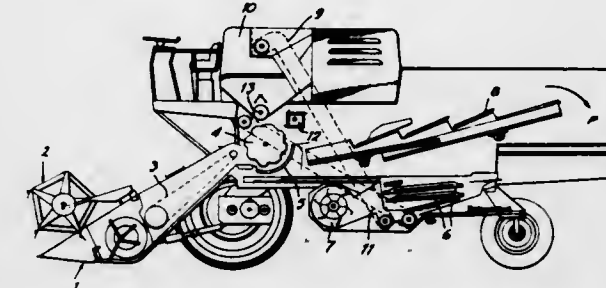
2 Claims



An appliance suitable for use in the heat treatment of a human being comprising a loose-fitting, body enveloping, baglike garment of a flexible, nonporous material closed at the bottom end, the other end, which is open, terminating in a neckband, which is preferably adjustable. A conduit is connected to the closed end of the garment for the supply of hot dry air to the interior of the suit. Apertures are punched in the garment in positions remote from the conduit connection for the escape of hot air. The garment may optionally have arms with adjustable cuffs and in which case the apertures are located adjacent the cuffs.

3,610,252
APPARATUS FOR MEASURING QUANTITIES OF GRANULAR MATERIAL SUCH AS CORN GRAINS OR SIMILAR CROPS
 Frans J. De Coene, Zedelgem, and Daniel C. C. Dewaele, Beselare, both of Belgium, assignors to Clayson N. V., Zedelgem, Belgium
 Filed Dec. 2, 1968, Ser. No. 780,489
 Claims priority, application Belgium, Dec. 5, 1967, 47,468
 Int. Cl. A01f 12/00
 U.S. Cl. 130—24

2 Claims

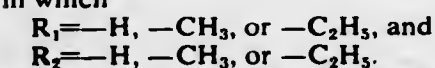


This invention relates to an apparatus for measuring quantities of granular material, more especially corn, small grains or similar crops, consisting of letting the grains beat against a diaphragm or vibrating plate, whereby the mechanical impulses thus obtained are converted into electric impulses or vibrations, which are subsequently fed into a measuring or counting device.

3,610,253
TREATING TOBACCO
 Georg Neurath, Hamburg; Michael Dunger, Hamburg, and Herbert Wichern, Halstenbek, all of Germany, assignors to H.F. & Ph. F. Reemtsma, Hamburg, Germany
 Filed Feb. 20, 1969, Ser. No. 801,155
 Claims priority, application Germany, Feb. 23, 1968, P 16 92 949.0
 Int. Cl. A24b 3/12, 15/04
 U.S. Cl. 131—17

10 Claims

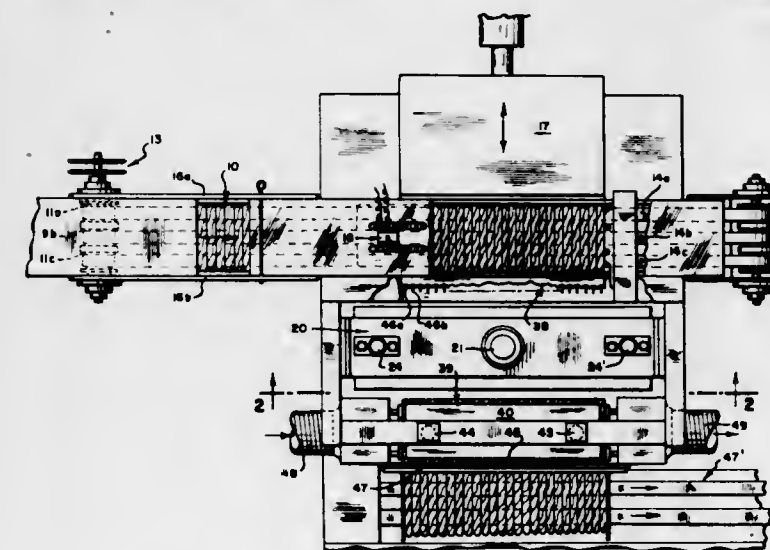
Tobacco is treated with a compound of the following general formula



The tobacco smoke is thus aromatized in a controlled manner and an intensified total flavor impression is obtained.

3,610,254
CIGAR-PRESSING METHOD
 Patrick W. Shellenberg; Edward W. Reed, and James L. McLaughlin, all of Richmond, Va., assignors to The American Tobacco Company, New York, N.Y.
 Filed June 18, 1969, Ser. No. 834,414
 Int. Cl. A24c 1/18, 1/32, 1/44
 U.S. Cl. 131—79

2 Claims

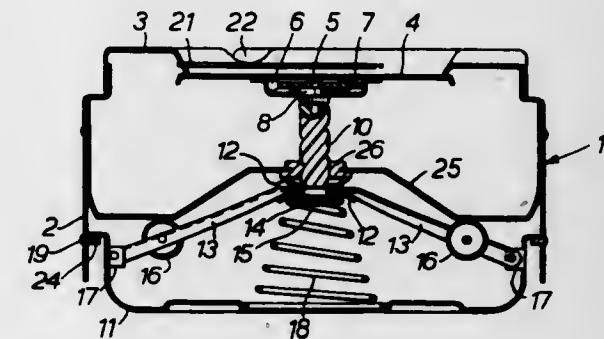


A method for selecting a predetermined quantity of cigars from a moving production belt, moving the cigars as a body

into a press and applying therein sequentially lateral pressure and vertical pressure accompanied by heat and, thereafter, moving the pressed cigars into an accumulator for a predetermined period while simultaneously piercing the ends, while like quantities of cigars are simultaneously removed from the accumulator.

3,610,255
SMOKERS' ASHTRAYS
 Wing G. Cheng, Kowloon, Hong Kong, assignor to Meyer Manufacturing Company Limited, Kowloon, Hong Kong
 Filed Oct. 7, 1969, Ser. No. 864,341
 Claims priority, application Great Britain, Oct. 11, 1968, 48371/68
 Int. Cl. A24f 19/04
 U.S. Cl. 131—242

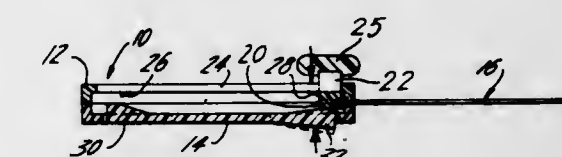
7 Claims



A smokers' ashtray of the centrifugal disc type, includes a bowl made in upper and lower parts which are telescopically movable relative to one another, and a centrifugal disc which is operated by the closing together of the two parts of the bowl telescopically. The upper part has an upper flanged portion that is centrally apertured and a helical screw vertically disposed therein. A system of levers and rollers engage the lower surface of the upper part such that the telescoping motion of the parts depresses the centrifugal disc below the flange to expose the aperture as the disc is rotated to cause debris thereon to be deposited within the tray. The disc is mounted on an overriding clutch so as to be able to spin relatively freely after the execution of the telescoping motion.

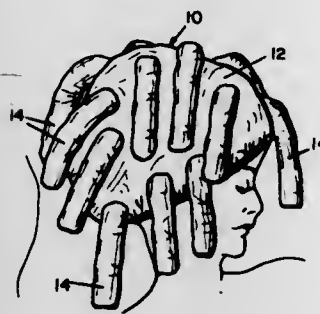
3,610,256
RETRACTABLE HAIR LIFT
 Abraham Sidelman, Manchester, Ga., assignor to H. Goodman & Sons Inc., Kearny, N.J.
 Filed June 11, 1969, Ser. No. 832,122
 Int. Cl. A45d 24/00
 U.S. Cl. 132—9

6 Claims



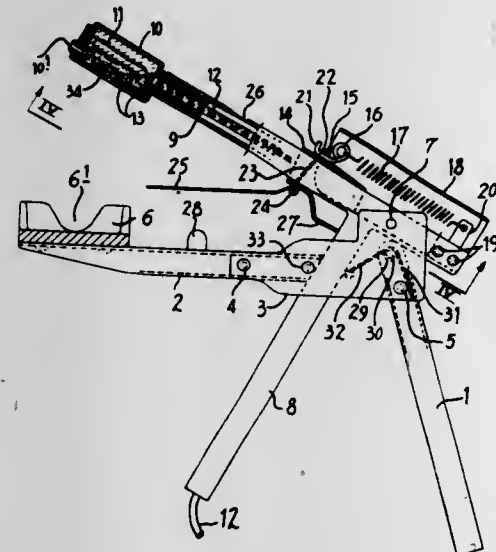
The disclosed retractable hair lift has a hollow case serving to contain a long-toothed hair lift member when retracted and serving as a handle when the long teeth are projected. A finger piece extends from the hair lift member through a first wall of the case for sliding the hair lift member to either desired position. The first wall also has detents near the opposite ends of the case, to arrest the hair lift member in either extreme position, and the opposite wall has integral spring tongues to render the detents effective. The spring tongue can be squeezed for gripping the movable hair lift member when firm control is wanted. The hair lift is slim and compact since its top-to-bottom dimension is a minimum.

3,610,257
DEVICES FOR STREAKING HAIR
 William A. Hall, R.F.D. 200, Greenbriar Ave., Ormond Beach, Fla.
 Filed Oct. 24, 1969, Ser. No. 869,022
 Int. Cl. A45d 1/00
 U.S. Cl. 132-9



A cap, positionable on the head to cover the hair, is provided on the outside thereof with a plurality of open-ended flexible tubular members into which hanks of hair are drawn. Inner ends of the members adjacent the cap are then closed around the hanks of hair and a treating solution is introduced into the members through the outer ends thereof, after which the outer ends are closed off and the solution is permitted to treat the hanks of hair in the tubular members.

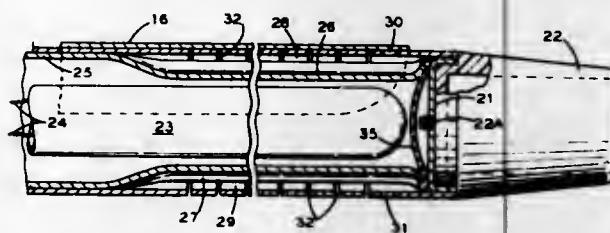
3,610,258
APPARATUS FOR TREATING HAIR TO PRODUCE FLAT CURLS
 Jean Francois Van Droogenbroeck, 88 Ave. Louise, Brussels, Belgium
 Filed Feb. 20, 1969, Ser. No. 800,949
 Claims priority, application Belgium, Feb. 23, 1968, 711,176
 Int. Cl. A45d 2/36
 U.S. Cl. 132-31 R



An apparatus for treating hair to produce a flat curl comprises a cup-shaped member for receiving a manually preformed spiral curl of hair, a pressure member arranged for insertion into the cup-shaped member to subject the preformed curl to pressure, and operator means for moving one of said members relative to the other to apply and release said pressure. Means are provided for applying a rehydrating vapor into the cup-shaped member in direct contact with the preformed curl of hair to keep the curl in its normal hygrometric state while it is being subjected to said pressure.

1 Claim U.S. Cl. 132-37

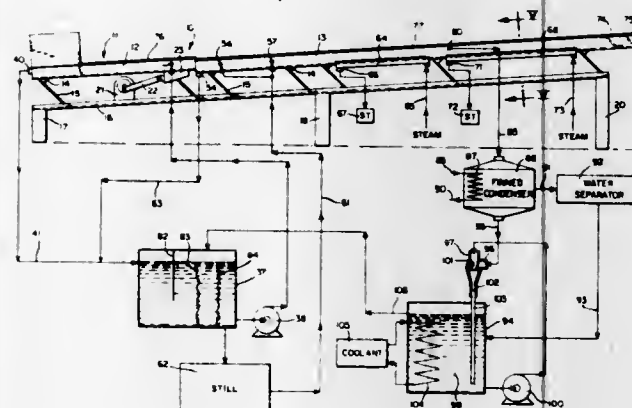
3,610,259
HAIR-CURLING IRON
 Lance Brown, Brooklyn, N.Y., assignor to Kenneth Boyar, Brooklyn, N.Y., a part interest
 Filed Feb. 27, 1970, Ser. No. 14,936
 Int. Cl. A45d 2/24



A hair curling and conditioning iron for heating the hair while applying vaporized treating fluid to the heated hair.

3 Claims

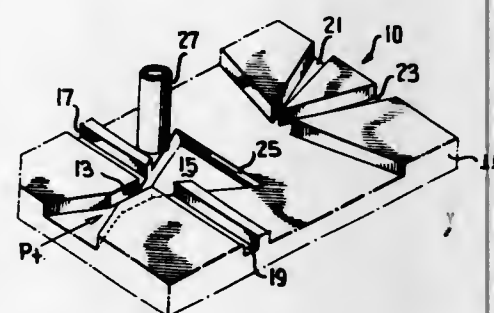
3,610,260
DEGREASING APPARATUS AND METHOD
 Thomas J. Kearney, Detroit, Mich., assignor to Detrex Chemical Industries Inc., Detroit, Mich.
 Filed Mar. 28, 1969, Ser. No. 811,458
 Int. Cl. B08b 3/10
 U.S. Cl. 134-12



An apparatus is provided for cleaning articles conveyed along a predetermined path, by bathing and rinsing the articles with a solvent, followed by a drying of the articles, with the solvent being recirculated for reuse, and with solvent particles that are evaporated during the drying operation being reclaimed for reuse.

27 Claims

3,610,261
METHOD AND APPARATUS FOR VARYING THE GAIN OF A FLUIDIC AMPLIFIER
 Robert F. Turek, Silver Spring, Md., assignor to Bowles Fluidics Corporation
 Filed June 27, 1969, Ser. No. 837,119
 Int. Cl. F15c 1/14
 U.S. Cl. 137-13

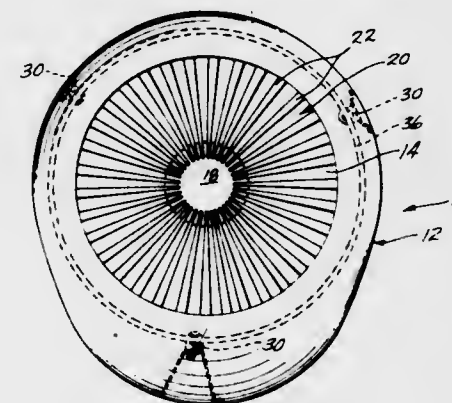


A variable gain fluidic amplifier of the stream interaction type employs an out-of-phase secondary control port for selectively modifying the power stream. In one embodiment

10 Claims

the power stream is selectively deflected out of the plane of the primary control ports to vary the proportion of power stream fluid receivable at the outlet passages. In another embodiment the power stream is selectively compressed or pinched against a cover plate whereby the configuration of the velocity profile of the power stream is controllably varied.

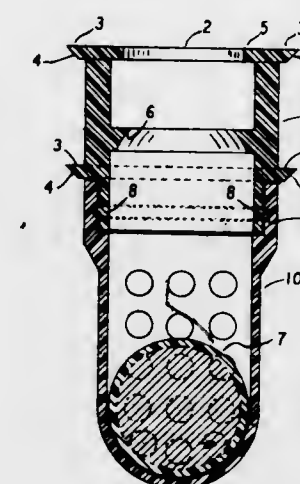
3,610,262
STOWABLE VANE SONIC THROAT INLET FOR JET AIRCRAFT NOISE SUPPRESSION
 William H. Wise, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
 Filed Oct. 7, 1969, Ser. No. 864,449
 Int. Cl. F02b 27/00; F02k 11/00
 U.S. Cl. 137-15.1



An apparatus to suppress fan or compressor noise emitted in a forward direction from the inlet of an airplane jet engine, particularly for approach mode operation of the airplane. There are in the engine inlet at a location forward of the compressor a set of vanes which are swing mounted in the inlet cowl wall. For low engine thrust values, the vanes are swung to a position where they extend radially inwardly in a plane generally transverse to the centerline axis of the inlet to provide a flow restriction in the inlet. This causes the air in the inlet to flow at, or nearly at, sonic velocity in the region of the vanes. For moderately high thrust settings and engine speeds where greater airflow through the inlet is required, the vanes are swung rearwardly to an angle which provides greater effective flow area through the inlet and maintains Mach 1.0 flow velocity in the vane region to achieve high noise attenuation. During airplane cruise operation, the vanes are swung into the inlet wall to provide a substantially settings engine inlet.

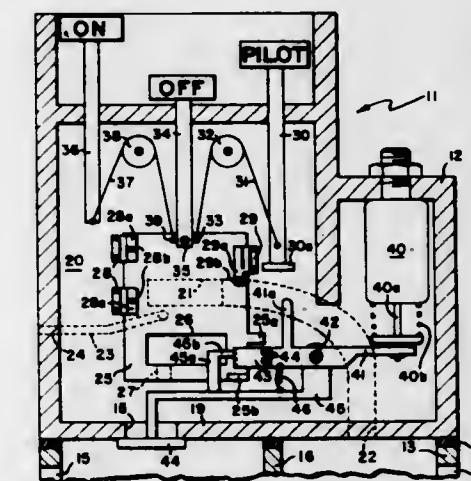
5 Claims

3,610,263
FUEL TANK SAFETY VALVE ASSEMBLY
 Gary Alan Walters, 2105 W. Broadway, Enid, Okla.
 Filed May 31, 1968, Ser. No. 733,572
 Int. Cl. F16k 17/36
 U.S. Cl. 137-43



An apparatus to prevent the discharge of fuel from the fuel reservoir inlet or filling spout of an overturned motor vehicle

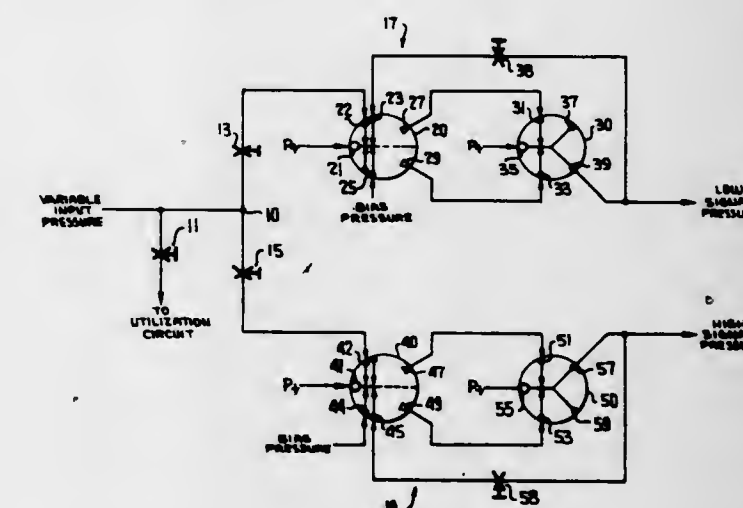
3,610,264
MANIFOLD VALVE
 Raymond P. Flagg, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
 Filed June 5, 1970, Ser. No. 43,869
 Int. Cl. F23n 5/10
 U.S. Cl. 137-66



A manifold gas valve including a partition wall having main gas and pilot gas passageways therein, a slidable control valve having a gas flow passageway therethrough and biased against said wall, and pushbuttons arranged and operably connected to the control valve so as to respectively move the control valve to one of its "pilot," "on" and "off" positions and simultaneously move the other pushbuttons to their retracted positions. The manifold valve also includes a biased closed safety valve, condition responsive means for holding the safety valve open, and a separable coupling between the condition responsive means and the safety valve. The safety valve is arranged to be actuated by the pushbutton for moving the control valve to its "pilot" position while the separable coupling between the safety valve and the condition responsive means is arranged to be actuated upon movement of the control valve to its "off" position.

6 Claims

3,610,265
FLUIDIC LIMITING NETWORK
 James P. McGuinness, Hyattsville, Md., assignor to Bowles Fluidics Corporation
 Filed Mar. 19, 1969, Ser. No. 808,457
 Int. Cl. F15c 1/12
 U.S. Cl. 137-81.5



A fluidic circuit is provided for indicating when a variable pressure signal exceeds either limit of a predetermined pres-

7 Claims

sure range. The variable pressure is compared with fixed bias pressures at each of two proportional fluidic amplifiers, the amplifiers in turn feeding respective bistable fluidic elements. If the variable pressure falls below the first bias pressure the first bistable element is switched and provides an output signal. Similarly the second bistable element is switched when the variable pressure exceeds the second bias pressure. Each bistable element feeds back a portion of its output signal to its respective proportional amplifier as an additional bias signal to minimize hysteresis effects in bistable element switching.

3,610,266

PRESSURE FLUID CONTROL DEVICE

August Rudie, Stuttgart-Bad Cannstatt, Germany, assignor to Bizerba-Werke Wilhelm Kraut KG., Wilhelm Kraut-Str., Balingen, Württemberg, Germany

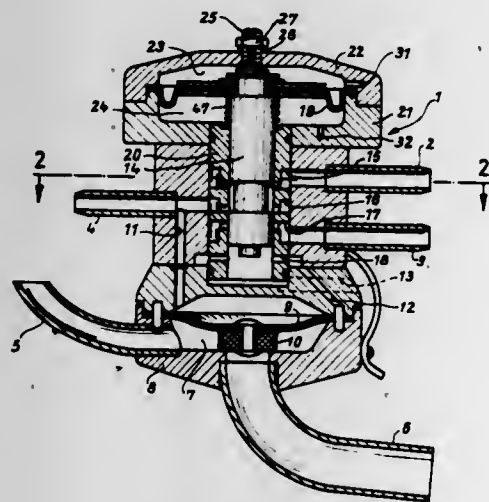
Filed Aug. 27, 1969, Ser. No. 853,364

Claims priority, application Germany, Aug. 29, 1968, P 17 82 418.9

Int. Cl. F15c 3/02, 3/04

U.S. Cl. 137—81.5

4 Claims



The fluid supplied to a double-acting pneumatically operated reciprocating element is led through a control device which includes a jet nozzle directing the pressure fluid alternatively to a pair of angularly related channels, and back pressure from reciprocating element is directed into the path of the jet stream to assist in guiding it into the proper channel.

3,610,267

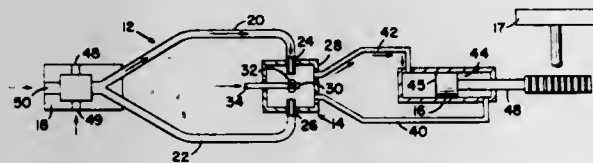
FLUIDIC ACTUATED FLAPPER DRIVEN JET PIPE SERVO VALVE FOR ATTITUDE CONTROL SYSTEMS
Carl H. Warren, New Hope, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 8, 1969, Ser. No. 883,081

Int. Cl. F15c 3/12

U.S. Cl. 137—81.5

2 Claims



Apparatus for utilizing low-energy gas flow from a fluid amplifier for directing in proportional manner, a high-energy output for driving a mechanism such as a piston-type actuator for moving jet vanes, or the like, for controlling the attitude of a rocket. A differential control flow from a fluid amplifier is impinged on opposite sides of a flapper for displacement thereof to proportionately open and close ports in the apparatus which direct a gas at high pressures to the piston actuated mechanism for controlling the attitude of the rocket.

3,610,268 LIQUID CHECK VALVE WITH CONTROLLED GAS VENT

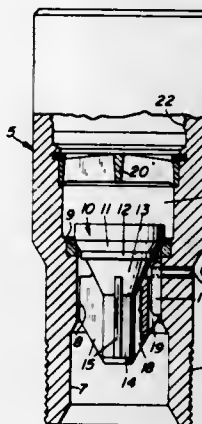
Armas Arutunoff, Bartlesville, Okla., assignor to Reda Pump Company, Bartlesville, Okla.

Filed Jan. 7, 1970, Ser. No. 1,225

Int. Cl. F16k 45/00

U.S. Cl. 137—119

4 Claims



A gas venting check valve assembly for connection between the discharge end of a submergible, centrifugal pump in an oil well and the inlet end of a delivery tubing, having a valve member which normally opens under the influence of the oil being pumped and seats under the weight of the column of pumped oil above the pump when the pump is stopped or when the gaseous content of the fluid being pumped is sufficient to prevent the maintenance of the necessary pressure to support the column of pumped oil. The valve housing is provided with a gas vent passageway below the valve seat which is closed by the valve proper when the latter is in open position and is opened to permit the venting of gas when the valve proper is seated.

3,610,269

PRESSURE GAUGE AND VALVE FOR A TIRE

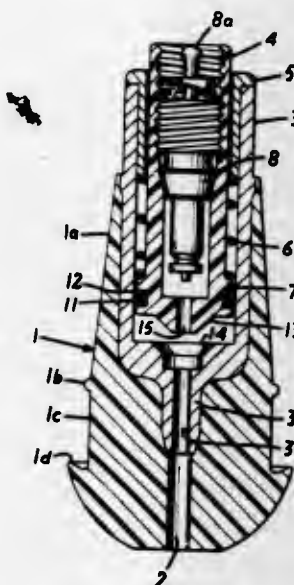
Donald L. Adams, Rolling Hills, Calif., assignor to Diamond-U Products, Inc., Long Beach, Calif.

Continuation of application Ser. No. 755,202, Aug. 26, 1968, now abandoned. This application Apr. 22, 1970, Ser. No. 28,286

Int. Cl. F16k 15/20

U.S. Cl. 137—227

1 Claim



A pressure gauge and valve for a tire which includes a housing adapted to be force fitted in the wall of a tire, an open receptacle in the outer end of the housing, a passage establishing communication through the housing between the tire and the receptacle, a spring-urged plunger accommodated for movement within the receptacle, the position thereof indicating the tire pressure, a valve through which

the tire is inflated accommodated within the plunger, and cooperating valve head and valve seat formations on the plunger and receptacle to form a seal when the tire pressure falls below a predetermined level.

3,610,270

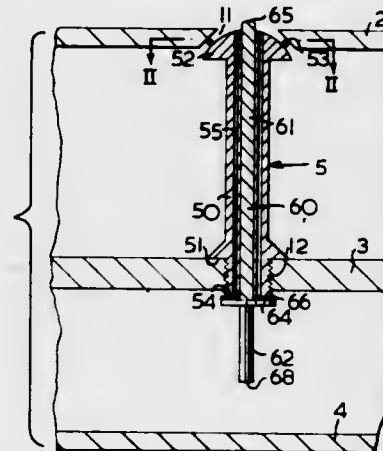
APPARATUS FOR COMBINED PRESSURE AND VACUUM SHOE DRYING AND CLEANING
George Attle, Pine Shores Road, Goulais River, Ontario, Canada

Filed Dec. 2, 1969, Ser. No. 881,508

Int. Cl. A47I 9/08; F16k 1/00

U.S. Cl. 137—362

10 Claims



There is disclosed a floor or pedestrian walkway comprising a multiplicity of valves which are depressed by the footwear of pedestrians whereupon high-pressure ambient or warmed air is directed to the underside of the footwear to remove dirt, snow, etc. Also provided is a source of suction in the vicinity of every valve to carry away the dislodged matter. Particularly, there is provided a novel valve which also serves to support the tread surface of the floor.

3,610,271

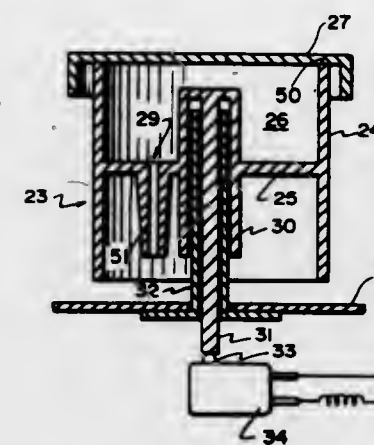
LIQUID LEVEL CONTROL
Wilbur W. Jarvis, Benton Harbor, Mich., assignor to Whirlpool Corporation

Filed Apr. 15, 1970, Ser. No. 28,650

Int. Cl. F16k 33/00

U.S. Cl. 137—412

8 Claims



A variable liquid level control apparatus for a liquid receiving device such as a dishwasher, laundry appliance or the like in which the flow of liquid into a liquid-receiving chamber is terminated by a float with the float having a plurality of buoyant compartments and a device for closing at least one of these compartments, as desired, to increase the buoyancy of the float with the resulting lowering of the terminating level of the liquid. Thus with all compartments closed the float has greater buoyancy with the result that only a relatively small amount of liquid is admitted to the liquid-receiving chamber while when at least one compartment is open to receive liquid from the chamber the buoyan-

cy is reduced so that a larger amount of liquid is admitted before the float terminates the supplying of the liquid.

3,610,272

VALVE BLOCK

Roger E. W. Manley, and Charles J. A. Wallington, both of Chesham, Buckinghamshire, England, assignors to Blease Medical Equipment Limited, Deansway, Chesham, Buckinghamshire, England

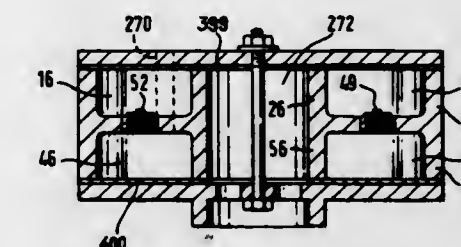
Filed July 3, 1969, Ser. No. 838,738

Claims priority, application Great Britain, July 5, 1968, 32258/68

Int. Cl. F16k 15/14

U.S. Cl. 137—512

3 Claims



A valve block particularly for a medical or surgical ventilating machine allows easy cleaning and sterilization. The valve block has several nonreturn valves whose valve members are coplanar. These valves separate chambers in the block arranged to overlap each other in a chosen configuration to facilitate a desired pattern of interconnection.

3,610,273

COMPRESSOR OR LIKE INTAKE VALVE

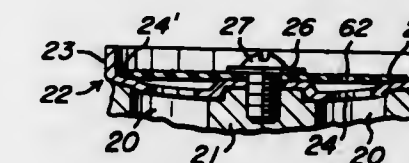
Linus E. Russell, Springfield, Ohio, assignor to Peters and Russell, Inc., Springfield, Ohio

Division of Ser. No. 602,058, Dec. 15, 1966, Pat. No. 3,462,073. Filed Mar. 13, 1969, Ser. No. 807,019

Int. Cl. F16k 15/14

U.S. Cl. 137—513.3

6 Claims



A valve unit having particularly advantageous application to air compressors or like structures characterized by a base element formed with relatively displaced portions to define substantially in one plane a plurality of apertures, the base element having centrally connected flexible flapper means. The connection of the flapper means to the base element is so designed that save for the center of the flapper means the remainder of the flapper means is free to normally adhere to the base element and seal the apertures.

3,610,274

FLUID LOGIC CIRCUIT

George Napoleon Levesque, Warwick, and Alfred Hirt, East Greenwich, both of R.I., assignors to Brown & Sharpe Manufacturing Company

Filed Oct. 8, 1969, Ser. No. 864,640

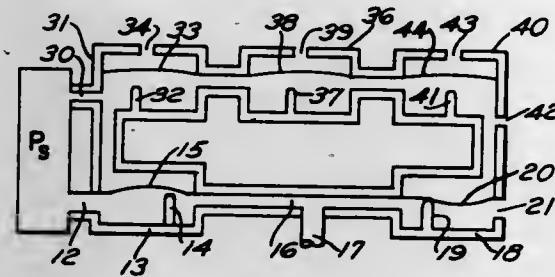
Int. Cl. F16k 37/00, 31/145

U.S. Cl. 137—559

1 Claim

A NOR fluid logic circuit mechanism comprising an arrangement of diaphragm-controlled valves which have three inputs and which has a single output. This provides effectively a three-input NOR logic element that is preferably made of two injection molded transparent plastic halves that are bonded to a flexible polyurethane membrane between them, the membrane acting as a valve that opens to permit or

closes to prevent the passage of air. The proper operation of the device can be seen visually since the area above the diaphragm in the chambers is visible to recognize the position of the device.



3,610,275

REMOVABLE DRAIN VALVE

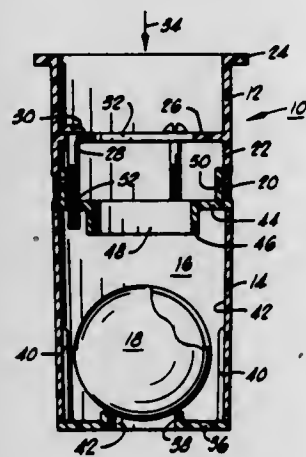
Thomas E. Determan, 7301 Norman Road, Oklahoma City, Okla., and David M. Scheirman, 3305 Windsor Blvd., Oklahoma City, Okla.

Filed May 4, 1970, Ser. No. 34,040

Int. Cl. F16k 31/18

U.S. Cl. 137-430

7 Claims



3,610,276

PRESSURE CONTROL VALVE

Herbert Seelman, Mainaschaff; Rudolf Mundkowski, Aschaffenburg, and Anton Wombacher, Goldbach, all of Germany, assigns to Linde Aktiengesellschaft Hildesheim, Wiesbaden, Germany

Filed Oct. 10, 1969, Ser. No. 865,386

Claims priority, application Germany, Oct. 14, 1968, P 18 03 018.7

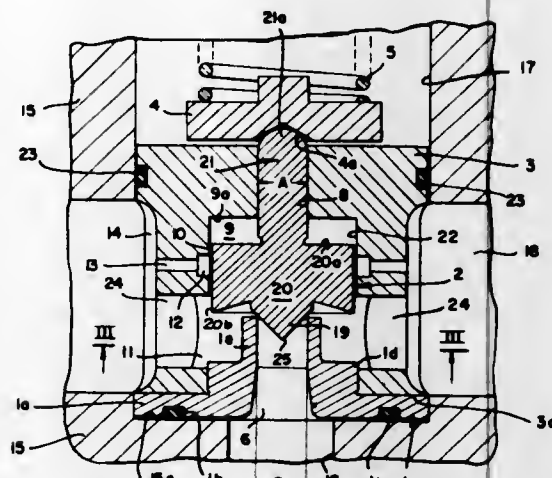
Int. Cl. F16k 15/00

U.S. Cl. 137-469

6 Claims

An automatic pressure control valve in which a valve member is spring biased against a valve seat at a source pressure. The valve member is formed as a plunger or piston and defines with a housing bore a motion-damping chamber connected with the outlet of the valve by a throttling clearance

permitting leakage of fluid to and from the outlet side. The face of the plunger confronting the valve seat is of forwardly



3,610,277

PRESSURE-ACTUATED FLOW REGULATOR

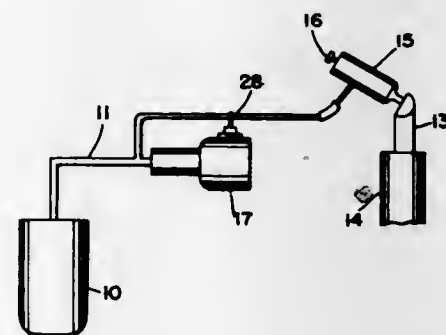
Clarence E. Smith, Jr., Johnsville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 20, 1969, Ser. No. 867,649

Int. Cl. F16k 31/12

U.S. Cl. 137-505.13

4 Claims



3,610,278

DEVICE FOR THE PRODUCTION OF A UNIFORM GAS PRESSURE

Friedrich-Wilhelm Hill, Hamburg, Germany, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Mar. 13, 1970, Ser. No. 19,218

Claims priority, application Germany, Mar. 14, 1969, P 19 13 013.3

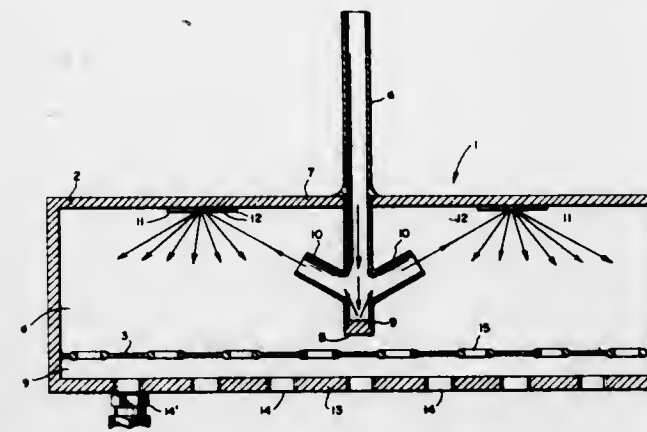
Int. Cl. F17d 1/10

U.S. Cl. 137-574

8 Claims

Device for the production of a uniform gas pressure for a plurality of pressure gas consumers. It comprises a tank divided by an intermediate wall into an equalizing chamber and a calming chamber. A gas inlet is attached to the equalizing chamber and it has a plugged tubular end a short distance away from the intermediate wall. The inlet is provided with several nozzles closely above the plug which nozzles direct

gas flow against impingement surfaces placed opposite the intermediate wall in the equalizing chamber. The intermediate



3,610,279

MIXING VALVE CONSTRUCTION, SYSTEM AND METHOD

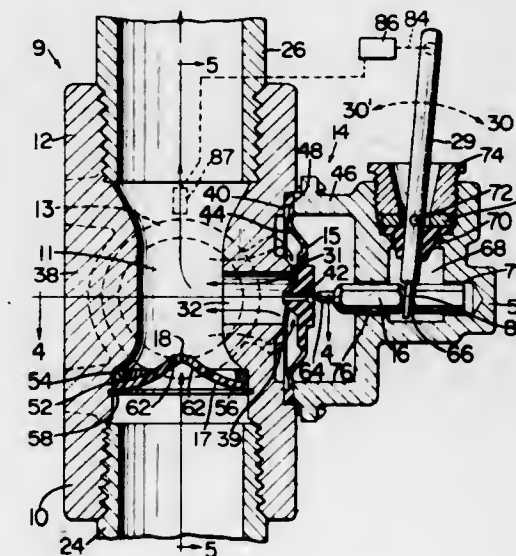
Harold A. McIntosh, South Pasadena, and Gordon K. Slocum, Downey, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation of application Ser. No. 716,557, Mar. 27, 1968, now abandoned. This application Feb. 26, 1970, Ser. No. 18,362

Int. Cl. F16k 19/00

U.S. Cl. 137-606

5 Claims



This application discloses a valve construction having a modulating pilot diaphragm fluid control which cooperates with an adjustable pilot which remains stationary after adjustment to control the flow of the fluid. This valve construction may be used in a construction having a hot water inlet, a cold water inlet, a mixing chamber connected to said cold water inlet and said hot water inlet, a hot and mixed water outlet connected to said mixing chamber, and a variable flow control construction controlling the flow of cold water from said cold water inlet to said mixing chamber. This variable flow control construction may be a modulating control construction, so that the water flow from the cold water inlet may be modulated to the desired volume to produce the desired mixture of hot and cold water at the mixed water outlet. Other fluids, instead of hot and cold water, may be controlled and mixed by the valve construction. More than two fluids may enter more than two inlets in the valve construction. A flexible variable orifice means may be used adjacent one or more of the inlets. The valve construction may be unitary or homogeneous, such as a casting.

3,610,280
METHOD CONTROLLING A WATER SUPPLY AND THE SWIVEL FAUCET

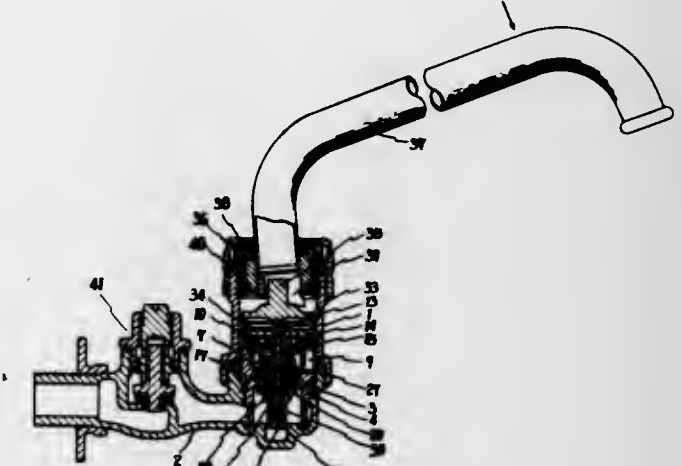
Yoshiki Kitamura, Yamagata-gun, Japan, assignor to Kitamura Gokin Industry Co., Ltd., Yamagata-gun, Gifu Prefecture, Japan

Filed Apr. 15, 1969, Ser. No. 816,262

Int. Cl. E03c 1/04; F16k 31/383

U.S. Cl. 137-616.5

2 Claims



This invention relates to an apparatus and method for controlling a water supply by means of vertical movements of a drain pipe, wherein a swivel faucet has a freely movable discharge pipe and further relates to the control of drainage and stoppage thereof by vertical movements of an open end of the drainpipe along a holding section provided at the upper part of the faucet body.

3,610,281

ROTARY CONTROL VALVE

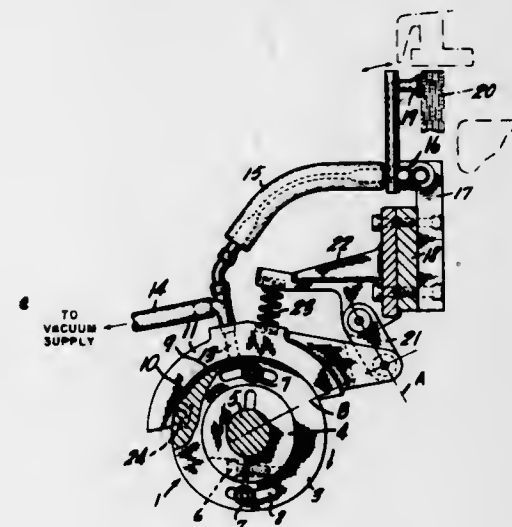
Warren D. Reinert, York, Pa., assignor to John C. Motter Printing Press Co., York, Pa.

Filed Oct. 1, 1969, Ser. No. 862,807

Int. Cl. F16k 5/00

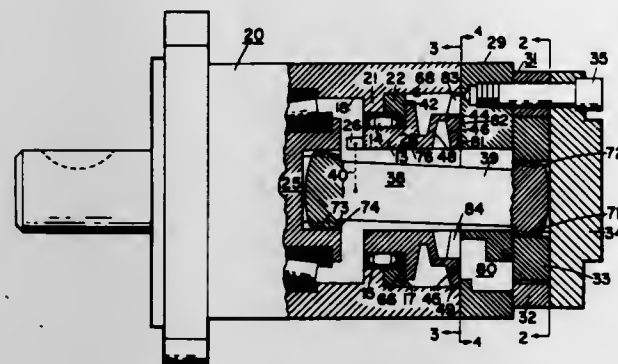
U.S. Cl. 137-624.15

9 Claims



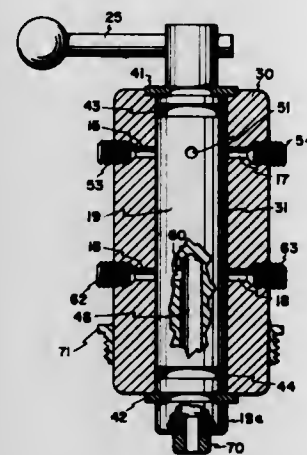
A rotary control valve which includes a rotatable valve body, a valve cap engageable with a portion of the outer periphery of the valve body as the valve body rotates and a channeled formation in the outer periphery of the rotatable valve body to establish communication between passages in the valve cap during part of the cycle of the valve body.

3,610,282
VALVING MEANS FOR FLUID PRESSURE OPERATING MEANS
 George V. Woodling, 22071 W. Lake Road, Rocky River, Ohio
 Division of Ser. No. 715,247, Mar. 22, 1968, Pat. No. 3,531,225.
 Filed June 26, 1970, Ser. No. 50,113
 Int. Cl. F16k 35/00, 11/02; F01c 1/10
 U.S. Cl. 137—625.21 18 Claims



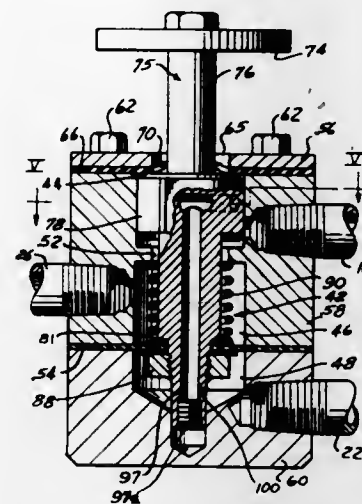
Stationary valve and rotary valve for fluid pressure operating means, in which the rotary valve has an external annular surface including at least first and second opposed external flanges defining an external fluid chamber extending therearound. The rotary valve also has an internal annular surface including at least third and fourth opposed internal flanges defining an internal fluid chamber. Said stationary valve and said rotary valve have fluid connection means extending therethrough for controlling the flow of fluid between said chambers and said fluid pressure operating means. Axial force means constrains said rotary valve against said stationary valve. The rotary valve has a radial clearance with the housing in which it is rotatably mounted and is independently mounted from the main shaft, whereby it is free from both the radial thrust and the end thrust to which the main shaft may be subjected.

3,610,283
FOUR-WAY HYDRAULIC VALVE
 George B. Hill, and Jacob D. Noorda, both of Salt Lake City, Utah, assignors to Brimco Manufacturing Company, Salt Lake City, Utah
 Filed Apr. 3, 1969, Ser. No. 813,012
 Int. Cl. F16k 11/02
 U.S. Cl. 137—625.23 7 Claims



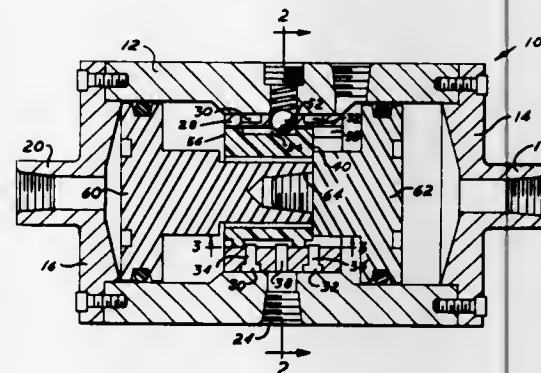
A valve for use in hydraulic systems is constructed with a body member and a stem member having corresponding lateral bores which may be brought into alignment or blocked in selected relationship by rotating the stem between two established positions to reverse the direction of flow in a pair of hydraulic lines. The stem is provided with a longitudinal exhaust bore thereby eliminating the need for milled grooves on the valve stem.

3,610,284
FLUID CONTROL DEVICE
 Larry K. Spencer, Dallas, Tex., assignor to Sigma Enterprises, Inc., Dallas, Tex.
 Filed Oct. 27, 1969, Ser. No. 869,681
 Int. Cl. F16k 17/00, 11/02
 U.S. Cl. 137—625.66 11 Claims



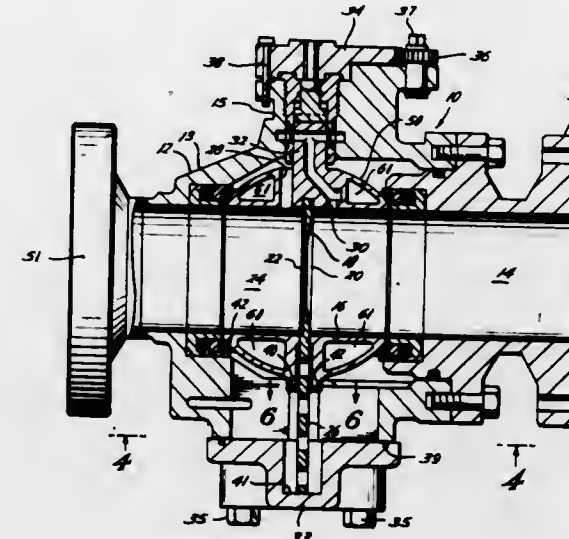
A fluid control device for use in a pressurized control system for shutting in a gas well automatically when pressure deviates from preset limits or for shutting in the well manually when desired. The control device comprises a body having a bore therein, said bore being divided into first, second and third chambers with an exhaust port in the first chamber. A pressure supply line is connected to the second chamber and an outlet is connected to the first chamber. A pilot pressure line, connected to the third chamber, is arranged to actuate a plunger through a diaphragm upon pressure deviation in a flow line. The plunger may also be actuated manually. When the exhaust port is closed the outlet is pressurized to maintain a valve in a flow line in an open position. When the exhaust port is open the outlet is connected to exhaust causing the valve in the flow line to be closed, thereby shutting in the well.

3,610,285
SLIDING VALVE
 Charles Passaggio, Cheshire, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
 Filed Dec. 11, 1969, Ser. No. 884,209
 Int. Cl. F16k 11/07
 U.S. Cl. 137—625.66 2 Claims



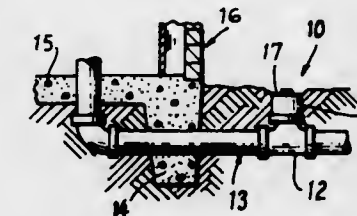
A sliding valve has a plastic valve element which has a working face, this face only engaging the housing adjacent the ports. The face of the element has legs extending longitudinally of the valve and nonaligned with the valve opening so that if tipping of the valve element occurs, it will not result in the catching of the leading edge of the valve element in the valve openings and the nonfunctioning of the valve.

3,610,286
ORIFICE VALVE ASSEMBLY
 Harold E. McGowen, Jr., and Howard M. King, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.
 Filed Oct. 27, 1969, Ser. No. 869,683
 Int. Cl. F15d 1/02
 U.S. Cl. 138—44 6 Claims



The improvement in an orifice valve assembly having a rotary plug valve carrying an orifice plate therein for use in a conduit for measuring the fluid flow therethrough by providing two stems integrally connected to the valve plug for preventing any floating action of the plug when operating under line pressure fluctuations. The second stem having an orifice plate slot extending axially and transversely entirely through the second stem with the body having a circular recess for receiving and supporting the second stem. The body including a groove of a width less than the diameter of the recess with the second stem including two flat parallel sides which when aligned with the groove allows insertion of the second stem into the recess with the flat sides being at an axial angle to both the valve plug open and close positions thereby providing bearing surfaces for the second stem in the recess. Four internal bypass openings in the valve plug extending from the upstream side to the downstream side of the valve when the orifice plate is aligned with the flow conduit.

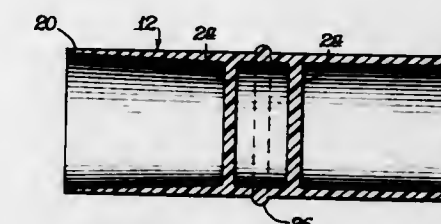
3,610,287
SAFETY CLEANOUT PLUG FOR SEWER SYSTEMS
 Lewis V. Allgood, Rte. 2, Box 76AA, Willis, Tex.
 Continuation-in-part of application Ser. No. 842,163, July 6, 1969, now abandoned. This application Mar. 3, 1970, Ser. No. 16,065
 Int. Cl. F16l 55/10
 U.S. Cl. 138—89 12 Claims



The disclosure shows a plug assembly in releasably latched position in a sewerage system internally threaded outlet fitting. The plug includes a float lifted by sewerage rise to bear against a resiliently suspended latch bar part in tangential contact therewith for the latch bar to release latch contact with hinged mechanism mounting opposed thread segments to retract these from engagement with the internal threads of the fitting, the hinged mechanism toggling upwardly. Further sewerage rise causes float to lift lid supporting hinged mechanism, thus to vent fitting. The float lid has a bleed hole therein to avoid pressure buildup thereunder; also

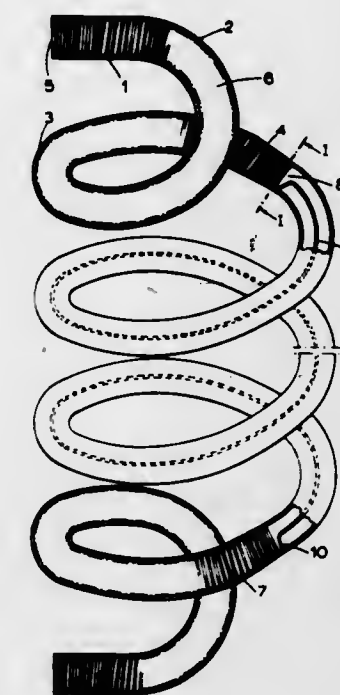
a gasket may be installed under the float lid to insure proper seating.

3,610,288
COMBINED PIPE CONNECTOR AND PIPE CAP
 Donald G. Carr, Franklin Park, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
 Filed Oct. 17, 1969, Ser. No. 867,288
 Int. Cl. B65d 59/00
 U.S. Cl. 138—96 R 9 Claims



A combination device for connecting together the adjacent ends of two pipes prior to passing the pipes through a pipe cleaning and/or coating process. At the completion of the coating process, the device is cut substantially in half to form a pair of removable protective pipe caps which are mounted on the ends of the newly coated pipe.

3,610,289
AIR LINE FITTED WITH INTERNAL COIL SPRINGS
 Trevor F. Moss, Tidal Waters, Noss Mayo, South Devon, England
 Filed Mar. 1, 1968, Ser. No. 709,773
 Claims priority, application Great Britain, Mar. 3, 1967, 10170/67
 Int. Cl. F16l 11/10
 U.S. Cl. 138—110 2 Claims



An extensible coiled air line is provided for use with articulated vehicles. The air line consists of a helically coiled tube of thermoplastics material in which metal coil springs extend partially along the air line from each end thereof. The purpose of the coil springs is to prevent kinking of the air line when the air line is subjected to large extensions. The coil springs are normally variable rate springs, for example, tapered over their inner end portions, in order to prevent weakness developing in the tube at the inner ends of the springs. In one arrangement the two coil springs are connected by a resilient wire which passes through the intervening coils of the tube.

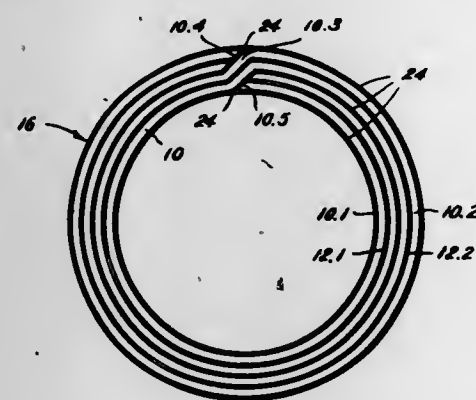
3,610,290 METAL LAMINATES AND TUBING EMBODYING SUCH LAMINATES

Ray B. Anderson, Attleboro, and Charles D. Turk, Norwood, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 22, 1968, Ser. No. 769,662
Int. Cl. F161 9/14

U.S. Cl. 138—143

15 Claims

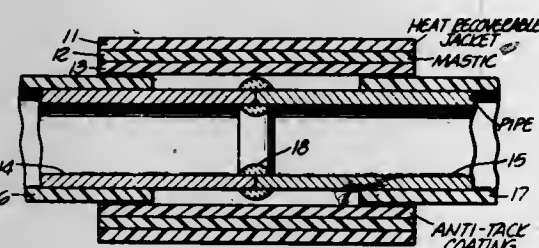


Novel and improved metal laminates characterized by low cost, good brazability, and easy formability preferably comparable to low carbon steel, and by high strength and desirable corrosion resistance properties are shown to comprise one or more thin inner layers of corrosion-resistant material of selected tensile strength, yield strength, elongation, and work-hardening properties sandwiched between and metallurgically bonded to relatively thicker outer layers of other less corrosion-resistant metals which are characterized by a relatively lower tensile and yield strengths and by a work-hardening rate at least as low as the metal of the inner layers. Other such laminates having additional outer claddings of solder or brazing materials metallurgically bonded thereto are also shown. In addition, novel and improved tubings are shown which embody such easily formed, corrosion-resistant laminates.

3,610,291
PROTECTIVE COVERING AND ARTICLE
William Rosse Heslop; Vincent L. Lanza, and Edward C. Stivers, all of Atherton, Calif., assignors to Raychem Corporation, Redwood City, Calif.
Division of Ser. No. 391,090, Aug. 21, 1964, Pat. No. 3,415,287.
Filed Dec. 8, 1968, Ser. No. 745,051
Int. Cl. F161 9/14

U.S. Cl. 138—146

6 Claims



The present invention relates to a means and process for protecting pipe and similar articles against corrosion and other damage by applying a protective coating thereto. The present invention relates to a means and process which are particularly suitable for protecting pipe joints and the like, but which have a wide variety of other applications.

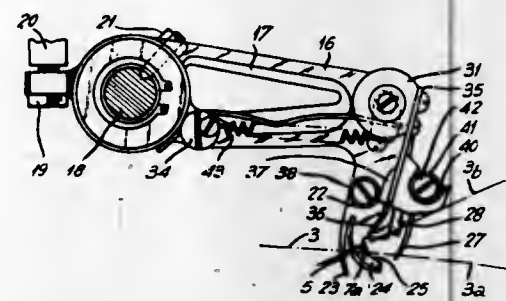
3,610,292
DEVICE TO FORM A CLOTH SELVAGE WITH TUCKED-IN FILLING ENDS ON A WEAVING MACHINE
Maurice Joseph Wasylevich, Bruyeres, France, assignor to Georg Flecher AG., Brugg, Switzerland
Filed Feb. 24, 1970, Ser. No. 13,579
Claims priority, application France, Feb. 28, 1969, 16226
Int. Cl. D03d 47/40

U.S. Cl. 139—122 R

3 Claims

This invention relates to a device to form a cloth selvage with tucked-in filling ends on a weaving machine with filling

yarn supply packages situated outside of the warp shed, a filling insertion member pulling the yarn from the supply package and inserting it into the shed in the form of a loop starting from the selvage and a cutting device being controlled synchronously with the filling insertion cycle for

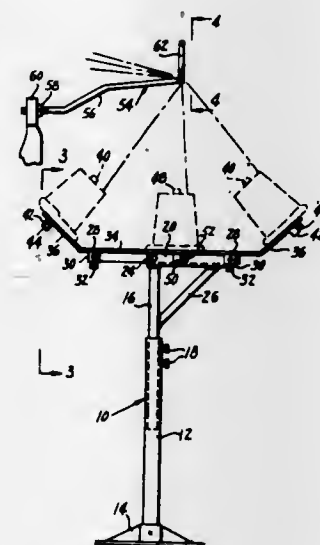


cutting the filling at a distance from the selvage inside of the warp shed. The cutting device itself is characterized by a first cutter half mounted fixed for rotation on an oscillating shaft borne parallel to the fell of the cloth, whereas the second cutter half of said cutting device is arranged in the same way but pivotable in relation to the first cutter half.

3,610,293
YARN SUPPLY STAND FOR LOOMS
Laudis-Phillips, Erwin, N.C.
Filed Sept. 15, 1969, Ser. No. 857,832
Int. Cl. D03d 47/00

U.S. Cl. 139—122 R

3 Claims



A stand is provided at the top thereof with spaced parallel bars, the ends of which are turned upwardly at an angle to support yarn spindles, and the opposite sides of the bars centrally thereof are adapted to support vertical yarn spindles so that as many as six spindles can simultaneously supply yarn through a yarn guide to the loom.

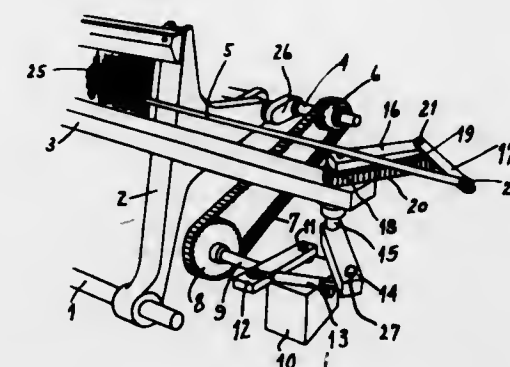
3,610,294
WEFT-INSERTING ROD DRIVE FOR SHUTTLELESS LOOMS
Heinz Maassen, Dulken, and Hans Dieter Galdies, Altenfurt, Nurnberg, both of Germany, assignors to Jean Gusken Maschinenfabrik-Eisen-gieserei, Dulken, Germany
Continuation-in-part of application Ser. No. 697,143, Jan. 11, 1968. This application May 19, 1969, Ser. No. 868,252
Claims priority, application Germany, Jan. 11, 1967, G48958
Int. Cl. D03d 47/12

U.S. Cl. 139—122

4 Claims

The weft-inserting rods of a shuttleless loom are driven rectilinearly by a crank arrangement including a cycloid gear to produce a variable-speed straight line drive. A drive gear on the loom shaft drives a gear train mounted on the loom frame and includes a shaft having a crank arm affixed thereon. The crank arm, through an adjustable link, drives a

crank arm fixed on a stub shaft mounted in the lay of the loom. As the last-named crank arm rotates, a gear fixed on the lay drives a further gear, by means of a toothed belt. The first gear is connected to a crank arm in which the second



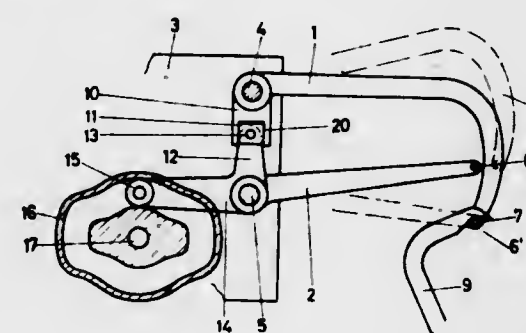
gear is rotatably mounted. A lever arm fixedly connected to the second gear is pivotally connected to the weft-inserting rod. The mechanism, beginning with the stub shaft mounted in the lay, partakes of motion of the lay.

3,610,295
FILLING MIXING MOTION FOR SHUTTLELESS RAPIER LOOMS
Paul Halmeler, Brugg, Switzerland, assignor to George Fischer Ltd., Brugg, Brugg, Aargau, Switzerland
Filed Dec. 19, 1969, Ser. No. 886,437
Claims priority, application Switzerland, May 8, 1969, 7030/69

U.S. Cl. 139—122

Int. Cl. D03d 47/38

2 Claims



This invention relates to a filling mixing motion for rapier-type shuttleless looms with two filling feeding fingers which alternately position one of two filling threads, leading from two supply packages outside of the warp shed to the cloth selvage to which they are connected, to a taking or pickup position where said filling thread is caught by a filling carrier.

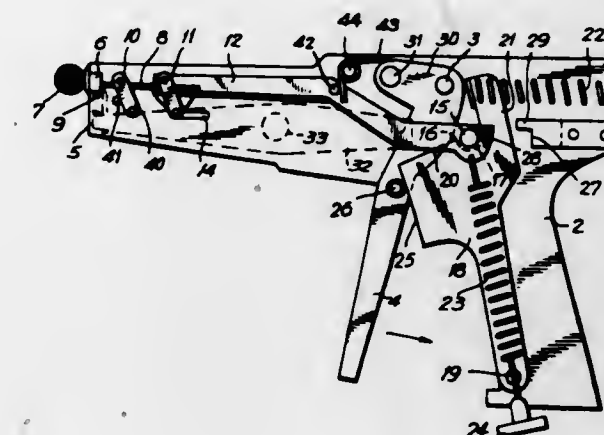
3,610,296
TOOL FOR TENSIONING A TAPE WRAPPED AROUND AN OBJECT AND FOR CONNECTING THE ENDS OF THE TAPE AND CUTTING OFF OF THE SURPLUS
Heinrich Kabel, Quickborn, Germany, assignor to Paul Helmermann GmbH, Hamburg, Germany
Filed Jan. 19, 1970, Ser. No. 3,829
Claims priority, application Germany, Apr. 17, 1969, P 19 19 472.0
Int. Cl. B21f 9/00

U.S. Cl. 140—93.2

10 Claims

A tool is provided for tensioning a tape around an object, for connecting the ends of the tape and for cutting off the surplus, and the tool comprises a pivotal handle engaging an element with a cutout which receives a pin on a drawing bar engaged with tape gripping and tensioning devices. An abutment limits displacement of the drawing bar so that as the handle is alternately squeezed and released, the drawing bar is reciprocated and the tape is tensioned by the gripping and tensioning devices. When the tape tension

reaches a predetermined value the pin on the drawing bar releases from the cutout under the tape tension and now the handle is free to undergo further unlimited travel to actu-

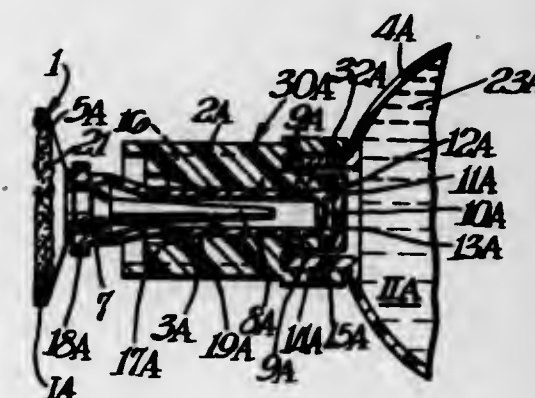


ate a locking device which connects the tape ends and thereafter a cutting device which severs the surplus tape beyond the connection.

3,610,297
DUAL-CHAMBER LIQUID EJECTOR AND FILLING CONNECTOR
Helmut W. Raaf, Karlsruhe-Waldstadt, and Lothar H. Happe, Karlsruhe-Surlach, both of Germany, assignors to Pfizer Inc., New York, N.Y.
Filed Aug. 26, 1969, Ser. No. 853,124
Claims priority, application Germany, Aug. 28, 1968, P 17 91 012.2
Int. Cl. A61j 1/00

U.S. Cl. 141—27

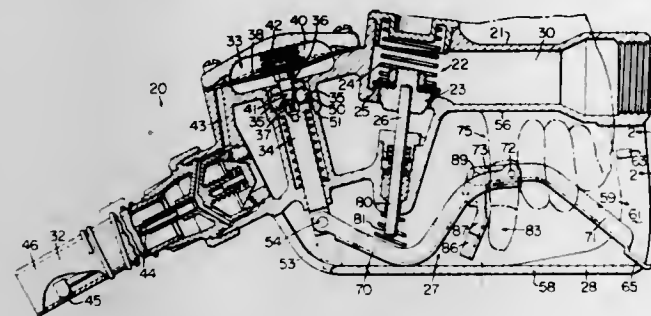
14 Claims



A dual-chamber liquid-injecting device includes a powder loaded piston-type syringe attached to a liquid container by a connecting member. The connecting member has an inner sleeve sliding within an outer sleeve with opposite ends of the sleeves coupling the neck of the container to the nozzle of the syringe. Ports on the inner sleeve are sealed within the outer sleeve in a preliminary extended position, and they are opened when the sleeves are pushed together or contracted to communicate the syringe with the container. The contents of the container are then drawn into the syringe. The connecting member is screwed to the neck of the container and attached to the nozzle of the syringe by a snap-fit connection on the inner sleeve. This facilitates ready detachment of the syringe from the connecting member and container for application. Locating stops for the different positions of the sleeves are provided by annular ridges between the sleeves or a cap on an internal boss within the outer sleeve, which also acts as a seal. The cap is automatically pushed off into the container when the connector is pushed together.

3,610,298
FLUID DISPENSING NOZZLE
 Chester W. Wood, Cincinnati, Ohio, assignor to Dover Corporation, Cincinnati, Ohio
 Continuation of application Ser. No. 712,213, Mar. 11, 1968, now abandoned. This application Mar. 2, 1970, Ser. No. 14,800
 Int. Cl. B67d 5/372
 U.S. Cl. 141—206

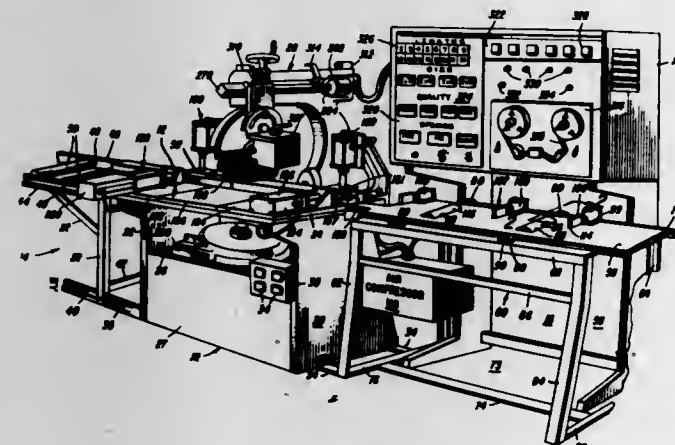
15 Claims



An automatic liquid level responsive dispensing nozzle of the type used to dispense gasoline. The nozzle is provided with a manually actuated handle which is used to initiate flow. The handle is formed from two sections which are pivotally connected to one another. The sections are further provided with an adjustable connecting means which changes the throw of the handle and thereby controls the extent to which the nozzle control valve may be opened.

3,610,299
AUTOMATED SAW
 John C. Jureit, Miami, Fla., and Lawrence A. Hoffman, Bowie, Md., assignors to Automated Building Components, Inc., Miami, Fla.
 Filed May 12, 1966, Ser. No. 549,624
 Int. Cl. B27b 5/20
 U.S. Cl. 143—6

50 Claims



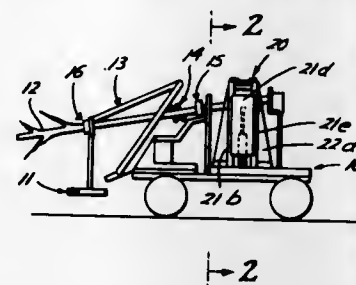
The automated saw has a saw table and saw superposed over the table for movement there across at selected angles. Board-length-positioning devices are spaced along the saw table. The variable angle saw and the variable-length-positioning devices are controlled by an input including predetermined numerical information. The saw is set up that single and double cuts can be made at opposite ends of the boards with the board length and saw angle positioning devices being automatically preset by the numerical information input.

3,610,300
LOG RECEIVER
 Cyrus E. Hoadley, Olla, La., and Robert E. Jones, Houston, Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
 Filed Mar. 9, 1970, Ser. No. 17,503
 Int. Cl. A01g 23/02
 U.S. Cl. 144—3 D

6 Claims

A tree-harvesting apparatus for processing trees. The apparatus moves trees through a buck shear which drops tree

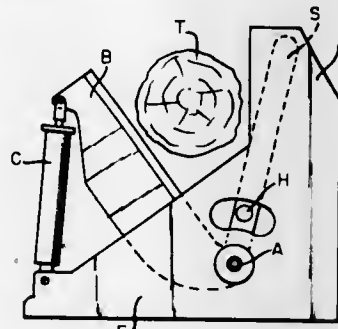
sections into a receiving and unloading means. The receiving and unloading means includes a depending pair of fingers held against spreading position by stops to receive sections of a tree. During the unloading of the tree sections the fingers



are moved to a position outboard of the vehicle and the fingers are moved relative to each other longitudinally of the fingers to release the stops and permit the fingers to spread and discharge the load.

3,610,301
TREE-FELLING DEVICE
 Bertram L. Jordan, Lewiston, N.C., assignor to Harrington Manufacturing Company, Inc., Lewiston, N.C.
 Filed Apr. 15, 1970, Ser. No. 28,660
 Int. Cl. A01g 23/02
 U.S. Cl. 144—34 E

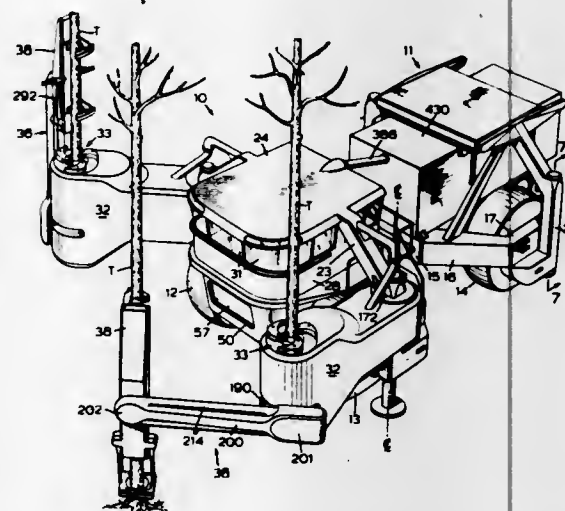
1 Claim



A tree-felling device employing a combination of a shear blade member and a saw chain member, said members acting in sequence upon opposite sides of a tree trunk in order to effect felling of the tree with a minimum of damage to the tree fibers.

3,610,302
IMPACT SHEAR DEVICE
 Bruce John McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc.
 Division of Ser. No. 572,530, Aug. 15, 1966, Pat. No. 3,533,458.
 Filed Aug. 5, 1970, Ser. No. 61,241
 Int. Cl. A01g 23/02
 U.S. Cl. 144—34 E

4 Claims

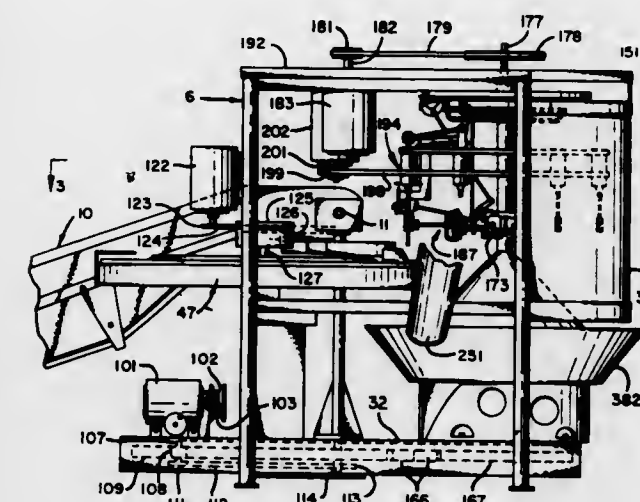


A shearing mechanism for a tree harvester having a pair of arms each carrying a weighted shear blade at one end and af-

fixed at the other end to each of a pair of parallel shafts supported by the harvester with the shafts being rotated in opposite directions to move the arms between a first position in which the shear blades face outwardly in opposite directions from upwardly extending arms and a second position in which the shear blades face inwardly adjacent each other in opposite directions from downwardly extending arms.

3,610,303
MACHINE FOR AUTOMATICALLY PEELING AND CORING APPLES FED FROM A BULK SUPPLY
 Malcolm W. Loveland, Orinda, and Robert G. Ellis, Richmond, both of Calif., assignors to Atlas Pacific Engineering Company
 Division of Ser. No. 629,600, Apr. 10, 1967, abandoned. Filed Sept. 26, 1969, Ser. No. 870,909
 Int. Cl. A23n 3/12
 U.S. Cl. 146—52

12 Claims

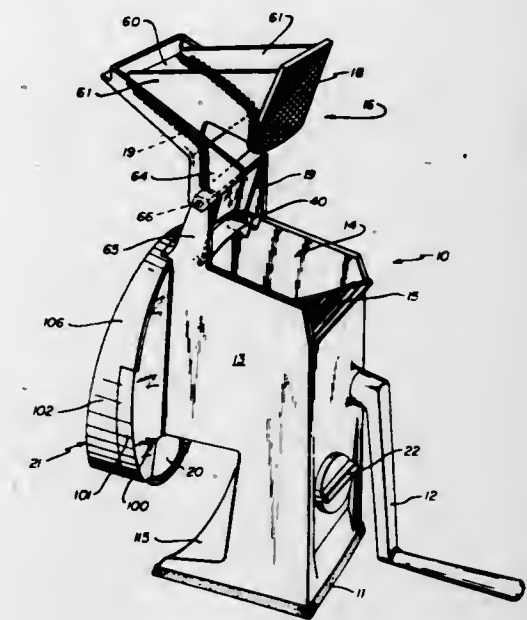


Apples are picked from a bulk supply and are fed continuously in single file order one at a time to the first of two orientors, the primary orientor. In the primary orientor, each apple is positioned with one of the two indents down and with its outer surface generally centered. The upper indent may or may not be in vertical alignment with the lower indent. The semioriented apples are then engaged by mechanism which engages both indents of the apple to refine the vertical alignment of the indents. Thereafter each properly oriented apple is moved into a peeling and coring mechanism wherein the skin and the core are removed and the indents are trimmed. Apples which are not fully oriented during the pickup are rejected before entering the peeling and coring sections. The peeling operation is particularly characterized in that each apple is peeled by one or more rotary cutters so that the peeling is effected very quickly.

3,610,304
FOOD-CUTTING MACHINE
 Samuel J. Popell, 179 E. Lake Shore Drive, Chicago, Ill., and Raymond Popell, 2970 N. Lake Shore Drive, Chicago, Ill.
 Filed Nov. 24, 1969, Ser. No. 879,098
 Int. Cl. A23n 15/00; B26d 4/24
 U.S. Cl. 146—113 B

46 Claims

A food-cutting machine for slicing and shredding foodstuffs with semiautomatic feed is disclosed in which a spring-loaded mechanism coacts with a pusher in a chute or hopper having a plurality of rollers on the bottom to feed foodstuffs into a manually rotated reversible cutting disc for slicing, shredding and comminuting foodstuffs. A bayonet fastener for the reversible cutting disc firmly supports the disc against the pressure of the spring-loaded pusher and hopper. The principal parts including the hopper and rollers, deflector, and discs are all removable without the use of independent fasteners, for quick assembly and disassembly as well as cleaning. Two reversible discs are provided which will per-



tion base with a stop limited knob is shown which limits actuating travel to 180°.

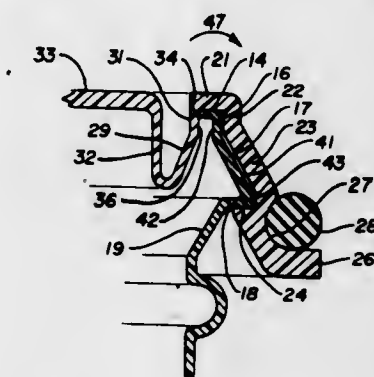
3,610,305
METHOD OF DEHULLING CEREAL GRAINS
 Mikio Suekane, Saltamaken; Fumiko Noguchi, Tokyo, and Chikako Satake, Tokyo, all of Japan, assignors to Best Foods Company Ltd.
 Filed Aug. 6, 1969, Ser. No. 848,076
 Int. Cl. B02b 3/12

7 Claims

A method of dehulling cereal grains without reducing their starch content or germination potential. The method consists in contacting the grains with sulfuric acid or hydrochloric acid for a sufficient time to effect decomposition of the hulls and release them from the remainder of the grain.

3,610,306
SNAP-ON RESEALABLE LID FOR LARGE-MOUTH CONTAINERS
 Kenneth L. Summers, Hudson, Ind., assignor to Rieke Corporation, Auburn, Ind.
 Filed Aug. 6, 1969, Ser. No. 847,920
 Int. Cl. H45c 1/00; B65d 1/00, 41/22
 U.S. Cl. 150—.5

13 Claims



A large-mouth container has an inwardly turned sealing lip at the mouth, and an outwardly projecting locking lip below the mouth. A plastic closure includes a ring skirt formed to provide a pair of channels, one receiving the sealing lip and the other receiving the locking lip. A compression ring around the exterior maintains adequate preload between the closure and container around the circle of engagement of the outward projecting lip and an inward projecting lip of the closure. The central top portion of the closure is joined to

the skirt by a flexible junction portion accommodating shocks and content expansion without release of the closure.

3,610,307

HOLLOW BODIES OF RUBBER AND RUBBERLIKE VULCANIZABLE SYNTHETIC MATERIALS

Karl Huff, Ahlem, Hannover; Heinz Moeller, Apelern, Wunstorf, and Rolf Krauss, Langenhagen, Hannover, all of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Division of Ser. No. 678,382, Oct. 26, 1967, Pat. No. 3,523,848.
Filed Oct. 31, 1969, Ser. No. 872,952
Int. Cl. A61f 7/04

U.S. Cl. 150-2.1

1 Claim



An improved hollow body of rubber material, especially warm water bottle, which is characterized in that its surface is of a textile material, as for instance, terry cloth.

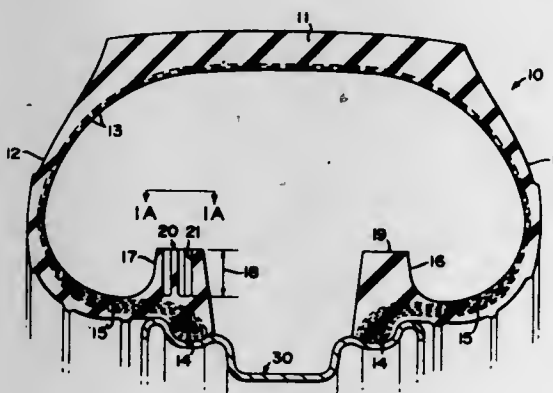
3,610,308

PNEUMATIC TIRE

Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Oct. 2, 1969, Ser. No. 863,090
Int. Cl. B60c 17/04

U.S. Cl. 152-158

17 Claims



This disclosure relates to a tire construction which gives an improvement in the run flat characteristics of the tire construction described and claimed in U.S. Pat. No. 3,392,772 and, therefore, an improvement in the safety features of the tire. This improved construction comprises locating an annular safety rib member radially outwardly of and in substantially the same radial plane as each bead and rim flange area in the tire described in U.S. Pat. No. 3,392,772; these safety rib ring members may be either cured integrally with the tire or may be cured as a separate ring and then cemented to the proper locations on the inner surface of the separately cured tire.

3,610,309
TIRES

Henry R. Fletcher, deceased, late of Ward End, Birmingham, England, by Agnes Marion Fletcher, legal representative, 219, Coleshill Road, Ward End, Birmingham 34, Warwickshire, England

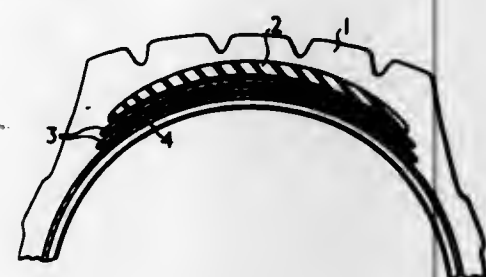
Filed June 17, 1969, Ser. No. 834,614

Claims priority, application Great Britain, June 22, 1968, 29880/68

Int. Cl. B60c 9/16

U.S. Cl. 152-210

2 Claims



A pneumatic tire having tread or sub-tread incorporating lengths of steel wires substantially shorter than thread width distributed throughout the depth and circumference of the tread, sub-tread or both, each wire having a diameter of substantially 0.003 of an inch or less.

3,610,310

PNEUMATIC VEHICLE TIRE, ESPECIALLY SPARE TIRE

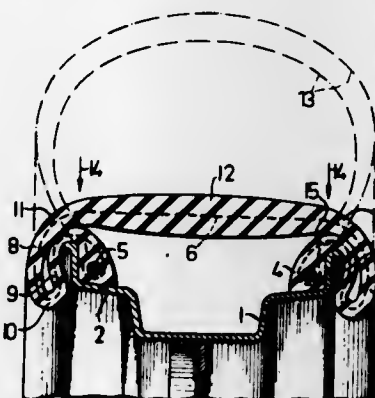
Hermann Wittneben, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Apr. 16, 1969, Ser. No. 816,522

Claims priority, application Germany, Apr. 27, 1968, P 17 55 335.4

Int. Cl. B60c 5/00

U.S. Cl. 152-352

4 Claims



A pneumatic vehicle tire, especially spare tire, which, when in deflated position on a wheel, has its sidewalls folded over the wheel flange so that the folded-over tire sidewall portion together with the adjacent bead portion will be U-shaped in cross section with the opening of the U directed toward the axis of rotation of said vehicle.

3,610,311

TIRE YARN METHOD

Frank Holmes Simons, Charlotte, N.C., assignor to Fiber Industries, Inc.

Filed May 26, 1971, Ser. No. 827,992

Int. Cl. D02g 3/48 3/36

U.S. Cl. 152-359

25 Claims

A method for reducing the strength loss and increasing hot elongation tolerance before break of a nylon tire cord which is subjected to an application of coating material during a hot stretching process, by applying to the tire cord a protective finish comprising an alkali metal soap of a fatty acid and an alkanolamine, particularly a lower trialkanolamine.

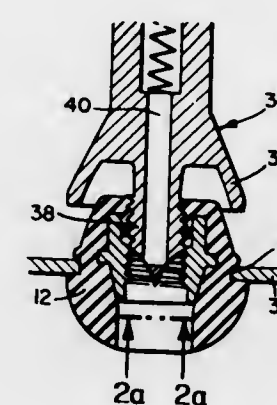
3,610,312

TUBELESS TIRE VALVE MEANS

Louis Edward Kilmarx, Dickson, Tenn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Division of Ser. No. 669,225, Sept. 20, 1967, Pat. No. 3,510,929.
Filed Dec. 10, 1969, Ser. No. 886,592
Int. Cl. B60c 29/00; B60b 25/22

U.S. Cl. 152-427

9 Claims



The tubeless tire is mounted on a rim in which the valve stem opening is blocked by obstruction means having any of various structures. The tire is filled "under the bead." Subsequently a selected valve stem is used to force the obstruction means to unblock the opening and is mounted in the opening in communication with the tire.

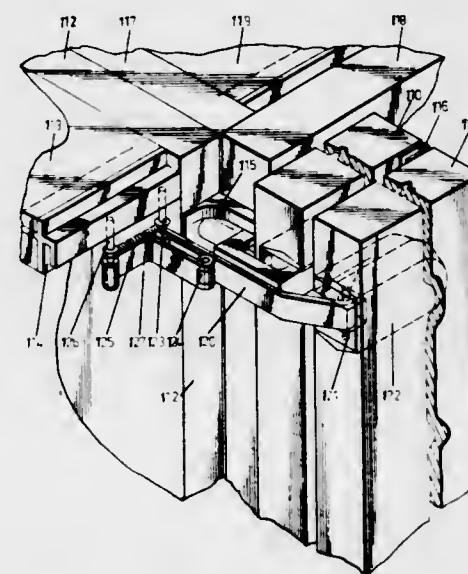
3,610,313

GUIDING BAND FOR FOLDING DOORS, PARTICULARLY OF FURNITURE BODIES

Horst Friedrich, Mannheimer Strasse 153,655 Bad Kreuznach, Germany
Filed Dec. 19, 1968, Ser. No. 785,208
Claims priority, application Germany, Dec. 19, 1967, Nov. 11, 1968, P 17 08 149.1; P 18 08 214.9
Int. Cl. E05d 15/26

U.S. Cl. 160-206

8 Claims



A holding device and driving band for folding doors particularly of furniture, closets and other structure. A door wing journaled to swing about a vertical axis has a lever carried pivotally along one side thereof. The lever has more than one arm portion optionally resiliently movable in longitudinal, bellcrank and triangular manner with respect to each other. Up to two pin members are carried by the arm portion arrangement and these pin members cooperate with a fixed guide track. A resilient means is optionally provided between an end stop of the guide track and one of the pin members.

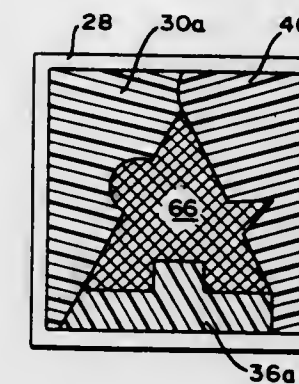
3,610,314

METHOD OF MAKING A SEGMENTAL METAL MOLD CAVITY

Frederick G. Hochgraf, Durham, N.H., assignor to Aaron J. Bronstein, Swampscott, Mass.
Filed Feb. 10, 1970, Ser. No. 10,263
Int. Cl. B22c 9/04

U.S. Cl. 164-27

19 Claims



A method of making a segmented negative mold cavity having the segments in precise registration. The segments are formed from investments prepared from a number of fusible wax negative models, these models all deriving their shapes from the pattern with substantially equal cumulative errors. Equalization of errors in the models is achieved by the use of plural preliminary negative impressions formed in a flowable, hardenable material having minimal or negligible shrinkage upon hardening.

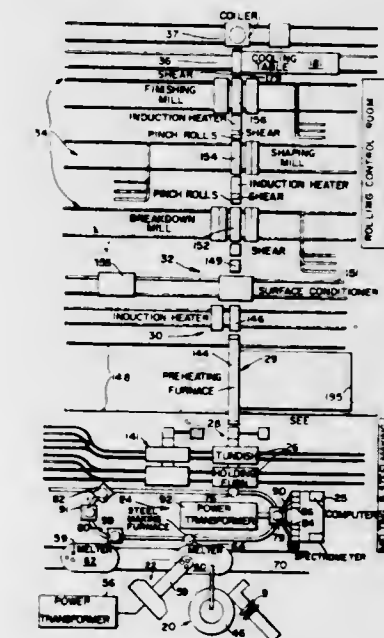
3,610,315

CONTINUOUS STEELMAKING SYSTEM AND PROCESS

Walter M. Juergens, Dover, and Oleg Svetlichny, Chelmsford, both of Mass., assignors to Urban Reclamation Technologies, Inc., Dover, Mass.
Filed Oct. 9, 1969, Ser. No. 864,981
Int. Cl. B22d 47/00

U.S. Cl. 164-76

20 Claims



A continuous Steelmaking system and process involves supplying iron base solids, removing nonferrous metals therefrom, delivering said iron base solids to a continuous electric melter for conversion to an iron base melt, successively transferring increments of said iron base melt to a series of discrete vessels, successively adjusting the chemical components and thermal energies of said iron base melt increments in said series of discrete vessels to produce steel melt increments meeting predetermined specifications, successively combining said steel melt increments to produce a steel melt composite, continuously casting said steel melt composite to form a continuous billet, and continuously con-

ditioning and working said continuous billet on line to produce a finished steel shape.

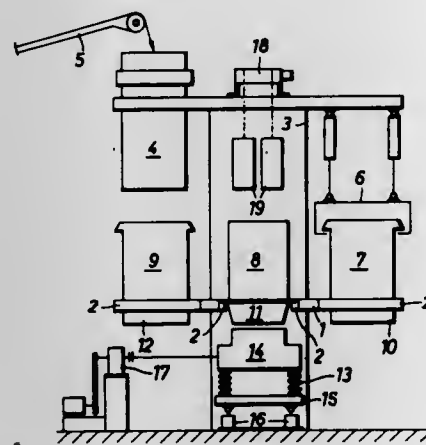
3,610,316

ROTARY TABLE JARRING APPARATUS FOR PRODUCING LARGE MOLDED CARBON BODIES
Otto Engel, Cologne, Sulz; Jakob Engelmann, Cologne, Mulheim, and Kurt Wilkens, Porz-Ell, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Deutz, Germany

Filed June 20, 1969, Ser. No. 835,069
Claims priority, application Germany, July 12, 1968, P 17 84 164.4

Int. Cl. B22c 15/10
U.S. Cl. 164—203

3 Claims



A jarring apparatus used for producing large molded carbon electrodes is provided with a rotary table which is rotated step by step to move mold boxes on the table from a point of filling them with a mass to be molded to a jarring point, and then to discharge point for the molded electrodes. At the jarring point is arranged a yieldably supported jarring table containing a driven jar-producing mechanism to operate the jarring table which by hydraulic means is raised to engage the mold boxes to be jarred to such a high level, that during the jarring operation, the mold is lifted from the rotary table. After the jarring operation, the jarring table is lowered and the mold boxes are again placed on the rotary table which moves the boxes with the electrodes therein to the electrode discharge point.

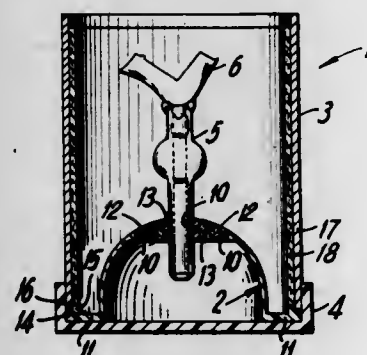
3,610,317

CRUCIBLE FORMER
James W. Benfield, 43 Westport Road, Milton, Conn., and Charles Blechner, 166-25 Powells Cove Blvd., Beechhurst, N.Y.

Filed Apr. 11, 1969, Ser. No. 815,293
Int. Cl. B22c 7/02

U.S. Cl. 164—238

4 Claims



A crucible former for use in the production of metal castings by the "lost wax" process, which is formed of a thermoplastic material which volatilizes below the mold temperature for making the casting. A flange extends circumferentially about the bottom of the crucible former and interlocks with the bottom of the casting ring. A plurality of sprue

pin apertures located symmetrically about the apex of the crucible former mount the sprue pins by means of a friction fit.

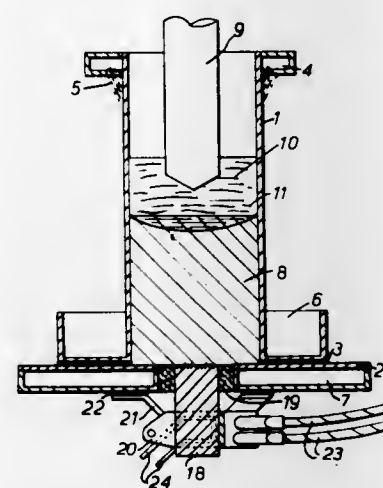
3,610,318

ELECTROSLAG INGOT PRODUCTION
Adrian Paul Simmons, Lichfield, England, assignor to Associated Electrical Industries Limited, London, England
Filed Jan. 30, 1968, Ser. No. 701,723

Claims priority, application Great Britain, Aug. 23, 1967, 38887/67

Int. Cl. B22d 27/02
U.S. Cl. 164—252

6 Claims



The electroslag process of ingot production in a mold is improved by providing bottom contact to the forming ingot by means of a stub or spigot which is electrically insulated from the mold base and also has electrical connection made to it in a manner electrically insulated from the mold base.

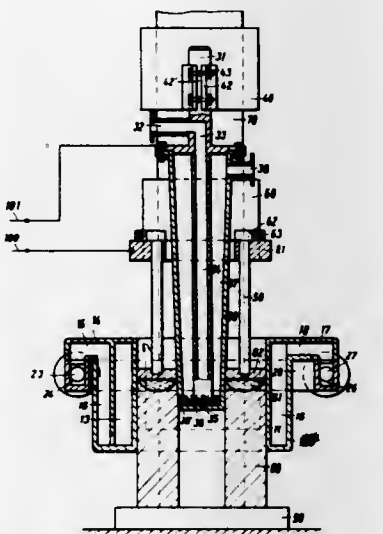
3,610,319

APPARATUS FOR THE PRODUCTION OF HOLLOW INGOTS OF METAL BY ELECTRIC SLAG REFINING
Otmar Kleinhagauer, and Wolfgang Holzgruber, both of Kapfenberg, Austria, assignors to Gebr. Bohler & Co., Kapfenberg, Austria

Filed Feb. 5, 1969, Ser. No. 796,772
Claims priority, application Austria, Feb. 12, 1968, A 1272/68

Int. Cl. B22d 27/02
U.S. Cl. 164—252

3 Claims



In an electric slag-refining arrangement a system for cooling a mold with liquid. An electric power source is connected in circuit with said mold and with fusible electrode means and is operable to cause said electrode means to fuse down. A core extends into said mold at least partly the length of the core and defines within said mold an annular molding cavity, which receives said electrode means.

3,610,320

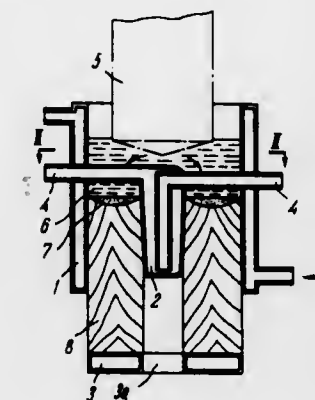
UNIT FOR MANUFACTURING HOLLOW METAL INGOTS

Boris Izrallevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Leonty Vasilievich Chekotlo, ulitsa Scherbakova, 49a, kv. 10; Rudolf Solomonovich Dubinsky, Brest-Litovskiy prospekt, 11, kv. 15; Viktor Leonidovich Artamonov, ulitsa Sovetskaya, 9, kv. 4, and Leonid Viktorovich Pavlov, ulitsa Kartvelishvili, 5, kv. 331, all of Kiev, U.S.S.R.

Filed Oct. 31, 1969, Ser. No. 872,871
Claims priority, application U.S.S.R., Nov. 11, 1968, 1283250

Int. Cl. B22d 27/02
U.S. Cl. 164—252

1 Claim



The proposed unit is intended for manufacturing metal hollow ingots by the electroslag remelting of a consumable electrode in a cooled mold.

3,610,321

STARTER BAR FOR A CONTINUOUS CASTING PLANT
Georgy Lukich Khimich, ul. Lenina, 53, kv. 92; Vitaly Maximovich Niskovskikh, ul. Festivalnaya, 21, kv. 60, and Boris Yakovlevich Orlov, ul. Krasnykh partizan, 3, kv. 4, all of Sverdlovsk, U.S.S.R.

Continuation-in-part of application Ser. No. 619,403, Feb. 28, 1967, now abandoned. This application Jan. 20, 1970, Ser. No. 4,260

Int. Cl. B22d 11/08
U.S. Cl. 164—274

6 Claims



A starter bar for a continuous casting plant in which the body of the bar is provided with grooves or recesses in which resilient means are positioned for forcing friction or gripper plates beyond the surface of the starter bar and the plates and the surface of the starter bar body opposite the plates may be coated with a material of a higher coefficient of friction than the coefficient of friction of the material of the starter bar. The resilient means acting on the plate develops a force which ensures friction between the plates and the body of the bar and the pulling device respectively which will exceed the force of resistance to the "pulling out" of an ingot from the mold.

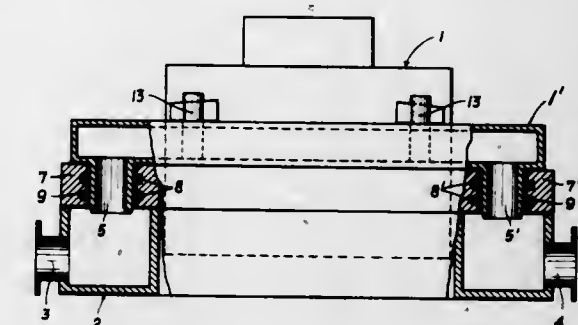
3,610,322

WATER-COOLED CONTINUOUS CASTING MOULD
Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed May 21, 1970, Ser. No. 39,458
Claims priority, application Austria, May 30, 1969, A5141/69

Int. Cl. B22d 11/12
U.S. Cl. 164—283

2 Claims



The invention starts from a water-cooled continuous casting mould with a water-cooled carrying frame and provides that the mould is stationarily surrounded by a hollow ring having a box-type profile which is connectable with the carrying frame by means of a plurality of rapid connections for the formation of a common carrying frame-mould cooling system, the rapid connections being formed by hollow pins engaging with bushings of the carrying frame, and sealing rings being provided in annular recesses of the bushings. This plug-in connection for the common cooling water system makes it possible to exchange the casting mould within a few minutes.

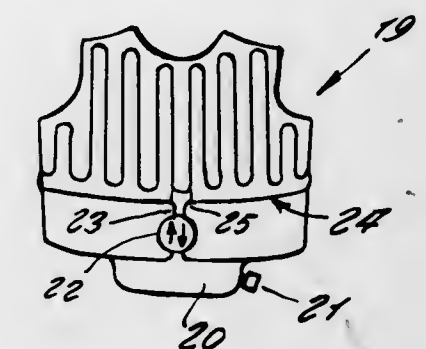
3,610,323

COOL COAT

Dan E. Troyer, Rte. 2, Box 53, Fredericksburg, Ohio
Filed Oct. 20, 1969, Ser. No. 867,667

Int. Cl. F28f 7/00
U.S. Cl. 165—46

1 Claim



A thermal coat or garment for maintaining a person comfortably cool, the garment comprising an article of clothing having a tube, the tubular network comprising a passage containing water and other chemicals such as Freon used in refrigerator mechanisms, and the tubes having capillary openings through the wall thereof so to permit the tube to evaporate outwardly, the evaporating operation creating a cooling effect to a wearer.

3,610,324

AIR COOLER APPARATUS

Eugene M. Davidson, and Ira C. Brackett, Jr., both of Houston, Tex., assignors to Hudson Products Corporation, Houston, Tex.

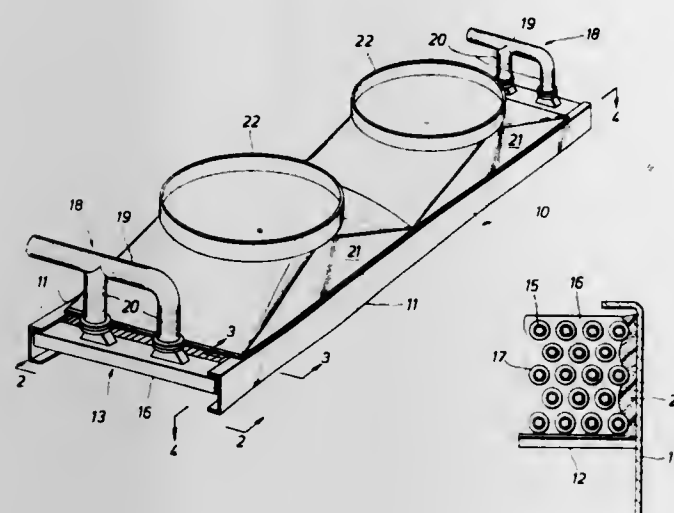
Filed Oct. 15, 1969, Ser. No. 866,643
Int. Cl. F28f 7/00

U.S. Cl. 165—69

7 Claims

Air cooler apparatus comprising a framework and a bundle of finned tubes supported on and extending longitudinally of

the framework for shifting laterally with respect to longitudinally extending members of the framework at each side of the bundle. A strip of resilient foam material extends longitudinally



dinally between the inner side of each frame member and the adjacent outer side of the tube bundle so as to substantially close the space between the outermost tubes and the frame member.

3,610,325

HEAT EXCHANGE APPARATUS

Charles M. B. Russell, Wolverton, and John J. Kelly, Hornchurch, both of England, assignors to The Lummus Company, Bloomfield, N.J.

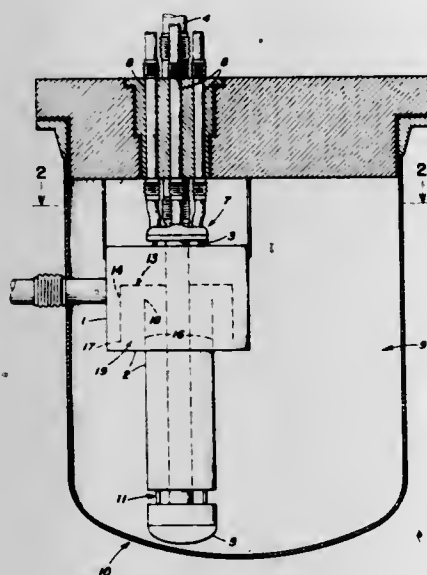
Filed Oct. 3, 1968, Ser. No. 764,848

Claims priority, application Great Britain, Oct. 5, 1967, 45556/67

Int. Cl. F28d 3/02

U.S. Cl. 165-74

7 Claims



Heat exchange apparatus for use with an atomic reactor the core of which is cooled by a primary stream of liquid metal circulated through it. The primary stream is passed through an outer container to an inner one and is heat exchanged with a secondary liquid metal circulated through a tube-type heat exchanger housed within the inner container. An atmosphere of gas lies on top of the primary liquid surface in the outer container. The problem of vortex formation on the surface of the primary liquid is avoided by providing a series of baffles in the outer container over which the primary liquid flows in a sinuous manner.

3,610,326
APPARATUS FOR CONTROLLING HEAT EXCHANGE IN STEAM GENERATORS

Alfred Brunner, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

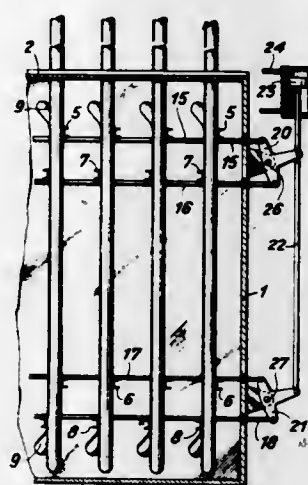
Filed June 24, 1969, Ser. No. 835,987

Claims priority, application Switzerland, June 25, 1968, 9430/68

Int. Cl. F28f 27/00

U.S. Cl. 165-96

7 Claims



The convection heated heating surfaces are formed of tube panels in which adjacent pairs of panels are movable with respect to each other into and out of a common plane to vary the amount of heating surface exposed to the flue gas. The panels can be formed with sinuous-shaped coils with the interconnecting bends bent out of the plane of the straight sections.

3,610,327

COOLING SYSTEMS FOR TRANSFORMERS

Ronald Rutherford, Sunderland, England, assignor to Washington Engineering Limited, Washington, England

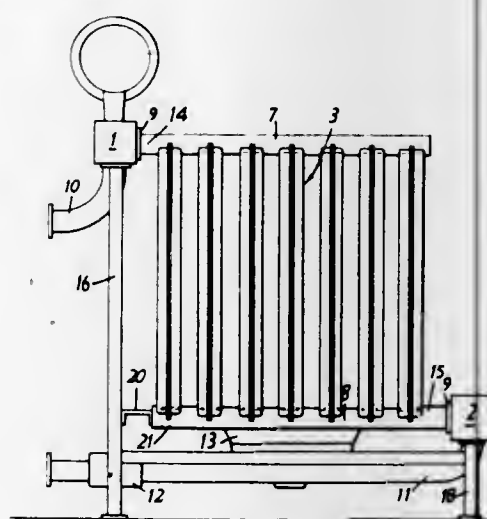
Filed Aug. 29, 1969, Ser. No. 854,128

Claims priority, application Great Britain, Aug. 30, 1968, 41,668/68

Int. Cl. F28b 7/00

U.S. Cl. 165-106

4 Claims



A cooling system for electric transformers in which the individual radiators are connected with upper and lower main headers at diagonally opposite corners of the radiators.

3,610,328

PREVENTION OF CREVICE COKING IN HEAT EXCHANGERS

Jerry M. LaRue, and Bartlett A. Lloyd, both of Tulsa, Okla., assignors to Sun Oil Company, Philadelphia, Pa.

Filed Sept. 25, 1969, Ser. No. 860,972

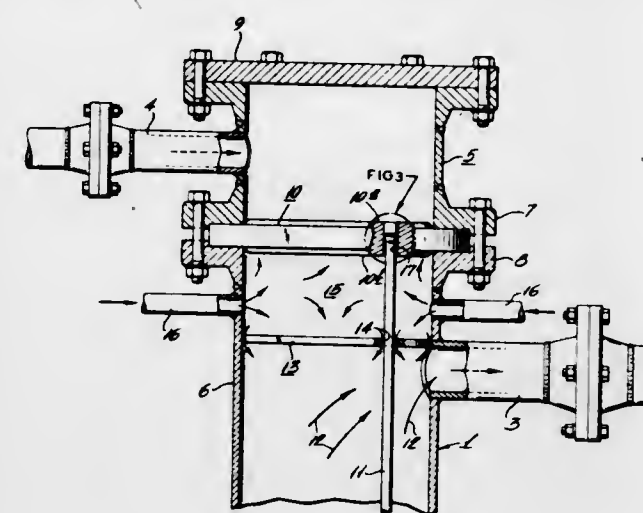
Int. Cl. F28f 19/00

U.S. Cl. 165-134

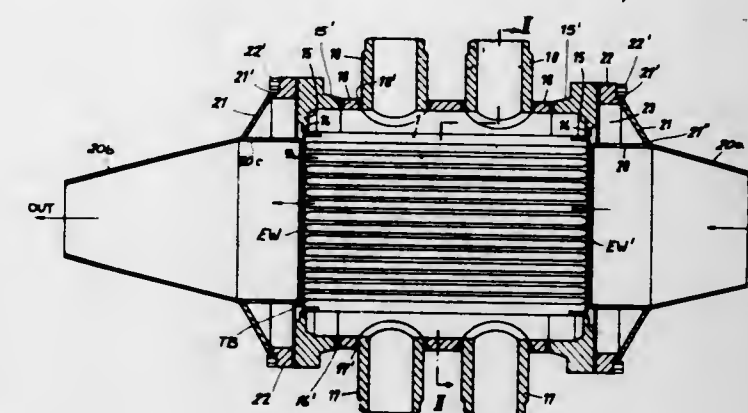
11 Claims

In a shell-and-tube sheet exchanger, a masking blanket of steam is provided in the space between the outlet conduit for

the shell fluid and the tube sheet, at one end of the heat exchanger. This steam blanket serves as a barrier, to prevent



and the like in which the tube bundle is formed by a stack of tube arrays, each of which is constituted by a pair of corrugated plates having their corrugations in mutually facing and registering relationship. The pair of plates are stacked together in a housing permitting flow of the coolant between the arrays perpendicular and/or parallel to the tubes while



the hot hydrocarbon fluid which is flowing through the shell from coming into contact with the tube sheet at this end of the exchanger.

3,610,329

TUBE PLATE FOR HOT GAS COOLERS

Ferdinand Markert, Limburgerhof, and Michael Schunck, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, (Rhine), Germany

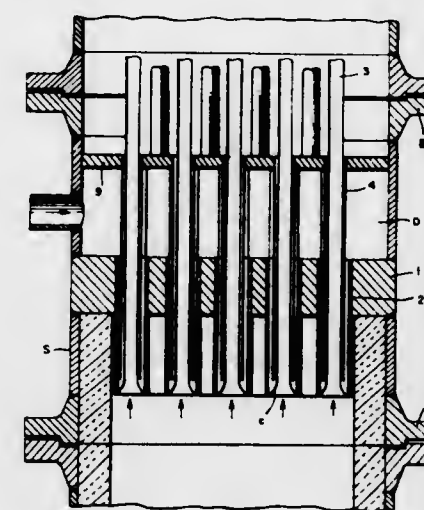
Filed Dec. 29, 1969, Ser. No. 888,399

Claims priority, application Germany, Dec. 27, 1968, P 18 17 043.9

Int. Cl. F28d 7/12

U.S. Cl. 165-142

8 Claims



A tube plate for heat exchangers, particularly for hot gas coolers, wherein the gas inlet is exposed to gas temperatures exceeding 500° C. at high gas velocities, and wherein the gas inlet portions of the tubes conveying the gas that is to be cooled are double-walled and the two walls are annularly interconnected at the inlet end, the annular jacketing chambers thus formed each containing a coaxially inserted baffle tube for guiding the coolant, and the ends of said baffle tubes being fixed in a supplementary tube plate.

3,610,330

HEAT EXCHANGER

Gamal El Dia Nasser, Planegg, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Nov. 4, 1968, Ser. No. 773,082

Claims priority, application Germany, Nov. 3, 1967, P 16 01 215.0

Int. Cl. F28f 9/02

U.S. Cl. 165-158

17 Claims

A heat exchanger, especially for the cooling of gases emerging at high temperature and low pressure from reactors

the compartments are sealed at the ends of the arrays at which the tubes terminate by outwardly flared edges of the plates, which are of quarter-circular cross section and are welded together along seams parallel to the plane of the tubes of the respective array. The tube sheets normally required in tube-bundle heat exchangers are thus constituted by the plates which also form the tubes.

3,610,331

HEAT EXCHANGER

Helmut Schreiber, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

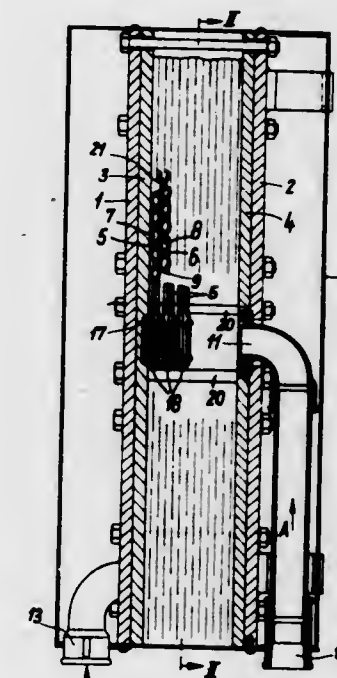
Filed Mar. 10, 1970, Ser. No. 18,115

Claims priority, application Germany, Mar. 15, 1969, P 19 13 226.4

Int. Cl. F28f 3/00

U.S. Cl. 165-166

2 Claims



A heat exchanger, especially through flow heater for the preparation of hot water, which is composed of a plurality of discs arranged adjacent to each other. Each of said discs comprises two complementary plates which are connected to each other by cementing, welding or the like, and when so connected form with each other spiral-shaped flow passage means.

3,610,332

MULTILAYERED FLAT HEAT EXCHANGER

Kiyosumi Takayasu, 2, 5-Chome, Horita-Dori, Mizuho-Ku, Nagoya, Japan

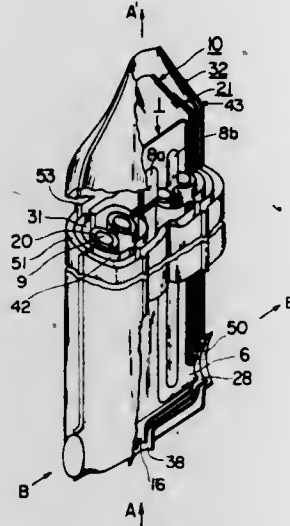
Filed Mar. 16, 1970, Ser. No. 19,706

Claims priority, application Japan, Sept. 27, 1969, 44/76,670

Int. Cl. F28f 3/00

U.S. Cl. 165—166

5 Claims



A multilayered flat heat exchanger, consisting of a plurality of concentrically disposed shells. The spaces between adjacent shells are isolated from each other, and each of such spaces has separate inlet and outlet openings. A heat carrying fluid medium and a fluid to be treated by the medium are passed through alternate spaces between the adjacent shells. Each shell is made of two identical halves, having peripheral ear portions, so that the shell can be easily assembled by seamwelding of the two halves. As a result, the heat exchanger can be readily fabricated by assembling the shell one by one starting from the innermost one.

3,610,333

TUBULAR-TYPE HEAT-EXCHANGE APPARATUS

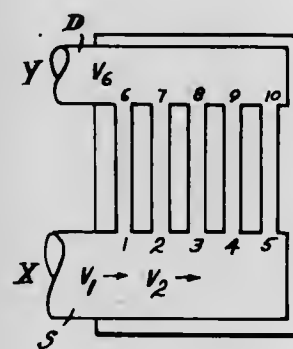
Leonard A. Fisher, Granby, Conn., assignor to The H. B. Smith Company, Incorporated, Westfield, Mass.

Filed Sept. 5, 1969, Ser. No. 855,722

Int. Cl. F28f 9/00

U.S. Cl. 165—175

5 Claims



Heat-exchange apparatus of a kind wherein a substance is heated by the flow of a hot gaseous fluid through a series of like, spaced, parallel flues which pass through the substance to be heated and wherein each of the parallel flues communicates at one end with a supply flue and at its opposite end with a delivery flue, and wherein the supply and delivery flues are so relatively arranged and are so proportioned, as to relative transverse area from point-to-point, that an equal quantity of the gaseous fluid flows through each of the parallel flues per unit of time.

3,610,334

HEAT EXCHANGER

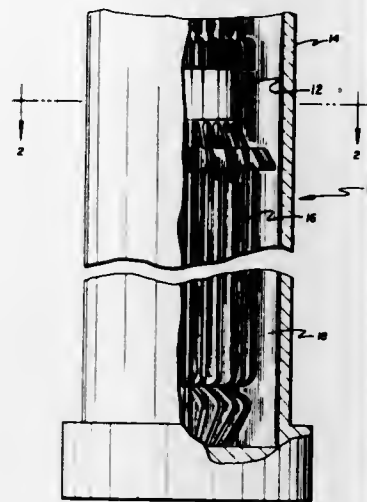
Harold L. Sletten, Northridge, Calif., assignor to North American Rockwell Corporation

Filed Sept. 26, 1968, Ser. No. 762,850

Int. Cl. F28f 1/20

U.S. Cl. 165—181

10 Claims



An improved heat exchanger that effects the transfer of heat between spaced-apart members that are thermally coupled by extended and interjacent surfaces of the members.

3,610,335

APPARATUS FOR TESTING WELL FORMATIONS

Orville Roland Smith, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed June 26, 1970, Ser. No. 50,162

Int. Cl. E21b 33/12

U.S. Cl. 166—55.1

12 Claims



An apparatus is provided for obtaining a test sample of formation fluids from a well bore formation. An elongated tool is lowered into a well bore and is provided with explosive means for perforating the casing and formation at a desired production site. Sealing means is incorporated on the tool to define an isolated, relatively large diameter fluid flow path from the perforated formation site to a formation fluid receiving, test sampler chamber disposed within the tool. A unitary slide valve arrangement is provided within the tool for sequentially closing the fluid sample test chamber and equalizing the pressure differential across the sealing means to release the sealing means from the formation and permit the overall tool to be withdrawn from the well bore. The slide valve is powered by pressures existing in well bore fluid ambient to the tool.

3,610,336

LANDING NIPPLE WITH LOCATOR AND ORIENTING MEANS

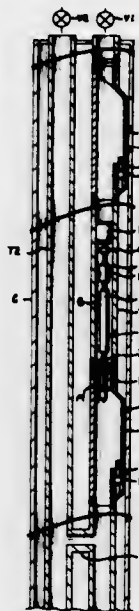
Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 23, 1970, Ser. No. 31,138

Int. Cl. E21b 7/06, 33/16

U.S. Cl. 166—117.6

12 Claims



A well tool for use in connection with offset landing nipples connected in a flow conductor of a pumpdown well installation, including a locator sub for connection with said landing nipple and a positioning tool for connection with the kick-over running or pulling tool assembly used to install and remove flow control devices in said landing nipples. The positioning tool has stop dogs engageable with an internal shoulder in the locator sub to prevent premature undesired movement of the kick-over running or pulling tool assembly from oriented position in said landing nipple until the flow control device has been installed or retrieved, whereupon the stop dogs may be released and the assembly withdrawn from the well. The positioning tool may be moved downwardly in the well past any number of offset landing nipples thereabove to a desired one of a plurality of such offset landing nipples, and then used to prevent premature undesired movement of the running or pulling tool assembly from such landing nipple.

3,610,337

TUBING UNLOADER

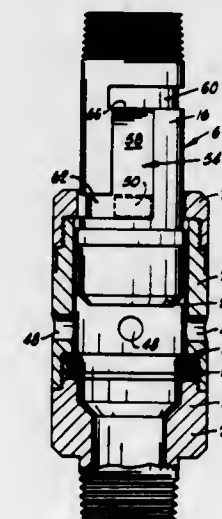
William R. Lewis, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1970, Ser. No. 26,281

Int. Cl. E21b 33/00

U.S. Cl. 166—226

9 Claims



The present invention relates to apparatus for unloading fluid from a string of tubing disposed in a well bore which

comprises a first conduit member having the lower end thereof adapted to be connected to a lower portion of the tubing string and having a fluid port extending through a side thereof, and a second conduit member telescopically mounted within the first conduit member having the upper end thereof adapted to be connected to an upper portion of the tubing string. The first conduit member includes an internal seating surface positioned below the fluid port for sealingly engaging the lower end of the second conduit member. A spring-loaded dog is attached to one of the conduit members facing a peripheral surface of the other of the conduit members, and continuous groove means are provided in the peripheral surface of the other conduit member for slidably engaging the spring-loaded dog. The continuous groove means are of a shape such that the second conduit member may be alternately moved with respect to the first conduit member and locked in positions whereby the interiors of conduit members are communicated with the fluid port, or the second conduit member is engaged by the seating surface of the first conduit member thereby preventing communication between the interiors of the conduit members and the fluid port.

3,610,338

TREATMENT OF AN UNDERGROUND FORMATION

Bobby G. Harnsberger, and Joy T. Payton, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 16, 1969, Ser. No. 885,643

Int. Cl. E21b 43/22, 43/24

U.S. Cl. 166—272

24 Claims

Method of stabilizing a clay-containing body by treatment with an imidazoline in water, alkanol or mixtures of alkanols.

3,610,339

SURFACTANT MIXTURE IN WATERFLOODING

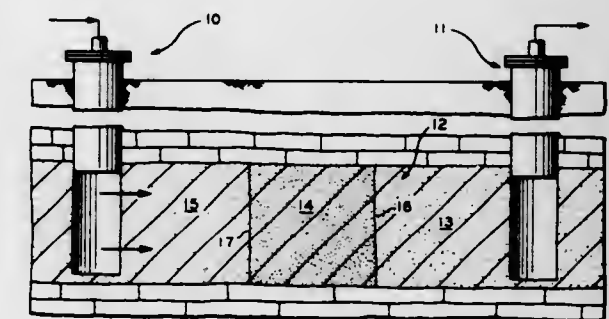
Robert R. Harvey, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 14, 1969, Ser. No. 799,180

Int. Cl. E21b 43/22

U.S. Cl. 166—274

6 Claims



A method for recovering oil from a formation by injecting an aqueous solution containing two surfactants which are ethylene oxide adducts of alkyl phenols, one surfactant being a solubilizing agent for the other, into that formation; an aqueous liquid containing a viscosifying agent maybe injected behind the surfactant solution.

3,610,340

AQUEOUS FOAMED WELL CIRCULATION FLUIDS CONTAINING A BASE COMPONENT AND THEIR USE IN THE TREATMENT OF WELLS

Stanley O. Hutchison, Bakersfield; John C. McKinnell, Taft, and Glen W. Anderson, Oildale, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of application Ser. No. 704,832, Feb. 12, 1968, now Pat. No. 3,463,231, and a continuation-in-part of Ser. No. 720,977, Apr. 12, 1968, Pat. No. 3,486,560. This application July 7, 1969, Ser. No. 839,623

Int. Cl. E21b 21/00, 21/04

U.S. Cl. 166—311

16 Claims

Preformed well circulation foams containing a base component are used for the treating of wells, particularly for the neutralization of acid in oil wells.

ERRATUM

For Class 166—93 see:
Patent No. 3,610,344

3,610,341

MOTOR-GRADER CONTROL SYSTEM

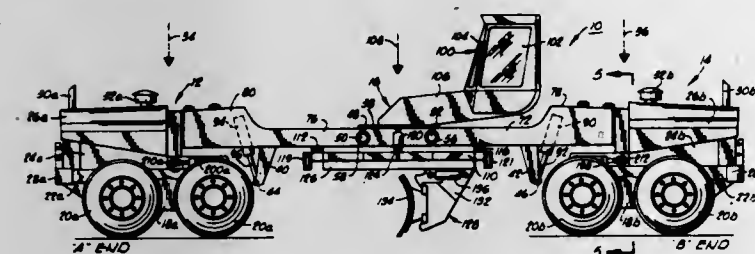
George W. Swisher, Jr., Oklahoma City; Don W. Smith, Edmond; Gordon L. Spivey, Oklahoma City, and Ralph K. Snow, Oklahoma City, all of Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Apr. 1, 1969, Ser. No. 812,229

Int. Cl. E02f 3/76, 3/12

U.S. Cl. 172—4.5

14 Claims



Apparatus for control of double-articulated earth-working machinery of the type consisting of two similar mobile assemblies, including drive engine and traction elements, which are oriented in back-to-back manner to support a main frame therebetween. The control system of the earth-working apparatus enables automatic control of machine attitude relative to an external reference such as a string line, such automatic control being applied to generate continual steering regulation as well as continual correction of the height and level of the main frame which, in turn, carries the working implement therebeneath in earth engaging attitude.

3,610,342

LOAD WEIGHING APPARATUS FOR ELEVATORS

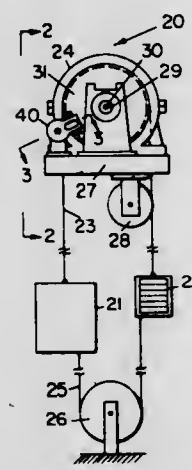
Henry August Stalcken, New York, N.Y., assignor to Otis Elevator Company, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,159

Int. Cl. B66c 1/40; B66b 1/28 G01g 19/18

U.S. Cl. 177—147

20 Claims



A load weighing apparatus including a hoist motor having a drive shaft for driving an elevator car having a variable load, a plurality of hoist ropes supported by the drive shaft and connected to a counterweight and to the elevator car at opposite ends thereof, and a brake applying and torque sensing device coupled to the drive shaft for measuring the amount of the elevator car variable load for operating a control for controlling the elevator car. The hoist motor and the brake applying and torque sensing device are mounted on a support structure. The brake applying and torque sensing device includes a pair of brake shoes for restraining the movement of the drive shaft and for resisting the torque applied to the drive shaft by the elevator car load. In addition, the brake applying and torque sensing device includes tension bars for resisting the force of the shaft torque and in-

cludes transformer coils for measuring the amount of the torque force.

3,610,343

NUT RUNNER HAVING TORQUE RESPONSIVE GEARSHIFT

Sven Ake Bratt, Trollbacken, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

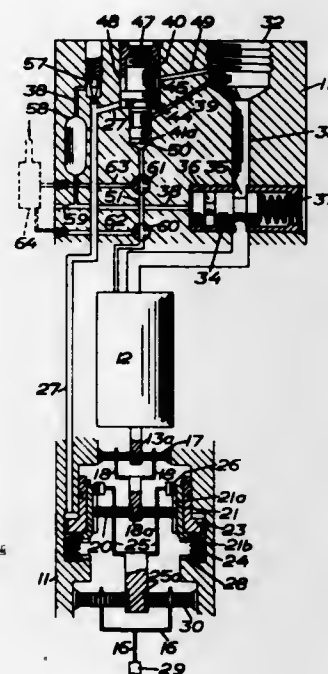
Filed Aug. 20, 1969, Ser. No. 851,660

Claims priority, application Sweden, Sept. 10, 1968, 12125/68

Int. Cl. B25b 23/14

U.S. Cl. 173—12

16 Claims



A nut runner has a compressed air driven motor and a two-speed gear mechanism. The gear mechanism shifts automatically to the lower speed when, at the end of a running down period, the resistance to rotation becomes greater. The shift is initiated when a predetermined rise in pressure in the motor is reached.

3,610,344

IMPACT CLUTCH

Knut Christian Schoeps, Nacka; Karl Gosta Karden, Nacka; Sven Wilhelm Lundin, Tyreso, and Klas Johan Astrom, Danderyd, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

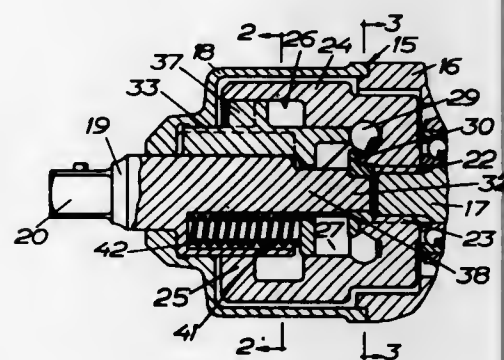
Filed Sept. 18, 1969, Ser. No. 859,155

Claims priority, application Sweden, Sept. 24, 1968, 12892/68

Int. Cl. B25d 15/00

U.S. Cl. 173—93.5

8 Claims



In an impact clutch with coaxially rotatably mounted hammer body and anvil member, a clutch dog features radially outwardly directed impact surfaces and is coupled for conjoined rotation but axially movable on the anvil member. A spring bias acting against the clutch dog strives constantly to retract the impact surfaces thereof to uncoupled rotation

position into a cavity in the hammer body. During relative rotation between the hammer body and clutch dog, cam means therebetween throw the clutch dog and the said surfaces thereof axially forward to impact position against cooperating radially inwardly directed impact surfaces on the hammer body.

3,610,345

EARTH BORING MACHINE CARRIAGE WITH DETACHABLE PUSHER RING AND POWER FRAMES

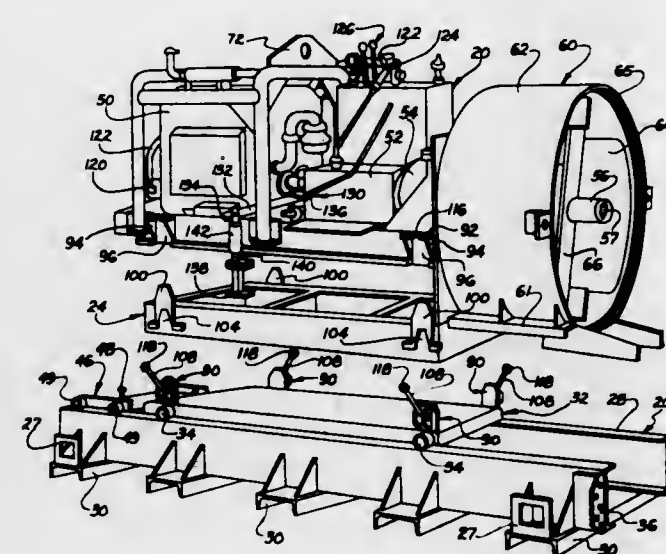
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Oct. 20, 1969, Ser. No. 867,815

Int. Cl. E21c 1/10

U.S. Cl. 173—154

4 Claims



A machine for the horizontal boring of shafts for the insertion of pipelines where excavation from the surface is undesirable, such as under freeways or the like, which comprises a boring mechanism for forming the holes as well as the push function for advancing the pipeline casings. This novel arrangement includes a pusher ring frame which is removably mounted on the track means and a power means frame which is in turn removably mounted on said pusher ring frame such that the frames can be removed from one another or removed from the carriage as an assembly.

3,610,346

METHOD FOR ORIENTED EMPLACEMENT OF WELL CASING TO ACHIEVE DIRECTIONAL DRILLING

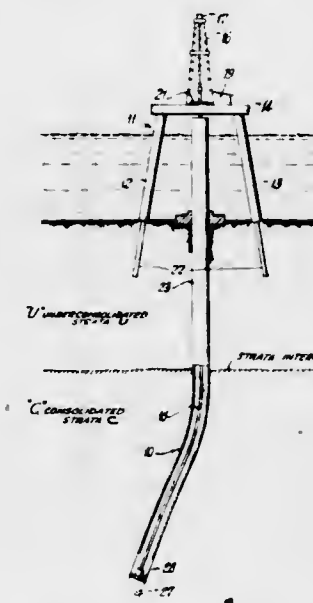
Johanne J. Zlober, Morgan City, La., assignor to Texaco Inc., New York, N.Y.

Filed June 1, 1970, Ser. No. 42,188

Int. Cl. E21b 7/06, 7/12

U.S. Cl. 175—5

7 Claims



The invention relates to a method and apparatus for the emplacement of an oriented conductor casing at a desired

angle preliminary to slant drilling of a well in the substratum of an offshore well site. The method provides for the initial lowering of a well casing into the substratum. Thereafter the casing is forcefully urged downwardly whereby to bend and assume a curvature in a desired direction, as the casing advances along a preformed curved guide passage. The casing is progressively advanced until penetrating one or more competent subsurface formations.

3,610,347

VIBRATORY DRILL APPARATUS

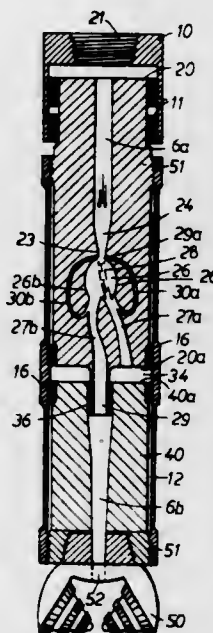
Nick D. Diamantides, Cuyahoga Falls, and William L. Hinks, Bath, both of Ohio

Filed June 2, 1969, Ser. No. 841,177

Int. Cl. E21b 5/00; B06b 1/18, 1/14

U.S. Cl. 175—56

24 Claims



The subject matter of this invention is a rock drill apparatus whose kinematics is based on the resonance of two massive members connected through a member possessing the characteristics of a stiff spring. This resonant system is driven to a high rate of vibratory motion through an hydromechanical actuator, because of which the attached bit strikes repeated blows on the rock formation and thus effects drilling.

3,610,348
DRILLING APPARATUS

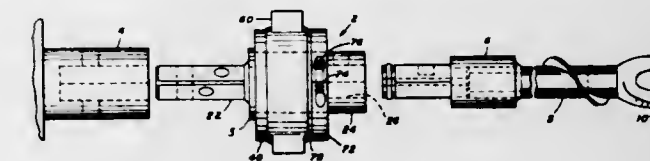
Marvin J. Brooks, Bluefield, and Charles S. Davis, Bridgeport, both of W. Va., assignors to Carmet Company, Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 33,993

Int. Cl. E21b 21/02; E21c 7/10

U.S. Cl. 175—207

4 Claims



Apparatus for supplying flushing water or other dust-suppressing fluid to an operative drill bit from an external source including a torque transmitting chuck adapted to cooperate with a rotary power source and a hollow drill rod, the chuck having a longitudinal chamber therein to closely receive said drill rod, with the bore of said drill rod connected to a passage between said longitudinal chamber and a peripheral channel in the outside surface of said chuck. A bearing sleeve is adapted to be received over said chuck and in close contact therewith, the bore of said bearing sleeve having a channel around the perimeter thereof aligned with the channel of said chuck and a passage through the wall of said sleeve connecting said sleeve channel to its external surface,

said sleeve provided with a bearing surface being substantially cylindrical in cross section and adapted to receive a swivel collar thereover in close contact permitting relating rotary motion therebetween, said collar having an annular channel therein adapted to be aligned with the passage in said sleeve, and having a passage therethrough opening into said annular channel adapted to be connected to an external source of dust-suppressing fluid. Preferred embodiments of said apparatus including sealing means operating between the adjacent surfaces, drill rod, chuck, and drill rod is minimized.

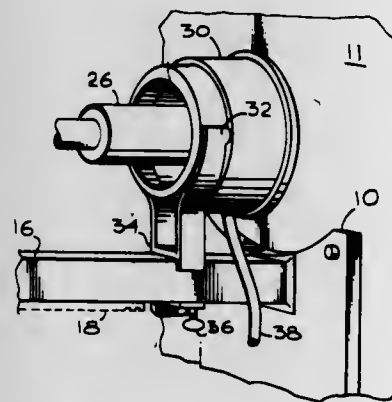
3,610,349

SPLASH GUARD FOR CORE DRILLING

Edward J. Dempsey, Huntington Beach, Calif., assignor to Concrete Cutting Equipment Co. Inc., Hawthorne, Calif.
Filed Dec. 10, 1969, Ser. No. 883,838
Int. Cl. E21c 7/02

U.S. Cl. 175-209

2 Claims



A splash guard is provided for a concrete cutting machine so that the water which is supplied to a concrete cutting tool to keep it cool during the process of cutting, together with any concrete slurry is caught and directed into a container, rather than are permitted to be sprayed and thrown about as is the present practice.

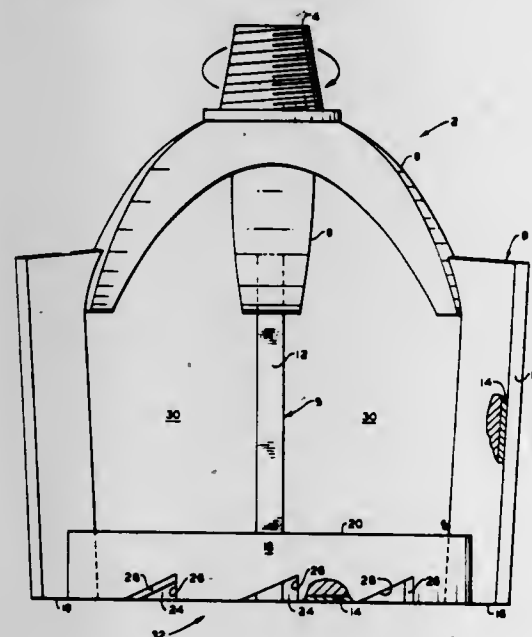
3,610,350

OVERSHOT ROTARY BIT

Ed O. Seabourn, Stavanger, Norway, assignor to Phillips Petroleum Company
Filed Nov. 3, 1969, Ser. No. 873,268
Int. Cl. E12b 2/16; E21c 13/12

U.S. Cl. 175-403

4 Claims



A rotary bit having a chamber and annular and sidewall cutting elements for cutting over an undersea wellhead and receiving said wellhead within the bit.

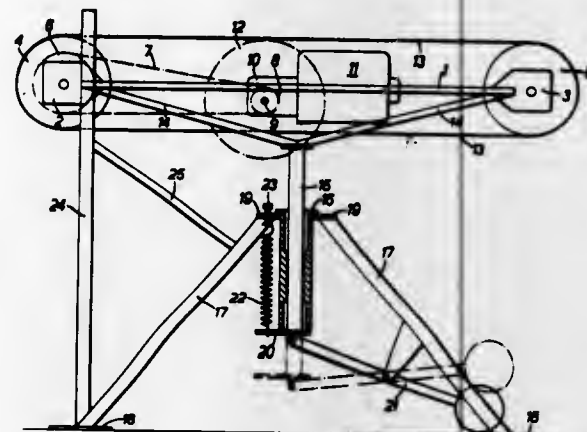
**3,610,351
CONVEYORS**

William P. Billington, Flitwick, England, assignor to National Research Development Corporation, London, England
Filed Feb. 20, 1970, Ser. No. 13,018
Claims priority, application Great Britain, Feb. 21, 1969, 9515/69

U.S. Cl. 177-16

Int. Cl. G01g 1/14

6 Claims



Weighing apparatus comprising a horizontal conveyor resiliently mounted for vertical movement to an extent related to the weight of material being carried thereby, and integrator means responsive jointly to the speed of conveying movement of the conveyor and the degree of vertical movement of the conveyor under the weight of material carried thereby to provide an indication of the weight of material conveyed during a chosen time interval.

3,610,352

SIDE LOAD PROTECTION DEVICE FOR TREADLE SCALES

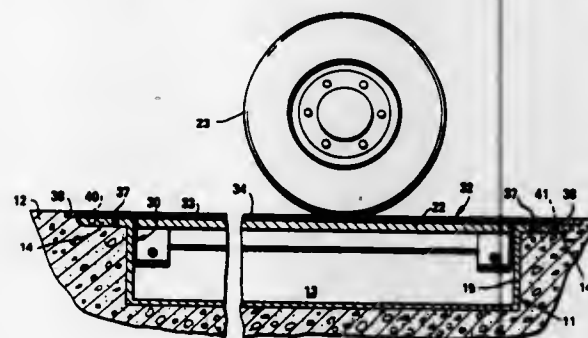
Eric Laimins, Belmont, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.

Filed Dec. 4, 1969, Ser. No. 882,048

Int. Cl. G01g 19/02

U.S. Cl. 177-134

3 Claims



A substantially flat, resilient plate positioned over a treadle scale with its lower surface overlying and engaging the upper load-receiving platform of the scale is secured along opposed longitudinal end surfaces of the plate to the framework in which the treadle scale is supported for transmitting loading forces in the normal loading direction only to the scale platform, while simultaneously preventing the application to the platform of adverse side loads which might damage the scale.

3,610,353

FLEXIBLE SCALE PLATFORM

Simon J. Hocking, Laurium; Gary L. Viegela, Lake Linden, and James W. Keranen, Laurium, all of Mich., assignors to Northern Technical Services, Inc., Laurium, Mich.

Filed May 4, 1970, Ser. No. 34,384

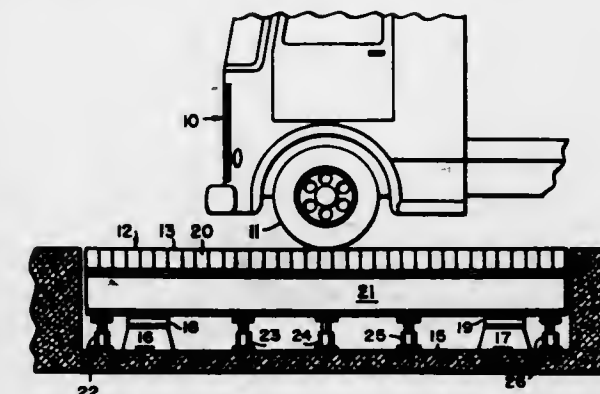
Int. Cl. G01g 23/02, 19/02

U.S. Cl. 177-153

4 Claims

A scale platform is supported in no-load condition by at least one load-registry device. A plurality of abutments are

distributed about an area below the platform, and are



adapted to function as supports exclusively on deflection of the platform.

3,610,354

BALANCE

Bauke S. Sieswerda, Geleen, Netherlands, assignor to Stam-Icarbon N. V., Heerlen, Netherlands

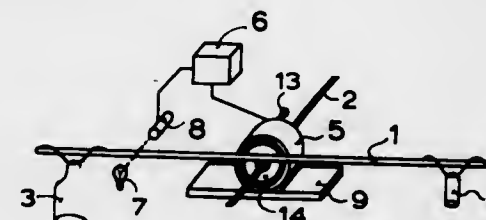
Filed Jan. 27, 1969, Ser. No. 794,218

Claims priority, application Netherlands, Jan. 25, 1968, 6801106

Int. Cl. G01g 3/14

U.S. Cl. 177-210

3 Claims



A balance having a rotatably suspended balance arm connected to a horizontally disposed tension wire; the tension wire is mechanically linked to a barrel-shaped coil holder which is rotatably mounted in a casing; a permanent magnet is fixed to the casing to extend within the coil holder; conducting coils are arranged on the exterior of the coil holder to cooperate with the magnets to restore the balance arm to an equilibrium position; the current supplied to the coils to restore the balance arm being a measure of the weight of the object placed on the balance arm.

3,610,355

PORTABLE SNOW VEHICLE

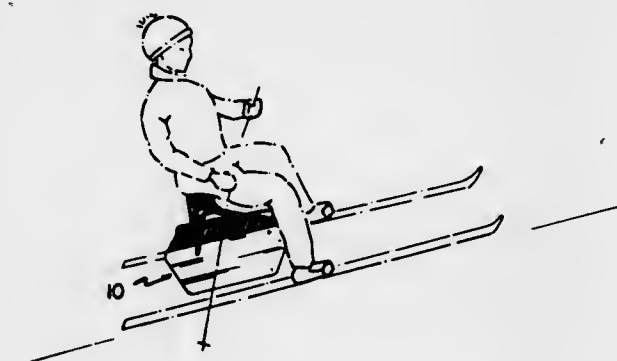
Willard E. Buck, P.O. 671, Lake Havasu City, Ariz.

Filed Apr. 28, 1969, Ser. No. 819,674

Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

11 Claims



A self-powered snow vehicle for propelling a skier over snow-covered terrain, particularly for gaining elevation, and which is adapted to be back-packed by the skier during his descent.

3,610,356

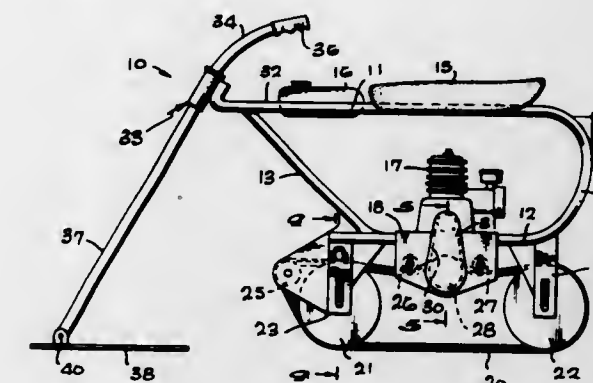
SNOW VEHICLE

Ernest L. Byar, Jr., 1335 N. Detroit St., Los Angeles, Calif.
Filed May 20, 1969, Ser. No. 826,228

Int. Cl. B62m 27/02

U.S. Cl. 180-5 R

3 Claims



A snow vehicle is disclosed herein resembling a motor "bike" having a tubular frame movably supporting an endless belt operable to drivingly engage with a snow-covered ground surface. A motor is carried on the frame beneath a seat and is operably coupled to the belt for driven rotation about shock absorbing idler rollers so that a substantial portion of the belt tread frictionally engages the ground surface. Steering mechanism in the form of a front ski is laterally, swingably mounted on the forward end of the frame by a steering column. The ski is detachably secured to the column and may be replaced by a pneumatic wheel having a strut adapted to be releasably connected to the steering column when the ski is detached.

3,610,357

SEISMIC SOUND SOURCE

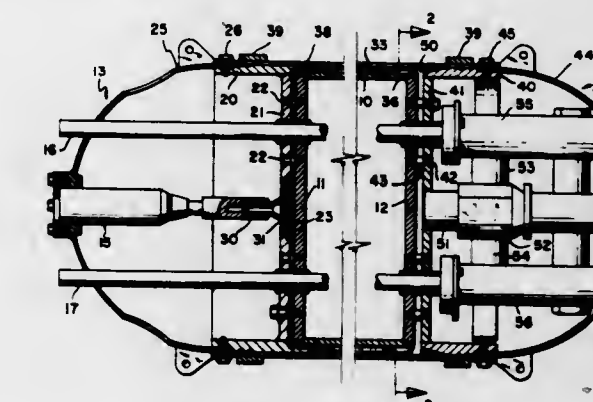
William J. Neal, Manvel; Joseph H. Rosenbaum, Houston, and Thomas F. Vining, Houston, all of Tex., assignors to Shell Oil Company, New York, N.Y.

Filed June 16, 1969, Ser. No. 833,571

Int. Cl. G10k 1/100

U.S. Cl. 181-0.5

3 Claims



A seismic source for use in water-covered areas wherein an explosive gas mixture is detonated within a closed chamber having a flexible wall. The gas is contained within a volume formed between a rigid impermeable inner-wall and a flexible impermeable outer wall. The products of the detonation are exhausted first to the atmosphere and then into an evacuated chamber before the hydrostatic pressure has completed the inward flexing of the flexible outer wall.

3,610,358

CYCLE CAR

Walter H. Korff, 449 N. Lamer, Burbank, Calif.

Filed July 23, 1969, Ser. No. 843,957

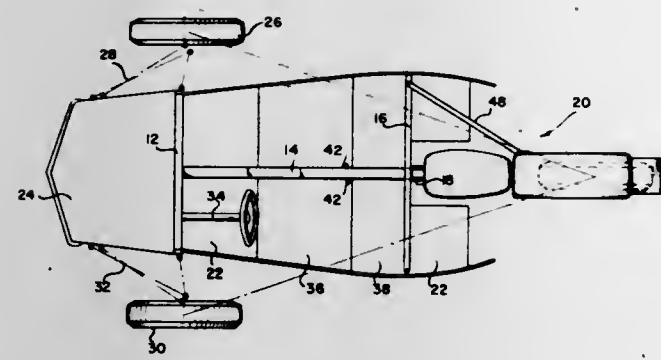
Int. Cl. B62d 61/06

U.S. Cl. 180-25 R

14 Claims

A three-wheel convertible car has a forebody having a front crossframe, a centerline frame, and a rollbar frame.

which is bolted to the front of a standard two-wheel motorcy-



cle frame from which the front wheel and front fork have been removed.

3,610,359

TRUCK WITH MOVABLE CONTROL PANEL

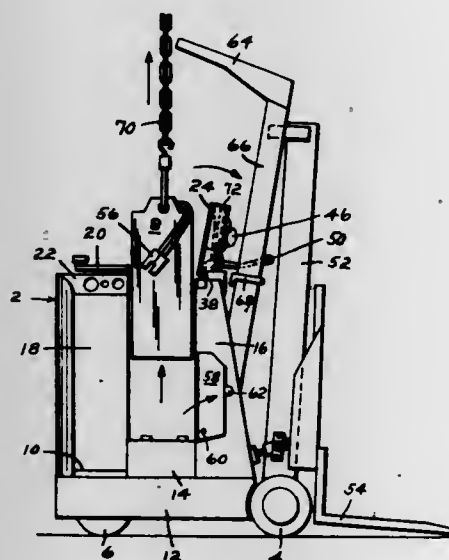
Bernard B. Becker, Belmont, Mass., assignor to Hyster Company, Portland, Oreg.

Filed Nov. 17, 1969, Ser. No. 877,264

Int. Cl. B62d 25/00

U.S. Cl. 180-68.5

8 Claims



In a battery powered material handling truck in which the batteries are located beneath a panel on which are mounted the controls, a pivoted construction is provided permitting both the panel and controls to swing up and forward away from their normal position above the batteries thereby providing a clear space above the batteries so that an overhead hoist may be used to remove them.

3,610,360

MOTOR VEHICLE EXHAUST OUTLET ARRANGEMENTS AND SYSTEMS FOR COUPLING TO MOTOR VEHICLE EXHAUST OUTLETS

Conrad O. Gardner, 99 Woodhaven, Edmonds, Wash.

Continuation-in-part of application Ser. No. 545,117, Apr. 25, 1966, now Patent No. 3,503,188. This application Feb. 26, 1970, Ser. No. 14,300

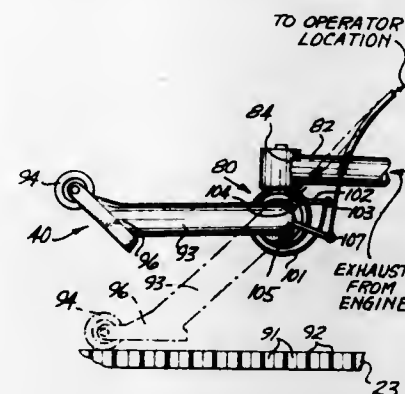
Int. Cl. B60k-13/04

U.S. Cl. 180-64 A

5 Claims

Motor vehicle exhaust outlet arrangements and systems for receiving the noise and/or exhaust emissions transmitted from motor vehicle exhaust outlet arrangements. The motor vehicle transmitter of noise and/or exhaust emissions have a modified tailpipe arranged for close coupling and transmis-

sion of the noise and/or exhaust emissions to receiving means for collecting and processing the noise and/or exhaust emissions. The receiving means extends along the length of the



highway and attenuates the received noise and/or collecting and passing the received exhaust emissions to processing means for recovering or purifying the exhaust emissions.

3,610,361

ELECTRICALLY OPERATED SEAT BELT RETRACTOR

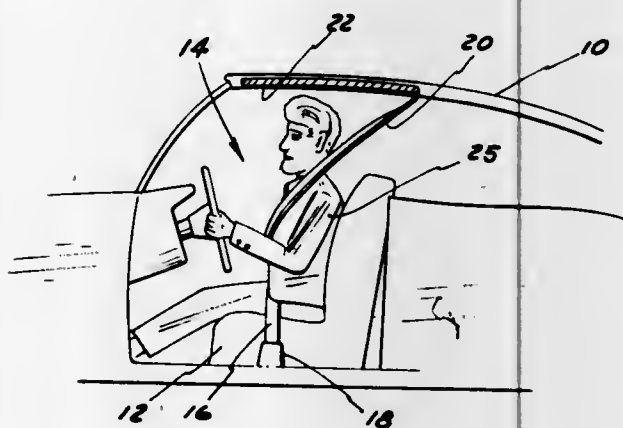
William L. Pringle, Grosse Pointe, Mich., assignor to Jim Robbins Seat Belt Company, Mount Clemens, Mich.

Filed Feb. 7, 1969, Ser. No. 797,429

Int. Cl. B60r 21/10

U.S. Cl. 180-82

7 Claims



An emergency-locking seatbelt retractor having a solenoid-operated, spring-biased lock connected to the vehicle's electrical system to automatically unlock the retractor when the ignition circuit is energized, and to automatically lock the retractor in response to various abnormal vehicle operating conditions.

3,610,362

ANTISKID DEVICE WITH CLUTCH RELEASING MEANS

Koichi Toyama, Toyohashi-shi; Atutoshi Okamoto, Toyohashi-shi, and Shunji Okumura, Kariya-shi, all of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 21, 1969, Ser. No. 878,827

Claims priority, application Japan, Dec. 21, 1968, 43/94021

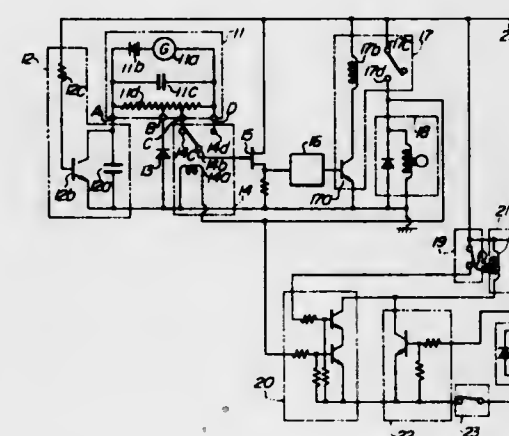
Int. Cl. F16d 67/02

U.S. Cl. 180-82

1 Claim

An antiskid device with clutch releasing means comprising a wheel speed-detection circuit adapted to convert the speed of a wheel into a DC voltage and provide a wheel speed voltage from said DC voltage, a reference wheel speed-establishing circuit adapted to store said DC voltage across a capacitor and discharge the stored charge in the capacitor with a time constant corresponding to a predetermined wheel deceleration to thereby produce a reference wheel speed, a circuit for comparing the wheel speed voltage from the wheel speed-detection circuit and the terminal voltage of said capacitor representing the reference wheel speed voltage

from the reference wheel speed-establishing circuit to thereby detect the wheel deceleration, a relay circuit adapted to be actuated by the output from said comparator circuit to energize a braking force releasing solenoid valve, an AND circuit adapted to perform a logical operation on the output signal from the relay circuit and a signal produced by the opening and closing of a brake switch, a switch element actuated by the output from the AND circuit to energize a clutch-releasing solenoid, a holding circuit adapted for actuation upon the closing of said switch element to maintain the continued energization of the clutch-releasing solenoid even



after the output from said AND circuit has ceased to exist, and a switch element to force the operation of the holding circuit to stop, whereby, as the deceleration of the wheels approaches a preset wheel deceleration, the braking force applied to the vehicle is intermittently released and simultaneously the clutch is released to uncouple the wheels and the engine such that the rotation of the wheels may be readily restarted, even on road surfaces, such as, a snowy frozen road surface where the friction coefficient between the wheel and the road is small, thereby effectively preventing the vehicle from skidding with locked wheels.

3,610,363

AUTOMATIC VEHICLE GUIDANCE SYSTEM

Frederick Walter Hartley, 46, Hughes Road, Hayes, Middlesex, England

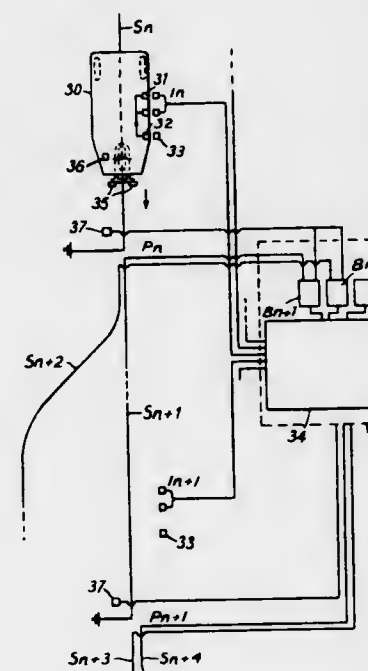
Filed Nov. 29, 1968, Ser. No. 780,050

Claims priority, application Great Britain, Nov. 30, 1967, 54450/67

Int. Cl. B62d 5/04

U.S. Cl. 180-98

8 Claims



An automatic vehicle guidance system includes a plurality of vehicles each having means for indicating its identity,

means associated with respective decision points in the system for deriving a signal representing the identity of a vehicle arriving at a decision point, and control means remote from the vehicles for controlling their movement. The control means include means for storing a program of decisions for each vehicle, a plurality of decision means each of which when actuated can cause selective control of a vehicle arriving at a respective decision point, sequencing means for sequentially conditioning according to each program of decisions in turn the decision means to a state in which they can be actuated and means for utilizing an identity signal to actuate the decision means for the respective decision point in such a way as to render effective the respective decision stored.

3,610,364

FREE BOTTOM AIR BEARING DEVICE

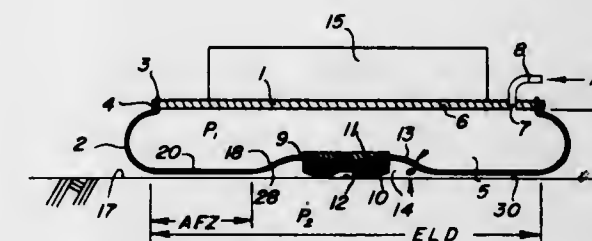
David Roy Snoeyenbos, Niantic, Ill., assignor to Airfloat Corporation, Decatur, Ill.

Filed Jan. 9, 1969, Ser. No. 789,990

Int. Cl. B60v 1/06, 1/16

U.S. Cl. 180-124

6 Claims



An air bearing device capable of increased inflation height which consists of a load supporting member and an inflatable flexible diaphragm attached peripherally to the support, the attached diaphragm having a rigid center portion which operates in light contact relationship with the operating surface, and spaces that portion of the diaphragm adjacent to the rigid center portion above the operating ground surface.

3,610,365

AIR BEARING

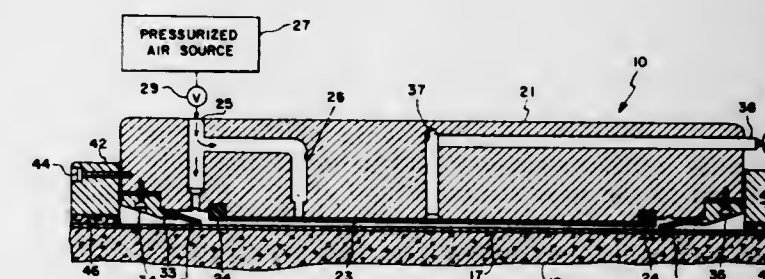
James W. Maddox, Pocomoke, and Frank T. Wolf, Stockton, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 17, 1970, Ser. No. 47,062

Int. Cl. B60v 1/00

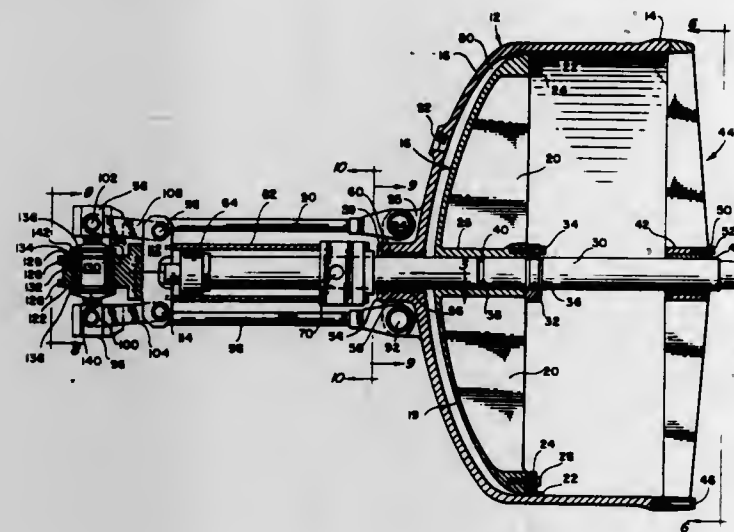
U.S. Cl. 180-125

10 Claims



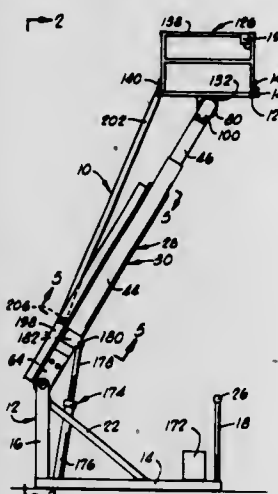
An air bearing for use in an exterior environment to facilitate movement of a heavy load in a horizontal plane including a flexible peripheral seal to direct the flow of pressurized air toward a metal plate surface and toward a central air outlet, and a floating wiper circumferentially disposed about the air bearing body to keep sand and dirt off the bearing lifting area.

3,610,366
SYSTEM FOR MARINE SEISMIC EXPLORATION
 Seymour Goldberg, Lexington, Mass., assignor to EG&G, Inc., Bedford, Mass.
 Filed Apr. 4, 1969, Ser. No. 813,625
 Int. Cl. G01v 1/00
 U.S. Cl. 181-0.5



A system of marine seismic exploration is provided utilizing the force exerted by the ambient pressure of the water to accelerate a piston inwardly toward the closed end of a partially evacuated cylinder, followed by the controlled rebound of the piston due to the compression of the gas contained in the cylinder, to produce acoustic pulses.

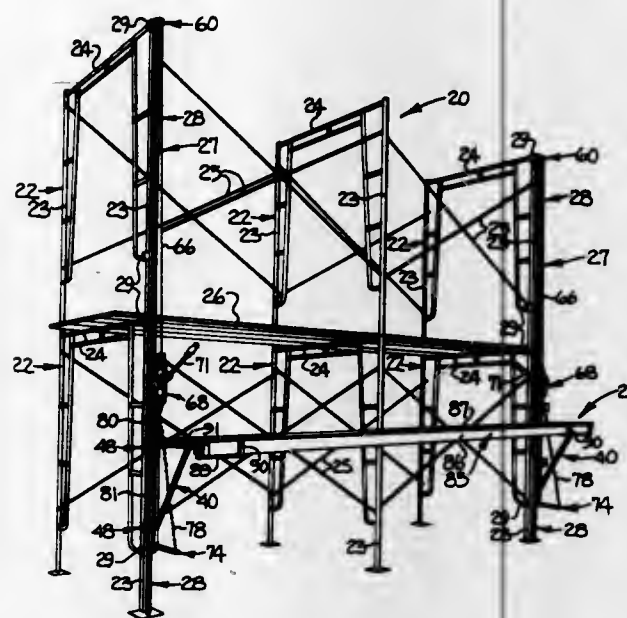
3,610,367
COLLAPSIBLE SCAFFOLD
 George L. Atchey, 3715 Bella Vista, Midwest City, Okla.
 Filed June 23, 1970, Ser. No. 49,074
 Int. Cl. B66f 11/04
 U.S. Cl. 182-2



A scaffold apparatus having a work platform positioned on one end thereof, which can be expanded to an elevated status, thereby elevating the work platform. The apparatus includes a base structure and a boom assembly pivotally secured to the base structure and at the opposite ends to a work platform. A pair of piston and cylinder assemblies, interconnected between the base structure and the boom assembly, for elevating the boom assembly and the work platform. The boom assembly is provided with a plurality of beveled gears and beveled pinion gears and linking shafts, interconnected such that, as the boom assembly is elevated, the work platform is pivoted to maintain the horizontal status of the work platform during elevation. The boom assembly is constructed such that the upper portion thereof may be extended or retracted, thereby providing a further or additional elevation of the work platform, and yet allowing the boom assembly to be retracted in a compact inoperative status when not in use.

27 Claims

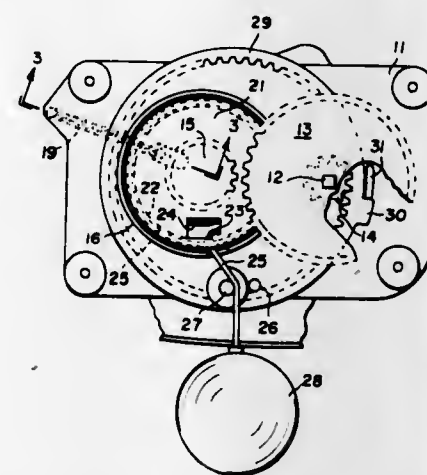
3,610,368
VERTICALLY ADJUSTABLE PLATFORM FOR SCAFFOLDING
 Harold R. Johnson, P.O. Box 849, Monroe, N.C.
 Filed Oct. 15, 1969, Ser. No. 870,457
 Int. Cl. E04g 1/20
 U.S. Cl. 182-146



A vertically adjustable work platform which may be easily attached to a conventional scaffolding or other similar supporting structure. The platform includes a spaced pair of supporting vertical trackways, each of which slidably mounts a platform bracket having a horizontal supporting member for supporting the platform therebetween and is preferably formed in sections of a length corresponding to the height of a scaffold section. A cable is releasably connected to the associated trackway, and a cable hoist is operatively connected to the cable and bracket for supporting and raising and lowering the bracket. A releasable safety brake is provided for each trackway and bracket, and includes a plurality of vertically spaced abutments positioned along the length of the trackway and a pivotal brake bar which is adapted to engage behind one of the abutments to preclude downward movement of the bracket along the trackway.

22 Claims

3,610,369
WINDING MECHANISM
 James A. Rodgers, Hamburg, N.Y., assignor to The Quaker Oats Company
 Filed Mar. 16, 1970, Ser. No. 19,740
 Int. Cl. F03g 1/08
 U.S. Cl. 185-39

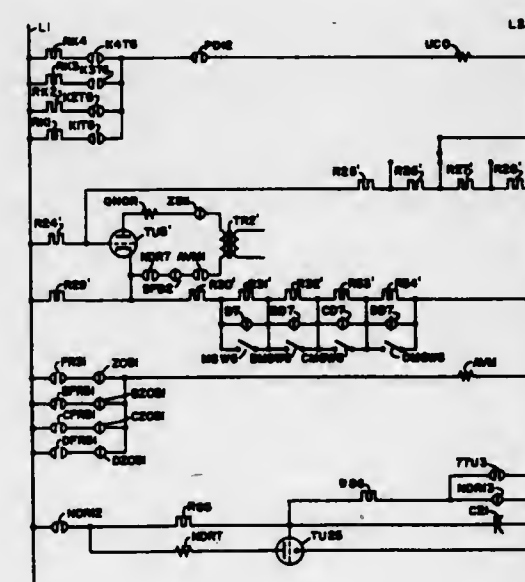


A winding mechanism for a spring-driven device such as a music box unit has an axially movable winding gear that is

18 Claims

spring biased to move out of a meshed relation with a driving gear for the driven device. The winding gear is also rotationally biased, and a pull string is wound coaxially with the winding gear. A guide pulley for the pull string is arranged so that pulling on the string moves the winding gear into meshed relation with the drive gear then turns the winding gear for advancing the drive gear. Release of the pull string lets the winding gear move out of mesh with the drive gear to recoil the pull string for another actuation. A ring gear meshed with a gear coaxial with the drive gear carries a lug limiting the rotational movement of the drive gear.

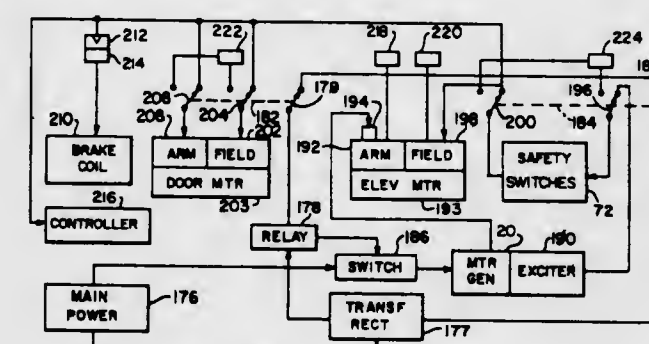
3,610,370
ELEVATOR SYSTEMS
 John Suozzo, and Henry C. Savino, both of Hackensack, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Division of Ser. No. 452,216, Apr. 30, 1965, abandoned.
 Filed Jan. 9, 1970, Ser. No. 1,612
 Int. Cl. B66b 1/22
 U.S. Cl. 187-29 R



In an elevator system a predetermined number of priority down floor calls prevents an elevator from answering an up floor call for a floor above the highest floor for which a call is registered in the elevator. If a first car assigned to a floor call is traveling up through an express zone when a second car becomes available in a more advantageous position the assignment is transferred to the latter car. A car may be parked at a floor above the express zone. Scanning for an available car for a call above an express zone starts in a high zone.

15 Claims

3,610,371
AUXILIARY ELEVATOR CONTROL SYSTEMS
 Paul Douglas Abbott, 403 Webster St., Needham, Mass.
 Filed Dec. 13, 1968, Ser. No. 783,563
 Int. Cl. B66b 13/24
 U.S. Cl. 187-29 R

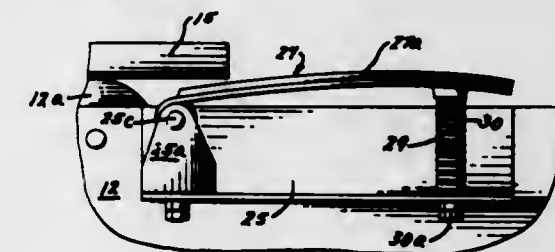


An auxiliary control system for an elevator installation with safety switches, a brake coil, and a main motor driven

25 Claims

from a primary power supply for normal operation of the installation, employs a motor-generator set for driving the armature of the main motor, control circuitry, a transformer-rectifier set for providing a source of electrical current at least one voltage, and a connector for effectively connecting the source to the brake coil and to the field and armature of the main motor, and for effectively coupling the safety switches to the control circuitry.

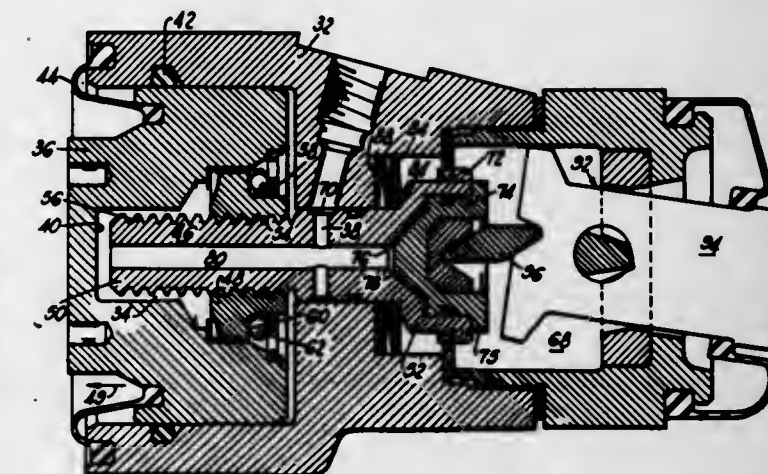
3,610,372
PALLET BRAKING MECHANISM
 Samuel C. Warren, Vanderburgh County, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.
 Filed Nov. 12, 1968, Ser. No. 775,086
 Int. Cl. B60t 3/00
 U.S. Cl. 188-32



A pallet braking mechanism characterized by a spring-urged pivotal pallet engaging member which selectively coacts with a surface of the pallet for positive braking action.

2 Claims

3,610,373
ADJUSTER MECHANISM FOR DISC BRAKES
 Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation
 Filed Oct. 3, 1969, Ser. No. 863,481
 Int. Cl. F16d 55/18, 65/56
 U.S. Cl. 188-71.9



A caliper disc brake assembly includes an adjuster mechanism for maintaining the proper clearance between the brake shoes and the disc. The adjuster is actuated by relative movement between it and the piston and is mounted on a member that reciprocates with the piston during high pressure brake applications thus precluding adjustment, but is held stationary during low pressure applications to permit operation of the adjuster. Over-adjustment due to "panic stops" is thereby prevented. Such an adjuster is particularly useful when mechanical actuation is provided in addition to the usual hydraulic actuation.

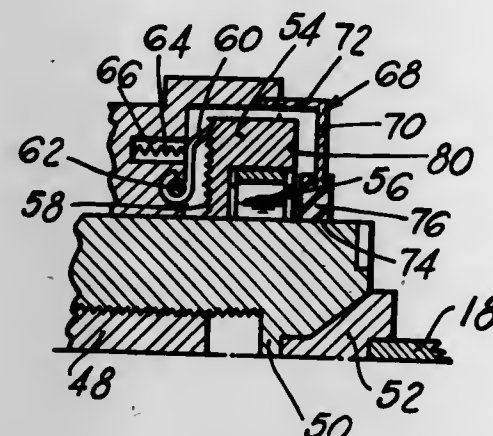
8 Claims

3,610,374
ADJUSTER MECHANISM FOR WEDGE BRAKES
 David J. Troyer, South Bend, Ind., assignor to The Bendix Corporation
 Filed Aug. 8, 1969, Ser. No. 848,424
 Int. Cl. F16d 51/52, 65/56
 U.S. Cl. 188-79.5 GE

An adjuster mechanism for wedge brakes includes a plunger assembly that carries an adjuster nut coaxially

12 Claims

receiving an adjuster screw. A flange circumscribes the adjuster nut and is releasably connected thereto by a pair of sprag springs disposed in corresponding recesses in the flange. An annular retainer member is secured to the housing, and has a portion that overlays the path of axial travel of the flange. Upon actuation of the brake, the flange moves axially with the plunger assembly until it contacts the retainer, whereupon the sprag springs allow the adjuster nut to move



axially with respect to the flange. Upon return movement of the plunger, the driving pawl rotates the flange which, due to the interconnection between the flange and the adjuster nut, rotates the latter to extend the same from the adjuster screw. However, should "kickback" forces lock the screw and the nut against relative rotation, the sprag spring permits the flange to turn with respect to the nut, thereby preventing destruction of the apparatus.

3,610,375

DISC BRAKE WEAR COMPENSATION

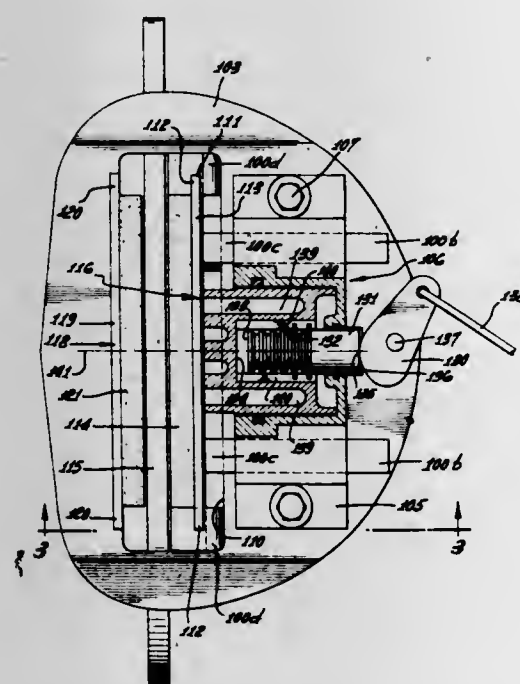
Warren L. Gilliland, Sepulveda, and Franklin B. Airheart, Granada Hills, both of Calif., assignors to Airheart Products, Inc., Van Nuys, Calif.

Filed Aug. 28, 1969, Ser. No. 853,678

Int. Cl. F16d 65/54, 55/18

U.S. Cl. 188—196 B

8 Claims



The invention concerns disc brake lining wear compensation, in which a fluid pressure responsive element, as for example a plunger, urges the brake lining toward the disc, there being load transmitting shoulders carried by the plunger and by auxiliary means to mechanically advance the plunger toward the disc, such shoulders being located for relative shifting in response to predetermined plunger advancement to block retraction of the plunger in such manner as to compensate for brake lining wear.

3,610,376

AUTOMATIC ADJUSTMENT LINK

Pierre Baronnet, Sansibar Strasse 38, 8 Munich 32, Germany; Jean Lamotte, 31 bis, Rte. de Versailles, 78-Port-Marly, and Henri Tainguy, 41, Rue Jean Jaures, 92-Levallois-Perret, France

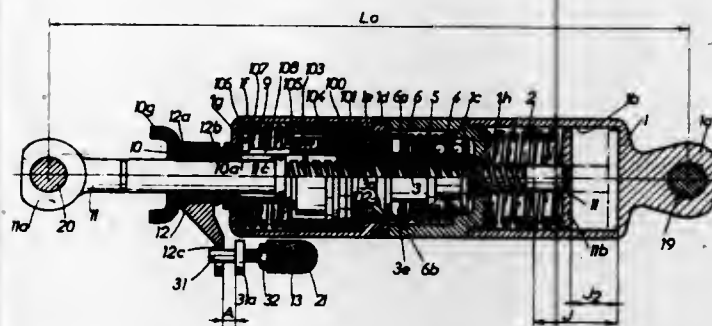
Filed Apr. 15, 1969, Ser. No. 816,314

Claims priority, application France, Apr. 26, 1968, Mar. 21, 1969, 149801; 6908435

Int. Cl. F16d 65/56

U.S. Cl. 188—202

5 Claims



Automatic transmission link for transmitting braking forces on railway vehicles comprising a casing, a rod fitted therein and formed with a screw thread thereon for reversible cooperation with a nut, a tensioned recovery spring bearing against said nut, a trigger continuously urged against said nut by an axially disposed spring, and locking and actuating means operating by self-tightening springs.

3,610,377

DRUM BRAKE HEAT PIPE COOLING

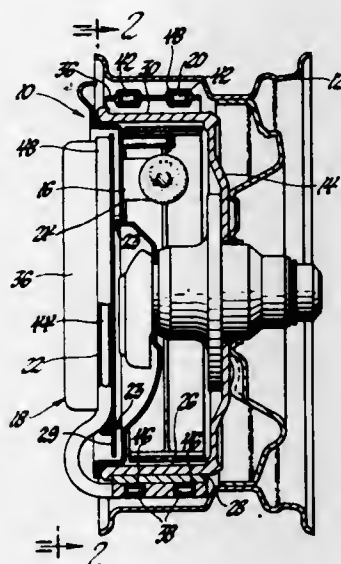
Charles B. Leffert, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of application Ser. No. 838,519, July 2, 1969, now abandoned. This application Oct. 29, 1969, Ser. No. 872,013

Int. Cl. F16d 65/82

U.S. Cl. 188—264 CC

5 Claims



A brake cooling system in which the brake drum is in heat transfer contact with the evaporator section of a heat pipe arrangement. The heat transferred during low levels of braking is transmitted to ambient air or other heat exchange means by conduction and convection. When sufficiently severe braking loads occur so that the conduction mode of heat transfer will not carry away the heat at a sufficient rate, the heat pipe liquid is vaporized and builds up vapor pressure to bring the heat pipe into efficient operation. As the cooling system quickly shifts into this mode of operation the entire heat pipe assembly in effect suddenly increases its thermal conductivity by several orders of magnitude and the heat is rapidly carried away to the heat pipe condenser section, where it is then removed by a suitable heat exchanger arrangement.

3,610,378

PLURAL VEHICLE BRAKE SYSTEM

Arthur Goddard, Solihull, England, assignor to Girling Limited, Birmingham, England

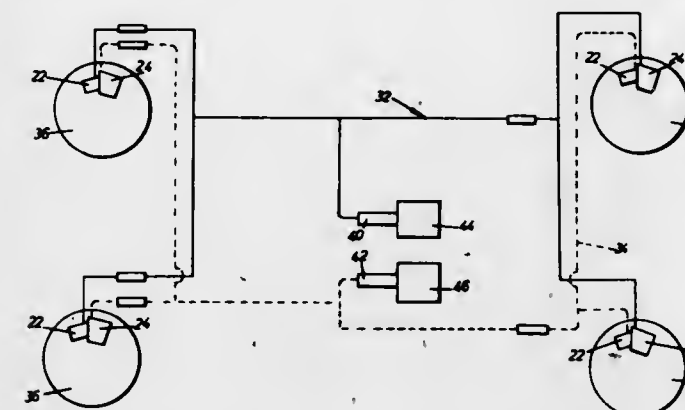
Filed Apr. 30, 1969, Ser. No. 820,383

Claims priority, application Great Britain, May 11, 1968, 22,448/68

Int. Cl. B60t 11/20

U.S. Cl. 188—345

2 Claims



There is disclosed a shoe drum brake and a braking system utilizing such a brake. The brake has a pair of brake shoes, with a hydraulic expander unit arranged between one pair of adjacent ends of said shoes and a fixed anchorage arranged between the other pair of adjacent ends. The expander unit has two oppositely directed shoe displacing pistons having different cross-sectional areas, which are slidably arranged in corresponding cylinders in the unit so as to assist in positioning the center of pressure of the lining, within the region of the center of area of each shoe's lining. A shoe drum brake as disclosed, is attached to each wheel of the vehicle, and the leading shoes at the front wheels of the vehicle together with the trailing shoes at the rear wheels are interconnected, and actuable by means for directing pressure fluid from a source of such fluid. The remaining brake shoes are likewise interconnected and arranged for simultaneous actuation with said first mentioned shoes.

3,610,379

DOUBLE-ACTING FREEWHEEL FOR THE PROTECTION OF HYDRAULIC MOTORS

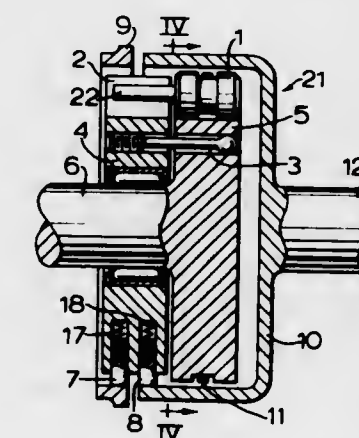
Jerzy Leon Courtenay, Wolverhampton, England, assignor to H.M. Hobson Limited, London, England

Filed July 16, 1970, Ser. No. 55,433

Int. Cl. F16d 41/07, 41/10; B64c 13/00

U.S. Cl. 192—36

5 Claims



A protective freewheel device, for use in a powered control system for aircraft control surfaces in which the control surface is actuated by a drive unit which derives power from either of a pair of hydraulic motors, said freewheel device comprising an input shaft, an output shaft, an intermediate member coupled by torsion springs to the input shaft, two sets of braking members on the intermediate member which cooperate respectively with a stationary member and with the output shaft and roller means engaging the intermediate member and coacting with cam faces on the input shaft

3,610,380

COUPLING WITH PIVOTALLY MOUNTED MOTORS AND FRICTION ELEMENTS

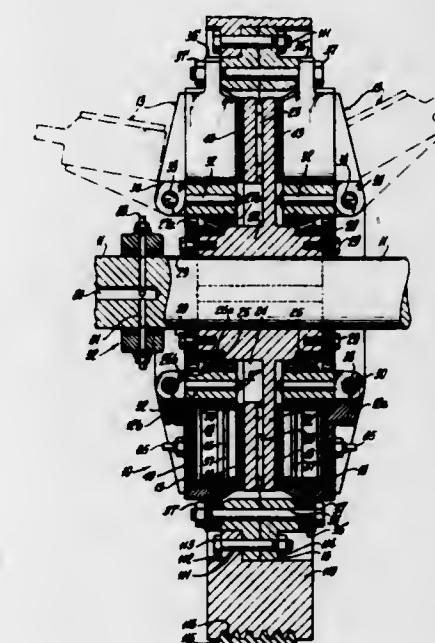
William W. Montalvo, III, Montvale, N.J., assignor to Montalvo and Company, Inc., Hackensack, N.J.

Filed Aug. 26, 1969, Ser. No. 853,164

Int. Cl. F16d 25/00

U.S. Cl. 192—85 AA

3 Claims



A mechanism for frictionally coupling two relatively rotatable elements, suitable for use as a brake or as a clutch. A cage casting carries a plurality of opposed fluid-actuated piston-cylinder assemblies adapted to engage both sides of a relatively rotatable disk secured to a hub surrounded by the casting. The housings of the piston-cylinder assemblies can be swung out away from the casting for easy maintenance, and a spring mechanism for selectively retarding the retraction of the pistons serves to adjust the position of the friction elements automatically, compensating for wear.

3,610,381

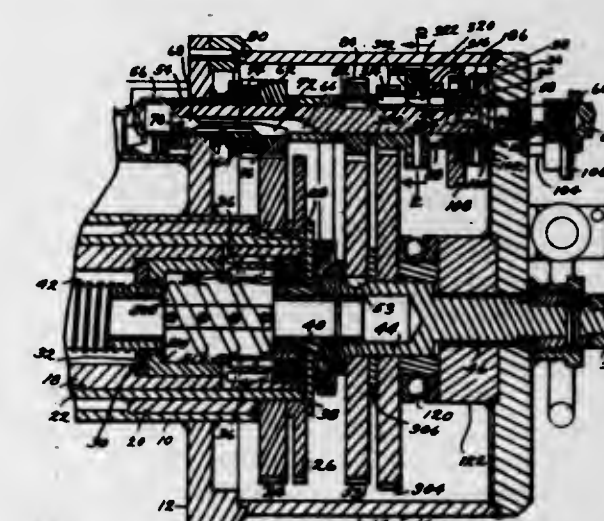
FEED MECHANISM FOR A DRILLING MACHINE

Frank H. Mueller; John J. Smith, and Lynn D. Edwards, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill. Division of Ser. No. 760,006, Sept. 16, 1968, Pat. No. 3,541,894. Filed Mar. 31, 1970, Ser. No. 30,619

Int. Cl. F16d 19/00; F16h 1/18; B23b 41/08

U.S. Cl. 192—93 R

4 Claims



A drilling machine for tapping a pipe includes a rotatable boring bar which is advanced linearly by a ball bearing nut

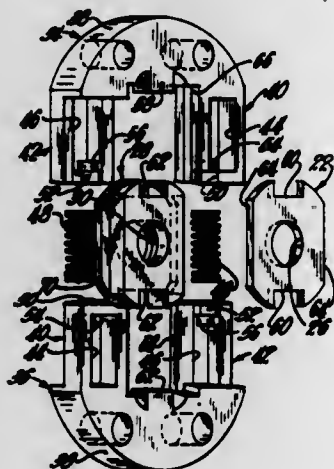
and screw combination, the nut being fixed to the boring bar and the screw being rotated by a power source. The power source is inactivated when the pipe has been tapped, and the fluid pressure in the main will act on the boring bar tending to force it in a reverse direction thereby tending to rotate the screw rapidly in an uncontrolled manner. To prevent this the machine includes a friction brake of special design which automatically restrains reverse rotation of the screw yet is not sufficient to prevent manual reverse rotation of the screw by the operator.

3,610,382 CENTRIFUGAL CLUTCH

Clifford Makinson, Rosemere, Quebec, Canada, assignor to The Scott & Fetzer Company, Cleveland, Ohio
Filed Oct. 27, 1969, Ser. No. 869,490
Int. Cl. F16d 43/14

U.S. Cl. 192-105 BA

9 Claims



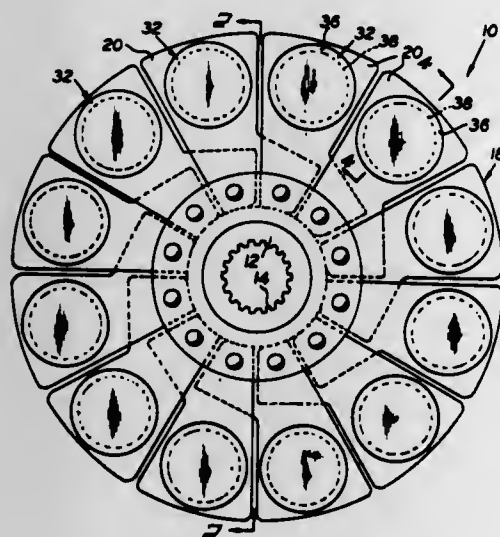
A centrifugal clutch particularly for a chain saw is provided. The clutch is made of two sintered centrifugal elements normally urged together by coil springs which are under compression when in a static condition and are further compressed as the clutch elements move outwardly under centrifugal force. By functioning in compression, the springs last longer and the engagement of the clutch is smoother.

3,610,383 ROTARY FRICTION CONSTRUCTION

Frank N. Rosteo, 2 Knoll Lane, Jericho, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,622
Int. Cl. F16d 13/60, 11/00

U.S. Cl. 192-107 M

9 Claims



A rotary friction construction having a rotatable hub on which there is at least a mounting member mounting a friction member in a rivetless, bond-free manner to permit the dissipation of heat generated at the friction member without producing a consequent distortion of the mounting or the friction members.

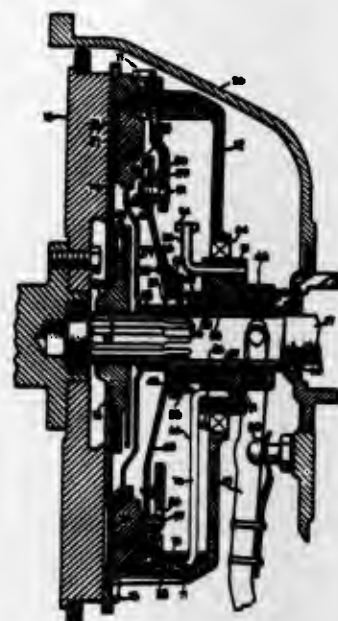
3,610,384 FLUID COOLED CLUTCH

Howard O. Borck, Detroit, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 855,650, Sept. 5, 1969, now abandoned. This application June 8, 1970, Ser. No. 44,494

Int. Cl. F16d 13/72

U.S. Cl. 192-113 B

38 Claims



A liquid cooled friction clutch system in which a pitot tube pump, attached to a release mechanism, has an inlet end disposed in the path of a rotating body of cooling fluid which forms an annular band around the inner periphery of a cover plate assembly. The pump directs fluid from the cover plate through a cooler and then to a fluid reservoir from which it is directed through a control valve to flow across the friction facings of a driven member. Valve means in said system limits the fluid pressure to a predetermined maximum irrespective of the engine speed, thus limiting the flow through the system to a predetermined value.

3,610,385 MOTOR CHAIN SAW

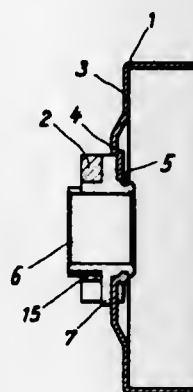
Hans Dolata, Neustadt, Germany, assignor to Andreas Stihl Maschinenfabrik, Neustadt, Germany
Filed Feb. 17, 1970, Ser. No. 12,061

Claims priority, application Germany, Feb. 18, 1969, G 69 06 243

Int. Cl. F16d 13/68

U.S. Cl. 192-115

11 Claims



A clutch drum, especially for motor chain saws, which is composed of a drum body and a hub body and in which the hub body partially extends into the drum body through a corresponding opening thereof and is connected to the drum body by upset riveting, the drum body and the hub body having oppositely located face areas with interengaging elevations and depressions, while that portion of the hub body which is remote from the elevation and depression-equipped portion of the hub body is pivoted with a splined surface for receiving a sprocket wheel for a motor chain saw.

3,610,386 LIMIT STOP INCREMENTAL DRIVE SYSTEM

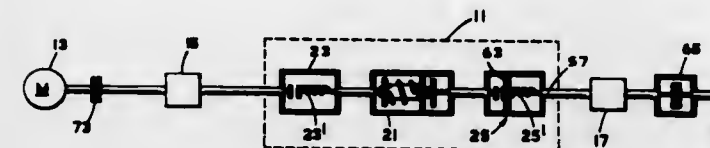
Frederick John Palm, and Donald Keerie, both of London, England, assignors to Elliott Brothers (London) Limited, London, England
Filed Dec. 16, 1969, Ser. No. 885,397

Claims priority, application Great Britain, Dec. 18, 1968, 60128/68

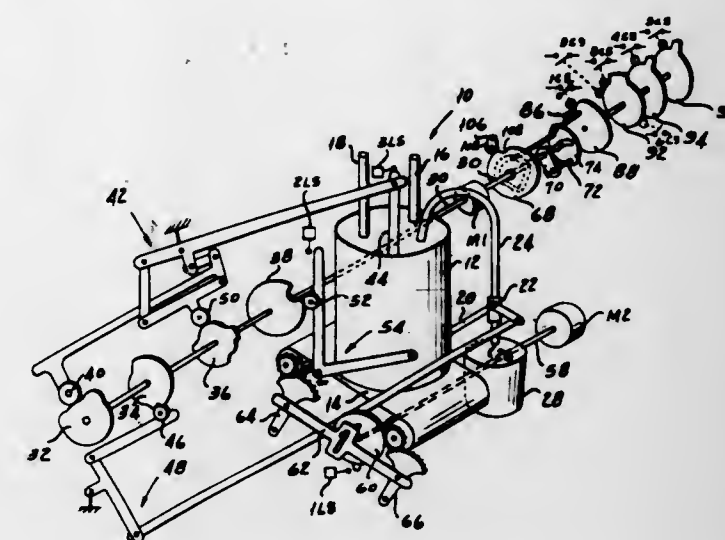
Int. Cl. F16d 71/00

U.S. Cl. 192-142 R

8 Claims



The authority of known actuators can be made to vary only by halting or disengaging a motor drive to the actuator. The authority of the actuator of the present invention is incrementally variable in small steps. Each operation of a switch produces a predetermined limited movement in the actuator. To achieve large authority levels the switch must be operated a number of times.



speed up the camshaft during the ingredient delivery portion of the input shaft cycle to deliver a reduced volume of beverage.

3,610,387 ROLLER FOR ROLLER CONVEYORS

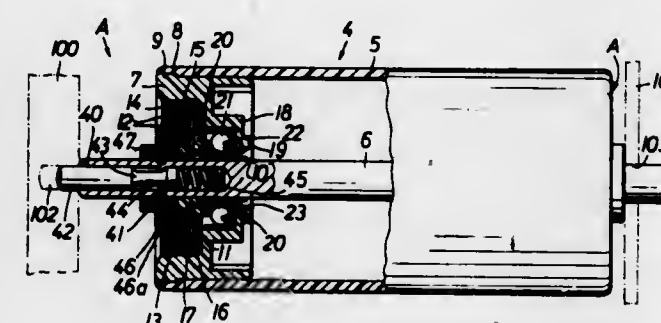
Hans Vom Stein, Wermelskirchen, Rhineland, Germany, assignor to Hans Vom Stein O. H. G., Dhunn-Rhineland, Germany
Filed Feb. 20, 1969, Ser. No. 801,089

Claims priority, application Germany, May 10, 1968, P 17 56 340.5

Int. Cl. B65g 13/00

U.S. Cl. 193-37

7 Claims



An idler roller for use in roller conveyors comprises a shaft which is nonrotatably installed in the frame of the conveyor, a hollow cylindrical shell coaxial with the shaft, and two annular mounting units each installed in one end of the shell and each provided with an antifriction bearing to facilitate rotation of the shell about the axis of the shaft. Each mounting unit further comprises a labyrinth seal which prevents entry of foreign matter into the respective bearing. The mounting units are assembled of several separably connected parts at least some of which consist of elastic synthetic plastic material.

3,610,389 KEYBOARD MACHINE WITH SEQUENTIALLY RESPONSIVE PRINTING MEANS

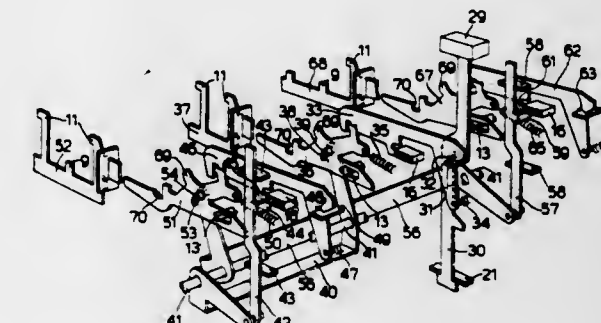
Alessandro Cortona, Banchette (Turin), and Eridiano Gindri, Ivrea (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Sept. 9, 1968, Ser. No. 758,350

Claims priority, application Italy, Sept. 16, 1967, 53042 A/67

Int. Cl. B41j 3/00

U.S. Cl. 197-7

4 Claims



An apparatus for automatically setting a sequence of code combinations in a teleprinter or other keyboard machine comprising a series of setting members, each arranged, when preset by a movement in a first direction to initiate a cycle of operation of a motor-driven universal member which drives the preset member in a second direction to set a group of code bars in accordance with the code combination pertaining to the said member and then permits the said member to be restored resiliently to its inoperative position, and a plurality of keys for presetting corresponding setting members, one of these said corresponding setting members being connected to a further one of the setting members by a linkage which presets the further setting member when the said one member is driven in the said second direction.

3,610,388 TWO-PRICE TWO-LEVEL BEVERAGE MERCHANDISING MACHINE

William Rosenhagen, Ossining, N.Y., assignor to Rowe International, Inc., Whippany, N.J.
Filed Aug. 18, 1969, Ser. No. 850,947

Int. Cl. G07f 13/00

U.S. Cl. 194-3

15 Claims

A beverage merchandising machine having an actuatable shaft coupling which normally provides a direct drive from an input shaft to an ingredient dispensing camshaft to

3,610,390 COMPACT HIGH-SPEED TELEPRINTER MECHANISM

Frederick P. Willcox, 565 Osmoke Ridge, New Canaan, Conn.
Filed June 21, 1968, Ser. No. 744,606

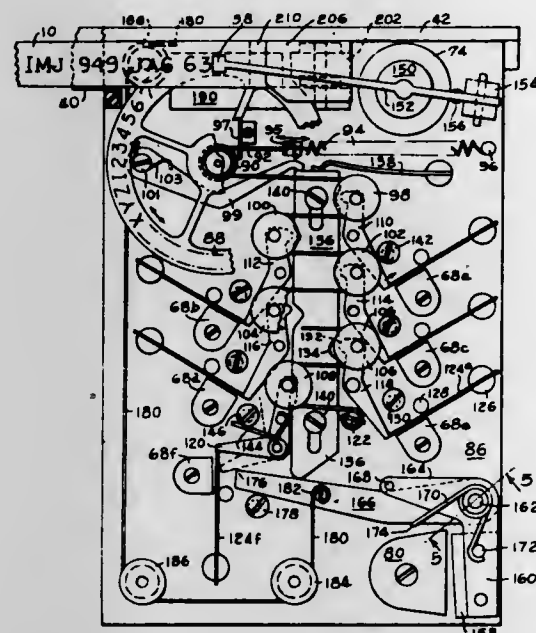
Int. Cl. B41j 1/22

U.S. Cl. 197-49

5 Claims

A compact code-controlled high-speed character printer uses a rotatable wheel-like printing element of low inertia

which is rotated by selective, digitally-metered movement of a tensioned cable to position the selected character for imprinting by the pressing together of the printing element and the impression paper between a relatively-movable rigid



backup anvil and an impression hammer. The received codes position the printing element by the shifting of binary cable-guiding pulleys through the selective electromagnetic release of respective pulley-controlling latches.

3,610,391

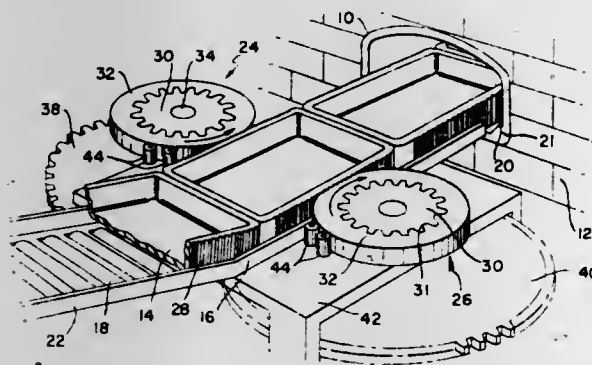
FURNACE CONVEYOR SYSTEM

Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, Waltham, Mass.
Filed Mar. 20, 1970, Ser. No. 21,302

Int. Cl. B65g 19/00

U.S. Cl. 198-1

5 Claims



A resilient gear system especially adapted for use with high-temperature furnaces and operative to provide positive and continuous transport of a work product through a furnace. A pair of counterrotating resilient gears are disposed at the entrance end of a furnace and are cooperative with serrated side surfaces of product carriers to effectively mate with the carriers in gear-coupled relationship for positive transport of the carriers through the furnace.

3,610,392

INFLATABLE TUBE CONVEYOR

Wallace James Parker, Thornliebank Industrial Estate, Glasgow, Scotland

Filed Jan. 17, 1969, Ser. No. 791,982

Claims priority, application Great Britain, Jan. 19, 1968, 2961/68

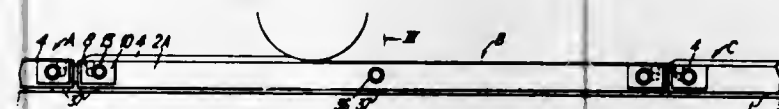
Int. Cl. B65g 35/00

U.S. Cl. 198-1

6 Claims

The invention consists in a conveying apparatus comprising elongated inflatable tubing to receive a load on its exterior

or and fluid supply means connected to the tubing to create



within the tubing an inflationary through flow of fluid which causes movement of the load along the tubing.

3,610,393

LIFTER FOR USE WITH AUTOMATIC TONG UNLOADER

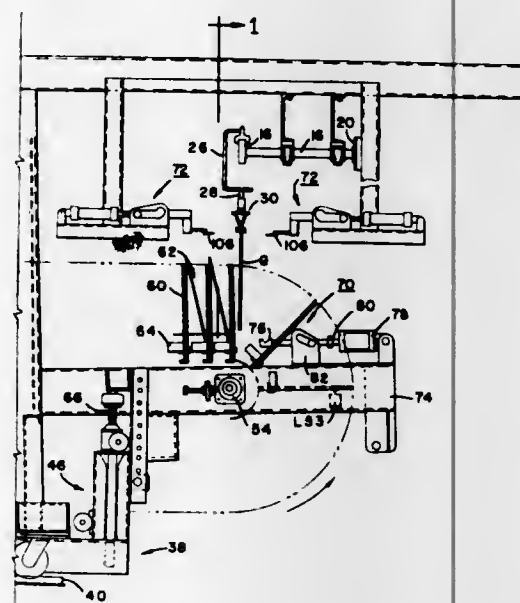
Ronald E. Richardson, Oshawa, Ontario; Gordon F. Pereman, Columbus; John D. Kellar, Oshawa, Ontario, and Jan G. Borremans, Oshawa, Ontario, all of Canada, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 11, 1970, Ser. No. 10,428

Int. Cl. B65g 47/00

U.S. Cl. 198-20

4 Claims



The disclosure shows apparatus and method for transferring a tong suspended glass sheet from a first conveyor system to a peg conveyor in a relatively gentle manner by engaging the tong suspended glass sheet at its bottom edge and then lifting the glass upwardly to relax the tongs. The relaxed tongs are then engaged and held in the relaxed position while the bottom edge supporting member lowers the glass toward the peg conveyor.

3,610,394

CONTAINER TRANSFER MEANS FOR SLOTTED BEAM TYPE CONVEYORS

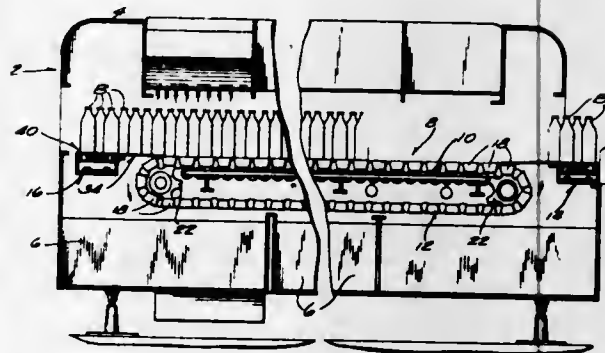
William P. Sager, Milwaukee, Wis., assignor to A-T-O Inc., Cleveland, Ohio

Filed June 9, 1970, Ser. No. 44,775

Int. Cl. B65g 47/66

U.S. Cl. 198-28

7 Claims



An assembly of elongated, parallel extending rods or fingers for receiving upright bottles and like containers from a

conveyor means of the type employed in spray-type pasteurizers for bottled beer, for example, and formed of a continuous succession of tandemly arranged, transversely slotted carrier beams, wherein alternate of the fingers in the assembly are of a first length and extend over and angularly downwardly to the conveyor in positions to engage within the slots of the carrier beams as the latter complete an operating pass in the pasteurizer thereby to engage under and effect an initial stripping from the beam of such bottles as are supported thereon, and wherein the other of the fingers of the assembly are of a second, shorter length and extend in planar relation to the first-mentioned fingers over and angularly downwardly toward the conveyor in positions to engage just above the beams whereby to provide added support to the bottles as the latter are stripped from the beams by the first-mentioned fingers.

3,610,395

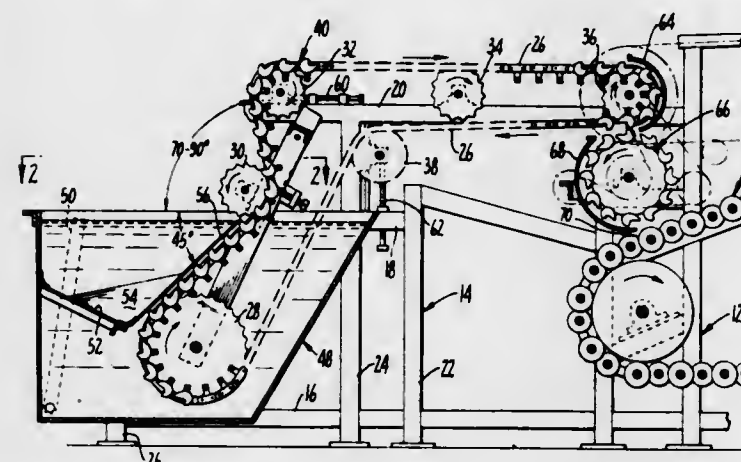
FEEDER APPARATUS FOR FRUIT HANDLING MACHINE

Joseph A. Amorl, 1270 Pine Ave., San Jose, Calif.
Filed May 29, 1969, Ser. No. 829,013

Int. Cl. B65g 47/26, 53/30

U.S. Cl. 198-30

4 Claims



Feeder apparatus for fruit handling machines including a water tank to receive fruit in bulk and render it buoyant, a pocket conveyor having a fruit-receiving reach movable angularly upwardly and outwardly of said tank to receive buoyant fruit and remove the same from said tank, said conveyor including means for removing excess fruit from the pockets thereof, means for retaining fruit in said pockets to the extent of one fruit per pocket, and means for transferring fruit from said pockets to a fruit handling machine.

3,610,396

ARTICLE COMBINER

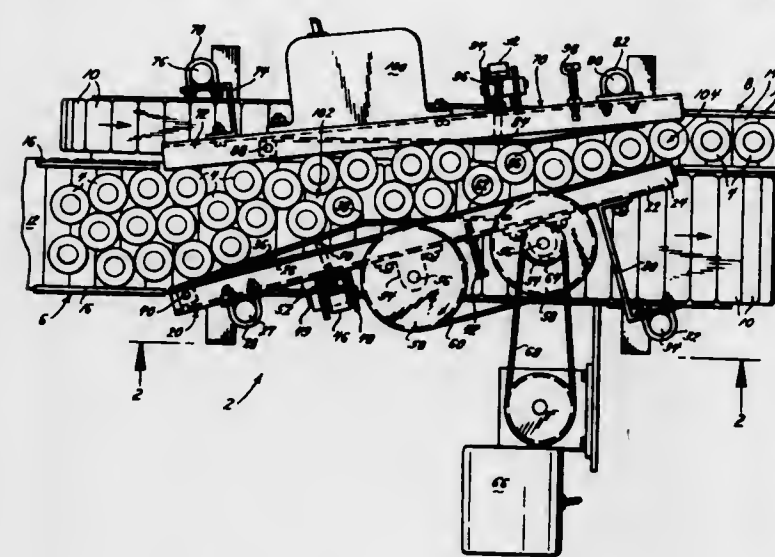
Momir Babunovic, Des Peres, Mo., assignor to Barry-Weh-miller Company, St. Louis, Mo.

Filed June 19, 1969, Ser. No. 834,705

Int. Cl. B65g 47/26

U.S. Cl. 198-30

15 Claims



An article combiner includes adjacent supply and delivery conveyors and converging guides extending obliquely across

the conveyors for channelling a haphazard mass of articles on the supply conveyor into a single file at the infeed end of the delivery conveyor. The guides have yieldable bars which are engaged by the articles, though yielding under pressure from the articles, act to retard the articles sufficiently to prevent formation of jams as the articles are channelled into a single file. A moving belt trained around pulleys on one of the guides has a friction surface which also engages the articles and spins them to further retard the formation of jams.

3,610,397

METHOD AND APPARATUS FOR TURNING OVER A PLATE

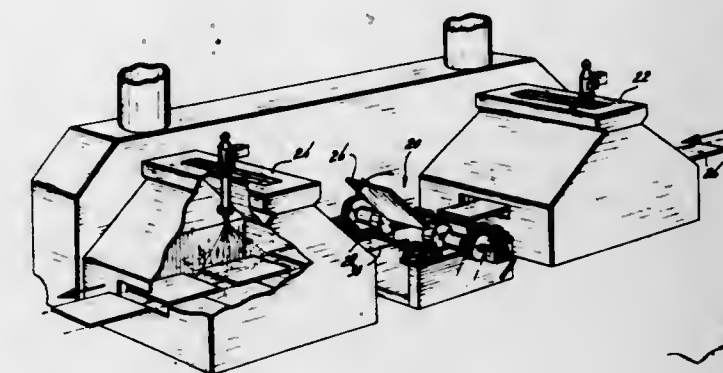
Hendrik F. Bok, North Dartmouth, Mass., assignor to Epec Systems Corporation, New Bedford, Mass.

Filed Mar. 5, 1969, Ser. No. 804,523

Int. Cl. B65g 47/24

U.S. Cl. 198-33 AD

2 Claims



Method and device for turning over a plurality of plates being advanced sequentially in a horizontal plane, a suggested structure including a pair of slotted heads which engage the leading edge of the advancing plate and upon being rotated 180° flip the plate over, so that both top and bottom of the plate may be painted or treated within the horizontal plane.

3,610,398

METHOD AND APPARATUS FOR DUMPING AND FILLING GENERALLY CYLINDRICAL CONTAINERS

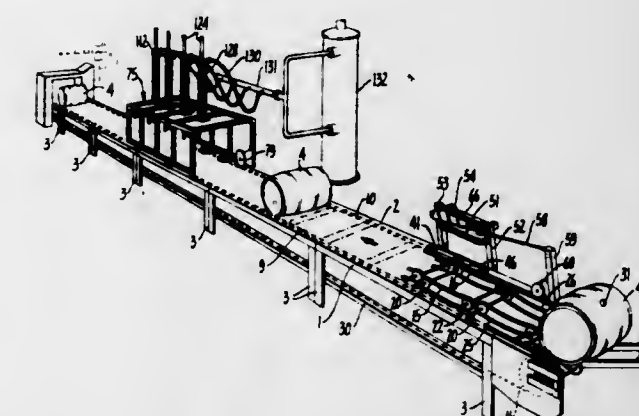
Harold B. Rice, Walnut Creek, Calif., assignor to John Burton Machine Corporation, Concord, Calif.

Filed July 29, 1969, Ser. No. 845,782

Int. Cl. B65g 47/24

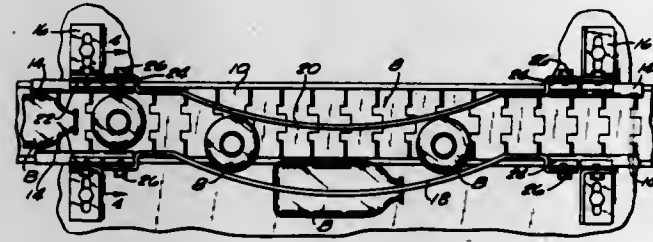
U.S. Cl. 198-33 AD

8 Claims



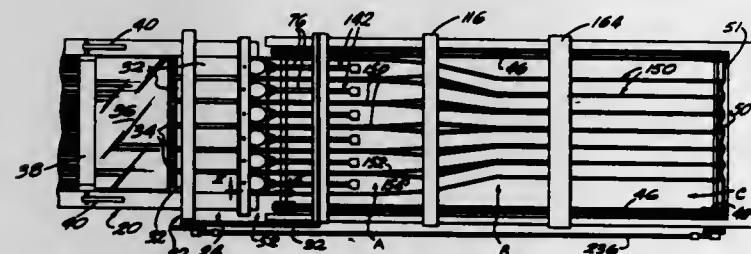
Method and apparatus for dumping the contents of generally cylindrical containers such as barrels and drums and which may also be employed for filling such containers. As specifically applied to barrels, such as whiskey barrels, conveyor means is provided for carrying the barrels along a generally horizontal path of travel and simultaneously orienting the barrels with the bunghole of each barrel in a predetermined position relative to vertical. Thereafter the contents of the container are removed at a high speed or, alternatively, the container may be filled.

3,610,399
ARTICLE CONVEYOR HAVING EJECTING MEANS FOR TIPPED OR FALLEN ARTICLES
 Herman G. Friedrich, Milwaukee, Wis., assignor to A-T-O Inc., Cleveland, Ohio
 Filed Sept. 10, 1969, Ser. No. 856,594
 Int. Cl. B65g 47/24
 U.S. Cl. 198—33 R 2 Claims



A conveyor for upright, generally cylindrical articles, especially bottles and cans, comprising the combination with a powered linkage-type conveyor chain defining a longitudinally extending support surface for the articles, of a pair of opposed, generally rectilinear guide rails normally confining the articles for travel on such surface and which are interrupted at selected positions along the length of the surface to receive sets of arcuately curved guide plates designed to sweep the articles relatively toward one side of the support surface during movement between such plates. The particular one of the arcuately curved guide plates toward which the articles are swept in each such interruption in the side rails is of the reduced vertical extent relatively of its companion plate and is spaced above the plane of the support surface a distance which is in excess of the maximum outside diameter or transverse dimension of the articles being handled so as to enable such articles as are in a horizontal or tipped position on the support surface to eject off the side of the conveyor in moving between a set of curved guide plates.

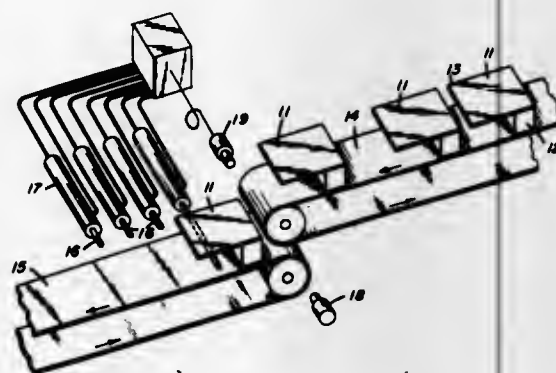
3,610,400
EGG-PACKING MACHINE
 Harvey Z. Burkholder, Ephrata, Pa., assignor to U.S. Industries, Inc., New York, N.Y.
 Filed Oct. 6, 1969, Ser. No. 863,893
 Int. Cl. B65g 47/24
 U.S. Cl. 198—33 AA 12 Claims



An improved egg-packing apparatus orienting eggs into columns and rows so that a carton can be packed by vacuum lifting the eggs positioned with the pointed end downward. To insure that each row is filled as it advances into the machine, a vacuum switch is actuated when vacuum builds up due to the closing of openings to the atmosphere by the presence of an egg on a spring-biased hinged platform positioned in each column adjacent to an accumulating table which is delivering the eggs to the apparatus. Also, a gate otherwise blocking the egg on the platform is cam-actuated

out of the way when the filled row is advanced by engaging rollers. The eggs are oriented as they index through the column one row at a time, the rows being defined by the engaging rollers, by means of flexible fingers mounted on a separate endless chain, which fingers are cammed up into the plane of the rollers. Because the eggs have moved so that the pointed end is adjacent to the fences defining the columns due to the rotation of the engaging rollers by a rack, the fingers upend the eggs with the pointed ends down. This orientation is maintained by converging the fences defining the columns and by preventing tipping of the eggs by fingers projecting sideways and down between the engaging rollers, the fingers being in the form of a star rotatably mounted on the fences. As the rollers advance, the fingers each move into and out of position. Immediately before pickup, the eggs' orientation is maintained by the spacing of the fences to approximate the width of the eggs, this spacing including the use of horizontally extending wire loops which compress as the eggs pass through.

3,610,401
SHINGLING ACCUMULATOR
 Robert W. Herendeen, and Milton E. Meerdink, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed May 28, 1970, Ser. No. 41,342
 Int. Cl. B65g 57/22
 U.S. Cl. 198—35 8 Claims

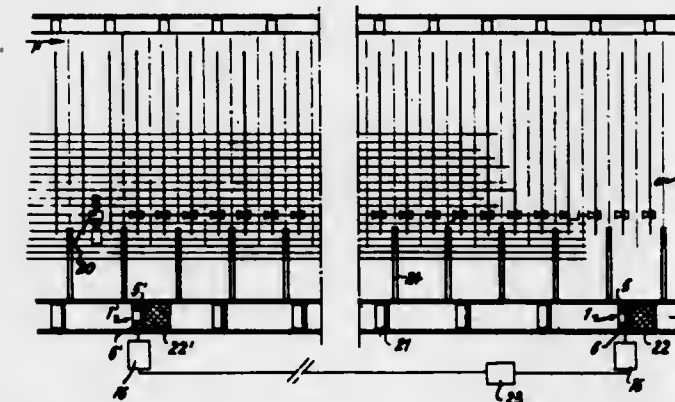


A method and an apparatus for accumulating in overlapping juxtaposition articles, such as card-cartoned products, having a body portion and a flange portion generally coplanar with one surface of said body portion. A series of such articles having a predetermined orientation is caused to descend at intervals to a support surface. Upon interception by said surface each article is advanced in turn together with any preceding articles a distance equal to at least the length of the body portion of an article, but less than the overall article length. The articles are held in their advanced position until the interception of the next succeeding article, whereby successive intercepted articles are juxtaposed such that the flange portion of one article and the body portion of an adjacent article are in overlapping relationship.

3,610,402
ROLL FOR DISPLACEMENT OF BARLIKE PRODUCTS
 Georges Louis Pierre Tavernier, Nord, and Robert Lucien Dubois, Maubeuge, both of France, assignors to Usinor, Paris, France
 Filed Jan. 22, 1969, Ser. No. 793,081
 Claims priority, application France, Jan. 22, 1968, PV 136,931
 Int. Cl. B65g 17/46
 U.S. Cl. 198—41 2 Claims

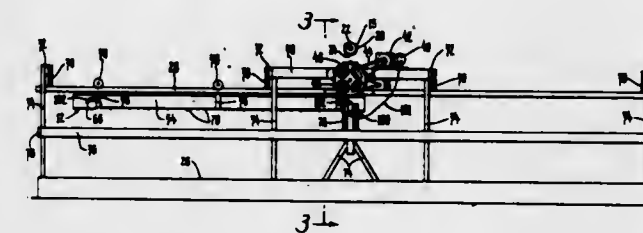
Roll for transporting rolled steel products comprises rings of ferromagnetic material separated by rings of nonmagnetic material. All rings have same diameter but nonmagnetic rings

are narrower than magnetic rings. Annular coil within each magnetic ring supplied with DC power to magnetize ferromagnetic rings. Entire assembly mounted on rotatable



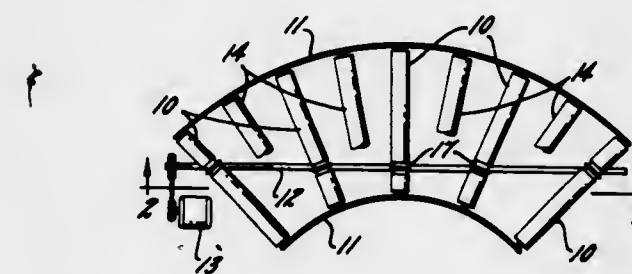
shaft. Apparatus may comprise plurality of such rolls on parallel shafts with idler rolls between them; nonmagnetic rings of the rolls being out of alignment.

3,610,403
MATERIAL DISTRIBUTION APPARATUS
 Gerald L. Schoen, and Robert W. Smith, both of Kaukauna, Wis., assignors to Badger Northland Inc., Kaukauna, Wis.
 Filed Mar. 18, 1969, Ser. No. 808,210
 Int. Cl. B65g 47/44, 23/00
 U.S. Cl. 198—101 3 Claims



A material distribution apparatus for receiving material from a material supply and distributing it evenly over an elongated area. The material distributor has a carriage assembly with an endless conveyor mounted on a track above the elongated area. The endless conveyor is held at one point adjacent to the material supply point so that when the carriage is reciprocated back and forth on the track, the material will be carried off the end of the moving carriage by the endless conveyor. The carriage is propelled by a stationary power source which is mechanically connected to the carriage assembly.

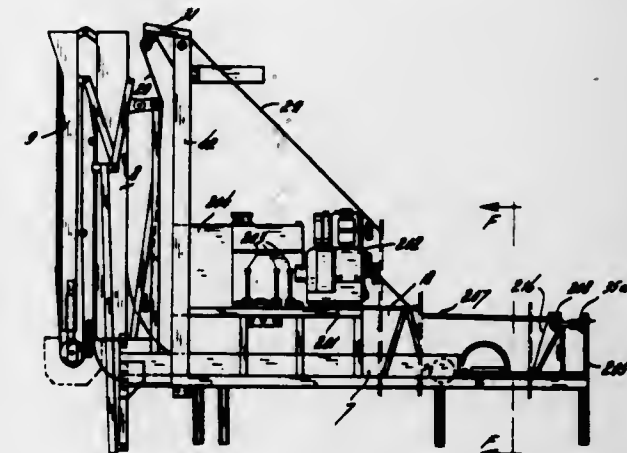
3,610,404
CURVED POWERED ROLLER CONVEYOR
 Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to Ermanno Incorporated, Grand Haven, Mich. and General Logistics Corporation, Oakmont, Pa., part interest to each
 Filed May 5, 1969, Ser. No. 842,048
 Int. Cl. B65g 13/02, 21/12
 U.S. Cl. 198—110 4 Claims



A curved live roller conveyor is described in which a plurality of individual live rollers disposed at angles about the

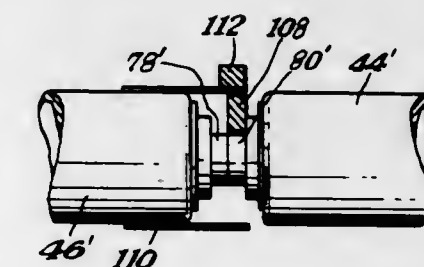
center of conveyor curvature are driven from a common powered drive shaft through a system of pulleys and elastomeric belts. Straight or tapered rollers are used, with pulley diameters being varied to provide constant rotational speed for each driven roller.

3,610,405
VEHICLE FOR THE TRANSPORT OF A ROTATING MIXER OR THE LIKE
 Lionello Rossi, Km. 16,500 via Tiburtina, Roma, Italy
 Filed Oct. 9, 1969, Ser. No. 865,027
 Int. Cl. B65g 21/12, 41/00
 U.S. Cl. 198—113 4 Claims



This is a foldable conveyor having means for locking the same into extended positioning, particularly adaptable to concrete mixers and the like.

3,610,406
CONVEYOR CONSTRUCTIONS AND TORQUE-LIMITING TRANSMISSIONS THEREFOR
 Fred J. Fleischauer, Pittsburgh; John D'Amore, Butler, and Ralph C. Green, Butler, all of Pa., assignors to General Logistics Corporation, Oakmont, Pa.
 Filed Mar. 20, 1968, Ser. No. 714,625
 Int. Cl. B65g 13/02
 U.S. Cl. 198—127 11 Claims



A number of limited torque conveyor constructions are disclosed, which are suitable for a variety of uses. Each roller of the conveyor, or at least in that portion thereof where accumulation may occur, is coupled to a torque-limiting transmission such that the rollers are not rotated when in contact with articles stopped upon the conveyor. By thus limiting the driving torques applied to the conveyor rollers, damage-producing forces cannot build up in a line of stopped or accumulated articles. When arranged for accumulation, the disclosed conveyors apply only that torque which is necessary to overcome the rolling friction of the loaded conveyor rollers. The summation of the tangential forces acting upon accumulated or stopped articles is very small in comparison to the forces developed by positively driven or live conventional rollers which continue to rotate while contacting stopped articles. The invention also contemplates a number of forms of torque-limiting transmissions. Singulation devices are disclosed in combination with the torque-limiting feature. A conveyor construction suitable for use partially within a sealed enclosure also is disclosed.

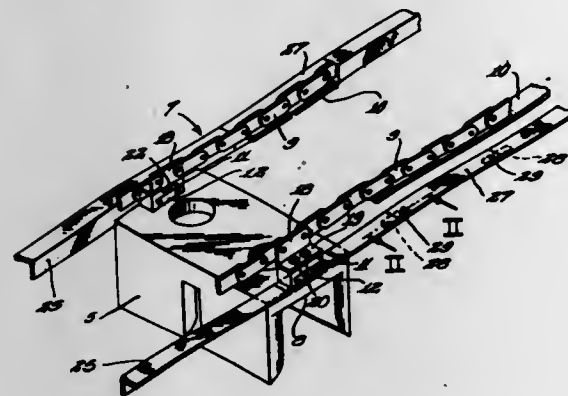
3,610,407

QUICK-CHANGE COUPLING DEVICE FOR CONVEYOR-TRANSPORTED MEMBERS

Donald T. Prodzinski, Glen Ellyn, Ill., assignor to Alpeda Industries, Inc., Golf, Ill.
Continuation-in-part of application Ser. No. 792,595, Jan. 21, 1969. This application Oct. 6, 1969, Ser. No. 864,142
Int. Cl. B65g 19/02

U.S. Cl. 198-131

18 Claims



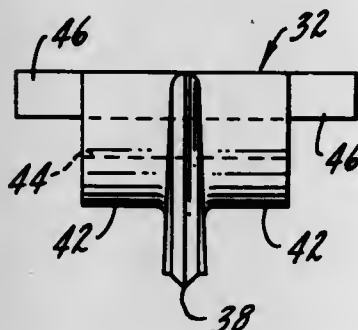
A quick-change coupling device for members transported by a conveyor oriented to travel a given path comprises respective structure carried by the member and the conveyor, and coactive means on the structures enabling relative assembly and separation of the structures transversely relative to the path of the conveyor. In a specific embodiment, the structures of the device are a tee and a complementary yoke.

3,610,408
COIN TILL

Frederick P. Strobl, Jr., Park Ridge, Ill., assignor to Fred Jay & Co., Chicago, Ill.
Filed Aug. 25, 1969, Ser. No. 852,739
Int. Cl. A45c 11/28

U.S. Cl. 206-0.81

3 Claims



A coin till of molded thermoplastic or similar material having molded partitions for segregating the various money denominations and including separately molded socket members which are inserted into recesses in the partitions. A bar member has bearing surfaces for minimizing wearing of the bar and distortion of a spring used with a bill-depressing arm. A top member required for the attachment of a separate cover is independently molded and thereafter secured to the rear wall. A minimum amount of solvent is employed to seal the several independently molded parts.

3,610,409

LUNCH BOXES WITH CARRIER ATTACHMENTS

Edwin H. Graf, W187 S6876 Jewel Crest Drive, Muskego, Wis.

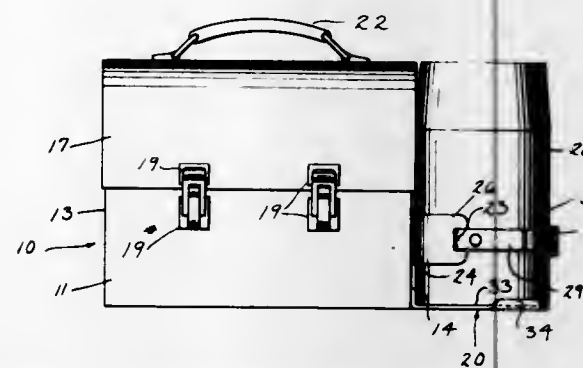
Filed Nov. 13, 1969, Ser. No. 876,487
Int. Cl. A45c 11/20

U.S. Cl. 206-4

2 Claims

A vacuum bottle holder attachment including a wall with an integral downturned flange closely removably fitted over an end wall of a standard lunchbox in a manner whereby said

holder is clampingly retained in an external position on said lunchbox by the box cover when said cover is in its closed



condition, said removable holder having an outwardly projecting bottom support and having releasable straps.

3,610,410

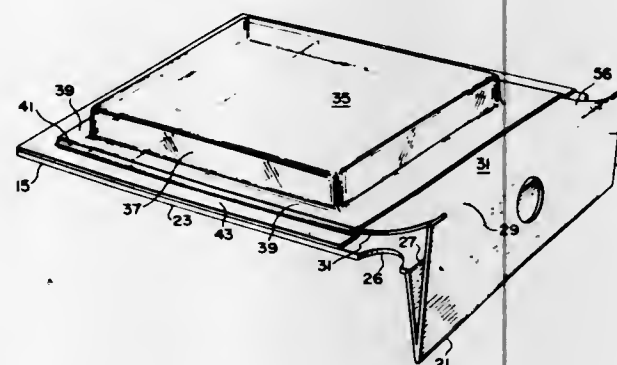
TAMPERPROOF RECLOSABLE SLIDING PANEL DISPLAY BLISTER PACKAGE

Leonard Seeley, Palatine, Ill., assignor to Plastofilm Industries, Inc.

Filed Nov. 10, 1969, Ser. No. 875,041
Int. Cl. B65d 83/04, 79/00

U.S. Cl. 206-44.12

1 Claim



An integral folded panel component secured to a transparent blister enclosure includes a slidable folded front portion secured between a fixed back panel portion and the blister enclosure, the folded portion being slidable to expose a discharge port in the back panel.

3,610,411

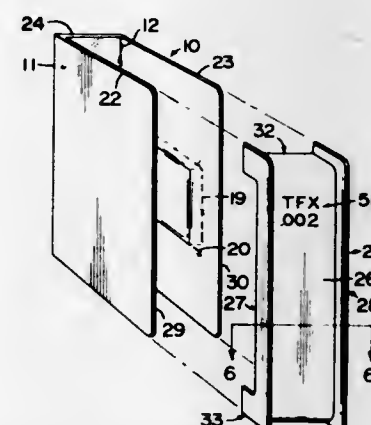
PACKAGING SYSTEM FOR INVENTORY MAINTENANCE

Eugene W. Coleman, Richmond Heights, Ohio, assignor to Picker Corporation, White Plains, N.Y.

Filed May 16, 1969, Ser. No. 825,242
Int. Cl. B65d 71/00, 75/34, 85/62

U.S. Cl. 206-65 R

28 Claims



A parts inventory maintenance system utilizing novel kit and parts packages. The kit package is a folded sheet which

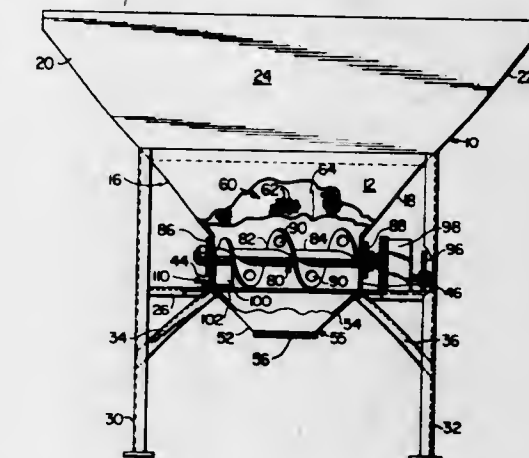
3,610,414

CRUSHING AND SCREENING APPARATUS FOR SCREENING PARTICULATE MATERIAL CONTAINING FRANGIBLE LUMPS

Harold Zumak, Yazoo City, Miss., assignor to Mississippi Chemical Corporation, Yazoo City, Miss.
Filed Jan. 16, 1969, Ser. No. 791,631
Int. Cl. B07b 1/00

U.S. Cl. 209-283

5 Claims



Prilled and granular fertilizer and other particulate materials containing frangible lumps and foreign material can be screened at high rates in a hopper having V-shaped screen mounted therein through which the particulate fertilizer passes, the screen having a hemicylindrically shaped bottom portion forming a depressed trough in which is axially mounted a screw conveyor which conveys fertilizer in the trough toward one wall of the hopper, the edge of the blade of the screw being proximate the inner surface of the trough, so that lumps in the fertilizer are crushed between the edge of the blade of the screw and the inner surface of the trough, with a cam being mounted on the shaft of the conveyor near the wall of the hopper toward which the fertilizer in the trough is conveyed, which lifts out of the trough foreign material conveyed to the cam, thereby preventing the conveyor from becoming clogged.

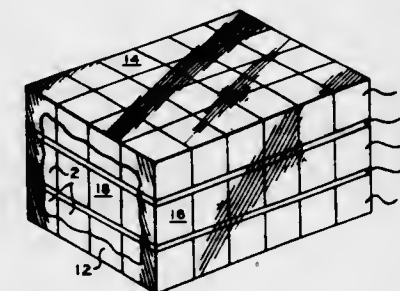
3,610,412

SINGLE-SERVICE DELIVERY PACKAGES

Clifford G. Morse, and George E. MacEwen, both of Kansas City, Mo., assignors to Phillips Petroleum Company
Filed Oct. 2, 1969, Ser. No. 863,254
Int. Cl. B65d 71/00, 85/62

U.S. Cl. 206-65 S

5 Claims



A plurality of stacked articles maintained from separation one from another by means within the article stack and heat shrunk film encompassing a portion of the external surfaces of the article stack.

3,610,413

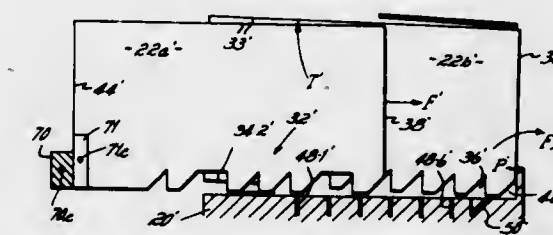
MAGNETICALLY RESPONSIVE CARD RETRIEVAL SYSTEM

Daniel J. Bandenburg, Cincinnati, Ohio, assignor to OK Partnership, Cincinnati, Ohio

Filed June 16, 1969, Ser. No. 840,111
Int. Cl. B07c 3/18

U.S. Cl. 209-80.5

3 Claims



Card retrieval system for physically shifting and thereby selecting desired cards having a predetermined notch pattern along a sorting edge and a ferromagnetic member in a transverse edge from undesired cards having a different notch pattern and a ferromagnetic member including, a horizontal platen for supporting the cards with their respective sorting and transverse edges and ferromagnetic members aligned, a plurality of sorting bars disposed transversely of said sorting edge adjacent said notches, a sorting bar actuator for selectively moving said sorting bars into said notches, a dual-purpose elongated magnet disposed adjacent the ferromagnetic members of the cards which is movable in a direction parallel to the card sorting edges to separate the desired and undesired cards and which has a magnetic center below that of the ferromagnetic members to bias the sorting edges of the cards against the platen prior to magnet movement, thereby properly orienting the cards relative to the platen prior to sorting.

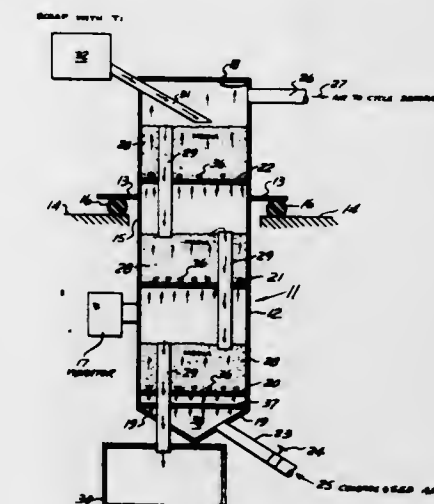
3,610,415

METHOD OF DRY SEPARATION OF LESS DENSE METAL PARTICLES FROM MORE DENSE METAL PARTICLES AND APPARATUS THEREFOR

Charles K. Deak, Warren, Mich., assignor to Frankel Company, Inc., Detroit, Mich.
Filed May 1, 1969, Ser. No. 820,793
Int. Cl. B07b 3/02

U.S. Cl. 209-466

1 Claim



The method of dry separating a mixture of dense scrap particles from less dense scrap particles such as aluminum or Titanium, which includes confining a finely divided media of metallic particles of a specific gravity greater than said less

dense particles upon a perforate support, fluidizing said media by delivering continuously a flow of compressed gas upwardly through said media modifying said media producing an apparent specific gravity less than the dense particles and introducing said scrap particle mixture into the fluidized medium and floating off from the said media the less dense scrap particles; and the apparatus for carrying out said method.

3,610,416

PUMP FOR LIQUIDS

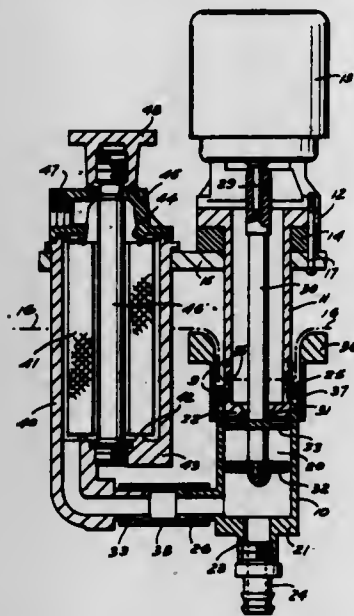
Walter J. Otto, Wantagh, N.Y., assignor to Julius L. Englesberg, Rockville Centre, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,252

Int. Cl. B01d 35/26, 35/02

U.S. Cl. 210-121

7 Claims



The pump includes a body having two inlets, arranged one above the other, and an outlet. A pair of spaced-apart impellers rotate within the body between the two inlets and draw liquid into the body through the two inlets, respectively, and discharge the liquid through the outlet. Surface liquid flows over an annular float into the upper inlet. The body is formed of two telescoping parts adjustable so that one of the inlets may be closed. Top and bottom walls within the body define an impeller chamber, and the upper impeller is located closer to the top wall than the spacing between the lower impeller and the bottom wall, so that the upper impeller develops a higher pressure than the lower impeller.

3,610,417

SYSTEM FOR PREVENTING SLUDGE FORMATION IN A COOLING TOWER RESERVOIR

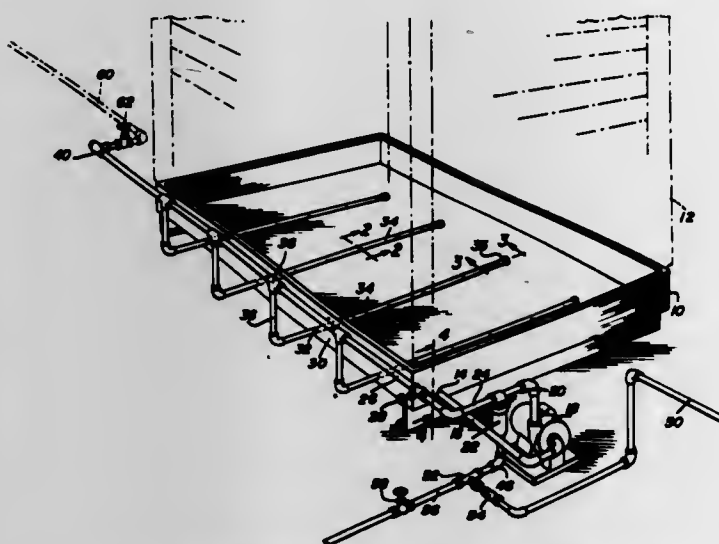
James H. DeLoach, 1604 E. 34th St., Savannah, Ga.

Filed Feb. 24, 1970, Ser. No. 13,646

Int. Cl. B01d 35/02

U.S. Cl. 210-167

1 Claim



A number of parallel spaced pipe sections are disposed in overlying adjacent relation to a reservoir base. Apertures are

formed along the length of each pipe section at an acute angular relation with the horizontal. Fluid from the reservoir is pumped through the pipe sections so as to produce jets that exit from the apertures. These jets impinge upon the reservoir base and cause agitation of the liquid stored in the reservoir. This agitation inhibits propagation of organisms which produce sludge.

3,610,418

MULTIPLE BORE REVERSE OSMOSIS MODULE

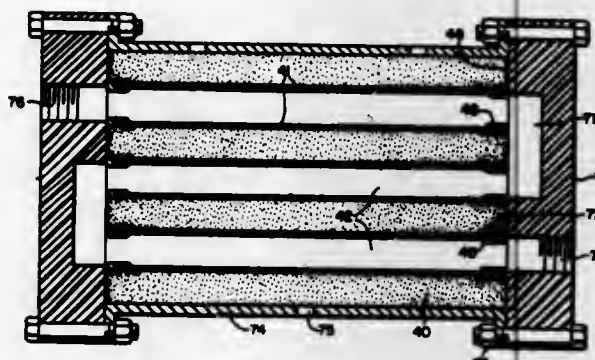
Andrew S. Calderwood, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 5, 1969, Ser. No. 855,491

Int. Cl. B01d 31/00

U.S. Cl. 210-321

19 Claims



A reverse osmosis apparatus, comprising an open pore module of bonded, resin-coated filler particles having sealed, nonporous terminal ends and a plurality of spaced feed bores, lined with semipermeable membranes and connected for series flow by means of attached end plates, is made by coating granular filler particles with a resin solution, pouring the resulting composition into a mold of suitable configuration, curing the resin, removing the mold to provide a module having terminal ends and a plurality of spaced-apart bores therethrough, impregnating the terminal ends of the module and the terminal ends of the bores with a liquid-impermeable polymeric sealing composition having a postgelation shrinkage of less than 4 percent, curing the sealing composition, inserting semipermeable membranes into the bores, sealing the membranes into the bores by suitable sealing means and attaching end plates to provide for series connection of the bores.

3,610,419

FILTER LEAF

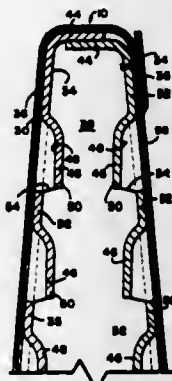
Gilles G. Vallee, and Phillip J. Mills, both of Sherbrooke, Quebec, Canada, assignors to Improved Machinery Inc., Nashua, N.H.

Filed June 9, 1969, Ser. No. 831,436

Int. Cl. B01d 33/26

U.S. Cl. 210-486

9 Claims



A filter segment for a disc filter, having louvered openings providing slotlike drainage passages through its sidewalls and a drainage duct between such sidewalls communicating with the drainage passages to receive filtrate therefrom.

3,610,420

POROUS SUPPORT TUBES FOR REVERSE OSMOSIS

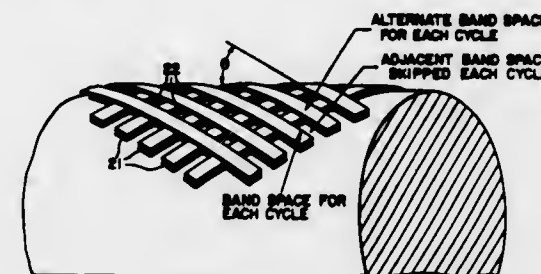
Ronald N. Sampson, Monroeville; Jacob Chottiner, McKeesport, and Edward M. Petrie, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1968, Ser. No. 740,184

Int. Cl. B01d 31/00, 13/00

U.S. Cl. 210-490

2 Claims



A fiber glass filament-wound porous tube for use in a reverse osmosis water purification system is made from multiple layers of resin impregnated continuous glass roving. These tubes are fabricated either by an open weave helical filament winding technique or by adding to the impregnating resin certain amounts of blowing agent having a decomposition temperature slightly below or above the resin cure temperature.

3,610,421

APPARATUS FOR SEPARATING IMMISCIBLE LIQUIDS

William A. Gurney, Birmingham, England, assignor to Dunlop Holdings Limited, London, England

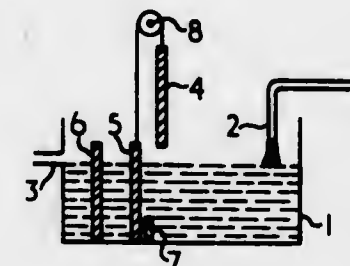
Filed Jan. 30, 1970, Ser. No. 7,048

Claims priority, application Great Britain, Feb. 18, 1969, 8661/69

Int. Cl. B01d 17/02

U.S. Cl. 210-496

10 Claims



An apparatus for separating immiscible liquids comprises: a liquid-separating zone, a cleaning zone and at least one porous metal or ceramic device. Said porous metal or ceramic device being movable between the two zones. In the separating zone the porous device serves to separate the immiscible liquids and in the cleaning zone the separated liquid is removed from the porous device. Also the method in which the above apparatus may be used.

3,610,422

CLOTHES DRYER

Gustav Jager, Rettenbachwaldstr. 35, A-4820 Bad Ischl, Austria

Filed Jan. 28, 1970, Ser. No. 6,376

Claims priority, application Austria, Nov. 12, 1969, A 10,616/69

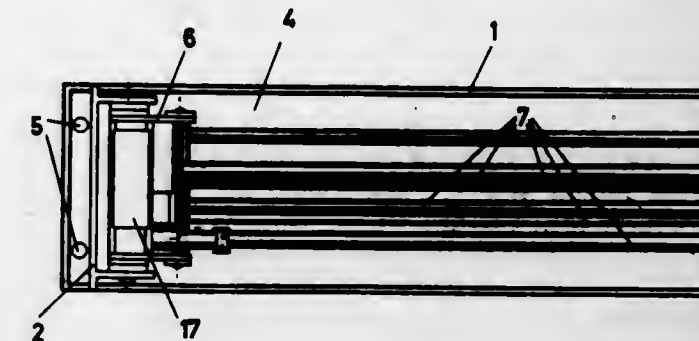
Int. Cl. A47b 53/00

U.S. Cl. 211-1.3

13 Claims

The clothes dryer comprises a housing and a frame, which is adapted to be extended out of said housing. The frame comprises two spaced-apart, self-supporting carrying arms, which are articulately connected to said housing and foldable inwardly about a point disposed approximately in the

middle of their length. In a folded condition, the arms are adapted to be swung into said housing. Equally spaced mounting brackets are mounted in each of said carrying



arms. Horizontal carrying rods are mounted in said mounting brackets for displacement relative thereto and connect said carrying arms.

3,610,423

GARMENT DISPLAY RACK

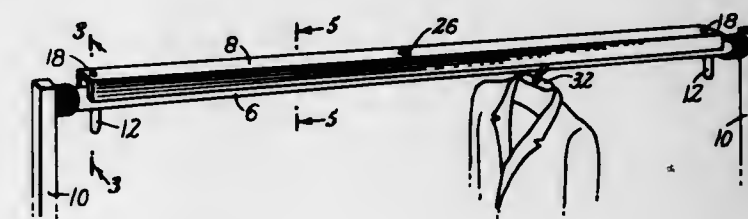
Vincent Parillo, Highland Park, N.J., assignor to Bond Stores, Incorporated, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,100

Int. Cl. A47f 7/24; E05b 73/00

U.S. Cl. 211-7

1 Claim



The application discloses a garment display rack having a security device and lock to prevent theft of the displayed articles. The device is spring actuated for opening to unlock position automatically when the lock is released. The lock is arranged on the rack to permit the hangers for the articles, when being loaded thereon, to pass freely from one end to the other thereof, which facilitates the loading of a large number of hangers at a time from one end of the rack until the rack is full while thereafter allowing individual hangers to be removed easily from any point along the length of the rack.

3,610,424

CASSETTE HOLDER

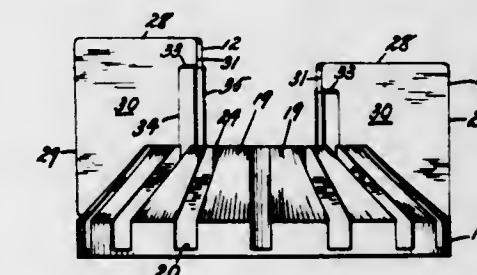
Maxwell H. Connan, Glen Head, N.Y., assignor to The Conart Co., Inc., Glen Head, N.Y.

Filed Apr. 28, 1970, Ser. No. 32,590

Int. Cl. A47g 29/00

U.S. Cl. 211-40

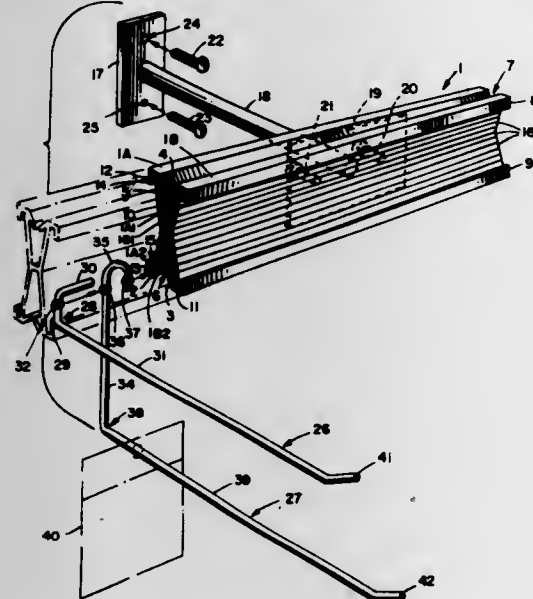
2 Claims



A device for the retrievable storage of individual tape cassettes including a plurality of first members in juxtaposed relation and defining a plurality of slots therebetween cor-

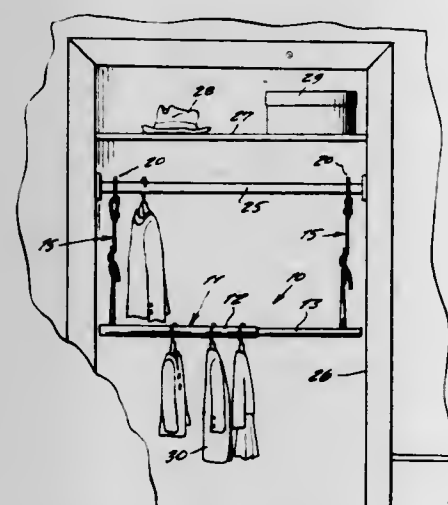
responding in width to that of an individual cassette, a second member abutting the inner end of each of said plurality of first members, and defining therewith a tapered slot corresponding generally in width to an enlargement on said cassettes, whereby a cassette may be inserted endwise within one of said plurality of slots in such manner that the enlargement thereon becomes wedged within said tapered slot.

3,610,425
ARTICLE SUPPORT AND DISPLAY DEVICES
Marion Joseph Madey, Park Ridge, Ill., assignor to Foster Products, Inc., Chicago, Ill.
Filed Feb. 24, 1960, Ser. No. 13,532
Int. Cl. A47f 7/00
U.S. Cl. 211-57 6 Claims



Article support and display devices are provided which have an elongated body with a pair of flanges running lengthwise and extending inwardly toward one another, the inner edges of said flanges being substantially parallel and forming a slot between them, said slot being open at an end thereof, and means comprising an article supporting rod or rods of substantial length adapted to be removably mounted in said slot through said open end thereof and to extend laterally of said elongated body. Packages containing articles of merchandise can be suspended on said rods by forming a hole in one end of the package and inserting the rod through the hole. Other items can also be suspended from the rods in any suitable manner.

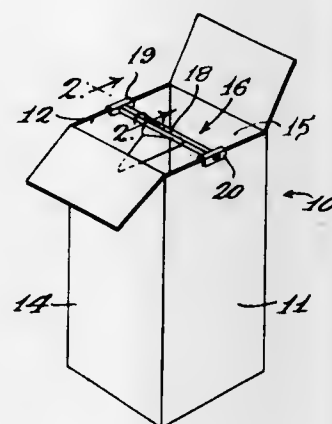
3,610,426
CHILD'S GARMENT SUPPORTING ROD FOR HANGING HIS CLOTHES
Sadie L. Thomas, 139 Pacific Court, Vallejo, Calif.
Filed Nov. 14, 1969, Ser. No. 876,756
Int. Cl. A47f 5/08
U.S. Cl. 211-117 1 Claim



A bar for supporting a plurality of garment hangers, the bar being positioned at a relatively low elevation so to be

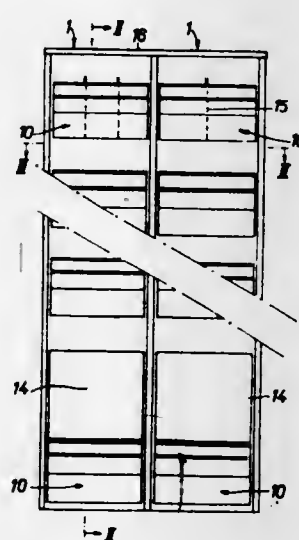
convenient for a small child for hanging his clothes himself or removing his clothes therefrom, the bar being adjustably suspended from opposite ends of the conventional bar used by adults for supporting garment hangers supporting adults' clothing.

3,610,427
GARMENT HANGER DEVICE
Joseph A. Mazlarka, and Robert J. Mazlarka, both of c/o Relling Corp. 1837 W. Grand Ave., Chicago, Ill.
Filed Feb. 25, 1969, Ser. No. 802,127
Int. Cl. A47f 5/00; B65d 85/18
U.S. Cl. 211-123 8 Claims



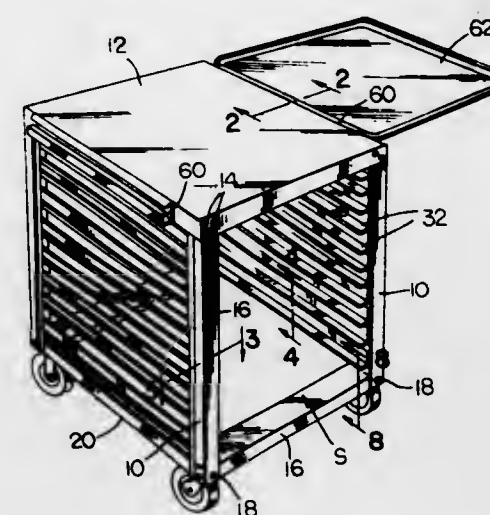
A clothes hanger support for shipping containers including a horizontally extending U-shaped hanger bar having at each end downwardly projecting tongues which fit over a U-shaped strap formed integrally with brackets at each end of the bar adapted to fit over the shipping container, there being provided interengaging locking projections on the strap and on the tongue.

3,610,428
STORAGE STRUCTURE
Hans Steger, 22, Morgentalstrasse 22, 8355 Andorf, Switzerland
Filed Aug. 25, 1969, Ser. No. 852,658
Claims priority, application Switzerland, Aug. 29, 1968, 13 027/68
Int. Cl. A47b 87/00; A47f 3/14
U.S. Cl. 211-126 10 Claims



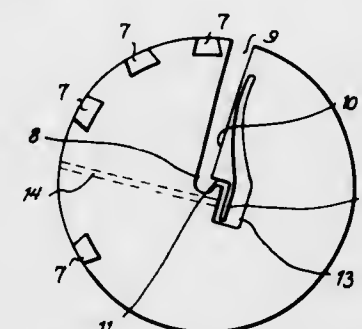
The invention relates to a storage structure comprising juxtaposed, forwardly open boxes, being divided by separator sheets into compartments lying above each other and capable of receiving material, e.g., fittings. The whole structure being made substantially of sheet metal parts joined to each other by dismantlable horizontal rod-fastening means.

3,610,429
ARRANGEMENTS FOR SLIDABLY SUPPORTING PANLIKE OR TRAYLIKE ARTICLES
Robert H. MacKay, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.
Filed July 15, 1969, Ser. No. 841,851
Int. Cl. A47b 9/00; A47f 3/14; B62b 1/10
U.S. Cl. 211-133 14 Claims



The invention relates to a supporting arrangement for panlike or traylike articles, in which the structure takes the form of vertical columns arranged in laterally spaced pairs with the columns of each pair spaced in the fore-and-aft direction. The columns are fixedly interconnected at their upper and lower ends and the laterally spaced pairs of columns define spaces therebetween for receiving panlike or traylike articles. The articles are supported by horizontal guide members detachably connected to the pairs of columns on the support sides of the space. The structure can be stationarily mounted, or it may be provided with wheels on the bottom so that it is portable.

3,610,430
DISPLAY STAND
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Oct. 28, 1969, Ser. No. 870,035
Claims priority, application Norway, Aug. 7, 1969, 3233/69
Int. Cl. A47f 3/14, 5/10
U.S. Cl. 211-176 1 Claim

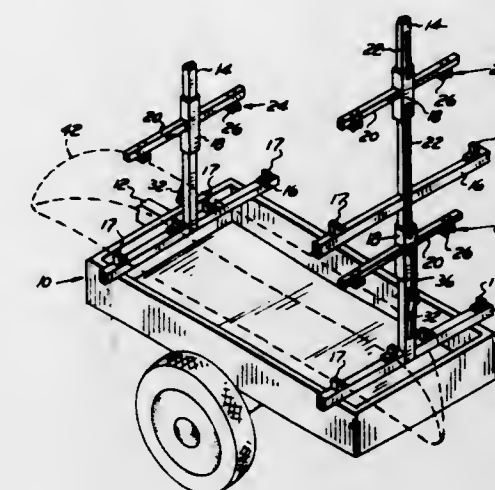


A display stand for tooth brushes which are arranged on the rims of a plurality of discs placed on a common control rod, the discs being easy to replace by sliding them off the rod after release of a locking device.

3,610,431
TRAILER AND TRUCK RACK WITH HOLDDOWN DEVICE
Horace E. Rodden, 202 N. 4th St., Roscommon, Mich.
Filed Oct. 10, 1969, Ser. No. 865,431
Int. Cl. A47f 5/10, 7/00
U.S. Cl. 211-176 2 Claims

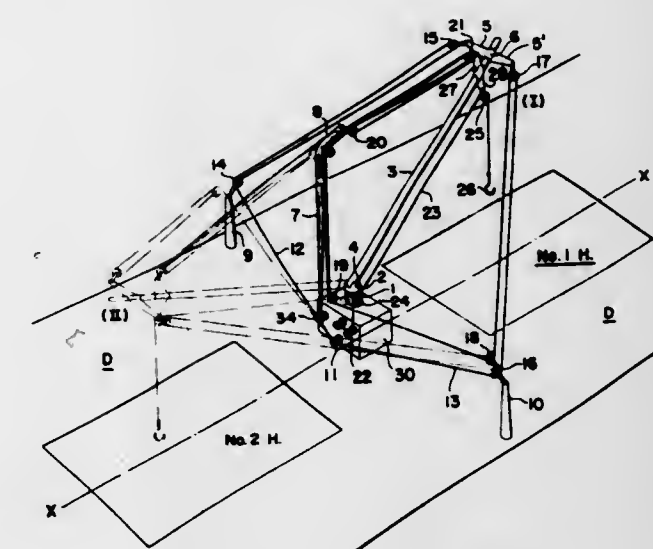
A load-carrying rack for trailers and trucks consisting of a pair of spaced upright posts, each having thereon vertically

spaced pairs of oppositely disposed support arms. Slidable sleeves on the upright posts, one located above each pair of support arms, have thereon clamping arms vertically aligned with the support arms. The slidable sleeves on each post are held in fixed spaced relationship by connector bars. A



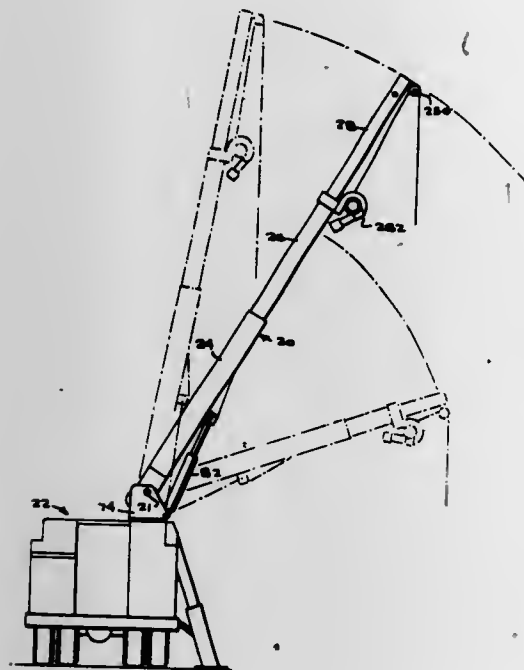
pivoted operator lever on each of the upright posts is connected by pivoted means to one of the slidable sleeves on the post. The slidable sleeves on each post are thus movable in unison so that the clamping arms thereon will simultaneously engage and disengage any load resting on the support arms.

3,610,432
MARINE DERRICK SYSTEM
Sadatomo Kuribayashi, 11-21, 2-chrome, Kakinokizaka, Meguro-ku, Tokyo, Japan
Filed Mar. 20, 1969, Ser. No. 808,772
Claims priority, application Japan, Aug. 9, 1968, 43/56,110
Int. Cl. B66c 23/52
U.S. Cl. 212-3 3 Claims



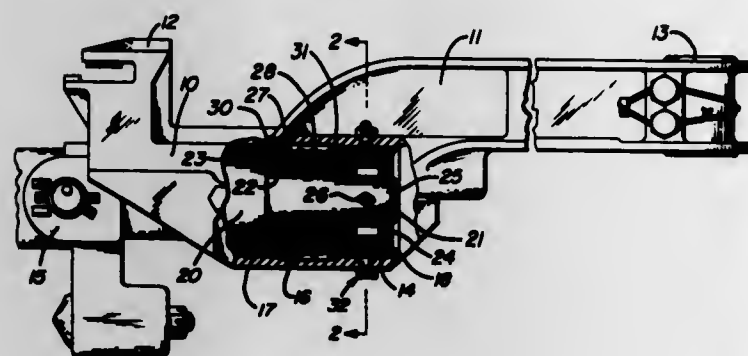
A marine derrick system consisting a derrick post erected on deck at a point away from the longitudinal center plane of a ship and having a top end thereof bent inboardly so that it will come within the longitudinal center plane, and a derrick boom having a lower end pivotally mounted on deck at a point within the longitudinal center plane and having an overall length greater than the height of the derrick post so as to render the derrick boom operable in the area both forward and aftward of the derrick post.

3,610,433
HYDRAULICALLY OPERABLE EXTENDABLE BOOM
 Edwin E. Milner, Jr., Williamsburg, and William R. Pierce, Richmond, both of Va., assignors to Baker Equipment Engineering Company, Richmond, Va.
 Filed May 7, 1970, Ser. No. 35,343
 Int. Cl. B66c 23/00, 23/62
 U.S. Cl. 212-46 B



An extendable boom formed of three telescopically received boom sections with a pair of hydraulic piston and cylinder assemblies in side-by-side relationship on the boom interior with one cylinder being axially movable with respect to the other form retracted to extended position for extending the boom and with the piston of one cylinder being connected to the inner end of the inner boom section and the cylinder of the same assembly being connected to the inner end of the middle boom section with the piston of the second hydraulic assembly being connected to the middle section and with the cylinder of the second assembly being connected to the outer boom section.

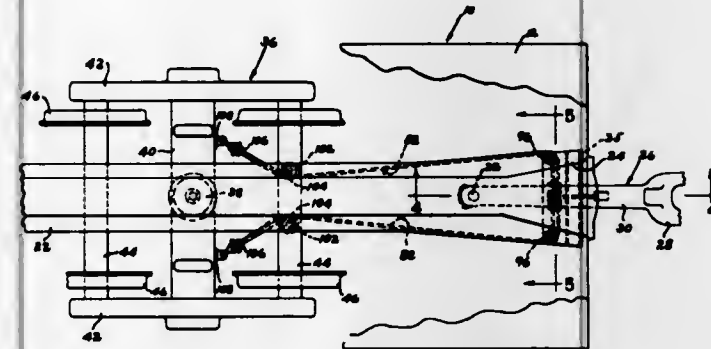
3,610,434
EMERGENCY RELEASE COUPLER
 Donald L. Herbert, Lexington, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio
 Filed Oct. 27, 1969, Ser. No. 869,480
 Int. Cl. B61g 9/04
 U.S. Cl. 213-9



An emergency release device for a railway car coupler embodying shear bolts connecting two adjacent load-carrying members of the coupler, the load-carrying members being

31 Claims

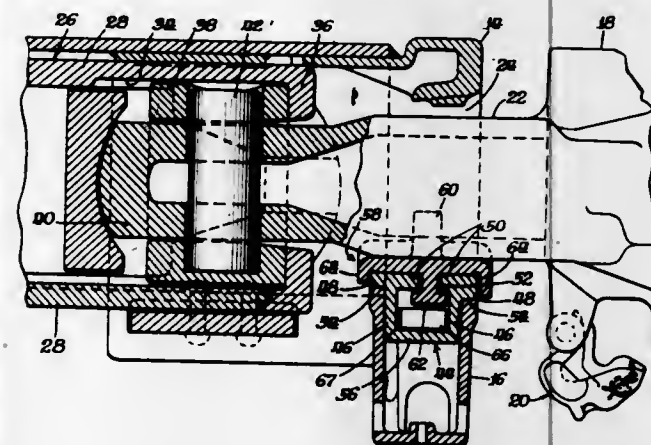
3,610,435
COUPLER POSITIONING DEVICE FOR LONG LENGTH RAILWAY FREIGHT CARS
 Robert W. Randolph, and Dallas W. Rollins, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
 Filed Nov. 26, 1969, Ser. No. 880,020
 Int. Cl. B61g 7/12
 U.S. Cl. 213-15



A coupler positioning device for long length railway freight cars comprising an elastomeric member having an upper surface connected to the shank of a coupler for lateral movement therewith. The lower surface of the elastomeric member is operatively connected to the adjacent truck and moves with the truck upon a pivotal movement of the truck relative to the car body or center sill. The elastomeric member deflects in shear upon any relative lateral movement between the truck and the coupler shank. After the shear deflection of the elastomeric member the coupler shank and truck are urged by the bias of the elastomeric member to longitudinally aligned relation.

8 Claims

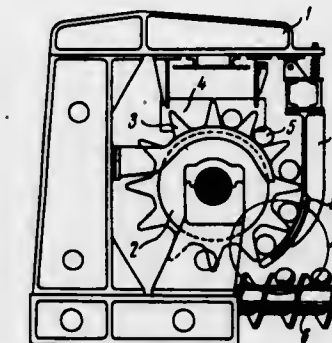
3,610,436
COUPLER CARRIER
 Lee Gail Wisler, Beloit, Ohio, assignor to Amsted Industries Incorporated, Chicago, Ill.
 Filed Oct. 2, 1969, Ser. No. 863,162
 Int. Cl. B61g 1/00, 7/10
 U.S. Cl. 213-61



An adapter unit for converting a railroad freight car equipped with an AAR Type "F" interlocking coupler to accept a noninterlocking rotary-type coupler for use in a rotary car dumper. The conversion is accomplished by the use of an adapter casting and a saddle casting in conjunction with various locking and retaining means to convert the existing spring supported coupler carrier to a rigid coupler carrier adapted to receive the shank of a rotary coupler.

2 Claims

3,610,437
DEVICE FOR TUBE TRANSFER IN TUBE-ROLLING MILL
 Vladimir Vasilievich Barakov, ulitsa Stalevarov, 8-a, kv. 11, Elektrostal; Alexandr Alexandrovich Sukhanov, prospekt Lenina, 10-a, kv. 67, Elektrostal, and Anatoly Sergeevich Tyrtov, Nogliksky rayon, de revaya Babeeva, 14, Moskovskaya oblast, all of U.S.S.R.
 Filed Jan. 16, 1970, Ser. No. 3,315
 Claims priority, application U.S.S.R., Apr. 7, 1969, 1,318,079
 Int. Cl. B65g 29/00
 U.S. Cl. 214-1 P

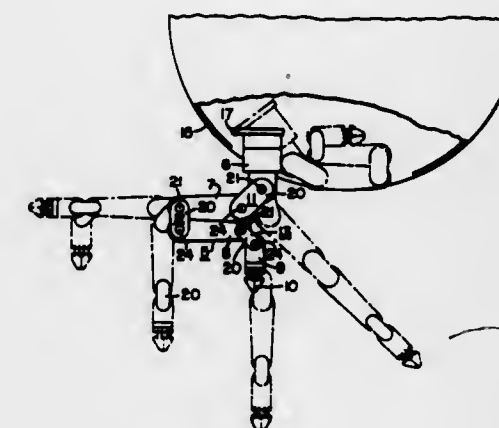


1 Claim

A device for tube transfer in a tube-rolling mill from the roller table to a continuously transporting mechanism, in which the working member is essentially a drum having longitudinal grooves for tubes and provided with guides which, due to the fact that their position can be controlled with respect to the height, make it possible to control the height form which tubes fall from the drum down onto the transporting mechanism.

3,610,438
MANIPULATOR ARM
 Everett W. Opdahl, Lutherville, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Mar. 16, 1970, Ser. No. 19,654
 Int. Cl. B25j 1/02
 U.S. Cl. 214-1 CM

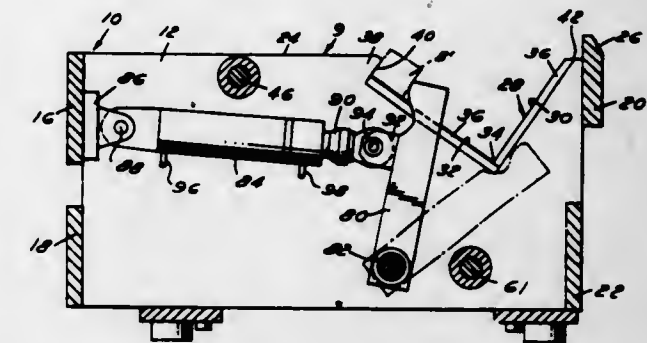
5 Claims



A manipulator arm is exemplified which employs externally at its joint a pair of parallel actuator links extending longitudinally between pivotal connections on adjacent rounded arm section ends that are coupled together for rolling motion of one of such ends on the other. Rotary actuation of the links about the pivotal connection on one arm section causes a greater rotary movement of the other arm section about such connection. Control and/or actuator lines extend longitudinally inside the arm; interconnected at the arm section joints via flexible sections snaked between the actuating links for constant length at all angular joint positions.

3,610,439
BILLET MANIPULATOR
 Richard G. Hopkins, Bennington Township, Shiawassee County, Mich., assignor to MWA Company, Owosso, Mich.
 Filed Mar. 27, 1970, Ser. No. 23,363
 Int. Cl. B65g 7/08
 U.S. Cl. 214-1 OG

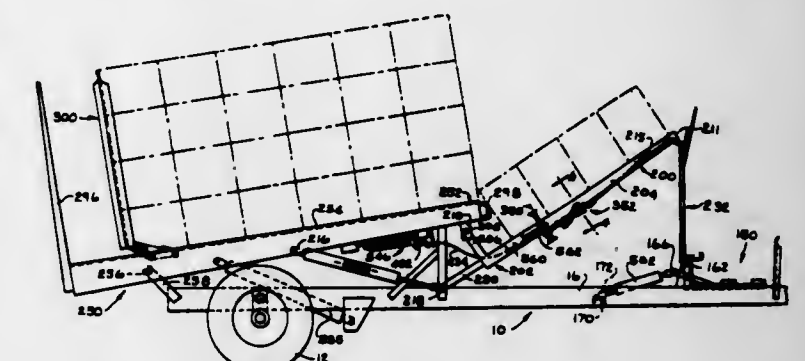
7 Claims



A mechanism for supporting and turning a rectangular billet comprising an upright frame and a pivoted arm for supporting the billet in an elevated position to perform a grinding or other operation thereon and also for lowering the billet into a recess in the frame for turning. A clamp is provided for clamping the billet against an abutment in a position such that a corner of the billet projects above the frame to permit a grinding or other operation to be performed on the corner.

3,610,440
SHUTTLE LATCH FOR THE TRANSFER TABLE BALE HOOKS ON A BALE WAGON
 Jerry W. Welker, and Donald M. Grey, both of Selma, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
 Filed May 29, 1969, Ser. No. 828,865
 Int. Cl. B65g 60/00, 59/08
 U.S. Cl. 214-6 B

14 Claims



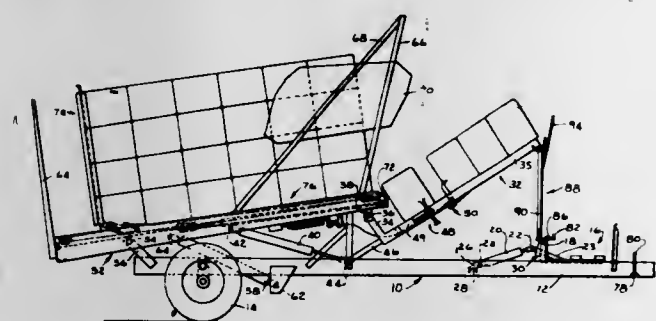
A bale wagon adapted to unload successive bale tiers therefrom one bale at a time having a transfer table which supports the bale tiers during the tier formation and discharge, a cross conveyor for discharging the bales, bale hooks pivotally mounted with respect to the transfer table to engage and separate bales disposed on the transfer table to facilitate unloading, and a shuttle member engageable with the cross conveyor and actuated by movement thereof and operably connected to the bale hooks to cause movement thereof between bale engaging and retracted positions in response to movement of the conveyor.

3,610,441
TABLE SUPPORT FOR A BALE WAGON
 Donald M. Grey, Selma; Lee D. Butler, Kingsburg, and Jerry W. Welker, Selma, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
 Filed May 29, 1969, Ser. No. 828,866
 Int. Cl. B65g 57/32, 59/08
 U.S. Cl. 214-6 B

11 Claims

A single bale-unloading wagon having a table support which extends upwardly from the wagon chassis and is

adapted to hold the transfer table in an inclined position dur-

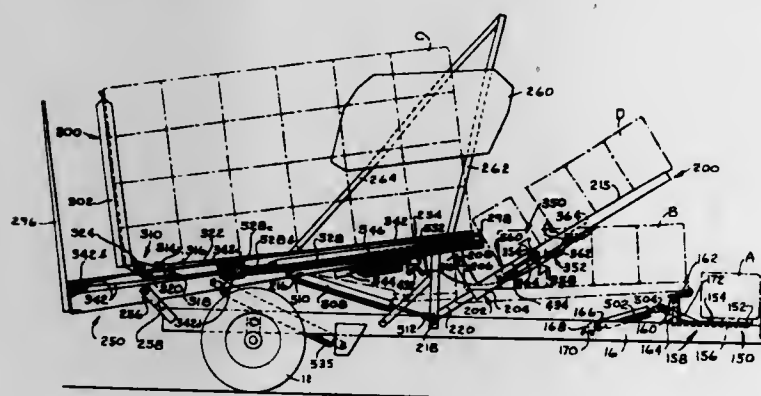


ing the bale-discharging operation.

3,610,442
CABLE CONTROL FOR A BALE WAGON ROLLING RACK
Lee Dennis Butler, Kingsburg, and Jerry W. Welker, Selma, both of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed May 29, 1969, Ser. No. 828,883
Int. Cl. B65g 57/32

U.S. Cl. 214-6 B

7 Claims

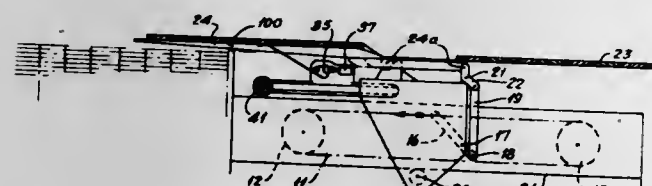


A bale wagon having a load-carrying bed with a movable rolling rack thereon, the rolling rack being adapted to support successive bale tiers placed on the load bed and to be movable in response to actuation of a hydraulic cylinder which is connected to the rolling rack between the load bed and a cable. Actuation of the cylinder results in movement of the rolling rack through relative lengthening or shortening of the cable.

3,610,443
MACHINE FOR THE AUTOMATIC STACKING OF BOARDS AND OTHER TIMBER
Jon Berge, Brumunddal, and Sigmund Rypdal, Honefoss, both of Norway, assignors to Skogsagarnas Industri Aktiebolag, Hultsfred, Sweden
Continuation-in-part of application Ser. No. 664,149, Aug. 29, 1967, now abandoned. This application Sept. 10, 1969, Ser. No. 871,438
Int. Cl. B65g 57/10

U.S. Cl. 214-6 DK

3 Claims



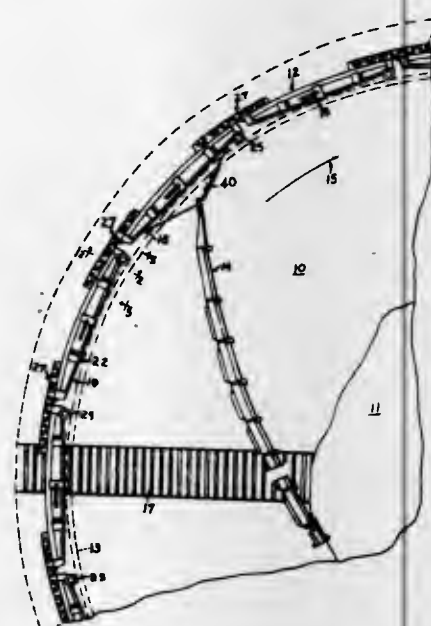
A machine for stacking boards or other elongated articles having an automatically actuated displacement mechanism which removes the articles from a position to which they have been advanced by a conveyor and stacks them in layers. The displacement mechanism is moved by a pivoting linkage

to lift and carry successive layers from a table to the stack periodically upon actuation by a feeler device which is mounted adjacent to the table.

3,610,444
SEGMENTED HORIZONTAL RING AND COOPERATIVE DRIVE ASSEMBLY
Gary L. Vanhoff; Leonard J. Bouge; Harold J. Borneman, and Donald F. Darden, all of Spokane, Wash., assignors to Atlas Spokane, Inc., Spokane, Wash.
Filed Aug. 14, 1969, Ser. No. 850,087
Int. Cl. B65g 65/42

U.S. Cl. 214-10

8 Claims

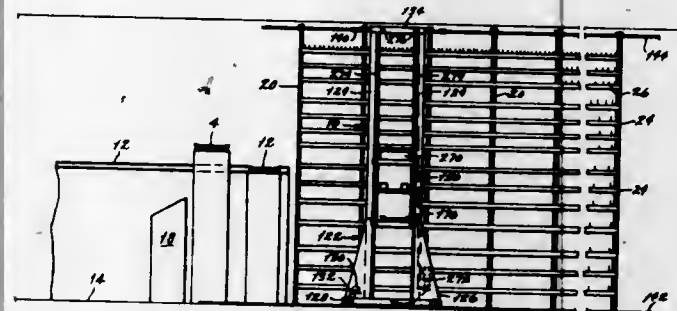


A segmented pull ring designed for an apparatus for particle transfer from a storage pile of the type utilizing a rotatable pull ring mounted about an upright axis of rotation within the pile and having sweep means for engagement against the pile. The segmented pull ring accommodates minor construction variances encountered in large diameter circular guides for the ring. It also makes possible the utilization of conventional roller chain members to provide a constant pitch drive mechanism for rotation of the ring by meshing engagement with a movable powered sprocket.

3,610,445
WAREHOUSE STORAGE SYSTEM AND RETRIEVING DEVICE THEREFOR
Robert L. Kitchen, Riverside, Calif., and David W. Stallard, Winfield, Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa. and Alvey Conveyor Manufacturing Company, St. Louis, Mo., part interest to each
Filed Oct. 20, 1969, Ser. No. 867,455
Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 A

6 Claims



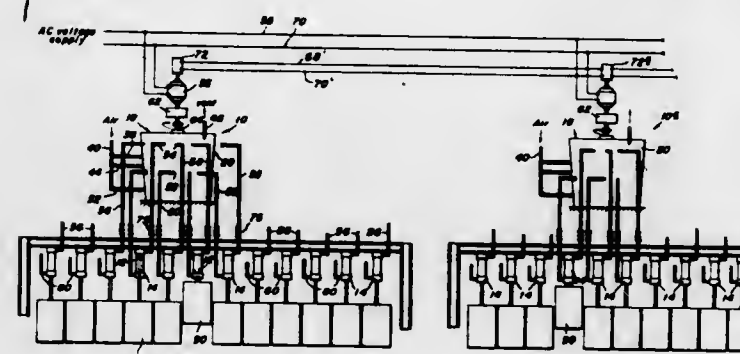
A warehousing system having remote controlled components for transferring items from an infeed conveyor to selected storage conveyors in a storage rack and for retrieving the items therefrom and depositing them on a discharge conveyor. The storage conveyors in such a system are pro-

vided with rollers on which the items rest and the retrieving unit, which retrieves items from the storage conveyors, includes an extractor belt which engages the rollers, rotates them, and thereby shifts the items onto a waiting supporting bed on the retrieving unit.

3,610,446
OPERATING MECHANISM FOR A COKE WHARF GATE
Pete Palumbo, Bethel Park Borough, Pa., assignor to United States Steel Corporation
Filed Feb. 18, 1970, Ser. No. 12,367
Int. Cl. B65g 65/56

U.S. Cl. 214-17 R

10 Claims



An operating mechanism for moving a gate on a coke wharf from a closed material-restraining position on the wharf to an open material release position is disclosed. The operating mechanism has a fluid supply means and a sequence valve connected to the fluid supply means and to a cylinder which operates the wharf gate. The valve has a stationary member and a movable member rotatable with respect to the stationary member. The movable member has a first annular venting vein for causing the venting of the cylinder on the side of its piston adjacent the first or closed operating position. A first annular pressurized vein is provided adjacent the first venting vein and has a first or closed operating position program port extending into the first venting vein, and is employed to cause the pressurization of the cylinder on the side of the piston adjacent the first or closed operating position and for causing movement of the piston from the first or closed operating position to the second or open operating position. In addition, the movable member has a second annular pressurized vein for causing the pressurization of the cylinder on the side of the piston adjacent the second or open operating position and for causing the movement of the piston from the second or open operating position to the first or closed operating position. Further, the movable member has a second annular venting vein adjacent the second pressurized vein which second venting vein has a second or open operating position program port extending into the second pressurized vein and is used for causing the venting of the cylinder on the side of the piston adjacent the second or open operating position. The stationary member is provided with a first supply conduit connected to the fluid supply means and registerable with the first pressurized vein to pressurize the first pressurized vein. A second supply conduit of the stationary member is connected to the fluid supply means and is registerable with the second pressurized vein to pressurize such second pressurized vein. Further, the stationary member has a first venting conduit connected to atmosphere and registerable with the first venting vein to permit venting of the first venting vein. A second venting conduit is connected to atmosphere and registerable with the second venting vein to permit venting of such second venting vein.

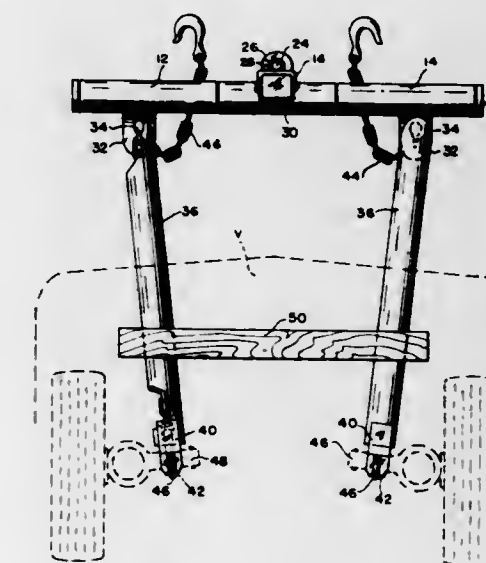
A second or open operating position conduit on the stationary member is connected to the cylinder adjacent the first or closed operating position and is registerable first with the first venting vein to vent the side of the piston adjacent the first or closed operating position to atmosphere and registerable then with the first or closed operating position program port to pressurize the side of the piston adjacent the first or closed operating position and to move the piston from the first or closed operating position to the second or open operating position. Finally, a first or closed operating posi-

tion conduit is connected to the cylinder adjacent the second or open operating position and is registerable first with the second pressurized vein (while said second or open operating position conduit is registered with the first venting vein) to pressurize the side of the piston adjacent the second or open operating position and to move the piston from the second or open operating position to the first or closed operating position; and is registerable then (while said second or open operating position conduit is registered with said first or closed operating position program port) with the second or open operating position program port to vent the side of the piston adjacent the second or open operating position and to permit the first pressurized vein to move the piston from the first or closed operating position to the second or open operating position.

3,610,447
RIGID STAND-OFF CONNECTOR COUPLING FOR A VEHICLE TOW BAR
Philip J. Ortiz, Railroad Avenue, Hopewell Junction, N.Y.
Filed Sept. 25, 1969, Ser. No. 860,925
Int. Cl. B60p 3/12

U.S. Cl. 214-86 A

5 Claims



A pair of connecting pipes each having one end abutting an operative dependent element of a tow bar, and the other end operatively connected to the lower A-frame of a vehicle to thereby maintain the tow bar at a predetermined distance from the vehicle when tension chains are passed through the pipes and connected to the A-frame and tow bar respectively. This arrangement prevents damage to bumpers, underpans and cowlings of automobiles, resulting from previous towing apparatus, due to the tow bar being directly held against a portion of the vehicle.

3,610,448
APPARATUS FOR TRANSPORTING RECEPTACLES FOR CIGARETTES OR THE LIKE
Ulrich Bornfleth, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG., Hamburg, Germany
Filed Mar. 20, 1968, Ser. No. 714,474
Claims priority, application Germany, Mar. 25, 1967, H 62241 III/79b
Int. Cl. B65g 17/16

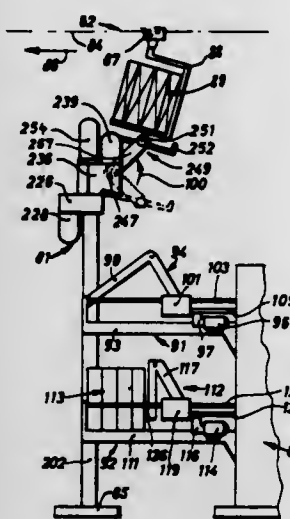
U.S. Cl. 214-89

22 Claims

A load-unload unit which transfers cages for cigarette trays between carriages traveling with the chain of an overhead conveyor and tray-receiving and tray-discharging stations in a cigarette-producing or cigarette-packing machine. The unit comprises an upright column which may be moved along the ground and supports a vertically reciprocable lifter for a rotator which can move a carrier for cages about the axis of the column. The carrier has a fork or plate which can support one cage at a time, and the entire carrier or its fork is turn-

ble or tiltable about a horizontal axis. A parallel mechanism is provided to maintain the fork in a desired position of

horizontal position along opposite sides of a tractor to which they are detachably connected while supporting the front end



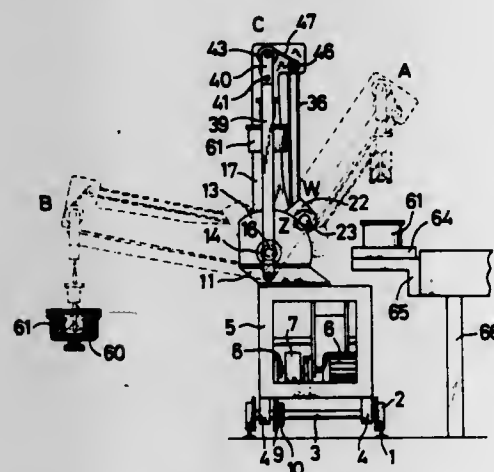
inclination during rotation of the carrier about the horizontal and/or vertical axis.

3,610,449

APPARATUS FOR TAKING SPUN Cakes OUT OF THE CENTRIFUGAL SPINNING MACHINE
Kiyoji Hashimoto, Yoriko Harada, and Hideo Miki, all of Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki City, Okayama Prefecture, Japan
Filed Jan. 19, 1970, Ser. No. 3,825
Int. Cl. B66c 1/54

U.S. Cl. 214-1 BD

3 Claims



Methods of an apparatus for taking a plurality of freshly spun cakes out of the centrifugal spinning machine simultaneously by internally gripping and holding the spun cakes with cake-supporting means for swaying lift, stable carrying and swaying suspension of the cakes. The cake-supporting means has at its one end a stabilizing rod adapted to be slidably inserted into a stabilizing sleeve pivoted to a reverse turn arm so that the cake-supporting means carrying the cake is always stabilized in the vertical direction.

3,610,450

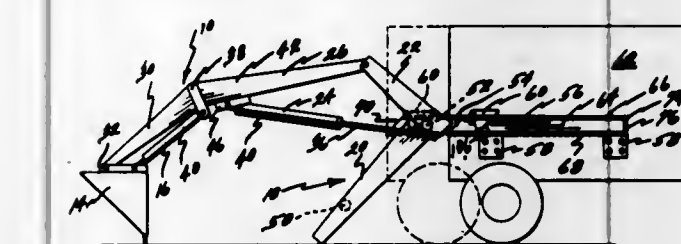
FRONT END LOADER AND METHOD OF FORMING SAME

Eugene Demkiw, P.O. Box 1349, Vegreville, Alberta, Canada
Continuation-in-part of application Ser. No. 720,511, Apr. 11, 1968, now Patent No. 3,554,396. This application Dec. 29, 1969, Ser. No. 888,401
Int. Cl. B66f 9/00

U.S. Cl. 214-140

16 Claims

This invention relates to an improved front end loader of the hydraulically operated free-standing "tilt-on" type wherein a pair of transversely spaced side frame elements of a subframe are raised hydraulically from a downwardly tilted ground-engaging position upwardly into an essentially



of the loader by means of the bucket resting upon the ground.

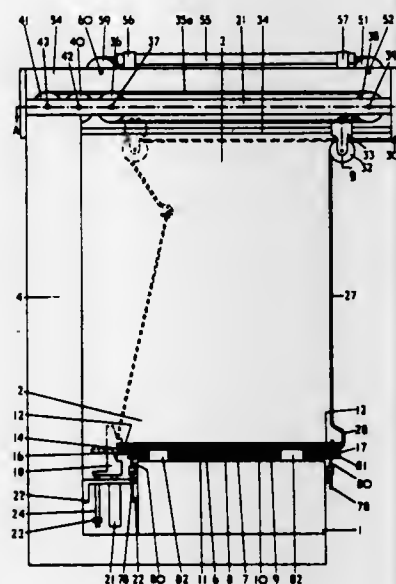
3,610,451

SHEET HANDLING

Ronald Bevan, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 27, 1970, Ser. No. 32,154
Claims priority, application Great Britain, May 7, 1969, 23377-69
Int. Cl. B65g 60/00

U.S. Cl. 214-152

3 Claims



Apparatus and a method for dismantling and reassembling cells, e.g., for press loads in which the sheets are pivoted about one side to expose workpieces which are then removed, and fresh workpieces are inserted in their place on lowering of the sheets.

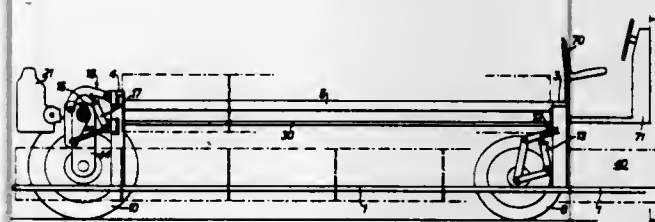
3,610,452

LOAD-CARRYING VEHICLES

John Briggs Holt, Bedford, England, assignor to National Research Development Corporation, London, England
Filed Apr. 16, 1969, Ser. No. 816,721
Claims priority, application Great Britain, Apr. 19, 1968, 18682/68
Int. Cl. B60p 1/64

U.S. Cl. 214-392

8 Claims



Vehicles for picking up, transporting and putting down bins, comprising rails displaceable downwardly to pass under surfaces of the bins and upwardly to raise the bins for trans-

port. There is no obstruction between the rails so that the vehicle can push up, transport and put down their load without a reversal of direction of movement.

3,610,453

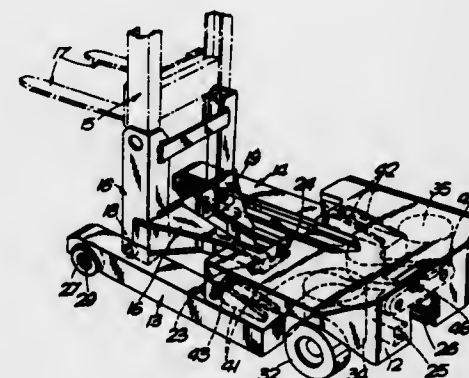
INDUSTRIAL TRUCKS

Cecil Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, Hampshire, England
Filed Feb. 14, 1969, Ser. No. 799,362
Claims priority, application Great Britain, Feb. 16, 1968, 7789/68

Int. Cl. B66f 9/00, 9/12

U.S. Cl. 214-670

7 Claims



An industrial load-handling truck having a body portion supported on ground wheels with a pair of straddle legs projecting from said body portion, said straddle legs being pivotally attached to the body portion, for up-and-down pivotal movement about a horizontal transverse axis and being provided with ground wheels at positions remote from the pivotal attachments and with means interconnecting the legs in a manner such that upward pivotal movement of one leg will be accompanied by downward pivotal movement of the other leg.

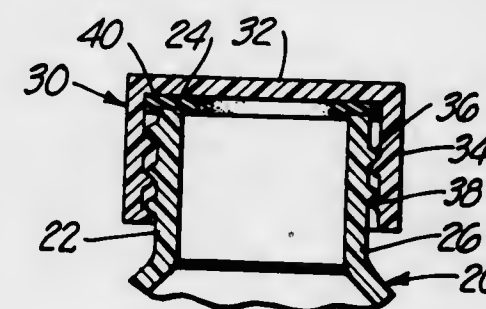
3,610,454

SAFETY CONTAINER AND CLOSURE STRUCTURES

Dell M. Mallick, Rte., Box 31-A, Santa Rosa, Tex.
Filed July 24, 1969, Ser. No. 844,334
Int. Cl. B65d 41/06, 53/02

U.S. Cl. 215-9

11 Claims



The disclosure pertains to so-called "safety" containers and closures or caps which may utilize conventional threads or thread means for attachment purposes and which may utilize conventional sealing structures or means for sealing purposes. These structures of this invention utilize cooperating holding means on a cap and a container. Such holding means are adapted to cause temporary deformation between the container and the cap as the cap is threaded on the container so that the holding means can "snap" past one another to a position in which the cap is latched against movement along the thread means. When a cap is so held, it may be removed by forcing the closure towards the container, compressing the sealing means until such time as the holding means are offset with respect to one another. The closure may then be removed from the container in a conventional manner.

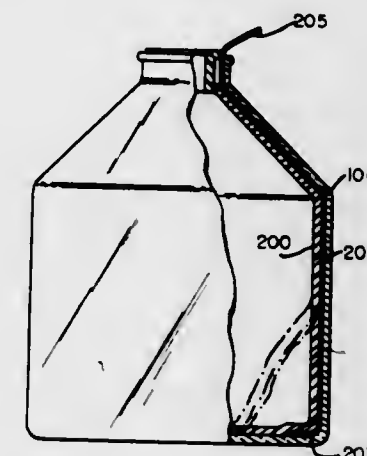
3,610,455

DISPOSABLE CONTAINER LINER WITH REMOVAL MEANS

William Greenhalgh, P.O. Box 521, Oshawa, Ontario, and David Kenneth Soper, 48 Montgomery Blvd., Brooklyn, Ontario, both of Canada
Continuation-in-part of application Ser. No. 721,852, Apr. 16, 1968, now Patent No. 3,484,011. This application Nov. 20, 1969, Ser. No. 878,447
Int. Cl. B65d 11/16

U.S. Cl. 215-12

12 Claims



A container provided with a flexible removable single service liner including means for inducing and facilitating the removal thereof from the container subsequent to emptying of the contents of the liner.

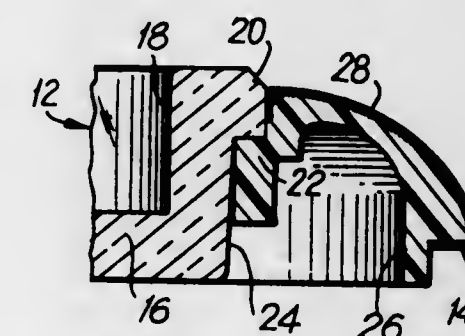
3,610,456

RECEPTACLES

Louis Marsh, 606 Maitland Ave., Teaneck, N.J.
Filed Sept. 29, 1969, Ser. No. 861,652
Int. Cl. B65d 23/08

U.S. Cl. 215-100 R

6 Claims



A receptacle which may be used for different purposes such as an ashtray or as a coaster on which a glass, which contains a beverage, for example, may be placed. The receptacle has an inner glass dish which is provided with an endless sidewall extending upwardly from and surrounding its bottom wall and terminating at its top end in an outwardly directed peripheral flange. This inner dish is surrounded by an outer ring which has an inner peripheral flange extending beneath and overlapping the outer flange of the inner dish. In this way the receptacle is made of a pair of components which will have a minimum possibility of distortion when these components are molded using glass for the receptacle and plastic for the outer ring.

3,610,457

ROTATIONALLY MOLDED HOLLOW ARTICLE WITH INSERT

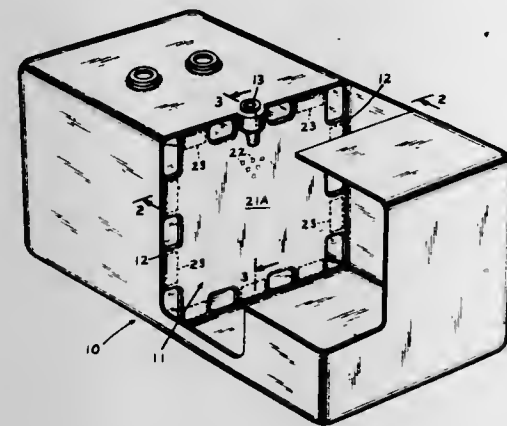
Vincent J. Opalewski, Rockaway, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed July 24, 1969, Ser. No. 844,354
Int. Cl. B65d 25/04

U.S. Cl. 220-22

11 Claims

An insert is affixed to the inner wall of a rotationally molded hollow article by securing a wad of absorbent fibers

to the insert and frangibly mounting the insert within the cavity of the mold. Upon rotationally molding a charge of the plastic, a column thereof is formed about the wad between the wall and the insert, and the insert is coated with plastic.



After curing, the frangible mount is removed and the cavity in the plastic wall resulting from the removal may be sealed to provide the final product. The method is useful for affixing baffles within rotationally molded liquid storage tanks.

3,610,458

FOOD PACKAGE WITH SERVICE PLATE COVER

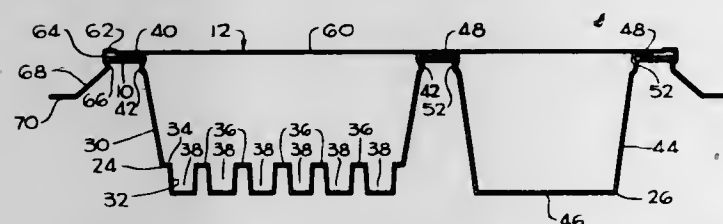
Robert Nissley, Brookfield, Conn., assignor to Cease Central, Inc., Dunkirk, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,547

Int. Cl. B65d 21/02

U.S. Cl. 220-23.4

4 Claims



A food package including a substantially flat container holder having openings for receiving food containers. The food containers are provided with flanges at their upper edges supported by one side of the holder and peripheral beads spaced from the flanges and extending parallel thereto for engagement behind the other side of the holder with a snap fit. A food service plate is adapted to be inverted over the tops of the containers to serve as a cover for the food package. The service plate has an intumed bead which engages over the outer edge of the holder with a snap fit and the bottom surface of the service plate bears against the flanges of the food containers to seal and isolate them from each other and retain them in the holder.

3,610,459

MAGNETIC SYSTEM FOR RETAINING DISHES ON A TRAY DURING SERVICE

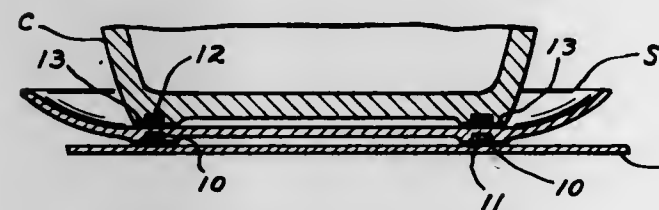
Maynard P. Hanson, 2511 McKinley St. N.E., Minneapolis, Minn.

Filed May 15, 1969, Ser. No. 825,002

Int. Cl. A47g 19/10; B65g 21/00

U.S. Cl. 220-23.83

1 Claim



A combination and structure of serving tray and dishes wherein between the base areas of the dishes and the upper

surface area of the tray are interposed permanent magnet elements secured to one of said surfaces, and thin sheets of magnetic metal secured to the other of said surfaces. In both instances (securing of the magnetic elements and securing of the metal elements respectively) the elements are preferably coated and covered and sealed to the said surfaces by thin coatings or laminations of plastic material.

3,610,460

TRAFFIC SIGNAL HOUSING

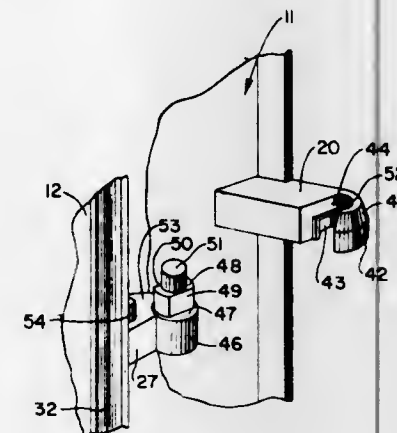
Gregory Siklos, Bronx; Henry Dowling, Staten Island, both of N.Y., and The Marbelite Company, Inc., Brooklyn, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,586

Int. Cl. B65d 51/04

U.S. Cl. 220-31 R

6 Claims



A traffic signal housing has a housing body and a pivotal, removable door. Hinge means provide ease of assembly of the door on the body and permits pivoting of the door about an axis to open and close the body with the door being removable from the body only in one position thereof and preferably prevented from movement into said one position when assembled by a stop means which coacts as a lens hood.

3,610,461

CONVERTIBLE FOOD CONTAINER

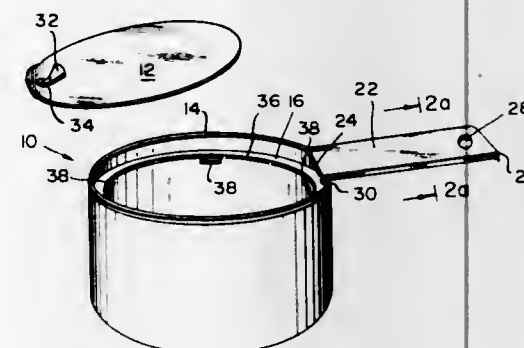
George Allyn, 599 E. 7th St., Brooklyn, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,793

Int. Cl. B65d 17/24, 25/28

U.S. Cl. 220-54

21 Claims



The essence of the invention resides in a food container package which is usable as a cooking utensil before or after the container has been opened. A can composed of any well-known metallic composition capable of being used in the packaging of food stuffs is provided with a handle integrally connected to the rim on the upper edge of the can and is extensible therefrom to be held by the user thereof as a normal pot handle. The cover of the can is removable from the food container and is adapted to be used as a pot lid. The food container is provided with an upwardly extending ridge therearound and may be further provided with a plurality of inwardly extending protrusions so that the lid when removed from the can is provided with a means for maintaining the position of the lid when the same is being used as a cover.

3,610,462

CONTAINER SCORELINE AND TEAR EDGE PROTECTION

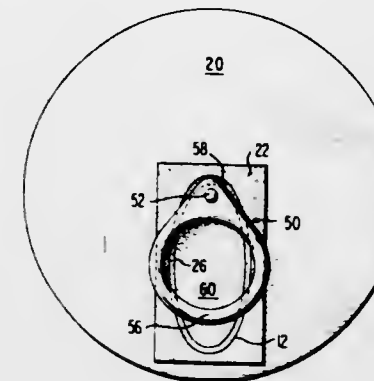
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation

Filed July 17, 1969, Ser. No. 842,456

Int. Cl. B65d 17/24

U.S. Cl. 220-54

9 Claims



In the manufacture of easy-opening containers including a scoreline defining a removable portion of a sheet metal wall, scoreline repair prior to opening and protection for the raw tear edge after opening are provided by a plastic, pressure-sensitive tape. The tape covers the scoreline before opening and presents an edge configuration which overlays the raw tear edge after opening. The tape is scored or can be precut or prescored to provide the necessary raw edge protection overlay. Assembly steps cover formation of a unitary rivet held opener and preparation of the tape to provide the scoreline repair and the tear edge protection.

3,610,463

EASY OPENING CONTAINER WALL HAVING STRESS RELIEF SCORES

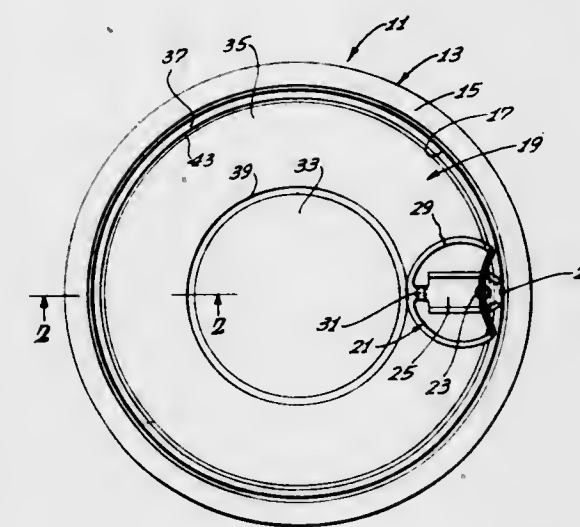
Omar L. Brown, and Ermal C. Frazee, both of Dayton, Ohio, assignors to Ermal C. Frazee, Dayton, Ohio, a part interest

Filed Nov. 6, 1969, Ser. No. 874,623

Int. Cl. B65d 17/24

U.S. Cl. 220-54

9 Claims



An easy-opening container wall having a line of weakness therein defining a panel at least partially removable from the container wall and a tab attached to the panel to initiate severance of the panel from the container wall. The panel is weakened along a plurality of circumferentially extending regions. Preferably, the panel includes first and second axially offset sections interconnected by a connecting wall with one of the weakened regions being formed in each of the sections closely adjacent the connecting wall.

3,610,464

ARTICLE HANDLING APPARATUS WITH AUTOMATIC CONTROLS FOR SUPPLY AND DISPENSER

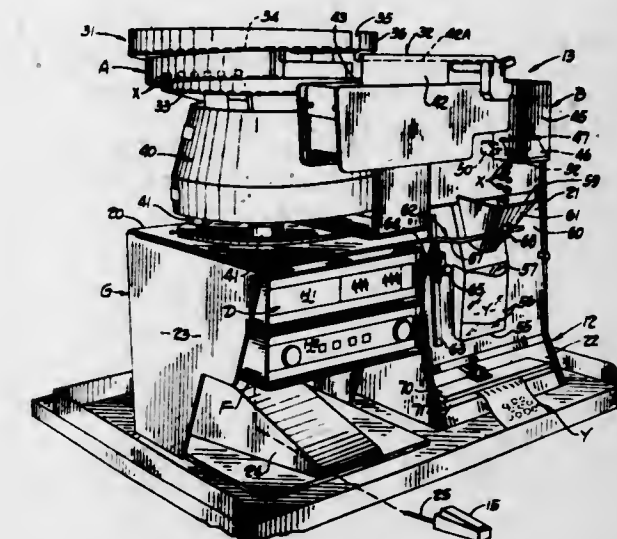
Horton Hampton Loughry, Chesterland, Ohio, assignor to Automated Packaging Systems, Inc., Twinsburg, Ohio

Filed June 18, 1969, Ser. No. 834,366

Int. Cl. G071 11/00

9 Claims

7 Claims



Material-handling apparatus including a feeder unit for feeding articles to an accumulator structure, a counter unit for counting the articles being fed to the accumulator, and a control unit governing operation of the feeder unit and accumulator in response to operation of the counter unit. The control unit permits a batch of articles in the accumulator to be dumped into a container at a packaging station after which the container is sealed by a sealing unit operated by the control unit.

In one embodiment, a plurality of these apparatuses are utilized to separately feed desired numbers of articles to a conveyor. Each apparatus includes feeder, counter and control units and the apparatuses are ganged together so that the conveyor deposits the articles in a common container for packaging.

3,610,465

DISPENSER FOR A STACK OF BOTTLES PROVIDED WITH MEANS FOR REGULATING THE RELEASING SPEED OF THE BOTTOM BOTTLE AND CONSEQUENTLY THE FALLING VELOCITY OF EACH BOTTLE

Lamberto Mazza, Pordenone, Italy, assignor to I.M.D. Italiana Machine Distribuzione S.p.A., Bergamo, Italy

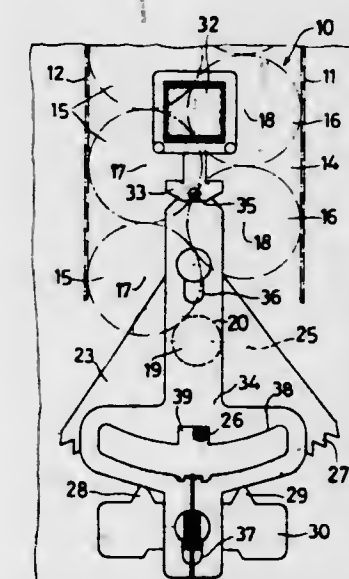
Filed Aug. 4, 1969, Ser. No. 847,165

Claims priority, application Italy, Oct. 2, 1968, 21988A/68

Int. Cl. G071 11/08

U.S. Cl. 221-67

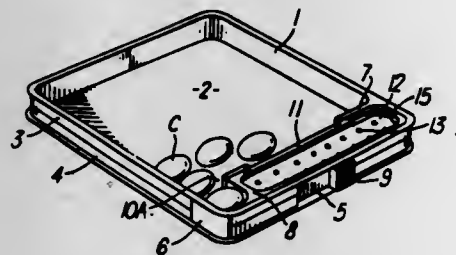
6 Claims



A dispenser for a stack of bottles is provided with a device for regulating the releasing speed of the bottom bottle and

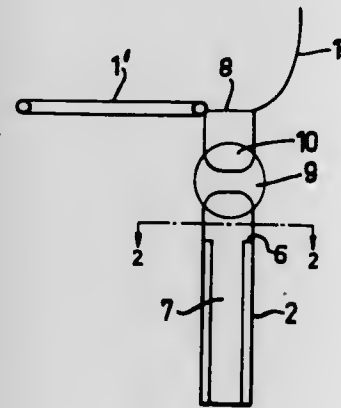
hence the falling velocity of each bottle; this device comprises a sector provided with teeth, which is caused to oscillate on its center by the weight of the bottles, and an oscillating arm provided with a tooth adjacent each of its ends, which teeth engage alternately the teeth of the sector, thus slowing down the oscillating velocity of the sector.

3,610,466
DISPENSING BOX WITH SLIDABLE MEMBER CONTAINING AN ABSORBENT MATERIAL
Georges Raybols, Paris, France, assignor to Societe Parisienne D'Expansion Chimique, Paris, France
Filed Aug. 15, 1969, Ser. No. 850,442
Claims priority, application France, Apr. 23, 1969, 6912815
Int. Cl. B65d 83/04
U.S. Cl. 221-135 3 Claims



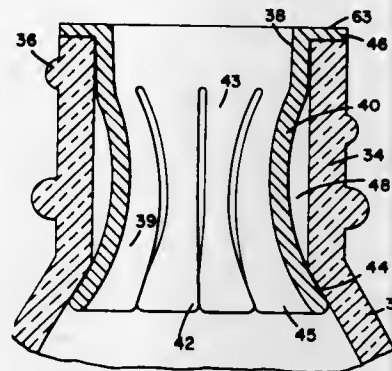
A flat box for dispensing pills one at a time has a thickness slightly greater than one pill. A partition is arranged parallel to one sidewall of the box and a dispensing slide is slidable from the exterior between the sidewall and partition, so one pill can pass through a gap in the partition and into a first recess in the member. A second recess in the slide is closed by a perforated cover, and contains an absorbent material. Air from the interior of the box is drawn through an opening in the partition and the perforated cover, as the slide is operated, and is dried by the absorbent material.

3,610,467
DEVICE FOR AUTOMATIZED INSERTION OF REACTION TUBES IN TEST TUBE HOLDERS
Kjell Agner, Lla Angsholmen, 170 11 Drottningholm, Sweden
Filed Nov. 26, 1969, Ser. No. 880,069
Claims priority, application Sweden, Nov. 27, 1968, 16149/68
Int. Cl. B65h 9/00
U.S. Cl. 221-172 4 Claims



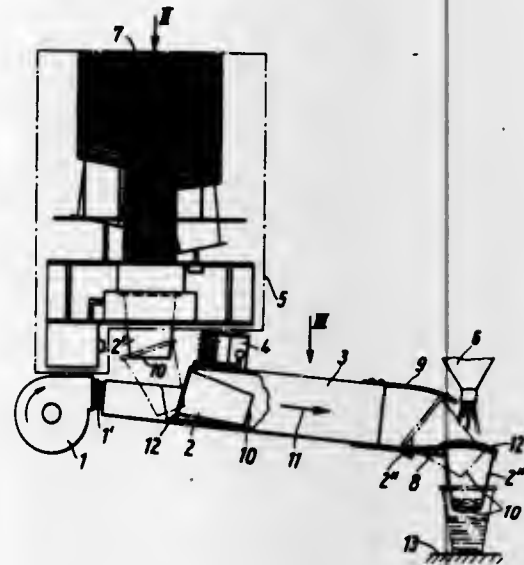
A device is provided for insertion of reaction tubes, having projections or the like at the open end, into holders. The tubes are fed one at the time from a supply into which the test tubes are placed directly from the packages to a means in which guide means retard the falling action of the end having the projections so that the closed end of the test tube falls faster and so that the test tube will be placed in a vertical position with the open end upwards, in a test tube holder placed directly beneath the falling path. When the next tube is fed also the next empty holder is fed into position.

3,610,468
DISPENSING CLOSURE DEVICE FOR STANDARD TABLET CONTAINER
Adolph W. Borsum, 521 Pacific Ave., Solana Beach, Calif.
Filed Aug. 18, 1969, Ser. No. 850,798
Int. Cl. B65d 45/28
U.S. Cl. 221-256 13 Claims



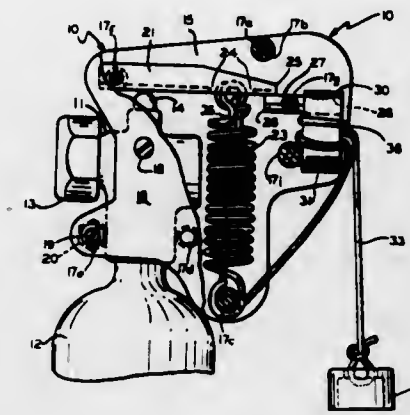
A sleeve-type closure device for fitting into the neck of a standard tablet or other object container and having resiliently bowed fingers that lock the sleeve in the neck. The bowed portion forms a resiliently biased inward, narrow channel to the passage of tablets therethrough, and a cap having a tablet receptacle with a sidewall that fits into said sleeve and forces said bowed portion outwardly, allowing the tablets to pass through the channel into the receptacle.

3,610,469
METHOD AND APPARATUS FOR DISPENSING CONTAINERS FROM VENDING MACHINES
Alexander Kuckens, Hamburg, and Manfred Gehrke, Hamburg-Langenhorn, both of Germany, assignors to Alexander Kuckens, Hamburg, Germany, by said Gehrke
Filed Oct. 3, 1969, Ser. No. 863,445
Claims priority, application Germany, Oct. 4, 1968, P 18 01 185.3
Int. Cl. B65g 59/06
U.S. Cl. 221-278 14 Claims



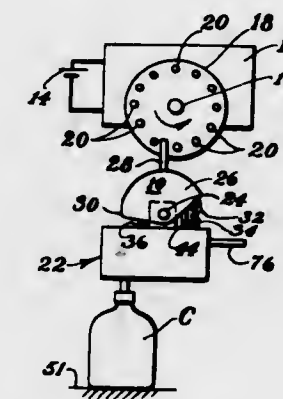
A method and arrangement for conveying container cups from a storage area to a filling station within vending machines. Upon actuating the machine through the insertion of a coin, for example, a holding device within a conveying chute, is released and a container cup is transported through the application of an airstream, to a filling station at one end of the chute. At the same time, a second cup within a column of stacked containers becomes separated from the stack, and is dispensed towards the holding device within the chute, where it is held until the next time that the vending machine is actuated. A bracket at the end of the chute at the location of the filling station, suspends the container cup at its upper rim, while being filled. When the cup is partially filled, the latter slips through the bracket and upon a supporting surface from which it may be taken by the consumer.

3,610,470
AUTOMATIC OPERATING ATTACHMENT FOR MANUALLY OPERABLE INFLATING DEVICE
Wilbur W. Waters, Cicero, N.Y., assignor to Lifeguard Manufacturing Corporation, East Syracuse, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,361
Int. Cl. B67b 7/00
U.S. Cl. 222-5 2 Claims



A head for a compressed gas container has a projecting plunger which, when depressed, releases gas for inflating a raft. Spaced are bolted to either side of the head and a plurality of spacer shafts secure the plate in parallel to the head. An operating lever of the second class is fulcrumed on a spacer shaft and its free end is biased by a spring toward the plunger, the spring being anchored to another spacer shaft. A fixed post projects from another shaft and a detent lever of the first class fulcrumed on another shaft has a swinging post at one end normally in parallel with the fixed post. The other end of the detent lever is normally engaged with the end of the operating lever to prevent it from engagement with the plunger. A paper ring, rupturable when wet, passes around the posts keeping the detent lever in normal position. A cord attached to the operating lever has a loop around the ring for rupturing the paper and for pulling down the operating lever as a fail-safe.

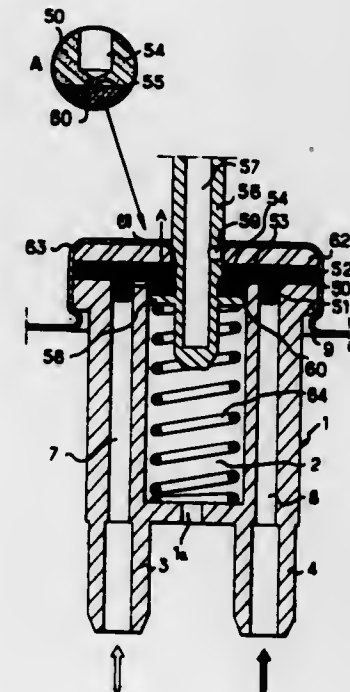
3,610,471
A PERIODICAL DISPENSER FOR AEROSOL CONTAINERS
Herbert S. Werner, Massapequa, L. I., N.Y., assignor to Leonard H. King, trustee
Filed Aug. 19, 1969, Ser. No. 851,389
Int. Cl. G04c 23/38
U.S. Cl. 222-70 17 Claims



In an actuator for periodically dispensing metered quantities of the contents of an aerosol container, a housing is provided having means for maintaining the valve stem of the aerosol container in an open position. A metering chamber is formed in the housing which is also provided with a first valve communicating with the interior of the aerosol container and the metering chamber, and a second valve communicating between the metering chamber by means of a passageway and the atmosphere. Means responsive to drive means having low power requirements concurrently reverse the position of the first and second valve means on a periodic

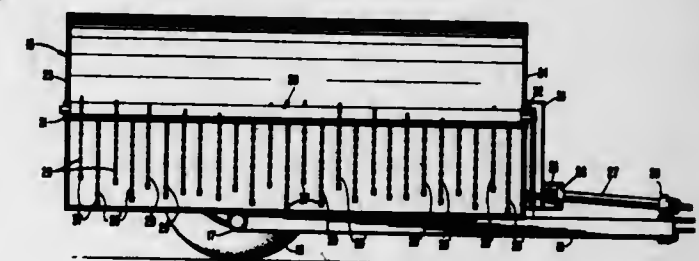
basis so that a metered quantity of the contents of the aerosol container is discharged into the atmosphere from the metering chamber when the second valve means is open. The metering chamber is filled when the position of the valve means is reversed.

3,610,472
VALVE FOR SIMULTANEOUSLY DISPENSING A PLURALITY OF FLUIDS
Bruno P. Morane, 33, rue de Naples, Paris, France
Filed Nov. 2, 1970, Ser. No. 86,176
Claims priority, application France, Nov. 7, 1969, 6938452
Int. Cl. B67d 5/60
U.S. Cl. 222-145 6 Claims



Valve for simultaneously dispensing a plurality of fluids stored under pressure comprises a cup having vertical passageways in its walls which are open at the top and lead to containers for the individual products. The cup is surmounted by a disc having radial passageways leading from the vertical passageways to points inside the cup. A spout passes through the disc and carries on a peripheral shoulder a sealing member normally engaging the inner ends of the radial channels. The spout has a radial orifice and when it is depressed, the sealing member is moved away from the radial passageways, and the orifice brought into communication with them.

3,610,473
FLAIR-TYPE MATERIAL SPREADER
Ell Hochstetler, Star Route, Millersburg, Ohio
Filed June 30, 1969, Ser. No. 837,391
Int. Cl. A01c 3/06
U.S. Cl. 222-178 4 Claims



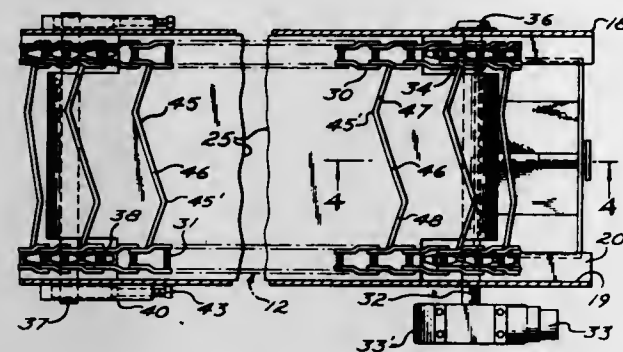
To prevent overloading and damage or destruction of the flair shaft bearings and the universal joints of the input drive shaft, the flair chains of the spreader are connected to the shaft in staggered relation along two spiral paths, thus avoiding a concentrated shock loading of the shaft bearings and universal joints when the chain flails engage the solid material.

3,610,474 MATERIAL CONVEYOR AND SPREADER

Charles S. Usher, and John A. Keller, both of Bucyrus, Ohio, assignors to Shunk Manufacturing Co., Inc., Bucyrus, Ohio
Filed Oct. 6, 1969, Ser. No. 864,095
Int. Cl. A01c 15/00

U.S. Cl. 222-178

8 Claims U.S. Cl. 222-194



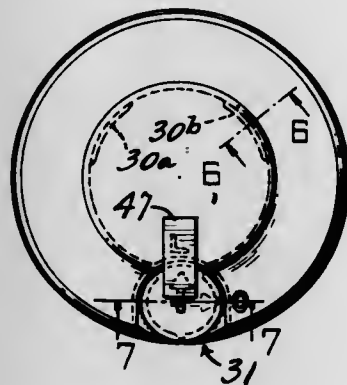
A chain and flight conveyor is provided at the bottom of a truck-mounted hopper, the conveyor comprising parallel endless chains connected by substantially Z-shaped flights. Material is conveyed by the Z-shaped flights toward one end of the hopper and deposited upon a spinner disposed adjacent thereto.

3,610,475 CHILDPROOF REPLACEABLE OVERCAP FOR AN AEROSOL CAN

Peter P. Gach, Evansville, Ill., assignor to Sunbeam Plastics Corporation, Evansville, Ind.
Filed Sept. 22, 1969, Ser. No. 859,708
Int. Cl. B65d 83/14

U.S. Cl. 222-182

6 Claims

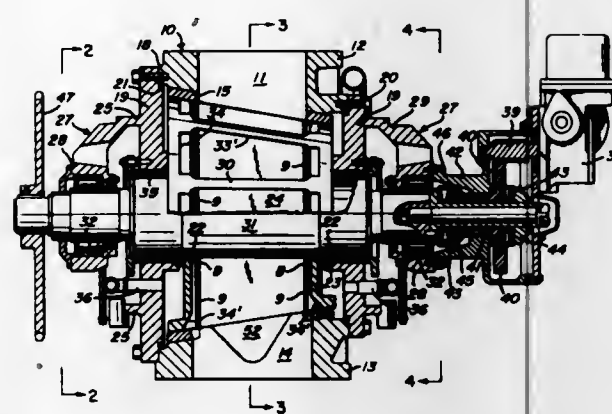


A substantially tamperproof and childproof replaceable cover cap for an aerosol spray can or the like which has a central dispensing valve at one end with an annular collar surrounding the dispensing valve. The cap has an inverted, cup-shaped, outer wall and an inner concentric skirt. The lower edge of the inner skirt has an inwardly turned retaining lip adapted to engage beneath the collar of the can in order to retain the cap in place. A locking element which is manually movable between "Open" and "Locked" positions is mounted in an opening in the cap and extends inwardly or downwardly to a position adjacent the outer surface of the inner skirt. The element has means on its inner or lower end which cooperate with the retaining lip on the inner skirt to reinforce the engagement of the retaining lip with the can collar in order to securely retain the cap in place when the element is in "Locked" position and to provide for disengagement of the cap from the can collar and removal of the cap when the locking element is in "Open" position. The element may be sealed in "Locked" position by a removable seal to prevent improper initial removal of the cap. Even after the cap has been initially removed and replaced, movement of the locking element to "Locked" position prevents or makes difficult the removal of the cap by an infant or small child.

3,610,476 ROTARY VALVE

James R. Starrett, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio
Filed Aug. 6, 1969, Ser. No. 848,025
Int. Cl. B67d 5/54

23 Claims



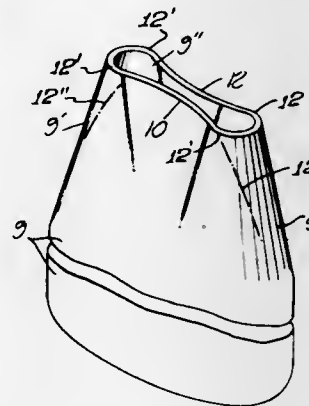
A rotary material handling valve particularly useful in the pulping industry featuring means for improved valve discharge and further characterized by a system for achieving improved pressure and temperature balance in the operation of the valve rotor, there being means for relieving end bell cavities to rotor pockets at a position to advantageously condition the materials therein and in the process thereof reduce pressure and temperature differentials across the rotor rims.

3,610,477 AUTOMATIC CLOSURE FOR CONTAINERS

Albert M. Herzig, 9465 Wilshire Blvd., Beverly Hills, Calif.
Filed July 16, 1969, Ser. No. 842,108
Int. Cl. B65d 1/32

U.S. Cl. 222-213

4 Claims



This invention is an improved automatic closure for squeeze bottles or the like tubes or containers of the type formed from semirigid, flexible material such as polyethylene or semirigid polyvinyl chloride having properties of resilient flexibility, and means and methods for making the same. The container is provided with a preferably tapered neck portion terminating in lips and edges forming an openable closure elongate in cross section. One or both of these lips is preferably formed with an inherent reentrant or inward curve or set so that when the tapered side edges are sealed together and the lips are pressed together they provide the closure, which is opened by pressure digitally exerted on the container and closes on release of pressure. A closure which can effectively seal is realized in this manner by way of a preferred sealing technique. In this technique, sealing dies are used having nonsealing inserts so that when sealing, the outlet of the container is subjected to a uniform clamping pressure so that the outlet thereof is held fully flattened and uniformly closed during the sealing operation, both in and adjacent the closure to obviate the formation of irregularities and leaks at and adjacent the sealed edges. Upon release of clamping pressure the preferred form of outlet retains an inherent-closing bias. A tear-strip seals the outer end of the end of the closure until removed in a manner heretofore disclosed.

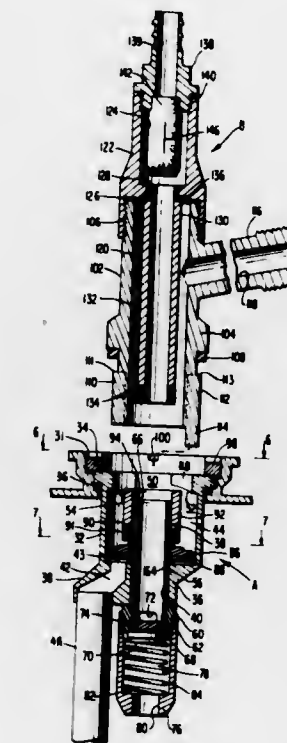
3,610,478 TAPPING DEVICE FOR BEER KEGS AND THE LIKE

Mack S. Johnston, 26 Hitching Post Drive, Rolling Hills, Calif.

Filed Apr. 28, 1969, Ser. No. 819,706
Int. Cl. B65d 83/00

U.S. Cl. 222-400.7

28 Claims



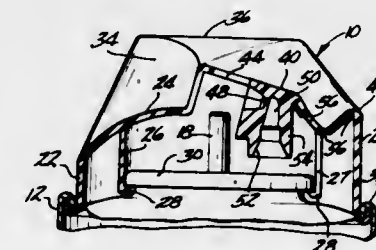
Disclosed is a novel tapping device for beer kegs and the like including a keg adapter mounted in the opening of a keg at the brewery and a probe-type coupler secured to the keg adapter at the dispensing establishment to dispense beer. The adapter has an enlarged central gas passage and a laterally offset beer passage terminating in a depending siphon tube. Beer and gas valves are disposed in the beer and gas passages respectively. The coupler has a central probe engageable with the gas valve to open the latter whereby gas is transmitted through the coupler and keg adapter into the keg. The coupler also carries a lug engageable with the beer valve in the keg adapter for opening the latter upon securement of the coupler to the adapter whereby beer is dispensed from the keg through the siphon tube, keg adapter and coupler.

3,610,479 DISPENSING CAP WITH TAMPER-RESISTANT ACTUATOR

Frank Venus, Jr., Watertown, Conn., assignor to The Risdon Manufacturing Company, Watutuck, Conn.
Filed Mar. 23, 1970, Ser. No. 21,964
Int. Cl. B65d 83/14

U.S. Cl. 222-402.13

10 Claims



A one-piece molded plastic overcap and actuator assembly of inverted cuplike configuration for a valved aerosol dispenser having an axially projecting valve stem at one end, wherein the actuator comprises an integrally hinged elongated tab partially cut from the bottom wall of the cut, the tab having a free-flexing end and a valve stem receiving socket adjacent that end at the underside with an internal passage connecting the socket to a lateral discharge orifice in the tab. The tab is formed intermediate its ends with at least

one region of substantial flexibility whereby, when the free end of the tab is manually lifted to disengage the socket from the valve stem, the tab can be foreshortened or extended by flexing of its flexible region, and engaged while in one of its positions with a surrounding part of the cap to lock the actuator tab out of contact with the stem, thereby to prevent accidental or unintentional actuation of the valve stem.

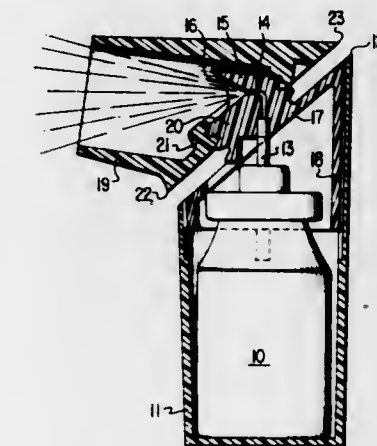
3,610,480 AEROSOL DISPENSING APPARATUS

Donald E. Liptert, Woolwich, Maine, and Wilfred Goldschmidt, Syosset, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed July 31, 1969, Ser. No. 846,402
Int. Cl. B65d 83/00

U.S. Cl. 222-402.21

3 Claims



A conventional aerosol dispenser of medicament as an oral spray is encased within a plastic cylindrical casing. A cylindrical dispensing nozzle is pivoted on the casing for movement to a nondispensing position in which it is an axial extension of the casing, and to a dispensing position at a right angle to the casing. In the latter position depression of the nozzle effects discharge of a medicament spray.

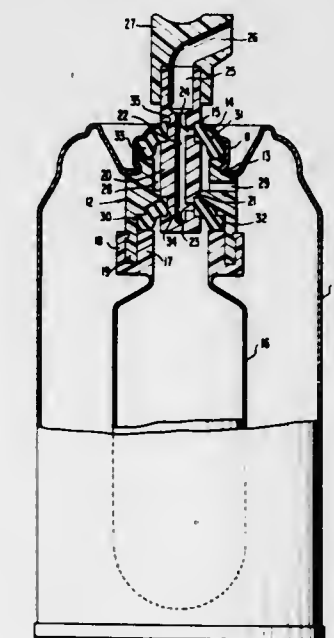
3,610,481 TWO-FLUID AEROSOL DISPENSER WITH INTERNAL COLLAPSIBLE SECONDARY FLUID CONTAINER

Leonard L. Marraffino, 884 Northeast 42nd St., Oakland Park, Fort Lauderdale, Fla.

Filed May 27, 1969, Ser. No. 828,286
Int. Cl. B65d 83/00

U.S. Cl. 222-402.24

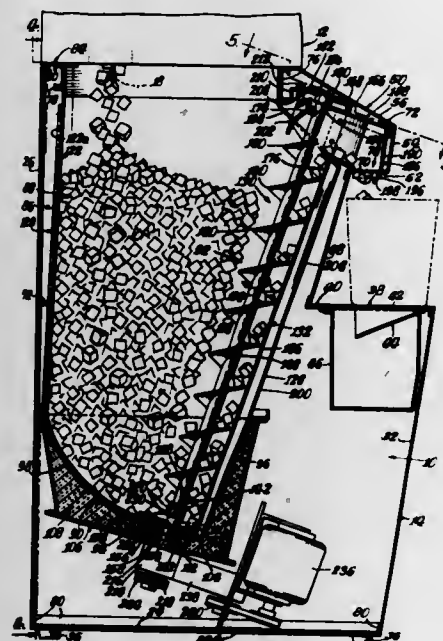
10 Claims



Primary and secondary fluids are held separately in outer and inner pressurized containers prior to dispensing through a common mixing and discharge nozzle. Separate flow

passages from the containers to the nozzle are provided and the flow of the primary and secondary fluids through these passages is regulated by a pair of distortable valve elements which also serve as springs.

3,610,482
ICE-DISPENSING BIN
Leon R. Van Steenburgh, Jr., Manitowoc, Wis., assignor to The Manitowoc Co., Inc., Manitowoc, Wis.
Filed Mar. 21, 1969, Ser. No. 809,068
Int. Cl. B65g 33/20
U.S. Cl. 222-413 18 Claims



In the ice-cube-dispensing bin, a film of water is permitted to be formed between adjacent stored ice cubes. The stored ice cubes, thus prevented from sticking together, may be dispensed from the reservoir by mechanical means preferably comprising an auger. The stored ice cubes remain generally clear and generally uniformly sized and shaped.

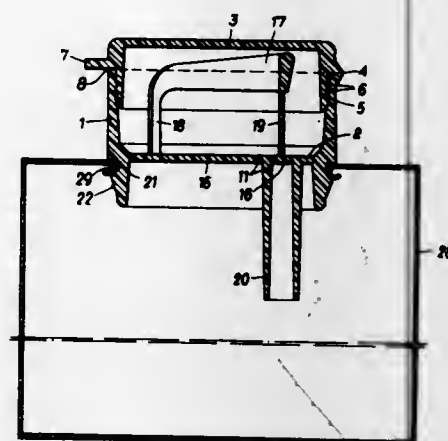
3,610,483
DISPENSER WITH LIQUID-IMPERVIOUS VENT
Ralph Visconti, 3122 Hanna, and Miroslav Uroshevich, 2505 Fleetwood, both of Cincinnati, Ohio
Continuation of application Ser. No. 694,639, Dec. 29, 1967, now abandoned. This application Dec. 1, 1969, Ser. No. 876,215
Int. Cl. B67d 3/00
U.S. Cl. 222-478 5 Claims



A dispensing device for liquid medication is formed in the shape of a straw. The device has a passage extending therethrough with the upper end closed by a removable cover. The lower end has means to permit the introduction of air into the passage whereby suction on the upper end of the

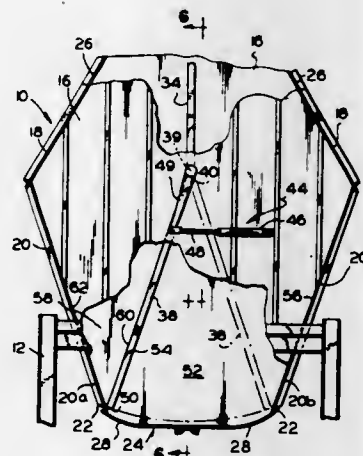
passage results in the liquid medication within the passage being dispensed into the mouth of the user.

3,610,484
FRANGIBLE CONTAINER CLOSURE MADE OF ELASTOMERIC PLASTICS MATERIAL
Johann Matzka, Gumpendorferstr. 15, Wein VI, Austria
Filed Aug. 4, 1969, Ser. No. 847,084
Claims priority, application Austria, Aug. 8, 1968, A 7767/68
Int. Cl. B65d 47/10
U.S. Cl. 222-479 7 Claims



A container mouth is plugged by an open-ended tubular shell, closable at the top by a hinged cap, whose interior is spanned by a membrane which is weakened along two closed lines defining two separate detachable wall portions. The larger of the two wall portions is rigid with the extremities of a ring-segmental tab which spacedly overlies the membrane within the shell and whose midpoint is integrally joined to the smaller wall portion whereby an upward pull upon the two halves of the tab simultaneously removes both wall portions to form a pouring aperture and an air inlet.

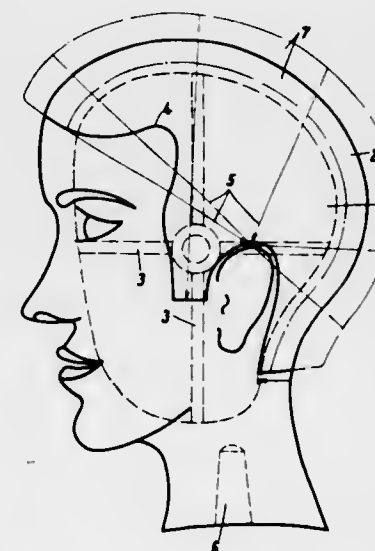
3,610,485
DUMPING-TYPE STORAGE BIN WITH MOVABLE INTERIOR Baffle
Frederick F. Van Raden, Hillsboro, Oreg., assignor to Peerless Trailer and Truck Service, Inc., Portland, Oreg.
Filed Mar. 11, 1970, Ser. No. 18,472
Int. Cl. A47f 1/02
U.S. Cl. 222-564 5 Claims



A storage bin for wood chips or like products has sidewalls including a pair of opposite bottom walls which inwardly converge in the downward direction and are inclined to the horizontal at an angle substantially greater than the angle of repose of the product. Such bottom walls terminate short of their line of convergence to define a bottom opening in the bin. A gate is mounted below the opening to permit the product to discharge therethrough. A longitudinally ex-

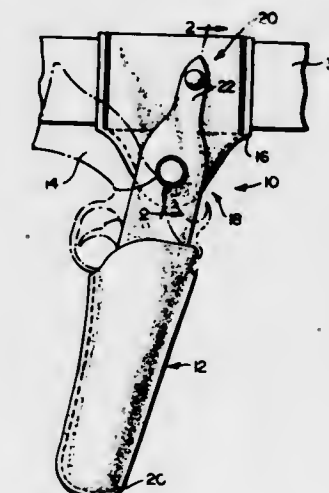
tending interior baffle is positioned within the bin to divide the interior thereof into two longitudinally contiguous compartments. A hydraulic piston and cylinder position the lower portion of the baffle alternatively at least parallel to each of the inwardly converging bottom walls. When the baffle is in a position parallel to one of the bottom walls, a longitudinally extending interior compartment is formed with generally parallel sidewalls which compartment is readily emptied when the gate is opened. When the baffle is then rotated to a position at least parallel to the other bottom wall, the remaining portion of the product in the bin is readily discharged.

3,610,486
MANNEQUIN HEAD FOR WIGS
Josef Kunzmann, 668 Neunkirchen Saar, AM Stadtbad, Germany
Filed July 10, 1969, Ser. No. 840,694
Claims priority, application Germany, July 12, 1968, P 17 60 863.8
Int. Cl. D06c 15/00; A41g 5/00; A47j 51/00
U.S. Cl. 223-66 8 Claims



A hollowed-out mannequin head for the manufacture, care, and exhibition of wigs, made of rubber or rubberlike material of sufficient rigidity to retain its shape and to accommodate wig assembly pins in its outer wall, optionally provided with a removable flexible cap, suitable for extended use and resistant to moisture and mechanical damage.

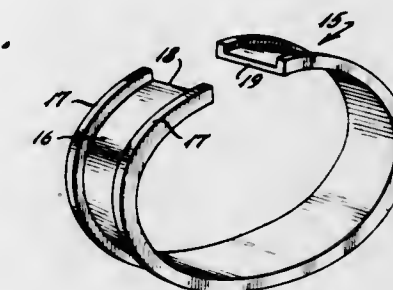
3,610,487
SWIVEL HOLSTER
Conrad Campos, 1519 Las Vegas Blvd. North, Las Vegas, Nev.
Filed Sept. 10, 1969, Ser. No. 856,766
Int. Cl. B41c 33/02
U.S. Cl. 224-2 B 2 Claims



A holster for a handgun is pivotally secured to a belt or pendant loop by a pivot pin having a first integral head and a

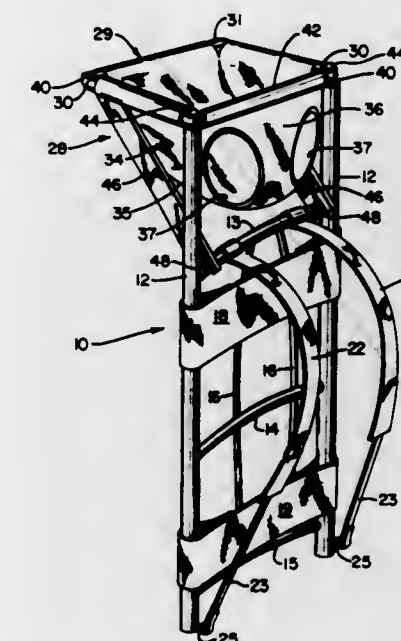
shouldered elongated shank with the shoulder adjacent the end of the shank remote from the integral head. The pivot pin also includes a second head having a central opening adapted to receive the pin shank and engage the shank shoulder portion when the shank is peened. The assembly may also include a separable fastener connecting the holster and the belt loop at a position removed from the axis of the pivot pin.

3,610,488
WATCH BAND LINER
Charles W. Tracy, Tallahassee, Fla., assignor to International Enterprises, Inc., Tallahassee, Fla.
Filed Mar. 21, 1969, Ser. No. 809,346
Int. Cl. A45c 11/10
U.S. Cl. 224-4 F 4 Claims



Apparatus applicable to the wrist of a person and having means for retaining a wrist watch and band or bracelet and for maintaining the same out of contact with the skin of the wrist while permitting easy access and readability of the watch.

3,610,489
INFANT CARRIER FOR BACK PACK FRAME
Clark G. Parsons, 1180 Drexel, Boulder, Colo.
Filed Mar. 13, 1969, Ser. No. 806,913
Int. Cl. A47d 13/02
U.S. Cl. 224-6 6 Claims

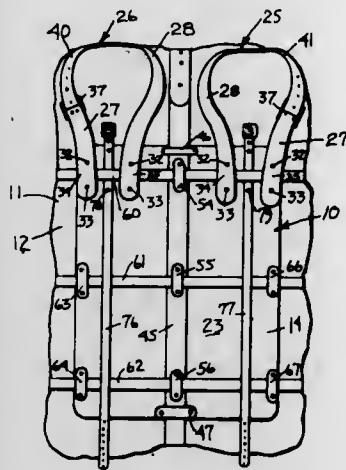


An infant carrier is conformable for quick-releasable, telescoping attachment to the upper end of a conventional back pack frame so that the weight of the child is placed above the shoulders of the individual carrying the frame and is applied through the main side frame members of the pack while permitting the normal load to be carried on the back pack frame.

3,610,490
PACK-CARRYING APPARATUS
 Cecil Raymond Smith, P.O. Box 29, Clarkston, Wash.
 Filed Nov. 13, 1969, Ser. No. 876,468
 Int. Cl. A45f 3/04

U.S. Cl. 224-12

3 Claims



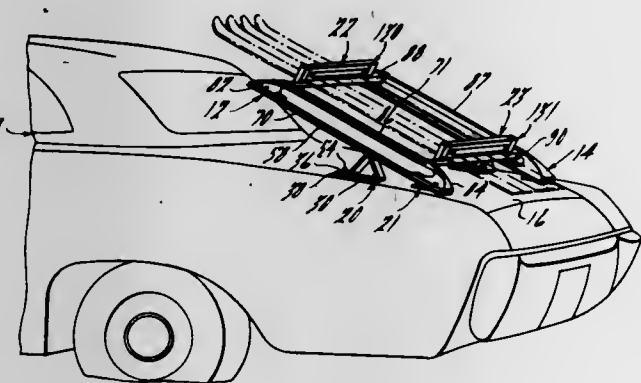
A unit has a rectangular leather sheet with a main strap affixed thereto and cross straps slidably mounted thereon for securing a pack thereto.

3,610,491
AUTOMOBILE SKI AND LUGGAGE RACK
 John A. Bott, 931 Lake Shore Drive, Goose Pointe Shores, Mich.

Filed Apr. 20, 1970, Ser. No. 29,867
 Int. Cl. B60r 9/00

U.S. Cl. 224-29 R

24 Claims



There is herein disclosed a combination ski rack and luggage rack adapted to be mounted on a trunk lid of an automobile by variably positionable hinge means and being movable between a flat stowed luggage carrying position and an inclined ski carrying position.

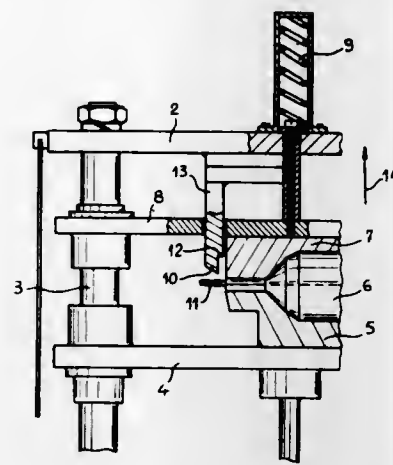
3,610,492
CUTTING DEVICE ESPECIALLY FOR MACHINES FOR TRIMMING ARTICLES OF BLOWN PLASTIC MATERIAL
 Jacques Bourgeois, Lyon, France, assignor to Lesieur-Cotelle, Boulogne Sur Seine, France
 Filed June 13, 1969, Ser. No. 833,123
 Claims priority, application France, June 17, 1968, 50,113
 Int. Cl. B26f 3/02

U.S. Cl. 225-95

7 Claims

A cutting device for a trimming machine comprises a principal knife and a secondary knife, which can be positioned at a sufficient distance from the tangential trimming path of an article bearing scraps to be removed, to detach the scraps by the principal knife by stripping without cutting by shearing. The secondary knife is located downstream of and close to the principal knife to shear off any scraps which have withstood the action of the principal knife. The trimming

machine can have a fixed upper plate to which the cutting device is rigidly fixed and movable lower plates to carry two

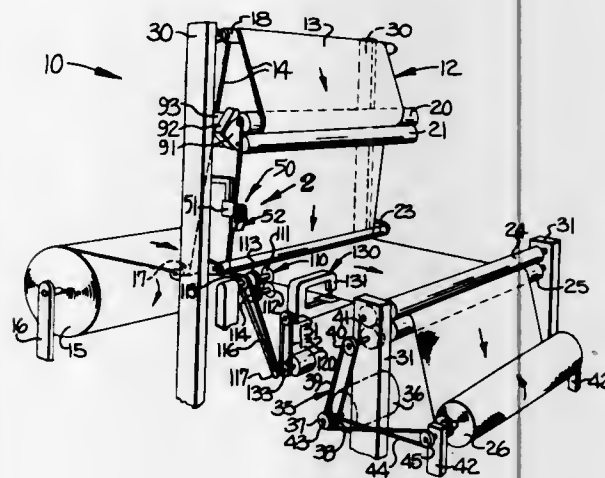


mold halves enclosing the article. The movable plates move upwards against a spring anchored to the upper plate.

3,610,493
TRAVELING WEB ALIGNING APPARATUS
 Charles E. Brocklehurst, Augusta, Ga., assignor to Riegel Textile Corporation, Ware Shoals, S.C.
 Filed Dec. 30, 1969, Ser. No. 889,089
 Int. Cl. B65h 25/26

U.S. Cl. 226-17

12 Claims



An apparatus for aligning one longitudinal side edge of a thickened portion of a traveling web having both thickened and thinned portions along a substantially constant line of travel. The apparatus comprises a sensing head means for sensing a deviation in the line of travel of one longitudinal side edge of the thickened portion and a switch means for constantly actuating guide means responsive thereto for constantly laterally shifting the traveling web to compensate for the deviations in the line of travel of the one longitudinal side edge of the thickened portion from the desired substantially constant line of travel.

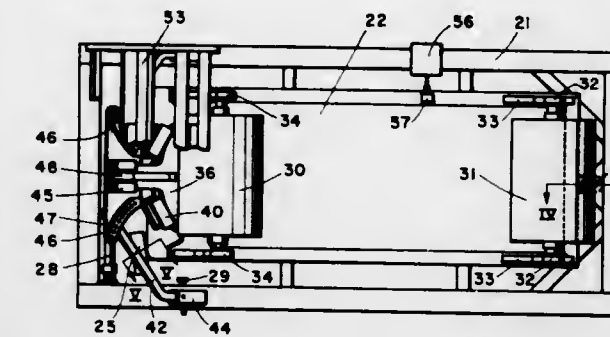
3,610,494
STRIP STEERING ROLL ASSEMBLY
 Carl H. Minton, ADS Machinery Corp. P.O. Box 1027, Warren, Ohio
 Filed Sept. 8, 1969, Ser. No. 855,820
 Int. Cl. B65h 25/26

U.S. Cl. 226-21

13 Claims

A guide roll assembly for effecting lateral displacement of running strip from an offset to a centered position and for compensating for any tendency of the strip to run askew. A

pair of rolls are carried by a frame which is pivoted for movement in a horizontal plane about the centerline of the exiting shafts are driven by an adjustable differential drive, and a pulse-responsive device controls the differential drive to in-

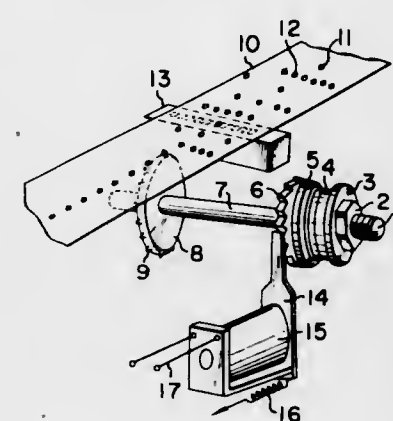


strip. The entry roll is tilted in coordination with its lateral displacement.

3,610,495
ESCAPEMENT FOR CARD OR TAPE READER
 Noboru Murayama, Sagami-hara-shi; Shinichi Hirata, Yokohama-shi, and Kinichi Yoshikawa, Kawasaki-shi, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
 Filed Aug. 19, 1969, Ser. No. 851,331
 Claims priority, application Japan, Aug. 24, 1968, 43/60219
 Int. Cl. G11b 15/24

U.S. Cl. 226-24

2 Claims



In a card or tape reader of the type in which a ratchet wheel (escapement wheel) is imparted with a continuous torque and its rotation is controlled by controlling a stopper which engages with the teeth of the ratchet (escapement) wheel thereby intermittently feeding a paper tape or card, an electrical circuit arrangement for extending the control time of the stopper and more particularly a stopper control time extension circuit in parallel with a conventional control circuit. When a code or signal indicates that the reader is not required to be stopped, stopper holding current is supplied to a magnet which attracts the stopper. The feeding speed may be remarkably increased.

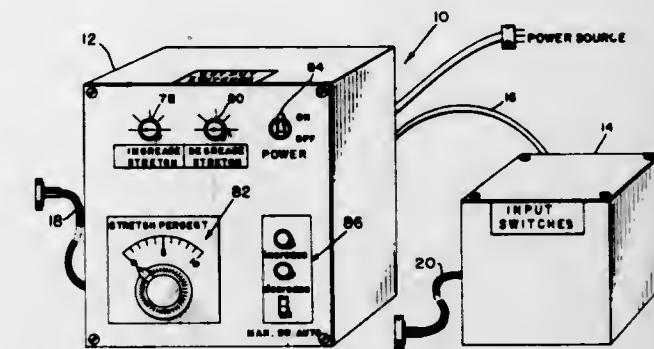
3,610,496
AUTOMATIC TENSION CONTROLLER
 Carroll H. Parker, 1502 Meadowview Road, Greensboro, N.C.

Filed Dec. 6, 1967, Ser. No. 688,423
 Int. Cl. B65h 23/22

U.S. Cl. 226-42

12 Claims

An automatic tension controller for a web material machine which has an input shaft and an output shaft on which the web material may be tensioned or overfed selectively during the winding operation, the controller including responsive devices indicating the rotation of the input and output shafts and signalling means providing an electrical pulse when the rotation of one shaft differs from the rotation of the other. The signalling means are operative to prevent the provision of electrical pulses when the rotation of the shafts is within preselected and adjustable tolerances. The

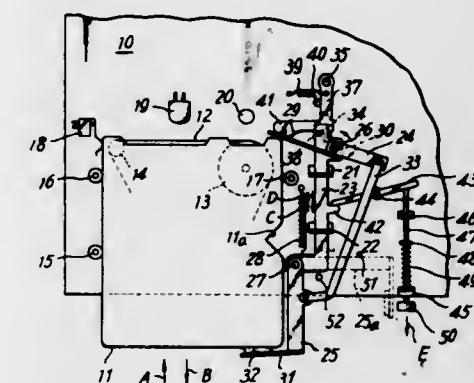


crease and/or decrease the speeds of the input and output shafts when pulses are provided by the signalling means.

3,610,497
TAPE CARTRIDGE LATCHING APPARATUS
 Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
 Filed Nov. 24, 1969, Ser. No. 879,356
 Claims priority, application Japan, Nov. 27, 1968, 43/86345
 Int. Cl. B65h 17/20

U.S. Cl. 226-89

5 Claims



A tape cartridge latching apparatus for a tape player utilizing an endless magnetic tape cartridge comprising a first lever engageable with and movable by a front edge of a cartridge when the cartridge is inserted into the player, a second lever mechanically cooperating with said first lever and movable to be positioned to engage the rear edge of said cartridge, a slide lever urged by a strong tension spring in one direction and carrying the first and second levers, and a stopper lever for restraining movement of the slide lever by the heavy tension spring when the cartridge is not inserted, the second lever urging the rear edge of the cartridge by the bias of the strong tension spring and advancing the cartridge to the playing position and maintaining the same in that position.

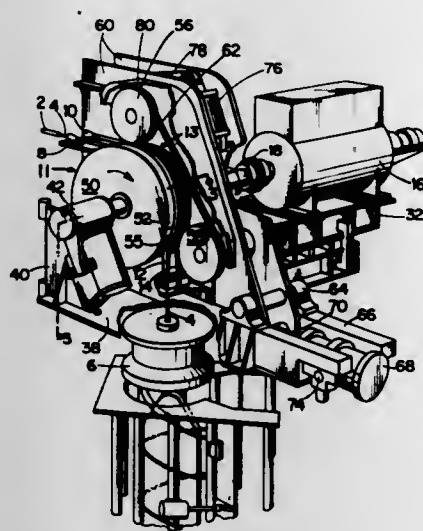
3,610,498
COMBINATION CENTRIFUGAL GUIDE AND CHAIN GUIDE
 Martin Gilvar, Westboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.
 Filed Apr. 15, 1970, Ser. No. 28,595
 Int. Cl. B65h 29/16

U.S. Cl. 226-110

6 Claims

Alternate means, selected according to the size and delivery speed of rod coming from a rod mill, incorporated in

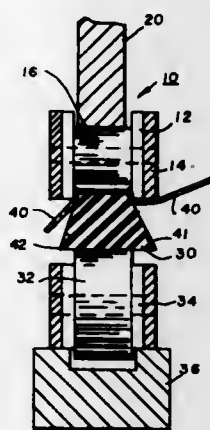
a single machine and driven at a proper speed for receiving and changing the direction of travel of the rod as received ing apparatus to control the forces exerted on an article being moved by said apparatus.



3,610,501
FILM-TRANSPORTING APPARATUS
Robert O. Wolfelsperger, Fairfield, N.J., assignor to William E. Young, Stamford, Conn.
Filed Mar. 18, 1970, Ser. No. 20,524
Int. Cl. B65h 29/12

U.S. Cl. 226—172

18 Claims

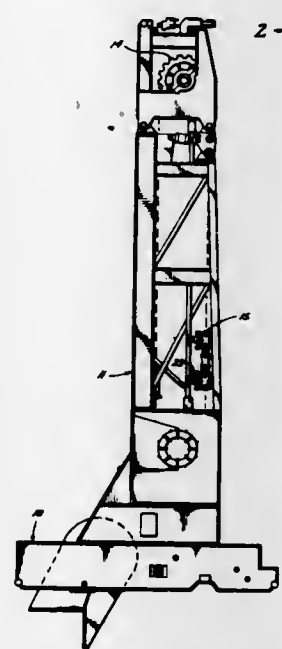


Apparatus is provided for transporting a strip of film through the contiguous engagement of the protruding portions of the inner links of a roller chain and a V-belt adapted to engage the strip of film so as to locally clamp the film between the tapered sides of the V-belt and the protruding inner portions of the inner side links of the roller chain. The roller chain is preferably arranged to ride upon and be supported by a guideway and the V-belt is disposed to be engaged by a plurality of rollers so that the spacing of the V-belt from the roller chain is a determined and substantially consistent distance.

3,610,502
GRIPPER RETRACTOR
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 6, 1970, Ser. No. 17,248
Int. Cl. B65h 17/34

U.S. Cl. 226—173

2 Claims

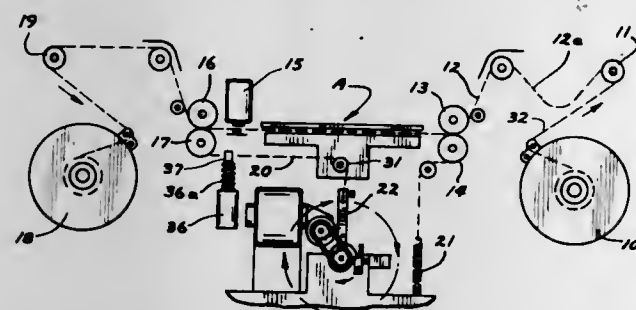


A retractor is provided with a fluid system for opening and closing grippers in which a three-position valve is utilized with a high- and low-pressure system in such manner that fluid from an opening gripper is utilized to close another gripper. The three-position valve is rotated between open, close and grip position by cooperating lugs carried on the valve and positioned on the retractor.

3,610,499
PAPER-FEEDING MECHANISM FOR PHOTOGRAPHIC PRINTERS
Albert F. Gallistel, Wayzata, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed June 6, 1969, Ser. No. 831,049
Int. Cl. B65h 17/04

U.S. Cl. 226—115

2 Claims

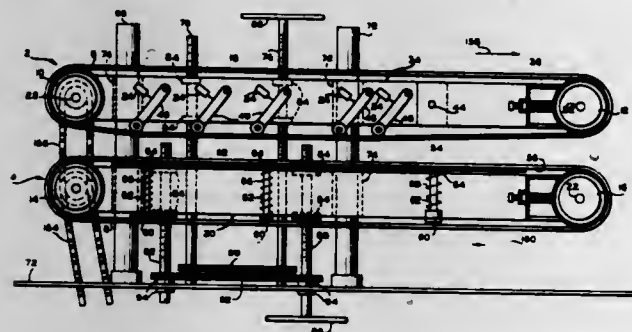


This is an invention which permits precise feeding of a readily adjustable predetermined length of paper progressively in a step-by-step intermittent manner through a photographic printer. This is accomplished by a precisely variable length actuating arm intermittently rotatable through a predetermined constant arc (such as one complete revolution) and connected to a paper-feeding roll assembly for intermittent feeding of the paper through the printer.

3,610,500
CONVEYING APPARATUS
Claude V. Brown, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 19, 1970, Ser. No. 3,935
Int. Cl. B65h 29/12

U.S. Cl. 226—172

4 Claims

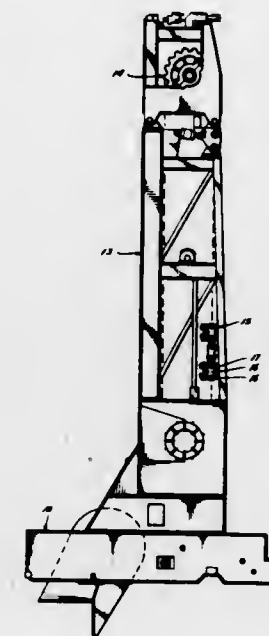


A plurality of cylinders are connected to rollers that are in contact with one of two endless conveying belts of a convey-

3,610,503
RETRACTOR
Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 9, 1970, Ser. No. 17,779
Int. Cl. B65h 17/34

U.S. Cl. 226—173

5 Claims



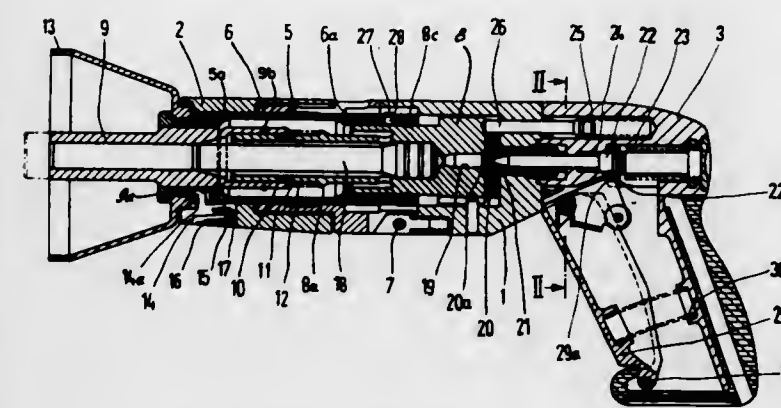
A retractor for running pipe into and out of a hole is provided with a fluid operating system for opening and closing the several grippers, in which the grippers are opened and closed by pressure responsive members which are subjected to a high- and low-pressure fluid system through a suitable three-way valve to effect opening, closing, and gripping with a minimum volume of high-pressure fluid being utilized.

3,610,504
EXPLOSIVE-ACTUATED BOLT-SETTING GUN
Helmut Oesterle, Feldkirch-Nofels, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Fürstentum, Liechtenstein
Filed May 15, 1969, Ser. No. 824,895
Claims priority, application Germany, May 20, 1968, P 17 03 439.8

U.S. Cl. 227—8

Int. Cl. B25c 1/14

1 Claim



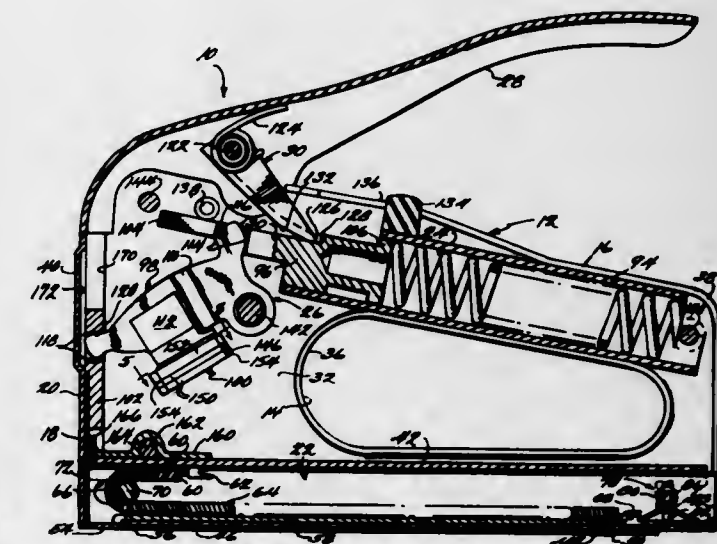
An explosive actuated bolt-setting gun includes a housing and a two-part barrel mounted in the housing for axial displacement therein and including front and rear barrel parts, with the front barrel part mounted on the rear barrel part for limited axial displacement against the force of a first spring engaged between the barrel parts. A cartridge chamber is formed in the rear portion of the barrel, and a plate closes the cartridge chamber. A firing pin is operatively associated with the cartridge chamber, and second spring means bias the barrel and the plate forwardly out of firing position except when the barrel is pressed against the target material. The second spring means includes a spring biased plunger engaged with the barrel and a spring engaged with the plate. The initial force of the first spring is at least equal to the ter-

minal force of the second spring means. A protective cap is associated with the front barrel part, and the front barrel part may protrude slightly beyond the work-engaging outer end of the protecting cap.

3,610,505
SPRING-OPERATED FASTENER DRIVING DEVICE
Robert E. Males, Cranston, and Walter G. Lemos, Riverside, both of R.I., assignors to Textron Inc., Providence, R.I.
Filed May 12, 1969, Ser. No. 823,620
Int. Cl. B25c 5/06

U.S. Cl. 227—123

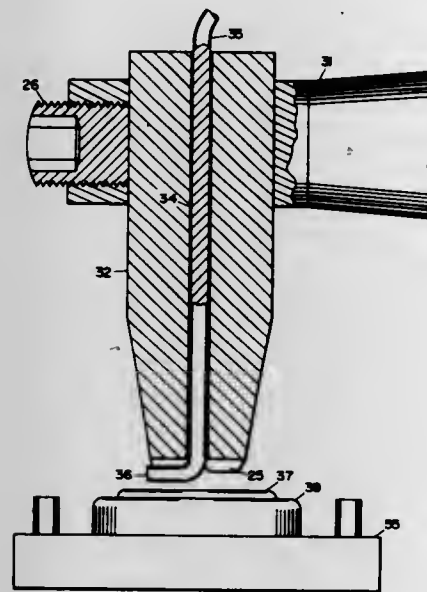
26 Claims



A fastener driving device including a housing providing a fastener drive track and an elongated hollow handle portion extending transversely with respect thereto within which an elongated drive spring is mounted in peripherally confined relation so as to enable the housing to have a low profile and to permit more efficient utilization of its spring energy to effect rapid fastener driving. The spring is compressed by movement of a spring actuated member thereagainst in response to the movement of an actuating lever and pawl through an actuating stroke, as by a manual gripping action between the actuating lever and the handle portion of the housing. The actuating lever and pawl having a toggle-like action which increases the mechanical force transmission as the spring is progressively compressed. The spring actuated member is released at the end of the actuating stroke of the actuating lever so as to be moved through a spring actuated stroke by the compressed drive spring, which movement is transmitted to the fastener driving element of the device by means of a bellcrank in such a way that the drive stroke of the fastener driving element is through a greater distance and at a greater speed than the spring actuated stroke of the spring actuated member. Resilient bumper means disposed at an acute angle to the horizontal is provided for engaging the bellcrank and cushioning the end of the spring actuated stroke of the parts. A fastener magazine is provided to feed a fastener from a contained supply to the drive track to be driven by the fastener driving element during its drive stroke, the latter being normally biased into a position corresponding to the end of its drive stroke and being moved through a retraction stroke by the operation of the bellcrank when the actuating lever is moved through its actuating stroke. The fastener magazine includes a movable member which is slidable rearwardly to permit fasteners to be inserted in the magazine assembly from the bottom. The movable member is positively secured to a fixed member in operative position by means of a releasable locking pin mounted in slots in the movable member and resiliently biased into engagement with a notch in the fixed member. The parts constituting the fastener driving mechanism and its housing are constructed in a manner such that relatively few manipulative steps are required to assembly an operating embodiment.

3,610,506
METHOD FOR ULTRASONICALLY WELDING USING A VARYING WELDING FORCE
 Peter T. Robinson, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
 Filed June 11, 1969, Ser. No. 832,324
 Int. Cl. B23k 1/06, 5/20
 U.S. Cl. 228—1

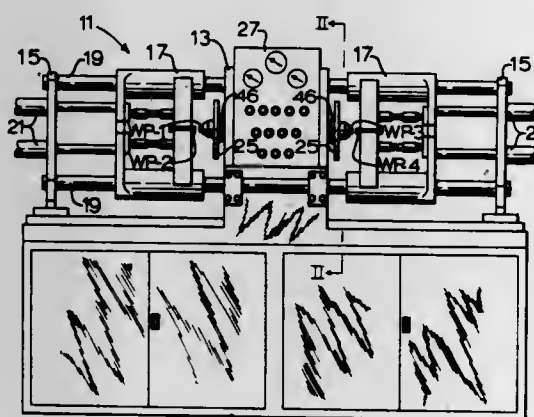
5 Claims



An improvement in ultrasonic welding is effected by progressively increasing the welding force and then applying the ultrasonic energy so that a portion of the ultrasonic welding period occurs during the welding force range when optimum ultrasonic welding conditions exist; an ideal welding force, for this application being defined as the force applied to the parts to be joined by a welding tip or other means of applying ultrasonic energy, so that the faces to be welded are pressed together at the intended location of the weld.

3,610,507
DRIVE SYSTEM FOR AN INERTIA WELDER
 Jozef Kiwalle, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
 Filed Apr. 13, 1970, Ser. No. 27,651
 Int. Cl. B23k 27/00
 U.S. Cl. 228—2

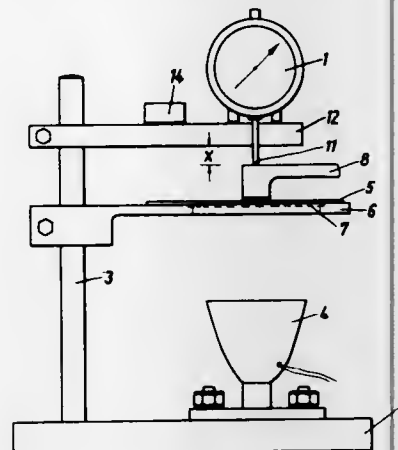
4 Claims



A hydraulic drive system for accelerating the flywheel of a friction welder to welding speed includes a single pump and a number of constant displacement motors. Each motor is connected to drive the flywheel so long as fluid is supplied to that motor from the pump. The drive system has a valve and manifold arrangement such that fluid is supplied from the pump to the motors in parallel at start up to provide the maximum torque. As the flywheel accelerates, the flow of fluid from the pump to selected ones of the motors is discontinued and is redirected to the remaining motors to provide rapid acceleration with a system that approaches a constant horsepower supply of power.

3,610,508
SOLDERING APPARATUS
 Gunther Laubmeyer, Arolsen/Waldeck, Germany, assignor to Zeva-Elektrizitäts-Gesellschaft Smitz und Laubmeyer K.G., Arolsen, Germany
 Filed Mar. 13, 1969, Ser. No. 806,853
 Claims priority, application Germany, Mar. 13, 1968, P 16 52 852.2
 Int. Cl. B23k 1/00, 5/00
 U.S. Cl. 228—8

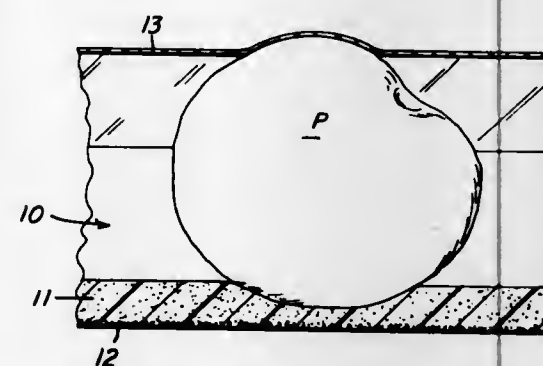
8 Claims



An apparatus for soldering together tinned components is arranged to detect the progress of a soldering operation as a function of the movement together of the parts to be soldered and, in accordance with such movement switches off the supply of heat to the position of soldering or operates a time measuring device.

3,610,509
SKIN-COATED ARTICLE FORMED OF FOAMED THERMOPLASTIC MATERIAL
 Thomas W. Winstead, P.O. Box 308 18030 Gilroy Road, Cockeysville, Md.
 Continuation-in-part of application Ser. No. 506,804, Nov. 8, 1965, now abandoned. This application May 27, 1969, Ser. No. 840,084
 Int. Cl. B65d 1/34
 U.S. Cl. 229—2.5

10 Claims



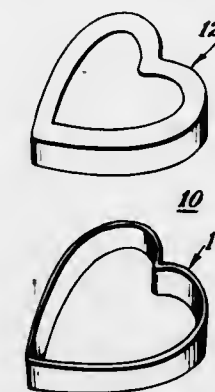
An article of manufacture such as a food-packaging tray, formed of extruded thermoplastic material having an inelastic and permanently deformable expanded, open-celled core of low density and an unexpanded, biaxially oriented, high density skin of said thermoplastic material, molecularly integral with the expanded core, covering at least one surface of the core to provide a stiffening shield. The inner surface of a receptacle of the invention may be free of the skin, so that permanent depressions may be formed by fruit, for example. Drain apertures may be provided through an inner skin to provide access to the absorbent core.

3,610,510
PLASTIC, HEART-SHAPED BOX
 John C. Lowry, Chappaqua, N.Y., assignor to Cellu-Craft Inc., Lake Success, N.Y.
 Filed Jan. 16, 1970, Ser. No. 3,393
 Int. Cl. B65d 1/34
 U.S. Cl. 229—8

4 Claims

A two-part, heart-shaped box is molded of foamed

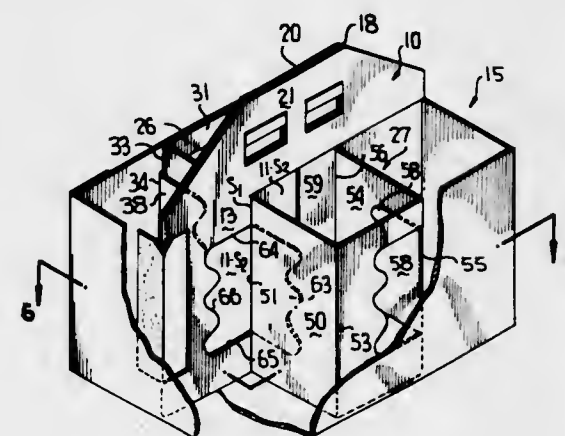
polystyrene. A beaded, peripheral lip provides rigidity and folded bottom is outfolded in such circumstances. In the open, food-holding position, the ends and bottom are slightly



aids in sealing one part with respect to the other but does not interfere with assembly of the two parts.

3,610,511
TWO-SIDED BOTTLE CARRIER PARTITION
 Arnold Bernard Engdahl, Jr., Stanton, Calif., assignor to Continental Can Company, Inc., New York, N.Y.
 Filed Sept. 5, 1969, Ser. No. 855,694
 Int. Cl. B65d 5/48
 U.S. Cl. 229—15

24 Claims



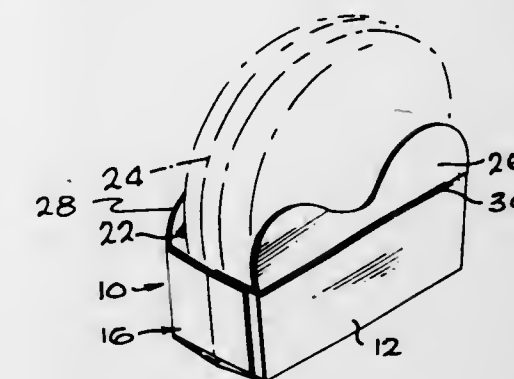
This disclosure relates to a partition formed from "two-sided" paperstock material wherein a blank of two-sided material is folded to form a longitudinal partition panel and at least a single transverse partition panel at each side of the longitudinal partition panel. A portion of the blank at each side of the longitudinal partition panel is struck to form a shock-absorbing flap, and each flap is folded upon its adjacent transverse partition panel with the same side of the two-sided material in face-to-face bonded relationship whereby the bond strength is thereby materially increased as opposed to the bond strength which would exist if opposite sides of the shock-absorbing flap and the transverse partition panel were bonded together.

3,610,512
HANDHELD FOOD HOLDER
 Harry J. Hermalin, 1961 Vista Del Mar, Los Angeles, Calif.
 Filed Jan. 29, 1970, Ser. No. 6,908
 Int. Cl. B65d 5/36

U.S. Cl. 229—32

10 Claims

The food holder is made of paperboard stock and has front and back panels which are interconnected by accordion-folding ends and bottom. The open top of the holder is for the insertion of a food product, such as a hamburger or a piece of pizza. The accordion-folding ends are infolded when the holder is in its collapsed position, while the accordion-

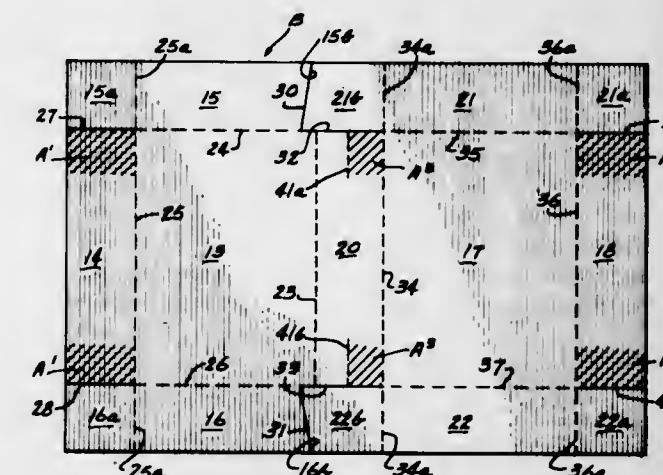


outfolded. In this position, the food holder is locked open by overcenter action.

3,610,513
CONTAINER CONSTRUCTION AND BLANK THEREFOR
 Robert Charles Hosek, Madison, Wis., assignor to Packaging Corporation of America, Evanston, Ill.
 Filed Nov. 3, 1969, Ser. No. 873,570
 Int. Cl. B65d 5/22

U.S. Cl. 229—33

10 Claims



A container of one-piece construction is provided which includes a tray section and a cover section, the latter having a backwall foldably connected to a peripheral portion of a bottom panel forming a part of the tray section. The cover section backwall is provided with a pair of short elongated axially aligned fold lines which are disposed in spaced parallel relation with respect to the fold line connection between the cover and tray sections. A segment of the backwall disposed to one side of each fold line of the pair of short fold lines is secured to a flap foldably connected to an end wall forming a part of the cover section, thereby permitting distortion of said backwall when said cover section is moved to a closed position with respect to said tray section.

3,610,514
DIAMOND-SHAPED CARTON HAVING FIFTH SIDE
 Rolf A. Samsing, Braintree, Mass., assignor to The Gillett Company, Boston, Mass.
 Filed June 13, 1969, Ser. No. 832,919
 Int. Cl. B65d 5/08, 25/54

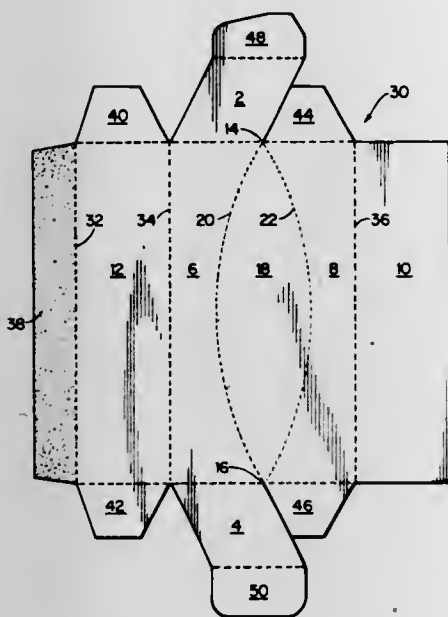
U.S. Cl. 229—38

1 Claim

A carton having first and second four-sided end walls, four sidewalls each being connected at either end to correspond-

ing sides of the end walls, and a fifth sidewall extending from a corner of the first end wall to a corresponding corner of the

container is provided with a product-inlet opening, with openings for the ingress of inert fluid and for the egress of air



second end wall and being concave, thereby to join two adjacent sidewalls.

3,610,515 LOCKS FOR EGG CARTON COVERS

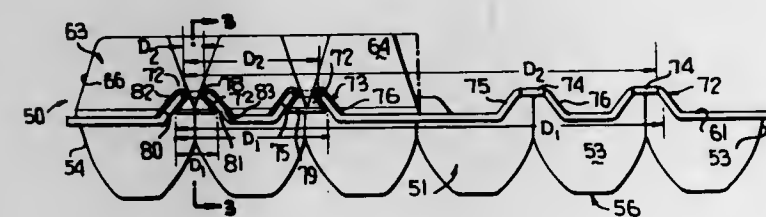
Harold W. Voorhis, Upper Nyack, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,331

Int. Cl. B65d 85/32

U.S. Cl. 229-44 R

8 Claims



This disclosure relates to one-piece molded plastic egg cartons in which a cover is hingeably connected to a carton body, and sidewalls of the cover and carton body remote from the hinge means are provided with interlocking means for maintaining the cover in its closed position. The interlocking means are defined by posts which project above the terminal edge of the carton body and are interlockably received within recess or means or openings in the carton sidewall. The posts are preferably constructed from flexible and reboundable material to permit temporary deformation incident to the opening and closing of the carton.

3,610,516 CONTAINER FOR PERISHABLE PRODUCTS

Joseph J. Esty, 1827 Logan Ave., San Diego, Calif.

Filed May 26, 1969, Ser. No. 827,852

Int. Cl. B65d 81/20

U.S. Cl. 229-53

3 Claims

The steps in the method of preserving a perishable product in a container formed of impermeable material, which steps comprise purging the container with an inert fluid after the product is in the container, and after the purging step, sealing the container against the ingress of environmental air. The

and for sealing the container (1) after the product is within the container and (2) after completing the purging.

3,610,517 BAG CONSTRUCTION

Karl-Heinz Honsel, Strassburger Strass 25, 48 Bielefeld, Germany

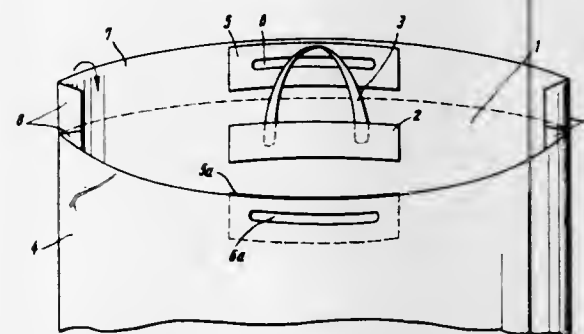
Filed Mar. 18, 1970, Ser. No. 20,520

Claims priority, application Germany, Mar. 22, 1969, P 19 14 728.5

Int. Cl. B65d 33/12

U.S. Cl. 229-54 C

10 Claims



A shopping bag has an upper opening and two sidewalls. From an upper edge of one of the sidewalls a flap projects upwardly. The flap and the upper edge region of the other sidewall are provided with reinforcing strips and with apertures extending through the strips and the underlying material of the flap and other sidewall, respectively. The one sidewall is provided in its upper edge region, but downwardly of the flap, with another reinforcing strip which holds in place a loop handle. In use the flap is folded over the opening until the apertures align, and the handle is pulled through both apertures to the exterior where it may be gripped by a user.

3,610,518 PRINTING DEVICE FOR CALCULATING MACHINES

Andreas Metschnabl, Nuernberg, Germany, assignor to Diehl, Nuernberg, Germany

Filed Oct. 21, 1969, Ser. No. 868,064

Claims priority, application Germany, Oct. 24, 1968, P 18 04 778.4

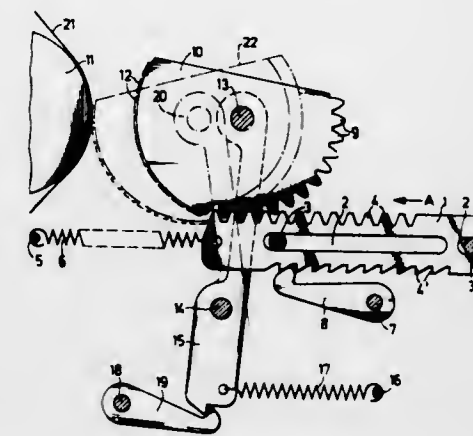
Int. Cl. G06c 29/00

U.S. Cl. 235-58 P

5 Claims

A printing device for a calculating machine in which a reciprocable value transfer member is drivingly connected with a printing wheel, while the printing wheel is rotatably mounted on one end of a lever which is pivoted in the machine and which is spring biased toward printing position and adapted for being held in retracted position by a pawl. The pawl releases the printing lever to actuate the type wheel toward a printing position and adapted for being held in retracted position by a pawl. The pawl releases the printing lever to actuate the type wheel toward a printing roller when

the value transfer member is stationary. The printing wheel remains drivingly connected with the value transfer member



during movement of said lever between printing and retracted positions thereof.

3,610,519 CALCULATOR

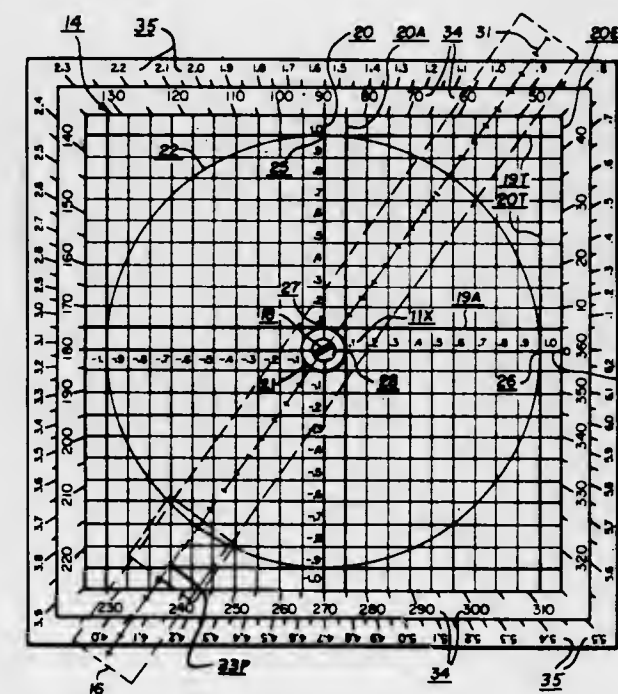
Svetislav M. Radosavljevic, Chicago, Ill., and Verner John Raelson, Valparaiso, Ind., assignors to Svetislav M. Radosavljevic and Verner John Raelson, part interest to each

Filed Jan. 19, 1970, Ser. No. 4,001

Int. Cl. G01b 5/24; G09b 23/04

U.S. Cl. 235-61 GM

7 Claims



A mechanical analog computing device is disclosed that includes a planar base on which a rotatable transparent flat elongated arm is affixed. The arm defines a rotatable index line that may lay over any part of a rectangular coordinate grid having a center at the point of attachment of the arm to the base. About the grid is defined two angle scales in radians and degrees for reading the angular setting of the arm line. Unit circle, \cos and \sin lines are conspicuously defined on the grid to allow the trigonometric functions to be read directly thereon and reciprocal scales are provided on the arm for the conversion between reciprocal values. A slide is affixed on the arm defining a movable hairline that is perpendicular to the arm line. The other side of the planar base forms part of a circular slide rule whose disc and hairline half-arm are attached by the same fixture as is the rotatable arm.

3,610,520 COMMUNICATIONS CALCULATOR

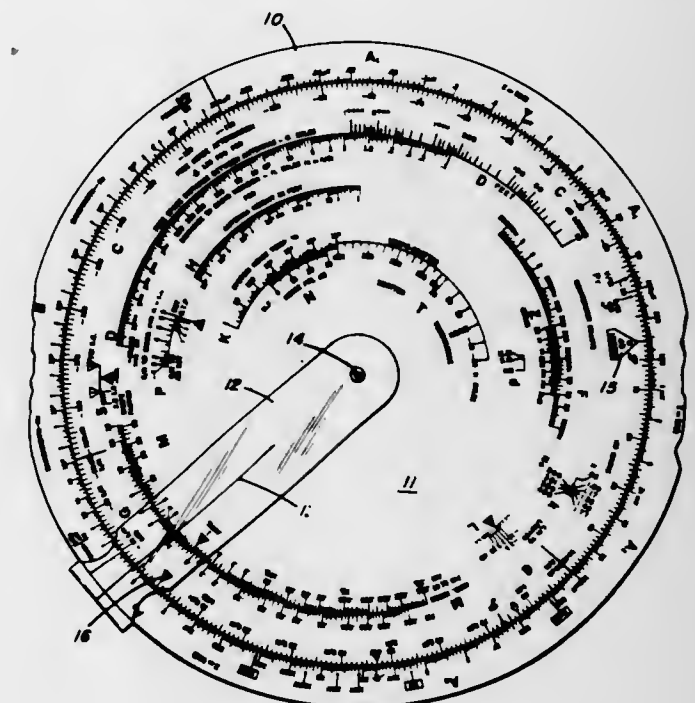
Raymond S. Connell, Edgewater, Md., assignor to Aeronautical Radio Inc., Annapolis, Md.

Filed Aug. 20, 1970, Ser. No. 65,411

Int. Cl. G06c 27/00, 3/00

U.S. Cl. 235-78

2 Claims



A circular slide rule for quickly and accurately performing a wide range of radio system calculations involving free space attenuation, tropospheric scatter propagation, thermal noise, modulation, system noise temperature, flux density, etc. in which each known parameter is sequentially entered to effect a cumulative result. Calculations other than by the invention are obviated, and the calculations possible start with transmitting power and yield signal-to-noise output of a distant receiver, for any type modulation index or bandwidth. Since the result is always a cumulative one, calculations can begin or end at any intermediate point between transmitter power and receiver output.

3,610,521 REVOLUTION COUNTER WITH DISCONNECTING MEANS

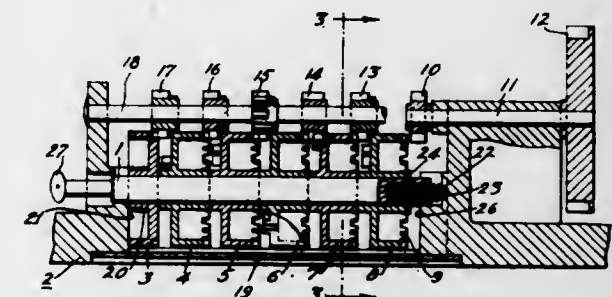
Einar T. Young, Newtown Square, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Aug. 21, 1970, Ser. No. 65,864

Int. Cl. G04b 15/00, 37/04

U.S. Cl. 235-117 R

8 Claims



An array of number wheels in a counter are mounted for free rotation on a shaft and are normally held out of engagement with a driving gear by a strong spring which biases the shaft axially in one direction. To couple the counter to its driving gear, the shaft is pushed axially in the opposite direction to overcome the spring force and allow the wheels to be moved into engagement with the driving gear by the action of a weaker spring.

3,610,522

AIR-CONDITIONING SYSTEM

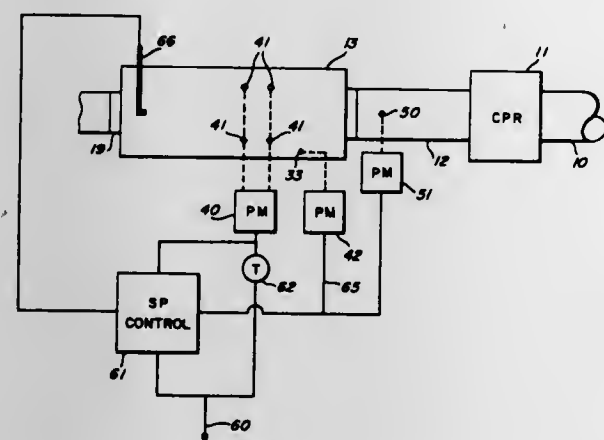
Richard D. Tutt, Tucson, Ariz., assignor to Krueger Manufacturing Company

Filed Jan. 24, 1969, Ser. No. 793,835

Int. Cl. F24f 13/04

U.S. Cl. 236-13

10 Claims



An air-conditioning system including a means for mixing primary air with recirculated secondary air. Primary air is passed through a plurality of nozzles to form a primary airstream for inducing the flow of secondary air into the stream. The secondary air enters the stream through dampers which may be positioned in accordance with the temperature requirements of the room receiving the mixed air. A primary air passageway by passing the nozzles is provided and also includes a bypass damper. A direct-acting thermostat senses the temperature of the room and provides pneumatic input to a pneumatic motor coupled to the dampers at the input of the secondary air. A static pressure-sensitive regulating element senses the static pressure at the exit. A second motor operates the bypass damper to admit more or less primary air to regulate the volume rate of air being supplied to the room.

3,610,523

HYDRONIC, ZONE-CONTROLLED TEMPERATURE CONDITIONING SYSTEMS

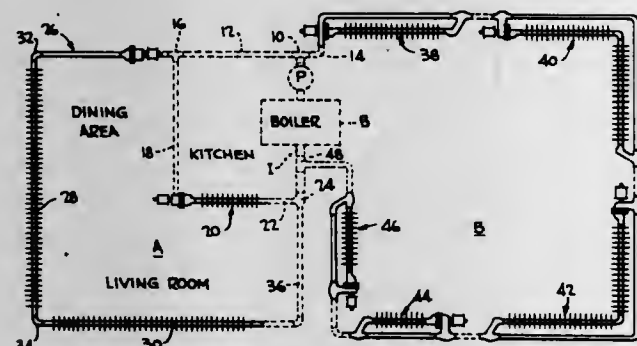
Leonard Troy, 611 North Webster Ave., Scranton, Pa.

Filed June 2, 1969, Ser. No. 829,542

Int. Cl. F24d 3/02

U.S. Cl. 237-8

17 Claims



Hydronic, temperature-control systems including either single or multiple line loops communicating with a source of circulating conditioned fluid for either providing upon demand and/or continuously circulating conditioned fluid, and in which thermostat-operated, solenoid-controlled valve-and-radiator assemblies include fail-safe means, plunger-dampening means, and/or lost-motion mounting for valve elements to afford proper seating; in which an expansion chamber is utilized to distribute fluid at increased pressure and reduced velocity for fluid distribution in a "bypass" system; and in which certain units are particularly adapted to facilitate maintenance and repair.

3,610,524

MANHOLE VENTILATING AND HEATING SYSTEM

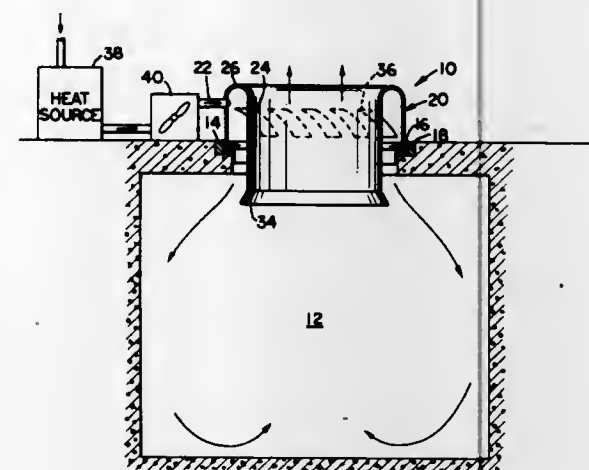
Gerald J. Wallen, San Bruno, Calif., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 3, 1969, Ser. No. 873,181

Int. Cl. B60h 1/04

U.S. Cl. 237-12.1

16 Claims



An apparatus for providing a continuous flow of air into manholes below the ground level such as those used for servicing underground communication facilities. A hollow, toroidal-shaped member adapted to fit within a manhole entrance to the hole forms an annular shaped chamber with an annular outlet below the ground level. Air under pressure is provided to the toroidal member and is deflected downwardly by internal baffles into the hole. The incoming air may be heated either by a portable heat source or by conduit coils within the chamber that are supplied with heated fluid or gas from a truck or the like.

3,610,525

VEHICLE ALIGNER

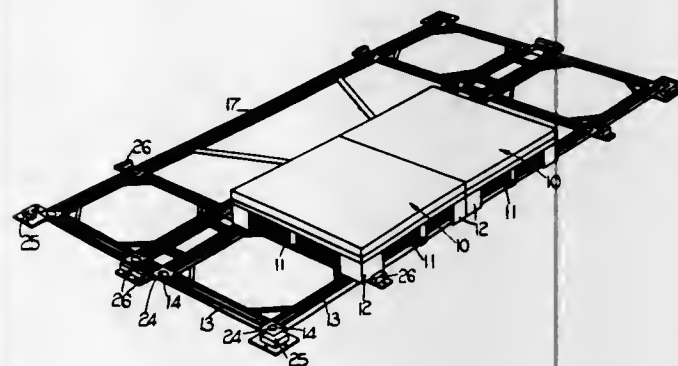
David James Townsend, 106 Moorcraft Road, Birmingham, and Claude Mortimer Townsend, Eastcote Manor, Hampton-In-Arden, Warwickshire, both of England

Filed Mar. 18, 1968, Ser. No. 713,779

Int. Cl. E01b 7/28

U.S. Cl. 238-10 R

2 Claims



A track layout comprising track sections, each having zones at least one of which defines a recess for location of a wheel of a vehicle for which the tracking is intended, and at least one stop is disposed adjacent to an edge of each of the sections for limiting the movement of the vehicle along the track.

3,610,526

PLASTIC RAIL INSULATOR FOR CONCRETE TIE FASTENINGS

Garwood N. Burwell, Madison, N.J., assignor to The Rails Company, Hamden, Conn.

Filed June 25, 1969, Ser. No. 837,008

Int. Cl. E01b 9/30

U.S. Cl. 238-310

1 Claim

An insulator has a platelike body portion and an integral end flange in abutting contact with the top side and the edge

3,610,528

SPRAY GUNS

Noel Felici, Grenoble, France, assignor to Tunzini-Sames, Grenoble, France

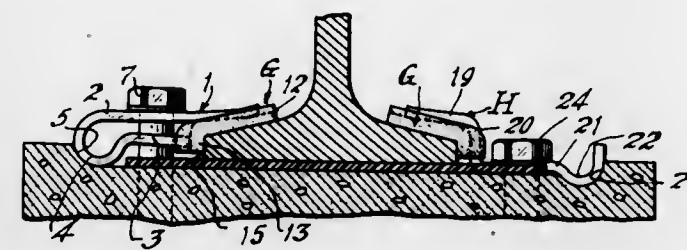
Filed Nov. 6, 1969, Ser. No. 874,541

Claims priority, application France, Nov. 14, 1968, 5289

Int. Cl. B05b 5/00

U.S. Cl. 239-15

7 Claims



spaced relation to the corresponding side of said clip to prevent the insulator from moving or twisting from between the clip and the rail in either direction that the rail may tend to move longitudinally during expansion and contraction of the rail and during passage of a train or the braking of a train.

3,610,527

ATOMIZATION APPARATUS AND METHOD

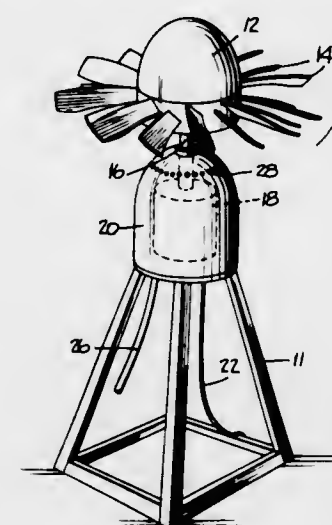
David B. Erickson, 625 South Broadway, Nyack, N.Y.; Goesta Wollin, Snedens Landing, Palisades, N.Y., and Roger L. Zaunere, 62 N. Greenbush Road, West Nyack, N.Y.

Continuation-in-part of application Ser. No. 741,512, July 1, 1968, now abandoned. This application June 11, 1969, Ser. No. 834,225

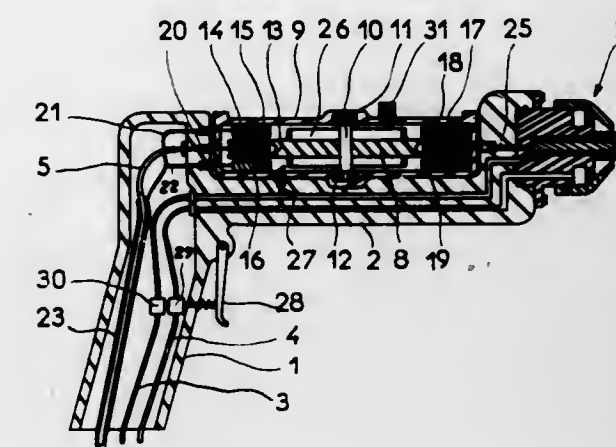
Int. Cl. A01g 15/00

U.S. Cl. 239-2 S

20 Claims



An atomization technique which involves the movement of a film of liquid, such as water, over both surfaces of the blades of a multibladed fan rotating about its hub. The liquid is fed in an annular stream or annular series of jets to the rotating blades near the hub of the blades. The leading edge of each blade cuts into the stream and picks up a portion of the liquid. The liquid then travels over both surfaces of each blade progressing from leading edge to trailing edge and also, because of centrifugal forces, outboard from the hub. As the liquid comes off the trailing edge of each rotating blade, it is atomized to the droplet size desired; the droplet size being a function of parameters such as rotational speed, quantity of water fed to the rotating blades, and length of trailing edge. There is also specifically disclosed the application of the invention to snow-making. In snow-making, the movement of air over the surface of the film of water, that in turn is moving over the surfaces of each blade, causes evaporation. This evaporation cools the water down to somewhere between 10° F. and 15° F., at which temperature the atomized droplets that come off the trailing edge of the blades will, under proper ambient conditions of temperature and humidity, form particles of snow.



This invention relates to electropneumatic spray guns, particularly paint spray guns having an electrostatic generator incorporated in the barrel of the gun. According to this invention, the air supply which is fed to the gun to atomize the material to be sprayed is also used to drive the rotor of an electrostatic generator for applying an electric charge to the atomized particles of the material to be sprayed. The said rotor is provided with blades on which the air impinges to cause it to rotate.

3,610,529

ELECTROMAGNETIC FUEL INJECTION SPRAY VALVE

Robert Huber, Zumikon, Switzerland, assignor to Societe Des Procedes D'Injection Sopromi, Les Mureaux, France

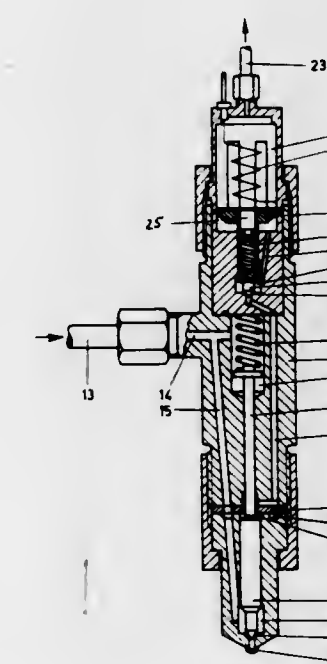
Filed July 23, 1969, Ser. No. 844,005

Claims priority, application Switzerland, Aug. 28, 1968, 12911/68

Int. Cl. F02m 47/00

U.S. Cl. 239-96

11 Claims



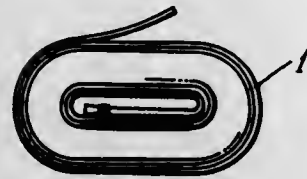
The nozzle valve needle is closed by a compression spring housed in a space that is separate from the space in which the pressure determines the opening and closing of the needle. In another embodiment, a piston is acted upon by the pressure in this latter space to close the needle.

3,610,530 METHOD FOR SPREADING POWDER AND DEVICE THEREFOR

Nako Suda, Sado, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 723,449, Apr. 23, 1968. Filed Dec. 19, 1969, Ser. No. 888,109
Int. Cl. B05b 9/02

U.S. Cl. 239-146

6 Claims



A device for spreading powder in which air under pressure carrying a pulverulent treating agent in the form of powder and/or granular material is forced into a soft and light tubular pipe from one end or both ends thereof and discharged or spread downwardly through a plurality of nozzles disposed spaced apart from each other longitudinally of the tubular pipe.

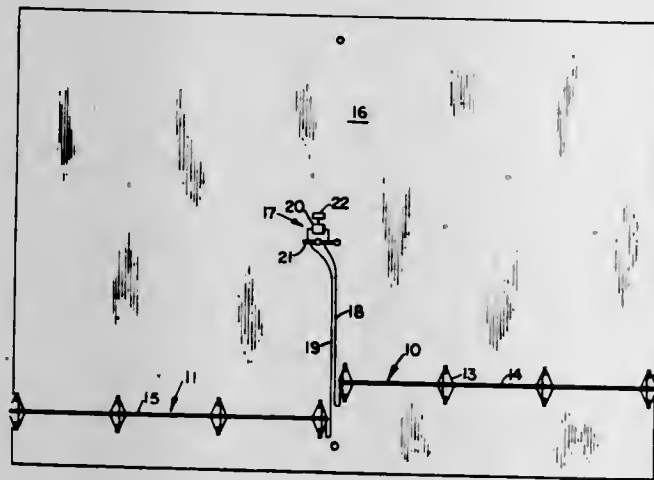
3,610,531

APPARATUS FOR SPRINKLER IRRIGATION

Lennart G. Erickson, 2075 Pioneer Court, San Mateo, Calif.
Filed Oct. 16, 1968, Ser. No. 767,955
Int. Cl. B05b 3/18

U.S. Cl. 239-191

6 Claims



Sprinkler irrigation in which water is flowed intermittently through sprinkler apparatus during each watering shift. This "on-off" application of water results in an increased rate of infiltration of the water into the soil. Mobile sprinkler apparatus is used to illustrate the intermittent application of the water. The apparatus is provided with means for draining residual water so that movement occurs when empty and during the nonflow periods. The water can also be used as a means of self-propulsion of the mobile sprinkler apparatus. Energy from water flow is stored in a spring energized by a water driven ram for use during periods of nonflow of water.

3,610,532

BALLJET TANK CLEANER

Henry J. Modrey, 158 Eagle Drive, Stamford, Conn.
Filed Aug. 20, 1969, Ser. No. 851,670

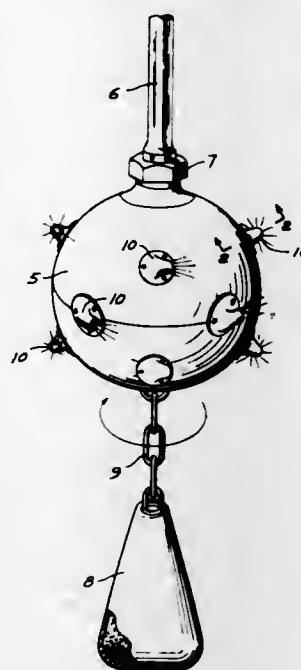
Claims priority, application Great Britain, Jan. 21, 1969, 3348/69
Int. Cl. B05b 3/06

U.S. Cl. 239-251

8 Claims

This invention is directed to a cleaning device for the tanks or holds of ships and includes a resiliently surfaced hollow ball that is rotatably suspended from a water supply hose and is provided on its surface with a plurality of spaced nozzles so constructed and directed as to cause the ball to undergo ro-

tary, swinging and/or jerky motions by reaction from the water jets emerging from the nozzles. A swingably connected



pendant weight is employed to dampen the movements of the ball.

3,610,533

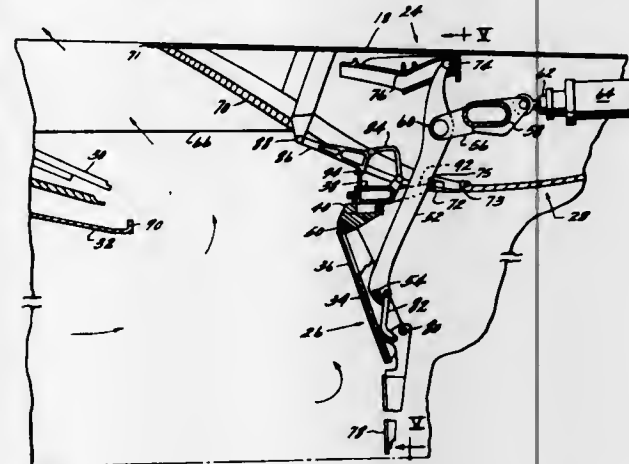
VARIABLE AREA AND THRUST-REVERSING NOZZLE

Jerry T. Johnson, Hamilton; William V. Sutherland, Milford, and Roy A. Krabacher, Cincinnati, all of Ohio, assignors to General Electric Company

Filed June 29, 1970, Ser. No. 50,414
Int. Cl. B64c 15/06; F02k 1/24

U.S. Cl. 239-265.19

10 Claims



A variable area, convergent-divergent, propulsion nozzle is disclosed which comprises a hooplike carrier having flaps pivoted thereon. For forward propulsion, the carrier is positioned at the outlet of a duct from which a motive fluid stream is discharged. The flaps are pivoted to form a discharge nozzle of a desired area. For reverse thrust, the carrier is spaced from the end of the duct, the flaps are swung inwardly and tabs, pivoted on the flaps, are also swung inwardly to provide substantially complete blockage of the motive fluid stream which is discharged laterally and forwardly through open blow-in doors.

3,610,534

THRUST-REVERSING APPARATUS FOR JET-PROPELLED AIRCRAFT

George E. Medawar, San Diego, and Harold E. Nelson, Jr., Chula Vista, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

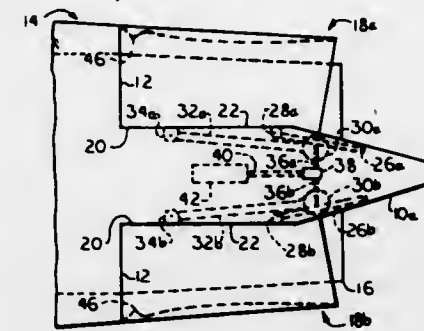
Filed Dec. 18, 1969, Ser. No. 886,248
Int. Cl. B64c 15/04

U.S. Cl. 239-265.29

5 Claims

Each of a pair of thrust-reversing doors is mounted on an

aircraft jet engine housing by means of four links, two of



which are rotatable by gear drive mechanisms located at the points of connection of the links to the housing.

3,610,535

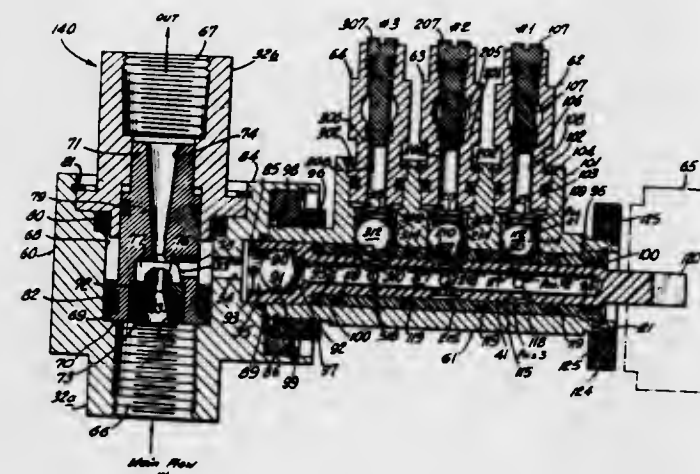
LIQUIDS MIXING AND SELECTIVE DELIVERY SYSTEM

James E. Bradshaw, Carmel, N.Y., assignor to Mite Corporation, Danbury, Conn.

Filed Sept. 3, 1969, Ser. No. 854,931
Int. Cl. B05b 7/32

U.S. Cl. 239-305

10 Claims



A liquids mixing and selective delivery eductor system. Pump-equipped conduit to force carrier liquid, e.g., water, from source to delivery nozzle structure. Conduit has an eductor inserted therein with its throat area connected by a check valve controlled suction passage to one or more sources of supplemental liquids, e.g., separate solution concentrates for washing, degreasing and jet-waxing. The eductor has associated therewith a special valve mechanism which can be selectively manipulated to allow one or more of the supplemental solutions to be mixed and delivered with the carrier liquid alone or together. The delivery nozzle has selective manual controls which will determine the types of deliveries, such as carrier liquid alone or the latter having a supplement admixed therewith as dictated by the setting of the valve mechanism.

3,610,536

COMBINATION GAS/OIL BURNER

Bradford K. Pease, Allentown, and Eugene M. Rudzki, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation

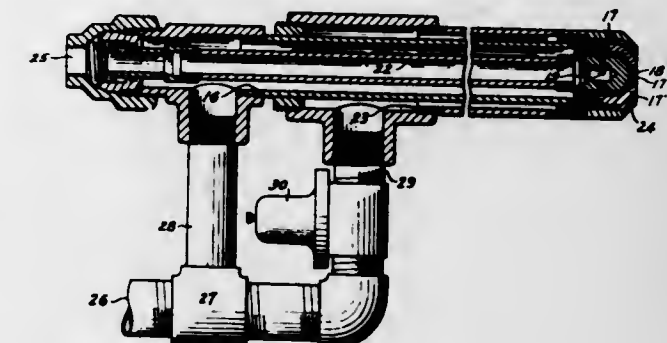
Filed June 16, 1970, Ser. No. 46,710
Int. Cl. B05b 7/12

U.S. Cl. 239-412

1 Claim

A burner suitable for firing a gaseous fuel, or a combination of a gaseous and a liquid fuel, with the gas being used to atomize the liquid fuel. The burner includes an inner liquid fuel tube which is surrounded by a primary gas tube that is positioned within a secondary gas tube. The liquid fuel tube is connected to a source of liquid fuel and at its outer end has a nozzle with several discharge orifices. The primary and secondary gas tubes are each connected to a source of gaseous fuel and each has a discharge opening at its outer end.

The secondary gas tube discharge opening is of annular shape and surrounds the discharge opening of the primary gas tube. The liquid fuel tube nozzle defines a constricted discharge passage with the primary gas tube discharge opening. Liquid fuel passing into this passage from the liquid fuel tube nozzle is atomized by primary gas which also passes through the passage, and the atomized liquid fuel and primary gas pass from the burner through the discharge opening at the outer end of the primary gas tube. Secondary gas discharged from the secondary gas tube discharge opening



impinges on the liquid fuel primary gas mixture discharged from the discharge opening of the primary gas tube. A pressure regulator maintains constant the pressure of the primary gas passing into the primary gas tube, over the range of total gas flow rates, assuring adequate primary gas pressure and flow for atomization of the liquid fuel, even at low total gas flow rates. The burner has given excellent results in atomizing fuel oil with gas flows as low as 15 percent of the B.t.u. fired at a high firing rate (30 g.p.h. oil equivalent total fuel in the case of the burner tested) and also with 50 percent gas at a low firing rate (10 g.p.h. equivalent total fuel.)

3,610,537

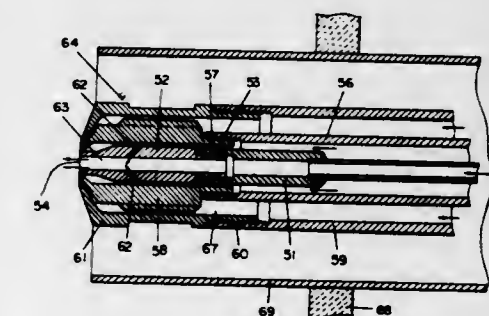
LIQUID FUEL COMBUSTION DEVICE

Masayoshi Nakagawa, Nishinomiya; Toshihiro Hirai, Sakai; Yuji Suzuki, Amagasaki; Ryozaaburo Kimura, Takarazuka, and Masamichi Okahara, Takarazuka, all of Japan, assignors to Daiichi Sankyo Kabushiki Kaisha, Banchi, Japan

Filed Jan. 27, 1969, Ser. No. 794,221
Claims priority, application Japan, Jan. 25, 1968, Feb. 23, 1968, Aug. 27, 1968, 4,712/68; 11,674/68; 74,096/68
Int. Cl. F23d 13/40

U.S. Cl. 239-419.3

1 Claim



Through a combination of
a. the supply of oxygen substantially in the form of pure oxygen in an amount far less than that theoretically required for combustion of liquid fuel to be burned in such a manner as to attain a very rapid combustion temperature rise,
b. with the strong activation of the liquid fuel by mixing and atomization of a part of the fuel liquid sufficiently with the oxygen, limited in quantity, closely adjacent to a liquid fuel nozzle thereby to form a high-temperature center flame very close to the nozzle,
c. a high-temperature flame having a large potential heat per unit volume thereof, that is, a flame of extremely high intensity, is obtained efficiently with a small supply of oxygen.

3,610,538

DIFFUSER FOR FEED WATER HEATER

Joseph T. Enders, Berkeley, Ill., assignor to Struthers Wells Corporation

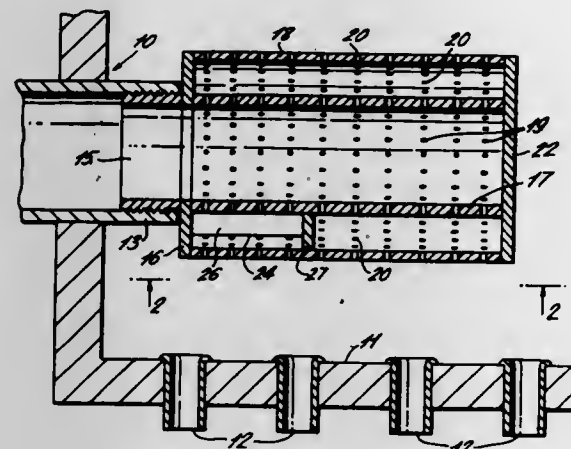
Filed Aug. 5, 1969, Ser. No. 847,645

Claims priority, application Great Britain, Aug. 7, 1968, 37697/68

Int. Cl. B05b 1/14

U.S. Cl. 239—553.3

1 Claim



A diffuser for a feed water heater is made from capped coaxial lengths of perforated pipe of a larger and a smaller diameter disposed one within the other and fixed to protrude from the water inlet, a rectangular baffle being fixed between the walls of the perforated pipes near the water inlet to direct entering flow to adjacent feed water tubes.

3,610,539

SELF-PROPELLED WAGONS AND LORRIES

Cornelis van der Lely, 7, Bruschennrain, Zug, Switzerland

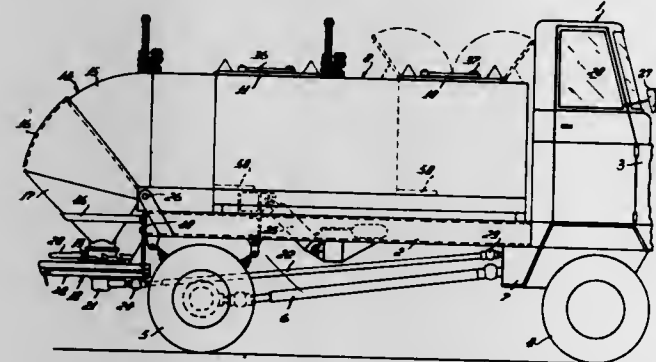
Filed June 26, 1969, Ser. No. 836,695

Claims priority, application Netherlands, July 3, 1968, 6809370

Int. Cl. A01c 17/00

U.S. Cl. 239—657

18 Claims



A self-propelled wagon with separate compartments that form a tiltable trough. The compartments have interconnecting outlet ports with slides and individual measuring devices can be located in each compartment. A collector is mounted at the rear of the wagon and a spreader is rotatably positioned beneath the collector for spreading a mixture of materials. Controls or monitors for the slides, tilting mechanism and spreader are located in or adjacent the cab of the wagon.

3,610,540

METHOD AND APPARATUS FOR TREATING GRANULIZED COFFEE

Otto C. Krolopp, Villa Park, Ill., and Leon J. Nowak, Liverpool, N.Y., assignors to Blaw-Knox Company, Pittsburgh, Pa.

Filed May 6, 1969, Ser. No. 822,229

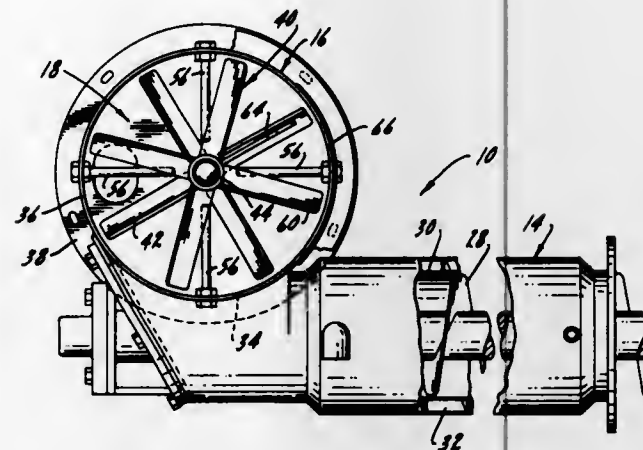
Int. Cl. B02c 3/04, 4/02, 13/24

U.S. Cl. 241—2

19 Claims

The method and apparatus for treating granulated coffee delivered from a granulating mill. The coffee from the mill is

conveyed into the lower portion of an upright mixing chamber having a rotating agitator with mixing blades inclined at an angle to move the material upwardly while mixing. The pressure head of the material in the chamber is



controlled to achieve improved mixing conditions. The blades in a flight at the chamber discharge end have a reverse pitch for restricting flow through the chamber, and the discharged material is delivered to a scalper for subsequent treatment.

3,610,541

APPARATUS FOR CONTROLLING PAPER STOCK REFINERS

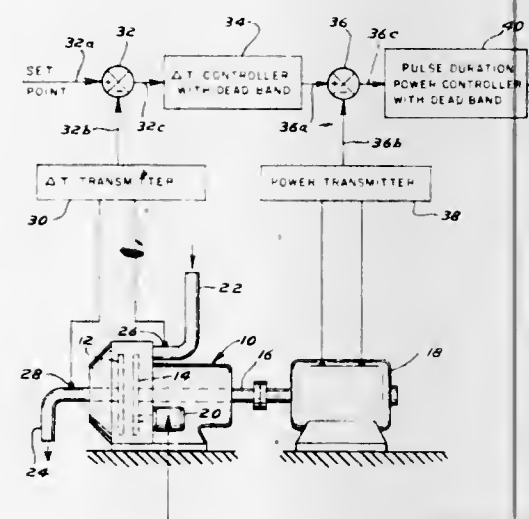
John A. Gudaz, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 29, 1969, Ser. No. 872,145

Int. Cl. B02c 25/00, 7/06, 7/14

U.S. Cl. 241—37

4 Claims



In apparatus for refining paper stock, one beater element is both rotated and longitudinally positioned with respect to a stationary second element, a drive motor causing the rotation and a control motor the positioning. In order to maintain the power consumption of the drive motor relatively constant, a first signal is produced which is representative of the actual work performed within the refiner. This signal is compared with a desired set point signal. Any difference therebetween is forwarded to a deadbanded delta T controller that produces an output signal whenever the error is above or below the selected deadband limits. This signal is then compared with a signal representing the actual electric power being utilized by the drive motor for the refiner and any difference therebetween is forwarded to a deadbanded power controller of the pulse duration type which then delivers to the control motor pulses having a duration in accordance with the magnitude of the last-mentioned error, doing so only when the error is above or below the dead zone limits adopted for the power controller.

3,610,542

PULVERIZER

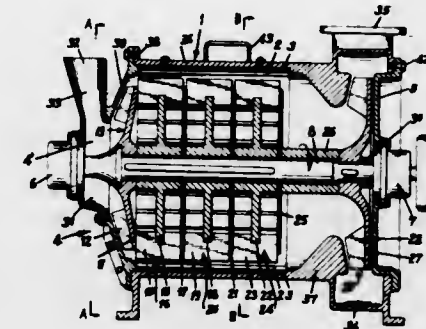
Takashi Yamagishi, 9-13 3 Chome Sakuragaoka, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan

Filed Oct. 11, 1967, Ser. No. 674,524

Int. Cl. B02c 13/08, 18/22

U.S. Cl. 241—43

10 Claims U.S. Cl. 241—189 R



A pulverizer comprising a cylindrical casing, the inner wall of which is lined with a liner having a plurality of grooves thereon extending substantially parallel to the centerline of the casing, a plurality of rotors rotatable concentrically about said centerline in the casing, said rotors having a number of radially extending blades respectively. The diameter of rotors up to the tip of the blade is slightly less than the inner diameter of the liner. At one end of said rotors there is provided a disc-shaped distributor, and at one end of said cylindrical casing there is provided an end cover having in its center an opening for feeding material. Adjacent to this opening there is provided a chamber wherein material supplied is given a prewhirl movement. Material is then transferred through the opening at the center of the end cover to the center of the distributor. The material is thereafter delivered to the outer periphery of the respective rotors.

3,610,543

WASTE AND REFUSE DISINTEGRATING MILL

Alfred Jensen, Svedala, Sweden, assignor to Aktiebolaget Ab-jorn Anderson, Svedala, Sweden

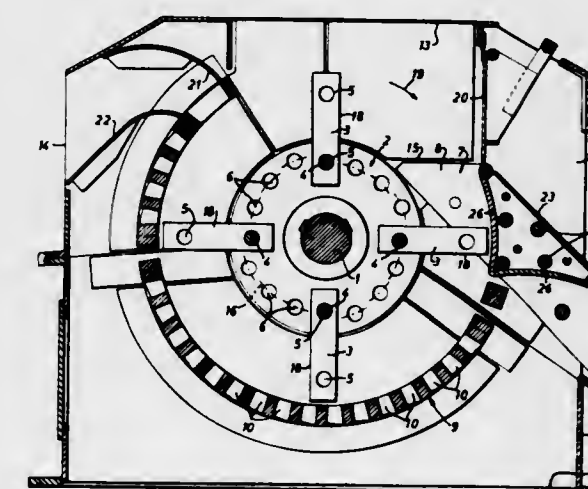
Filed June 16, 1969, Ser. No. 833,339

Claims priority, application Sweden, June 27, 1968, Apr. 18, 1969, 8724/68; 5476/69

Int. Cl. B02c 13/04, 13/22, 13/02

U.S. Cl. 241—73

5 Claims



A mill having means for continuously removing nondisintegratable metallic refuse comprising an entrance opening at the top thereof, a foraminous bottom discharge portion, rotatable hammerlike tools, and cooperating stationary disintegrating teeth having upper surfaces. A discharge opening for nondisintegratable material is located adjacent the upper surfaces of the teeth to receive the nondisintegratable material. The disintegrating tools push along the upper surfaces of the teeth. The upper surfaces of the teeth are tangent to a circle concentric with the axis of rotation of the hammerlike tools. A discharge opening for partially comminuted material is located adjacent the trailing end of the foraminous cage in the direction of rotation of the hammerlike tools.

3,610,544

DESTRUCTOR MILLING MECHANISM

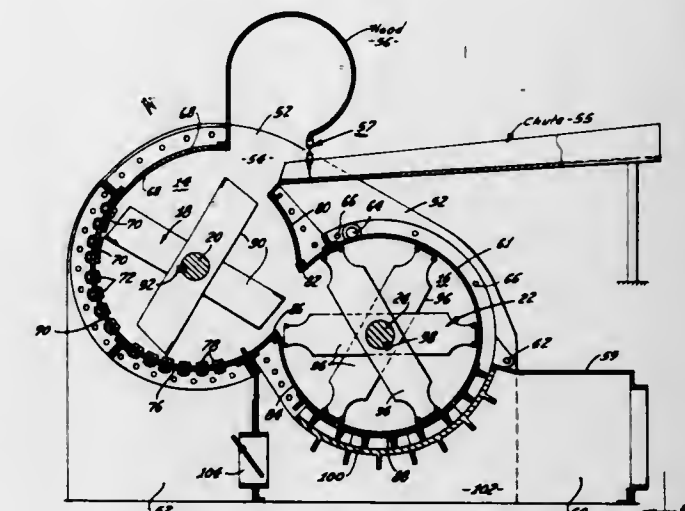
James E. O'Connor, South Laguna, Calif., assignor to Document Disintegration, Inc., Gardena, Calif.

Filed July 28, 1969, Ser. No. 845,177

Int. Cl. B02c 13/06, 18/14, 18/22

U.S. Cl. 241—189 R

2 Claims



An improved destructor mechanism is described for reducing documents, paper and similar fibrous materials to a fluffy illegible consistency. The mill to be described is equipped with a hood at the entrance to the mill, into which material which is not accepted initially by the mechanism is discharged back through the entrance and circulated, to be reintroduced through the entrance into the mechanism until it is accepted and reduced to the aforesaid fluffy consistency. The mill to be described is particularly advantageous, in that bulky material can be fed into it without the tendency for the apparatus to become jammed, and no special care need be taken in the manner in which the material is fed into the mechanism, or of the size or weight of the material.

3,610,545

APPARATUS FOR WINDING CONTINUOUSLY PRODUCED LAYER MATERIAL ON ELONGATED CORE

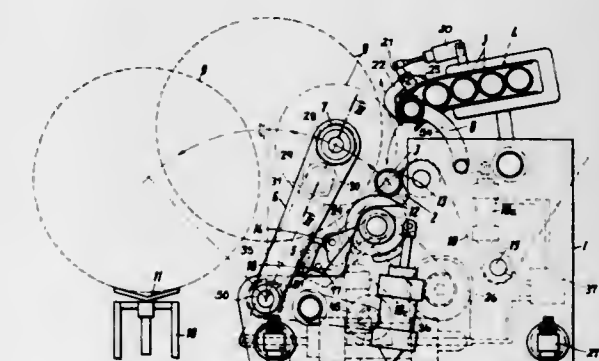
Hans Reiffenhausser, Troisdorf; Horst Gunter Keferstein, Mulleken; Friedrich A. Reiffenhausser, Troisdorf, and Heinz Herchenbach, Troisdorf, all of Germany, assignors to Reiffenhausser K.G. Maschinenfabrik, Troisdorf, Germany

Filed Jan. 17, 1969, Ser. No. 858,205

Int. Cl. B65h 19/26

U.S. Cl. 242—56 R

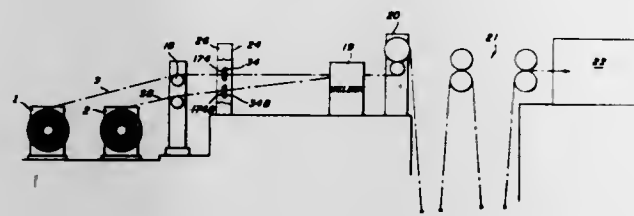
3 Claims



An apparatus for winding continuously produced layer material (e.g. synthetic-resin film or foil) on an elongated core holds a plurality of cores in a magazine and grips them axially one at a time between two arms to place them on the material in a cradle formed by a plurality of rollers. Then two pivotal transport arms axially grip the winding core and, as it is wound, move through a dead center position to deposit the wound core in an unloading station. As the one core is being unloaded, another is being fed into the cradle for continuous winding.

3,610,546
AUTOMATIC STRIP ALIGNMENT SYSTEM
 Francis J. McGorry, 128 Vermillion Drive, Levittown, Pa.
 Filed Aug. 13, 1969, Ser. No. 849,816
 Int. Cl. B65h 25/26
 U.S. Cl. 242-57.1

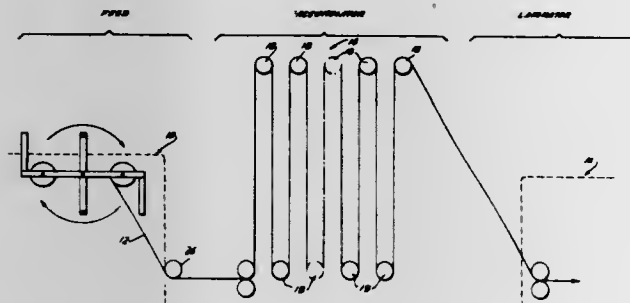
8 Claims



In a strip-processing line in which the trailing end of a first strip is welded to the leading end of a second strip vertically spaced from the first strip, apparatus is provided for aligning one edge of the moving first strip with the corresponding edge of the clamped second strip. A carriage movable transversely of the strip carries a pair of edge sensors one in alignment with each strip. When the edges of the strip are out of vertical alignment, an alignment control operable by the sensor associated with the moving strip moves the moving strip transversely until the edges return to alignment. A control is provided to move the carriage into a rearward position away from the strip when the leading edge is not clamped and into a forward operative position when clamped. The carriage position control prevents operation of the alignment control until the leading edge of the second strip is clamped and its sensor is in alignment therewith.

3,610,547
DEVICE FOR JOINING THERMOPLASTIC WEB MATERIAL
 Harvey G. Anderson, Clifton Knolls 2 Cardoba Drive, Elnora, N.Y.
 Filed Sept. 17, 1969, Ser. No. 858,722
 Int. Cl. B65h 19/14
 U.S. Cl. 242-58.3

4 Claims



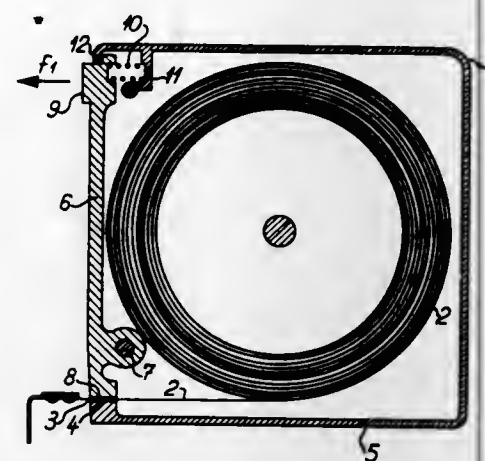
A device is provided for the continuous feeding of a thermoplastic web material or a rolled foam material without interruption at the exhaustion of a particular web. The device includes a first web support and a second web support mounted to a common turret and means for joining the trailing edge of the web material of one support to the leading edge of the web material of the other support.

3,610,548
BRAKING DEVICE FOR TAPE MEASURE AND THE LIKE
 Andre Quenot, Besancon, France, assignor to Quenot & Cie S.a.r.l., Besancon, France
 Filed Feb. 18, 1969, Ser. No. 800,085
 Claims priority, application France, Oct. 10, 1968, PV. 169349
 Int. Cl. B65h 75/48
 U.S. Cl. 242-107.3

1 Claim

A device for controlling the unwinding of the tape of a linear measuring instrument having a tape wound in a casing is characterized by a lever forming the front side of the casing and mounted substantially perpendicular to the direction

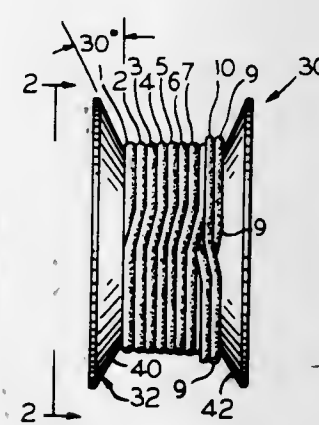
assumed by the tape at its outlet. The lever is pivoted in such a way that its extremity forming one of the walls of the outlet



slot compresses under the urging of a spring the tape against the lower side of the slot along a tangential movement.

3,610,549
CABLE WIND DEVICE AND WINDING PATTERN
 Carl G. Wennerstrom, Evanston, and Paul M. Slevert, Oak Park, both of Ill., assignors to Slevert Electric Co., Chicago, Ill.
 Filed July 15, 1968, Ser. No. 744,808
 Int. Cl. B65h 55/04, 75/14
 U.S. Cl. 242-176

7 Claims



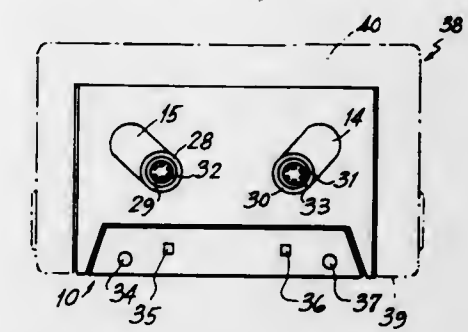
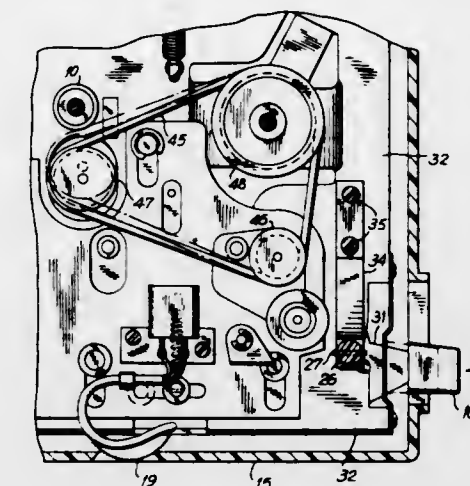
A cable wind device having a drum with end flanges tapering outwardly and away from each other. The crossover portion of the coils of one layer of cable wind is spaced from the crossover portion of the coils of the other cable layers.

3,610,550
TAPE RECORDERS
 Horace Brock, Brookville Road, Jericho, N.Y.
 Filed Sept. 22, 1969, Ser. No. 859,901
 Int. Cl. G11b 23/10, 15/18
 U.S. Cl. 242-198

8 Claims

Improvements to portable tape recorders which permit them to be leased to groups of persons in public places of interest for listening to prerecorded educational information. The components of the recorder are maintained in a locked case so as to prevent the recorded program from being

removed or rewound while the machine is in use. External battery terminals also permit the recorder to be easily modulated on spindles which are relatively proximate or distal in the small and large enclosures respectively.



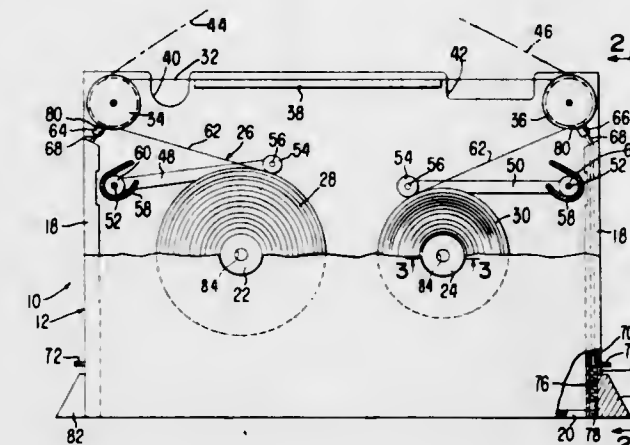
modulated on spindles which are relatively proximate or distal in the small and large enclosures respectively.

3,610,551
RECORDING AND/OR REPRODUCING APPARATUS
 Masayoshi Matsuyama, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan
 Filed Sept. 4, 1969, Ser. No. 855,297
 Claims priority, application Japan, Sept. 7, 1968, 64404/1968
 Int. Cl. B11b 15/32; G03b 1/04
 U.S. Cl. 242-201

5 Claims

3,610,551
TAPE CARTRIDGE
 Arthur I. Protas, Cupertino, Calif., assignor to Cartridge Television Inc., New York, N.Y.
 Filed Aug. 13, 1969, Ser. No. 849,722
 Int. Cl. G03b 1/04; G11b 15/32, 23/04
 U.S. Cl. 242-199

3 Claims

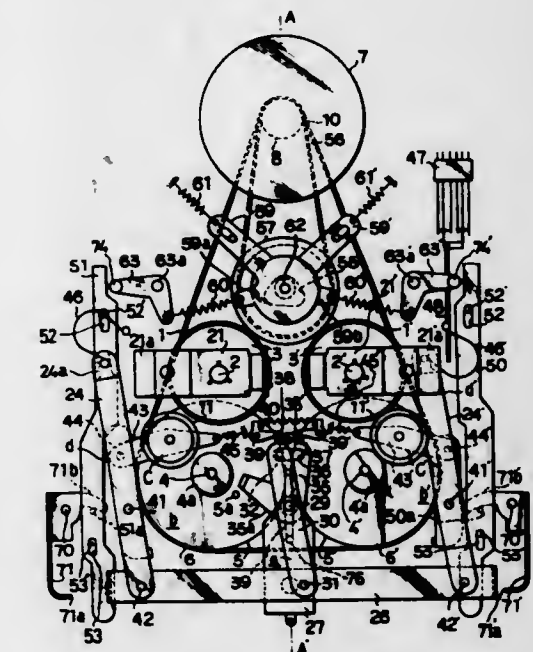


A tape cartridge having a housing containing a pair of rotatable hubs on which a flexible tape is wound to form a pair of tape packs whose diameter changes as the tape is wound on and wound from the hubs. The hubs are constructed to permit the cartridge to pivot from an inclined position out of coupled relationship to a pair of hub drive shafts into an operative position with the hubs being coupled in driving relationship with respective drive shafts. Improved stop means is provided to hold the tape against movement relative to the housing when the latter is out of its operative position.

3,610,552
TAPE CARTRIDGE
 Kazuyuki Shirakura, 4-15-15 Kamihara, Setagaya-ku, Tokyo, and Koichi Iwase, c/o Tamagawa-jutaku Ro 3-205, 3-1-130 Somechi, Chofu-shi, Tokyo, both of Japan
 Filed Oct. 29, 1969, Ser. No. 872,183
 Claims priority, application Japan, Oct. 30, 1968, Oct. 30, 1968, 79127/68; 79128/68
 Int. Cl. G03b 1/04; G11b 15/32, 23/04
 U.S. Cl. 242-199

16 Claims

A tape cartridge having a supply and takeup reel in which the reels can be located so as to vary the distance between them. An adapter fits around the periphery of the tape car-



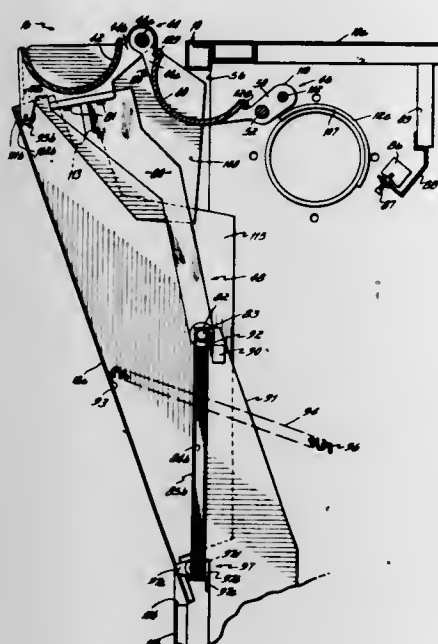
A recording and/or reproducing apparatus includes a lever that selectively rotates in relation to a rotor, and further includes a pair of driving lever means which control reel driving means and which produces back tension on the tape. A working lever connects the rotating lever and the driving lever, and back tension is produced on one of the reel-supporting means when the other reel-supporting means is rotated.

3,610,554
TRANSFER STATION FOR PNEUMATIC TUBE CONVEYOR SYSTEM
 Alex Schwarz, Englewood Cliffs, and Zoltan Gagy, Bloomfield, both of N.J., assignors to The Mosler Safe Company, New York, N.Y.
 Filed Sept. 29, 1969, Ser. No. 861,686
 Int. Cl. B65g 51/32
 U.S. Cl. 243-19

9 Claims

A transfer station for pneumatic tube conveying system including a tray mechanism for facilitating transfer of carriers to and from the pneumatic tube, the tray mechanism including upper and lower semicylindrical trays movable between a closed position coaxial with the pneumatic tube in which the trays cooperate to form an extension of the pneumatic tube,

and in open position radially displaced from the pneumatic tube in which the lower tray functions as a conveniently



located carrier holding device for facilitating removal of a received carrier or insertion of a carrier for transmission.

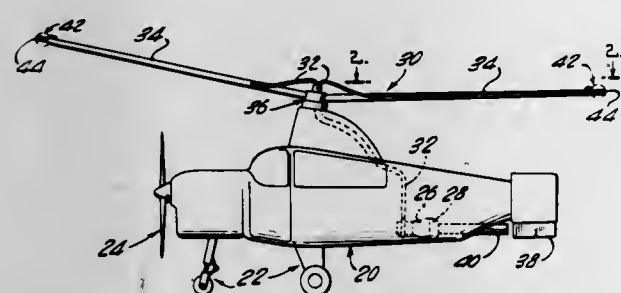
3,610,555

FLUID-DRIVEN ROTARY WING AIRCRAFT

Bruno A. Nagler, New York, N.Y., assignor to Vertidynamics Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 600,702, Dec. 9, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 532,042, Jan. 28, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 340,588, Jan. 17, 1964, now abandoned. This application May 21, 1969, Ser. No. 827,492
Int. Cl. B64c 27/18

U.S. Cl. 244-17.19

27 Claims



A rotary wing aircraft which operates during takeoff and landing as a conventional helicopter employing the combined outputs of main and auxiliary compressors. When the aircraft is lifted vertically to the selected altitude the same may be propelled in forward flight in the manner of an autogyro by disconnecting the rotor compressor drive means and connecting the propeller to the output of the reciprocating engine. The aircraft is further provided with wing thrust augmenting devices, and flap means for increasing the lift forces at lower rotational speeds.

The aircraft can also be manufactured from a standard propeller-driven commercial monoplane in which the wing is taken off and a compact compressor installed on the same mounting points of the fuselage as the wing that was removed, and installing a fluid-driven rotary wing that is connected to the compressor.

3,610,556

DIRECTIONAL CONTROL MECHANISM FOR REACTION PROPELLED CRAFT

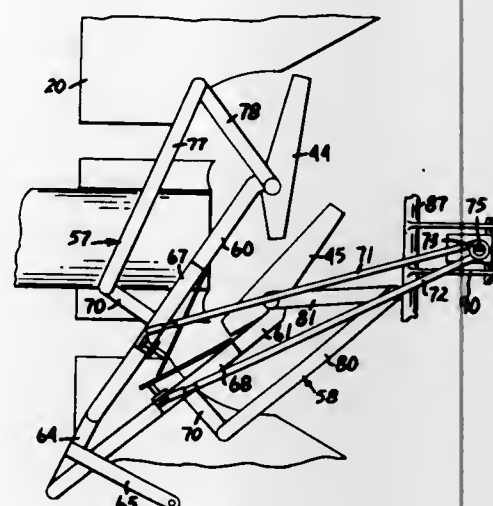
Tully Cecil Charlton, Jr., 19 N. 9th St., Cheney, Wash.
Filed May 12, 1969, Ser. No. 823,754
Int. Cl. B64c 15/06

U.S. Cl. 244-52

12 Claims

A directional control mechanism is described for controlling reaction propelled craft. The mechanism has two

vanes that are pivotally mounted for deflecting the exhaust stream from a reaction engine. The vanes are operated by a steering control mechanism that pivots one vane through a wider angle than the other vane to accent the turning of the



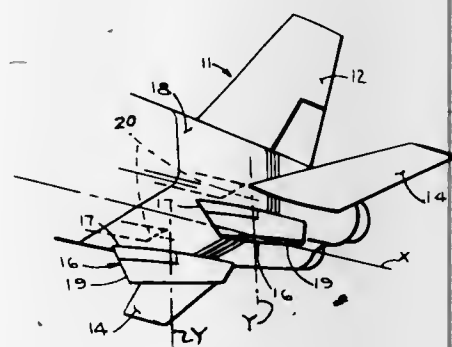
3,610,557

SPEED BRAKE FOR AIRCRAFT

Walter E. Fellers, Los Angeles, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.
Filed Nov. 19, 1969, Ser. No. 878,037
Int. Cl. B64c 9/32

U.S. Cl. 244-113

2 Claims



An aircraft incorporating a pair of ventral fins equally spaced on each side of the aircraft's longitudinal axis providing dual functions, viz., directional stability and speed brakes.

3,610,558

CHRISTMAS TREE STAND

Victor Tawara, 3750 S. Federal Blvd., Englewood, Colo.
Filed Feb. 26, 1970, Ser. No. 14,302
Int. Cl. A47g 33/12

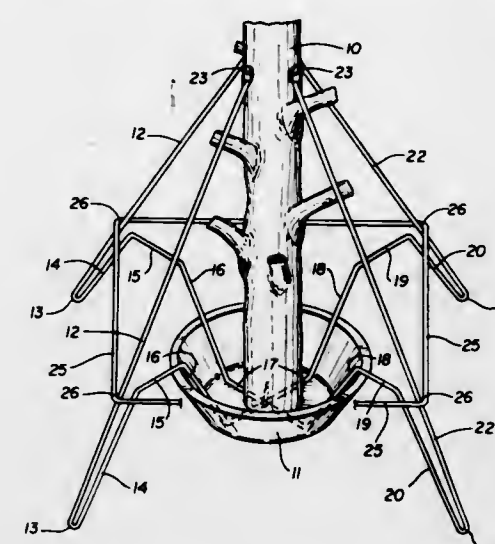
U.S. Cl. 248-44

4 Claims

A Christmas tree stand consisting of only three lengths of wire bent and connected together, including two identical main lengths of wire each bent to form two opposite inclined side members, two legs and a generally horizontal supporting crosspiece between the legs, and including a third length of wire bent into a generally square brace connected to the inclined side members when the two main lengths have been bent as described and arranged to have their crosspieces extend across each other at the center of the assembly,

whereby the crossed pieces support the bottom of the tree trunk. The upper ends of the inclined side members

section and bail releasably secure the open end portion of a litter bag for adjustment between open and closed conditions, and the closed end of the bag is secured releasably to



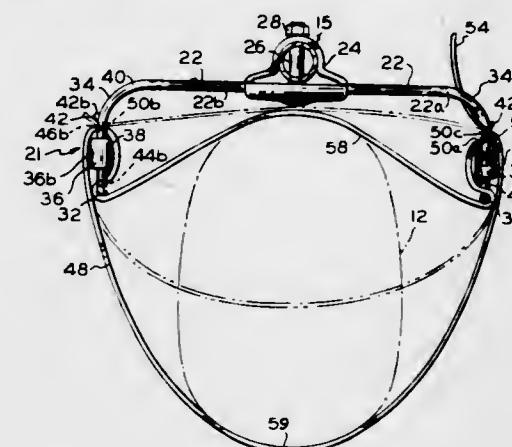
yieldingly engage the sides of the trunk 90° apart from each other and are adapted to be nailed thereto.

3,610,559

GOLF BAG BUCKLE AND MOUNTING STRUCTURE FOR GOLF CART

Ammon M. Leitzel, Portland, Oreg., assignor to Jarman Company of Oregon, Portland, Oreg.
Filed Nov. 17, 1969, Ser. No. 877,072
Int. Cl. B62b 1/02; A63b 55/08
U.S. Cl. 248-96

4 Claims



A buckle structure for mounting on the frame of a golf cart releasably to buckle a golf bag thereto includes brackets which are attachable to the frame and extend in opposed directions to the axis thereof. Belt-engaging prongs are slidably attached to the brackets at their outboard ends to form openings or eyes on both sides of each of the prongs. A belt is attached to the prongs, being threaded through the eyes outboard thereof to pass outside of the brackets from one outboard end to the other. The reach of the belt between such outboard ends forms a resilient sling against which the golf bag is supported, the belt thereupon encircling the golf bag and passing inboardly of the prongs to be received thereupon. The belt thus retains the bag snugly against the sling, yet the bag is kept removed from the brackets to prevent its being damaged thereby.

3,610,560

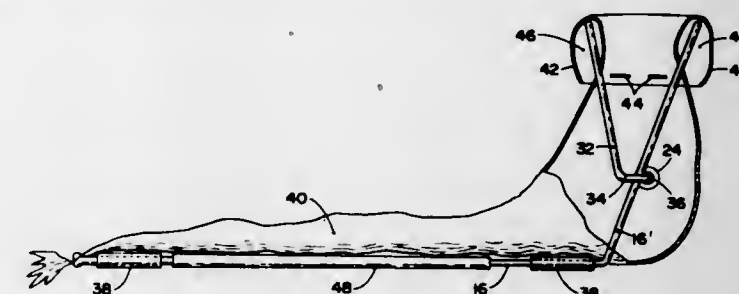
LITTER BAG HOLDER

Alan G. Dillabough, 615 Idlewood Drive S.E., Salem, Oreg.
Filed Dec. 3, 1969, Ser. No. 881,643
Int. Cl. B65b 67/12

U.S. Cl. 248-97

7 Claims

The upwardly inclined front section of an open rectangular wire frame mounts laterally spaced bearings which pivotally support the ends of a wire bail. The upper ends of the front



the rear end of the frame. The assembly is adapted for support upon an automobile body floor for removable storage under the front seat.

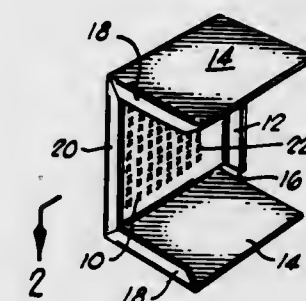
3,610,561

CLIPS FOR MOUNTING ELECTRICAL FITTINGS IN NEW WALL AND CEILING CONSTRUCTION

Beverly Greenwood, 420 N.W. 29th St., Oklahoma City, Okla.
Filed Nov. 13, 1969, Ser. No. 876,354
Int. Cl. H02g 3/08

U.S. Cl. 248-205

3 Claims



Clips for mounting electrical outlet boxes to wall and ceiling constructions, such clips including a monoplanar screw-engaging face, a box-engaging projection extending generally perpendicular to the screw-engaging face, and at least one brace flange extending from the screw-engaging face and spaced from the box-engaging projection to permit one wall of an electrical box to be positioned between the box-engaging projection and the brace flange. The screw-engaging face is perforated over at least a portion of its areal extent, with the perforations formed through the screw-engaging face being bounded on one side of such face by a plurality of times which project out of the screw-engaging face.

3,610,562

ADJUSTABLE MOUNTING FOR MARKING AND DISPLAY PANEL

Ronald M. Holmes, Lansing, and Dennis D. Page, Ithaca, both of Mich., assignors to Eberhard Faber Inc., Crestwood, Wilkes Barre, Pa.

Filed Sept. 15, 1969, Ser. No. 857,797

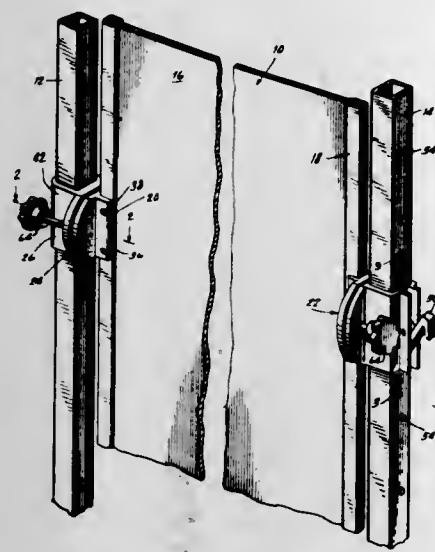
Int. Cl. A47b 97/04; A47f 5/10

U.S. Cl. 248-286

8 Claims

A marking and display panel is held in upright supporting standards by a pair of panel swivel-mounting brackets which permit free rotation of the panel in its supporting standards and also the elevational adjustment of the panel along the height of the supporting standards. The panel swivel-mount brackets comprise a section fixed to the panel for rotation therewith and a fixed section adapted to slide along spaced upright supporting standards. A latch carried by the panel

swivel-mount brackets cooperates with means on the supporting standards to hold the panel at a selected elevation



while a position-securing screw interengaging the bracket sections secures the selected rotational position of the panel.

3,610,563

MANDREL FOR FORMING FIBER-REINFORCED PLASTIC ARTICLES

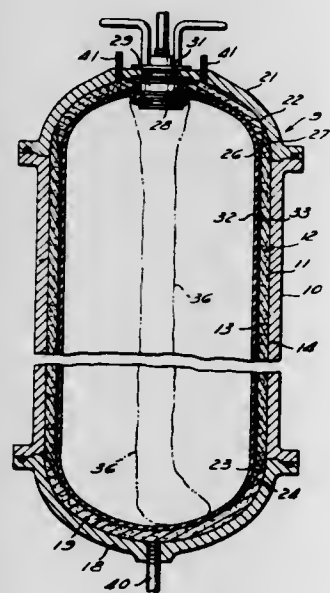
Phillip E. Allen, Wickliffe, Ohio, assignor to Structural Fibers Inc., Chardon, Ohio

Filed Aug. 20, 1969, Ser. No. 851,547

Int. Cl. B29c 1/00; B29d 3/02; B28b 7/32

U.S. Cl. 249-65

6 Claims



Hollow, reinforced plastic articles are molded in a closed molding chamber by employing an internal expandable bag to define the inside surface of the article to be molded. A nonstretchable sleeve surrounds at least a portion of the bag so that, when the bag is inflated during the molding operation, the sleeve accurately establishes the wall thickness of the article to be molded.

3,610,564

CONSTRUCTION MEANS FOR THE CONSTRUCTION OF A SWIMMING POOL

Charles D. Mattingly, Wichita, Kans., assignor to Mattingly, Inc., Wichita, Kans.

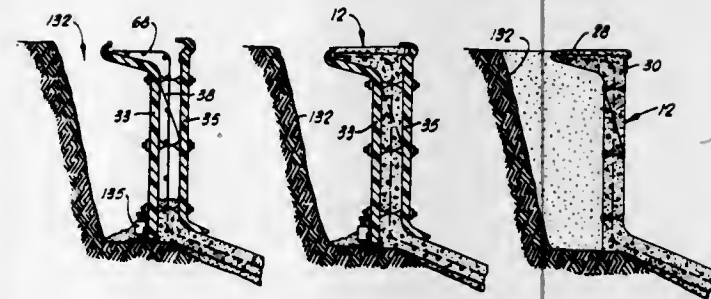
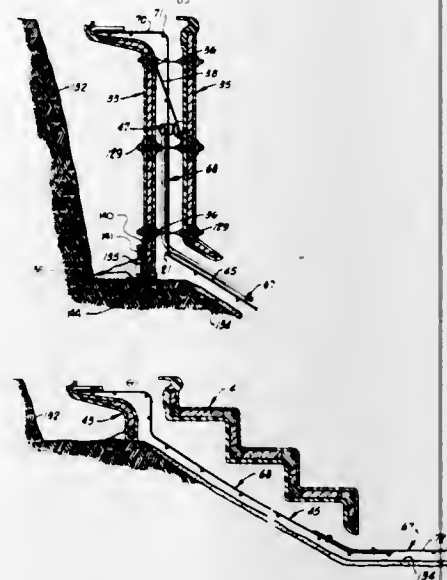
Filed Jan. 17, 1969, Ser. No. 792,047

Int. Cl. B22c 9/24

U.S. Cl. 249-148

This invention relates to the structural elements required and the method of constructing a swimming pool having the ultimate in design, space efficiency, ease of maintenance, and

durability. More particularly, this invention relates to a means of constructing a swimming pool through the use of a plurality of interconnected inside, outside, and step form structures placed in cooperating positions with the plumbing, electrical, and reinforcing steel placed therebetween whereupon an entire concrete swimming pool can be poured in sub-



stantially one operation. Still, more specifically, this invention is a method of constructing a swimming pool utilizing cooperating form structures whereupon a pool can be built in a minimum amount of time without skilled labor, in a variety of design variations, and using a plurality of preconstructed engineered elements achieving a maximum of uniform and durability therefrom.

3,610,565

RETAINING MEMBER FOR RETAINING CONCRETE FORM SHEETS IN RIGHT-ANGULAR ASSEMBLY

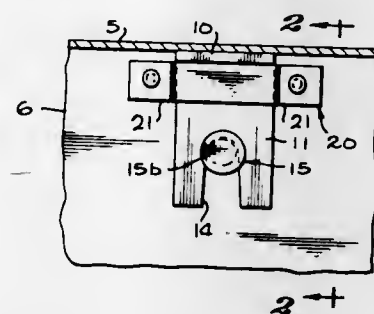
Miyoji Okazaki, 1328 "F" St., Oxnard, Calif.

Filed July 22, 1968, Ser. No. 746,533

Int. Cl. E04g 9/00

U.S. Cl. 249-194

2 Claims



My invention comprises a novel cooperating yoke and rivet assembly for positively retaining right-angled disposed concrete form sheets in such assembly for the reception of wet concrete mix for integrally forming walls of a building structure.

3,610,566

ROCKER CLAMP FOR FLEXIBLE TUBING

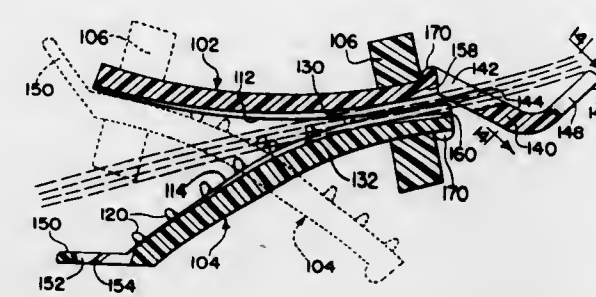
Frank J. Rychlik, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 19, 1969, Ser. No. 870,611

Int. Cl. F16k 7/06

U.S. Cl. 251-9

5 Claims



A variable clamp device for controlling fluid flow through resilient tubing. The clamp includes a pair of arcuate body portions each having at least one rigid convex reference surface with the body portions maintained with the reference surface in intimate contact and each body portion including a groove or channel having a varying depth relative to the axial extent of the adjacent reference surface; the opposing channels accepting and acting on the tubing as the convex rocker-like body portions move relatively along the reference surfaces and compress the tubing within the channel.

3,610,567

VENTILATING SYSTEM

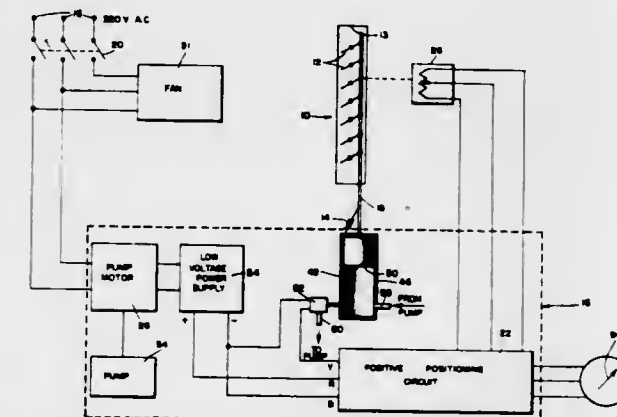
Robert M. Stuck, Chicago, Ill., assignor to ILG Industries, Inc., Chicago, Ill.

Filed Apr. 14, 1969, Ser. No. 815,967

Int. Cl. F16k 31/02

U.S. Cl. 251-30

1 Claim



A system is provided for selectively controlling the movement of air through a passageway by means of a damper operated by an actuator which, in turn, is controlled by a movable selector. In a specific embodiment, the movable selector determines a preset position of the damper, which is caused to move from the preset position to a back draft position when the system is shut down. When the system is again energized, the damper is automatically returned to the position determined by the movable selector.

3,610,568

VALVE ACTUATOR INCLUDING CAM LINKAGE

William D. Duwe, Tulsa, Okla., assignor to Dover Corporation, Tulsa, Okla.

Filed July 18, 1969, Ser. No. 843,155

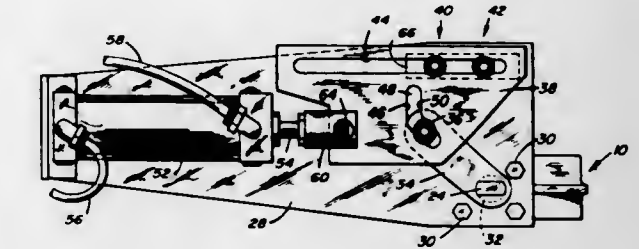
Int. Cl. F16k 31/163

U.S. Cl. 251-58

4 Claims

This invention relates to a mechanism for the controlled rotation of a shaft. More particularly, the invention relates to a valve, including means for the controlled opening and closing thereof, including a valve body having a stem opening therein, a stem rotatably received in the stem opening, an

arm affixed to the stem and extending radially therefrom, cam plate movably supported relative to the valve body and movable in a plane parallel the arm, the cam plate having an



edge defining a cam surface, an upstanding boss portion affixed to the arm and engaging the cam surface, and means of controllably displacing the cam plate relative to the valve body.

3,610,569

FLUID CONTROL VALVE WITH RETRACTABLE BODY SEAT

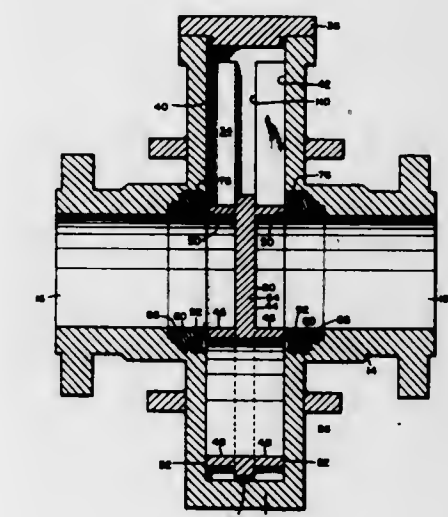
Henry V. Reeves, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Oct. 2, 1969, Ser. No. 863,150

Int. Cl. F16k 31/163

U.S. Cl. 251-62

6 Claims



The control valve is provided with a normally stationary body seat which is retractable from the moveable valving member, to free said valving member of frictional resistance to movement in advance of disposition of the valving member to open or closed positions. The retractable seat of the valve body is designed for prolonged and efficient trouble-free service.

3,610,570

PROTECTIVE ADAPTER FOR DIAPHRAGM-TYPE VALVE

Curtis L. Erwin, Jr., 5010 S.E. 41st Ave., Portland, Oreg.

Filed Mar. 10, 1969, Ser. No. 805,546

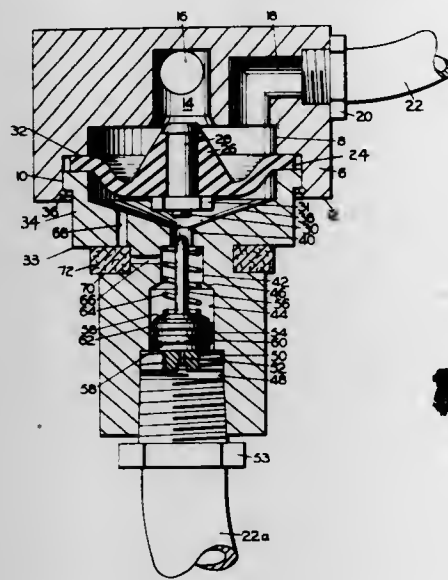
Int. Cl. F16k 31/143

U.S. Cl. 251-63.4

1 Claim

An adapter having a body portion with a bore for slideably receiving a valve-operating projecting rod on a plunger and also having a counterbore for receiving the head of the plunger. A seat is formed in the body portion, and the plunger is selectively engageable with such seat when an operating pressure exists in the system such that the rod upon seating of the plunger has moved the diaphragm-type valve to an operative position. Through the arrangement of seating of the plunger in the body portion and predetermined length of the rod the plunger exerts the same operating pressure on the

diaphragm-type valve regardless of the pressure to which the plunger is subjected. The housing has an inlet opening leading to the counterbore for the entrance of plunger-operating



fluid, and such opening has fluid inlet-restricting means therein for feeding fluid under pressure to the plunger at a slow rate to prevent shock operation of said plunger.

3,610,571

CONTROL VALVE ASSEMBLY

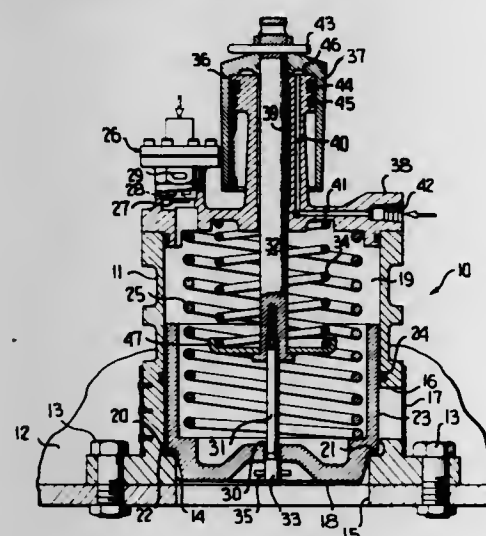
Richard L. Cisco, Torrance, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 27, 1969, Ser. No. 828,132

Int. Cl. F16k 31/12

U.S. Cl. 251-63.6

7 Claims



This disclosure relates to a valve for tank filling and draining. The valve is adapted to be disposed in the bottom of a tank and includes a housing and a valve seat. A main valve member is biased against the seat and may be opened by actuating means including a piston fixed relative to the housing and a cylinder movable relative thereto. The cylinder overlies the piston and thus protects it from sediment settling in the tank.

3,610,572

DRAIN VALVE ASSEMBLY

Edward J. Swearingen, San Antonio, Tex., assignor to Swearingen Aircraft, San Antonio, Tex.

Filed Nov. 10, 1969, Ser. No. 875,389

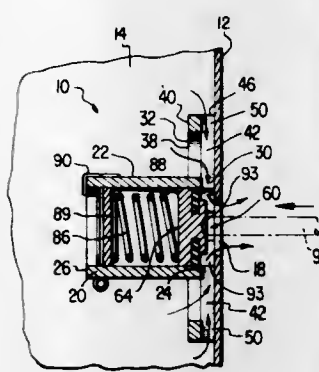
Int. Cl. F16k 51/00

U.S. Cl. 251-144

10 Claims

A drain valve assembly which is to be installed on the interior of an integral aircraft fuel tank of the type where the skin of the aircraft is also the wall of the tank. When mounted the valve is wholly within the tank with the excep-

tion of an operating means for opening the valve which lies flush with the outer surface of the skin. The valve normally



closes an orifice in the skin section that forms the tank, however, when pushed inwardly into the tank, it opens the orifice to permit drainage.

3,610,573

VALVE STRUCTURE

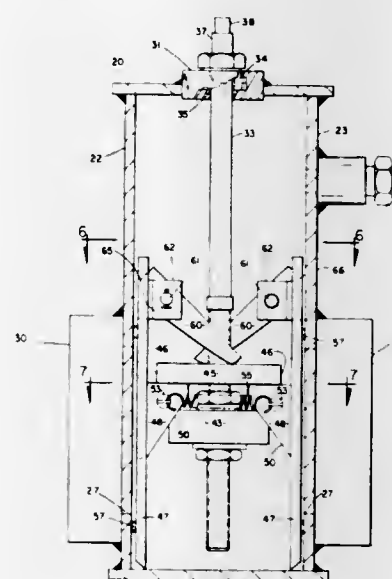
David E. Robertson, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,472

Int. Cl. F16k 31/10

U.S. Cl. 251-167

6 Claims



The valve casing has openings in opposite sidewalls communicating with conduits in a pipeline. A stem is mounted in the casing for rotation and axial sliding movement. A valve mechanism is carried at the inner end of the stem and includes valve plates movable upon rotation of the stem in one direction into engagement with the sidewalls of the casing to close the openings therein. Spring means is connected to the valve plates for urging the same away from the sidewalls upon reverse rotation of the stem. The entire valve mechanism is movable into and out of registration with the sidewall openings upon axial sliding movement of the stem. The valve mechanism also includes levers which, upon reverse rotation of the system, serve to pry the valve plates away from the opposite sidewalls in the event the valve is closed with high pressure within the casing.

3,610,574

FLEXIBLE STEM SLIDE VALVE

Thomas A. Hartman, 700 Capac Court, St. Louis, Mo.

Filed Mar. 11, 1969, Ser. No. 806,243

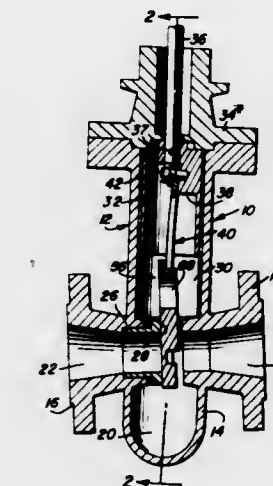
Int. Cl. F16k 31/16

U.S. Cl. 251-176

12 Claims

A valve construction including a valve seat defining a flow passage therethrough and a valve member movable transversely of the passage and disposed in sliding contact with one

axial end face of the seat. The valve member is elongated in its direction of movement and includes a first imperforate end portion for closing the passage and a second end portion having an opening formed therethrough for registry with the passage. An actuating mechanism for shifting the valve



3,610,575

SEAT RING FOR BALL VALVES

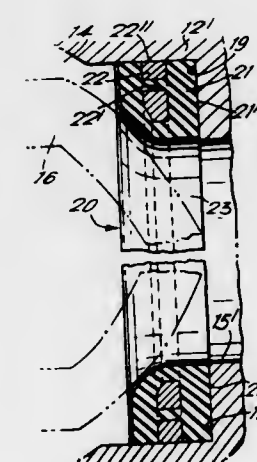
Rikizo Yoneda, 64, Shimagamo Umenoki-cho, Sakyo-ku, Kyoto, Japan

Filed Aug. 18, 1969, Ser. No. 850,891

Int. Cl. F16k 5/06

U.S. Cl. 251-315

5 Claims



A seat ring for ball valves which comprises an annular body made of natural or synthetic rubber and adapted to be disposed in the valve chamber so as to be in sealing contact with the ball therein; an annular core made of a rigid material and enclosed circumferentially in said annular body; and a lamina of a plastic material covering at least that portion of the outer surface of said annular body which is in sealing contact with said ball. The core ring makes the whole structure of the seat ring strong, and the plastic lamina reduces the frictional resistance between the seat ring and the ball thereby enabling smooth operation of the valve and, in combination with the rubber body, provides a good sealing effect between the ring and the ball.

3,610,576

SHEET FEEDING APPARATUS

Edric Raymond Brooke, Bishops, Stafford, England, assignor to English Numbering Machines Limited, Enfield, Middlesex, England

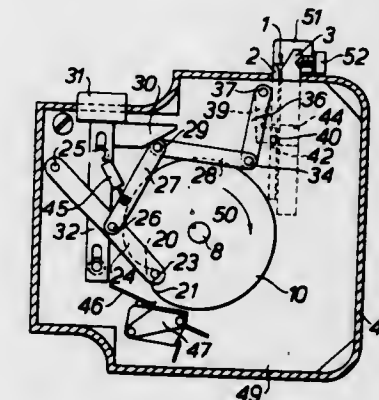
Filed June 19, 1969, Ser. No. 834,657

Claims priority, application Great Britain, July 19, 1968, 35495/68

Int. Cl. B65h 7/00

U.S. Cl. 271-8

6 Claims



This invention relates to apparatus for feeding sheets of paper from a delivery position and comprises means for mechanically locking of the rollers which transport the paper when a sheet of paper is absent from, or is misaligned in, the delivery position. The apparatus comprises a paper-sensing device, which is operated by depressing a plunger. The movement of the sensing device is arrested by the presence of a duly located sheet of paper in the delivery position and, when such a sheet is present, the motion of the plunger causes a locking pin to be disengaged from a notch, thus enabling the feed rollers to rotate so as to feed a single sheet of paper from the delivery position.

The provision of means for mechanically locking the sheet feeding means when a sheet is absent or is misaligned enables the invention to be distinguished from known arrangements where the absence of such a locking device may give rise to disruption of work flow, waste of materials and, possibly, damage to the apparatus.

3,610,577

SUCTION FEED CONVEYOR

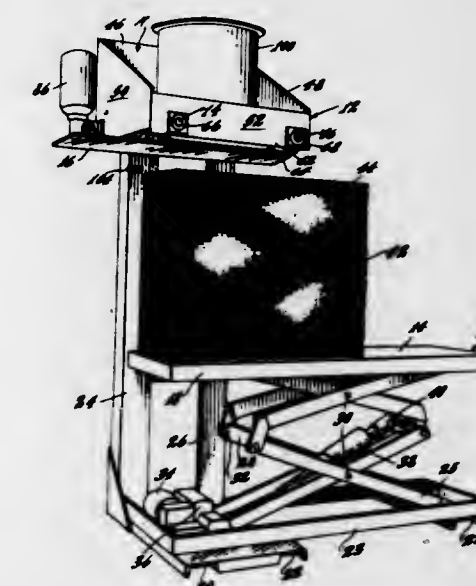
Joseph E. Foster, Jr., 723 Lincoln Hwy., Exton, Pa.

Filed Feb. 6, 1969, Ser. No. 797,016

Int. Cl. B65h 31/12

U.S. Cl. 271-30

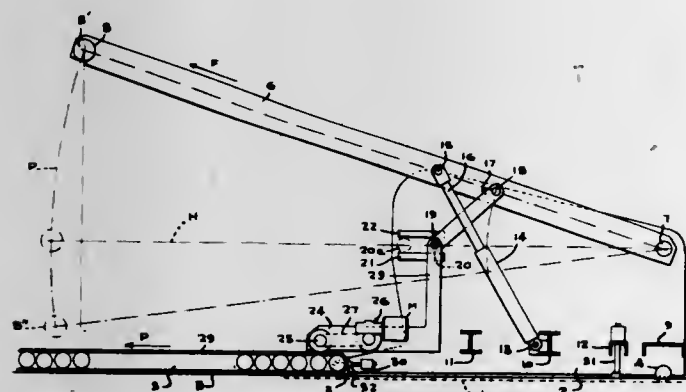
2 Claims



A suction feed conveyor for feeding cardboard blanks including an automatically elevating platform which is vertically operative below a suction conveyor, the said conveyor including suction forces which are strong enough to lift the top sheet from a stack of blank cardboard sheets positioned

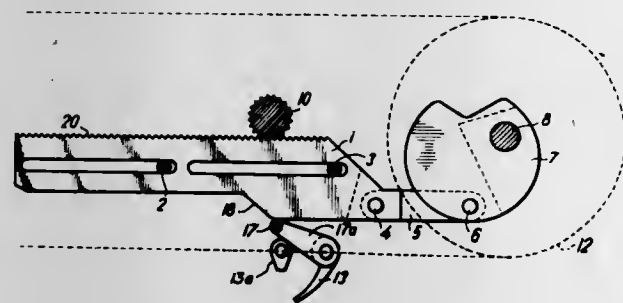
upon the said elevating platform and conveyor means capable of transversely transporting respectively each said top sheet with respect to the initial platform position.

3,610,578
SHEET STACKER
Raymond L. R. Lucas, Avenue de La Republique, Préchac, Gironde, France
Continuation-in-part of application Ser. No. 743,419, July 9, 1968, now Patent No. 3,549,144. This application Apr. 28, 1970, Ser. No. 32,632
Int. Cl. B65h 29/50
U.S. Cl. 271—68 10 Claims



A sheet stacker in which a sheet feed conveyor is progressively moved upwardly as the height of a stack formed from the sheets discharged from the conveyor increases with the stack being deposited on a stack removal conveyor connected to the sheet conveyor through a motor driven friction roller which can be bodily moved with the roller locked in position to maintain the stack in alignment with the discharge end of the conveyor and with the roller being drivingly operable following stacking to convey the completed stack away from the stacking station.

3,610,579
MECHANISM FOR RELEASE OF PAPER SHEETS FOR STACKING PURPOSE
Jaroslav Jiruse, Blansko, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia
Filed May 1, 1969, Ser. No. 821,043
Int. Cl. B65h 29/28
U.S. Cl. 271—79 4 Claims



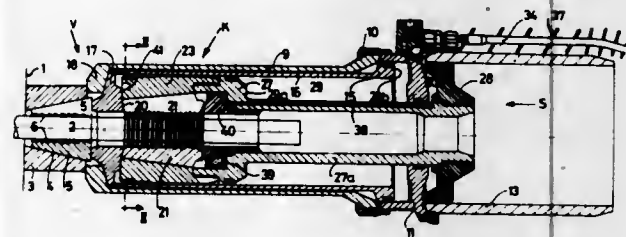
Feed mechanism for stacking printed paper sheets. The sheets are carried from the press between pivotal grippers on an endless conveyor entrained over at least one pulley. A movable slide having a cam surface is provided adjacent to the conveyor to engage the grippers and open the same at a precise point over the stack. Means are provided to reciprocate the slide so as to adjust the position of opening. The slide is provided with an arcuate member at its forward end and a connecting link. The arcuate member is provided with a segmented recess to receive the connecting link. The cam surface is thereby directly continued by the link and the arcuate member which is received in the recess when the cam is shortened.

3,610,580
TROLLEY
George Bernard Johnstone, Liverpool, England, assignor to Joloda Transport Equipment Limited, Liverpool, Lancashire, England
Filed July 25, 1969, Ser. No. 844,811
Claims priority, application Great Britain, Aug. 9, 1968, 38151/68
Int. Cl. B60p 1/44; B65g 67/00
U.S. Cl. 254—5 C 2 Claims



The invention is for a trolley comprising a carriage and a load-carrying member mounted on said carriage so that relative movement can take place between the carriage and the load-carrying member in the direction of travel of the trolley, said relative movement being effected by a manually operable hydraulic ram. An inclined plane is provided on the load-carrying member and a roller-follower on the carriage, or vice versa. This inclined plane and roller-follower cooperate when said relative movement between the carriage and the load-carrying member takes place to raise the load-carrying member relatively to the carriage.

3,610,581
APPARATUS FOR PRESTRESSING RODS IN CONCRETE
Odilo Paul, 7941 Durmentinger/Wurtl., Germany
Filed May 21, 1969, Ser. No. 827,127
Claims priority, application Austria, May 28, 1968, 9 A 5093/68 37b; Switzerland, Aug. 16, 1968, 12, 335/68
Int. Cl. E21b 19/00
U.S. Cl. 254—29 A 21 Claims

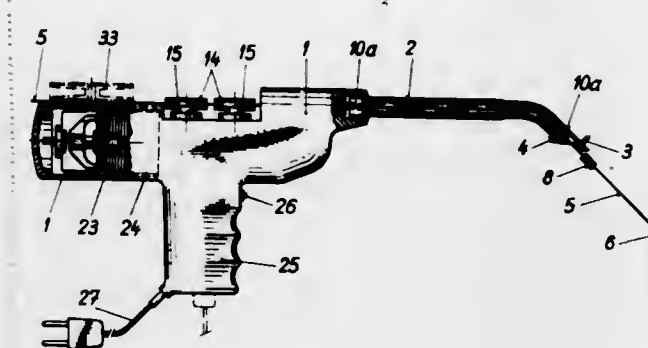


A hydraulic stressing press to be used for stressing at least one rod, wire or wire bundle which is prestressed in a concrete structure. The housing of the press is adapted to be supported against an abutment member and is provided with an anchoring device and a clamping device. The anchoring device and the stressing device itself are actuated by hydraulic pistons. An externally located anchoring ring cylinder unit is provided, and at least one part of this unit surrounds an internal clamping device and is connected to an anchoring element removably arranged between the clamping device and the clamping jaws.

3,610,582
MOTOR-DRIVEN APPARATUS FOR DRAWING CONDUCTOR WIRES INTO CONDUITS
Gianfranco Passoni, Bumpiz, Berne, Switzerland, assignor to Icomag Trust Reg., Vaduz, Liechtenstein
Filed Oct. 22, 1968, Ser. No. 769,635
Claims priority, application Switzerland, Oct. 25, 1967, 15 049/67
Int. Cl. E21c 29/16
U.S. Cl. 254—134.3FT 4 Claims

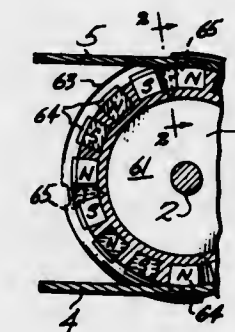
A motor-driven apparatus for drawing conducting wires into conduits has a housing which has a detachable insertion tube for introduction into the conduit and for guiding the draw wire. The apparatus comprises means for wireless remote control of a reversing drive motor, an externally projecting switch for switching the motor on and off manually, a

cable connector for the motor current and a cable connector for remote control of the motor by means of an electric lead. The apparatus has two pairs, fixed one behind the other, of



driving discs which act elastically against each other in part, as a forward feed mechanism, and which are arranged that the move the draw wire forwards and backwards.

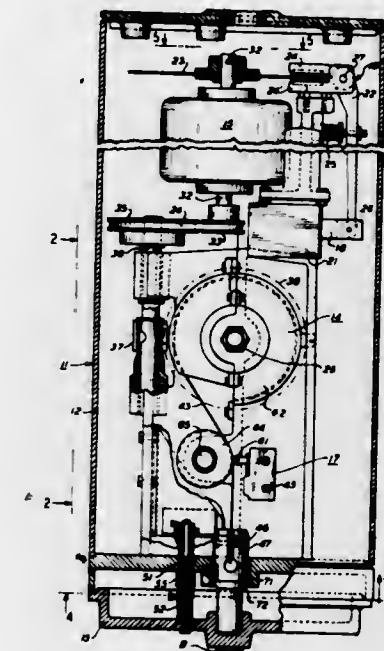
3,610,583
PERMANENT HORSESHOE MAGNET TRACTION LINE HAUL
Cyrus W. Ostrom, Seattle, Wash., assignor to Consolidated Electric Corporation, Seattle, Wash.
Division of Ser. No. 710,681, Feb. 23, 1968, Pat. No. 3,512,757.
Filed Apr. 20, 1970, Ser. No. 30,154
Int. Cl. B66d 1/30
U.S. Cl. 254—150 5 Claims



A sheave for steel cable in a line haul has a circumferential groove in which the cable fits closely, and unlike poles of permanent horseshoe magnets are spaced circumferentially of the sheave to produce a flux path passing through the cable in the groove. The unlike poles of each magnet are formed by the tips of the horseshoe magnet legs. The magnets can be arranged with unlike poles disposed alternately circumferentially of the sheave in the bottom of the sheave cable-receiving groove. The magnet legs project radially from sides of the sheaves.

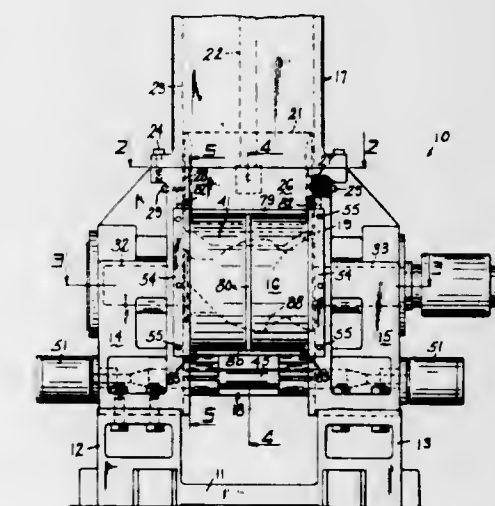
3,610,584
LOWERING DEVICE MECHANISM
Henry C. Pfaff, Jr., Summit, N.J., assignor to Pfaff and Kendall, Newark, N.J.
Filed Jan. 21, 1969, Ser. No. 798,247
Int. Cl. B66d 1/48
U.S. Cl. 254—173 5 Claims

A lowering device mechanism adapted to be utilized for movement of a structure, such as a luminaire or light-carrying apparatus, from a supported position to an accessible



apparatus, for servicing, repairing, or replacing elements of the apparatus as necessary.

3,610,585
MIXER
Douglas W. MacLeod, Oxford; Walter A. Rapetski, Orange; Jerome P. Rothschild, Orange, and Richard B. Barnes, Bethany, all of Conn., assignors to USM Corporation, Boston, Mass.
Filed Mar. 18, 1970, Ser. No. 20,596
Int. Cl. B01f 7/02
U.S. Cl. 259—6 8 Claims

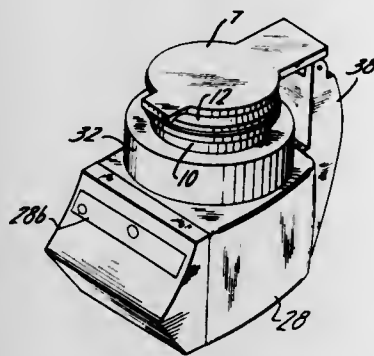


A mixing device having spaced-apart end frames and side assemblies defining an internal mixing chamber which slide into the end frames to define a mixing chamber. One piece end plates carried by the end frames and retained by the side assemblies further define the mixing chamber.

3,610,586
MIXING DEVICE
Howard Price, Kings Point, N.Y.; Seymour Wallick, Clifton, N.J., and Harvey Diamond, Brooklyn, N.Y., assignors to International Patents & Development Corporation, Kings Point, N.Y.
Filed July 17, 1969, Ser. No. 842,464
Int. Cl. B01f 9/12, 15/02
U.S. Cl. 259—15 17 Claims

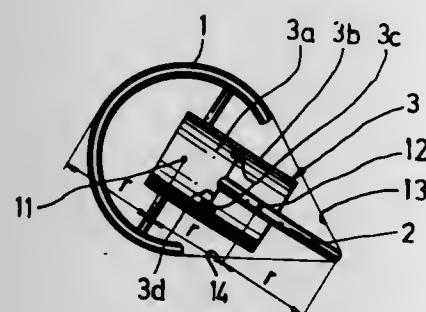
A dental mixing arrangement in which prepackaged ingredients to be mixed for dental applications are stored

within a container which maintains the ingredients isolated from each other prior to usage. The ingredients are inter-mixed by placing the container in a mixing device which rotates the base of the container while maintaining the cover stationary. A knife portion integral with the container bottom



severs an isolating membrane stretched over a portion of the cover, during operation of the mixer, and permits the ingredients to mix. Through rotation of the container bottom, a homogeneous mixture is realized with a mixing paddle integral with the stationary container top or cover.

3,610,587
TUMBLING APPARATUS
Paul Schatz, 11, Raingartenweg, Dornach, Solothurn, Switzerland
Filed July 16, 1969, Ser. No. 842,207
Claims priority, application Switzerland, Aug. 3, 1968, 11617/68
Int. Cl. B01f 9/00
U.S. Cl. 259-72
9 Claims

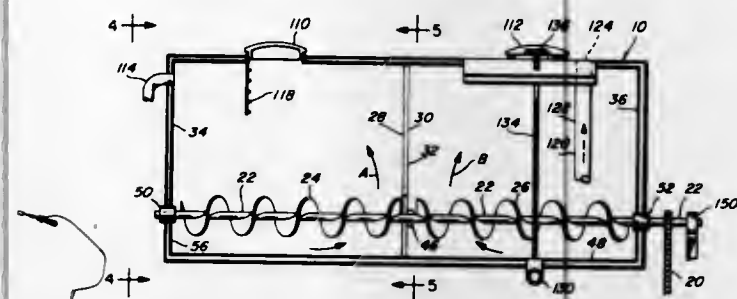


Tumbling apparatus comprising a pair of convex rockers which define surfaces about which the apparatus may be rolled to provide a tumbling motion. Preferably, the rockers have the same radius of circular curvature, their centers of curvature being spaced by a distance equal to this radius. Preferably, each rocker lies in a plane such that the two planes, so defined, are orthogonal. A cover enclosing the rockers may be employed as a vessel in which the material is tumbled.

3,610,588
ASPHALT MIXING AND PAVING APPARATUS
George W. Diefenbach, Phoenix, Ariz., assignor to Sahuaro Petroleum & Asphalt Co.
Filed Oct. 27, 1969, Ser. No. 869,505
Int. Cl. B28c 1/22
U.S. Cl. 259-157
10 Claims

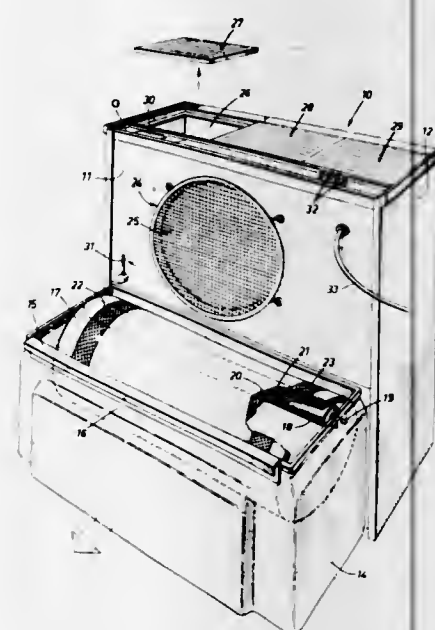
A mixer for asphalt and rubber compositions to be used for preparing topping for roadways or the like; said mixer comprising a tank having horizontally operable shaft means near the lower interior thereof and carrying a pair of opposed augers; said tank having a partition through which said shaft extends and which is located between said augers such that rotation of said shaft carrying said augers causes liquid material in said tank to be impelled toward opposite sides of

said partition by respective opposed augers; said partition having openings therein to allow counterflow exchange of



liquid materials from one compartment to another in said tank at opposite sides of said partition.

3,610,589
HUMIDIFIER
William P. Paulin, Barrie, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada
Filed Sept. 30, 1968, Ser. No. 763,520
Int. Cl. F24f 3/14
U.S. Cl. 261-30
9 Claims

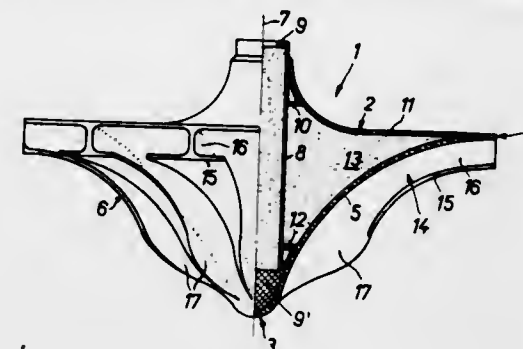


Apparatus for humidifying air by rotating evaporative material supported within a water reservoir while flowing air through the material. A baffle in the upper portion of the humidifier separates an air inlet opening from an air outlet opening. The air introduced into the humidifier at the air inlet opening is directed by the baffle from the top of the humidifier through the evaporative material and out the air outlet opening.

3,610,590
AERATOR IMPELLERS FOR THE AERATION OF LIQUIDS
Joseph Richard Kaelin, Villa Seeburg, Buochs, Nidwalden, Switzerland
Filed May 18, 1970, Ser. No. 38,254
Claims priority, application Switzerland, May 19, 1969, 7593/69
Int. Cl. B01f 3/04
U.S. Cl. 261-91
11 Claims

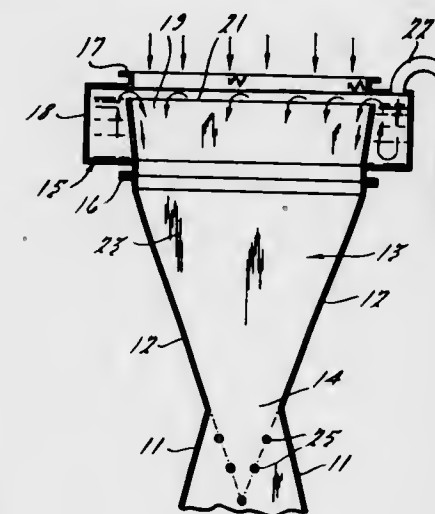
A vertical axis aeration impeller for the aeration of liquids, particularly for aerating sewage in aeration tanks comprises a rotor body of inverted frustoconical shape carrying blades for raising liquid from a lower suction side to an upper peripheral delivery side of the rotor. The outer side of the frustoconical rotor surface is provided with blades extending from the suction side to the delivery side and having a T-

shaped profile. The free edge of the web of the T-shaped profile is connected with the frustoconical surface of the rotor body, while the flanges or yoke of the T-profile are spaced from said surface and comprise a wider flange section along one side of the web and a narrower flange section



along the other side thereof. The free edges of the flanges of circumferentially adjacent blades are spaced from each other in circumferential direction to provide laterally open flow channels for the liquid which remains in intimate contact with air while being conveyed through the flow channels.

3,610,591
WATERFALL ATOMIZER
Giovanni C. Zillotto, 120 South Broadway, Lake Orion, Mich.
Filed May 23, 1969, Ser. No. 827,357
Int. Cl. B01d 47/00
U.S. Cl. 261-112
4 Claims



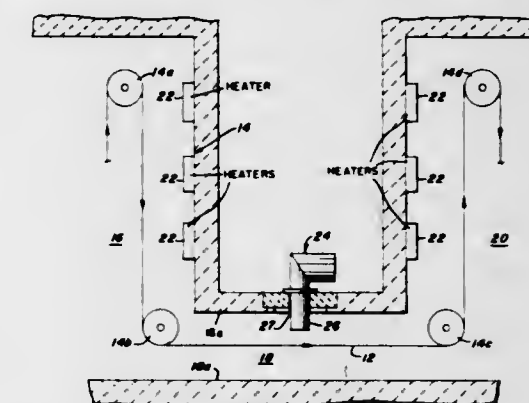
The intake passageway of the device has converging walls through which a gas passes and over which a flow of water is maintained which cools the gases and retains the walls clean. Certain types of dust and grime in the gas are difficult to wet for removal, and a series of rods in rows in extension of the sloping walls are struck by the flow of water therefrom which breaks up into droplets at the point where the gas expands to mingle with the gas and wet the hard-to-remove particles so that they can be separated more readily therefrom.

3,610,592
METHOD AND APPARATUS FOR ESTIMATING ERRORS IN PYROMETER READINGS
Thomas P. Murray, Churchill Borough, Pa., assignor to United States Steel Corporation
Filed July 29, 1969, Ser. No. 845,747
Int. Cl. G01J 5/06, 5/60; G01k 13/06
U.S. Cl. 263-3
19 Claims

Apparatus for and a method of determining the proper emittance factor for the combined thermal radiation from a body (disposed in a heating cavity defined by the walls of a furnace means and heated to a predetermined temperature by heating means associated with the furnace means) and the reflected thermal radiation from the walls to measure the

temperature of the body with a minimum range of temperature error, are disclosed.

The apparatus has sight tube means disposed in one of the walls and in registry with the body, and a body-temperature-measuring pyrometer having a high temperature to emittance factor ratio sensitivity disposed in the sight of tube means. The body-temperature-measuring pyrometer has a first predetermined body emittance factor for the body determined for the body by the ratio method. An emittance correcting pyrometer having a lower temperature to emittance factor ratio sensitivity than the body-temperature-measuring pyrometer is disposed adjacent the body-temperature-measuring pyrometer in the sight tube means. The emittance-correcting pyrometer has a second predetermined emittance factor for the body determined for the body by the ratio method. Mirror means are in said sight tube means for directing a portion or one wavelength band of the combined thermal radiation to the body-temperature-measuring pyrometer and another portion or other wavelength band of the combined thermal radiation to the emittance-correcting measuring pyrometer. The body-temperature-measuring pyrometer is operable to measure the temperature of the body with a first range of stepped emittance factors in the range from the first predetermined body emittance factor to 1.00 to determine a first measured temperature range for the body with a first temperature error range. The emittance-correcting pyrometer is operable to measure the temperature of the body with a second range of stepped emittance factors in the range from the second predetermined emittance factor to 1.00 to determine a range of emittance-correcting factors corresponding to the first measured temperature range. This range of emittance-correcting factors indicates one half-portion of the half-portions defined by the first predetermined emittance factor and the midpoint between the first predetermined emittance factor and 1.00 and the midpoint and 1.00 of the first range of stepped emittance factors in which an ad-



justed emittance factor for the body-measuring pyrometer lies. The body temperature pyrometer is then set at the midpoint of the one half-portion as such adjusted emittance factor to measure the temperature of the body within the minimum range of temperature error.

The method includes the steps of directing a portion or one wavelength band of the combined thermal radiation to a body temperature-measuring pyrometer having a high temperature to emittance factor ratio sensitivity and a first predetermined body emittance factor the the body as determined for the body by the ratio method; measuring the temperature of the body with a first range of stepped emittance factors in the range from the first predetermined body emittance factor to 1.00 to determine a first measured temperature range for the body with a first temperature error range; and measuring the temperature of the body with a second range of stepped emittance factors in the range from the second predetermined emittance factor to 1.00 to determine a range of second emittance factors corresponding to the first measured temperature range. The range of second emittance factors for the emittance-correcting pyrometer in the first measured temperature range indicates one half-portion

tion of the half-portions defined by the first predetermined emittance factor and the midpoint between the first predetermined emittance factor and 1.00 and the midpoint and 1.00 of the first range of stepped emittance factors in which an adjusted emittance factor lies. Also included are the steps of setting the body temperature pyrometer at the midpoint of the one half-portion as such adjusted emittance factor, and measuring the temperature of the body with the minimum range of temperature error.

3,610,593

FEEDING DEVICES FOR CERAMIC OVENS

Josef Varga; Jiri Kosar, and Milan Brand, all of Hradec Kralove, Czechoslovakia, assignors to Tesla narodni podnik, Praha, Czechoslovakia

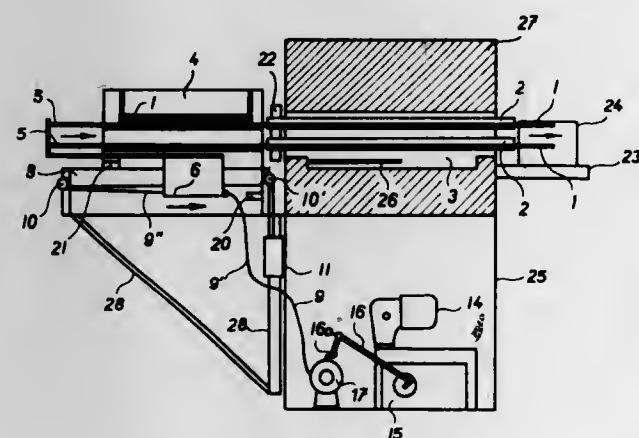
Filed Sept. 29, 1969, Ser. No. 861,927

Claims priority, application Czechoslovakia, Oct. 2, 1968, P 6840-68

Int. Cl. F27b 9/14; F27d 3/04

U.S. Cl. 263-6 R

7 Claims



An oven for curing ceramic objects having a kiln, a support mounted therein, a movable rod mounted for axial movement in alignment with the support, means for delivering successive workpieces between the rod and the support and means for continuously reciprocating the rod in the axial direction to move the workpieces through the oven.

3,610,594

OXYGEN DEFICIENT MATERIAL REDUCING SYSTEM AND APPARATUS THEREFOR

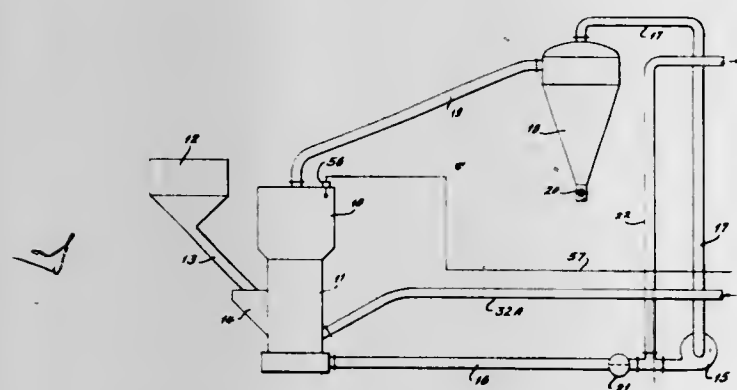
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.

Filed Apr. 27, 1970, Ser. No. 32,146

Int. Cl. B08 15/00; F26b 21/06

U.S. Cl. 263-15

10 Claims



A system for reducing raw materials in an oxygen deficient atmosphere to prevent fire and explosions and to maintain a humidity condition in the system to improve the transportation of the material from its zone of reduction to a discharge where the gaseous medium of low or deficient oxygen content is retained for recirculation. The system includes a primary circulation system for transporting the reduced medium and a secondary circulation system for obtaining a low or oxygen deficient gaseous atmosphere for starting up the prima-

ry system and for maintaining the oxygen deficiency and improved efficiency of operation of the primary system.

3,610,595

CERAMIC RECUPERATORS

William Robert Laws, Worcester Park, and David Arthur Winkworth, Farnborough, both of England, assignors to The British Iron and Steel Research Association, London, England

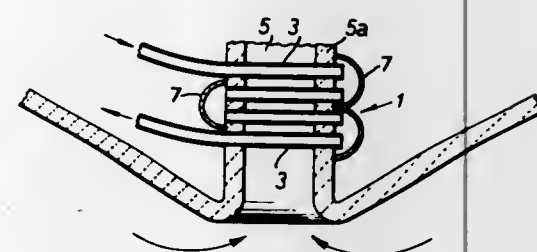
Filed Dec. 22, 1969, Ser. No. 886,881

Claims priority, application Great Britain, Jan. 9, 1969, 1309/69

Int. Cl. F27i 15/04

U.S. Cl. 263-20

6 Claims



A recuperator suitable for location in the waste-gas offtake of a slab reheating furnace or soaking hearth. The recuperator includes a plurality of integrally formed tubes of ceramic material extending with clearance into each of oppositely facing portions of the offtake duct and communicating at their ends with header boxes sealed to the outside of the duct. The header boxes connect the tubes in series so that fluid to be heated during use of the recuperator pass sequentially through the series connected tubes. The clearance between one end of each tube and the duct wall is sealed by an annular seal disposed in the region of the outside surface of the duct wall, said one end being slidable relative to its respective seal to allow for longitudinal tube expansion.

3,610,596

METHOD AND APPARATUS FOR ROTARY KILN CONTROL

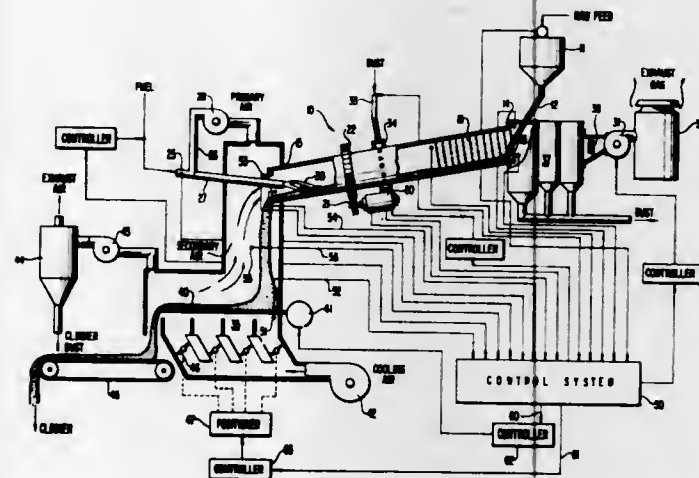
Gordon L. Snyder, Phoenix, Ariz., assignor to General Electric Corporation

Filed Oct. 15, 1969, Ser. No. 866,584

Int. Cl. F27b 7/20

U.S. Cl. 263-32 R

10 Claims



A rotary kiln control system and method for stabilizing kiln temperature. Measurements of kiln temperature and the air pressure under the cooler grate determine cooler grate speed to vary material depth on the grate to maintain the kiln-lining temperature constant. In addition, the temperature of cooling air from the material is measured and the flow of cooling air through the material is regulated in response to this measurement.

3,610,597

HEAT TREATMENT FURNACE

Jean Andreu, Rhone, France, assignor to Application Des Gaz, Paris, France

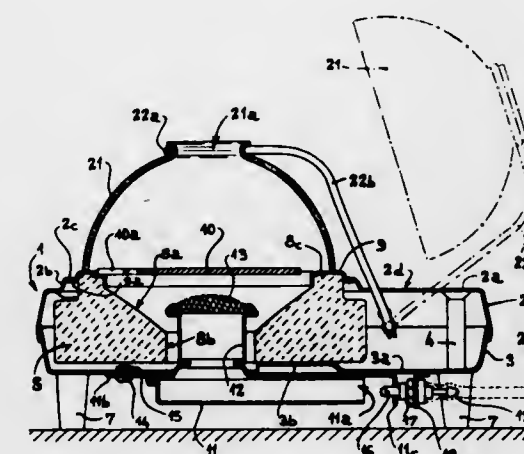
Filed May 12, 1970, Ser. No. 36,615

Claims priority, application France, June 30, 1969, 69.21916

Int. Cl. F27b 3/02

U.S. Cl. 263-40 R

11 Claims



A furnace for the heat treatment, particularly enamel firing, of small mechanical components. The furnace comprises a block of thermal insulation material in which a well is formed. A heat source, such as a gas burner, is accommodated within the well and a hearth plate extends across the top of the well, being mounted on the block by spaced legs. Removably mounted over the hearth plate is a bell-shaped cover of transparent refractory glass, the cover having an opening in its upper region for the escape of hot gasses from the cover after having risen from the burner through the spaces between the legs.

3,610,598

ORE PROCESSOR

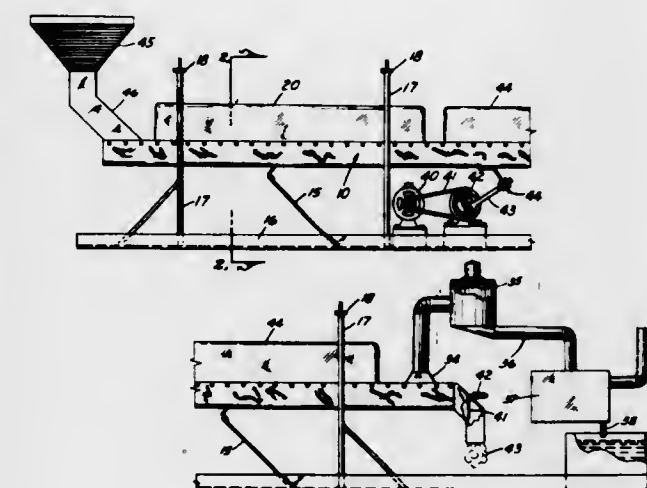
Gilbert R. Moore, 14452 Wildev Lane, Santa Ana, Calif.

Filed Sept. 29, 1969, Ser. No. 861,909

Int. Cl. F27b 21/00

U.S. Cl. 266-20

4 Claims



The processor of this invention is comprised of a vibrating table which vibrates back and forth along the direction that the ore is to travel, and a plurality of radiant heaters positioned along the length of the table and forming a substantially vaportight chamber therewith, along with a means for feeding ore uniformly onto one end of the table and for extracting the ore vapor positioned at the other end of the table.

3,610,599

SYSTEM FOR CONTROLLING PHOSPHORUS REMOVAL IN A BASIC OXYGEN FURNACE

Norman R. Carlson, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

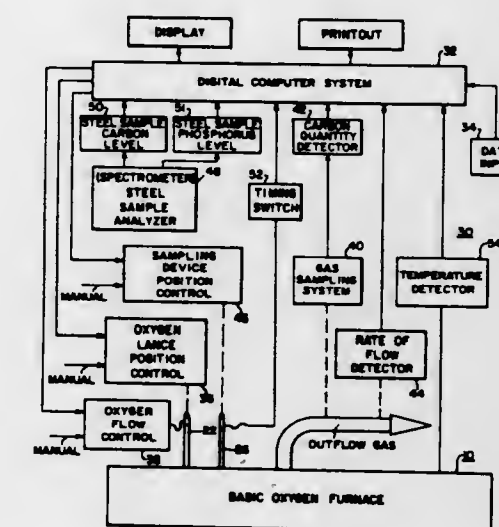
Division of Ser. No. 649,231, June 27, 1967, Pat. No. 3,540,879.

Filed Mar. 25, 1970, Ser. No. 22,496

Int. Cl. G01n 31/00; C21c 7/00

U.S. Cl. 266-34 R

2 Claims



Phosphorus control is achieved in low and high carbon basic oxygen furnace heats on the basis of direct metal sampling during the oxygen blow. Dephosphorizing corrective action is applied after the sampling and prior to vessel turn-down if such action is required to reach a phosphorus level equal to or less than the maximum allowable process endpoint level. The phosphorus control is made compatible with carbon, temperature and other endpoint controls.

3,610,600

CONTINUOUSLY OPERABLE PLANT FOR DEGASSING AND POURING METAL MELTS

Friedrich Schnake, Rheinhausen, Germany, assignor to AEG Eloterm GmbH, Remscheid-Hasten, Germany

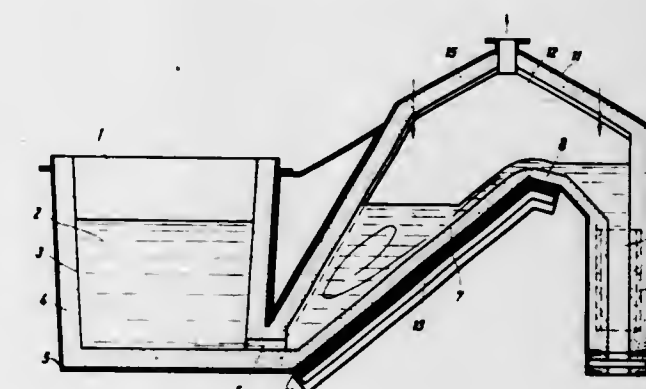
Filed Dec. 16, 1968, Ser. No. 783,990

Claims priority, application Germany, Feb. 15, 1968, P 15 83 857.0

Int. Cl. C21c 7/10

U.S. Cl. 266-34 V

4 Claims

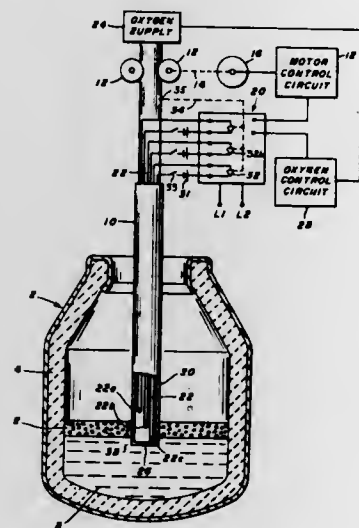


Degassing and pouring of metal melts has hitherto generally been carried out as a batch process, due to the necessity of removal of the vacuum during recharging of the melt-feeding means, e.g. crucible.

Plant has not been devised which allows the degassing and pouring operation to be carried out continuously, in that the melt-feeding means, i.e. crucible or feed head, is connected to a vacuum chamber by a transfer passage, and in that the vacuum head consists of an electromagnetic conveyor trough to convey the melt to the pouring lip within the vacuum.

3,610,601
APPARATUS FOR POSITIONING A CONSUMABLE LANCE
 Harry L. Bishop, Jr., Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
 Filed Oct. 1, 1969, Ser. No. 862,678
 Int. Cl. C21c 5/32
 U.S. Cl. 266—34 LM

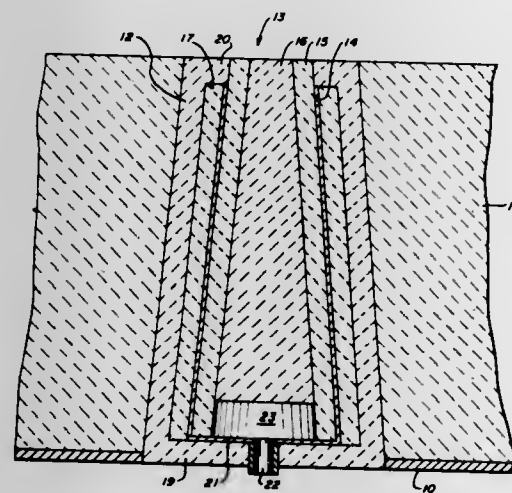
7 Claims



A plurality of parallel conductive loops extending longitudinally substantially the length of a consumable lance utilized to supply oxygen to a bath of metal within a vessel for steel-making. Each conductive loop extends a predetermined distance on said lance and is connected to monitoring means including electric power source and metering means to indicate electrical current flow through the conductive loop. In preferred embodiments, the consumable lance may be positioned by control equipment responsive to signals generated within the monitoring means responsive to changes in current flow or interruptions therein precipitated by physical conditions within the vessel.

3,610,602
GAS-PERMEABLE REFRACTORY PLUG AND METHOD
 Alexander J. Deacon, Chicago, and Marshall J. McCullough, Hazel Crest, both of Ill., assignors to United States Steel Corporation
 Filed Oct. 14, 1969, Ser. No. 866,316
 Int. Cl. C21c 7/04
 U.S. Cl. 266—34 PP

7 Claims

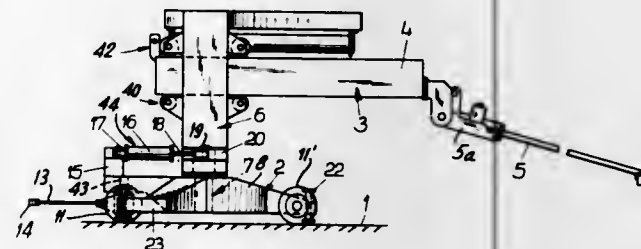


A permeable refractory plug through which gas can be introduced to liquid at high temperature. The structure around the permeable refractory tends to crack and channel the gas away from its intended path. Invention is to insert slabs of fusible viscous material, such as fused silica glass, around the plug. Slabs fuse and flow into any cracks and thus seal them.

3,610,603
DEVICE FOR SLAGGING OF THE BATH SURFACE OF A MELTING BATH OF A METALLURGICAL FURNACE
 Gunter Schmitz, Rumeln-Kaldenhausen, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
 Filed Aug. 19, 1968, Ser. No. 753,584
 Claims priority, application Germany, Sept. 12, 1967, P 15 83 238.9
 Int. Cl. F27d 23/00

U.S. Cl. 266—37

9 Claims

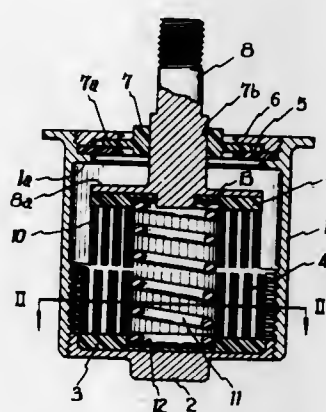


A device for slagging of the bath surface of a melting bath of a metallurgical furnace comprises a moving vehicle or car having wheels adapted for movement over the ground or a track surface and including a pivotal column on the car which carries a rake which may be moved outwardly or inwardly in respect to the pivotal column. The column is pivotal about a vertical axis by means of a fluid control piston and cylinder combination which is mounted on the car. The car carries jacking elements adjacent the wheels for lifting the car off the wheels in order to mount it firmly in position during operative raking, for example.

An alternate embodiment includes a fixed mounting adjacent a metallurgical operation which pivotally supports a column carrying a traverse with guide pulleys for a track carrier for a rake which moves inwardly and outwardly thereon. The column is pivotal with the track carrier about a vertical axis and the track carrier carries a car, which may be movable backwardly and forwardly therealong, and which supports the inner end of the rake.

3,610,604
METHOD AND MEANS FOR ISOLATING VIBRATION AND SHOCK
 Kazuo Terai, Kakamigahara, Japan, assignor to Kawasaki Heavy Industries, Ltd., Kobe, Japan
 Filed Aug. 13, 1969, Ser. No. 849,758
 Int. Cl. F16f 7/08
 U.S. Cl. 267—9 B

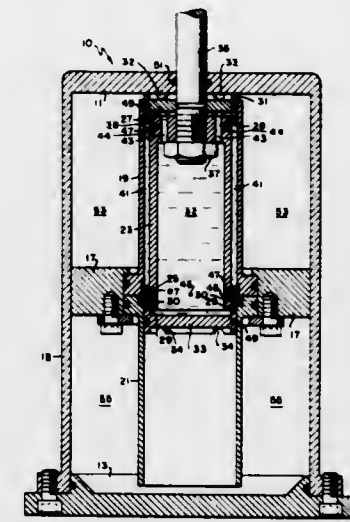
8 Claims



Method and means for isolating and absorbing vibration by making use of the friction between confronting filamentary materials extending normally outwardly from respective sides of a pair of base members which are arranged so as to make a relative movement upon being subjected to a vibration or a shock.

3,610,605
SHOCK MITIGATING DEVICE
 Kenneth T. Cornelius, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Army
 Filed Apr. 13, 1970, Ser. No. 27,580
 Int. Cl. B60g 11/26; F16f 5/00
 U.S. Cl. 267—64 A

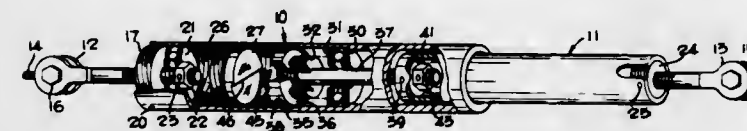
14 Claims



A shock absorber employing two opposing preloaded springs acting on opposite faces of a piston so that one of the springs will always oppose any motion of the piston while the other spring is prevented from aiding motion. Motion of the piston displaces fluid in a hydraulic system internal to the piston. The displaced hydraulic fluid opposes the return motion of the piston under the force of the compressed spring and allows the device to assume a new equilibrium position and act as an effective shock and vibration isolating mount at the new position.

3,610,606
TURNBUCKLE AND SHOCK ABSORBER
 Gary E. Andrews, 5199 Priorbrook, Florissant, Mo.
 Filed Oct. 8, 1969, Ser. No. 864,743
 Int. Cl. F16f 13/00
 U.S. Cl. 267—74

8 Claims



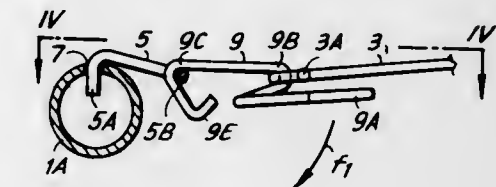
The turnbuckle includes a housing and a compound plunger receivable by the housing and having threadedly adjustable head and body portions. Cable attachments are provided at each end of the turnbuckle. The housing includes spaced abutments and the plunger is preloaded by means of a compression spring extending between the underside of the plunger head and one of the abutments. Clutch action between the other abutment and the plunger head rotates the housing and the plunger head together until a rated load is reached. Further rotation disengages the clutch and precludes additional tensioning of the cable system. Residual compression in the springs accommodates shock loading, and thrust bearings are provided under spring and at one cable attachment point to preclude rotational binding of the device.

3,610,607
SUPPORT ASSEMBLIES PARTICULARLY FOR BEDSTEADS AND THE LIKE
 Giancarlo Pofferi, Pistoia, Italy, assignor to Ital-Bed Costruzione Letti e Affini S.r.l., S. Pierino, Pistoia, Italy
 Filed Oct. 20, 1969, Ser. No. 867,587
 Int. Cl. F16f 3/00

U.S. Cl. 267—89
 A bedstead has a rigid frame which supports a spring mesh. The spring mesh is secured to the frame by adjustable

3 Claims

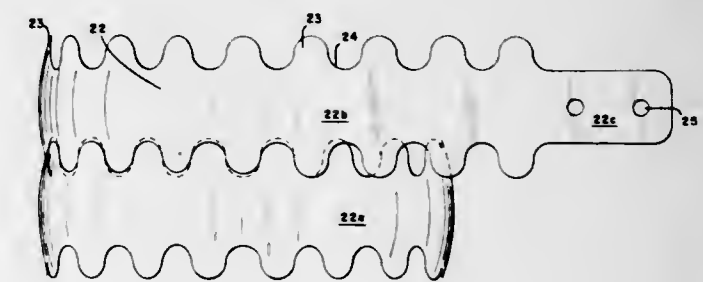
anchoring members. The adjustable anchoring members can



be operated to vary the tension of the spring mesh while it is supported on the frame.

3,610,608
SAFETY DEVICE
 William E. Horton, 1325 Jessie St., Las Vegas, Nev.
 Filed June 13, 1969, Ser. No. 832,959
 Int. Cl. B60c 17/04
 U.S. Cl. 267—136

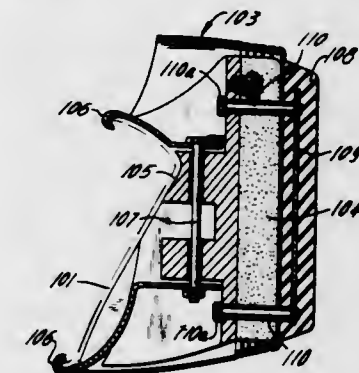
1 Claim



The invention relates to a safety device for insertion in automobile pneumatic tires and comprises a helical coil of ribbonlike material having its ends joined to form a toroid. The ribbonlike material is formed with a plurality of laterally extending fingerlike projections defining alternate notches whereby the fingers of each loop of the helical coil interfit into the notches of adjacent loops and underlie the adjacent ribbons to thereby interlock the relative position of adjacent loops.

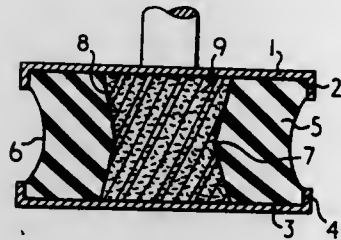
3,610,609
DEFORMABLE SHOCK-ABSORBING GUARD
 Leonard H. Sobel, 452 Beach 138th St., Rockaway Park, N.Y.
 Filed Jan. 21, 1969, Ser. No. 792,737
 Int. Cl. B60r 19/00; F16d 63/00; F16f 13/00
 U.S. Cl. 267—140

18 Claims



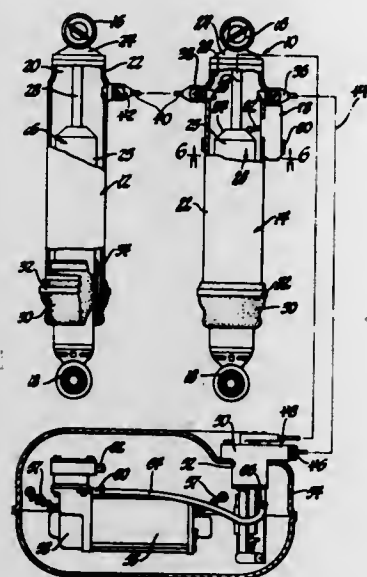
Devices for vehicles or the like to reduce shock of collision by utilizing energy absorbing material which compresses under the force of impact of collision offering increased resistance and effecting gradual momentum deceleration of the moving vehicle as it is being compressed.

3,610,610
APPARATUS FOR ABSORBING SHOCKS AND VIBRATIONS
 Pierre Chassagne, c/o Fort Dunlap Erdington, Birmingham 24, England
 Filed Jan. 27, 1969, Ser. No. 794,063
 Claims priority, application France, Jan. 31, 1968, 22 132
 Int. Cl. F16f 1/37
 U.S. Cl. 267—152 3 Claims



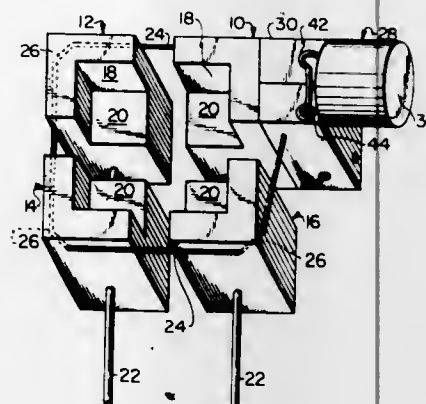
An antivibration mounting comprising an annular element of resilient polymeric material confined between rigid end pieces at its axially outer ends and containing in its central space an inner element of polymeric foam material, the annular element having a radially inwardly arched configuration.

3,610,611
AUTOMATIC VEHICLE LEVELING SYSTEM WITH ELECTRONIC TIME DELAY
 James O. Elliott, Xenia, and George W. Jackson, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
 Filed Mar. 13, 1970, Ser. No. 19,159
 Int. Cl. B60g 11/26
 U.S. Cl. 267—65 D 5 Claims



In preferred form, a fully automatic electrically operated leveling system for a vehicle having an undamped height sensing electric switch on one of a pair of air springs that operates to indicate vehicle height. An electric motor driven air compressor and electronic control circuit are mounted as a unit in a sealed storage tank along with a solenoid operated valve. The air compressor exhausts air from the springs into the tank to lower the vehicle chassis when it is unloaded. The solenoid operated valve directs air from the tank to the springs to raise the vehicle chassis when it is loaded. The electronic control circuit includes time delay means to prevent energization of the motor or solenoid in response to normal road movements of the vehicle.

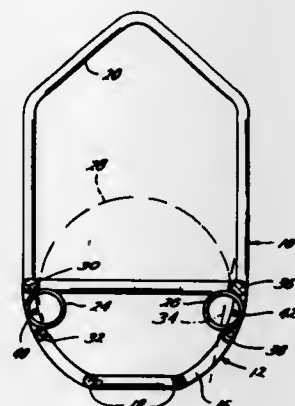
3,610,612
PICTURE-FRAMING CLAMP
 Clifford H. Day, P.O. Box 602, McLean, Tex.
 Filed July 30, 1969, Ser. No. 846,041
 Int. Cl. B25b 5/02
 U.S. Cl. 269—109 6 Claims



A novel clamp is disclosed for holding the sides of a picture frame or the like inserted therein in abutting relationship for assembly. The clamp, in a preferred embodiment thereof, comprises four right-angled corner blocks encircled by a flexible cord, the ends of which are wound upon a rotatable spool rigidly attached to one of the corner blocks so as to draw the corner blocks together and thus maintain the sides of the inserted frame mutually aligned and under compression. A locking pin cooperates with registry holes or recesses on the rotatable spool to prevent the spool from unwinding inadvertently while the cord is under tension.

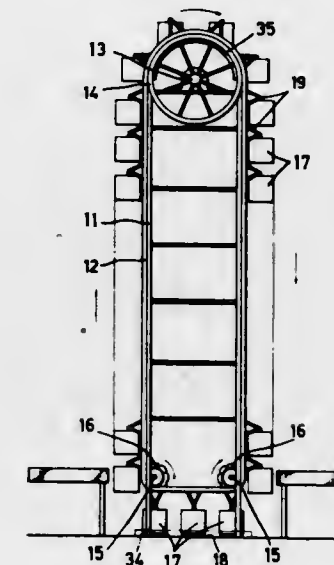
The clamp further includes a pair of rods, each rod being secured to one of the corner blocks and slidably passing through an adjacent corner block to thus form two pairs of slidably interconnected blocks. In this fashion, the two slidably interconnected blocks of each pair are maintained in essentially constant orientation relative to each other, thus maintaining the clamp as a whole and the frame inserted therein in a rigid and stable configuration while under compression.

3,610,613
QUARTZ HOLDER FOR SUPPORTING WAFERS
 Raymond D. Worden, Houston, Tex., assignor to Worden Quartz Products, Inc., Houston, Tex.
 Filed Mar. 17, 1969, Ser. No. 807,642
 Int. Cl. B25b 11/00
 U.S. Cl. 269—254 1 Claim



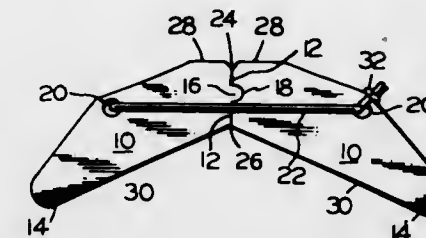
A quartz holder for supporting silicon wafers having one or more helical quartz springs for gripping and two elongate quartz rods positioned parallel to each other and parallel to the axis of the spring for assisting in supporting the wafers. Two rods parallel to and positioned against the outside of the spring for supporting the spring and a suppressor rod positioned parallel to the axis of the spring and interiorly of and through the spring for holding the spring in place while the wafers are removed. One end of the spring being freely movable along the axis of the spring allowing the spring to stretch to accommodate loading of the wafers therein.

3,610,614
ROTARY OBSERVATION TOWER EQUIPMENT
 Seichi Nishizawa, Toyonaka-shi, Japan, assignor to Sanyosokki Co., Ltd., Osaka, Japan
 Filed June 16, 1969, Ser. No. 833,425
 Claims priority, application Japan, Dec. 19, 1968, 43/112387
 Int. Cl. A63g 1/06
 U.S. Cl. 272—7 3 Claims



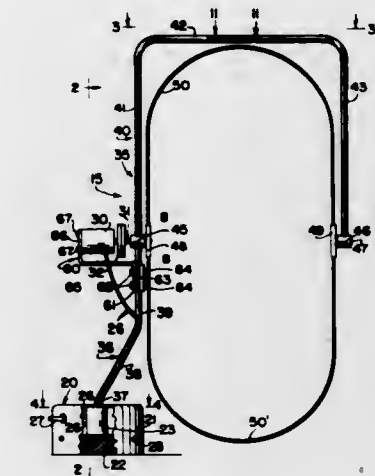
A rotary observation tower. An erected frame has a pair of endless chains wound around chain wheels driven in the same direction at the same speed. Outwardly protruding arms are provided at spaced intervals on the pair of endless chains, and a frame is rotatably mounted on the other end of each arm around a horizontal axis which is parallel with the axis of the chain wheel. A gondola is rotatably suspended from the center of each frame around a perpendicular axis. A guide rail curved so as to constitute a part of a helix is provided on the outside of the erected frame so that the said guide rail will cause the gondola to rotate around its perpendicular axis as it is elevated by means of guiding wheels mounted on the external periphery of the gondola.

3,610,615
DESTRUCTIVELY DISASSEMBLED DEVICE
 James M. Clearly, P.O. Box 541, Falmouth, Mass.
 Filed Sept. 23, 1968, Ser. No. 761,434
 Int. Cl. A63b 69/00
 U.S. Cl. 272—8 N 5 Claims



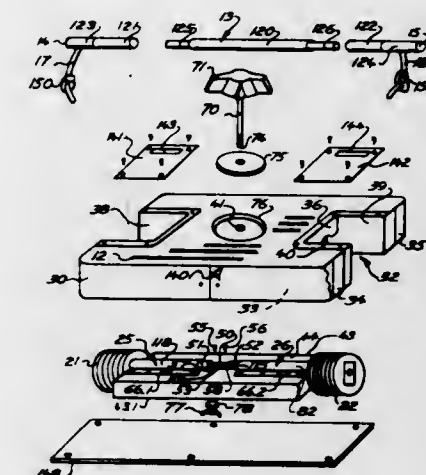
An amusement device to be destructively disassembled in the same manner as an item is broken by a karate blow, including two substantially identical elongated blocks having mating surfaces on one end thereof which fit together and are aligned by at least one interlocking element to form a bridge-type structure with the free ends of blocks resting on a support surface, and an elastic tension element passing through each of the blocks adjacent their free ends and thence about the blocks between the uppermost and lowermost contact points of the mating surfaces to thereby tie the blocks together in a toggle-type joint at the center of the bridge. The structure is stable in the described bridge-type configuration but when a force, such as a karate blow, is applied to the top surfaces of the blocks adjacent the mating surfaces and this force depresses the uppermost contact point of the mating surfaces below the tension element, the blocks become unstable and essentially fly apart.

3,610,616
POWER DRIVEN JUMPING DEVICE
 Wardell Evans, 1549 South Millard Ave., Chicago, Ill.
 Filed Feb. 3, 1969, Ser. No. 795,855
 Int. Cl. A63b 5/20
 U.S. Cl. 272—75 8 Claims



There is disclosed an amusement jumping device which comprises a length of cord secured in a generally U-shaped configuration at its respective ends to one of two spaced-apart horizontally aligned shafts rotatable about the same horizontal axis and rotatably supported, respectively, adjacent the ends of a U-shaped frame portion. The device comprises a base from which the U-shaped frame portion is laterally offset and an electric motor for rotating one of said shafts to impart a rotational movement to the cord through a 360° circular path.

3,610,617
EXERCISING DEVICE
 Douglas Ivan Hepburn, North Burnaby, British Columbia, Canada, assignor to Apollo Distributors Limited, Vancouver, British Columbia, Canada
 Filed July 19, 1968, Ser. No. 746,083
 Claims priority, application Great Britain, July 24, 1967, 33,989/67
 Int. Cl. A63b 21/00
 U.S. Cl. 272—79 5 Claims

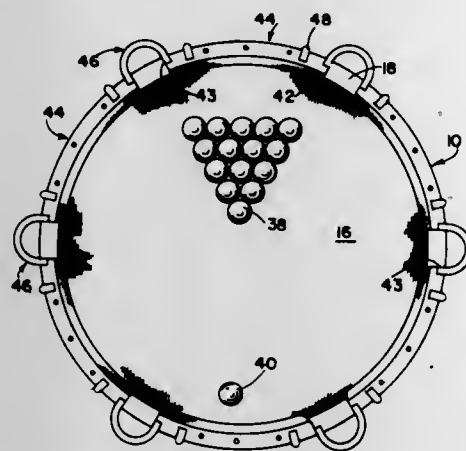


An exercising apparatus wherein a pair of pulleys having operating cables wound therearound are connected in one-way driving engagement to independently rotatable members, the free rotation of the members being retarded by their respective engagement with a commonly adjusted frictional element. The pulleys, when the cables are pulled, rotate in one direction so as to rotate the rotatable members, and are counterrotated by springs connected thereto so as to rewind the cables thereon when the latter are released.

3,610,618
KNOCKDOWN RECREATION TABLE CONSTRUCTION
 Kenneth Wiggins, 94255 Vernon Ave., Chicago, Ill.
 Continuation-in-part of application Ser. No. 701,210, Jan. 29, 1968, now Patent No. 3,526,404. This application June 30, 1969, Ser. No. 837,661
 Int. Cl. A63d 3/00

U.S. Cl. 273—5 A

6 Claims

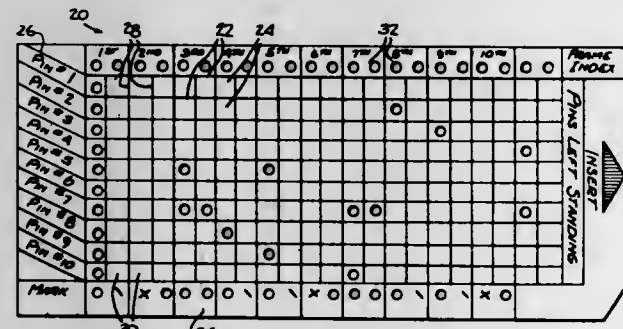


A recreation table construction including a disc carrying a playing surface thereon, removable and replaceable arcuate segment assemblies mounted to the disc about the peripheral edge thereof and endwise spaced one from the other, each segment assembly including cushion means along the inner facing section thereof and slot means formed in the opposite ends of said assemblies, a plurality of demicylindrical cup members, each demicup member having flange means and arranged engaged between the ends of the segments with the flange means received in the slot means of adjacent segment assemblies, each of the demicups bridging the gap between adjacent segment assemblies and cooperating with the peripheral edge of the disc to form a round pocket billiard table; roller means are provided for removable coupling to the disc about the periphery, below and slightly extending outward of the disc and a rotatable upstanding rim is provided for engagement upon said roller means selectively in substitution for said segment assemblies and demicup means without undue manipulations or handling, said rim having a portion thereof removed to provide limited tabletop access; said recreation table being so capable of multiple purpose recreational and other use.

3,610,619
METHOD AND APPARATUS FOR RECORDING POSITIONAL STATUS OF BOWLING PINS
 John J. Matcovich, 65-15 318th Ave., Woodside, N.Y., and John E. Magee, 191 Forest Blvd., Ardsley, N.Y.
 Filed Dec. 23, 1968, Ser. No. 786,255
 Int. Cl. A63d 5/04

U.S. Cl. 273—54 C

16 Claims

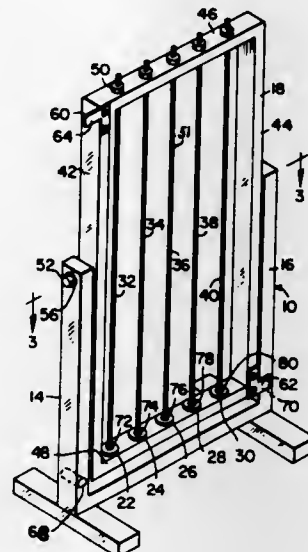


A method of and electromechanical apparatus for transferring and permanently recording data indicating specific bowling pins left standing, and conversely those bowling pins knocked down, following the roll of each ball in a bowling game; this data is recorded in punched card form and is then adaptable for either manual or machine totalization.

3,610,620
GRAVITY-ACTUATED SIMULATED RACING GAME
 Elias H. Stein, 1321 Arch St., Philadelphia, Pa.
 Filed Mar. 13, 1970, Ser. No. 19,275
 Int. Cl. A63f 9/14

U.S. Cl. 273—86 C

10 Claims



A toy comprising a stationary base and a frame selectively rotatable upon the base and carrying a plurality of spaced threaded rods. A movable washer associates with each respective rod and descendingly engages the rod following each one-half revolution of the frame. Each washer is provided with a central aperture having a diameter slightly larger than the diameter of the threaded rod to thereby assure an unpredictable descent as it falls with respect to the rod.

3,610,621
GAME FOR AMUSEMENT
 Robert V. Henry, 1769 Beryl, Akron, Ohio
 Filed Oct. 3, 1969, Ser. No. 863,611
 Int. Cl. A63b 63/00

U.S. Cl. 273—95 R

4 Claims



Game for amusement employs small sponge elastic ball and two relatively small flat disclike targets dimpled to form central, pointed protrusions at undersides. Discs are placed at a set distance apart, points down, to position targets at slight angles to hard playing surfaces. Each player in turn aims ball at high side of opponents target with object to flip it completely over.

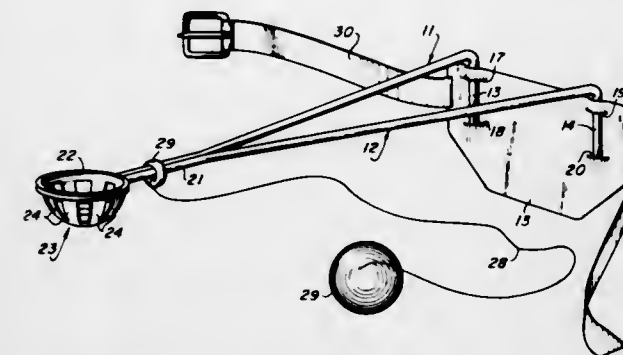
3,610,622
HIP-TOSS BALL GAME
 Anthony A. Haroski, 134 Longfellow St., Middlesex, N.J.
 Filed July 11, 1969, Ser. No. 841,028
 Int. Cl. A63b 67/00

U.S. Cl. 273—98

6 Claims

A hip-toss ball game for pleasure and physical fitness including a relatively rigid shaft secured at one end to the body at the waist extending generally horizontally outwardly and having an open-topped, generally horizontally oriented

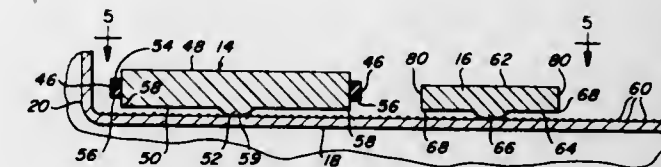
basket at the opposite end, and a ball secured to the shaft, intermediate its ends, by a slip ring and elongated, flexible axis and the convolutions have progressively decreasing radii to define a generally frustoconical tower.



3,610,625
SIMULATED POOL GAME APPARATUS
 Lyle W. Erno, and Judy L. Erno, both of 4747 North 71st Ave., Phoenix, Ariz.
 Filed Apr. 24, 1969, Ser. No. 819,009
 Int. Cl. A63f 3/00

U.S. Cl. 273—126

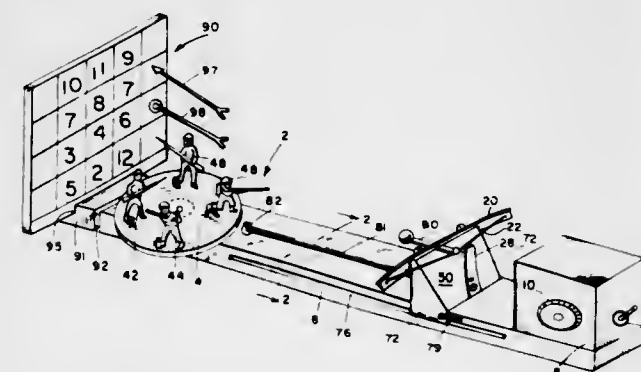
8 Claims



3,610,623
TARGET AND RAMMING GAME
 Tony Ferrer, 677 Park Ave., Brooklyn, N.Y.
 Filed July 14, 1969, Ser. No. 841,305
 Int. Cl. A63b 71/02

U.S. Cl. 273—101

12 Claims

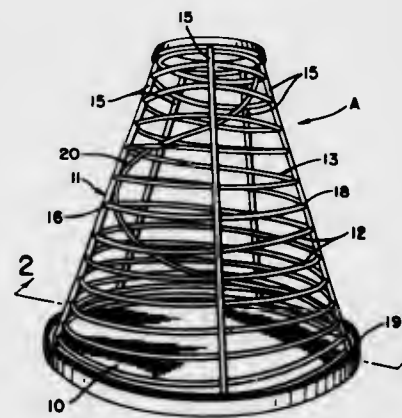


A game comprising a baseboard on which is mounted a horizontally disposed wheel at one end of said board, said wheel bearing impact demountable figures, said board having toward its end opposite said wheel means for launching a projectile and a variable speed motor for rotating said wheel at various desired speeds.

3,610,624
BALL AND HELICAL TUBING GAME APPARATUS
 William S. Fleischer, 13361 Shady Lane, Chesterland, Ohio
 Filed Nov. 10, 1969, Ser. No. 875,371
 Int. Cl. A63h 33/00

U.S. Cl. 273—112

3 Claims



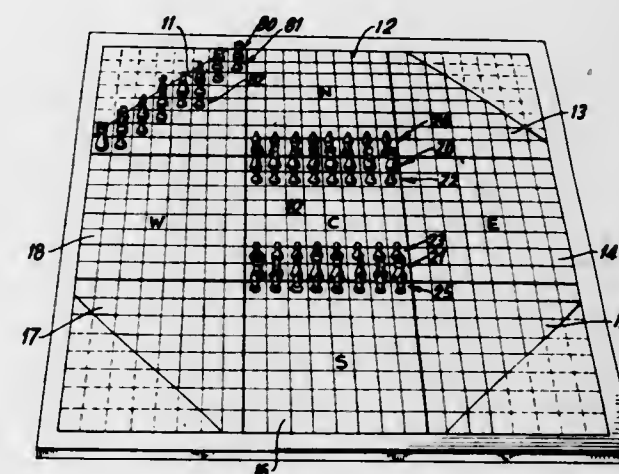
A device for education and amusement whereby one or more players through calculated and coordinated oscillation of the device cause a ball to roll in a helical path of travel to progressively higher levels in a transparent tube. The tube is formed into helical convolutions about a generally vertical

A simulated pool game apparatus comprising a table having a playing surface with resilient upstanding sidewalls extending therefrom and surrounding the playing surface, and also including a single cue-actuated generally disc-shaped playing piece having a resilient band surrounding its periphery and spaced from the upper and lower surfaces of the cue-actuated playing piece; a central bearing supporting the bottom of the cue-actuated playing piece generally above the surface of the table; and the plurality of second disc-shaped playing pieces having central bearings supporting the bottom surfaces thereof slightly above the playing surface of the board, and a cue stick provided with a hollow resilient tip adapted to impinge upon the cue-actuated playing piece to cause its resilient band to impinge upon the peripheries of any one of the plurality of second disc-shaped playing pieces.

3,610,626
CHESSLIKE GAME
 Lawrence H. Nolte, RR #1, Hampton, N.J.
 Filed Aug. 22, 1968, Ser. No. 754,593
 Int. Cl. A63f 3/02

U.S. Cl. 273—131 AB

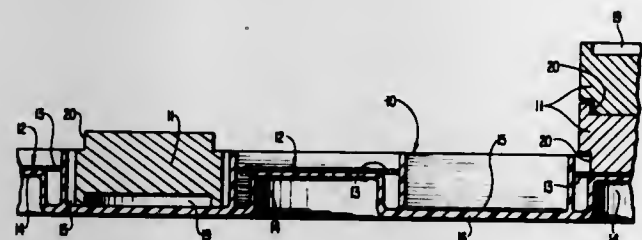
16 Claims



A chesslike game wherein the size of the playing area and the number of chess figures is increased to permit simulation of a larger war game wherein the players assist one another as allies. The main set of chessmen is set up in a center area of the playing area and when playing squares exist behind these chessmen, unique guard figures are added to the game to protect the royalty figures from a rear attack. In one embodiment, nine conventional checkerboards are loosely supported in physical abutment on a supporting surface thereby permitting a 90° rotation of any one of the boards to selectively match or mismatch alternating colored squares along a border of two adjacent boards. The playing area can be designated by the overall shape of the checkerboards or by transparent or opaque overlays. Movable markers are utilized to designate fortifications.

3,610,627
CHECKER GAME APPARATUS
 David Meade Peebles, 325 Marcy Ave., Oxon Hill, Md.
 Filed Sept. 3, 1969, Ser. No. 854,947
 Int. Cl. A63f 3/00
 U.S. Cl. 273-136 E

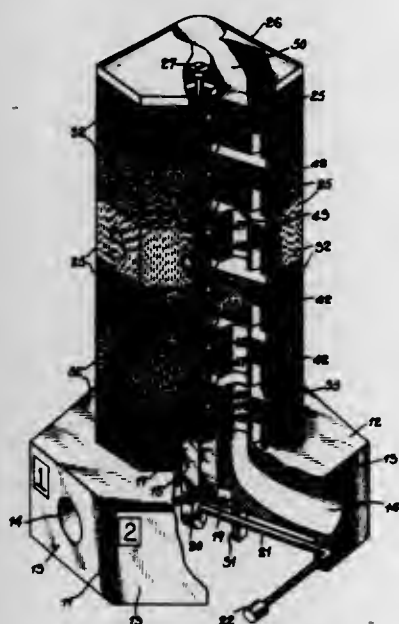
1 Claim



A checkerboard and checkers wherein the board is formed in readily separable sections for ease of carrying and compactness. The checkerboard surface has shallow recesses at all of the playing squares which prevent the checkers from sliding appreciably. The alternate squares which separate the playing squares on the board are more deeply recessed to facilitate the storage of checkers which have been "captured" or "jumped." The separable board sections are joined by elements received in bottom recesses formed by upwardly formed hollow bosses whose tops are the bottom walls of the playing square recesses.

3,610,628
DROP BALL CHANCE DEVICE HAVING PLURAL ROTATABLE PATHWAY MEMBERS
 Edward R. Promin, Bigelow Road, Newfoundland, N.J.
 Filed Oct. 2, 1969, Ser. No. 863,040
 Int. Cl. A63f 7/02
 U.S. Cl. 273-138 R

5 Claims



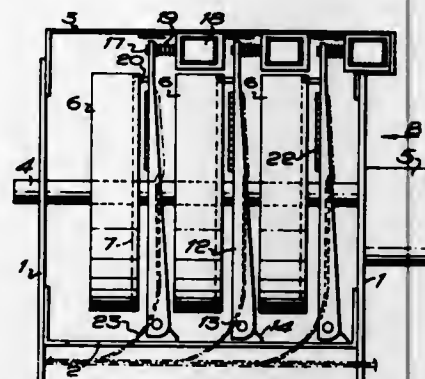
Game apparatus characterized by a plurality of number ring assemblies vertically and rotatably mounted on a shaft. The number ring assemblies are each provided with a ball hole, the holes being equidistant from the central axis of the shaft. By chance controlled rotation of the respective number ring assemblies, a ball playing element may be made to drop through the number ring assemblies and out through a base to indicate a winner of the game.

3,610,629
COIN-OPERATED ROTATABLE DRUM-TYPE CHANCE MACHINE
 Leslie George Pecksen, Mirfield, England, assignor to Coin Operated Games Limited, Leeds, Yorkshire, England
 Filed Jan. 19, 1970, Ser. No. 3,802
 Claims priority, application Great Britain, Jan. 22, 1969, 3676/69
 Int. Cl. A63f 1/18
 U.S. Cl. 273-143 R

6 Claims

In a coin-operated or coin-free machine for gaming amusement or vending, but particularly of that kind known in

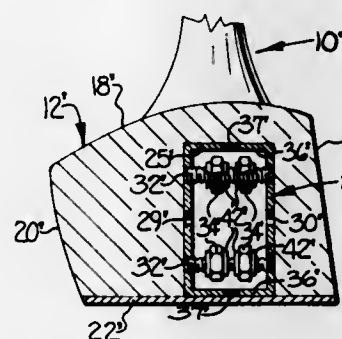
the amusement trade as "fruit machine," the drums carry actuator devices located in positions relative to location notches around the peripheries of location plates which are rotatable with the drums and are arrested by indexing members, carrying contact devices for contacting said actuator devices to produce a signal, for example to signal the value of payout won by a player, each contact operation taking place



only after rotation of the drum concerned has been stopped. The actuator devices are removable studs inserted in holes radially aligned with the notches. The indexing members are pivoted to move at right angles to the planes of rotation of the location plates and engage the notches from the faces of said plate. Preferably said contact devices are microswitches whose actuating buttons contact said studs.

3,610,630
GOLF CLUB HEAD WITH WEIGHT ADJUSTING MEANS
 Cecil C. Glover, P.O. Box 12705, Charlotte, N.C.
 Filed Oct. 21, 1969, Ser. No. 868,001
 Int. Cl. A63b 53/08
 U.S. Cl. 273-171

6 Claims



A golf club having provision for adjusting the swing weight and balance of the club. The club head includes a cavity adapted to removably receive a module mounting one or more threaded shafts. The shafts are threadably retained in the module and may be withdrawn therefrom to receive a plurality of threaded nuts or weights. The nuts may then be rotatably translated along the shaft or shafts to provide a finite adjustment of the swing weight and/or balance.

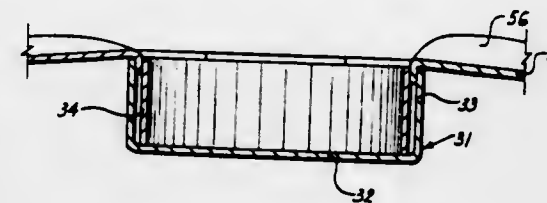
3,610,631
GOLFING TARGET
 Hubert F. Mulherlin, 7 St. Louis Street, Edmundston, New Brunswick, Canada
 Filed Oct. 2, 1969, Ser. No. 863,115
 Int. Cl. A63b 57/00
 U.S. Cl. 273-178 R

2 Claims

A game which may be played indoors or outdoors by two or more players who first select a card from a stack of cards containing instructions to follow in driving a golf ball by a putter from a selected location to a target consisting of a plurality of different ramps radiating outwardly from a central recess or pocket. The cards each have a numerical figure differing from the others thereby indicating the position or turn which each player assumes and further contain instructions for that player to follow, which instructions simulate hazards encountered during a normal golf game. The ramp and target assembly consists of a plurality of separate and distinct ramps each radiating outwardly from the target and having an upper

contour surface of selected characteristics with each ramp being differently identified such that each player, from the card selected, may determine which one of the plurality of ramps must be used by that player in the final approach during driving the ball to the target cup. A downwardly extending flange at the upper end of each ramp is clampingly

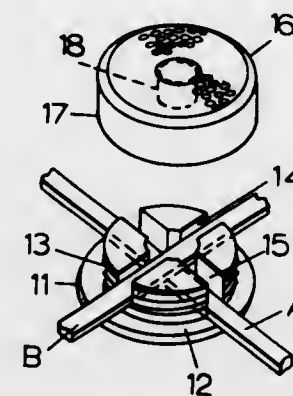
tion and the surfaces defining the narrowest end of the slot frictionally engage the opposite side portions of the free end



secured between two concentric rings forming the target assembly. One of the concentric rings may be the annular part of the putting cup, in which case the cup may be clampingly engaged to the ramp flanges in either the conventional cup-forming position or in an inverted position so that the bottom wall of the cup forms a horizontal surface at the upper ends of the ramps.

3,610,632
GOLFING AID
 Stanley Benson Caldwell, 31 Meols Drive, Hoylake, Wirral, Cheshire, England
 Filed Feb. 9, 1970, Ser. No. 9,716
 Int. Cl. A63 69/36
 U.S. Cl. 273-187 R

4 Claims

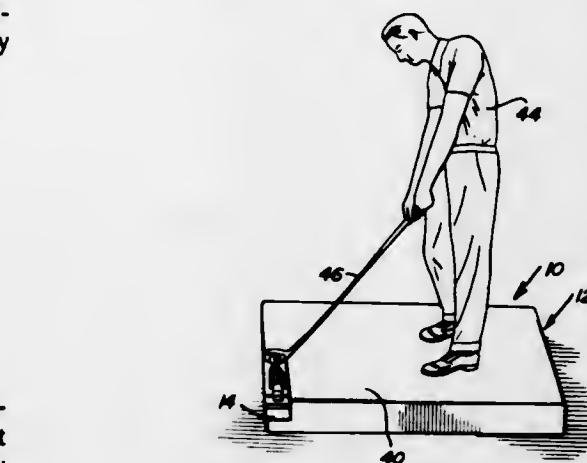


The invention provides a directional aid for use in practicing golf strokes, and comprises two guides which are adjustably connectable at right angles one to the other and one of said guides has pivoted to its upper end a third guide which is locatable at right angles thereto and slidable therealong. The two guides are seated in a slotted connecting member to which a cap is threadably secured to hold the two guides in their right angular relationship. The cap includes a central spigot for bearing against the crossing point of the two guides.

3,610,633
GOLF PRACTICE DEVICE
 Samuel C. Schecter, 40 Lincoln Blvd., Bethpage, N.Y.
 Filed Feb. 26, 1970, Ser. No. 14,567
 Int. Cl. A63b 69/36
 U.S. Cl. 273-200 B

8 Claims

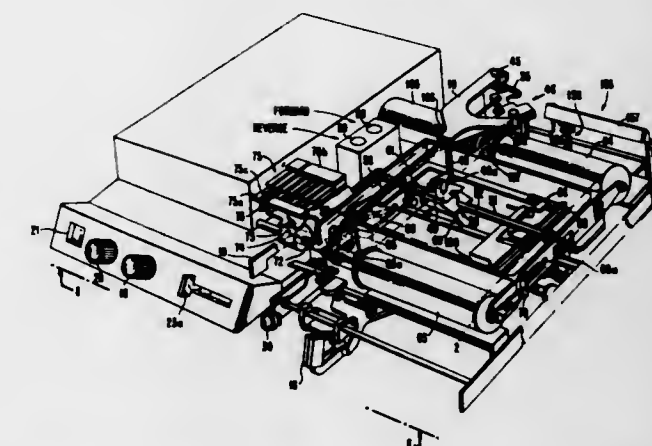
A golf ball is supported on the free end of an arm freely swingable generally 90° about a horizontal axis between an upright position with the ball disposed uppermost and a horizontal position with the ball swung forwardly and downwardly relative to a support structure from which the arm is pivotally supported. The support structure includes a resilient impact abutment block with which the ball impacts upon its movement to its second position and which causes the ball to bounce back toward its first position after being swung rapidly toward its second position. Further, the support structure includes physical features defining a progressively narrowing slot in which the free end portion of the arm swings during its final return movement toward its first position.



of the arm to check its return to the first upright position thereof.

3,610,634
DICTATING AND TRANSCRIBING APPARATUS FEATURING RECORD MEDIA EJECT CONTROL
 Fred W. Johnson, and Edward R. Lloyd, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Oct. 14, 1968, Ser. No. 767,532
 Int. Cl. G11b 25/06
 U.S. Cl. 274-4 J

10 Claims



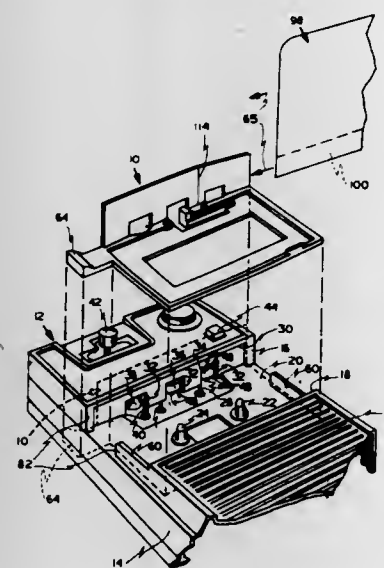
A dictating unit has an associated microphone with control buttons for establishing modes of operation, and otherwise controlling the unit. The dictating unit is arranged for loading and unloading of a magnetic belt from the side. A transcribing unit has an associated headset and foot control and is arranged for loading and unloading of the magnetic belt from the front of the unit. However, each unit makes use of the same basic frame and common operating mechanisms. For maximum convenience, the common mechanisms are oriented in a preferred direction, differing by 90°. In each unit, the microphone or headset, as the case may be, is retractable into a storage compartment. A media (belt) eject control feature enables rapid ejection of the media but in a controlled manner to prevent excess belt speed near the end of the eject operation.

3,610,635
CARD ADAPTER ATTACHMENT FOR CASSETTE TAPE RECORDER
 Morton Schiff, and James Rosen, both of New York, N.Y., assignors to United States Research & Development Corporation, New York, N.Y.
 Filed Sept. 25, 1969, Ser. No. 860,952
 Int. Cl. G11b 25/04, 25/06
 U.S. Cl. 274-4 J

30 Claims

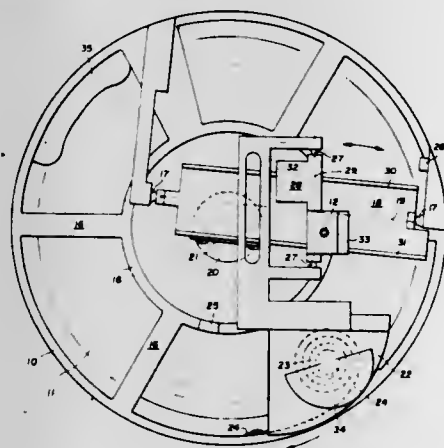
A cassette tape recorder is adapted to record and play back a magnetic recording on an educational card by means

of a plastic attachment which plugs into the tape recorder in the same manner as a tape cassette. The attachment comprises a horizontal base member with a rear edge that engages the cassette clamping spring, and an upstanding front wall which helps to define a card guide channel, and engages the front wall of the tape recorder cassette wall. A lockout projection at the rear of the base member engages the lockout feeler of the recorder to permit recording on the card, if desired. The front wall of the attachment is formed with cutouts to accommodate the recording and playback transducers and the tape drive pinch roller of the tape recorder, and curves away from the recording transducer so as to space the card from the protruding tape guides thereof.



Behind the front wall of the attachment is an integrally formed resilient cantilever spring member having a card-abutting member thereon which bears resiliently against the rear surface of the card. As the card traverses the channel it is gripped between the pinch roller and the constant speed drive capstan of the tape recorder, resulting in constant speed drive of the card past the playback transducer for reproducing the auditory message recorded on the card. The attachment is also formed with a sideward projection for supporting the card, and a pair of clearance holes and a rectangular cutout which provide clearance respectively for the cassette locating pins and the supply and takeup reel spindles located on the deck of the tape recorder.

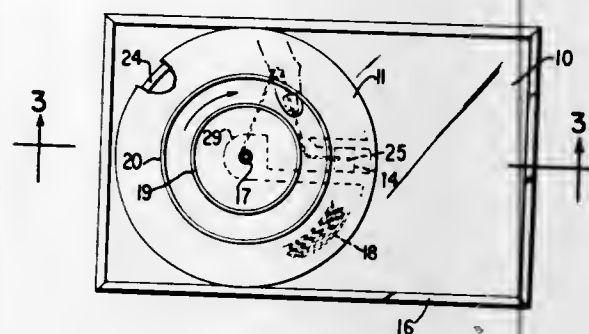
3,610,636
MECHANICAL SOUND-REPRODUCING SYSTEM
Donald W. Scott, East Aurora, N.Y., assignor to The Quaker Oats Company
Filed Dec. 17, 1969, Ser. No. 885,885
Int. Cl. G11b 3/26
U.S. Cl. 274-9 R 21 Claims



The invention improves on systems for mechanically reproducing sound from a mechanically modulated groove tracked by a stylus. The stylus is carried on a pivotal rocker

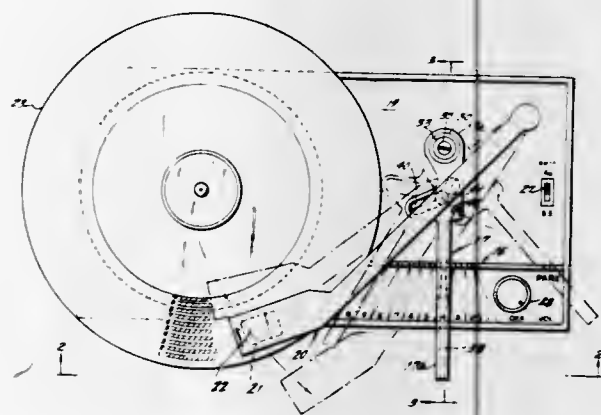
arm that engages a transverse speaker rocker arm one side of which is coupled to a speaker. Surfaces of the stylus rocker arm on opposite sides of its pivot axis engage surfaces of the speaker rocker arm on opposite sides of its pivot axis so that motion of the stylus rocker arm is transmitted to the speaker rocker arm and through the coupling to the speaker.

3,610,637
TOY PHONOGRAPH
Benjamin Kinberg, 425 Riverside Drive, New York, N.Y., and Richard J. Mayer, 34 Mount Vernon, Bloomfield, N.J.
Filed July 31, 1969, Ser. No. 846,347
Int. Cl. G11b 17/06
U.S. Cl. 274-14 4 Claims



A toy phonograph wherein a record is rotated manually which has its sound track on the underside thereof, and a needle block is slidably mounted on a vibrant sheet of material which has an upwardly facing needle thereon for cooperation with the sound track.

3,610,638
TOPE ARM POSITIONING MEANS
John Castagna, Brooklyn, N.Y., assignor to Creative Training, Inc., New York, N.Y.
Filed Sept. 2, 1969, Ser. No. 854,513
Int. Cl. G11b 17/06; G11d 3/06
U.S. Cl. 274-14 6 Claims

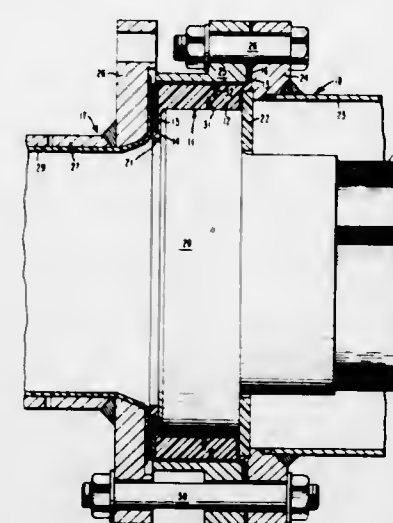


A phonograph is provided with manually operable indexing lever to directly move the tone arm so that the pickup stylus, when lowered to engage a disk record, contacts same at a preselected location determined by the cooperation of the lever with a notched indexing ridge.

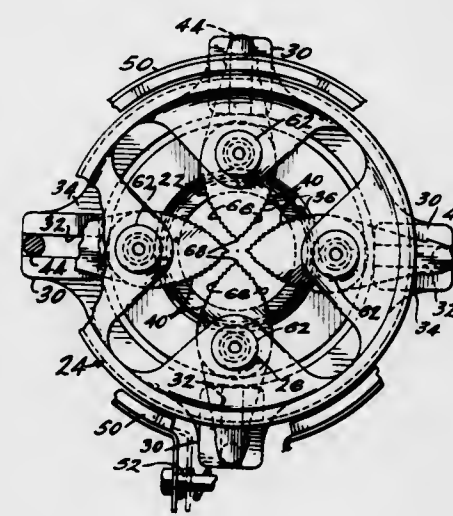
3,610,639
CORROSION RESISTANT SEALING MEMBER
Louis T. Staats, Jr., Lincoln University, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 18, 1969, Ser. No. 858,922
Int. Cl. F16j 15/06
U.S. Cl. 277-214 10 Claims

A corrosion-resistant sealing member comprising: a relatively rigid cylindrical member, made from a corrosion-resistant material deformable under applied pressure, with a passage connecting its ends, a flange at one end extending outward from its outer periphery, and a groove at the other end extending inward from its outer periphery in a manner such as to provide a thin flexible wall between the groove

and the adjacent end of the cylindrical member; a first gasket which is carried by the collet member and the other by the disposed within the groove; and a second gasket disposed spindle member such that relative axial movement of the col-



3,610,640
CHUCK ASSEMBLY
Robert S. Bolln, and Eugene S. Superczynski, both of Toledo, Ohio, assignors to Curtis Manufacturing Company, Cleveland, Ohio
Filed Mar. 21, 1969, Ser. No. 809,127
Int. Cl. B23b 31/12
U.S. Cl. 279-1 SG 5 Claims



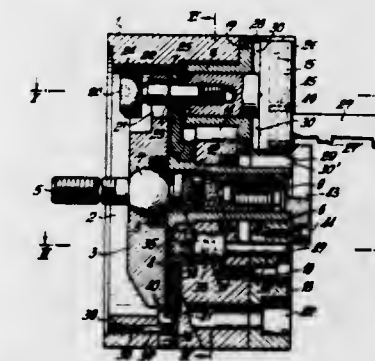
A chuck assembly for gripping pipe is of a simplified design involving fewer parts and has jaws which are more effective in gripping pipe over a wide range of diameters. The chuck assembly is particularly useful for pipe threading machines.

3,610,641
KEYLESS CHUCK ASSEMBLY
Francis E. Ryder, Lake Zurich, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed May 1, 1969, Ser. No. 820,814
Int. Cl. B23b 31/16
U.S. Cl. 279-1 Q 7 Claims

An insulated keyless chuck for drills and the like having threadedly interconnected plastic spindle and collet members providing therebetween an internal chamber for a circumferential array of waferlike chucking elements each with inwardly open hook formations at the outer ends thereof for permissive sliding interengagement with corresponding slots at the outer edges of a pair of cone-shaped retainers one of



3,610,642
DEVICE FOR CLAMPING WORKPIECES ON MACHINE TOOLS
David Fischer, Mainparkstr. 6096, Mainaschaff, and Rudolf Kohlert, Frankenstr. 19, Stockstadt, both of Germany
Filed June 16, 1969, Ser. No. 833,270
Claims priority, application Germany, June 14, 1968, P 17 52 548.3
Int. Cl. B23b 31/16
U.S. Cl. 279-1 L 29 Claims

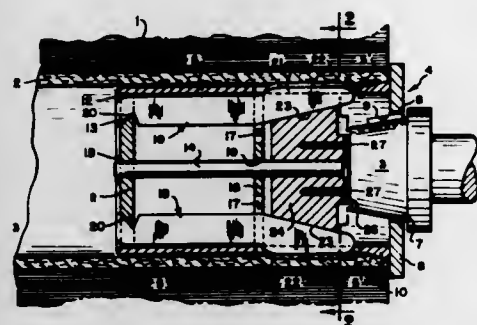


In a device for clamping workpieces on a machine tool, a housing contains a clamping plate to which is secured a connecting rod for axially displacing the clamping plate and with it a number of clamping jaws mounted within the housing. In addition, a centering plate is operatively associated with the clamping plate and is arranged to displace the clamping jaws radially inwardly and outwardly as it is rotated. As the clamping plate is moved in the axial direction, bolt members having tapered faces interact to rotate the centering plate and displace the clamping jaws radially outwardly and biasing means are mounted within the housing for rotating the centering plate in the opposite direction for displacing the clamp-jaws radially inwardly into the closed position.

3,610,643
CHUCK ADAPTER
Albion J. Thompson, Millinocket, Maine, assignor to Great Northern Paper Company
Filed July 3, 1969, Ser. No. 838,966
Int. Cl. B23b 31/40
U.S. Cl. 279-1 A 5 Claims

A chuck adapter for locking a chuck internally into a hollow tube. The chuck adapter comprises generally a cylindrical shell having a plurality of longitudinal openings which are aligned with a plurality of gripping bars carrying protruding blades which project through said openings and an axially

movable cone member engaging cam surfaces on the gripping blades. The gripping bars are adapted to pivot about the forward end of a cylindrical shank which is guided in the chuck body for movement axially thereof, with the



a fulcrum positioned in the interior of said shell to grip the tube as the cone member is moved axially with respect to the shell upon engagement with the end of a chuck.

3,610,644

HEAVY-DUTY CHUCK

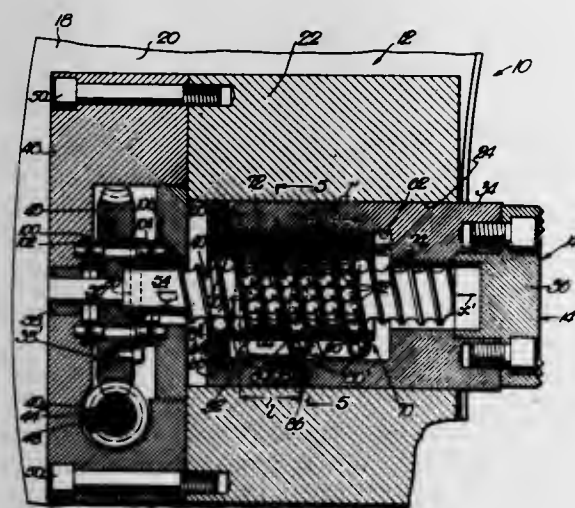
Linwood B. Swanson, Newington, and Gordon W. Smithson, West Hartford, both of Conn., assignors to Cushman Industries, Incorporated, Hartford, Conn.

Filed Oct. 6, 1969, Ser. No. 863,932

Int. Cl. B23b 31/16

U.S. Cl. 279-1 H

9 Claims



At least one of the jaws of a chuck is movable to and from clamping engagement with work by being carried by one of the nut and screw elements of a ball bearing screw assembly which is guided for axial movement but held against rotation, so that on rotation of the other, axially immovable, element the one jaw is by its carrying element moved to and from the work through intermediation of the complement of bearing balls of the assembly.

3,610,645

CHUCK OF WEDGE-ACTUATED JAW TYPE

John J. Roddy, Meriden, Conn., assignor to Cushman Industries, Incorporated, Hartford, Conn.

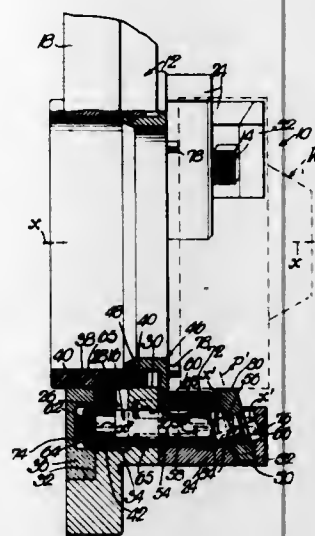
Filed Oct. 6, 1969, Ser. No. 863,790

Int. Cl. B23b 31/16

U.S. Cl. 279-60

5 Claims

A chuck having in its body at least one guided jaw, and a jaw-actuating wedge in the form of a cylindrical stud forma-



stud formation being inclined to the chuck axis at the desired wedge angle and fittedly received in a cylindrical bore in the jaw.

3,610,646

STABILIZERS FOR VEHICLES WITH NARROW BASE SUPPORT

Emile Bobard, 17, Rue de Reon, Beaune, Cote d'Or, and Just Delaunay, L'Etang-Vergy, Cote D'Or, both of France

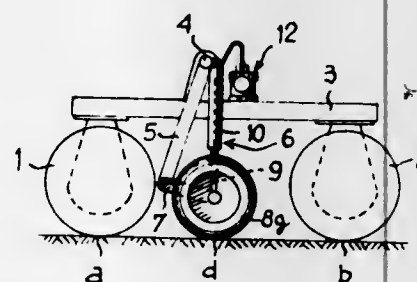
Filed Apr. 25, 1969, Ser. No. 819,199

Claims priority, application France, Apr. 30, 1968, 150141

Int. Cl. B60q 17/00

U.S. Cl. 280-6 H

10 Claims



The stabilization of a vehicle with narrow base support is ensured by two aligned wheels. The device comprises two load-bearing wheels mounted on either side of the vehicle support base on hydraulic supports which are hydraulically adjustable in length and associated with a device equipped with a supporting jack for controlling the length adjustments of the hydraulic supports.

3,610,647

TOE UNIT FOR A RELEASABLE SKI BINDING

Thomas G. Smolka, Wien-Mauer, Austria, assignor to Wiener Metallwarenfabrik Smolka & Company, Wien-Mauer, Austria

Filed Mar. 23, 1970, Ser. No. 21,849

Claims priority, application Austria, Mar. 26, 1969, A 2992/69

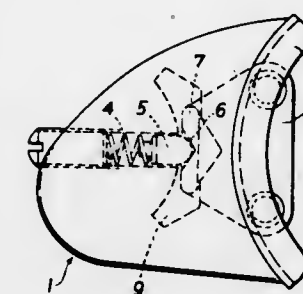
Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

7 Claims

A toe unit for a releasable ski binding having a readily visi-

ble portion of each of a pair thereof tapered forwardly



toward each other to simulate the normal similar tapering of ordinary shoes or boots.

3,610,648

AUTOMATICALLY RELEASABLE HEEL PLATE SKI BINDING

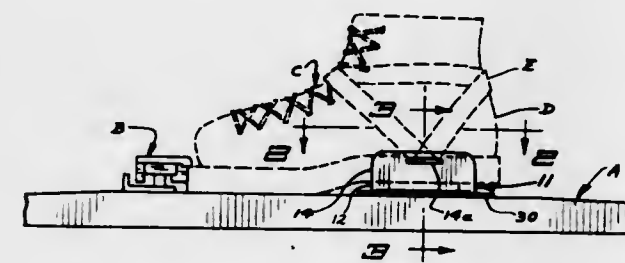
William H. Reese, Jr., 1091 22nd Ave., S.E., Minneapolis, Minn.

Filed Nov. 28, 1962, Ser. No. 241,112

Int. Cl. A63c 9/082

U.S. Cl. 280-11.35 K

8 Claims



A ski binding including a first plate member arranged for attachment to the ski and having at least a pair of normally outwardly urged tine members with means to adjust the outwardly urging force applied to the tines and a second plate member arranged for attachment to the skier's boot having a passage therethrough to position the same about said first plate member and having inwardly directed bosses for normally underlying said tines and a pair of slots adjacent each of said bosses such that upon a predetermined degree of rotation between said plates the tines will engage one or another of said slots and permit separation of said plates.

3,610,649

TOE IRON FOR SAFETY SKI BINDINGS

Ludwig Axthammer, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

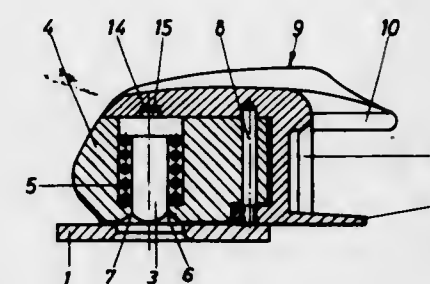
Filed Sept. 20, 1968, Ser. No. 761,036

Claims priority, application Germany, Sept. 22, 1967, P 15 78 857.5

Int. Cl. A63c 9/085

U.S. Cl. 280-11.35 T

11 Claims



A baseplate carries a vertical pivot pin, on which a pivoted member is rotatably mounted which carries a soleholder, which is pivoted to the pivoted member on an axis which is

parallel to the pivot pin on the baseplate. The soleholder is normally held against rotation by a detent device, which comprises a first member that is movable relative to a second member of the detent device to release the latter. The first member of the detent device is under the influence of the pivoted member in such a manner that the soleholder will be released when said member has performed a predetermined pivotal movement from its normal position.

3,610,650

SKI BOOT HOLDING CLAMP

Heinz Korger, and Heinrich Eckel, both of Munich, Germany, assignors to Firma Heinrich Eckel, Munich, Germany

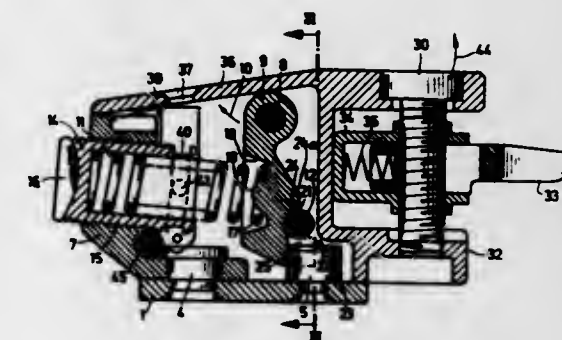
Filed June 30, 1969, Ser. No. 837,579

Claims priority, application Germany, July 2, 1968, P 17 03 719.3

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

14 Claims



A toe or heel clamp for ski bindings includes a bearing block pivotally mounted on a vertical bearing bolt carried on a binding plate which is adapted to be secured to the ski. The bearing block is contained within a housing carrying a boot-engaging holddown. The housing is carried on a horizontally extending crossbolt in a manner permitting its pivot movement about the horizontal axis of the bolt. The ski clamp is pivotal in a horizontal plane and lift movable in a plane perpendicular thereto for the release of the holddown from the boot in an overload condition. A combined ratchet device includes a ratchet carrier which is pivotal about a horizontal axis within the housing and which is biased in a direction against a cross ratchet member by a coil spring which may be adjustably mounted at one end within a sleeve which may be threaded in the bearing block. The opposite end of the spring is retained on a protuberance defined on the ratchet carrier. The ratchet carrier includes side projections or tines which extend around each side of the central ratchet bolt member and has an exterior roller sleeve thereon. The common ratchet carrier is movable by either a lifting and/or a transverse movement of the boot and it is associated with ratchet members in such a manner that a release in one direction of movement will cause a corresponding release of the ratchet member in another direction of movement.

3,610,651

MOBILE RECLINING COUCH

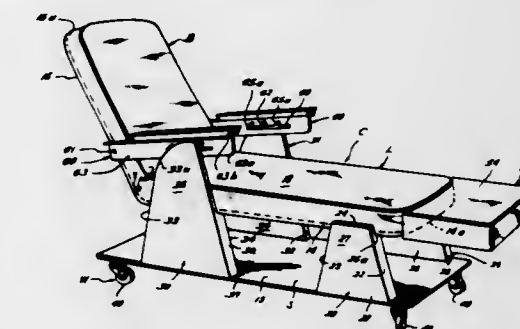
Clarence E. Jackson, P.O. Box 1109, Texas City, Tex.

Filed Nov. 24, 1969, Ser. No. 879,148

Int. Cl. B62b 5/00

U.S. Cl. 280-79.2

1 Claim



A mobile reclining couch having a fixed seat and leg support and a movable back support which articulates relative to

the seat to permit a person to either sit upright or recline on such couch. The fixed seat and leg support, which is adapted to be lengthened or shortened, is carried on a plurality of rollers to permit the couch to be moved about from place to place by a person seated thereon.

3,610,652

SUSPENSION SYSTEMS

John Russel Crompton Moore, Little Melton, Norfolk, England

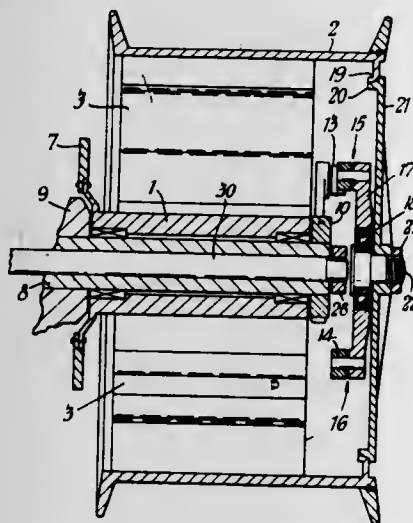
Filed Jan. 2, 1970, Ser. No. 315

Claims priority, application Great Britain, Jan. 3, 1969, 620/69

Int. Cl. B60b 9/00

U.S. Cl. 280-80

30 Claims



A suspension system having a suspension wheel in which the rim and hub are joined by compliant means such as V-form sheet material or freely or resiliently hinged spokes, the rim being coupled by a bearing to control means such as a pivoted link, a Watts mechanism or a cycloid mechanism to restrain rim movement to a predetermined path and said bearing also being able to transmit to the rim suspension springing and damping which bypasses the wheel hub.

3,610,653

AUXILIARY LOAD DISTRIBUTING AND STABILIZING ASSEMBLY

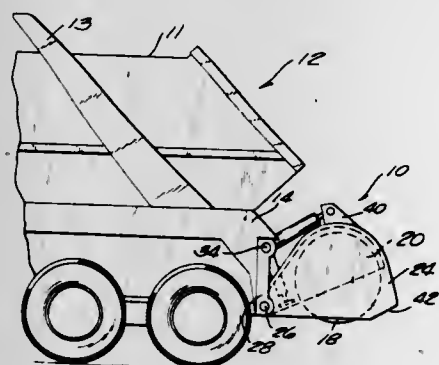
Phillip A. Derrwaldt, Brookfield, Wis., assignor to D. G. Beyer Inc., Milwaukee, Wis.

Filed Sept. 25, 1969, Ser. No. 860,889

Int. Cl. B62d 13/06

U.S. Cl. 280-81

7 Claims

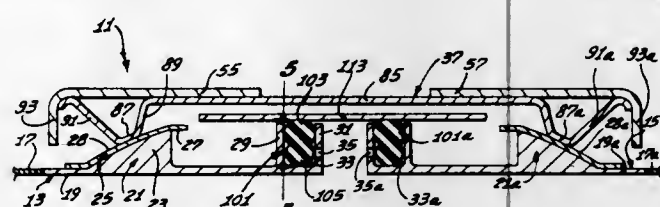


A pair of wheels and shrouds are mounted behind the rear wheels of a load-hauling vehicle and are arranged with the wheels adapted to telescope one within each of the shrouds. The wheels and shrouds are pivotally mounted for movement about the same axis for either independent or joint movement toward and away from engagement with the ground. Wheel engagement with the ground cooperates in load distribution during transportation while shroud engagement enhances vehicle stability during loading and unloading.

3,610,654
FLEXIBLE COUPLING
Jorge Torres, Newbury Park, Calif., assignor to Purolator, Inc., Newbury Park, Calif.
Filed June 6, 1969, Ser. No. 831,182
Int. Cl. F16l 17/04

U.S. Cl. 285-106

16 Claims



This disclosure describes a flexible duct coupling for use in interconnecting two duct sections for relative pivotal movement. The coupling includes first and second bearings mounted on the first and second duct sections, respectively, a retainer extending between the bearings for interconnecting the duct sections and seal means for sealing the region between the ends of the duct sections.

3,610,655

SUSPENSION OF A RIGID AXLE

Bela Barenyl, Stuttgart-Vaihingen, and Karl Willfert, Gerlingen-Waldstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

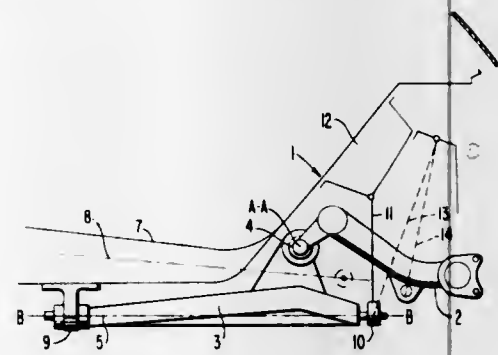
Filed Nov. 15, 1968, Ser. No. 776,098

Claims priority, application Germany, Nov. 15, 1967, P 16 30 388.1

Int. Cl. B60g 7/00

U.S. Cl. 280-112

10 Claims



A suspension for a rigid axle, in particular, for a rear axle of a passenger motor vehicle by means of an axle carrier on which is pivotally supported the rigid axle provided with a cranked portion; the axle carrier is disposed in the vehicle center and is pivotally supported about an axis disposed in the vehicle longitudinal direction with is located below the wheel centers and inside of the wheel base.

3,610,656

SELF-PUMPING HEIGHT CONTROLLER AND DAMPER

Gerard Timothy Klees, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 24, 1970, Ser. No. 13,367

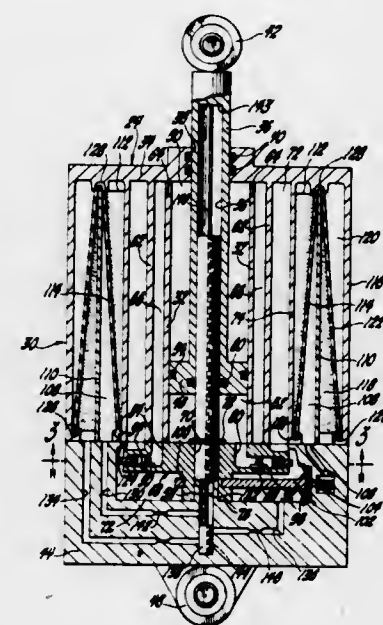
Int. Cl. B60g 11/46

U.S. Cl. 280-124

5 Claims

In preferred form, an integral shock absorber and self-pumping leveling unit for an automobile suspension in which pressurized fluid from the shock absorber's rebound chamber and compression chamber is dampened by flow through a small impulse turbine which operates a small displacement hydraulic fluid pump. A control valve operatively connected to the shock absorber piston rod is operated in response to a predetermined position of the piston rod to direct pressurized fluid from the pump outlet against the piston rod's cross-sectional area when elongation of the leveling unit is desirable for heightening the automobile. The control valve dumps the

pressurized fluid into the shock absorber's reservoir chamber in response to a predetermined movement of the piston rod connecting it to a bumper of a vehicle and sliding latch means adapted to be connected to a bumper and adapted to



into the shock absorber when contraction of the leveling unit is desirable.

3,610,657

VEHICLE OCCUPANT RESTRAINT SYSTEM

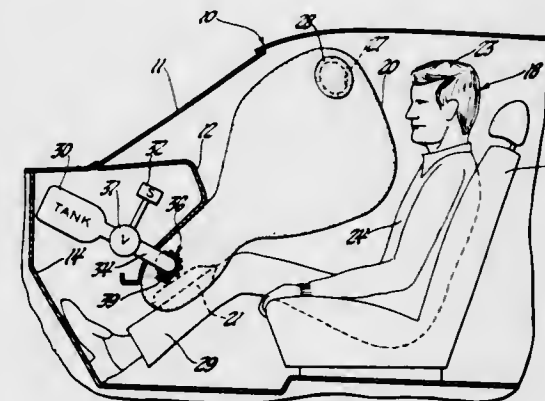
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 13, 1970, Ser. No. 11,189

Int. Cl. B60r 21/10

U.S. Cl. 280-150 AB

3 Claims



A vehicle occupant restraint system having a plurality of bags which are inflated on vehicle impact with a stationary or moving object. One of the bags receives the impact of the occupant's torso and on such impact, has controlled pressure relief to prevent excessive rebounding of the occupant. Another bag, that is located within the first-mentioned bag, receives the impact of the occupant's legs and remains inflated on such impact to maintain the occupant in the normal seated position. Fluid delivery to pressurize both bags is delivered by a manifold which is continuously open to the outer bag and is connected by a one-way valve to the inner bag.

3,610,658

STAIRWAY AND WHEEL CARRIER FOR TRUCK CAMPERS

Osvaldo F. Sartori, 4408 23rd St., Sacramento, Calif.

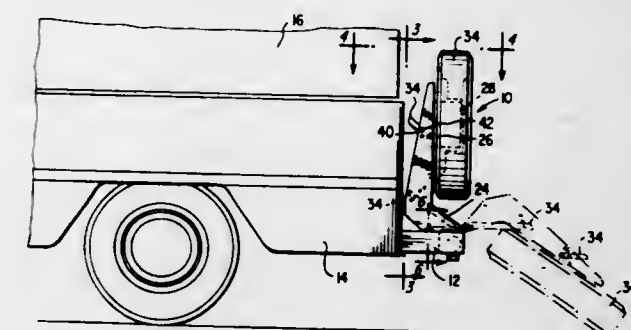
Filed Aug. 22, 1969, Ser. No. 852,161

Int. Cl. B60r 3/00

U.S. Cl. 280-164

8 Claims

A stairway and wheel carrier for truck camper comprising a wheel mount structure with means for attaching a spare tire thereto, a plurality of adjustable step members secured to said structure, hinge means on one end of said structure for



extend through the hinged end of said structure to secure said structure and spare tire carried therein in an upright position.

3,610,659

WHEEL FORK

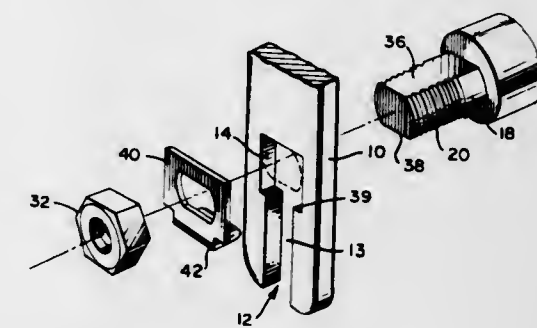
Donald R. Gerarde, 86 Fairlane Drive, Wethersfield, Conn.

Filed June 4, 1969, Ser. No. 830,253

Int. Cl. B62k 25/00

U.S. Cl. 280-279

4 Claims



A wheel fork is presented of the type wherein a wheel axle is mounted in a slot at the base of the fork. The slot is contoured so that it has sections of at least two different sizes, the smaller section serving as a path for inserting and removing the axle, and the larger section defining the mounting position for the axle. A bushing type retainer is used to lock the axle into the mounting position, or retention of the axle may be accomplished by cooperation between a contoured section on the axle and a shoulder between the larger and smaller sections of the slot.

3,610,660

BICYCLES AND ACCESSORIES THEREFOR

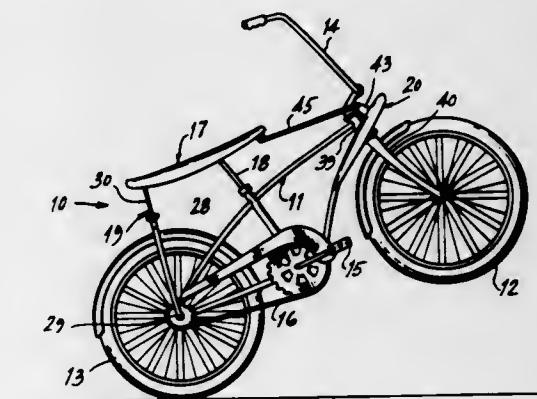
Nathaniel W. Price, 33 Barker Ave., White Plains, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,762

Int. Cl. B62h 7/00

U.S. Cl. 280-289

7 Claims



A bicycle is provided with a wing structure mounted on the forward portion of its frame so as to be pivotal relative to the latter for varying the angle of attack of the wing structure.

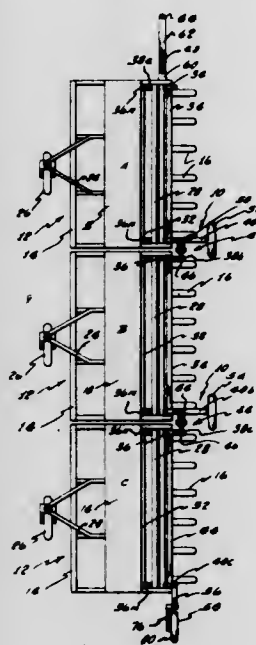
and such angle of attack is increased in response to rearward shifting of the rider's center of gravity, either by actual displacement of the seat or by movement of the rider along the seat, so that the shifting of the rider's center of gravity and the increased lift of the wing structure combine to raise the front wheel from the ground and to maintain the frame in the resulting tilted position.

3,610,661 AUXILIARY WHEELED FRAME FOR WHEEL-MOUNTED IMPLEMENTS

Dwight E. Pierce, and Ted W. Pierce, both of Stratton, Nebr., assignors to Miller Weeder Company Inc., Stratton, Nebr.
Filed July 24, 1969, Ser. No. 844,413
Int. Cl. A01d 75/22

U.S. Cl. 280—415 R

3 Claims



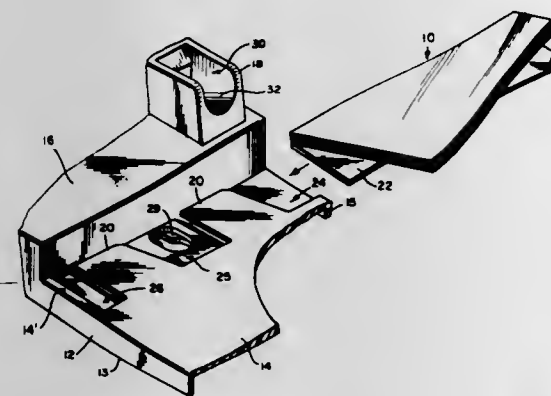
This invention relates to an auxiliary wheeled frame fastenable to the main frame of a tractor-drawn farm implement of the type having a caster wheel so as to cooperate therewith to define a wheeled assembly capable of being towed endwise along a highway or other thoroughfare in contrast to its sidewise movement through a field. The wheel of the auxiliary frame is movable to an inoperative position for field use of the implement and each frame is hingedly connectable to other similar frames to form a train thereof movable both endwise and sidewise.

3,610,662 NOTEPAD HOLDER

Peter M. Schatz, 8440 Evergreen Ave., Indianapolis, Ind.
Filed Jan. 17, 1969, Ser. No. 791,907
Int. Cl. B42d 1/00

U.S. Cl. 281—15 B

3 Claims



A holding device for a cardboard-backed notepad. The device comprises a base member having a pad supporting flat wall, and a raised portion at its forward end for preventing movement of the pad in the direction of said forward end. A

pen receiving opening is provided in the raised portion of the holder for supporting a pen or pencil in a convenient position. The forward end of the flat wall has three spaced portions offset downward to leave between them; a pair of tabs which extend toward the raised portion to receive and retain a short cardboard backing on the pad. The tabs and offset portions form a transverse slot which is open laterally at one side to allow the short backing to slide sideways under the tabs which grasp the backing and hold the pad in position on the supporting surface.

ERRATUM

For Class 285—106 see:
Patent No. 3,610,654

3,610,663 BRAZED CONNECTION

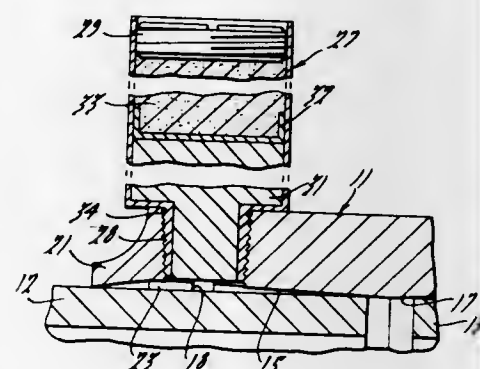
Ernest T. Lago, Jackson, Mich., assignor to Aesquip Corporation, Jackson, Mich.

Filed Apr. 20, 1970, Ser. No. 29,408

Int. Cl. F16l 35/00

U.S. Cl. 285—4

23 Claims



A system for brazing a tube end to a collar. The collar has a slightly flared interior surface which receives the tube, the end of which engages a shoulder. The edge of the collar is then rolled down against the tube to form a closed brazing pocket. A cartridge is mounted on the collar, the cartridge having brazing material and a propellant which becomes gaseous at approximately the same temperature as the brazing material. The propellant forces the brazing material into the shallow pocket where it forms a brazed connection between the collar and tube. As shown, the collar connects two tubes inserted from opposite ends.

3,610,664 HOSE CONNECTION

Carl Anders Hansson, Lidkopingsvagen, Johanneshov, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

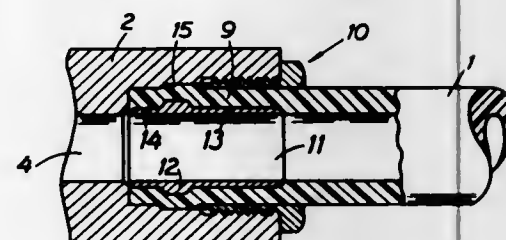
Filed Aug. 13, 1969, Ser. No. 849,647

Claims priority, application Sweden, Aug. 30, 1968, 11647/68

Int. Cl. F16l 33/22

U.S. Cl. 285—250

3 Claims



A hose connection for pneumatic tools and other apparatus consists of a recess in the tool or the like having three annular shoulders at the inner ends of two concentric

bores of different diameters. A stiffening member with an annular enlargement is fitted in the hose end portion and produces an annular enlargement on the hose. A sleeve fitting the outside of the hose presses the hose and the enlargement thereon against said shoulders.

3,610,665 COUPLING

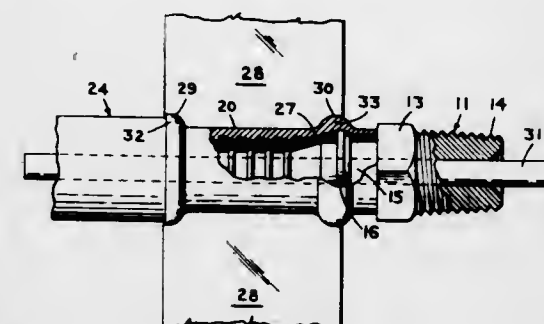
Harold E. Mingo, Clifton, N.J., assignor to Lyn-Mont Hose and Fitting Corp. Inc., North Arlington, N.J.

Filed Sept. 25, 1969, Ser. No. 860,993

Int. Cl. F16l 33/20

U.S. Cl. 285—256

3 Claims



A coupling having enhanced resistance to rupture in which the reduced diameter end of a hose is flared and a ferrule is crimped to seize the flared portion of the hose, and an arcuate external enlargement is formed over the crimped area.

3,610,666 FLUID COUPLING

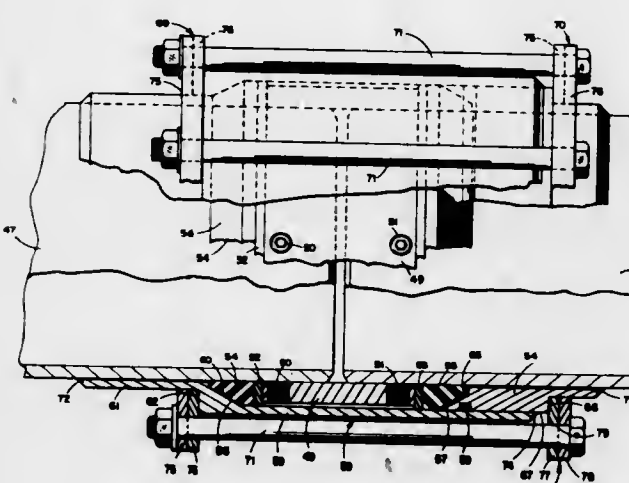
Truman V. Tyler, 5383 Rolling Ridge Road, Palos Verdes Estates, Calif.

Filed Feb. 11, 1969, Ser. No. 798,346

Int. Cl. F16l 23/00

U.S. Cl. 285—337

5 Claims



This invention provides a pipe-coupling arrangement that includes a gasket around each of the pipes to be connected, the gaskets having outwardly tapered surfaces engaged by members outwardly of them, with a provision being made for compressing the gaskets to wedge them against the surfaces of the pipes. One of the gaskets may include an outwardly tapered portion for sealing against a surrounding part when the gaskets are compressed, or a separate O-ring may be used for this purpose. The inclusion of sealed telescoping sleeves provides for an expansion coupling.

3,610,667 CLOSURE SUPPORT

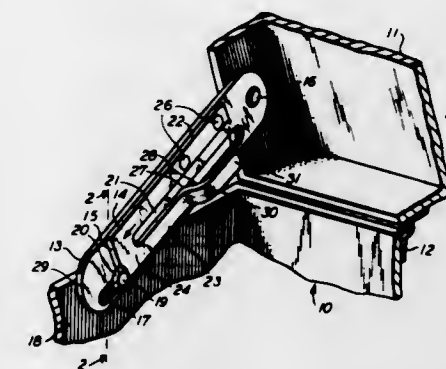
Richard E. Cragg, Winnetka, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed June 5, 1970, Ser. No. 43,899

Int. Cl. E05c 17/16; B65d 43/24

U.S. Cl. 292—270

5 Claims



A releasable support for holding a lid in an open position, against accidental bumping and vibrations, relative to a cabinet. The support has a strut pivotally mounted to the lid and slidably mounted to the cabinet by a headed stud. A U-shaped flat spring having a release section is securely attached to the strut and engages the stud beneath the head maintaining the lid in the open position. The lid is released by further moving the lid away from the cabinet, depressing the release section which raises the leaf spring above the headed stud, and then lowering the lid.

3,610,668 AUTOMOTIVE DOOR LOCKS

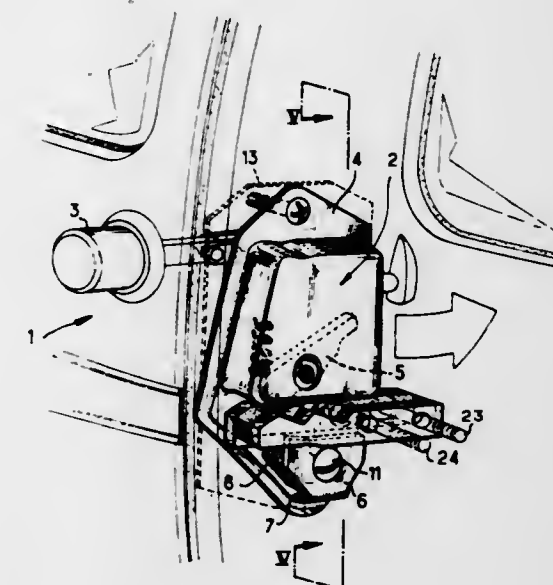
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, (Haut de Seine), France and Automobiles Peugeot, Paris, France

Filed Dec. 22, 1969, Ser. No. 887,042

Int. Cl. E05b 15/02

U.S. Cl. 292—341.12

3 Claims



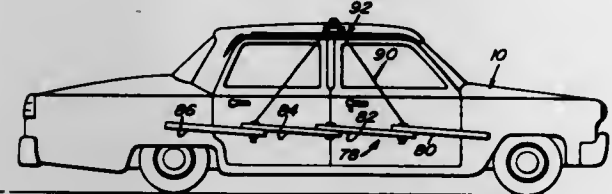
A lock assembly for the doors of automotive vehicles, which comprises a conventional-type lock and is characterized in that said assembly is secured to the door by means of a holding corner plate screwed in turn to the lower portion of the lock by means of the lower securing screw of said lock, said screw extending through a resilient pad of suitable plastic material, the vertical plane containing the lock bolt in the closed-door position merging substantially into the median plane of the keeper.

3,610,669 REMOVABLE AND COLLAPSIBLE VEHICLE SIDE PROTECTOR

Thomas N. Morrissey, Sr., P.O. Box 775, Little Rock, Ark.
Filed June 11, 1969, Ser. No. 832,346
Int. Cl. B60r 27/00

U.S. Cl. 293-62

18 Claims



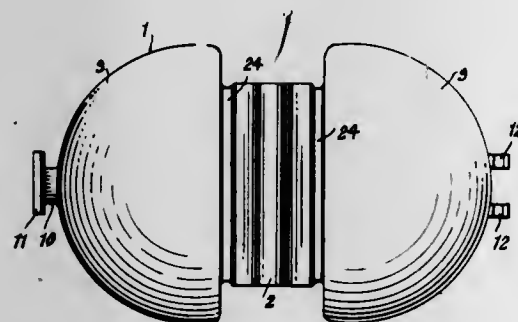
An elongated longitudinally extendible protector body for suspension in horizontal attitude along and from the side of a vehicle body adjacent the elevation of maximum width of the vehicle body. The protector body is constructed of resilient material and will therefore protect the vehicle body from direct impact from adjacent vehicle doors being swung there toward.

3,610,670 HOLDERS FOR SAFETY RAZOR BLADE CARRIERS OR OTHER OBJECTS

Karl M. Keck, 2155 Silver Palm Road W., Boca Raton, Fla.
Division of Ser. No. 609,534, Jan. 16, 1967, Patent No. 3,412,464.
Filed July 30, 1968, Ser. No. 748,697
Int. Cl. A47f 13/06

U.S. Cl. 294-1

2 Claims



A holder adapted for the holding of a rotative safety razor blade carrier or other product, said holder being of substantially clamshell shape and it maintains the blade carrier or other article in a groove or channel provided by a pair of jaws. The holder is preferably of one-piece plastic construction and it is provided with a pair of wings connected by a web or spine from which the jaws project. The wings are foldable in one direction to cause them to expose the jaws and the object held thereby and to enable the wings to form a handle for the holder. The wings, when folded in an opposite direction, come together and form a protective cover for the jaws and the object held thereby.

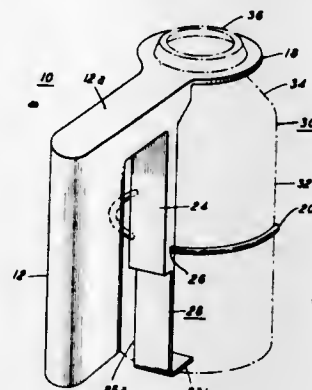
3,610,671
UNITARY CONTAINER HOLDER
Alfred P. Conger, 728 Carlton Ave., Plainfield, N.J.
Filed Aug. 21, 1969, Ser. No. 852,001
Int. Cl. A47j 45/00

U.S. Cl. 294-33

1 Claim

A unitary holder for cylindrical containers comprises a yoke for engaging the lip or rim on a bottle or beverage can. The yoke is connected to a grip by a horizontal extension and to a convex vertical portion which has an aperture for carry-

ing a resilient clamp. The clamp extends circumferentially around a portion of the body of the container. Optionally,

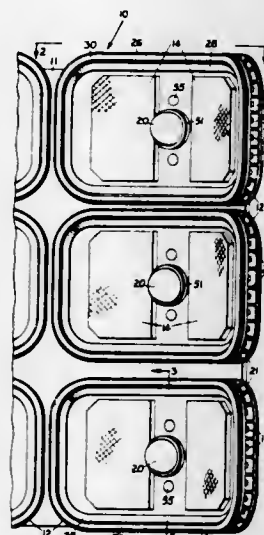


the holder also include a foot extending from the vertical portion for further supporting the container from its bottom.

3,610,672
VACUUM-OPERATED LIFT PLATE RIM
Harlan D. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.
Filed Apr. 23, 1970, Ser. No. 31,266
Int. Cl. B66c 1/02

U.S. Cl. 294-65

5 Claims



A vacuum-operated lift plate assembly including a curved main plate, an elongate resilient rim extending in a continuous course around the main plate defining a mouth for the lift plate assembly, a shear pad secured to the main plate and a contact-operated valve mounted on the main plate. The rim comprises an outer platform having a resilient facing, adapted to contact an object to be lifted, and a continuous mounting flange connected to the platform by an outwardly inclined wall. A plurality of supporting ribs, spaced at regular intervals on the outside of the rim, interconnect the outer platform, the inclined wall, and the mounting flange. The mounting flange is sealingly retained to the main plate by elongate segments located between the ribs. The segments are secured in position by bolts extending through holes in the segments and the main plate.

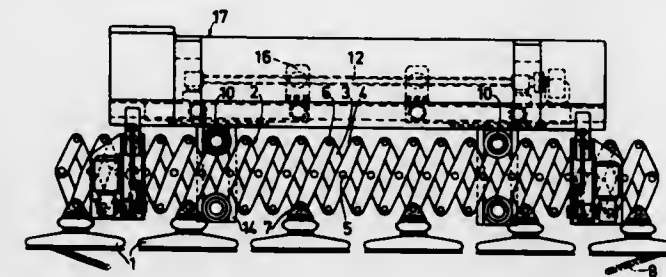
3,610,673
ARRANGEMENT FOR HANDLING OBJECTS
Per Albin Strombeck; Signar Alexander Karlsson, and Jan-Eje Ericsson, all of Sundsvall, Sweden, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden
Filed Oct. 20, 1969, Ser. No. 867,710
Int. Cl. B66c 1/02

U.S. Cl. 294-65

4 Claims

An apparatus for lifting (or, otherwise handling) objects, involving a plurality of movable contact members spatially arranged on a longitudinally extendible control element in which control element is movably connected with one or

more transverse link mechanisms. According to the invention, each transverse link mechanism is comprised of an extensible and constrictable element, (e.g., a lazy tong mechanism) which is supported by a carriage in the lifting device, in turn, is provided with mountings for the control elements which carry and adjust suction cups in the longitudi-

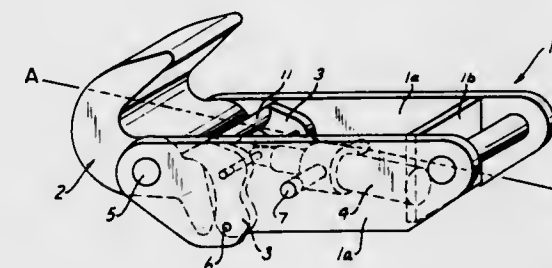


dinal direction so that the longitudinal adjustment of the control elements (and thereby of the suction cups) is accomplished by means of movement of the carriage relative to the lifting device or another carriage. The adjustment of the suction cups in the transverse direction is accomplished by extension or constriction of the transverse link mechanism to increase or decrease the spacing of the control elements.

3,610,674
SLIP HOOK
Hans-Georg Janssen, Bremerhaven, Germany, assignor to Aktiengesellschaft "Weser", Bremen, Germany
Filed Jan. 12, 1970, Ser. No. 2,085
Claims priority, application Germany, Jan. 18, 1969, P 19 02 416.9

U.S. Cl. 294-83

7 Claims



A slip hook has a body portion having a general plane. A hook portion comprises a hooked first arm having a free tip and a second arm extending from the first arm. An arcuately curved abutment face is provided on the second arm. Latch means is provided on the body portion and mounting means mounts the hook portion on the body portion for pivotal movement about a pivot axis between two positions in one of which the abutment face is located within the outline of the body portion and the first arm projects substantially normal to the general plane and in the other of which the abutment face and the curved arm both project beyond the general plane and are located in a common plane defining with the general plane an obtuse angle. Actuating means is provided for moving the latch means between two positions in one of which it displaces the hook portion to the first-mentioned position.

3,610,675
RELEASING DEVICE FOR THE LOCKING MECHANISM IN WIRE LINE CORE DRILLS
Oyvind Jensen, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed June 24, 1969, Ser. No. 835,965
Claims priority, application Sweden, July 2, 1968, 9,109/68
Int. Cl. E21b 31/00; E21c 19/00

U.S. Cl. 294-86.19

2 Claims

This invention relates to a releasing device for disconnecting a locking mechanism for a catching device which serves for connecting the wire with the inner core tube in wire line core drills, the locking mechanism having a gripper head

connected with the wire, the gripper head being provided with a locking shoulder to engage with a latch, a releasing

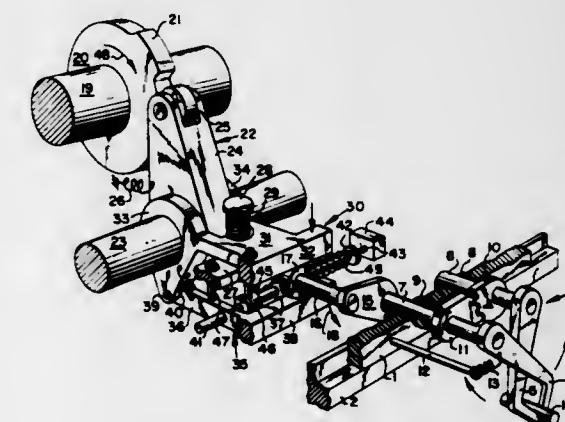


sleeve being provided to release the locking shoulder by applying a predetermined pulling force to the wire.

3,610,676
WORKPIECE TRANSPORT DEVICE
Hans Richner, Basel, Switzerland, assignor to F.B. Hatebur A.G., Basel, Switzerland
Filed Jan. 6, 1969, Ser. No. 789,332
Claims priority, application Netherlands, Jan. 9, 1968, 68.00308
Int. Cl. B66c 1/00

U.S. Cl. 294-116

7 Claims



The specification discloses a workpiece-handling device, preferably in a multistage die press, and comprising a gripper device connected to a drive arrangement by way of a pair of resiliently interconnected levers, so that obstruction of the gripper device effects separation of the levers and tripping of a switch which will require positive resetting before normal operation can be resumed.

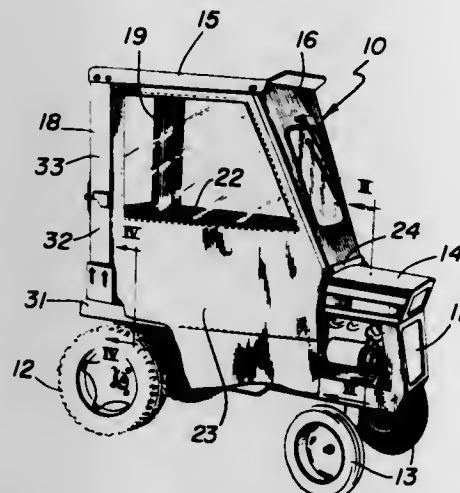
3,610,677
TRACTOR CAB
 Bradford F. Hawley, West Boylston, and Fred J. Curtis, Shrewsbury, both of Mass., assignors to Curtis Tractor Cab Inc., Shrewsbury, Mass.

Filed Aug. 14, 1969, Ser. No. 849,959

Int. Cl. B62d 31/00

U.S. Cl. 296—28 C

9 Claims



This invention relates to a tractor cab and, more particularly, to apparatus for the protection of a tractor operator from the weather.

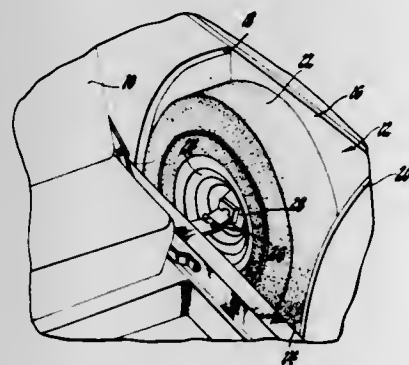
3,610,678
SPARE WHEEL MOUNTING CLAMP
 Donald D. Brokaw, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1970, Ser. No. 20,999

Int. Cl. B62d 43/08

U.S. Cl. 296—37.2

2 Claims



A vehicle includes inner and outer walls vertically positioned in opposed relationship longitudinally of the vehicle to partially define a vertical spare wheel well. A spare wheel is positioned within the well with the wheel axis normal to the walls. A clamp includes first and second hinged clamp members. The first clamp member has an end portion engageable with the inner wall. The second clamp member has an end portion engageable with a jack base positioned on the wheel on the side thereof facing the inner wall. The clamp members move between an initial position and an overcenter clamping position forcing the spare wheel against the outer wall to thereby mount the spare wheel within the well. Stops on the first and second clamp members cooperate to prevent movement of the clamp members past the overcenter clamping position.

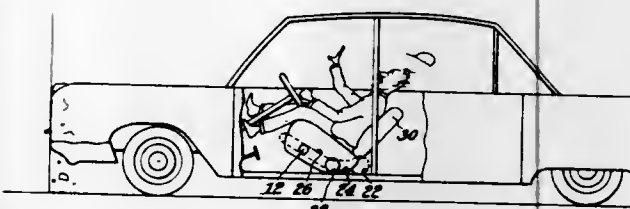
3,610,679
AUTO SAFETY SEAT AND DOOR LOCK
 Louis Amato, 69 Winfield Ave., St. George, Staten Island, N.Y.

Filed May 1, 1970, Ser. No. 33,702

Int. Cl. B60r 21/10

U.S. Cl. 296—65 A

5 Claims



Specially constructed seats in a vehicle move forward and tilt upward upon front or head-on collision to turn occupants away from dashboard and windshield. At the same time, these seats lock the doors closed in place to prevent occupants from being thrown out of the vehicle upon impact.

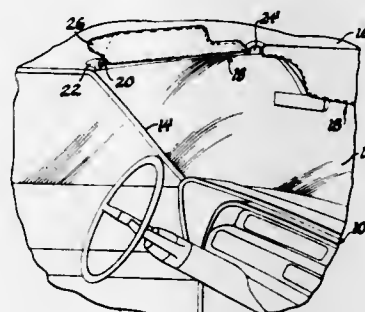
3,610,680
VEHICLE BODY SUNSHADE
 Joseph P. Brady, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 29, 1970, Ser. No. 32,832

Int. Cl. B60j 3/02

U.S. Cl. 296—97 H

3 Claims



A vehicle body sunshade includes a foundation board having a transverse groove adjacent one end portion thereof to provide a reduced thickness portion. The board is covered with padding and an outer covering in a conventional manner. Stitching through the reduced thickness portion of the board breaks the board at the groove. The stitching and padding and covering cooperate to provide a hinge connecting the end portion to the remainder of the sunshade.

3,610,681
AUTOMOTIVE VEHICLE BODY WITH DETACHABLE ROOF SECTION
 Werner Trenkler, Im Taschen, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed May 21, 1969, Ser. No. 826,451

Claims priority, application Germany, May 31, 1968, G 17 55 619.3

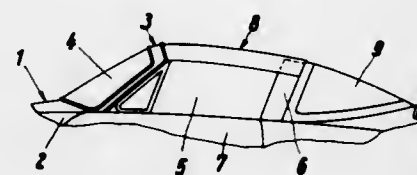
Int. Cl. B60j 7/10

U.S. Cl. 296—137 R

10 Claims

An automotive vehicle body provided with a detachable roof section and means provided at the windshield frame and the forward edge of the detachable roof section associated therewith for releasably securing the roof section along the windshield frame, including tension-locking devices exerting clamping forces effective in a direction substantially parallel to the plane of the roof section. Additionally, the present invention contemplates means provided upon a relatively fixed,

self-supporting roll yoke and the rear portion of the detachable roof section associated therewith for detachably securing the roof section along the roll yoke, which means include



clamping locks exerting a clamping force effective in a direction substantially at right angles to the plane of the roof section.

3,610,682
SLIDING ROOF CONSTRUCTION FOR A VEHICLE
 Theodorus Hendricus Vermeulen, Heemstede, Netherlands, assignor to Vermeulen-Hollandia, Netherlands

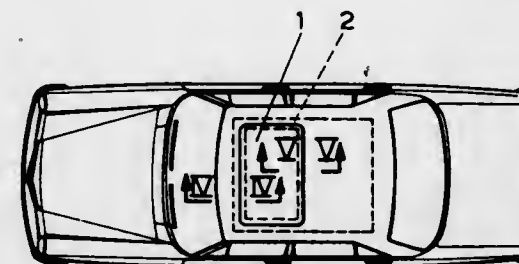
Filed May 21, 1969, Ser. No. 826,617

Claims priority, application Netherlands, May 28, 1968, May 28, 1968, 6807531; 6807532

Int. Cl. B60j 7/10

U.S. Cl. 296—137 E

13 Claims



A construction is disclosed for fitting a sliding panel of a sliding roof in a vehicle, in particular an automobile. An inner frame of the sliding panel is supported in guides carried by the vehicle and the operating mechanism mounted on the inner frame is adjusted, whereupon an upper panel is connected to the inner frame. The inner frame and the upper panel are interconnected along the front side only, while at least one spring carried by the inner frame acts upon the upper panel, near the rear side thereof, and exerts a downward force on the upper panel.

3,610,683
ELECTRICALLY OPERATED SLIDING ROOF FOR A VEHICLE
 Theodorus Hendricus Vermeulen, Heemstede, Netherlands, assignor to Vermeulen-Hollandia N.V., Haarlem, Netherlands

Filed Aug. 29, 1969, Ser. No. 854,109

Claims priority, application Netherlands, Sept. 6, 1968, 6,812,803

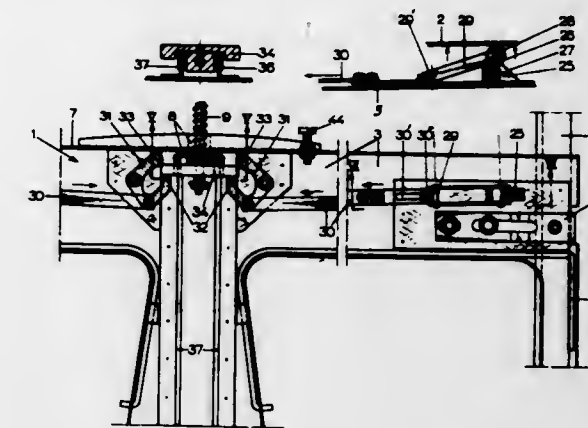
Int. Cl. B60j 7/10

U.S. Cl. 296—137 E

12 Claims

An electrically operated sliding roof arrangement is disclosed for a vehicle and comprises a nut fitted to the sliding panel near the rear end thereof and engages a screw spindle adapted to be driven by an electric motor. This screw spindle is mainly positioned behind the opening in the roof and extends in the direction of displacement of the sliding panel. The screw spindle is displaceable with respect to the roof between a front end position and a rear end position, while a spring exerts a forward pressure on the screw spindle, so that the screw spindle is in its front end position if no external opposing forces are exerted on the sliding panel. If the sliding panel encounters an obstacle during displacement towards its

closed position, the screw spindle moves from its front end position towards its rear end position and operates a switch.



This switch may switch off the electromotor or may reverse the direction of rotation of the electromotor.

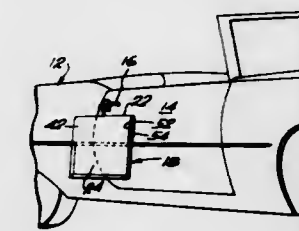
3,610,684
PROTECTIVE COVER
 Dudley Cole Richter, 231 Shore Drive East, Miami, Fla.

Filed June 23, 1969, Ser. No. 835,688

Int. Cl. B60j 11/00

U.S. Cl. 296—152

9 Claims



A protective cover to overlay the surface of an automobile which includes, in combination, a planar pad of flexible cushiony material, such as a small piece of carpet, and hook means to engage the handle of an automobile with the hook means being secured to the carpet pad so that the carpet pad, when hooked to the door handle of a vehicle, to overlay the door area so that when the car is parked in a parking lot and the pad is in position, opening of the door of an adjacent car will not dent or mark the finish of the car with the pad.

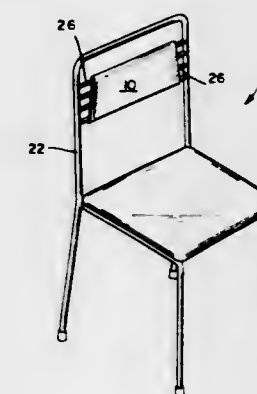
3,610,685
BACKREST PAD
 Ralph B. Lay, Columbus, Ind., assignor to Hamilton Cosco, Inc., Columbus, Ind.

Filed July 1, 1969, Ser. No. 838,187

Int. Cl. A47c 7/42

U.S. Cl. 297—231

1 Claim



A backrest pad for attachment to a chair having a backrest formed from transverse slats. The pad comprises a sheet of

padding and a hardboard panel encapsulated in a sturdy and flexible cover forming an outer envelope for the pad. The cover also extends from the top and bottom edges of the padding and panel to form a pair of flaps on the envelope for embracing a portion of the slats to fasten the pad thereon. The envelope is formed by two sheets of material which are so shaped as to require a minimum number of seams while yielding a sturdy and highly functional pad.

3,610,686

CAST-ALUMINUM STACK CHAIR

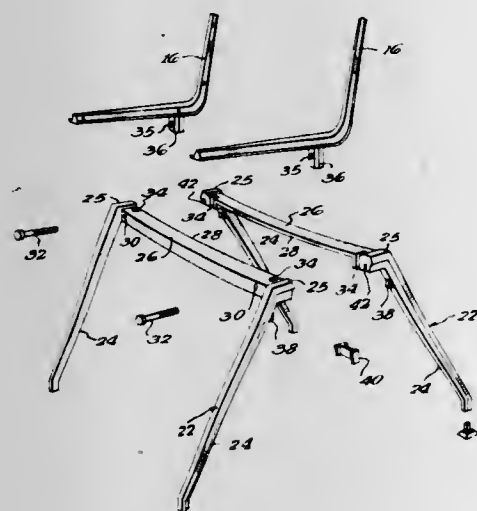
Jerome Carmel Caruso, Arlington Heights, Ill., assignor to Shelby Williams Industries, Inc., Chicago, Ill.

Filed Oct. 10, 1969, Ser. No. 865,449

Int. Cl. A47c 3/04

U.S. Cl. 297-239

22 Claims



A chair capable of being stacked for storage and releasably coupled or ganged in side-by-side relation forming a row of like chairs each having a seat assembly mounted in a cantilever fashion to a base assembly. The base assembly includes a pair of substantially identical leg units; one leg unit provides the two front legs of the chair and the other unit provides the two rear legs of the chair. The legs of each pair are joined at their upper ends to an intermediate horizontal crossmember thereby forming the leg unit; the crossmembers of the two leg units are secured in back-to-back relation so as to form the base assembly. Mating slots are provided in the abutted crossmembers so as to form a mortise joint when the base is assembled. The seat assembly includes two identical L-shaped frame members between which are disposed and to which are secured a backrest and seat. The seat assembly is mounted to the base assembly by means of a tongue or tenon adapted to fit into the mortise joint and which depends from a horizontally oriented section of each L-shaped frame member. The chair is assembled by inserting the tenons of the seat assembly into the mortises provided in the base assembly. A hole can be drilled through the crossmembers and the mortise and tenon joint so that appropriate mechanical fasteners can be inserted for firmly securing the seat assembly to the base assembly. The facing or opposed surfaces of the front and rear legs of each chair have stacking bosses provided thereon each having a horizontally oriented bottom surface. A plastic insert is installed on each leg to cover said bottom surface. Upon stacking of a pair of chairs, the plastic insert of the upper chair will engage upon the shoulder of the lower chair to prevent a metal-to-metal contact between the chairs which could mar or scratch the chairs' finishes. A plurality of chairs may be coupled in side-by-side relation by providing a slot in the under portion of the shoulder of one chair in which can be engaged a crosshead of a connector member which projects outwardly from the side of an adjacent chair.

3,610,687
CHAIR

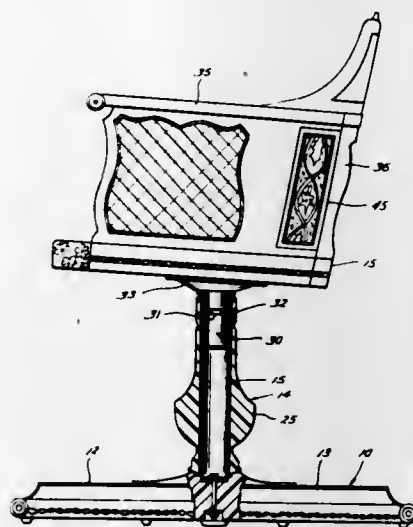
Donald W. Barker, South Boston, Va., assignor to Daystrom Virtue, Inc., Houston, Tex.

Filed June 2, 1969, Ser. No. 830,223

Int. Cl. A47c 1/12; A47b 17/04, 35/00

U.S. Cl. 297-445

1 Claim



This invention relates to furniture, and particularly to furniture constructed of plastic-molded components and arranged in such a manner to provide a decorative appearance similar to wood-constructed furniture.

3,610,688

ENCAPSULATED CUSHION AND SPRING DECK ASSEMBLY FOR SEATING STRUCTURES

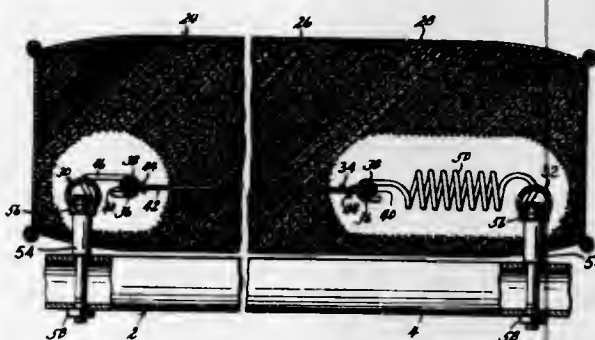
Harmon W. Arnold, Carthage; Lloyd E. Tleman, Carthage, Mo., and Ashley J. Freehan, Farmington Township, Oakland County, Mich., assignors to Flex-O-Lators, Inc., Carthage, Mo.

Filed Aug. 1, 1969, Ser. No. 846,686

Int. Cl. A47c 7/20, 7/14

U.S. Cl. 297-452

2 Claims



An encapsulated cushion and spring deck assembly for use in both automotive and furniture seating, comprising a cushion formed of molded plastic foam or other suitable material having embedded therein a generally planar spring deck yieldable transversely to its plane, and yieldably supported at certain of its edges by elastic means yieldable in the plane of the deck and attached to a rigid marginal deck frame. The deck-supporting means and deck frame may be embedded in the cushion, whereby the assembly may be used as a free, reversible cushion to be supported in a basic seating structure, or may be disposed externally of the cushion, in which case the basic seating structure may serve as the deck frame. The deck frame, if embedded, may also nevertheless be permanently affixed to the basic seating structure if desired. In any case, the encapsulated deck serves as the only required spring support for the cushion.

3,610,689

STRUCTURE COMPOSED ENTIRELY OF SEPARATE SIMILAR INFLATED MEMBERS REMOVABLY SECURED TOGETHER

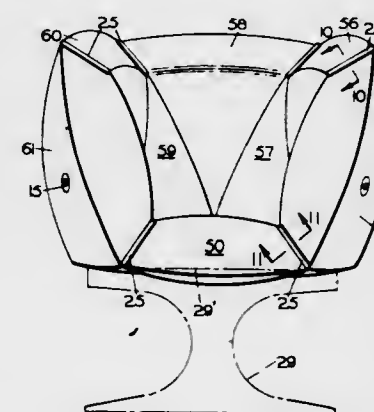
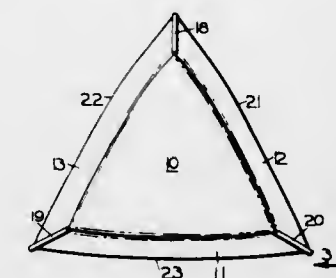
Gary D. Smith, 1624 10th Ave. West, Seattle, Wash.

Filed Oct. 23, 1969, Ser. No. 868,755

Int. Cl. A47c 7/02, 27/08

U.S. Cl. 297-456

3 Claims



The structure specially selected for illustrating this invention comprises a chair in which side, back and seat portions are formed entirely by relatively small, similarly shaped inflated bags of thermoplastic or other suitable pliable material. Each bag has a simple air valve and has front and rear walls, or top and bottom walls, as well as sidewalls, which walls give the bag definite shape and size upon its inflation. Each bag has a short edge seam at each corner where adjacent sidewalls meet, and the inflated bags are secured together in desired formation by means of slotted fastening elements which slide over the adjacent corner edge seams of the bags.

3,610,690

SUPPORT ARRANGEMENT FOR TRUCK BODY

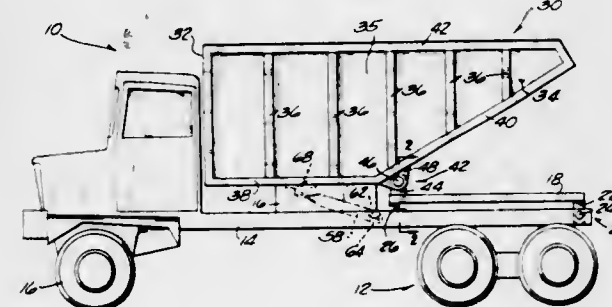
William F. Mengel, 521 Elm St., Wisconsin Rapids, Wis.

Filed May 5, 1969, Ser. No. 821,620

Int. Cl. B60p 1/16

U.S. Cl. 298-17.5

9 Claims



A load carriage is connected to an auxiliary frame for pivotal movement relative thereto about a first axis. The auxiliary frame is connected to the chassis of a vehicle for pivotal movement about a second axis and relative to the chassis. The load carriage engages the chassis for normal transportation and is rotatable by a telescoping ram about

3,610,691

WHEEL-TYPE EXCAVATING MACHINE FOR HARD MATERIALS

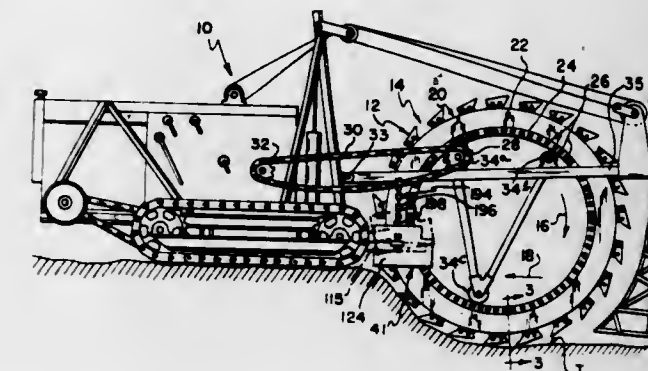
Vincent S. Penote, Shaker Heights, and Melvin K. Rear, Chesterland, both of Ohio, assignors to The Cleveland Trencher Company, Cleveland, Ohio

Filed Dec. 12, 1968, Ser. No. 783,244

Int. Cl. E02f 5/08

U.S. Cl. 299-25

12 Claims



An excavating machine of the type including a chassis and a digging unit mounted for digging movement thereon. The unit comprising an endless wheel-like member and a plurality of peripherally spaced sets of laterally staggered tooth members detachably mounted in angularly oriented relation on the wheel-like member for moving excavated material upwardly and outwardly of the digging unit. The body of each tooth member having leading and trailing ends and inner and outer edges extending therebetween, and including an attachment portion adjacent the leading and trailing ends, and a blade portion made integral therewith adjacent the leading end and outer edge thereof. A plow assembly is mounted for selective directional adjustment on the chassis and includes an angularly oriented winglike scraper construction operative on opposed sides of the digging unit for moving excavated material away from the digging unit.

3,610,692

APPARATUS FOR MAKING BRUSHES

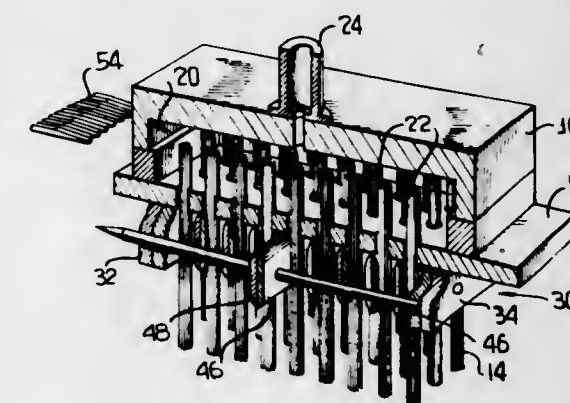
Hendrik R. Van der Molen, Huize "de Kaa," Terwolde, Municipality of Voorst, Netherlands

Continuation-in-part of application Ser. No. 640,692, May 23, 1967, now abandoned. This application Mar. 3, 1970, Ser. No. 16,129

Int. Cl. B25b 1/20

U.S. Cl. 300-11

8 Claims



Apparatus for the continuous manufacture of brushes by the injection molding technique, in which bundles of bristles are individually held in position while the leading ends of

such bundles are embedded in a brush back as the latter is molded and allowed to set. The bristle bundles are passed through a grate comprised of bars and transversely disposed striplike members which define clamping means for fixing the bristle bundles during the molding operation.

3,610,693

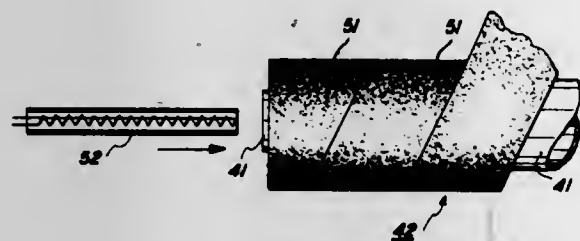
METHOD OF MAKING A CYLINDRICAL BRUSH
Thomas W. Solarek, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,282

Int. Cl. A46d 9/00

U.S. Cl. 300—21

4 Claims



A woven cut pile brush whose pile tufts are formed from glass fibers is particularly well suited for cleaning toner particles from reusable electrostatic imaging surfaces in xerographic processes. In addition, the backing yarn of the woven pile fabric from which the brush is made, is thermoplastic. A cylindrical brush is formed by helically winding a strip of the pile fabric on a mandrel, and heating the backing yarn to fuse the abutting edges of adjacent convolutions of the fabric together and to lock the pile tufts in place in the backing fabric.

3,610,694

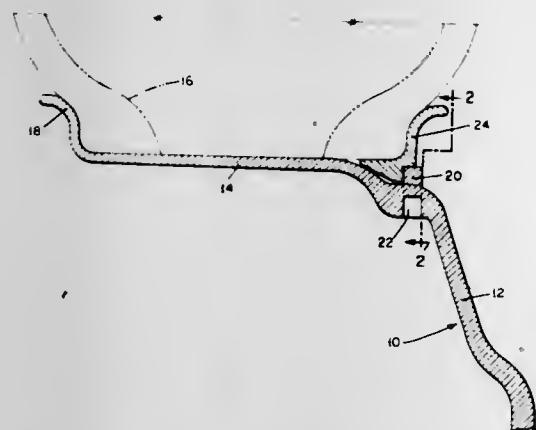
LANCED GUTTER FOR AN INTEGRAL WHEEL
John N. Bradley, Grosse Pointe Woods, Mich., assignor to The Budd Company, Philadelphia, Pa.

Filed Nov. 24, 1969, Ser. No. 879,227

Int. Cl. B60b 3/00, 25/14

U.S. Cl. 301—63 D

3 Claims



In an integral wheel formed by means such as a single stamping or spin forming, a gutter for retaining a side ring formed by lancing segments of the disk structure outwardly to provide a series of projections to cooperate with a side ring and retain the side ring and tire on the rim of the integral wheel.

3,610,695

**ELECTROMAGNETIC-INDUCTION-TYPE
NONCONTACT CONVEYING APPARATUS**
Yukio Yabuta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 18, 1970, Ser. No. 12,219

Claims priority, application Japan, Feb. 19, 1969, 44/12,317

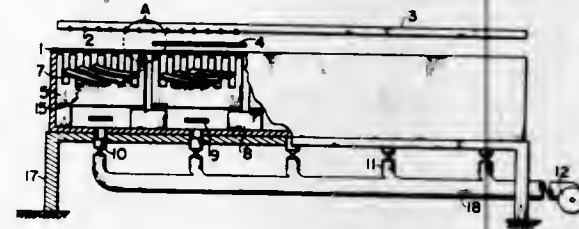
Int. Cl. B65g 53/04

U.S. Cl. 302—29

3 Claims

Paired groups of electromagnetic coils define parallel magnetic paths portions of which are selectively controlled by the

object being conveyed through individual detector means



above each coil group and the conveyed object which in turn rests on air film.

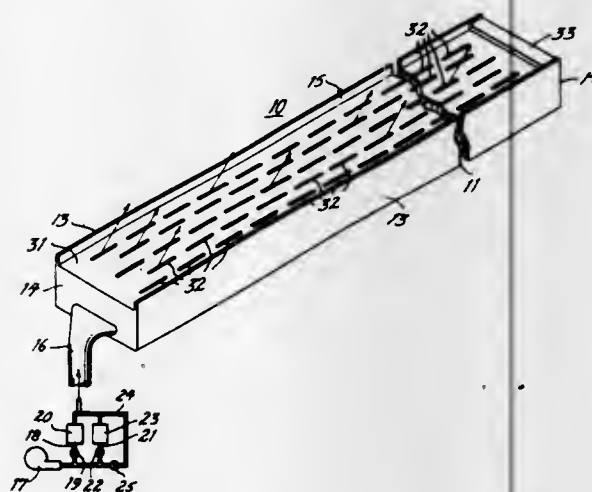
3,610,696

FLUID-OPERATED CONVEYOR
Garland L. Fulton, 1428 Woodford Drive, Wayne, Pa.
Continuation-in-part of application Ser. No. 822,174, May 6, 1969, now abandoned. This application May 14, 1969, Ser. No. 824,651

Int. Cl. B65g 53/04

U.S. Cl. 302—31

12 Claims



A gaseous-fluid-operated conveyor is provided for advancing fluidizable material, and nonfluidizable material including packages, and for mixing fluent materials, with controlled temperatures if desired. The conveyor includes a channel with side guide walls and with a bottom wall or floor having two components, a deck plate of metal or plastic with spaced and staggered longitudinal slots supported by a direction-imparting supporting grill structure such as a metal honeycomb inclined from the horizontal. A wind box below the supporting structure has gaseous fluid such as air, heated or cooled as desired, supplied thereto to supply the impelling force for the materials to be conveyed.

3,610,697

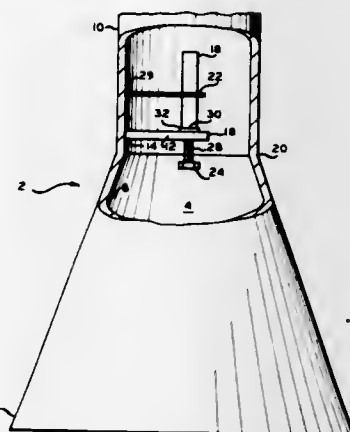
VACUUM NOZZLE
Roy T. Cone, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 8, 1970, Ser. No. 1,436

Int. Cl. B65g 53/40

U.S. Cl. 302—58

5 Claims



A vibratable material strip installed within a vacuum nozzle to prevent bridging of material within the nozzle and break up material bridging adjacent the nozzle.

3,610,698

COMPRESSED AIR BRAKE SYSTEMS FOR VEHICLES
Jean Gachot, 179 Avenue de la Division Leclerc, Enghien, and Fernand Perales, 87, Rue A. G. Belin, Argenteuil, (Val d'Aise) both of France

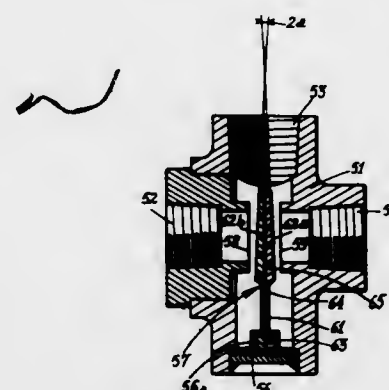
Filed May 9, 1969, Ser. No. 823,296

Claims priority, application France, May 15, 1968, Dec. 19, 1968, 151,804; 179,151

Int. Cl. B60t 15/00, 11/32, 13/42

U.S. Cl. 303—2

5 Claims



A compressed-air brake system for vehicles and especially road vehicles comprising two air circuits terminating in two of the ports of a double check valve whilst the third port serves to supply a common terminal pipe which extends to a receiving unit. The system is characterized in that the double check valve comprises a flap pivotally mounted between the two first ports aforesaid and capable of selectively obturating one of said ports under the action of compressed-air supplied through the other port.

Preferably the flap comprises a small flexible plate having one extremity which is inserted in the valve body.

3,610,699

BRAKE CONTROL MEANS AND SYSTEMS FOR DRAWN VEHICLES EFFECTING SYNCHRONOUS COACTION WITH THE BRAKING SYSTEM OF AN ASSOCIATED DRAFT VEHICLE

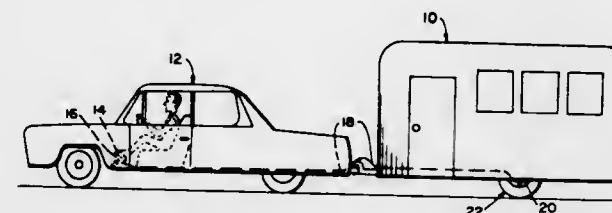
Joseph Ladoniczki, and Clara Ladoniczki, both of 4901 Shetland Ave., Tampa, Fla.

Filed Dec. 16, 1968, Ser. No. 784,031

Int. Cl. B60t 13/74, 7/04

U.S. Cl. 303—7

4 Claims



A safe, dependable brake control system for drawn vehicles such as boat trailers is provided in which a variable resistance control device is mounted on the foot operated brake pedal of the draft vehicle. The variable resistance device synchronizes the action of the drawn vehicle brakes with those of the draft vehicle by responding to foot pressure on the draft vehicle brake pedal to proportionately control the flow of electric current to electromagnetic brake actuators on each wheel of the drawn vehicle. A selector switch readily adapts the variable resistance control device and the system in which it is incorporated to either two wheel or four wheel braking systems on the drawn vehicle.

3,610,700

VEHICLE BRAKE SYSTEM

Siegfried Beck, Stuttgart-Moehringen, and Manfred Siebold, Boeblingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

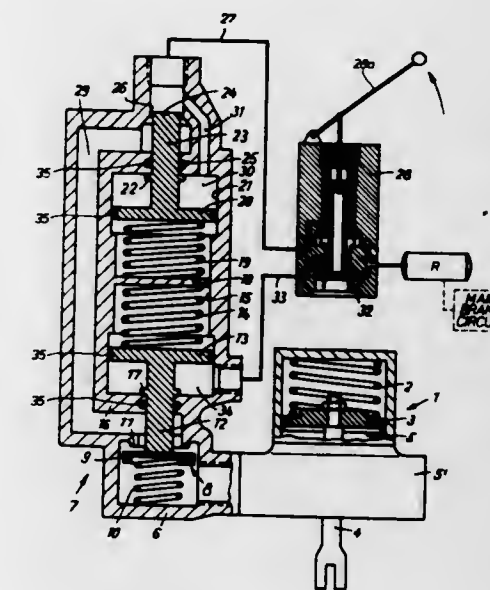
Filed Apr. 17, 1970, Ser. No. 29,450

Claims priority, application Germany, May 13, 1969, P 19 24 339.1

Int. Cl. B60t 13/42, 15/00

U.S. Cl. 303—9

12 Claims



A backup unit for actuating the brakes of a vehicle in the event of failure of the fluid-pressure-operated main vehicle braking unit. The backup unit has a first cylinder in which a piston is fluidtightly shiftable to a position actuating the vehicle brakes. A spring at one side of the piston urges the same to the aforementioned position. A first passage connects a fluid-pressure reservoir which supplies the main brake system with the first cylinder at the other side of the piston so that in response to the fluid pressure the piston is urged away from the aforementioned position. A check valve normally permits fluid flow only in a direction into the first cylinder. A second cylinder is provided in which a control member is shiftable to and away from a control position in which it displaces the check valve in order to permit the flow of fluid out of the first cylinder. A biasing spring urges the control member from one side thereof to the control position, and a second passage communicates with the second cylinder at the other side of the control member and with the reservoir so that the control member is urged by fluid pressure away from the control position. A control unit is manually operable by a vehicle operator and includes a pair of valves respectively provided in the first and second passages and actuatable by the operator to vent the first and second passages so that, in response to the resulting pressure drop, the control member will move to control position and thereby open the check valve so that fluid can flow out of the first cylinder, permitting the biasing spring thereof to urge the piston to its brake-operating position.

3,610,701

SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 31, 1969, Ser. No. 873,014

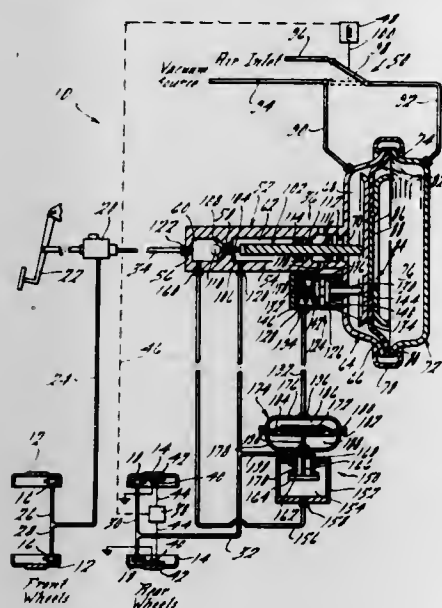
Int. Cl. B60t 8/08, 17/18

U.S. Cl. 303—21 AF

17 Claims

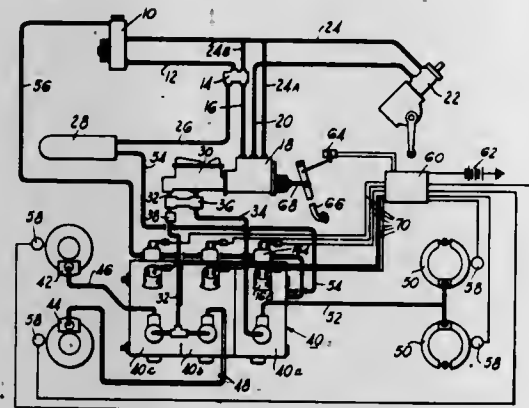
A skid control system adapted for operative association with the fluid actuated braking system of an automotive or similar type vehicle; the system including a modulating valve assembly for selectively controlling the flow or supply of hydraulic brake actuating fluid between the master brake cylinder of the vehicle and one or more of the wheel cylinders thereof; the modulating valve assembly including a piston member movable between positions opening and closing a valve element which is located in a hydraulic circuit communicating hydraulic fluid to the wheel cylinders, an actuator chamber having an actuating assembly movable

therein in response to differential pressure conditions and adapted to effect selective actuation of the piston member, and a failure detection and safety valve mechanism which



functions to assure that hydraulic fluid is communicated to the wheel cylinders in the event of a failure in the associated system communicating differential pressure conditions to the actuator chamber.

3,610,702
ADAPTIVE BRAKING SYSTEM WITH HYDRAULICALLY POWERED MODULATOR
Stanley I. MacDuff, South Bend, Ind., assignor to The Bendix Corporation
Filed June 10, 1969, Ser. No. 831,949
Int. Cl. B60t 8/04, 13/14
U.S. Cl. 303-21 F 10 Claims

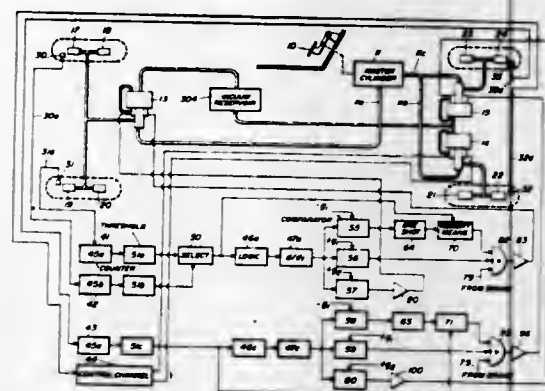


A vehicle antiskid braking system comprising a booster actuated master cylinder connected to the wheel brakes through a hydraulically actuated brake pressure modulator. The modulator is controlled by a solenoid valve which is responsive to vehicle wheel deceleration. Actuation of the solenoid valve causes the modulator to block communication between the master cylinder and brakes and to reduce the pressure at the brakes to allow the wheel to reaccelerate.

3,610,703
MEANS FOR DELAYING EFFECTIVE CONTROL OF VEHICLE BRAKING BY AN ADAPTIVE BRAKING SYSTEM UNTIL CERTAIN WHEEL VELOCITY CONDITIONS HAVE BEEN SATISFIED
Michael Slavin, and Ralph W. Carp, both of Baltimore, Md., assignors to The Bendix Corporation
Division of Ser. No. 712,672, Mar. 13, 1968, Pat. No. 3,494,671.
Filed Oct. 20, 1969, Ser. No. 867,839
Int. Cl. B60t 8/04
U.S. Cl. 303-21 P 13 Claims

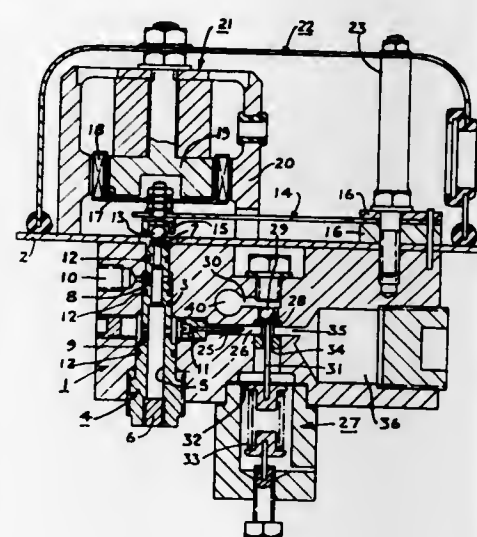
Means for delaying effective control of vehicle braking by the control channel of an adaptive braking system includes a

memory which is activated when a controlling vehicle wheel after being manually braked attains a certain deceleration. At that time a first signal proportional to a percentage of instantaneous wheel speed is memorized and thereafter continually compared to a second signal proportional to actual wheel



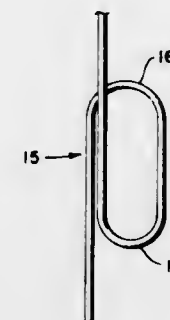
speed. If within a predetermined time period the second signal drops to the level of the first signal an output is generated which latches open a gate to allow the control channel error signal to proceed to a brake pressure modulator to thereby control vehicle braking.

3,610,704
FLUID PRESSURE CONTROL VALVES AND BRAKING APPARATUS
Charles F. B. Shattock; Oswald G. Shanks; Sydney A. Stevens; Boguslaw W. Wojtecki, London, England, and Robert J. Dixon, Palos Verdes Peninsula, Calif., assignors to Westinghouse Brake and Signal Company Ltd., London, England
Division of Ser. No. 600,799, Dec. 12, 1966, Pat. No. 3,503,656.
Filed Sept. 25, 1969, Ser. No. 871,022
Claims priority, application Great Britain, Dec. 21, 1965, Apr. 29, 1966, May 18, 1966, May 27, 1966, July 8, 1966, July 15, 1966, July 20, 1966, 54,066/1965; 18817/1966; 22018/1966; 23,776/1966; 30,718/1966; 31,868/1966; 32,617/1966
Int. Cl. B60t 8/22
U.S. Cl. 303-22 29 Claims



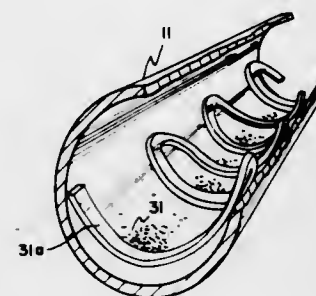
A fluid pressure control valve having a restricted flow inlet, an outlet and an exhaust port provided with a valve seat. A throttling element is movable towards and away from the valve seat to vary the throttling effect and thereby vary the pressure at the outlet port in proportion to the amount of throttling. A cantilever-mounted leaf-spring has its free end operatively engaging the throttle element. Loading means, operable in response to a predetermined signal, controls movement of the free end of the leaf-spring and hence movement of the throttling element. The exhaust port is carried by a member which is movable towards and away from the throttling element to effect adjustment to the minimum throttling effected by the throttling element.

3,610,705
METHOD OF LIMITING THE LOGITUDINAL SETTLING OF SOLIDS IN INCLINED SLURRY PIPELINES
Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed May 26, 1969, Ser. No. 827,584
Int. Cl. B65g 53/34
U.S. Cl. 302-64 1 Claim



A method of laying a pipeline along sloped terrain to prevent downhill slumping in a shutdown slurry pipeline wherein the path of the pipeline is deviated from its normal prescribed course, into a predetermined geometric pattern and then returned to the normal path.

3,610,706
METHOD FOR PREVENTING SLUMPING OF A SETTLED BED IN INCLINED PIPES
Frank L. Meyer, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed May 27, 1969, Ser. No. 828,266
Int. Cl. B65g 53/04
U.S. Cl. 302-66 1 Claim

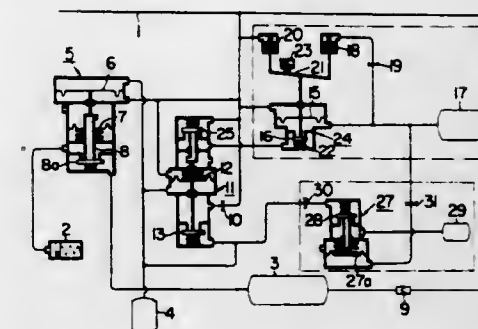


Method for preventing downhill slumping in a shutdown slurry pipeline. A helical rib or spiral fin is positioned in the pipeline in those sections of the line where inclination exceeds some predetermined critical angle to prevent the formation of a line plug by the solid phase of the slurry material sliding or slumping toward locations in the pipeline that are susceptible to plugging.

3,610,707
BRAKE CONTROL SYSTEM
Kyoze Kondo, Tokyo; Morio Uchimura, Tokyo; Kenichi Kojima, Omiya, and Yoshio Nomura, Tokyo, all of Japan, assignors to Nippon Kokuyo Tetsudo, Tokyo-to, Japan
Filed Jan. 30, 1970, Ser. No. 7,034
Claims priority, application Japan, Apr. 9, 1969, Apr. 9, 1969, 44/26841; 44/26842
Int. Cl. B60t 15/50
U.S. Cl. 303-70 4 Claims

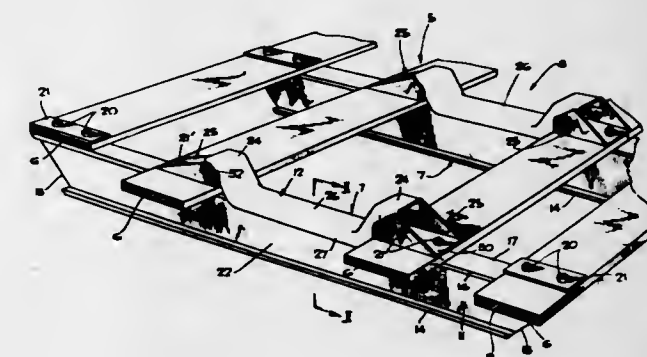
A pneumatic brake control system of the so-called three-pressure type installed in each of several cars in a train as a unit system of a continuous brake system and including a first expansion air reservoir and a constant-pressure air reservoir, the unit system further having a second expansion air reservoir connected by a path to the constant-pressure air reser-

voir and a valve operable by pressurized air from the first expansion air reservoir to open the path thereby to permit air



within the constant-pressure air reservoir to enter into the second expansion air reservoir.

3,610,708
GROUSER BAR ASSEMBLY
Kurt H. Muecke, Calgary, Alberta, Canada, assignor to Flex-trac Nodwell Ltd., Alberta, Canada
Filed June 17, 1969, Ser. No. 833,977
Claims priority, application Canada, June 24, 1968, 023,357
Int. Cl. B62d 55/24
U.S. Cl. 305-35 EB 19 Claims



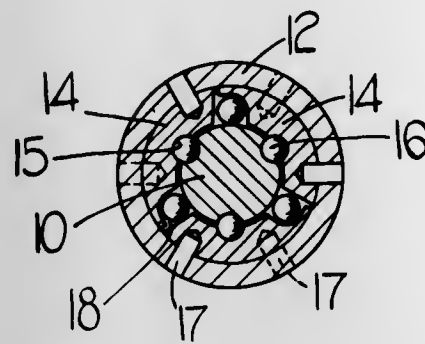
An improved grouser bar assembly for a tracked vehicle having a belt-type track. The improved grouser bar assembly comprising a grouser bar member for engaging the ground surface and a load distributing member having end supports adapted for securement to the track over the grouser bar member and an intermediate portion extending between the end supports and adapted to be supported by the latter in free spatial relationship above the intermediate portion of the grouser bar member such as to form a wheel engaging surface whereby the vehicle load is transmitted to the grouser bar member through the end supports and hence distributed along the width of the track.

3,610,709
BALL SPLINES
Ernest Leonard Allen, Dunstable, England, assignor to Rotax Limited, London, England
Filed Sept. 30, 1969, Ser. No. 862,315
Claims priority, application Great Britain, Oct. 10, 1968, 48028/68
Int. Cl. F16c 19/00, 29/00
U.S. Cl. 308-6 C 6 Claims

A ball spline having an inner grooved member and an outer member comprising a casing which has an inner cylindrical surface. The outer member also including a plurality of segmental pieces which are located against the inner cylindrical surface of the casing, each segmental piece having a groove formed therein and which can be aligned with the grooves in the inner member to define registering grooves for rows of balls. Each segmental piece also being recessed at one of its axially extending edges to define a return passage

for the balls. The segmental pieces being of an arcuate dimension such that a small gap exists between adjacent

A balanced seal ring structure is provided having seal ring segments engaging the shell and having orifices through



pieces whereby the pieces can be aligned prior to being secured to the casing.

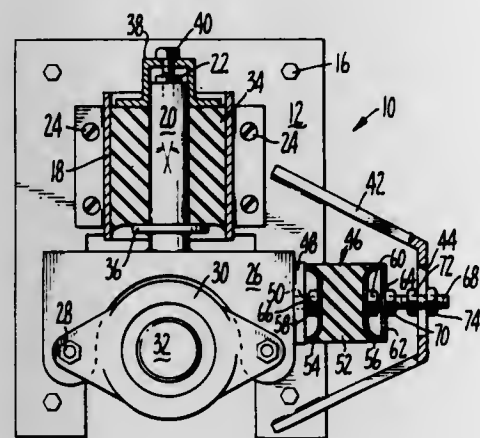
3,610,710

ADJUSTABLE SIDE MEMBER FOR PENDULUM MOUNTED BEARING STRUCTURE

John E. Dandi, 211 West 16th St., Chico, Calif.
Filed Dec. 22, 1969, Ser. No. 886,852
Int. Cl. F16c 27/00

U.S. Cl. 308—32

3 Claims



A pendulum mounted bearing structure is provided with an adjustable side member. The side member adjusts both horizontally and vertically relative to the bearing structure. A resilient member within the side member absorbs vibration.

3,610,711

TILTING PAD BEARING AND SEAL

George M. Mierley, Sr., Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 15, 1970, Ser. No. 28,606
Int. Cl. F16c 17/06, 33/78

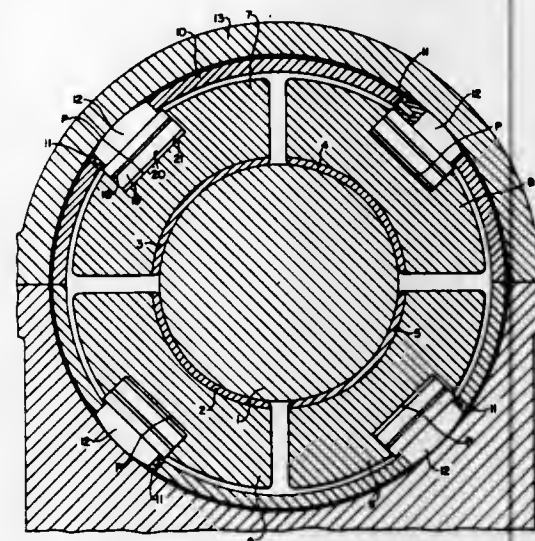
U.S. Cl. 308—73

6 Claims

The invention relates to a tilting pad bearing and seal for use in the housing of a turbine shaft or in other similar apparatus. The tilting pad bearing comprises a plurality of cylindrical pads or segments disposed in a housing in pivotable abutment with a key having a convex outer surface in the form of a cylindrical segment which makes line contact with the inner surface of the housing parallel to the axis of said shaft so as to compensate for irregularities in a radial plane.

The key has also a convex surface in the form of a cylindrical segment radially inwardly of the outer surface and which makes line contact with a flat surface on the bearing segment in a direction at right angles to the line of contact with the housing.

The key projects through an opening in a bearing shell located close to the inner surface of the housing into direct contact with the inner surface of the housing.



which high-pressure fluid is conducted to the low-pressure zone to balance the forces applied to the sides of the ring segments to make them free floating.

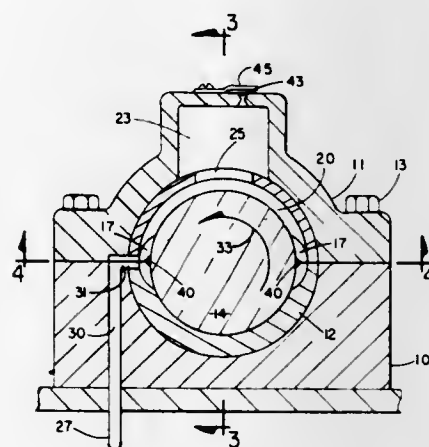
3,610,712

BEARING STRUCTURE WITH RESERVE OIL SUPPLY

James W. Endress, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,018
Int. Cl. F16c 33/04

U.S. Cl. 308—124

2 Claims



A bearing structure for a high-speed shaft carrying a substantial load. Opposite sides of the bearing bore are provided with radial enlargements connected by a relief passage formed in the upper half of the bore. An oil reservoir is mounted above the bore and has communication with the passage. The bearing is supplied with oil under pressure maintaining a high level in the reservoir, providing a supply of oil in the event of oil pressure failure.

3,610,713

WATER LUBRICATED THRUST BEARING

James Glenn Satterthwaite, 5001 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 River Drive, Morehead City, N.C.

Filed Oct. 8, 1969, Ser. No. 864,660

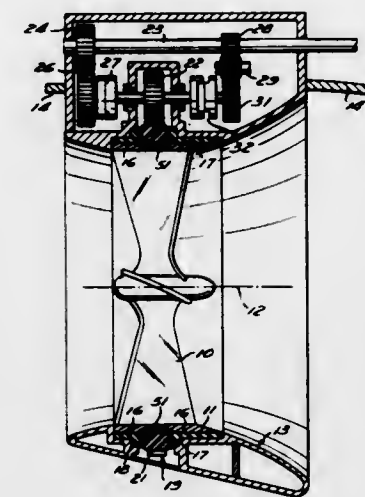
Int. Cl. F16c 17/14; B63h 5/06

U.S. Cl. 308—160

17 Claims

A water lubricated rubber thrust bearing is disclosed in which the rubber bearing surface is formed with a plurality of substantially flat bearing surfaces which are positioned adjacent to a mating flat annular metal bearing surface. The rubber bearing surfaces are separated by radially extending water grooves shaped to facilitate the creation of a lubricating film between the rubber and metal surfaces. The rubber

surfaces are arranged so that the pressure per unit area is substantially uniform when the bearing is loaded and the effective area of the bearing is at least equal to about one-half of the area of the associated metal bearing surface.



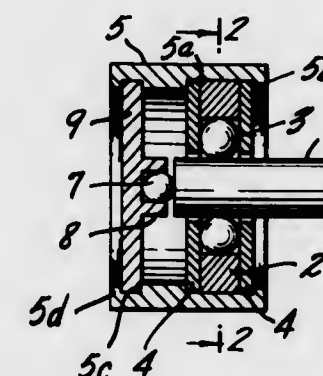
3,610,714

BALL BEARING

Albert M. De Gaeta, 133 84th St., Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 759,560, Sept. 13, 1968. This application Jan. 2, 1970, Ser. No. 180
Int. Cl. F16c 33/00, 19/04

U.S. Cl. 308—193

14 Claims



3,610,715

DEHUMIDIFICATION DOOR PANEL

Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-land Service, Inc., Elizabeth, N.J.

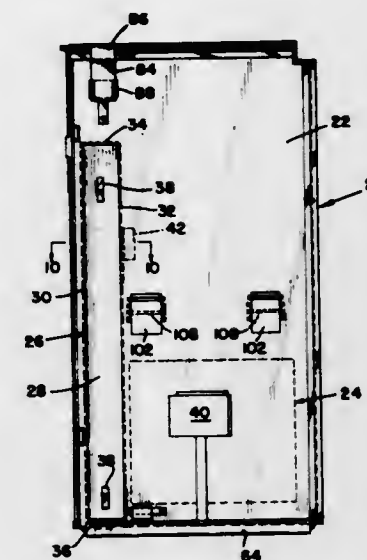
Filed Dec. 1, 1969, Ser. No. 881,248

Int. Cl. A24f 25/00

U.S. Cl. 312—31.1

7 Claims

A panel, having means for supporting a dehumidification unit thereon, is releasably secured within a freight container adjacent one of the rear doors. The panel substantially corresponds in size to a container rear door and includes sealing means around the periphery thereof to define a closed com-



locking jack to maintain the panel in a fixed position within the container.

3,610,716

ISOLATOR CRIB BANK

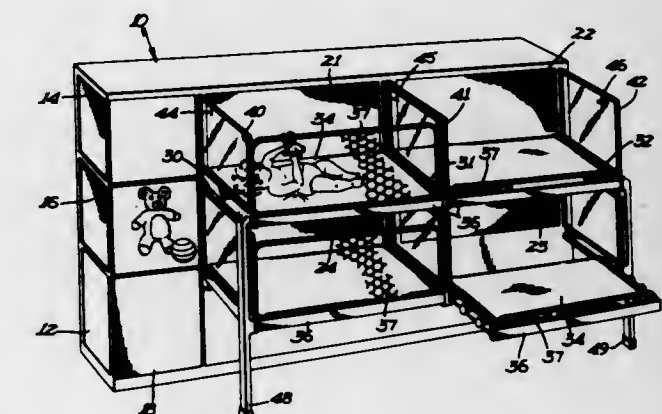
Steven H. Weinberg, St. Paul, and Wayne F. Hohn, Minneapolis, both of Minn., assignors to Sci-Med, Inc., Minneapolis, Minn.

Filed Sept. 22, 1969, Ser. No. 859,845

Int. Cl. A47b 77/08; A47d 7/00; A61b 19/00

U.S. Cl. 312—236

1 Claim



The invention relates to an isolator crib bank. A filtering unit or module is provided for supplying a filtered, uniform flow of air through a group of cribs. The group of cribs is constructed with a frame structure and other apparatus which is attached to the filtering unit.

3,610,717

PANELBOARD ENCLOSURE

Robert G. Van Nostrand, 311 Northmoor Drive, Ballwin, Mo.
Filed Feb. 20, 1969, Ser. No. 800,931

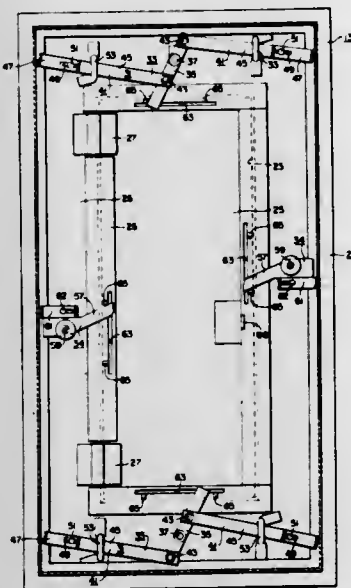
Int. Cl. H01r 39/38

U.S. Cl. 312—242

10 Claims

A panelboard enclosure comprises a receptacle and a trim panel structure with improved means for removably securing

the trim panel structure to the receptacle. The securing



means is accessible only when the openable cover of the trim panel structure is open.

3,610,718

ASH RECEPTACLE FOR AUTOMOBILES

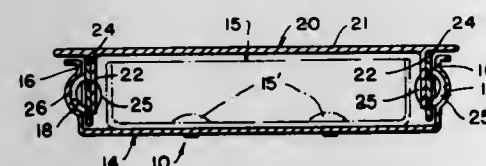
Henry Deboer, Lowell, Mich., assignor to F. L. Jacobs Co., Detroit, Mich.

Filed July 14, 1969, Ser. No. 841,472

Int. Cl. A47b 67/02; A47i 5/08; B60n 3/08

U.S. Cl. 312-246

1 Claim



The structure includes a fixed, stamped or drawn sheet metal ash box or receptacle member, and a die-cast cover member slidable thereon which is in general of inverted channellike section, each of whose depending flanges carries on its outer side a rigid nonmetallic frictional guide and skid plate. The plate is riveted or otherwise fixedly applied to the cover flange, and is preferably formed of a thermosetting plastic composition. Each plate carries a pair of horizontally aligned, integrally die-formed skid lugs of quasi-circular convex outline. Such lugs project outwardly of the cover flanges and skid plates to mate slidably in longitudinal guideway grooves in the fixed ash box sides.

3,610,719

DRAWERS FOR FURNITURE

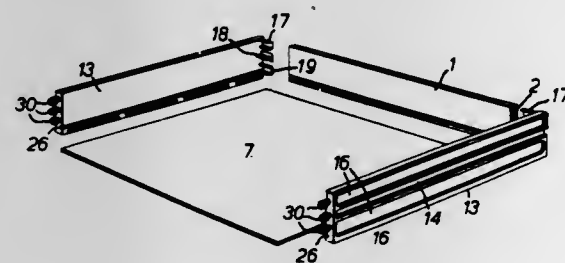
Leslie W. L. Alston, 9 Old Market Place, Sudbury, Suffolk, England

Filed Apr. 11, 1969, Ser. No. 815,399

Int. Cl. A47b 47/00, 88/00

U.S. Cl. 312-263

1 Claim



This invention relates to drawers for furniture and is more particularly concerned with a three-sided drawer frame of which the back and side members are made of plastics

material, the front member of the drawer being selectively made of wood, chipboard or the like material. The three-sided drawer frame construction enables the drawer front to be attached later and to match, in material, color and style, the remainder of the piece of furniture.

3,610,720

DRAWER CONSTRUCTION

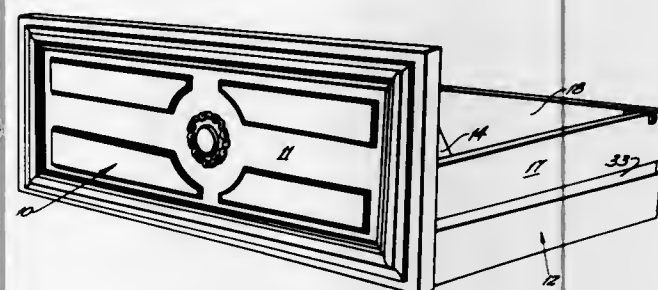
Max E. Hosmer, Charlevoix, Mich., assignor to Freedman Aircraft Engineering Corp., Charlevoix, Mich.

Filed Aug. 27, 1969, Ser. No. 853,404

Int. Cl. A47b 88/00

U.S. Cl. 312-330

9 Claims



A drawer for an item of furniture. The drawer has a plastic molded subassembly of bottom wall, opposed sidewalls and rear wall. This subassembly is made from a self-skinning foam having longitudinal reinforcement in the form of ribs of increased skin thickness extending throughout the foamed core.

3,610,721

MAGNETIC HOLOGRAMS

Edward Abramson, Wilmington, Del.; John C. Caris, Dallas, Tex.; Philip A. Flournoy, Wilmington, Del., and Monroe S. Sadler, Kennett Square, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

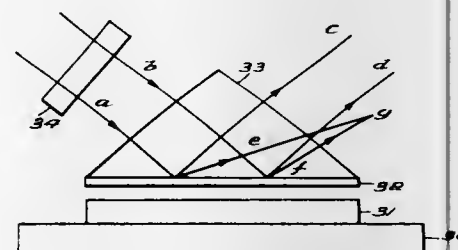
Continuation-in-part of application Ser. No. 561,811, June 30, 1966, now abandoned. This application Oct. 29, 1969,

Ser. No. 872,341

Int. Cl. G02b 27/00; G11i 5/00

U.S. Cl. 350-3.5

7 Claims



An off-axis magnetic holographic record and its preparation are described. The record may be prepared, for example, by splitting the coherent beam of radiation, e.g., a pulsed laser beam, into two parts, one part impinging directly onto a magnetic recording member containing a magnetic material of low Curie point, e.g., ferromagnetic chromium oxide, the other part striking first a three-dimensional scene to be reproduced and being reflected therefrom onto the same magnetic recording member, the phase of the two parts of the laser beam being altered by the different treatments they have undergone and producing essentially an interference pattern of heat in the magnetic recording member under magnetic conditions which change the heat pattern to a pattern of magnetization. The pattern can be read out and reassembled into a three-dimensional photograph, for example, by means of a polarized light.

3,610,722

ARRANGEMENT FOR RECORDING AND REPRODUCING HOLOGRAMS OF MOVING SUBJECTS
Fritz Bestenreiner, Munich; Heinrich Nassenstein, Leverkusen, and Gunther Langner, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 20, 1967, Ser. No. 669,235

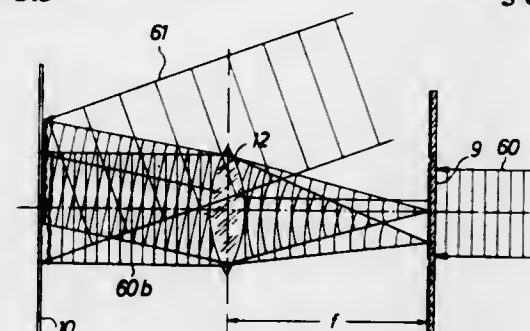
Claims priority, application Germany, Sept. 21, 1966, A

53567

Int. Cl. G02b 27/22

U.S. Cl. 350-3.5

5 Claims



Holograms of motion picture frames are recorded on a photosensitive carrier. When the carrier is moved with the holograms through coherent light, real images of the subject are formed which are reproduced for viewing.

3,610,723

HOLOGRAPHIC SYSTEM FOR STORING INFORMATION LYING IN A PLANE

Erich Spitz, Paris, France, assignor to Thomson-CSF

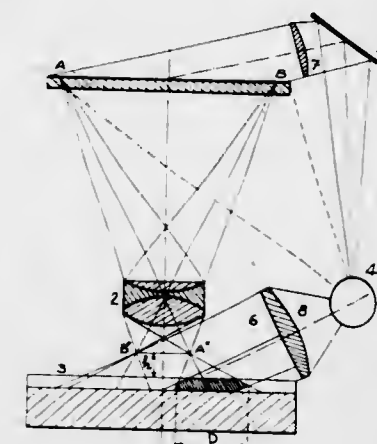
Filed Mar. 14, 1969, Ser. No. 807,377

Claims priority, application France, Mar. 20, 1968, 144,508

Int. Cl. G02b 27/22

U.S. Cl. 350-3.5

8 Claims



The invention relates to systems for optically storing and retrieving information. The information is stored on a photographic support by means of two interfering beams of monochromatic light supplied from a common luminous source. One of said beams is optically modulated and a lens system is interposed on its path for focusing at least one bundle of rays in a plane lying above the substrate.

3,610,724

PHOTOGRAPHIC DODGING APPARATUS

William F. Frizzell, Woodbridge, Va., assignor to Potomac Research, Incorporated, Baileys Crossroads, Va.

Filed June 19, 1969, Ser. No. 834,634

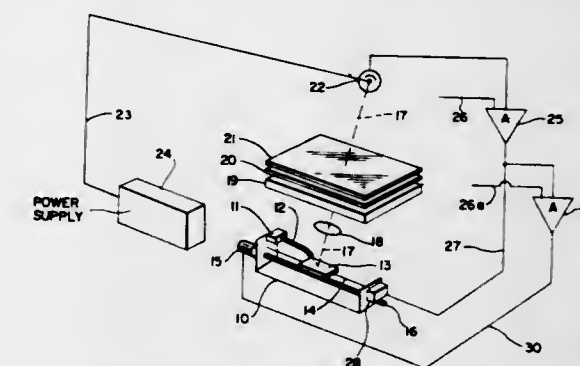
Int. Cl. G03b 27/76

U.S. Cl. 355-80

7 Claims

A light beam of constant intensity is directed against a mirror galvanometer and the reflected through a photographic

negative or positive against photosensitive printing material to expose the printing material. A photomultiplier is positioned in the path of the light to which the printing material is exposed. In response to the sensed light the galvanometer is actuated to move the mirror at a speed responsive to variation of density in the negative or positive so that the light beam will continuously scan across an elemental area of the



negative or positive but at a varying speed. After each scan of the light beam in one direction a mechanical structure moves incrementally the galvanometer and light source in a direction perpendicular to the scanning movement of the light beam so that the next scan will be adjacent the previous scan. In this manner all elemental areas of the negative or positive will be exposed.

3,610,725

FLEXIBLE GAS LENS WAVEGUIDE

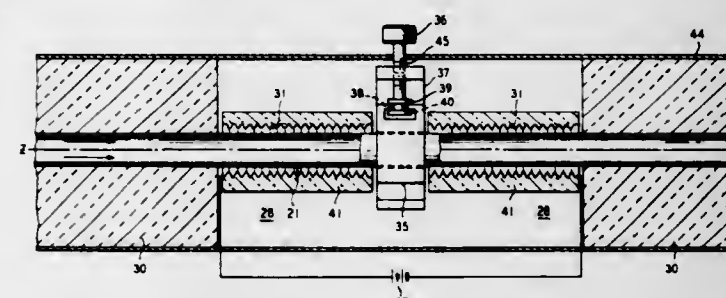
Peter Kaiser, Middletown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 26, 1970, Ser. No. 14,330

Int. Cl. G02b 3/12, 5/14

U.S. Cl. 350-96 WG

7 Claims



In an optical waveguiding system using thermal gas lenses, realignment of an undulating optical beam with the optical axis of the guide is achieved by bending the lenses along two mutually perpendicular directions. Bending can be done manually or automatically using, for example, slow speed motors activated by beam position sensors.

3,610,726

FIBER OPTICS PHOTOPROBE

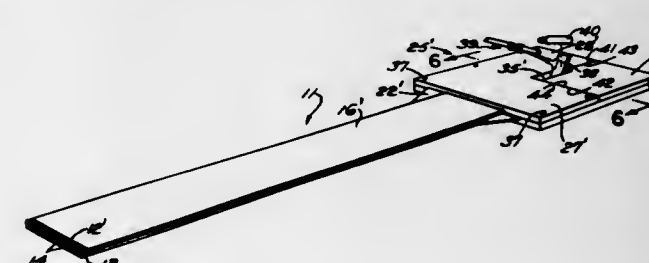
Sulo A. Aijala, Attleboro, Mass., assignor to Intricate Machine & Engineering Inc.

Filed Mar. 12, 1970, Ser. No. 18,841

Int. Cl. G02b 5/16

U.S. Cl. 350-96 B

5 Claims

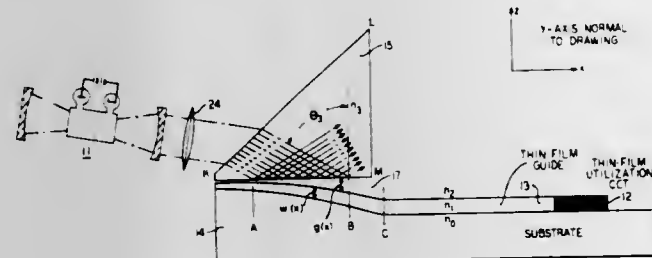


A device for examining by photographic means opposite closely spaced walls or surfaces, the device consisting of two

back-to-back units of identical construction, each having a head and a flexible tongue with the heads so shaped as to interfit when in opposed relation to align the tongues and position the viewing means in opposite directions.

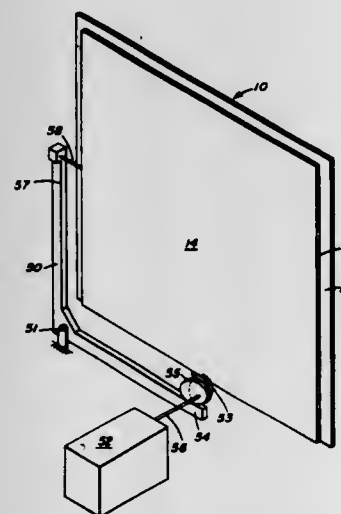
3,610,727
COUPLING ARRANGEMENT FOR THIN-FILM OPTICAL DEVICES
Reinhard Ulrich, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 9, 1969, Ser. No. 865,051
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 13 Claims



A coupling arrangement for thin-film optical devices is disclosed which couples a laser beam into or out of a thin-film light guide with high efficiency. The coupling between the thin-film guide and its bulk substrate is provided by an auxiliary film of low refractive index whose thickness is smoothly increased throughout the coupling region so that, for input coupling, the competing output coupling effect is minimized. In a preferred embodiment, the thickness of the thin-film guide itself is also increased beyond the coupling region. This permits then the thickness of the auxiliary coupling film to be tapered off, eventually to zero thickness, in the region of increased guide thickness.

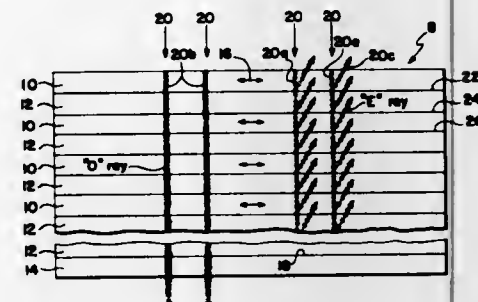
3,610,728
SCREEN ORBITING MECHANISM
Ronald R. Firth, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 7, 1969, Ser. No. 813,936
Int. Cl. G03b 21/56
U.S. Cl. 350—120 9 Claims



A device for orbiting a rear projection screen in which the combination of the screen and the orbiting mechanism eliminates substantially all screen scintillations. The screen comprises a fixed and a movable plate and the device comprises an arrangement of moment arms that are pivotally mounted for movement by an eccentric. The arms are arranged 90° out of phase and each arm is located relative to a respective adjacent side of the screen. Each of the arms contacts a respective side of the movable plate of the screen by

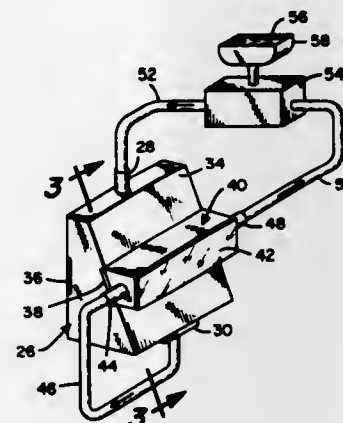
means of a flexible driving wire so that the movable plate is moved in an orbital path relative to the fixed plate.

3,610,729
MULTILAYERED LIGHT POLARIZER
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 716,775, Mar. 28, 1968, now abandoned. This application June 18, 1969, Ser. No. 834,339
Int. Cl. G02b 27/28
U.S. Cl. 350—157 18 Claims



This disclosure is directed to a highly efficient linear polarizer which is effective to separate normally incident light thereon into two oppositely polarized components, one of which is transmitted and another component which is reflected.

3,610,730
FLUIDIC PRISM
Gerald K. Goldberg, Philadelphia, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 23, 1969, Ser. No. 868,830
Int. Cl. G02f 3/00
U.S. Cl. 350—157 14 Claims



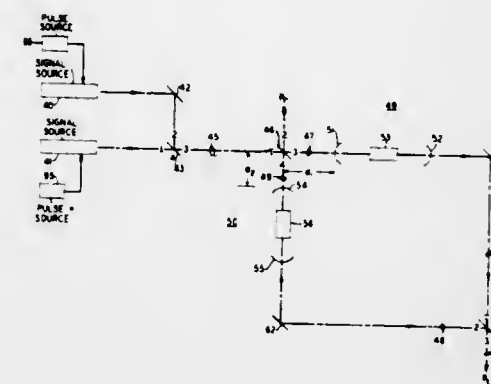
A fluidic prism having a colloidal suspension, that exhibits streaming birefringence, flowing through first and second hollow cells in different directions such that the components of a light beam polarized in different directions and incident upon the prism are deflected along different paths. When the suspension flows through the cells in substantially mutually orthogonal directions, the deflection paths and the path of the incident light beam are coplanar. When the suspension flows through the cells in other than substantially mutually orthogonal directions, the deflection paths and the path of the incident light beam are in mutually orthogonal planes.

3,610,731
BISTABLE OPTICAL CIRCUIT USING SATURABLE ABSORBER WITHIN A RESONANT CAVITY
Harold Seidel, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed May 19, 1969, Ser. No. 825,836
Int. Cl. G02f 1/28; H03k 23/12
U.S. Cl. 350—160 6 Claims

The hysteresis effect produced by a saturable absorber disposed within a resonant cavity is utilized in a bistable opti-

cal circuit. Use in an optical memory and optical data-

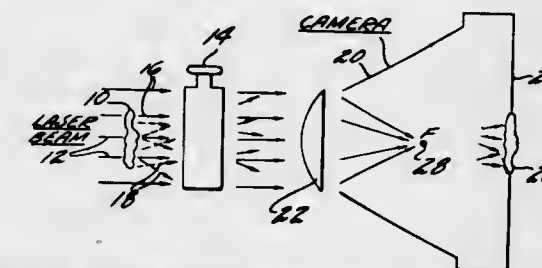
lowers do not change direction throughout the entire range thereby eliminating "jump" of the image.



3,610,734
TEMPERATURE-CONTROLLED ORIFICE OR SLIT FOR OPTICAL, ION-OPTICAL AND ELECTRON-OPTICAL INSTRUMENTS
Hermann Wollnik, 129, Eichendorffring, Gießen, and Gottfried Munzenberg, 18 Weidigstrasse, Gießen-Wieseck, both of Germany
Filed Aug. 12, 1969, Ser. No. 849,310
Claims priority, application Germany, Aug. 14, 1968, P 17 97 091.1
Int. Cl. G02f 1/30
U.S. Cl. 350—269 12 Claims

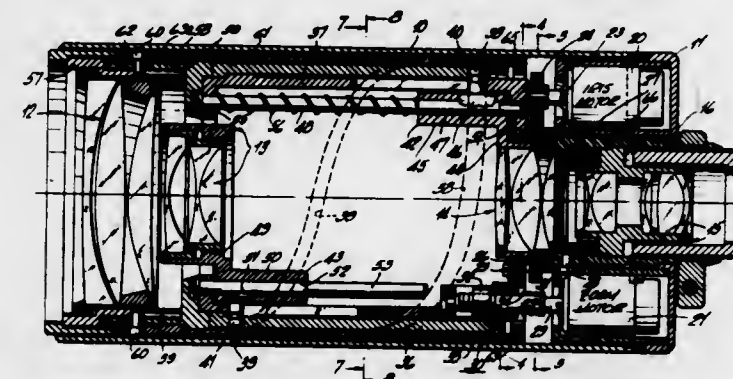
processing system is contemplated.

3,610,732
NONLINEAR IMAGE CONTRAST AMPLIFIER SYSTEM
Michael E. Mack, and Edmond B. Treacy, Vernon, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 28, 1969, Ser. No. 871,856
Int. Cl. G02b 27/38
U.S. Cl. 350—162 SF 7 Claims

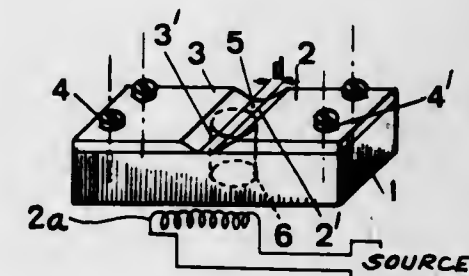


Stimulated thermal light-scattering techniques such as the amplification of a weak beam interfering with a strong beam in absorbing media produce amplification of the contrast of weak optical images. Parallel light such as from a mode-locked laser illuminates the object to be imaged such as a transparent object. The object is placed in front of a cell filled with a liquid solution exhibiting a strong nonlinear scattering. The nonaxial waves will be amplified in the cell at the expense of the strong axial beam.

3,610,733
VARIFOCAL LENS SYSTEM AND ACTUATING MECHANISM
Frank G. Back, 55 Sea Cliff Ave., Glen Cove, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,360
Int. Cl. G02b 7/04; 15/14
U.S. Cl. 350—186 8 Claims



The movable elements of a completely color-corrected varifocal lens system are carried upon elongated rods within a combined lens support and actuating mechanism whereby problems of internal reflections and vignetting are eliminated while reducing the overall dimensions of the assembly. The shape of the lens-controlling cams is such that the cam fol-



A temperature-controlled orifice or slit for optical, ion-optical and electron-optical instruments, comprising one or more pairs of slit-defining platelet-shaped jaws which in conjunction with support means common to said jaws serve to vary the width of an orifice or slit formed by the inner edges of the jaws. In the simplest embodiment the ends of said jaws remote from their slit-defining edges are firmly secured to said support means which consist of a material having a coefficient of thermal expansion that substantially differs from that of the material of which said jaws are made, the temperature of said jaws and of said support means being controllable by heating means common to both.

3,610,735
WINDOW FOR SPECTROMETERS
Andre J. Girard, Chatillon-sous-Bagneux, France, assignor to Office Nationale D'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.), Chatillon, S/Bagneux, France
Filed Sept. 24, 1969, Ser. No. 860,738
Claims priority, application France, Oct. 1, 1968, 168279
Int. Cl. G01J 3/04; G01J 3/32
U.S. Cl. 350—271 3 Claims



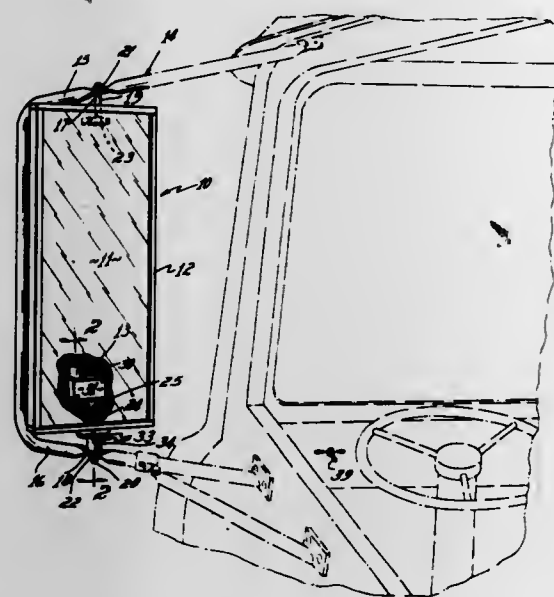
A radiation gate or window for a spectrometer, in which two such gates are relatively rotatable at the input and output ends of a ray path traversing a dispersive system, has a multiplicity of zones of different conveying characteristics (transparent and opaque or reflective) forming a plurality of identical sets which are mutually transposed, by an angle representing an aliquot fraction of a circle, with reference to a common center. In one embodiment the zones are bounded by identical, angularly offset spirals originating at the center of rotation, the spacing between adjacent spirals diminishing progressively with increasing distance from the center.

3,610,736

POWER-DRIVEN REAR VIEW MIRROR

Eugene W. Bateman, Cincinnati, Ohio, assignor to K-D Lamp Division of Concord Control, Inc., Cincinnati, Ohio
 Filed Oct. 8, 1969, Ser. No. 864,729
 Int. Cl. B60r 1/06; G02b 5/08
 U.S. Cl. 350—289

1 Claim



A remotely operable power-driven rear view mirror for vehicles of simple and reliable construction having a drive mechanism protectively contained entirely within the mirror casing and including a reversible electric power motor. The motor housing is secured to the inside of the mirror casing, while its motor armature is joined to a fixed shaft. The motor, when energized, carries the motor housing and the mirror to rotate about the armature and the shaft. A slip clutch is utilized to couple the armature and shaft and provides free manual adjustability and protection for the motor.

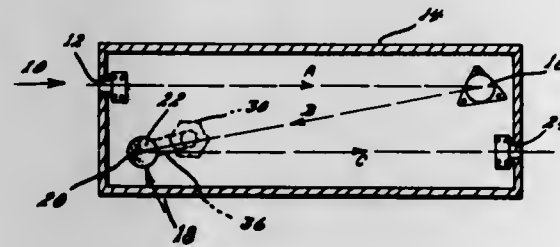
3,610,737

PRECISION RADIATION ATTENUATOR

Max Bender, and Anthony J. LaRocca, both of Ann Arbor, Mich., assignors to The United States of America as represented by the Secretary of the Air Force
 Filed June 24, 1970, Ser. No. 49,405
 Int. Cl. G02b 5/10

U.S. Cl. 350—294

1 Claim



Attenuation of electromagnetic radiation from the ultraviolet through the infrared region of the electromagnetic spectrum is achieved in an extremely precise manner through the use of a pair of reflecting spheres of precise roundness, arranged so that radiation polarization effects are small. One of the spheres is rotated to further reduce stray radiation, and has a portion which is blackened to further reduce the radiation.

3,610,738

ADJUSTABLE MAGNIFYING MIRROR

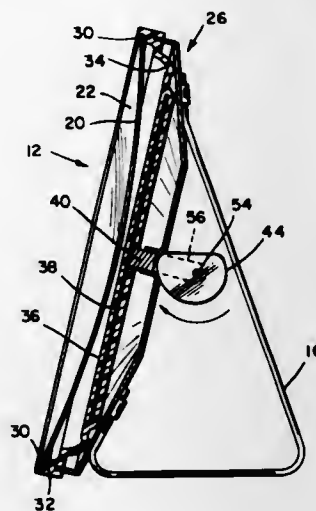
Carl E. Bochmann, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
 Filed Sept. 29, 1969, Ser. No. 861,717
 Int. Cl. G02b 5/10

U.S. Cl. 350—295

6 Claims

A mirror formed by a circular-shaped sheet of flexible material, and having a reflective coating on one side, is held

at its periphery in a resilient diaphragm which provides an air pocket between itself and the rear side of the mirror. The diaphragm and mirror assembly are mounted on a rigid dish-shaped plate, which is also circular shaped and attached at its periphery to the rear side of said diaphragm. A hole is provided at the center of the plate, and a stem attached to the center of the rear face of the diaphragm extends through the



hole and has an eccentric cam pivotally mounted to its free end. The rear face of the plate serves as a cam following surface, and as the cam is turned the diaphragm is drawn rearwardly thereby decreasing the air pressure in the pocket between the diaphragm and mirror, and causing the flexible mirror to deflect in a concave manner. Such concave flexion of the mirror gives it a magnifying effect which may be increased or decreased with the positioning of the cam.

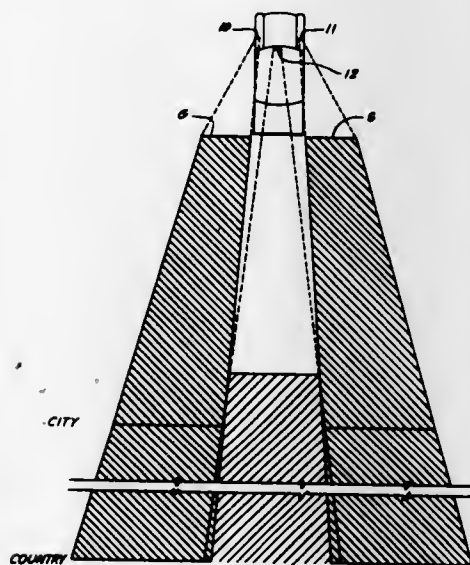
3,610,739

REAR VISION MIRROR SYSTEM

Carl G. Seashore, 7341 Ash, Prairie Village, Kans.
 Filed Jan. 19, 1970, Ser. No. 3,597
 Int. Cl. G02b 5/08

U.S. Cl. 350—307

4 Claims



A rear vision mirror system for passenger cars and/or road vehicles has an interior plane mirror and a fender mirror mounted on each of the forward fenders of the passenger car utilizing the system. The fender mounted mirrors are convex and have a preselected radius of curvature, vertical and horizontal dimensions in conjunction with a mounting technique relative to the passenger car size so that the inside vertical edge of each convex mirror reflects a field of view having an inner boundary terminating in a vertical plane that is coextensive with the rearmost visible side of the respective passenger car. To insure this inner boundary, the mirrors are preset for each vehicle and movable only in vertical plane and within the median fore and aft field of view. The interior plane mirror is to be focused, by markings, with respect to

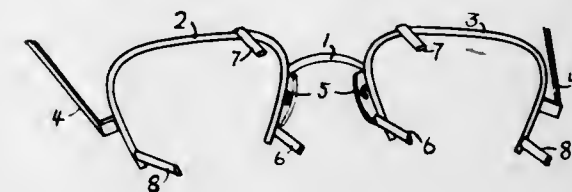
3,610,742

OPHTHALMIC MOUNTING FOR TENSIONALLY SECURING LENSES THERETO

Louis J. Page, 191-21 Hillside Ave., Hollis, N.Y.
 Filed Oct. 20, 1969, Ser. No. 867,445
 Int. Cl. G02c 1/04

U.S. Cl. 351—106

9 Claims



An ophthalmic mounting is provided for tensionally securing ophthalmic lenses thereto by means which comprises tension spring members having at least three bendable bracket members extending therefrom and directed across the edge portion of the lens and bent over to engage a portion of the surface thereof and arranged thereon to tensionally engage opposite side portions of the lens, one of the side portions of the rim member having at least two bracket members which are arranged at points above and below the longest horizontal diameter of the lens and inwardly toward the opposite side portion thereof, the opposite side portion of the rim member having a bracket member arranged to rotationally engage a notch provided in that side portion of the lens, so that the last mentioned bracket member tensionally wedges the opposite side portion of the lens between the first mentioned bracket members thereon by virtue of the spring action of the rim member, whereby the lens is tensionally and releasably secured thereto and held against rock and wobble relative to the rim member and can be slidably removed therefrom by the wearer of the mounting.

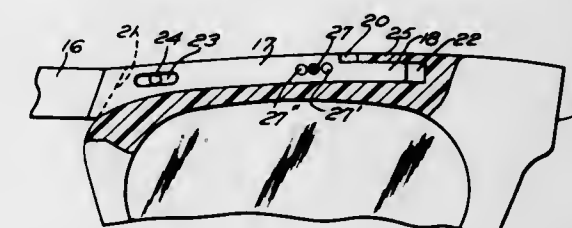
3,610,743

ADJUSTABLE INTERPUPILLARY DISTANCE

Frank W. Luddblom, Warwick, R.I., assignor to Welsh Manufacturing Company
 Filed Mar. 12, 1970, Ser. No. 18,842
 Int. Cl. G02c 1/04

U.S. Cl. 351—107

1 Claim



An adjustable interpupillary distance spectacle frame in which the lens frame units may be moved toward and away from each other to selectively determine the interpupillary distance. Adjustment is achieved by providing a bridge member and a pair of brow portions, the brow portions interfitting into the ends of the bridge member and supporting lenses, means being provided on each of the brow portions to maintain the proper position between the brow portions and the bridge member.

3,610,744

DEVICE FOR ENGAGING FILM WITH SOUND SPROCKET WHEEL OF A CARTRIDGE TYPE TALKIE CAMERA OR PROJECTOR

Tokusaburo Kakuchi, and Hideaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
 Filed May 27, 1969, Ser. No. 828,194

Claims priority, application Japan, June 3, 1968, 43/46368
 Int. Cl. G03b 31/02

U.S. Cl. 352—27

2 Claims

A device for engaging a film with a sound sprocket wheel of a cartridge-type talkie camera or projector in which a pair

the rear window of the passenger car and has a field of view that intersects with the available field of view of left and right convex fender mounted mirrors thereby eliminating blind areas either directly behind the host passenger car or in adjacent traffic lanes.

3,610,740

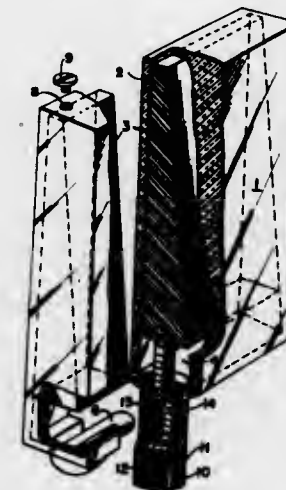
VARIABLE LIGHT FILTERS

Luis R. Aparicio, Avda. Jose Antonio 57, Madrid 13, Spain
 Continuation-in-part of application Ser. No. 410,049, Nov. 5, 1964, now abandoned. This application Oct. 7, 1968, Ser. No. 765,287

Int. Cl. G02b 5/24

U.S. Cl. 350—312

9 Claims



A variable light filter comprises a fluid filled cavity having opposed transparent walls with a prismatic member movable in the cavity for varying the thickness of a light modifying fluid interposed in the optical path between the transparent walls, the control for the prismatic member including an element movable in the cavity without causing any displacement of the total volume of said fluid.

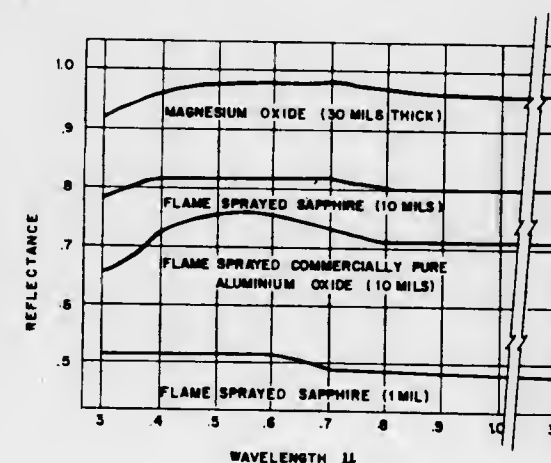
3,610,741

FLAME SPRAYING ALUMINUM OXIDE TO MAKE REFLECTIVE COATINGS

John M. Davies, Cochituate, and Walter Zagleyboyl, Norfolk, both of Mass., assignors to The United States of America as represented by the Secretary of the Army
 Filed Jan. 8, 1969, Ser. No. 840,546
 Int. Cl. B05b 7/20

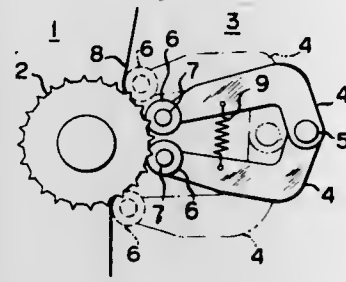
U.S. Cl. 350—320

2 Claims



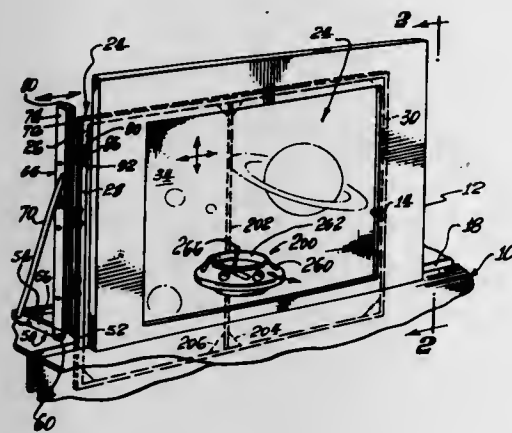
A method of making a hard, durable, diffuse reflecting surface of coating comprising flame spraying a synthetic sapphire (a pure monocrystal of aluminum oxide) on a surface, said coating having a reflectance that deviates less than 4 percent over the wavelength range of from 0.3 to 3.0 microns.

of roller levers each carrying a roller are pivotally attached to a film cartridge so that the rollers serve to securely engage the film with the sound sprocket wheel without causing any slacking when the film cartridge is inserted into the camera



or projector. The pair of levers are first closed, but gradually spaced apart from each other as the cartridge is inserted causing the rollers to press the film against the sprocket wheel. The film may be engaged with a considerable portion of the periphery of the sprocket wheel without slacking.

3,610,745
VISUAL EFFECTS COMBINING MOTION PICTURES AND THREE DIMENSIONAL OBJECTS
James Mark Wilson, 4919 Regal Oak Drive, Encino, Calif.
Filed Aug. 1, 1969, Ser. No. 846,899
Int. Cl. G03b 21/32
U.S. Cl. 352-4 D 6 Claims

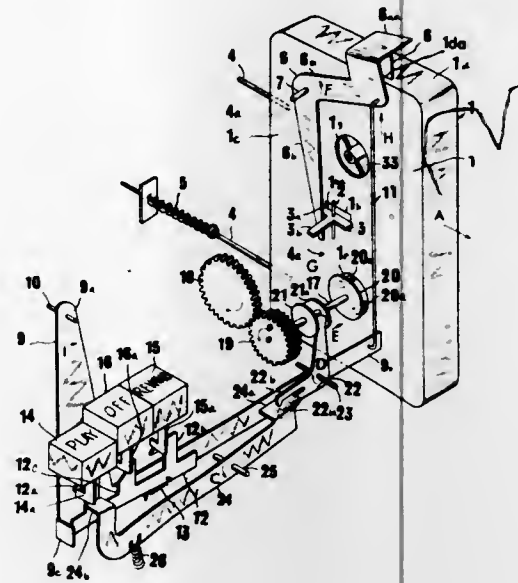


Motion pictures are projected onto a screen. A physical three-dimensional object is held in a position in front of the screen where it is visible to a viewing audience along with the motion pictures. The object is supported or suspended in such a way that its support is not visible to the viewing audience. In the preferred form of the invention the three-dimensional object is supported from the screen itself by way of a support between the object and the screen and the entire screen is movable vertically and horizontally. When the screen and the object are moved the picture stays in the same position. As a result, extraordinary effects can be produced wherein the physical object appears to be moving relative to the background picture projected on the screen.

3,610,746
MOVIE PROJECTOR HAVING THE DEVICE FOR AUTOMATICALLY MOVING CARTRIDGE
Tokusaburo Kakiuchi, and Hideoaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Richoh, Tokyo, Japan
Filed July 15, 1969, Ser. No. 841,753
Claims priority, application Japan, July 17, 1968, 43/50349
Int. Cl. G03b 23/02
U.S. Cl. 352-72 3 Claims

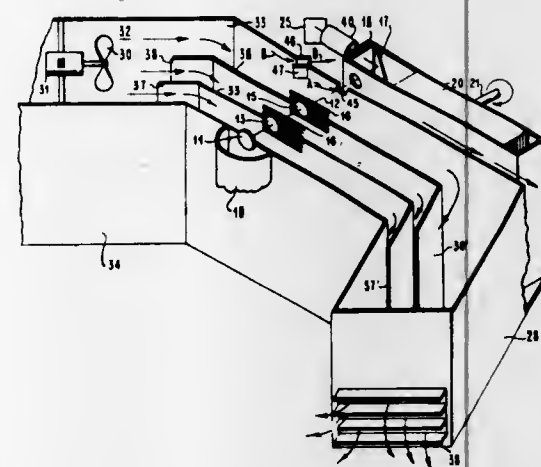
Automatic retraction of a cartridge in a movie film projector having an indicator rod that rotates a release rod upon termination of projection whereby another rod is moved to

allow the cartridge to move from a projection position to a rewind position. Pushbuttons are provided to actuate control



linkage for rewinding the film and for stopping the film movement where desired.

3,610,747
CARTRIDGE-LOADED FILM STRIP PROJECTOR, PARTICULARLY FOR NARROW FILM
John Bickel, Ossining, N.Y., assignor to Retention Communications Systems, Inc., New York, N.Y.
Filed Aug. 22, 1968, Ser. No. 754,601
Int. Cl. G03b 21/16
U.S. Cl. 353-61 4 Claims

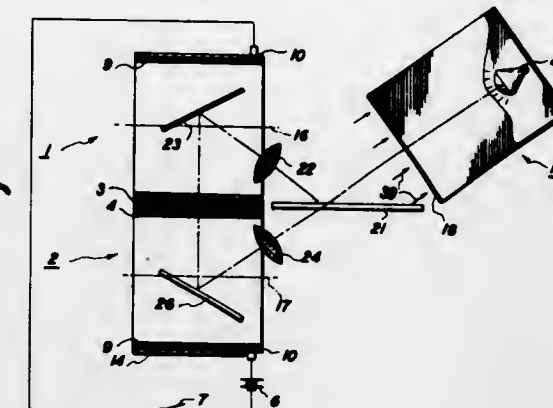


To provide for cooling of narrow film, for example of the 8 mm. type, while the film is stationary so that it can be used in a film strip projector, a combination of wire mesh and heat resistant optical elements, e.g. glass, in heat transfer relation with cooling baffles are arranged in the light path, and baffles directing a stream of air from a fan or blower past the optical elements and the wire mesh, to provide for attenuation of heat radiant energy in the path of the light.

3,610,748
PHOTOELECTROPHORETIC IMAGING SYSTEM
Kallis H. Mannik, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 25, 1969, Ser. No. 836,420
Int. Cl. G03g 15/00
U.S. Cl. 355-3 8 Claims

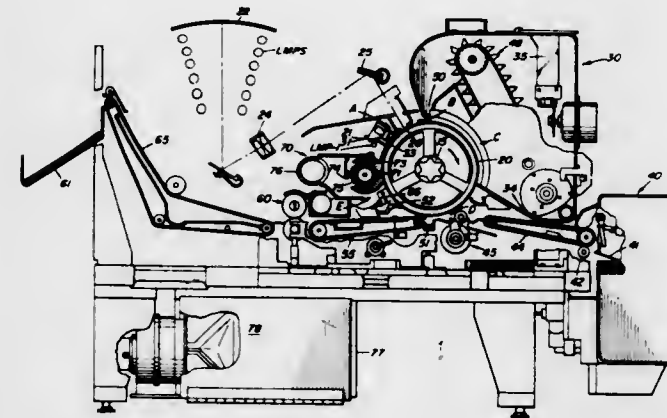
A photoelectrophoretic imaging system is disclosed wherein the injecting and blocking electrodes are both trans-

parent. Both electrodes are drum structures and the light image used to activate the photoelectrophoretic ink is projected onto the wafers or photosensitive plates in registry onto the work surface.



jected to the ink from two sides through each transparent electrode.

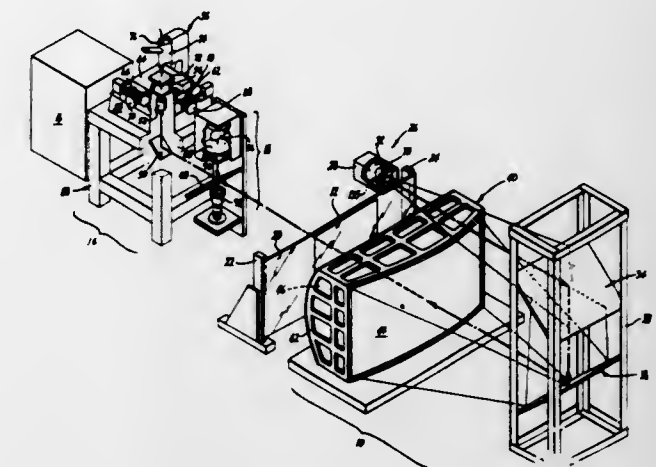
3,610,749
IMAGING SYSTEM
Robert W. Madrid, Macedon, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,049
Int. Cl. B03c 7/08
U.S. Cl. 355-17 22 Claims



A process and device for removing grit and other foreign matter from the toner in an electrostatic developing apparatus, where its presence may harm the electrostatic layer or cause other deleterious effects. The electrostatic surface is charged in the usual manner in one area, which is to record the picture, and another area, the terminal area of the first area, is charged to an opposite polarity. During the operation of the machine, grit and other foreign matter will be attracted to the latter area.

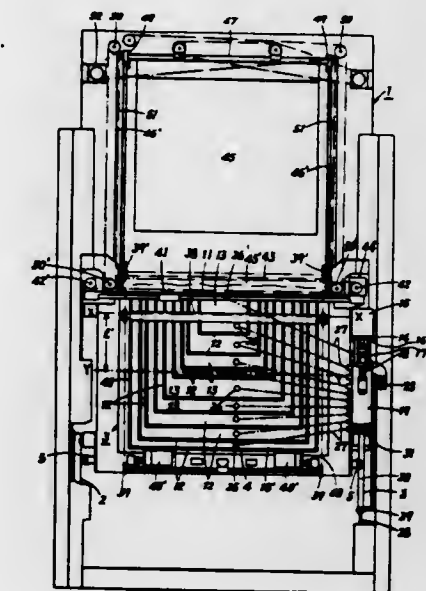
3,610,750
METHODS AND APPARATUS FOR PHOTO-OPTICAL MANUFACTURE OF SEMICONDUCTOR PRODUCTS
Robert E. Lewis, Palo Alto; Melvin D. Wright, San Jose, and Philip E. Chandler, Redwood City, all of Calif., assignors to Teledyne, Inc., Hawthorne, Calif.
Filed Nov. 25, 1968, Ser. No. 778,386
Int. Cl. G03b 27/70
U.S. Cl. 355-43 16 Claims

A microphoto pattern generator capable of reducing large scale artwork to finally reduced dimensions for single reduc-



the wafers or photosensitive plates in registry onto the work surface.

3,610,751
DEVICE FOR CONTROLLING AUTOMATICALLY THE SUCTION ZONES OF VACUUM BACK IN PHOTOMECHANICAL CAMERA
Yoshio Miyauchi, Hikone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Nov. 20, 1968, Ser. No. 777,274
Claims priority, application Japan, Nov. 30, 1967, 42-76395
Int. Cl. G03b 27/60
U.S. Cl. 355-73 5 Claims

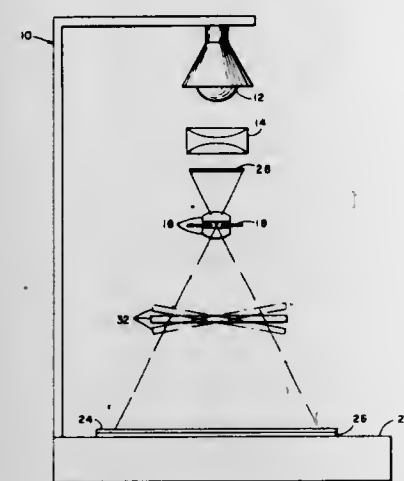


Device for controlling automatically the suction zones of vacuum back in photomechanical camera, wherein the position of the vacuum back determines the size of the vacuum zone activated for holding the film and secondly a large vacuum zone is activated for holding the screen.

3,610,752
PREPARING PRINTED CIRCUIT BOARDS BY REFRACTED RAYS
Frederick C. Wilson, Queens Village, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 15, 1970, Ser. No. 3,152
Int. Cl. G03b 41/00
U.S. Cl. 355-77 5 Claims

An improved process for preparing printed circuit boards in which only the conductor surrounding the circuitry is

removed. A refractor is utilized in preparing the circuit board emission is measured while the position of the image on the sensitive surface of the camera is recorded by carrying out a



negative to obtain exposure of the film only in the regions directly adjacent the lines representing the circuitry.

3,610,753

TIMER FOR CONTROLLING THE OPERATION OF DEVICES AND IMPLEMENTS, ESPECIALLY STOVES
Josef Neubauer, Wendelstein, Germany, assignor to Diehl, Nurnberg, Germany

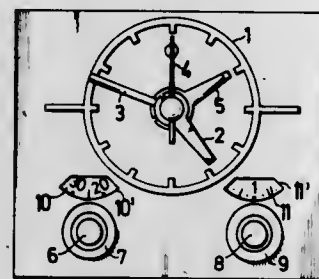
Filed Nov. 6, 1969, Ser. No. 874,469

Claims priority, application Germany, Nov. 7, 1968, G 68 05 821

Int. Cl. G04f 3/06

U.S. Cl. 58—39.5

15 Claims



A timing mechanism especially for cooking appliances, in which a pointer is adjustable over a clock face to indicate the end of a cooking period, while a dial is adjustable to indicate the duration of the cooking period. A planetary gear arrangement interconnects the dial and the pointer and adjusts one of a pair of clutch elements, the other of which is driven by the timer motor. Adjustment of the dial presets a power control device and when the clutch parts are in a certain relative position they clutch together and initiate the supply of power to the appliance, and which is automatically terminated when the preselected time expires.

3,610,754

METHOD FOR DETERMINING DISTANCES
Robert Alfred Pirlot, Angleur, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium

Filed Nov. 21, 1968, Ser. No. 777,752

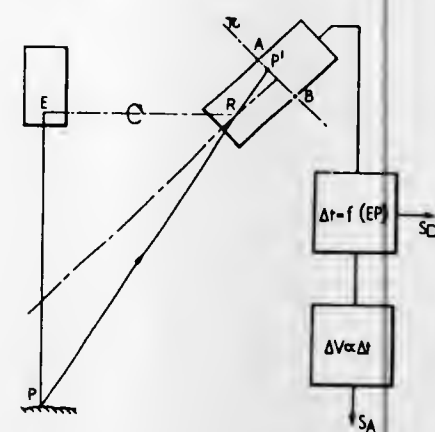
Claims priority, application Belgium, Nov. 24, 1967, 707,075

Int. Cl. G01c 3/08

U.S. Cl. 356—1

9 Claims

The invention is a method for determining distances and in particular for determining the profile of a surface. A ray of electromagnetic radiation is directed from a given emission point on to the surface whose profile is to be determined. A television camera, whose optical axis is fixed in relation to the axis of emission, is arranged at a reception point which is fixed in relation to the emission point. A ray reflected by the surface is collected by the camera. The position of the axis of



single time count. The distance of the surface from the point of emission is computed from this time count.

3,610,755

OPTICAL SIGHTING AND/OR OBSERVATION SET COMBINED WITH A LASER TELEMETRY UNIT
Heimrich Wieberger, Eschelbronn, and Walther Hess, Dilsberg-Neuhof, both of Germany, assignors to Eltro GmbH & Co., Heidelberg, Germany

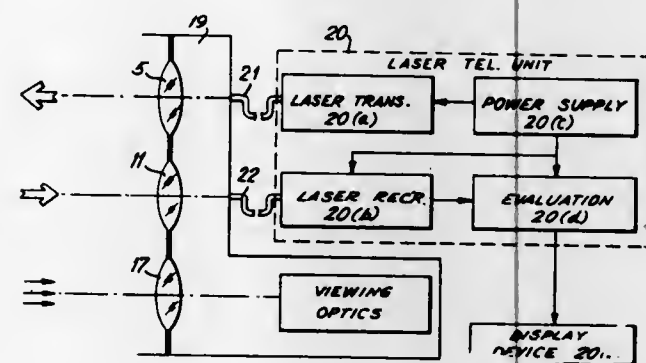
Filed Jan. 27, 1969, Ser. No. 794,228

Claims priority, application Germany, Feb. 15, 1968, P 16 73 905.2

Int. Cl. G01c 3/08

U.S. Cl. 356—4

16 Claims



Apparatus is provided including a laser telemetry unit and a set of objectives adapted for visual target sighting and for laser transmission and reception, there being provided in accordance with the invention a flexible light conducting means optically coupling the objectives and telemetry means. This light conducting means consists at least in part of a single light conducting fiber associated with each objective employed and adapted for conveying transmitted laser pulses to the corresponding objective and for conveying laser echo pulses from the corresponding objective to the appropriate unit in the telemetry unit.

3,610,756

APPARATUS FOR DETERMINING THE COLOR OF CUT DIAMONDS

Godehard Lenzen, 2 Hamburg 67 Frankring 31e, Hamburg-Volksdorf, and Manfred Eickhorst, Feldstr. 135/8-15, 2 Wedel/Holstein, both of Germany

Filed Mar. 18, 1970, Ser. No. 20,618

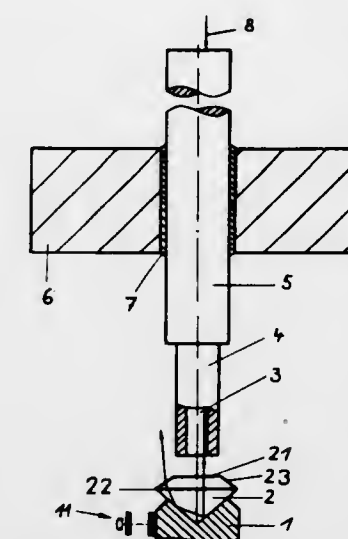
Int. Cl. G01n 21/00

U.S. Cl. 356—30

12 Claims

The apparatus includes a well-known holder receiving a cut diamond for determining its color. The diamond is held by the holder below its holder or mounting edge leaving its upper portion with the planar surface and the facets fully exposed. A source of monochromatic light is provided above the holder adjustable with respect to the distance between

the upper planar surface of the diamond and the source of light. A photoelectric receiver is arranged above the diamond



receiving and measuring the ray entered through the upper planar surface and emerging from the facets of the diamond.

3,610,757

HIGH PRESSURE OPTICAL CELL FOR RAMAN SPECTROGRAPHY

Alvin Van Valkenburg, McLean; Ellis R. Lippincott, Vienna, Va., and Charles E. Weir, Bethesda, Md., assignors to High Pressure Diamond Optics, Inc., McLean, Va.

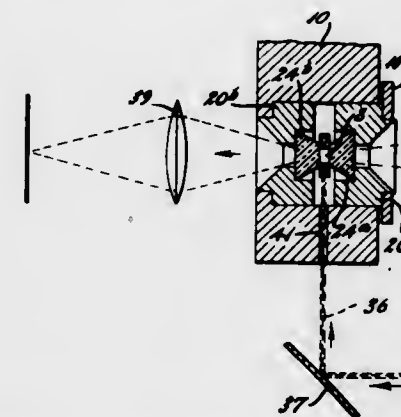
Continuation-in-part of Ser. No. 720,866, Apr. 12, 1968.

Filed Sept. 5, 1968, Ser. No. 757,716

Int. Cl. G01n 1/00; G01j 3/44; G01n 21/16

U.S. Cl. 356—36

2 Claims



A high pressure optical cell is combined with a laser beam spectroscopy and optical means for Raman spectroscopy at various angles through the specimen.

3,610,758

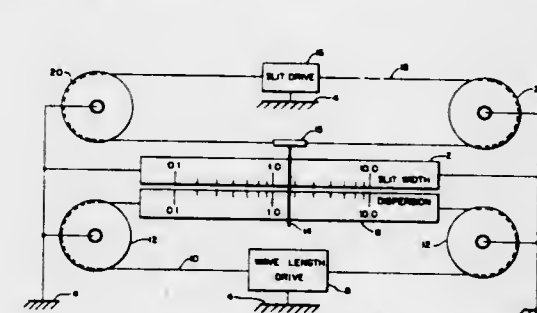
CALCULATOR FOR MONOCHROMATOR DISPERSION
Maoyeh Lu, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed June 24, 1970, Ser. No. 49,456

Int. Cl. G01j 3/00; G06g 3/00

U.S. Cl. 356—74

4 Claims



There is disclosed apparatus for automatically calculating spectral bandwidth in a monochromator of the type having

slit and wavelength drive mechanisms. A stationary scale member is scribed with indicating marks related to slit width. A sliding scale member is driven by the wavelength drive mechanism to slide juxtaposed with respect to the stationary scale member, the sliding scale member having a surface upon which are scribed indicating marks related to dispersion of the monochromator, the scribed marks of the sliding scale being calibrated with respect to the scribed marks of the stationary scale to indicate on the sliding scale the dispersion of the monochromator opposite a given slit width indication on the stationary scale. A moving indicator driven across the scribed surfaces of both scale members by the slit drive mechanism has a reference line to continuously indicate the monochromator slit width on the stationary scale and the corresponding dispersion on the sliding scale as the monochromator spectrum is scanned.

3,610,759

METHOD AND APPARATUS FOR ANALYZING ATOMIC SPECTRA OF GAS SAMPLES

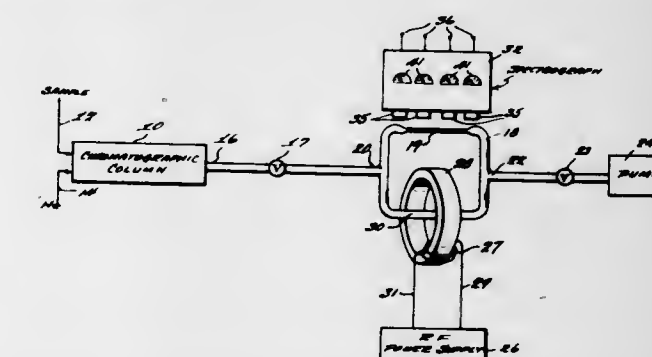
Lowell L. Wood, Jr., Simi, Calif., assignor to Mercantile-Safe Deposit and Trust Company

Filed June 14, 1967, Ser. No. 645,913

Int. Cl. G01j 3/34

U.S. Cl. 356—85

16 Claims



An elemental gas analyzer wherein the gas is converted into a highly ionized and dense plasma in which the molecules are completely dissociated into their respective atoms. The plasma is created by a magnetically coupled source of radio frequency energy and the resulting atomic spectral emission lines are monitored by a plural channel spectrographic detector for providing an indication of the concentration of each of the atoms present in the plasma from which the quality and quantity of gas may be accurately determined.

3,610,760

METHOD AND APPARATUS FOR SELECTIVELY MODULATING RESONANCE LINES EMITTED BY AN ATOMIC SPECTRAL LAMP AND DETECTION THEREOF

Ralph Martin Lowe, Hawthorn, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, East Melbourne, Victoria, Australia

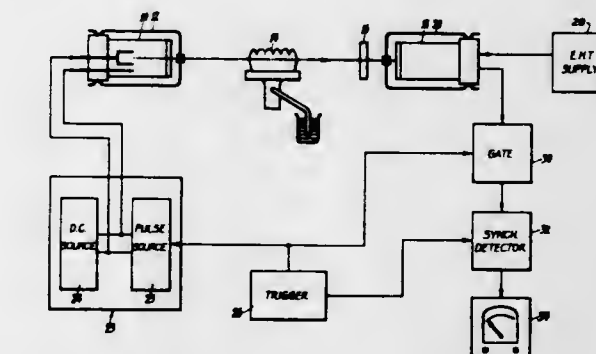
Filed May 1, 1969, Ser. No. 821,007

Claims priority, application Australia, May 1, 1968, 37,185

Int. Cl. G01j 3/42

U.S. Cl. 356—87

10 Claims



A method and apparatus for determining absorbance of a sample medium by using an atomic spectral lamp which uses

a discharge to sputter an electrode to produce atomic vapor and also to excite that vapor to produce spectral radiation which is passed via a sample to a photodetector the new method involving pulsing of the discharge so that radiation emitted in the absence of a pulse passes through vapor left by the preceding pulse and the resonance lines in the radiation are thereby absorbed by the vapor, and the apparatus including detector circuitry controlled to select the component of the photodetector output which is modulated by reason of the absorption of the resonance lines.

3,610,761

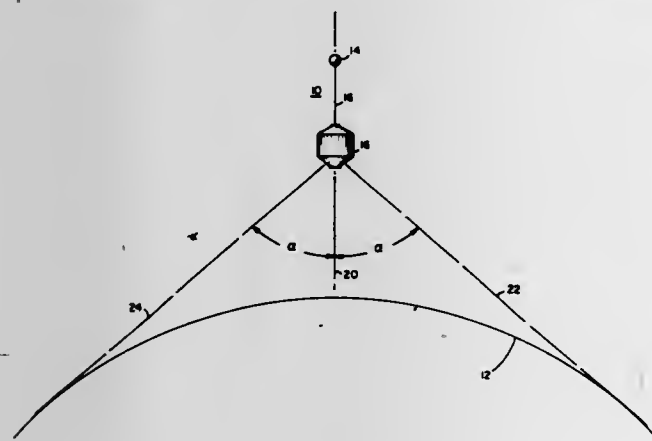
ELECTROOPTICAL ASPECT ERROR SENSING SYSTEM FOR A STABILIZED SATELLITE

Patrick H. Cudmore, Silver Hill, and Peter G. Wilhelm, Kerby Hills, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 30, 1968, Ser. No. 771,938
Int. Cl. G01b 11/26

U.S. Cl. 356-141

9 Claims



System for sensing vertical axis deviation of a gravity stabilized satellite. Electrooptical sensors respond to horizon to produce signals that are indicative of satellite attitude and which modulate transmitted radio signal.

3,610,762

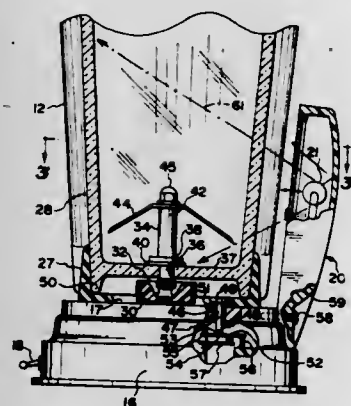
BLENDER WITH LATERALLY ILLUMINATED REMOVABLE RECEPTACLE

William F. Dugan, Simsbury, Conn., and Dynamics Corporation of America, New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,213
Int. Cl. G01n 21/06, 21/16

U.S. Cl. 356-197

8 Claims



Means are disclosed to illuminate the contents of a vessel at the locale of mixing in such a manner that the condition of the mixture can be readily ascertained. The light source is positioned outside the transparent or translucent wall of the vessel between a pair of convolutions in the wall whereby the interface between the liquid contents and the inner wall of the vessel is illuminated by light that includes transmitted light, reflected light and refracted light transmitted from the

light source to, through and in the glass or plastic wall of the vessel. Switch means are provided to connect the light source to the power source as the vessel is placed on the mixer base.

3,610,763

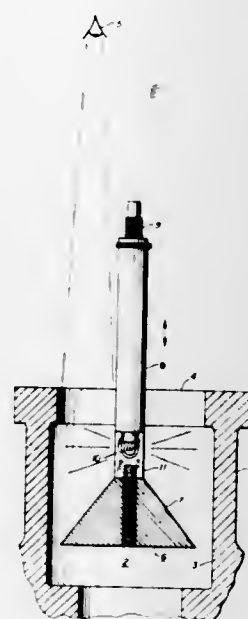
BORESCOPE UTILIZING A RIGHT FRUSTUM OF A CONE AS REFLECTOR

John A. Mathews, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,133
Int. Cl. G01n 21/16

U.S. Cl. 356-241

2 Claims



A body is mounted on one end of an elongated handle with which the body can be positioned within the bore of a workpiece. An image of the walls of the bore is reflected by an external surface of the body with light from a source mounted in the handle. The body is also sized to simultaneously function as a dimension gauge for the bore.

3,610,764

AUTOMATIC LEVELING TELESCOPE INCLUDING A REVERSIBLE TWO-SIDED PENDULUM MIRROR AND A FOCUSING PRISM

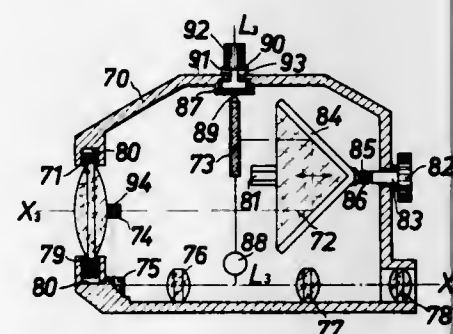
Gerhard Huther, Jena, Germany, assignor to VEB Carl Zeiss, Jena, Jena, Gera, Germany

Division of Ser. No. 788,668, Oct. 17, 1968, Pat. No. 3,552,866, which is a Continuation of Ser. No. 405,334, Oct. 19, 1964, abandoned. Filed Aug. 27, 1970, Ser. No. 67,320

Int. Cl. G01c 9/12

U.S. Cl. 356-250

2 Claims



A telescope having an optical axis comprising a housing with a light entrance aperture having a geometrical axis, an objective mounted in the aperture, the optical axis of the objective being parallel to the geometrical axis, a set of two prisms disposed in the housing near the objective, the objective and one of the prisms being jointly movable in a direction at a right angle to the optical axis, a collimating mark disposed on the one prism and movable therewith, focusing means comprising a rectangular prism mounted in the housing.

the housing at an end thereof remote from the aperture, with the hypotenuse surface facing the objective, the rectangular prism being displaceable along the optical axis to focus on the collimating mark imaging rays traversing the objective, a pendulum mirror disposed in the housing in the path of imaging rays deflected by the rectangular prism, the mirror having a silvered surface in front and in the rear and being suspended for oscillation, said mirror being rotatable between a first and a second position about an axis of rotation substantially at a right angle to the optical axis for automatically leveling the sighting of the telescope, rotating means for rotating the mirror between the first and the second position, damping means for damping the oscillation of the mirror, one of the silvered surfaces cooperating with the objective when the mirror is in the first position and the other of the silvered surfaces cooperating with the objective when the mirror is in the second position, an eyepiece mounted on one end of the housing remote from the aperture for viewing the collimating mark, the one prism of the set of prisms deviating the collimating ray in the telescope at a right angle to the optical axis of the objective, the other of the set of prisms deviating the collimating ray to be parallel with the optical axis of the eyepiece, and lens means located between the other of the set of prisms and the eyepiece for producing an intermediate image.

3,610,765

SEALED RESERVOIR FOR A STYLOGRAPHIC PEN

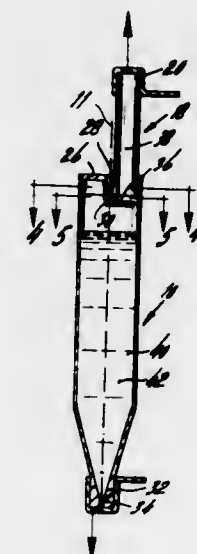
Edward Bok, 7348 Lee Hwy., Apt. 201, Falls Church, Va.

Filed Jan. 15, 1970, Ser. No. 3,121

Int. Cl. B43k 5/14, 1/10

U.S. Cl. 401-134

9 Claims



In stylographic pens of the type encompassing an ink reservoir communicant with a tubular writing pen tip, the improvement consisting of removable caps sealing both the bottom writing tip end and a vent passage in the top of the reservoir prior to use of the pen, and including an internal diaphragm in the ink capillary passage within the writing tip end.

3,610,766

FOUNTAIN PEN

Heinz Gunter Herrring, Hamburg-Fuhlsbittel, Germany, assignor to Montblanc-Simplo GmbH, Hamburg, Germany

Filed July 7, 1969, Ser. No. 839,227

Claims priority, application Germany, July 13, 1968, P 19 61 848.3

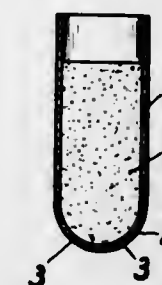
Int. Cl. B43k 1/06

U.S. Cl. 401-265

8 Claims

A fountain pen and method of making the same in which liquid ink is fed from an ink container through a capillary section of a shape-maintaining writing tip which is charac-

terized primarily in that the writing tip is formed by a thin-walled cap provided with ink from the inside while said cap



has an end face in which a plurality of closely adjacent capillary openings or passages are provided.

3,610,767

TAPPING MACHINE

Helmut Nutt, Arcuse, Neuchatel, Switzerland, assignor to Mikron-Haessler S.A., Boudry/Neuchatel, Switzerland

Filed Jan. 27, 1969, Ser. No. 794,003

Claims priority, application Switzerland, Feb. 6, 1968,

1809/68

Int. Cl. B23g 1/00; B23b 47/18

U.S. Cl. 408-137

3 Claims



This invention relates to a tapping machine including a rotating spindle capable of moving axially with a reciprocating motion for driving one of several taps, this spindle including on part of its length one or several guiding screw threads with a pitch corresponding to the one of the taps, while one of several fixed skids is resiliently applied against the guiding screw threads for driving the spindle axially, means to hold the spindle in its operating position and to reverse the direction of rotation of the spindle being also provided.

3,610,768

TREPPANNING TOOL

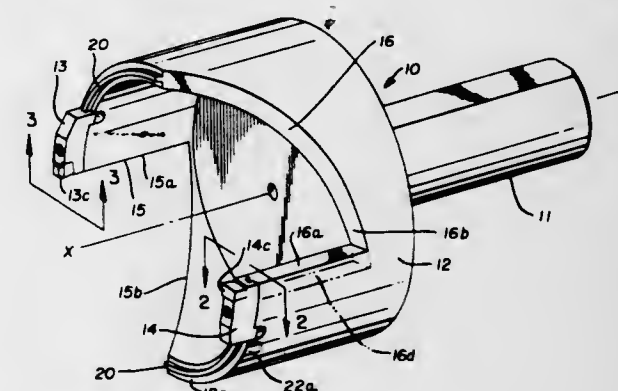
Burton L. Cochran, North Canton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Apr. 8, 1969, Ser. No. 814,360

Int. Cl. B23b 51/04

U.S. Cl. 408-204

6 Claims



A trepanning tool that is characterized by the provision of a cylindrical cutting head projecting coextensively from a shank that has an axis of rotation. Consumable cutting elements are releasably attached to the cutting head in axially projecting relationship therewith and these elements are also releasably secured against movement radially, circumferentially, and axially.

ferentially and axially of the cutting head. The tool also has a relieved wall section in the cutting head extending axially and circumferentially so as to provide a means of chip egress during the cutting operation.

3,610,769

POROUS FACING ATTACHMENT

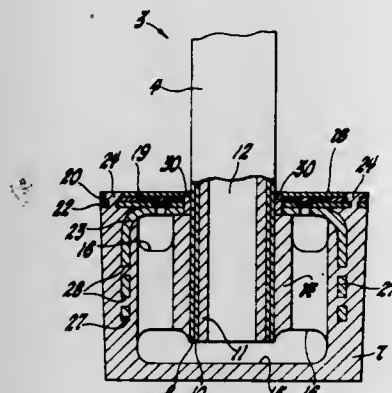
Ronald P. Schwedland, and Jack E. White, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 8, 1970, Ser. No. 44,032

Int. Cl. F01d 9/02

U.S. Cl. 415-115

6 Claims



A vane or blade for a turbine includes a shroud or platform defining a boundary of the motive fluid path through the turbine. The shroud or platform is of a cast structure with a laminated porous metal facing. Two modes of attachment of the facing to the cast base are described, one being headed pins or anchors cast integral with the base and the other being a flange on the innermost layer of the facing around which metal of the base is cast.

3,610,770

COMPRESSIBLE FLUID TURBINE

Rudolf Hendriks, Hengelo, Netherlands, assignor to Koninklijke Machinefabriek Stork N. V., Hengelo, Netherlands

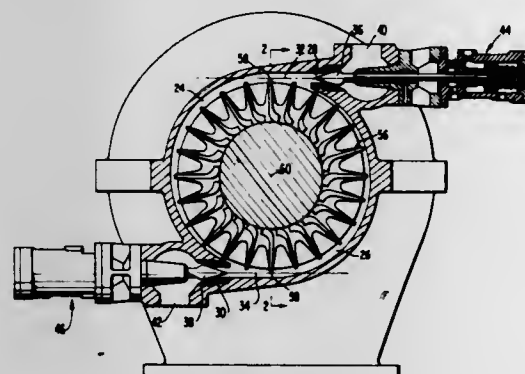
Filed June 2, 1969, Ser. No. 829,179

Claims priority, application Netherlands, May 31, 1969, 6807690

Int. Cl. F01d 1/00, 1/08

U.S. Cl. 415-159

6 Claims



Centripetal blades of a compressible fluid turbine project into a scroll-like steam induction passage so that their tips lie at or near the tangential centerline of the passage inlet when each blade tip is disposed in a plane normal to such centerline. A pressure reducing valve in the inlet to the steam induction passage converts steam pressure into kinetic energy and is adjusted to produce a velocity of steam at the inlet which is substantially greater than the peripheral velocity of the blade. There is very little reaction effect of the steam on the centripetal blades as the steam is directed radially inwardly and then axially in opposite directions to axial flow portions of the turbine and, consequently, the efficiency of the turbine is increased.

3,610,771 METHOD OF AND APPARATUS FOR DETECTING IRREGULARITIES IN A SURFACE

Warren W. Waters, Rte. 3, Box 252, Wichita Falls, Tex.

Filed Sept. 2, 1969, Ser. No. 854,710

Int. Cl. B43k 23/00

U.S. Cl. 401-9

7 Claims



A marking device for marking irregularities on rigid surfaces, whether plane, convex or concave, to enable the irregularities to be corrected. One of the uses is on contoured sheet metal rigid surfaces, such as vehicle bodies, where the marking media is deposited on the high spots and around the depressions to enable an artisan to ascertain such irregularities. Provision is made to have marking media on each side of a flexible, elongated element, which doubles the normal useful life of the marking device. Further provision is made to precontour the marking device for use on known complementary surfaces.

3,610,772

BLADED ROTOR

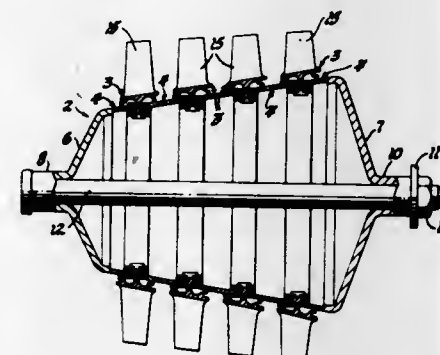
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1970, Ser. No. 34,055

Int. Cl. F01d 5/30

U.S. Cl. 416-198

5 Claims



A turbomachine rotor of alternating bladed rings and spacer rings, the bladed rings including blades welded to a rim, a web extending radially inward from the rim, and flanges extending from both faces of the web, with a reinforcing ring of filament reinforced composite material serving to resist centrifugal forces on each flange.

3,610,773

METALLURGICAL STIRRER CONSTRUCTION

Hubert Polomsky, Duisburg-Buchholz, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

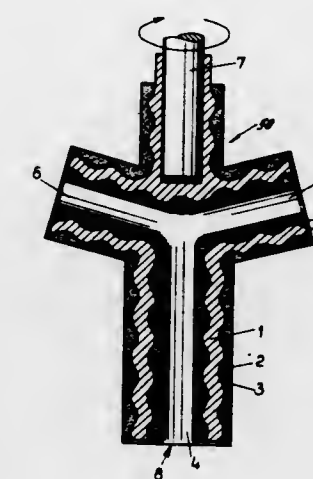
Filed Apr. 17, 1969, Ser. No. 817,057

Claims priority, application Germany, Apr. 20, 1968, P 17 58 194.1

Int. Cl. B01f 9/12

U.S. Cl. 416-91

8 Claims



A stirrer for metallurgical purposes particularly for the treatment of pig iron, steel or cast iron melts during desulfurization desilication, carbonization or addition of other metallurgical reactants, includes a rotatable tubular element or body preferably having at least two radially extending delivery conduits which communicate centrally with a central suction passage. The body is provided on its inside with a reinforcement and on its outside with a heat resistant material and advantageously includes axial and transverse intersecting tubular elements formed of high silicon steel alloyed with aluminum and chromium and having a coating of synthetic slag.

3,610,774

ROTORS FOR ROTARY-WING AIRCRAFT

Rene Louis Mouille, Aix-En-Provence, France, assignor to Sud-Aviation Societe Nationale de Constructions Aeronautiques, Paris (Seine), France

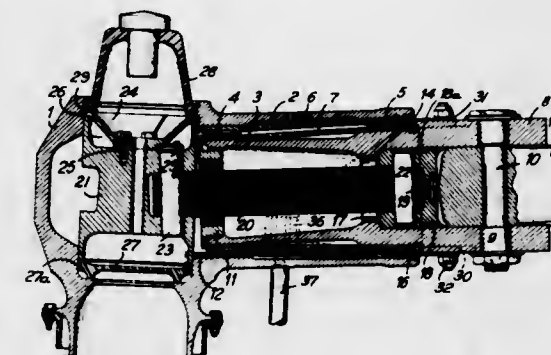
Filed Oct. 28, 1969, Ser. No. 871,934

Claims priority, application France, Oct. 30, 1968, 171,912

Int. Cl. B64c 27/48

U.S. Cl. 416-136

6 Claims



A rotor for rotary-wing aircraft, comprising, for interconnecting a hollow integral rotor-mast-forming at once a shaft, hub and blade-supporting arms—with the blades themselves, a blade-holding sleeve inside such an arm, mounted leaktightly for both rotation and for limited sliding motion authorized by a tie between the sleeve and the attachment core inside the hub, the said tie being inextensible under the effect of centrifugal force but flexible and resilient torsionally.

3,610,775

TURBINE WHEEL

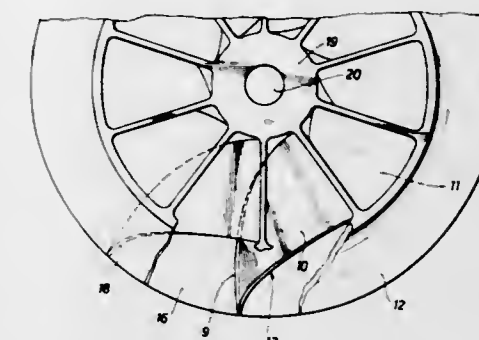
Judson S. Swearingen, 500 Bel Air Road, Los Angeles, Calif.

Filed July 9, 1969, Ser. No. 840,369

Int. Cl. F01d 5/04

U.S. Cl. 416-186

18 Claims



A turbine wheel or rotor for operation by gas streams containing entrained particles of liquid or solids or liquid streams containing bubbles, such as in power recovery from dust-bearing gas or boiling liquid. The passageways between blades of the rotor are so shaped that as the flow progresses radially inwardly and its circumferential motion with the wheel is retarded and centrifugal force on such particles therefore decreases, there will be at first a radial and small negative relative tangential component of flow, and the radial inward rate of flow component and hence drag on such particles opposed to such centrifugal force will decrease accordingly to maintain a substantial balance of radial forces on such particles. Also the passages are curved so that they will substantially parallel the circumferential-axial flow rate component as the decrease in radial flow rate component is replaced by increase in circumferential flow rate component relative to the rotor, while the axial flow rate component is maintained at or increased to a value to move the stream through the axial extent of such passages in such time as is required for the circumferential flow rate component relative to the rotor to substantially equal and oppose the circumferential velocity of the outlets of such passageways. Thereby the drag on such particles to cause them to impinge on the blades will be minimized. The words "tangential" and "circumferential" are used synonymously.

3,610,776

COMPRESSOR BLADE FOR A GAS TURBINE ENGINE

James A. Petrie, John M. S. Keen, Gordon C. May, Albert James Moreton, and Frank Littleford, all of Derby, England, assignors to Rolls-Royce Limited, Derby, England

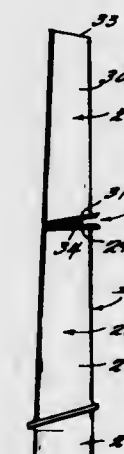
Continuation-in-part of Ser. No. 636,979, May 8, 1967, Pat. No. 3,524,712.

Filed Mar. 2, 1970, Ser. No. 15,561

Int. Cl. F01d 5/10, 5/22

U.S. Cl. 416-190

3 Claims



A composite clapped compressor blade for a gas turbine engine comprising a plurality of individually forged pieces bonded together by electron beam welding or other metallurgical means.

gical techniques to form the completed blade structure. The mated surfaces of the joint between the individually forged major pieces of the composite blade structure extend transversely across the longitudinal composite blade structure, the surfaces being easily machined to match accurately before bonding together.

3,610,777

COMPOSITE DRUM ROTOR

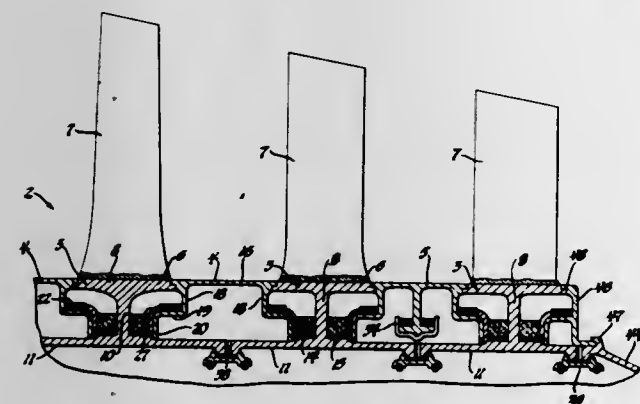
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 15, 1970, Ser. No. 37,731

Int. Cl. F01d 5/06

U.S. Cl. 416-198

6 Claims



A compressor is made of alternating bladed rings and spacer rings stacked together. Both the bladed rings and the spacer rings are encircled by fibrous composite material reinforcing rings. The bladed rings include radially inner rings coupled by face splines and an expanding internal ring which holds the face splines engaged.

3,610,778

SUPPORT FOR ROTOR BLADES IN A ROTOR

Peter Suter, Schottikon, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

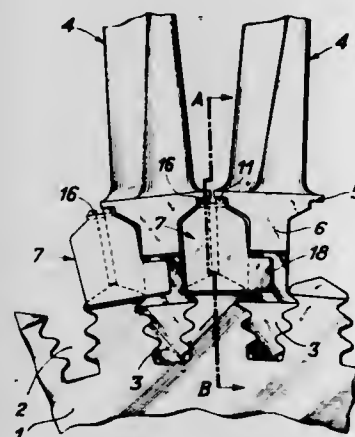
Filed Apr. 3, 1969, Ser. No. 813,235

Claims priority, application Switzerland, Aug. 9, 1968, 12011/68

Int. Cl. F01d 5/32

U.S. Cl. 416-210

9 Claims



The blades are held in slots of the rotor along with baffle elements which are placed between each pair of blades. Each element is elastically connected in a yieldable manner to each blade of a pair of blades at points on opposite sides of the element while simultaneously filling the slot to prevent leakage between the blades. The elements can be slotted or provided with elevations at opposite ends to enhance the yieldability.

Obstructions in the ejector of a jet pump system are removed by backflushing the system using pressurized fluid from the system storage tank and venting the pressure line to ambience. Venting of the pressure line is accomplished through the use of a three way valve positioned in the pressure line which closes the line upstream of the valve and permits backflushing liquid to flow from the storage tank, through the pump, intake line, ejector, pressure line and valve.

3,610,779

METHODS AND SYSTEMS FOR CONTROLLING PUMPING WELLS

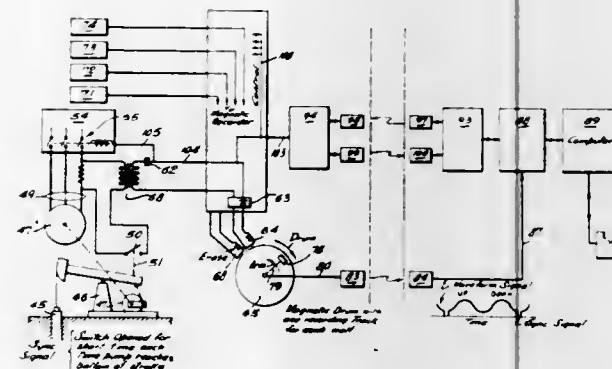
Laurence M. Hubby, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,877

Int. Cl. F04b 49/00

U.S. Cl. 417-5

4 Claims



A method and system for pumping-well control including determination of a production profile for the well. The profile consists of a function that defines the normal producing conditions when the well fluid is pumped out of the well at a greater rate than it is produced therein. Optimum producing conditions may then be determined and set. In addition, the magnitude of the load on the pump motor is monitored and fed out for remote indication and/or control.

3,610,780

JET PUMP SYSTEM

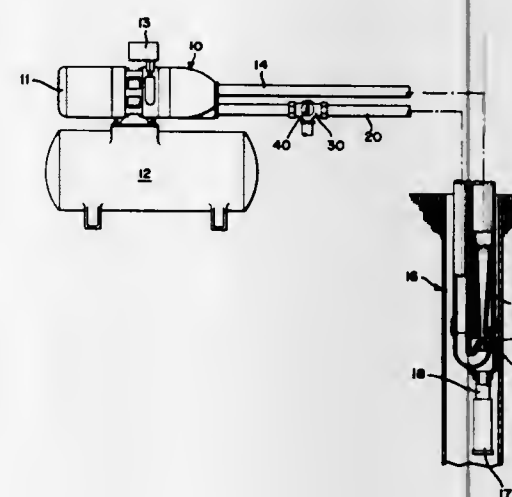
Cecil F. Smith, 106 South Main St., Lynn, Ind.

Filed Apr. 6, 1970, Ser. No. 25,981

Int. Cl. F04b 23/04; F04f 5/44

U.S. Cl. 417-79

8 Claims



3,610,781

WINDSHIELD WIPER MOTOR AND PUMP ASSEMBLY

Erich Kolb, Eisental, and Hubert Mainka, Buhlertal, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

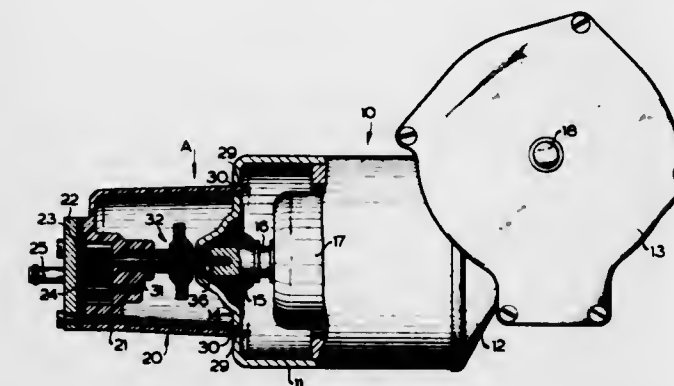
Filed Dec. 9, 1969, Ser. No. 883,378

Claims priority, application Germany, Dec. 10, 1968, P 18 13 638.4

Int. Cl. F04b 9/00; F03c 3/00; F01d 1/02

U.S. Cl. 417-319

15 Claims



A pump for spraying water on a windshield, has a pump casing which can be snapped on the casing of a motor driving the windshield wipers. A clutch connects the pump shaft with the motor shaft when the pump casing is held on the motor casing by resilient arresting means.

3,610,782

CONTROLLED PUMP

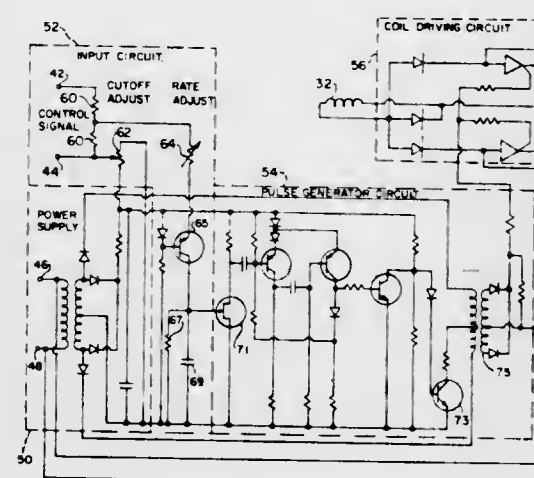
James P. McGulre, III, Waltham, Mass., assignor to Precision Control Products Corporation, Waltham, Mass.

Filed Oct. 6, 1969, Ser. No. 864,106

Int. Cl. F04b 17/04, 49/08

U.S. Cl. 417-326

5 Claims



An analog electrical signal-controlled pump having a reciprocating pumping element, pulse-operated means for reciprocating it at a rate proportional to the pulse rate of a pulse generator producing operating pulses at a predetermined rate from zero to a maximum and control means responsive to an analog electrical control signal, which establishes a predetermined pulse rate providing a rate of pump element reciprocation as a linear function of the control signal. The control means includes pump cutoff adjusting means for establishing a predetermined value of the control signal providing a zero pulse rate for cutting off flow through the pump and pump rate adjusting means for establishing a predetermined value of rate of change of the pulse rate with change of the control signal for varying the rate of change of flow through the pump in response to a change in the control signal. Preferably also provided is an adjustment for the stroke of the reciprocating pumping element for establishing a predetermined pumping volume per stroke.

3,610,783

METERING DEVICES

Antony Harry Croucher, "Homewood," 12, Pine Bank, Tower Road, Hindhead, Surrey, England

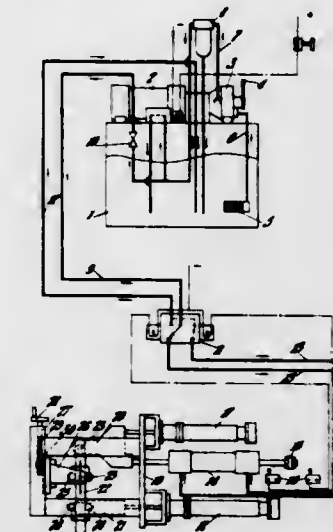
Filed Nov. 7, 1969, Ser. No. 874,851

Claims priority, application Great Britain, Nov. 18, 1968, 54634

Int. Cl. F04b 9/08, 41/06

U.S. Cl. 417-390

5 Claims



A metering device for delivering two or more materials in predetermined ratios and at predetermined rates, which is unaffected by changes in viscosity and operating pressure. The device comprising a positive displacement delivery pump for each material, an hydraulic ram for driving the said delivery pumps at predetermined relative speeds, and a variable delivery hydraulic pump for driving the ram at a predetermined speed. In the case when two delivery pumps are provided they may be connected by a rocking member having a variable fulcrum to vary the relative speeds of the delivery pumps.

3,610,784

ELECTRIC MOTOR AND COMPRESSOR CONSTRUCTION

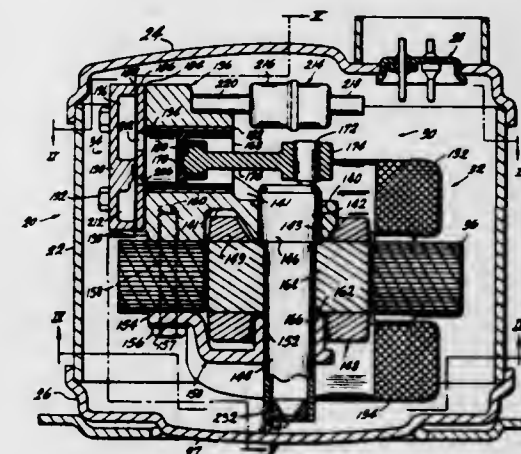
Theodore W. Rundell, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 19, 1970, Ser. No. 20,994

Int. Cl. F04b 35/04; H02k 1/12

U.S. Cl. 417-415

26 Claims



An electric motor-gas pump unit mounted in a hermetic sealed housing with the end turns of the motor stator windings each arranged in a horseshoe configuration to define two axially aligned winding gaps which register with an unslotted portion of the laminated stator core so that the same can serve as a mounting platform for the pump. The stator core thus serves its usual function as a support for the windings and as a flux conductor, and in addition serves as a supporting frame for the pump unit. One or two bearing arms

are also cantilever mounted on the unslotted portion of the stator core to serve as the journal for the rotor shaft-crankshaft of the motor-pump unit.

3,610,785

PUMP STRUCTURE FOR SELF-ADJUSTING HYDROPNEUMATIC SUSPENSIONS

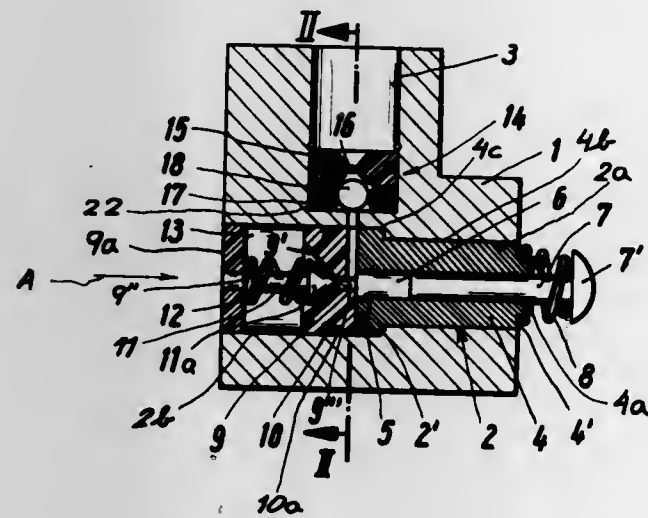
Erich Hahn, Ennepetal-Buttenberg, Germany, assignor to Firma August Bilstein, Ennepetal-Altenvoldre, Germany
Filed Nov. 12, 1969, Ser. No. 875,642

Claims priority, application Germany, Nov. 12, 1968, P 18 08 549.9

Int. Cl. F04b 21/02

U.S. Cl. 417-569

7 Claims



A miniature hydraulic pump, especially for automotive self-leveling vehicle suspensions using electric drive motors, in which the intake passage between the intake valve and the pumping chamber is split into two bores which communicate with the intake valve chamber on opposite sides of a ball check. The portion of the intake passage turned toward the pumping chamber is sectorally divergent away from the pumping chamber and lies in a plane perpendicular to the axis of the plunger and the pumping chamber.

3,610,786

VALVE SYSTEM MEANS FOR FLUID PRESSURE OPERATING MEANS

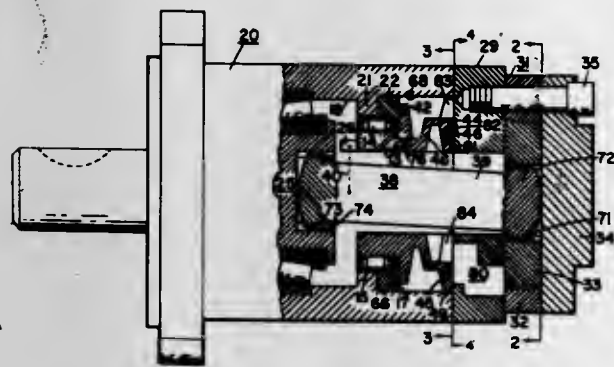
George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio
Division of Ser. No. 715,247, Mar. 22, 1968, Pat. No. 3,531,225

Mar. 27, 1970, Ser. No. 023,204

Int. Cl. F01c 1/10; F04c 1/06

U.S. Cl. 418-61

10 Claims



Stationary and rotary valve means are provided in combination with fluid pressure operation means, in which the stationary valve has a stationary valve face and a plurality of fluid openings communicating with the fluid pressure operation means. The rotary valve is hollow and has a rotary valve face sealingly engaging the stationary valve face. Externally

of the hollow rotary valve is a first fluid chamber or gallery and internally of the hollow rotary valve is a second fluid chamber or gallery. First and second alternate series of commutating fluid conduction means respectively extend from the first and second fluid chambers through the rotary valve face with each series commutating with and being one less in number than said plurality of fluid openings. A series of lands are circumferentially and respectively disposed between said first and second series. Said lands and said first and second series each have substantially the same circumferential width and are spaced at substantially uniform circumferential intervals relative to each other around the rotary valve face and are respectively positioned in substantially direct opposed diametrical locations relative to each other. The rotary valve terminates in flange means comprising an external-rim flange and an internal-rim flange interconnected by a common intermediate cylindrical body portion which has an end face defining substantially a circular sealing band disposed between said first and second series of commutating fluid connection means commutatingly registering with the fluid openings in the stationary valve face.

3,610,787

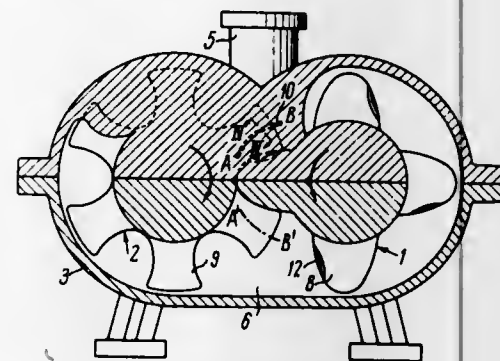
ROTARY SCREW MACHINE

Alexandr Ivanovich Borisoglebsky, Grazhdansky prospekt, 90, korpus 1, kv. 196, Leningrad; Boris Lazarevich Grinpress, Tikhoretsky prospekt, 20, kv. 20, Leningrad; Valentin Nikolaevich Pyankov, Leningradskol oblasti, Leningradskaya ulitsa, 61, kv. 51, Pushkin; Ivan Akimovich Sakun, Krasnoputlovskaya ulitsa, 12, kv. 44, Leningrad; Jury Iosifovich Dimentov, Budapeshtskaya ulitsa, 38, kv. 89, Leningrad; Raffhat Ismailovich Khasanov, prospekt Engelsa, 73, kv. 2, Leningrad, and Moisel Fischelevich Vainshteln, Nevsky prospekt, 27, kv. 15, Leningrad, all of U.S.S.R.
Filed Mar. 10, 1970, Ser. No. 18,167

Int. Cl. F01c 21/00, 1/16

U.S. Cl. 418-189

3 Claims



A rotary screw machine in which the openings for charging and discharging a gaseous working medium are located in the casing at both faces of the screws, and in which, in each portion of the casing adjacent to the like faces of the screws at a certain distance from the opening provided in this portion of the casing, a groove is provided along the line of engagement of the teeth of the screws and facing the adjacent faces of the screws. One end of this groove is located at the addendum circle of the teeth of the female screw while the other end of the groove is located beyond the addendum circle of the teeth of this screw.

3,610,788

PROCESS AND APPARATUS FOR THE COMBUSTION OF FUELS

Lothar P. Brenner, Lucerne, Switzerland, assignor to Anmelderin Ygnis S. A., Fribourg, Switzerland
Filed Oct. 1, 1969, Ser. No. 862,862

Claims priority, application Switzerland, Oct. 1, 1968, Sept. 5, 1969, 14741/68; 13457/69

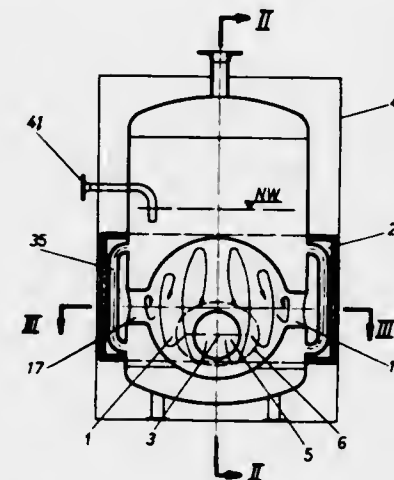
Int. Cl. F23c 3/00

U.S. Cl. 431-9

23 Claims

A combustion process and combustion chamber design for the improved combustion of liquid fuels is shown. By means of this process very high specific combustion chamber loads are attainable providing an economically optimal and silent combustion. The chamber is annular wherein the fuel-air

mixture is injected in the form of at least one jet in a secantal direction into the combustion chamber thus producing a rotating stream, and discharges the gases from the combustion chamber at right angles thereto. Thus by means of in-



jecting the fuel-air mixture in a secantal direction and the annular combustion chamber designs there is a complete mixing of the fuel-air mixture resulting in complete combustion of the fuel particles.

3,610,789

FLAME ROD SAFETY CONTROL SYSTEM

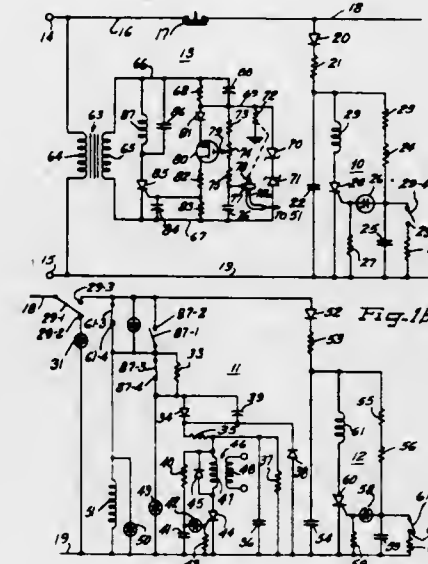
William H. Jones, Villa Park, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Sept. 30, 1969, Ser. No. 862,218

Int. Cl. F23n

U.S. Cl. 431-25

10 Claims



A flame rod safety control system for power-type gas burners as generally employed on agricultural type crop dryers employs apparatus for providing safe starting, stopping and monitoring of the operation of the burner. A purge timer is provided to prevent operation of the fuel supply circuit and the burner ignition circuit until sufficient time has elapsed for evacuation of residual fuel vapors from the combustion chamber. A flame rod sensing circuit is provided to monitor operation of the burner and includes as an operational component thereof the flame of the burner and its electrical rectification characteristic which in turn provides for the utilization of low voltage conductors between the flame rod and the remainder of the control system. The sensing circuit provides a fail-safe feature in that any opening, shorting or high resistance condition across the detection terminals will permit a safety timing circuit to operate and inhibit operation of the fuel supply and ignition circuits. A plurality of lamps are provided to indicate the operational condition of the burner and control system.

3,610,790

IGNITION AND FLAME DETECTION MEANS FOR GAS BURNERS

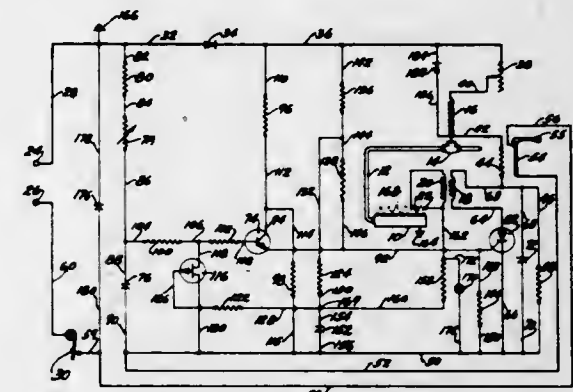
Allan W. Lindberg, Kirkwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 5, 1969, Ser. No. 855,514

Int. Cl. F23n 5/00

U.S. Cl. 431-69

6 Claims



A burner ignition and flame detection circuit operating on an AC power supply: in which, conduction of an SCR effects the opening of a fuel valve, the heating of a thermal time switch, and the discharge of a capacitor through the primary winding of an igniter transformer to produce an ignition spark; in which, means including an RC timing circuit effects the firing of the SCR at substantially midpoint of its conducting half cycle irrespective of line voltage, and maintains its conduction throughout the remainder of the half cycle; in which, flame conduction responsive circuit means effects substantially instantaneous cutoff of SCR conduction when burner flame appears; and, in which, a current limited holding circuit holds open the fuel valve when SCR conduction is cut off.

3,610,791

HEATING APPARATUS

Luigi Cirie Iacaccia, Turin, Italy, assignor to SOGENA S.p.A., Turin, Italy

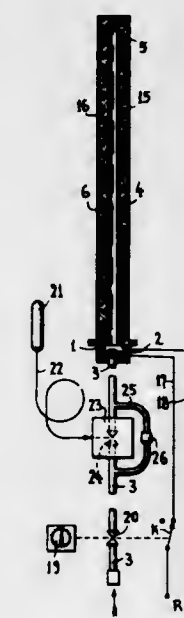
Filed Sept. 23, 1969, Ser. No. 860,274

Claims priority, application Italy, Nov. 26, 1968, Apr. 30, 1969, 54,060-A/68; 51,647-A/69

Int. Cl. F23n 5/00

U.S. Cl. 431-67

9 Claims



A heating device using catalytic oxidation of a gaseous or gasified fuel, wherein the catalytic element is in the form of a candle comprising an external tubular member traversed by holes, an internal diffuser tube also traversed by holes, and in the annular space between said external and internal tubes a filling of catalytically active mass; at one end of this catalytic

element a support and connection base is provided, for allowing application of the element in all cases wherein previously a long flame was used.

3,610,792

SAFETY DEVICE FOR GAS APPARATUS

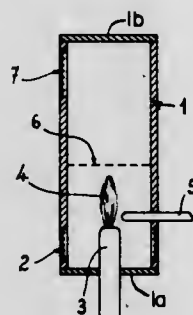
Roger Risse, Caluire, France, assignor to Societe Lyonnaise Des Applications Catalytiques, Caluire (Rhône), France
Filed Feb. 26, 1969, Ser. No. 802,600

Claims priority, application France, Feb. 26, 1968, 49499

Int. Cl. F23n 5/10

U.S. Cl. 431-76

8 Claims



A safety device for gas apparatus has a pilot flame at the base of a tube with a thermocouple close beside the flame. Spaced above the flame is a metal grill not reached by the flame when it burns in an atmosphere of normal composition. When the air has a high CO₂ content the flame is displaced from the pilot nozzle and is lifted to the grill. The thermocouple therefore cools and actuates the closure of the gas supply to the apparatus. A gridded aperture in the base allows air to flow in past the thermocouple thereby aiding its cooling. A gridded aperture at the top of the tube allows the burned gases to escape. The device is especially useful in apparatus with catalytic burners.

3,610,793
LIGHTER

Gerhard Steuernagel, Darmstadt-Eberstadt; Willi Solzer, Stierstadt, and Hans Schindler, Egelsbach, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 16, 1969, Ser. No. 858,456

Claims priority, application Luxembourg, Sept. 25, 1968, 56,959

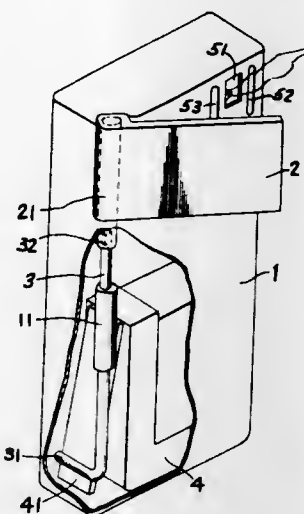
Int. Cl. F23q 2/08

U.S. Cl. 431-130

10 Claims

A lighter has an ignition system and a burner valve and an actuator that is operable to actuate the valve and the ignition

system at a time delay of the instant of ignition relative to the instant of valve opening, and a torsion rod is provided



between the actuator and the ignition system and constitutes both a power transmission therebetween and an energy store.

3,610,794

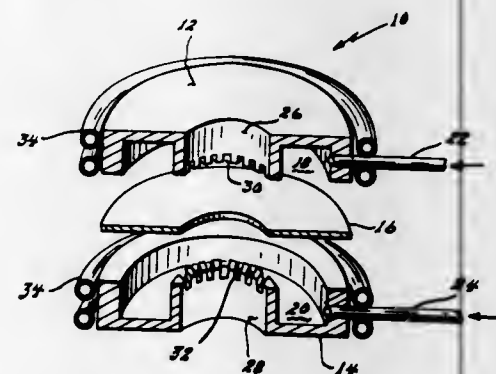
POSTMIX GAS RING BURNER

Joseph A. Adamski, Framingham, and Joseph R. Weiner, Marblehead, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force
Filed June 15, 1970, Ser. No. 046,367

Int. Cl. F23d 13/40

U.S. Cl. 431-354

2 Claims



Two hollow brass toroidal elements with internally directed gas inlets and perforations direct the flow radially inward to produce a continuous thin planar flame. A disc placed between the toroidal elements prevents premixing of the combustion materials.

ELECTRICAL

3,610,795

APPARATUS FOR CONTINUOUSLY MELTING OF METAL

Jacques Antoine, Metz, France, assignor to Institut de Recherches de la siderurgie Francaise, Saint Germain-en-Laye (Yvelines), France

Filed Oct. 14, 1969, Ser. No. 866,308

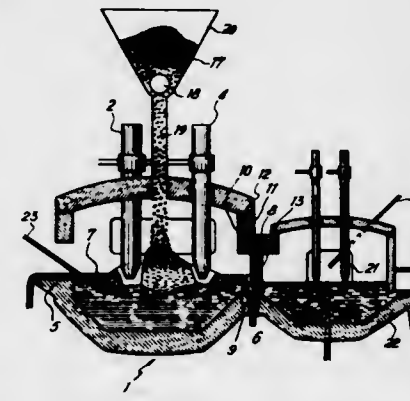
Claims priority, application France, Oct. 17, 1968, P.V.

170,197

Int. Cl. F27d 3/14, 11/10

U.S. Cl. 13-9

8 Claims



Apparatus for continuously melting of metal including a first electric arc furnace into which the solid metal is continuously fed to be molten therein by electric arcs produced by a plurality of electrodes extending into the first furnace, and a second furnace connected by a passage to the first furnace so that molten metal may flow through the passage from the first into the second furnace. Provisions are made to prevent solidifying of the metal, heated in the first furnace to the temperature of the liquidus, in the passage.

3,610,796

FLUID-COOLED ELECTRODES HAVING PERMANENT MAGNETS TO DRIVE THE ARC THEREFROM AND ARC HEATER APPARATUS EMPLOYING THE SAME

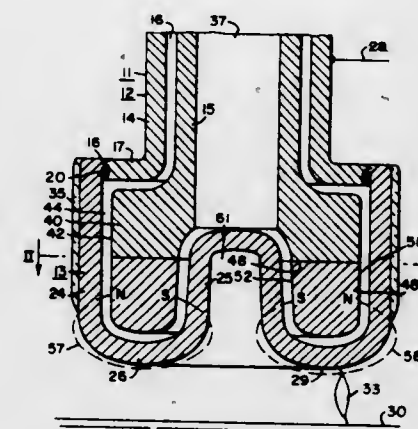
Serafino M. DeCorso, Media, and James M. Wallace, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1970, Ser. No. 4,488

Int. Cl. H05b 7/08

U.S. Cl. 13-18

18 Claims



An electrode has a tip forming an arcing surface, the tip being hollow, preferably generally annular in shape and preferably generally U-shaped in cross section. Disposed within the tip is according to one embodiment a permanent magnet having a contour similar to that of the tip, preferably

having flat inside and outside walls, and which has the outside wall surface thereof forming either the north or south pole and the inside surface thereof forming the other magnetic pole. Lines of force leaving the magnet from, for example, the inside annular surface thereof being of the same polarity oppose each other and bend around the arcing surface of the tip to the pole formed by the outside wall surface of the permanent magnet. The magnetic field lines extend generally radially from the axis of the tip and transverse to the arcing surface, the lines also being transverse to the current in the arc path, and the field exerts a force on the arc which causes it to move substantially continuously around the arcing surface. The tip includes a passageway for the flow of the cooling fluid between the permanent magnet and the arcing surface to conduct heat flux therefrom, a wall portion of the tip separating the fluid passageway from the arcing surface. In another embodiment two annular permanent magnets radially spaced from each other have their upper and lower axially spaced surfaces forming the magnetic poles; a line between the north and south pole of each magnet may lie in a direction substantially parallel to the axis of the electrode, that is the axial ends of the magnets are the poles. The two magnets have their north and south poles oppositely disposed with respect to each other. The gap between the upper poles of the two radially spaced annular magnets is closed by an annular ring of ferromagnetic material. The magnetic field between opposing poles at the lower end surfaces of the magnets extends transverse to the arcing surface around the entire face or periphery of the arcing surface, said transverse magnetic field exerting a force on the arc which causes it to rotate or move substantially continuously. A third embodiment employs a ceramic coating over a portion of the arcing surface to limit the width of the track on which an arc path may be formed to thereby utilize only the portion of the arcing surface of the tip which has substantially the total magnetic field parallel thereto and extending radially thereacross. An additional embodiment uses peripherally spaced discrete radially extending bars, the inner ends of all bars having the same or like polarity. An arc heater has two axially spaced electrodes, each of which is fluid cooled and includes at least one annular permanent magnet in the electrode tip and passageway therein for the flow of cooling fluid.

3,610,797

METHOD AND APPARATUS FOR CONTROLLING THE POSITION OF TWO ELEMENTS HAVING A DISCONTINUITY IN THEIR POSITIONAL RELATIONSHIP

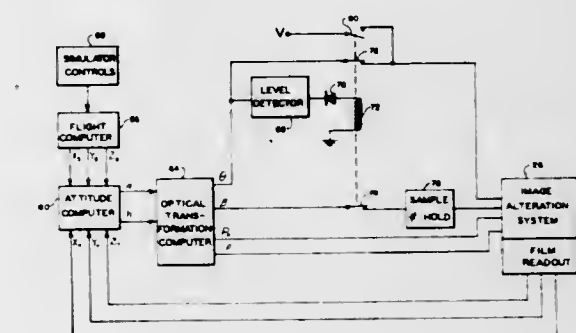
William C. Ebeling, Binghamton, N.Y., assignor to General Precision, Inc., Binghamton, N.Y.

Filed Sept. 5, 1968, Ser. No. 757,624

Int. Cl. G09b 9/08; G06g 7/66

U.S. Cl. 35-10.2

9 Claims



The disclosed embodiment of the present invention is a computer for controlling the rotational position of a pair of

anamorphic lenses in a perspective alteration optical system for a simulator. At a particular position of one anamorphic lens in such an optical system, the position of the other anamorphic lens is undefined and computed rates exceed the hardware capabilities. A level detector senses the signal supplied to the drive for the first anamorphic lens and supplies an output when that signal is within a prescribed range of the point at which the position of the second lens is undefined. The signal for driving the second anamorphic lens is connected through a switch and a sample and hold circuit to the drive for the second lens. The switch is responsive to the output of the level detector. The output of the level detector is also operative to disconnect the computed signal supplied to the drive of the first anamorphic lens and to connect a constant level signal to such drive to maintain the relative positions of the lenses fixed.

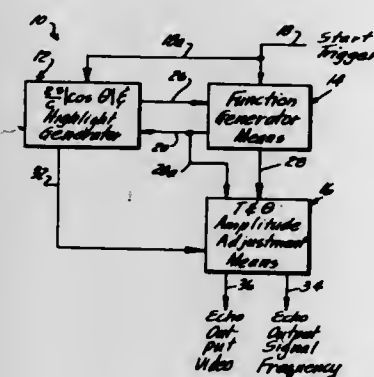
3,610,798 SONAR ECHO SIMULATOR

Francis J. Murphree, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 17, 1969, Ser. No. 858,671
Int. Cl. G09b 9/00; G01s 9/66

U.S. Cl. 35-10.4

9 Claims



A sonar echo simulator utilizes analog and digital means to generate a series of highlight trigger signals the timing of which is related to simulated target length, length of insonifying pulse, and target aspect angle. The highlight trigger pulses are applied to pulse function generator means which produces a plurality of highlight echo signals. The highlight echo signals are variably attenuated and added to provide a composite echo signal which is further attenuated in accordance with insonifying pulse length and aspect angle to provide a realistic simulated echo signal.

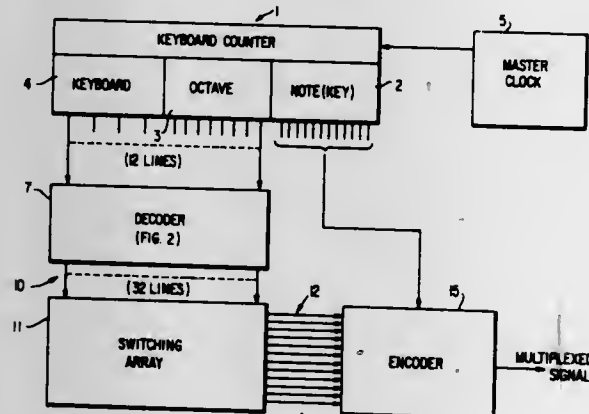
3,610,799 MULTIPLEXING SYSTEM FOR SELECTION OF NOTES AND VOICES IN AN ELECTRONIC MUSICAL INSTRUMENT

George A. Watson, Tustin, Calif., assignor to North American Rockwell Corporation

Filed Oct. 30, 1969, Ser. No. 872,597
Int. Cl. G10h 1/00

U.S. Cl. 84-1.01

42 Claims



In an electric organ, the actuation of keys in accordance with corresponding, audible tones to be reproduced effects

the gating of pulses into time slots of a time division multiplex signal, the time slots of the multiplex signal being structured in accordance with a desired assignment sequence to correspond to the keys and to be representative thereof for identifying each note capable of being generated by the organ. A set of note, or tone, generators with availability assignment control means for capturing a pulse in the multiplex signal are each rendered responsive to a given captured pulse for generating the tone represented by that pulse. A second multiplex system having time slot pulse assignments additionally provides for generation of a time division multiplex signal for control of voices and other characteristics to be imparted to the reproduced tones.

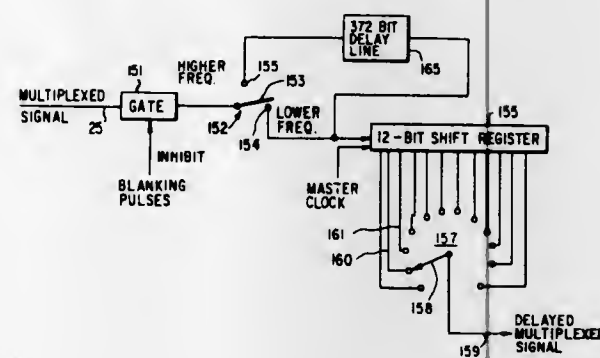
3,610,800 DIGITAL ELECTRONIC KEYBOARD INSTRUMENT WITH AUTOMATIC TRANSPOSITION

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation

Filed Oct. 30, 1969, Ser. No. 872,599
Int. Cl. G01h 1/02

U.S. Cl. 84-1.01

22 Claims



In an electronic organ, the actuation of keys in accordance with corresponding, audible tones to be reproduced effects the gating of pulses into time slots of a time division multiplexed signal, the time slots of the multiplexed signal being structured in accordance with a desired assignment sequence to correspond to the keys and to be representative thereof for identifying each note capable of being generated by the organ. A set of note, or tone, generators with availability assignment control means for capturing a pulse in the multiplexed signal are each rendered responsive to a given captured pulse for generating the tone represented by that pulse. Automatic transposition of notes, by a specified number of half steps higher or lower than the note played, is selectively effected by a time shift of pulses in the multiplexed signal by one time slot per half note to be transposed. In this manner, when an organist plays a musical selection in an original musical key, the organ produces the audible musical output in the selected, transposed musical key.

3,610,801 DIGITAL MUSIC SYNTHESIZER

Edward Fredkin, and Marvin L. Minsky, both of Brookline, Mass., assignors to Triadex Incorporated, Brookline, Mass.

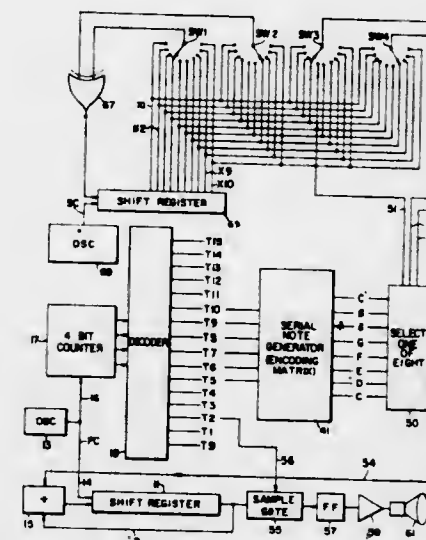
Filed Feb. 16, 1970, Ser. No. 11,683
Int. Cl. G10f 1/00; G10h 5/00

U.S. Cl. 84-1.03

19 Claims

In the apparatus disclosed herein, a note generator is controlled by a long term, quasi-periodic function which is in turn generated by applying digital feedback in preselected combinations around a digital register. The register comprises means for holding a plurality of bits of digital information in a given order, e.g. a shift register or counter, the held information being changeable according to a predetermined pattern in response to input signals applied thereto. Digital feedback is provided by applying to the register at least one input signal which is obtained according to a preselectable or

adjustable code from bits of information obtained from various points in the register itself. The apparatus thus, in effect,



composes music as distinguished from merely synthesizing sound.

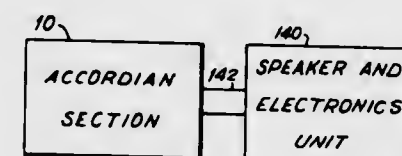
3,610,802 COMBINATION ACCORDION-ORGAN MUSICAL INSTRUMENT

Kurt Berwin, Fresh Meadows, N.Y., assignor to Bell Accordion Corporation, New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,164
Int. Cl. G10h 3/02

U.S. Cl. 84-1.07

19 Claims



A combined musical instrument in two parts providing electronic organ and accordion performance. Each musical function may be accomplished independently or simultaneously.

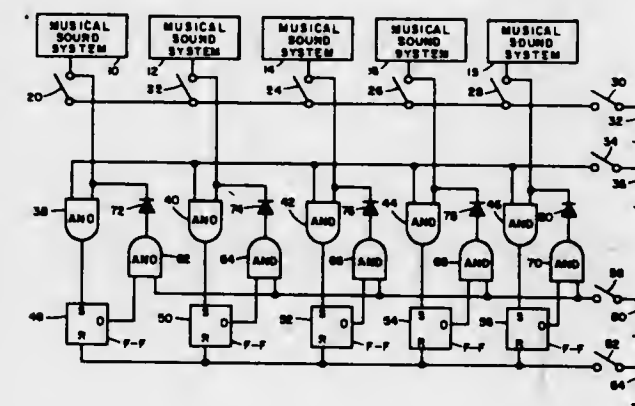
3,610,803 CHORD STORING APPARATUS FOR ELECTRIC ORGAN

Douglas W. Taylor, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 15, 1969, Ser. No. 858,072
Int. Cl. G10h 3/05

U.S. Cl. 84-1.17

4 Claims



A chord storing and playing apparatus is provided with keys and switches so that when one or more notes are played in an electronic musical instrument having keys, a record that that note or those notes have been played is stored in a memory

bank. Thereafter, that note may be sounded or those notes may be sounded simultaneously upon closing a switch whereby the performer may set up his own note or chord that will be played when the play switch is closed.

3,610,804 COMBINATION OF SELECTOR SWITCH AND EXPRESSION CONTROL OF ELECTRONIC MUSICAL INSTRUMENT

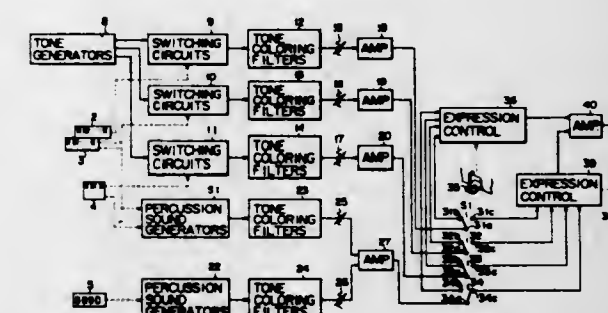
Toshiro Matsuura, Iwata-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Nakazawa-cho Hamamatsu-shi, Shizuoka-ken, Japan

Filed Oct. 7, 1969, Ser. No. 864,496

Claims priority, application Japan, Oct. 9, 1968, 43/73114
Int. Cl. G01h 3/06

U.S. Cl. 84-1.17

3 Claims



An electronic musical instrument having several music playing sections including musical-scale tone playing sections and percussion sound playing sections. The instrument also includes several expression controls which are separately operated by the leg portion of a player, and several selector switches connected between the outputs of the respective music playing sections and the expression controls. Each music playing section has an associated output which is connected to an associated predetermined one of the selector switches. Each selector switch is capable of connecting its associated music playing section output to any one of the expression controls.

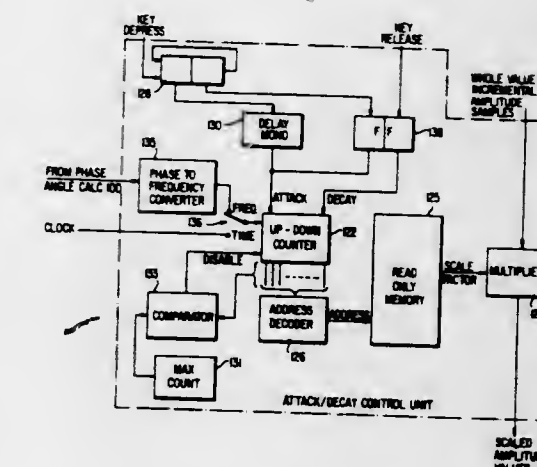
3,610,805 ATTACK AND DECAY SYSTEM FOR A DIGITAL ELECTRONIC ORGAN

George A. Watson, Tustin, and Ralph Deutsch, Sherman Oaks, both of Calif., assignors to North American Rockwell Corporation

Filed Oct. 30, 1969, Ser. No. 872,598
Int. Cl. G10h 1/02

U.S. Cl. 84-1.13

22 Claims



In an electronic organ, the actuation of keys in accordance with corresponding audible tones to be reproduced effects the gating of pulses into time slots of a time division multiplexed signal, the time slots of the multiplexed signal being

structured in accordance with a desired assignment sequence to correspond to the keys and to be representative thereof for identifying each note capable of being generated by the organ. A set of note, or tone, generators with availability assignment control means for capturing a pulse in the multiplexed signal are each rendered responsive to a given captured pulse for generating the tone represented by that pulse. The appropriate tone is generated digitally in the form of amplitude samples of a waveform stored in a memory, and the amplitude samples are subsequently subjected to digital-to-analog conversion for ultimate production of the audible output of the organ. Attack and decay of the tone, or note, waveform envelope are simulated by appropriately scaling the amplitude samples at the leading and trailing portions of the waveform envelope.

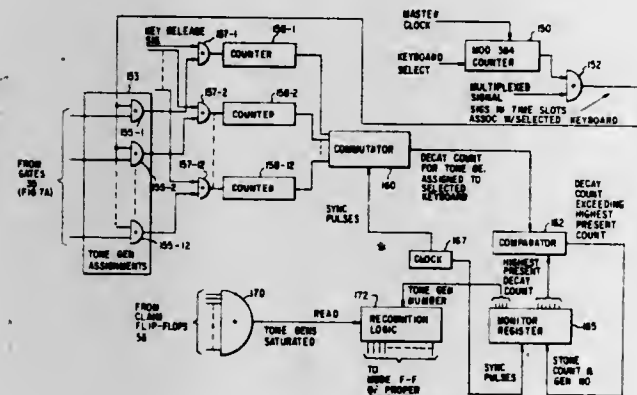
3,610,806

ADAPTIVE SUSTAIN SYSTEM FOR DIGITAL ELECTRONIC ORGAN

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation
Filed Oct. 30, 1969, Ser. No. 872,600
Int. Cl. G10h 1/02

U.S. Cl. 84-1.26

15 Claims



In an electronic organ the actuation of keys in accordance with corresponding audible tones to be reproduced effects the gating of pulses into time slots of a time division multiplexed signal, the time slots of the multiplexed signal being structured in accordance with a desired assignment sequence to correspond to the keys and to be representative thereof for identifying each note capable of being generated by the organ. A set of note, or tone, generators with availability assignment control means for capturing a pulse in the multiplexed signal are each rendered responsive to a given captured pulse for generating the tone represented by that pulse. The appropriate tone is generated digitally in the form of amplitude samples of a waveform stored in a memory, and the amplitude samples are subsequently subjected to digital-to-analog conversion for ultimate production of the audible output of the organ. Attack and decay of the tone waveform envelope are simulated by appropriately scaling the amplitude samples at the leading and trailing portions of the waveform envelope. An adaptive sustain operating mode is provided by which the length of decay is varied according to the availability of tone generators where the number of tone generators is limited.

3,610,807

ELECTRIC POWER TRANSMISSION SYSTEM INCLUDING PRESSURIZED PIPE HAVING CENTRAL CONDUCTOR AND PROVIDING AN EXPANSION JOINT AND GAS-BARRIER CONSTRUCTION

Daniel L. Whitehead, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1969, Ser. No. 807,653

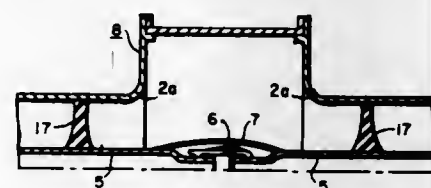
Int. Cl. H01b 9/06; H02g 15/24

U.S. Cl. 174-13

10 Claims

A pressurized gas-insulated enclosed high-voltage conductor or conductors are located axially within a surrounding grounded pipe, and enlarged expansion joints for accom-

modating a wide range of temperatures are provided. Additionally, to prevent a sudden surge of transient pressure being



developed along the pressurized transmission line, space gas barrier constructions having orifices are provided.

3,610,808

AREA SECURITY CABLE COMPRISING STRAIN AND HEAT-RESPONSIVE NETWORK

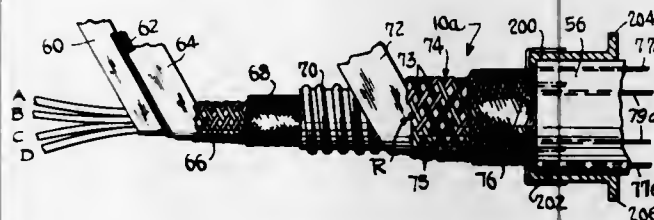
Elwood R. Horwinski, Cheshire, Conn., assignor to Lewis Engineering Company, Naugatuck, Conn.

Filed Nov. 20, 1968, Ser. No. 777,397

Int. Cl. H01b 7/32

U.S. Cl. 174-115

6 Claims



An area security cable having a network of conductors such as a tamperproof wire screen or a tamperproof cable braid for use with an associated detection circuit. The screen can be part of an enclosure, and can comprise insulated wires connected to form one or more trigger circuits. The cable may comprise a signal carrying core jacketed by one or more braids of insulated wires which are connected with each other to form one or more trigger circuits. Some of the screen or braid wires are resistance wires and at least one is metal of low melting point. The cable also has an unbraided and untwisted wire of high tensile strength, and the screen or cable can have an additional wire not included in the trigger circuit and adapted to constitute the bulb of a resistance thermometer. The trigger circuits can be connected to an energized detector circuit such as an instrument movement and a bridge, whereby any breaking or shorting of one or more of the wires of the cable or screen will result in a response by the instrument movement. The resistance bulb wire can be connected to a temperature bridge so that cable or screen temperature can be read.

3,610,809

POROUS VAPOR-COOLED ELECTRICAL CONDUCTORS

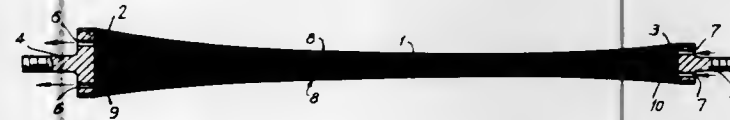
Lester K. Elgenbrod, Grand Island, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,115

Int. Cl. H01b 7/34

U.S. Cl. 174-15

19 Claims



Disclosed is a vapor-cooled, porous electrical conductor of nonconstant cross-sectional area having high current capacity and high coolant consumption efficiency. These conductors require substantially less cryogenic refrigeration at all ampere loadings up to rated load than do previously known fluid-cooled conductors.

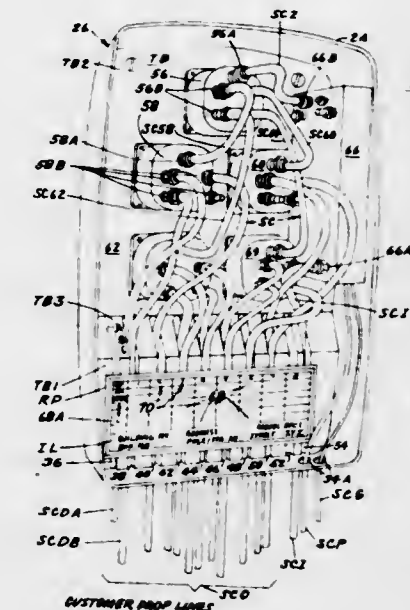
3,610,810 TERMINAL BOX AND SERVICE CABLE INVENTORY SYSTEMS FOR CABLE TELEVISION SERVICE AND THE LIKE

Charles W. Fribley, Jr., Canada Road, Painted Post, N.Y.
Filed June 18, 1970, Ser. No. 47,365

Int. Cl. H02g 3/16

U.S. Cl. 174-59

12 Claims



A terminal box is provided for orderly distribution of TV coaxial cable with coupling connectors to multiple output cable connectors known in the art as splitters which are each connectable and disconnectable for different locations, such as to serve positively designated apartments in large or small buildings. The splitters are mounted in a terminal box on a suitable terminal board in predetermined spaced positions and each service cable lead to and from such splitters is positively identified for each apartment and for each location in each apartment when one or more service outlets are desired for an apartment. The terminal box is marked and formed with openings for each cable to aid in the in-field inventory and installation of the respective service cable drops and is uniquely adapted to be placed in readily accessible locations known to the installer, effecting substantial savings in time and labor.

3,610,811

PRINTED CIRCUIT BOARD WITH SOLDER RESIST GAS ESCAPE PORTS

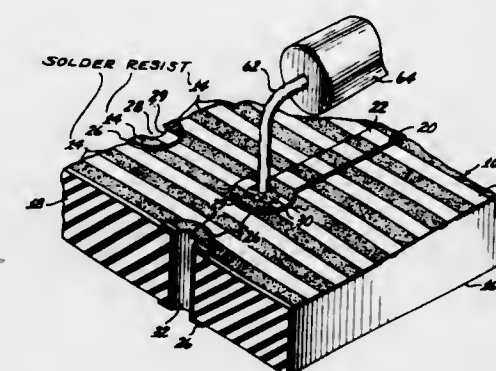
James E. O'Keefe, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.

Filed June 2, 1969, Ser. No. 829,492

Int. Cl. H05k 1/18, 3/32

U.S. Cl. 174-68.5

14 Claims



A circuit board having apertures within which circuit component leads are soldered and having a surface coated with solder resist in a universal pattern. The solder resist coating intersects the periphery of the apertures to alter the temperature environment in the aperture during the soldering

process, preventing the formation of solder fillets at the board surface and permitting gasses to escape from the apertures.

3,610,812

CONNECTING A SUBMARINE REPEATER AND A SUBMARINE COAXIAL CABLE

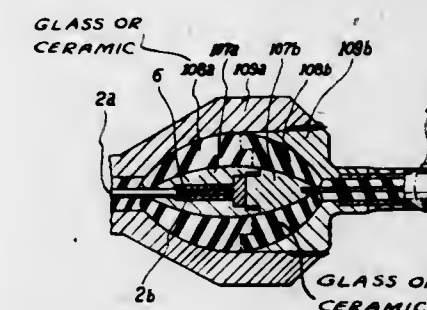
Kahel Furusawa, Tokyo-to, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Filed July 16, 1970, Ser. No. 55,369

Claims priority, application Japan, July 18, 1969, 43/68309

Int. Cl. H02g 15/08, 15/12

U.S. Cl. 174-70 S

7 Claims



A device connecting a submarine coaxial cable and a repeater. The connecting device has a conductive anchor means disposed internally of an insulator intimately covering the outer surfaces of the anchor means axially and circumferentially. The insulator is made of a material capable of withstanding large compressive forces. The anchor means is electrically connected to the inner conductor of the cable and to the repeater. An open-ended conductive receptacle is provided with a cavity complementary to the configuration of the insulator and receives it therein snugly with the anchor means. The receptacle means is supported by the box of the repeater. The anchor means and the insulator increase in cross section from both ends thereof toward the middle and the device substantially eliminates miswiring of impedances in the connection.

3,610,813

TUBULAR OIL FILLED ELECTRIC BUSHING WITH SEALING MEANS

Sven Linderholm, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

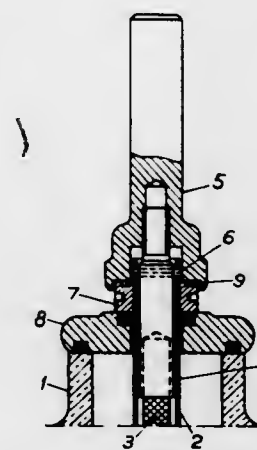
Filed Apr. 27, 1970, Ser. No. 032,114

Claims priority, application Sweden, Apr. 30, 1969, 622169

Int. Cl. H02g 15/04, 15/22

U.S. Cl. 174-75 R

4 Claims



An oil filled electric bushing consists of an elongated, tubular insulator, through which an electric conductor extends. The conductor is provided at one of its ends with a terminal assembly comprising an inner tap firmly joined to the conductor and an external terminal tap threaded on to the inner tap and pressed against an end seal member. A resilient tubular locking pin holds the inner tap in a fixed position in relation to the end seal member.

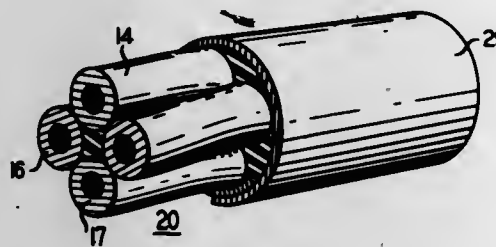
3,610,814

SPIRAL-FOUR QUAD STRUCTURE

John M. Peacock, Mendham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 8, 1969, Ser. No. 883,222
Int. Cl. H01b 7/00

U.S. Cl. 174-113 R

6 Claims



This application discloses a spiral-four quad conductor structure in which a desired square geometry is maintained by a thermoplastic filler. Four conductors are drawn through a filler bath and thereafter, through a circular die. Cooling of the filler assures maintenance of the quad into its desired geometry, as well as providing waterproofing for the quad.

3,610,815

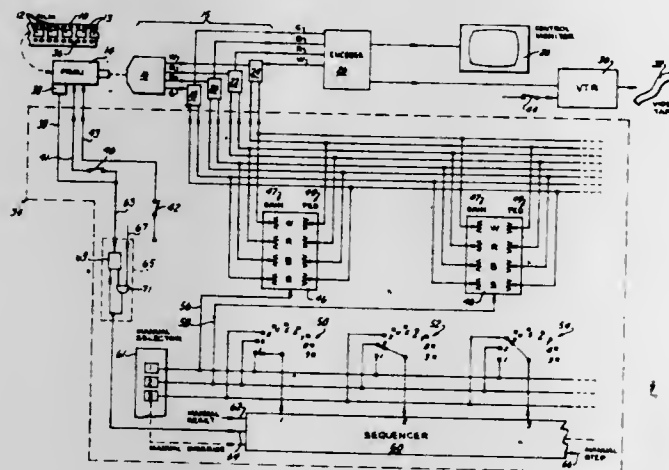
MOTION PICTURE FILM COLOR CORRECTION SYSTEM AND METHOD

George K. Gould, Roslyn, N.Y.; Robert W. Lieberman, Paterson, N.J., and Armando Belmares-Sarabia, Long Beach, N.Y., assignors to Teletronics International, Inc., New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,510
Int. Cl. H04n 9/02, 5/76

U.S. Cl. 178-5.2 A

21 Claims



A system and method for producing color-corrected video tape recordings from color motion picture film. The location of scene changes is marked on the film. The film is run through a motion picture projector which stops automatically when it senses one of the markings denoting a scene change. The color images from the projector are converted into electrical signals representing the color components, and the electrical signals are recombined and displayed as a composite picture on a color video picture tube which is used as a control monitor. Each time the projector stops for a scene change, the electrical color component signals are adjusted by the operator until the color in the picture on the control monitor is correct, and the adjustments are stored. Then the projector is restarted and automatically stops at the next scene change, and the next scene is corrected and the correction signals are stored as before. This process is repeated until all of the scenes have been corrected and the correction signals for each scene have been stored. Then the film is rerun through the projector, without stopping, while the stored signals are read out of storage in sequence and the corrected component signals are recorded on video tape.

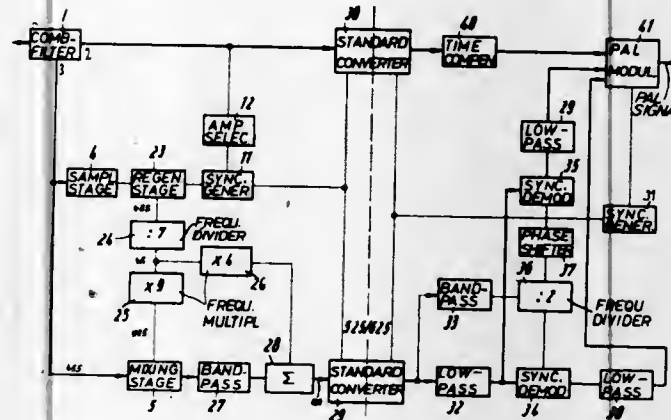
3,610,816

METHODS FOR CONVERTING COLOR TELEVISION STANDARDS

Fritz Jaeschke, Darmstadt, and Hartmut Wendt, Weiterstadt, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany
Filed July 28, 1969, Ser. No. 846,305
Claims priority, application Germany, Aug. 1, 1968, Jan. 30, 1969, P 17 62 671.0; P 19 04 393.7
Int. Cl. H04n 5/02

U.S. Cl. 178-5.4 C

18 Claims



A method for color standard conversion for color television, in which the color television signal to be converted is separated into luminance and chrominance components. The chrominance component from the separating step is converted in an auxiliary chrominance signal of lower carrier frequency. The lower carrier frequency signal is an integral multiple of the line frequency of the color television signal to be converted. The auxiliary chrominance signal is reproduced on the screen of a black-white picture tube which is then scanned corresponding to the synchronizing standard to which the television signal is to be converted. The signal resulting from this scanning step is then converted to a chrominance signal having the color carrier frequency of the new standard, and this converted chrominance signal is then combined with the luminance signal which has been converted to conform to the new standard.

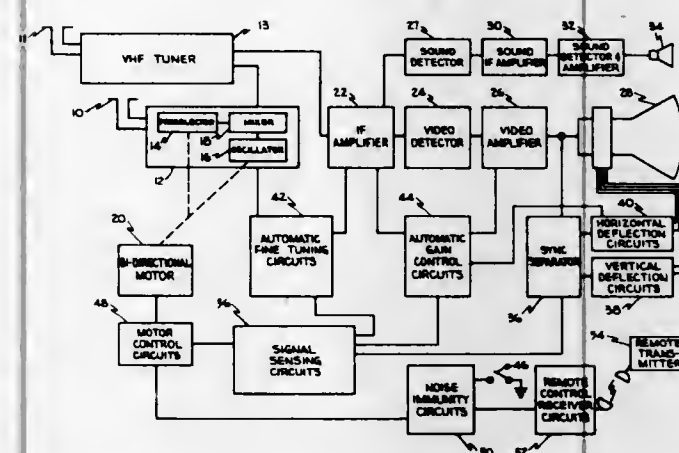
3,610,817

TELEVISION SIGNAL SEEKING SYSTEM WITH HORIZONTAL SYNCHRONIZING PULSE DETECTOR CIRCUIT FOR CONTROLLING THE SIGNAL SEEKING

Thomas Austin Bridgewater, Indianapolis, Ind., assignor to RCA Corporation
Filed June 2, 1969, Ser. No. 829,393
Int. Cl. H04n 5/44

U.S. Cl. 178-5.8 R

16 Claims



A television signal seeking system includes a UHF tuner driven by a bidirectional motor. The motor windings are energized through transistor switching circuits which are coupled to signal sensing circuits. Once the motor switch circuits are actuated, the motor will drive the tuner through the television frequency spectrum until a stopping signal is applied to the motor switch circuits to deenergize the motor winding. The stopping signal is developed in response to (1) the presence of a train of horizontal sync pulses; (2) the

presence of a predetermined level of automatic gain control voltage; and, (3) a predetermined level of automatic fine tuning correction voltage. Noise immunity is provided by integrating the horizontal sync pulses so that a predetermined number of sync pulses must occur before the stopping signal can be developed.

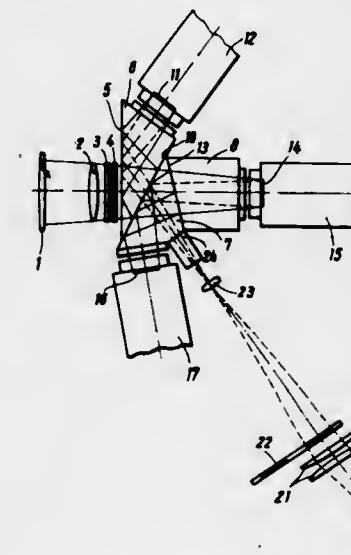
3,610,818

COLOR TELEVISION CAMERA WITH A DEVICE FOR ADDITIONAL ILLUMINATION OF SIGNAL CONVERTING PLATES OF CAMERA TUBES

Horst Bachmann, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed May 13, 1970, Ser. No. 36,925
Claims priority, application Germany, May 14, 1969, P 19 24 564.8
Int. Cl. H04n

U.S. Cl. 178-5.40

5 Claims



The color spectrum separating optical device for a color television camera comprises a combination of a triangular prism with a quadrangular prism. The triangular prism has an image light input face and two output faces. An output face of the triangular prism mates with a light input face of the quadrangular prism and is coated with a dichroic layer. The opposite light input face of the quadrangular prism is ground at such an angle as to project an auxiliary light beam on the mating faces of the two prisms in the region thereof where the image light beam from the image lens system passes through the two prisms. The light output faces of the prisms are optically coupled to the signal converting plates of the color camera tubes. One of the output faces of the quadrangular prism is also coated with a second dichroic layer.

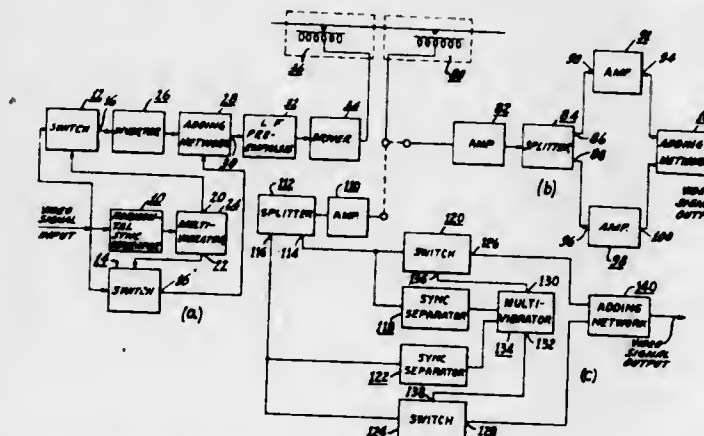
3,610,819

VIDEO RECORDING WITH ALTERNATE PERIOD INVERSION AND LOW-FREQUENCY PREMPHASIS

Roger D. Thompson, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 4, 1966, Ser. No. 518,631
Int. Cl. G11b 5/02; H04n 5/78, 7/12

U.S. Cl. 178-6.6 A

19 Claims



Television signals may be recorded with reduced bandwidth by inverting the polarity of the video signal for al-

ternate line periods to eliminate or reduce DC and low-frequency signals. Low-frequency preemphasis is used when recording and a keyed clamp may be used to establish sync tip level for reproduction.

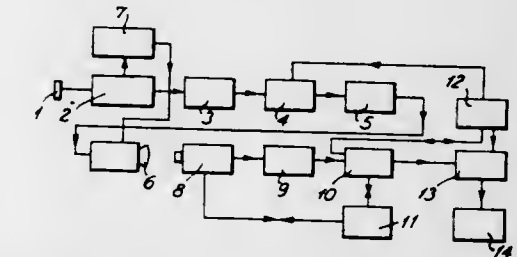
3,610,820

METHOD AND SYSTEM FOR RECORDING, REPRODUCING AND ANALYZING PICTURE INFORMATION BY ULTRASONIC-PULSE-ECHO SECTIONAL VIEW EXAMINATIONS

Svend Aage Lund, Birkerød, Denmark, assignor to Akademiet for de tekniske Videnskaber, Glostrup, Denmark
Filed Jan. 12, 1968, Ser. No. 697,445
Claims priority, application Denmark, Jan. 13, 1967, 229/67
Int. Cl. H04n 3/16 5/78 G01n 29/00

U.S. Cl. 178-6.6 A

13 Claims



By Ultrasonic-pulse-echo sectional view examinations the complete picture information is recorded by repeated, superimposed, synchronous recordings on an endless magnetizable signal carrier, and the recorded information is then reproduced on a video monitor.

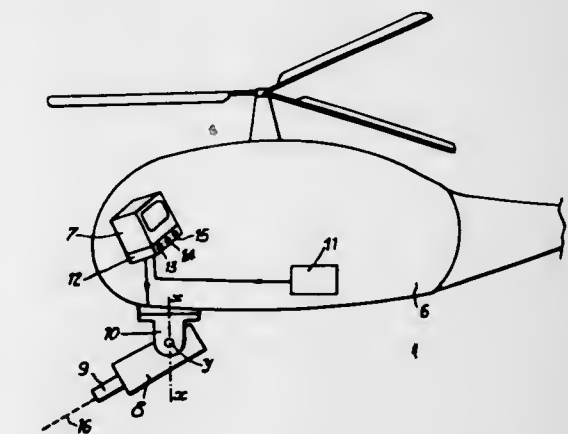
3,610,821

NAVIGATING AND LANDING DEVICE FOR AIRCRAFT

Jean Raymond Narbais-Jaureguy, 1. rue Louis Mercier, Malakoff, (Seine), France
Filed June 21, 1965, Ser. No. 465,796
Claims priority, application France, June 23, 1964, 979,284
Int. Cl. H04n 1/00

U.S. Cl. 178-6.8

3 Claims



A device projects two beams of light which are reflected and detected by a television camera; the camera has image-stabilizing means; the screen of a monitor shows the pilot of an aircraft the area on which he is to land.

3,610,822

INTRUDER DETECTION APPARATUS

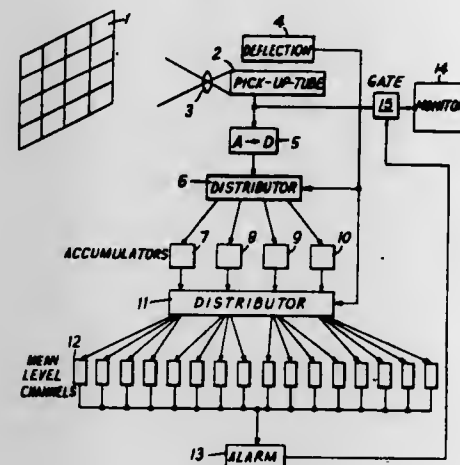
William Ellis Ingham, 12 Kent Avenue, Ealing, London W. 13; Robert Justin Froggatt, 11, Thorncliff Road, Norwood Green, Southall Middlesex, and Christopher Archibald Gordon Le May, 20 St. Mary's Crescent, Osterley, Middlesex, all of England
Filed Mar. 17, 1969, Ser. No. 807,886
Claims priority, application Great Britain, Mar. 20, 1968, 13417/68
Int. Cl. H04n 7/18

U.S. Cl. 178-6.8

8 Claims

A pickup tube repetitively scans a region so as to produce video signals dependent on radiation received from the re-

gion, and operating means produce a plurality of second signals which are dependent on changes in radiation from one scan to another from respective portions of the region. Alarm means produce an alarm signal when any of the second signals exceeds a threshold individual to the respective portion. The shapes of each of the portions may be



varied and the second signals may be weighted. A plurality of pickup tubes may be provided each arranged to survey a different region, the pickup tubes being sequentially monitored by the operating means. In another embodiment two pickup tubes are provided one having a longer lag than the other, and the video signals derived from the two tubes for the respective portions of the region compared to produce the second signals.

3,610,823

TELEVISION CAMERA SYSTEM

Henricus Wijnandus Gerardus Haenen, Emmasingel, Eindhoven, Netherlands; Frederick Johannes Van Roessel, Paramus, N.J., and Sing Liang Tan, Emmasingel, Eindhoven, Netherlands, assignors to North American Philips Company Inc., New York, N.Y.

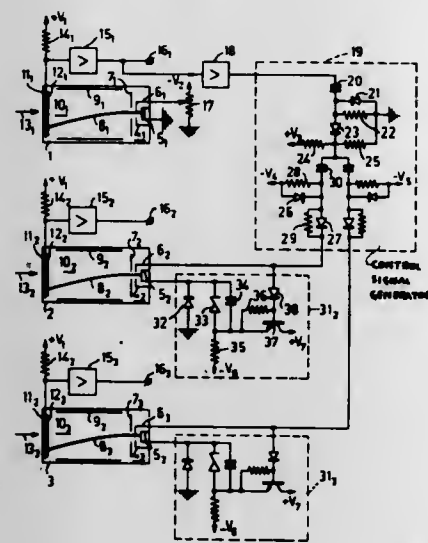
Filed Oct. 27, 1967, Ser. No. 678,641

Claims priority, application Netherlands, Nov. 1, 1966, 6615377

Int. Cl. H04n 5/34

U.S. Cl. 178-7.2

10 Claims



In a television camera system (e.g. a color television camera system) having a plurality of camera tubes, one of the camera tubes has a higher beam current intensity than the other tubes. The output of the one tube above a given threshold is employed to produce a control signal. The control signal is applied to control electrode of another camera tube for stabilizing potential images on the target plate of the other camera tube.

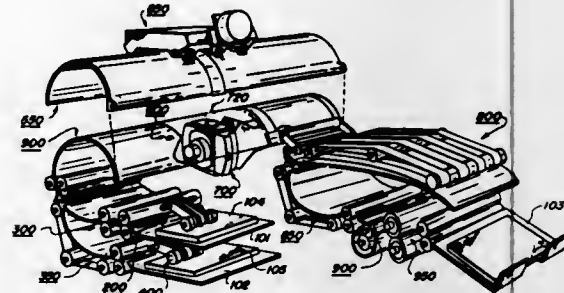
3,610,824
FACSIMILE SCANNING APPARATUS
Richard F. Hansen, Penfield; Frank L. Headd, Webster; Donald William Schaeffer, Webster, N.Y., and Ronald F. Rueckwald, San Mateo, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed Sept. 11, 1968, Ser. No. 758,930

Int. Cl. H04n 1/06, 1/30

U.S. Cl. 178-7.6

5 Claims



Facsimile scanning apparatus having a rotatable support member with first transducing means operatively associated therewith for converting information on record media into representative electrical signals for transmission to a remote location, and second transducing means operatively associated therewith for converting electrical signals received from a remote location into representative patterns of information on record media. The rotatable support member is positioned adjacent a scanning station axially located along a passageway formed by a first media support member having a convex semicylindrical surface extending axially therealong and a second media support member having a concave semicylindrical surface extending axially therealong which cooperate when in the operative position to form a curvilinear passageway through which record media are advanced. The rotatable support member is rotated about the longitudinal central axis of the passageway and in the transmit mode, the read transducing means are activated to generate representative electrical signals of information on record media supported at the scanning station as the transducing means traverse the record media. In the receive mode, the record transducing means are activated to produce electrostatic charge patterns on a dielectric record media positioned within the passageway at the scanning station in response to received electrical signals representative of the information.

3,610,825

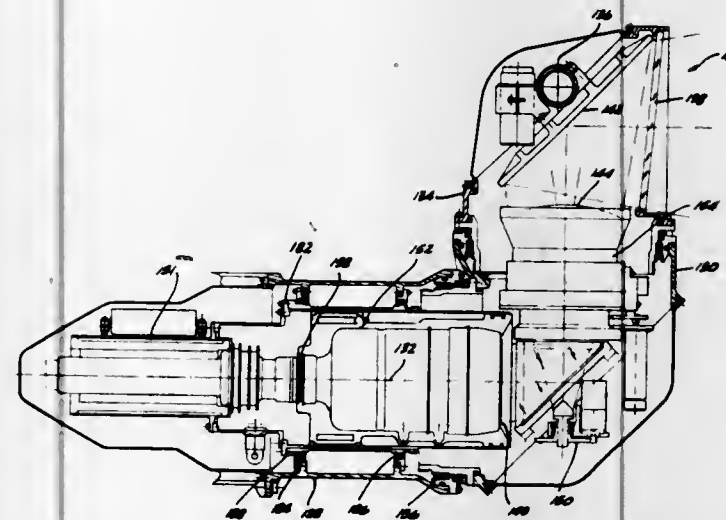
IMAGE CONTROL APPARATUS FOR A VISION SYSTEM
Bradley G. Fritzel, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 4, 1969, Ser. No. 831,277

Int. Cl. H01J 29/02

U.S. Cl. 178-7.8

8 Claims



Apparatus for providing an erect image in a viewing system that includes a viewing turret which matches the construction of a weapon turret, to simplify slaving the weapon turret to the viewing turret. The viewing turret includes a first mirror

which rotates in azimuth with respect to a second mirror, the second mirror rotating in elevation with respect to a stationary main turret housing. A camera or other detector which receives light from the second mirror points in a constant viewing direction, but it can be rotated around the axis of its viewing direction to compensate for tilting of the view reflected to it from the second mirror. A pair of potentiometers that sense the position of the two mirrors, provide the input to a circuit that drives a motor to turn the detector in an amount that corrects for tilting of the view.

3,610,826

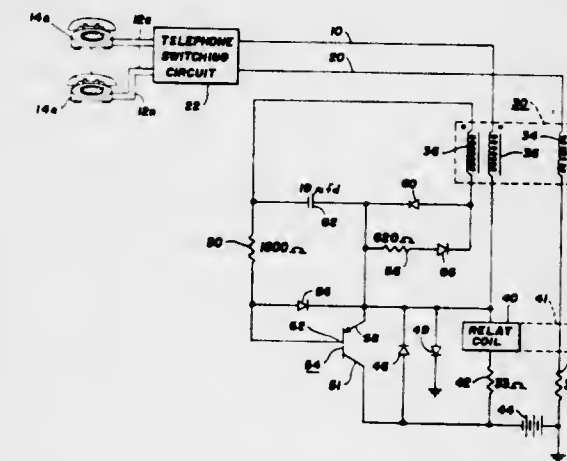
SELECTIVELY SHUNTED RELAY PULSING CIRCUIT
Charles A. Frumosa, and William E. Shaffer, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,209

Int. Cl. H04m 7/00

U.S. Cl. 179-78

12 Claims



A control device, such as a relay or saturable reactor, is connected across a pair of conductors that are adapted to be connected to a telephone line to function as a pulsing circuit. A switching circuit applies a momentary low impedance path across the control device when the connected telephone line is switched from a closed to an open circuit condition and reduces the effect of the reactive components in the telephone loop on the switching response of the relay.

3,610,827

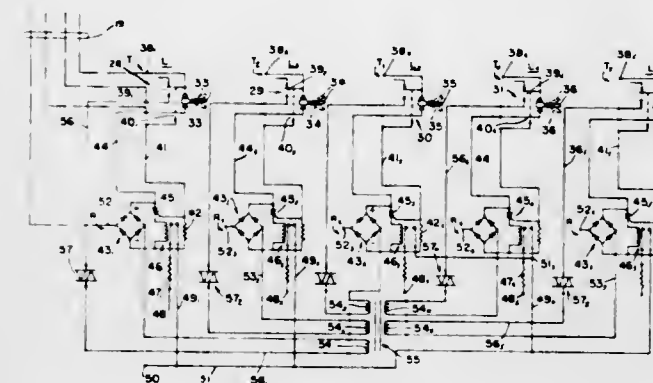
CONFERENCE CALL EQUIPMENT

Walter H. Shaw, 600 N.W. 196th St., Miami, Fla.
Filed Apr. 16, 1969, Ser. No. 816,738

Int. Cl. H04m 3/56

U.S. Cl. 179-1 CN

10 Claims



Plural conference line connections are controlled at a conference-initiating handset through like, manual switch-controlled networks or subcircuits structurally adjacent but external of the set. Each network includes a diode-type bridge and associated diode-type gate, the firing of which, upon operation of one of plural switches for the respective networks sets up tip, ring and other terminal connections of the conference-initiating set's subcircuit. Each switch has normally open-latched and instantaneous contacts; and similar selective manipulation of other switches at the initiator's set,

plus pushbutton selection of and dialing of conference line, routes the networks for conversation between any desired combination of conferees.

3,610,828

PRIVACY COMMUNICATION SYSTEM

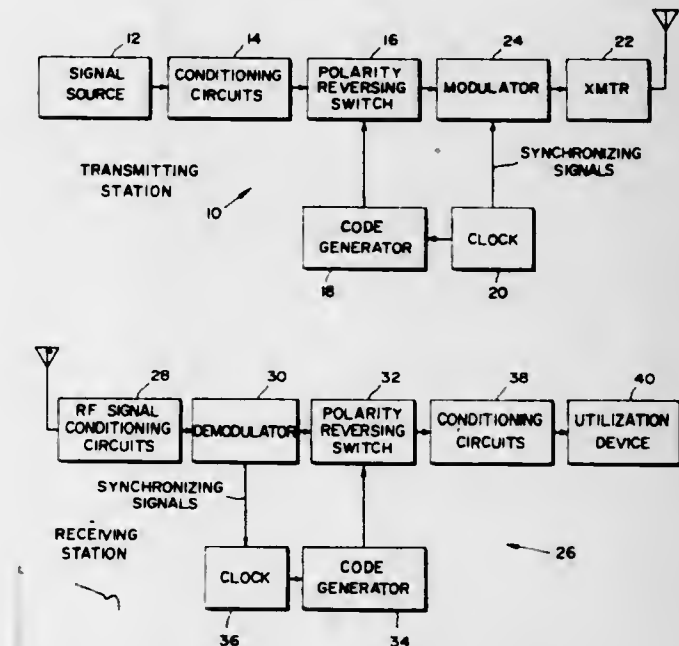
Alfred L. Girard, Billerica; Andrew S. Griffiths, Auburndale; Eugene H. Sheftelman, Weston, and William H. Smith, Hanover, all of Mass., assignors to Technical Communications, Lexington, Mass.

Filed May 23, 1967, Ser. No. 640,665

Int. Cl. H04m 1/08, H04k 1/02

U.S. Cl. 179-1.5 S

3 Claims



A privacy arrangement for a communication system scrambles the analog (audio) input signals prior to transmission by modifying successive fragments thereof in accordance with a complex code word. At the receiving end the signal is reconstituted by once again modifying it, this time in accordance with a locally generated code word identical with the word used at the transmitting end.

3,610,829

TRANSMISSION OF PULSE-CODED INFORMATION OVER TELEPHONE LINES

Hans Dinkel, Grobenzell; Anton Muschik, Munich, and Adolf Haas, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

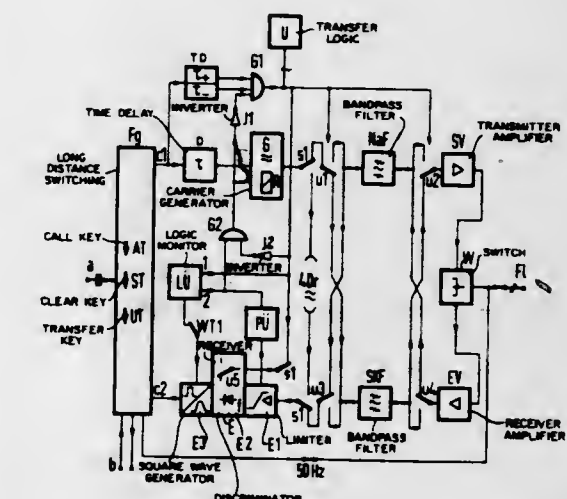
Filed June 28, 1967, Ser. No. 649,573

Claims priority, application Germany, June 29, 1966, S 104503

Int. Cl. H04m 11/06

U.S. Cl. 179-2 DP

7 Claims



A circuit arrangement associated with subscriber stations connected between telephone lines, wherein a portion of the

frequency range normally utilized for voice telephone communication is used to transmit a plurality of pulse-coded messages and associated control signals. Means are connected to each subscriber station to block the frequency range employed for transmission of voice telephone communication. A generator associated with each subscriber station may selectively generate signals at different carrier frequencies for pulse modulation by the message and control signals, and a receiver associated with each subscriber station selectively demodulates received modulated signals. A transfer control system is provided to control the frequency of the carrier signal generated by the generator and to effect selective connections between subscriber stations such that they may be utilized for pulse-coded message transmission and control signal reception, or for pulse-coded message reception and control signal transmission. Further, the carrier signals normally utilized to transmit control signals, may also be modulated to form pulse-coded information bits, thereby providing an additional message channel between subscriber stations.

3,610,830

PLUG-ACTUATED TRANSDUCER MEANS

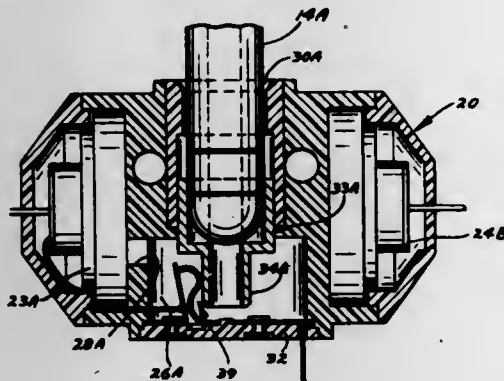
Meinrad C. Daleiden, St. Michael, and Donald L. Kilewer, Minneapolis, both of Minn., assignors to The Telex Corporation, Tulsa, Okla.

Filed June 16, 1969, Ser. No. 833,505

Int. Cl. H04r 1/00

U.S. Cl. 179-1 SW

9 Claims



A transducer for supplying compressional wave energy to a user in which the operation of the transducer is directly under the control of the user through application of compressional wave energy conveying apparatus to the transducer whereby the user is substantially unaware of the presence of compressional wave energy until the sound conveying apparatus has been disposed intermediate the user's auditory canals and the compressional wave energy transducer. The transducer is adapted to receive a plug which is operative, upon engagement with means in the transducer, to convey compressional wave energy from within the interior of the transducer assembly through the plug and suitable sound or compressional wave energy conducting apparatus, to the ear canal of the user. The transducer is further adapted to be selectively responsive to one or more plug members having a configuration adapted to cooperatively cause selective operation of the transducer with respect to two or more sources of signal.

3,610,831

SPEECH RECOGNITION APPARATUS

Stephen L. Moshier, Cambridge, Mass., assignor to Listening Incorporated, Arlington, Mass.

Filed May 26, 1969, Ser. No. 827,777

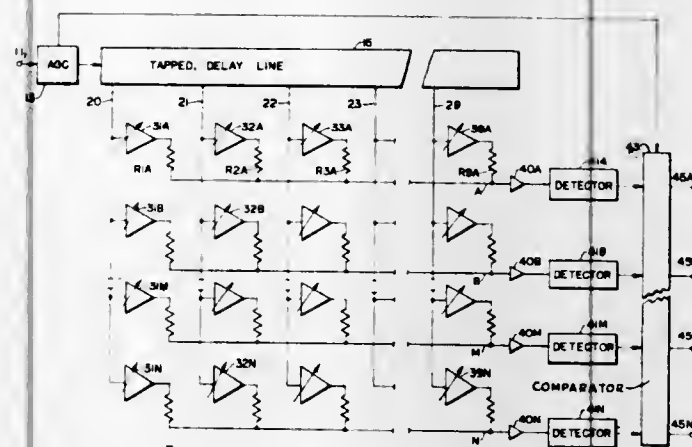
Int. Cl. G101 1/00

U.S. Cl. 179-1 SA

13 Claims

The apparatus disclosed herein identifies different vocal sounds by applying a voice signal which is to be analyzed to a tapped delay line and then linearly summing or mixing preselected proportions of the differently delayed signals. The contribution from each tap is weighted as a function of a corresponding characteristic of a respective vocal sound in

such a way that the composite signal obtained by mixing has a minimum average amplitude when there is a correspon-



dence between the input voice signal and the respective vocal sound.

3,610,832

APPARATUS FOR ADAPTING PCM TELEPHONE SYSTEMS TO MULTIPLEXED TELEGRAPH USE

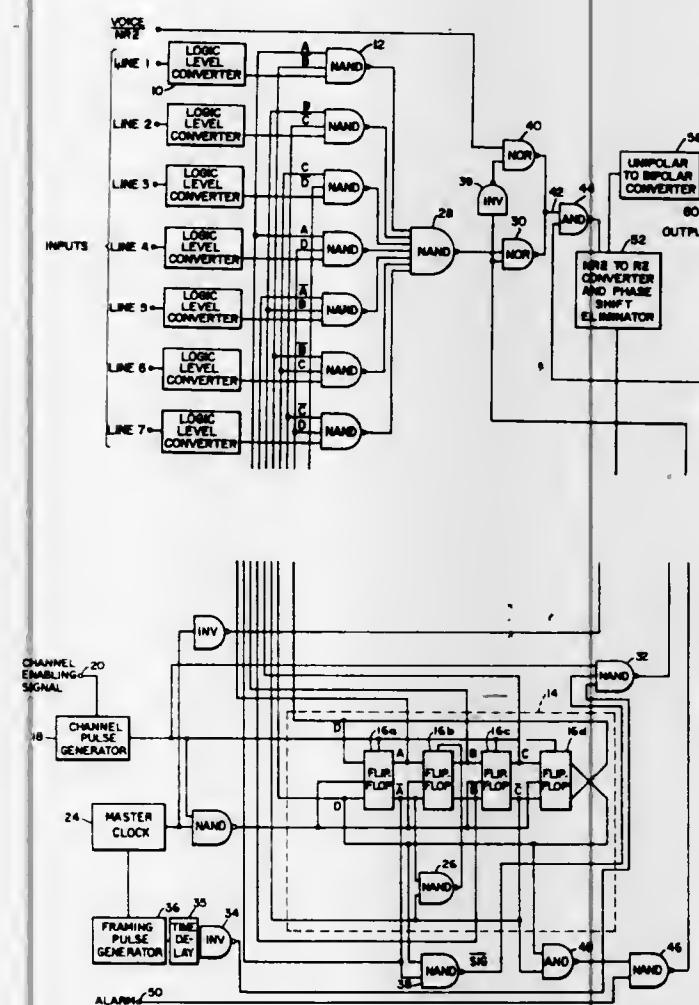
Henry A. Strobel, San Francisco, Calif., assignor to Lynch Communication Systems, Inc., San Francisco, Calif.

Filed July 16, 1969, Ser. No. 842,299

Int. Cl. H04j 3/00

U.S. Cl. 179-15 BY

7 Claims



One or more of the channels of a conventional T-1 type PCM telephone system can be used for the multiplexed transmission of seven telegraph signals by a time-sharing sampling of the telegraph signals. To make the telegraph channel signals compatible with voice channel signals, which have an inherent phase delay, the enabling of the telegraph channel is delayed a corresponding amount. The telegraph channel is also shortened to allow for the insertion of frame and

signalling pulses produced by the voice equipment independently of telegraph information. The telegraph channel signal is decoded by means of bistable latch circuits driving logic level converters. A master clock convertible between internal and external clocking modes is provided.

3,610,833

DEVICE FOR THE DOUBLE-CALL OPERATION OF A TELEPHONE SET CONNECTED TO AN EXCHANGE BY RADIO CHANNEL

Gabriel Lebegue, Massy, France, assignor to C.I.T. Compagnie Industrielle des Telecommunications, Paris, France

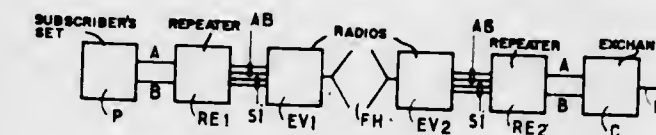
Filed June 12, 1969, Ser. No. 832,731

Claims priority, application France, June 12, 1968, 154760

Int. Cl. H04q 7/04

U.S. Cl. 179-16 E

14 Claims



Device for the double call operation of a telephone set connected to an exchange by radio channel including a first repeater connected between the telephone set and the associated radio equipment and a second repeater connected between the exchange and its associated radio equipment, the repeater at the exchange end comprising a reception relay which is warned by the repeater at the telephone set end, and in turn initiating a switching process the result of which is communicated to the repeater at the telephone set end, each repeater thus indicating in turn to the other the partial result attained until the command requested by the telephone set is effectively transmitted to the exchange as if the link had been metallic from end to end.

3,610,834

LOW-LEVEL DUPLEX SIGNALLING SYSTEM FOR TELEPHONE NETWORKS

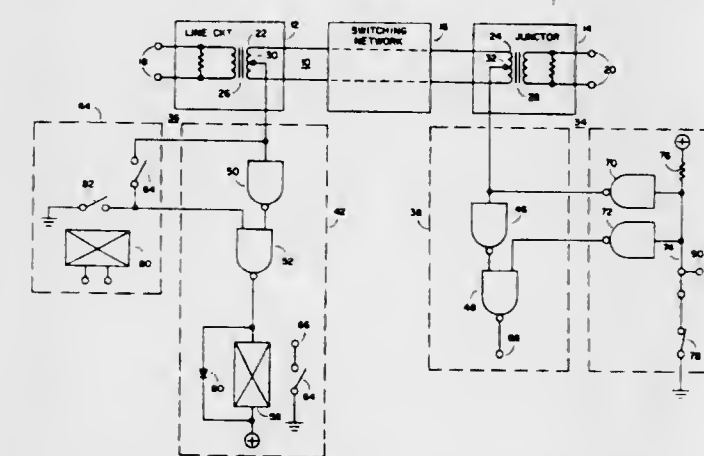
Klaus Gueldenpennig, Frank Churnetski, and Enrique Comas, all of Monroe County, N.Y., assignors to Stromberg-Carlson Corporation

Filed Nov. 4, 1968, Ser. No. 773,071

Int. Cl. H04m 7/10

U.S. Cl. 179-43

10 Claims



A duplex signalling system for transmitting direct-current (DC) signals over a conductive transmission path is described. A separate switching circuit is connected to a balanced connection at each end of the path to receive and transmit the direct-current (DC) signals, such as dialing pulses. The transmitter portion of the switching circuit at one end normally applies a first low-level DC signal (such as 5 volts) to the path and is switched between the first low-level signal and a second low-level signal (such as ground) when transmitting signals. The transmitter portion of the switching circuit at the other end only applies the second low-level signal to the path when transmitting signals. The receiver portion of the switching circuit at each end of the path is

responsive to the second low-level signal from the transmitter circuit at the opposite end of the path to produce an output signal, and is inhibited when the transmitter at the same end applies the second level of signal to the path.

3,610,835

LOUDSPEAKING TELEPHONE

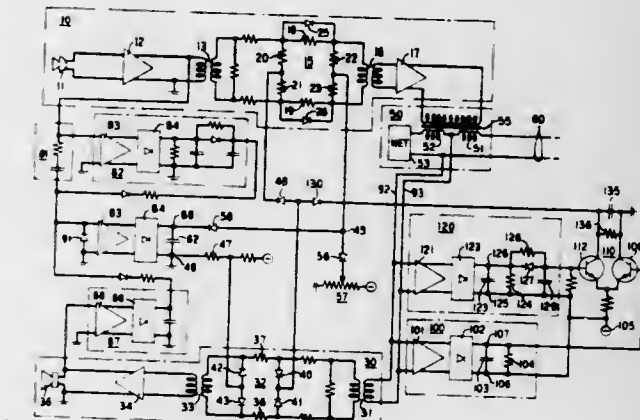
George Paul Reid, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 17, 1970, Ser. No. 20,235

Int. Cl. H04b 1/64; H04m 1/60

U.S. Cl. 179-81 B

4 Claims



A circuit is added to a loudspeaking telephone for preventing the telephone from locking in its receive mode in response to high-amplitude received noise whenever the volume control is adjusted to a high setting. This additional circuit controls a variable impedance device of a receiving channel of the telephone without affecting a variable impedance of a transmitting channel thereof. The circuit increases loss in the receiving channel when the amplitude of translated received noise is greater than the amplitude of translated received speech. The increased loss is switched out of the receiving channel when the amplitude of translated received speech exceeds the amplitude of translated received noise.

3,610,836

DISTRIBUTION FRAME FOR COMMUNICATION EQUIPMENT

Ryoichi Kimura, Yokohama; Kiyomi Omatsuzawa, Kakakura-shi, and Nanao Gunji, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

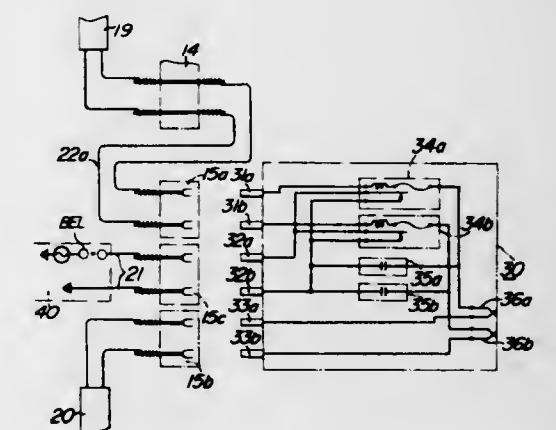
Filed Oct. 30, 1968, Ser. No. 771,838

Claims priority, application Japan, Nov. 1, 1967, 42/69869

Int. Cl. H04q 1/16

U.S. Cl. 179-98

4 Claims



A distribution frame for use in communication equipment having a jack mounted on the end of each of a plurality of unit cables split from a main cable led into the distribution frame in one direction, and a jack mounted on the end of each of a plurality of unit cables split from another main

cable led into the distribution frame in another direction. In the frame, the first-mentioned jack is combined with the second-mentioned jack to form a jack block, and a plug is fitted to each jack block for providing a necessary electrical connection between the main cables led into the distribution frame in the two different directions. The plugs connecting the main cables contain relays for disconnecting the cables from the exchange equipment in response to an overvoltage on the incoming cables. This relay also has a built-in fuse.

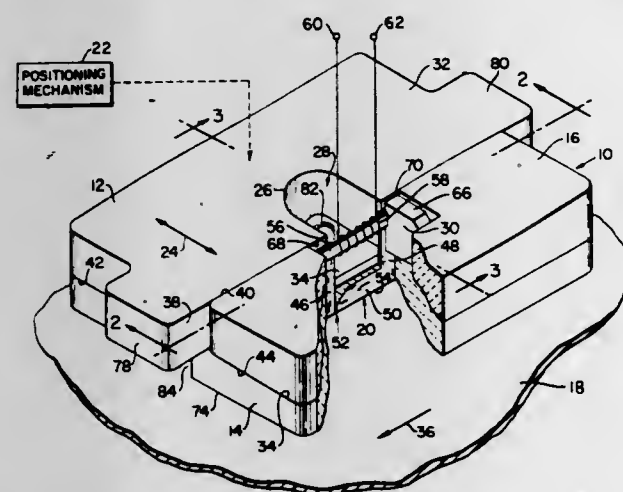
3,610,837

GLASS BONDED CERAMIC BODY FOR A MAGNETIC HEAD

Dwight W. Brede, Los Altos Hills; Miles H. Cook, San Jose; Marshall E. Freeman, San Jose, and Harold L. Turk, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 27, 1969, Ser. No. 794,322
Int. Cl. G11b 21/20, 5/10, 5/42

U.S. Cl. 179-100.2 C

7 Claims



An air bearing slider assembly includes a three-piece ceramic body held together by glass bonds and a magnetic head rigidly mounted by glass within a slot in the body and presenting a nonmagnetic gap at an air bearing surface of the body to facilitate noncontact magnetic recording. The body of the slider assembly is made by separately molding the three ceramic pieces, finishing the surfaces on one of the pieces which later support the magnetic head, and heating glass frit between surfaces of the pieces to a fluid to bond them together. Completion of the slider assembly is then accomplished by positioning the head against the supporting surfaces and within a slot in the formed body, filling the slot with a fluid glass composition to bond the head to the body, and finishing an air bearing surface of the body and included nonmagnetic gap of the head.

3,610,838

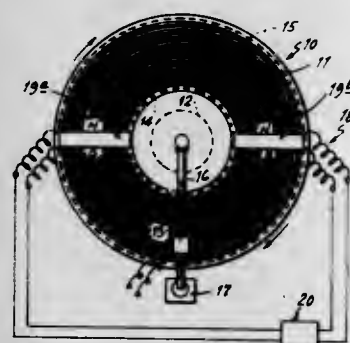
ERASING APPARATUS FOR MAGNETIC MEMORY DISCS USING TWO DC HEADS

Toshihiko Numakura, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 7, 1969, Ser. No. 805,144

Claims priority, application Japan, Mar. 11, 1968, 43/16021
Int. Cl. G11b 5/02, 25/04

U.S. Cl. 179-100.2 D

6 Claims



In a magnetic recording and reproducing apparatus having a magnetic disk on which a signal is magnetically recorded in

a spiral or other track, erasing of the signal is effected by at least one pair of angularly spaced erasing heads when relative rotation of the disk and heads is effected simultaneously with the supplying to the heads of a DC current which decreases progressively with time and which causes the heads to produce magnetic fields of opposite polarity and progressively decreasing intensity.

3,610,839

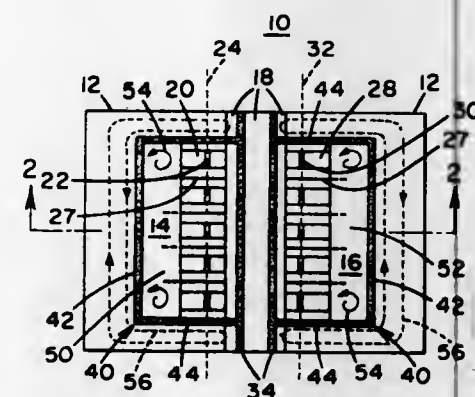
REDUCED COUPLING MEANS FOR REDUNDANT MAGNETIC HEADS

Edward C. Sand, Willoughby, Ohio, assignor to Clevite Corporation

Filed May 12, 1969, Ser. No. 823,733
Int. Cl. G11b 5/12, 5/10

U.S. Cl. 179-100.2 C

7 Claims



A redundant magnetic head is provided having an eddy current means between the head means and the electrically conductive housing of the redundant head and a shielding means which magnetically shields the eddy current means from the housing to reduce feedthru coupling between the read and write head.

3,610,840

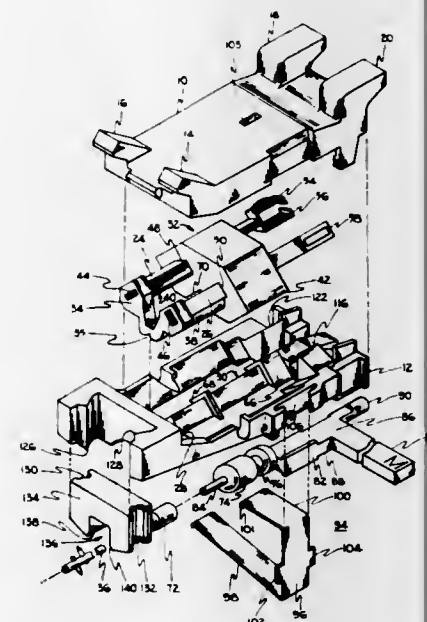
STEREOPHONIC PHONOGRAPH PICKUP WITH SINGLE PAD FOR PIEZOELECTRIC ELEMENT COUPLING, SUPPORT AND DAMPING

Michael Evans Miller, Indianapolis, Ind., assignor to RCA Corporation

Filed Dec. 24, 1969, Ser. No. 887,849
Int. Cl. H04r 17/08

U.S. Cl. 179-100.41 K

5 Claims



A phonograph pickup includes a case having a top section and a bottom section. A single piece elastomer member includes a stylus beam coupler, a damping block, and two interconnecting support elements mounted in the case. A transducing element is positioned on each of the support elements, with the ends of the transducing elements inserted

into apertures in the beam coupler and damping block. Electrical terminals are positioned on opposing surfaces of the transducing elements. When the top and bottom case sections are secured together, female receptacles are formed. Each female receptacle includes one of the electrical terminals positioned on the transducing elements.

A guard member having a channel in its underside is secured to the housing. The guard member is positioned such that a predetermined force applied to the pickup stylus deflects the stylus carrying beam into the guard member channel.

3,610,841

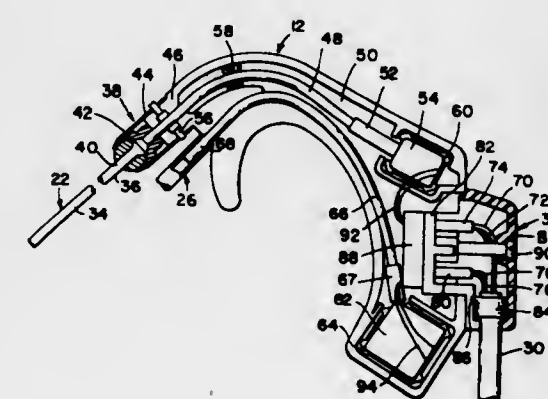
SELF-SUPPORTING HEADSET

Kenneth J. Hutchings, Soquel, Calif., assignor to Pacific Plantronics, Inc., Santa Cruz, Calif.

Continuation-in-part of application Ser. No. 839,016, July 3, 1969, now Patent No. 3,548,118. This application Mar. 6, 1970, Ser. No. 17,220
Int. Cl. H04m 1/05

U.S. Cl. 179-156

4 Claims



A self-supporting headset is disclosed with a housing adapted to accommodate a receiver and microphone. The headset housing comfortably supports itself on the upper portion of an ear of the user. A flexible acoustic tube together with an adjustable voice tube are mounted on an upper portion of the housing forward of the user's ear. The acoustic tube curves backwardly to provide communication between the auditory canal of the user's ear and the receiver through a tube along the inner periphery of the housing. The voice tube provides communication between the user's mouth and the microphone. Electrical signals are carried to and from the microphone and receiver through a pin and socket connection together with a strain relief collar device mounting a lead wire cable to the housing.

3,610,842

CHECKING SYSTEM FOR BINARY DECODER

Ferdinando Formenti, and Aldo Perna, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

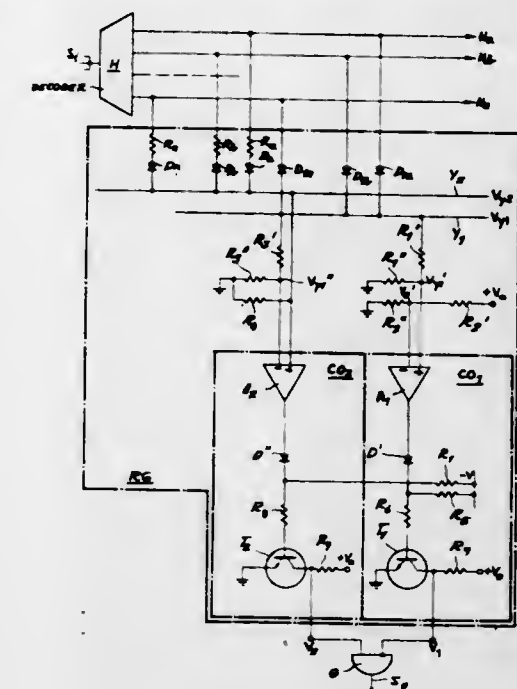
Filed Dec. 16, 1969, Ser. No. 885,478
Claims priority, application Italy, Dec. 17, 1968, 25167 A/68
Int. Cl. H04m 3/24

U.S. Cl. 179-175.2 R

7 Claims

A decoder used to emit a succession of commands in the testing of telephone lines, with several output leads only one of which carries a voltage of unit magnitude in any operating condition of the decoder, is checked for correct performance by a network in which a first conductor Y_1 is connected to all the output leads H_1, \dots, H_n of the decoder through respective diodes D_1, \dots, D_n while a second conductor Y_2 is connected to these same leads through other diodes D_1, \dots, D_n in series with respective resistors R_1, \dots, R_n . A first comparator CO_1 measures the voltage V_{Y1} of the first conductor against a reference voltage V_0 while a second comparator CO_2 measures the voltage V_{Y2} of the second conductor against voltage V_{Y1} ; only

comparator CO_1 has a true output if the decoder functions correctly with a single output lead energized, whereas in all



other instances both decoders have outputs of either zero or unity.

3,610,843

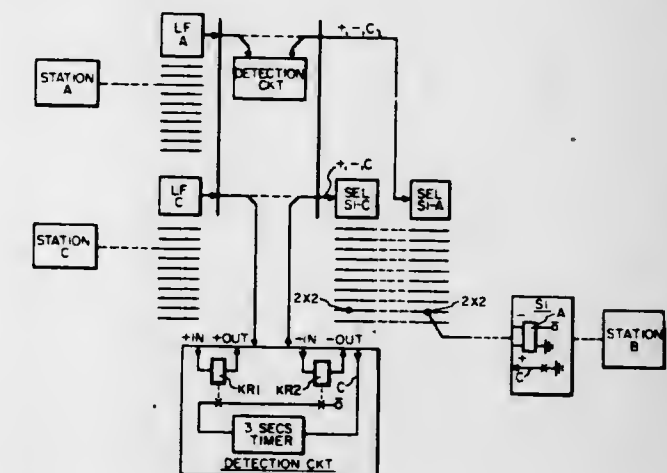
COMMUNICATIONS SYSTEM, DOUBLE CONNECTION TRAP CIRCUIT

Trifon P. Tripsas, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, North Lake, Ill.

Filed Apr. 29, 1970, Ser. No. 33,027
Int. Cl. H04m 3/24

U.S. Cl. 179-175.21

5 Claims



A telephone switching system of the step-by-step type includes a trap circuit to lock up the switches involved in a double connection. The circuit includes: line current detectors, a supervisory lead status detector, a timer and a lockup switch. The timer is effective to cause operation of the lockup switch to hold the circuits involved when the supervisory lead status detector discovers a busy indication lasting a predetermined time after the line current ceases to flow.

3,610,844

ELECTRIC CURRENT COLLECTOR ARRANGEMENT

Kenneth Vincent Blanchard, Bottisham, England, assignor to Tracked Hovercraft Limited, London, England

Filed Aug. 28, 1969, Ser. No. 853,916
Claims priority, application Great Britain, Aug. 29, 1968, 41365/68

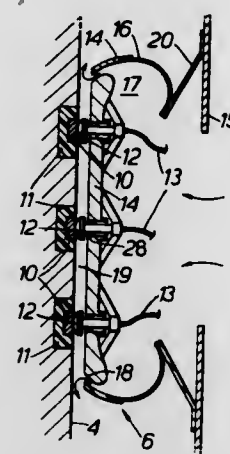
Int. Cl. B601 5/00

U.S. Cl. 191-45

10 Claims

An electric current collector arrangement is shown on an electrically propelled tracked gas cushion vehicle. The vehi-

cle has a number of gas cushion load bearing devices for supporting and guiding it from a track. Current collector shoes are mounted on a cushion member forming part of one of the load bearing devices, for contacting conductors laid along the track. The cushion member has a nozzle for forming a



curtain of gas to contain the cushion and the collector shoes are mounted to contact the conductors within the gas cushion. The cushion member is movably connected to the vehicle through a secondary suspension so that the shoes are therefore isolated to some extent from movement of the vehicle.

3,610,845

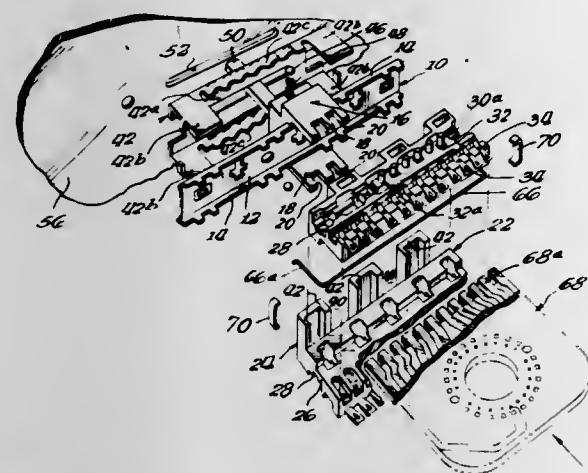
LINEAR SWITCH HOUSING ASSEMBLY WITH MULTIPLE REMOVABLE CONTACT UNITS

Raymond F. Lewandowski, Mount Prospect, Ill., assignor to Oak Electro-Netics Corporation
Filed June 18, 1970, Ser. No. 17,953

Int. Cl. H01h 15/00

U.S. Cl. 200-16 R

13 Claims



A slide switch for use in electrical circuits, including an elongated support member having a channel shape with parallel leg portions joined by a bight portion, and a plurality of elongated stator members having portions mounted within the channel of the support member between the leg portions. Each stator has a plurality of terminals mounted thereon and each has an independent switch carrier member for movement longitudinally along the stator. Each switch carrier member has switch means for operatively connecting selected pairs of terminals. An actuator member is seated on and moves longitudinally along the bight portion of the support member and has two arm portions overlying the leg portions of the support member and is operatively connected to the switch carrier members on the stators. Means are provided on the stators to interlock the stators in a back-to-back relationship or in an end-to-end relationship. An index mechanism is snap fit over the channel-shaped support, holds the actuator in position and has means for guiding the actua-

tor member for movement longitudinally along the support member. The index mechanism includes a pair of opposed spring loaded detent balls operatively associated with detent surfaces on the sidewalls of a frame member extending longitudinally along the switch to maintain the switch carrier members in a preselected position.

3,610,846

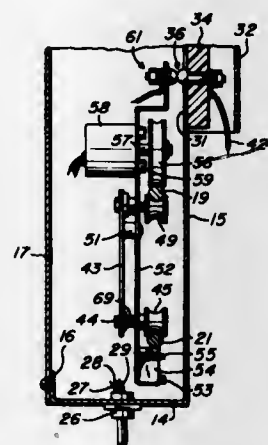
SEQUENCE CONTROL DEVICE WITH IMPROVED MOVABLE TRAVERSING TRACK MEANS CONTAINING DRIVE AND AUTOMATIC DISABLING MEANS

William W. Hanshaw, R.#1, Brookville, Ohio
Filed Nov. 4, 1969, Ser. No. 873,934

Int. Cl. H01h 3/00, 43/10

U.S. Cl. 200-38

15 Claims



A sequence control device in which a traveling carriage traverses a plurality of control stations under the influence of an intermittently activated constant speed drive means. The traveling carriage mounts a contact medium which makes successive contact with spaced contacts defining said control stations. The control stations may be selectively and differentially positioned to provide for a desired time lapse in respect to the movement of the traveling carriage from one station to another.

3,610,847

TIMING APPARATUS

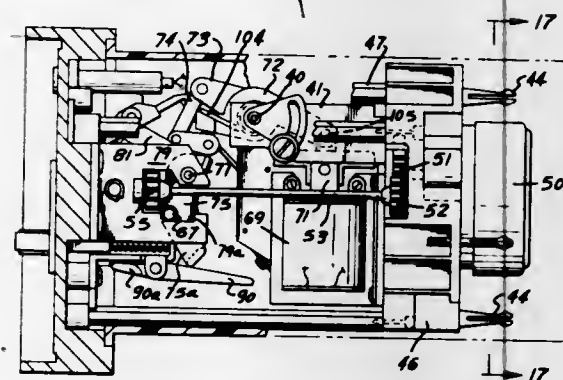
Grover K. Houpt, Wayne, and Franklin W. Kerfoot, Jr., Newton Square, both of Pa., assignors to Automatic Timing & Controls, Inc.

Filed July 28, 1969, Ser. No. 845,207

Int. Cl. H01h 7/08, 43/10

U.S. Cl. 200-38 R

7 Claims



A subtracting timer is shown in which there are a plurality of coaxial wheels having digital indicia thereupon. The wheels have associated cardioid cams associated with them which may be set before a timing interval by externally accessible setting pushbuttons, to any desired rotary position relative to the wheels. At the beginning of a timing interval a solenoid moves an assembly which actuates a load switch and also includes clutch means for transmitting rotary power from an appropriate source to the digit wheels and also includes means for enabling "carries" to be effected between adjacent digit wheels. During the timing interval, the setting

of any digit wheel may be changed by pressing an override button and simultaneously pressing appropriate ones of the setting buttons, this all being done while the originally actuated load switch remains unaffected. The original movement of the assembly causes a plurality of cam-following rollers to be moved into contact with respective cam surfaces on the wheels. Only when the rollers simultaneously engage corresponding recesses in the cam surface does their resultant movement unlatch the arm of a second switch which turns the power source off whereupon the timer reverts to its reset state.

3,610,848

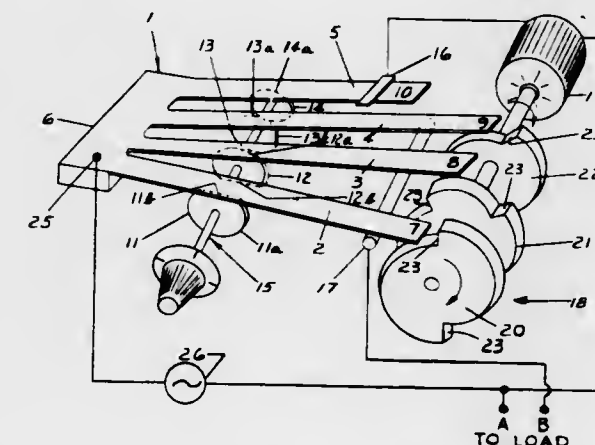
VARIABLE INTERVAL CIRCUIT BREAKING TIMER

David Rosenberg, Glen Cove, N.Y., assignor to Fall Corporation, Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 643,083, June 2, 1967, now Patent No. 3,447,479. This application June 3, 1969, Ser. No. 830,078

Int. Cl. H01h 7/08, 43/10

U.S. Cl. 200-38 B

21 Claims



A timer is provided for alternately opening and closing an electrical circuit in accordance with a preselected time interval determined by the surface contour and rate of rotation of a timer cam. A preselected resilient contact blade engages the timer cam surface and is moved thereby into and out of electrical contact. A selector cam having an array of cam surfaces selects those of a matching array of resilient contact blades which are to engage an array of rotating timer cam surfaces for chosen time intervals.

3,610,849

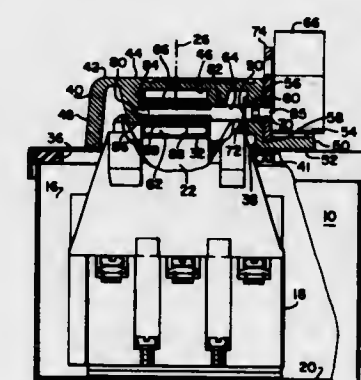
PUSHBUTTON SWITCH OPERATOR WITH A REVERSIBLE LOCKOUT

Lewis M. Lehman, and John R. Stauder, both of Milwaukee, Wis., assignors to Square D Company, Park Ridge, Ill.
Filed Feb. 6, 1970, Ser. No. 9,161

Int. Cl. H01h 9/28

U.S. Cl. 200-42 T

10 Claims



An enclosure structure including an operator for a push-button-type switch. The enclosure is of the dust or watertight type and supports a handle which is movable with an oscillating motion to an ON position and an OFF position to actuate

either one of a pair of linearly movable switch operating buttons and a plate which is selectively mountable in either of two positions on a front wall of the enclosure to lock the operating handle in either the ON or OFF positions.

3,610,850

SHUTTER ARRANGEMENT FOR A SWITCHGEAR UNIT

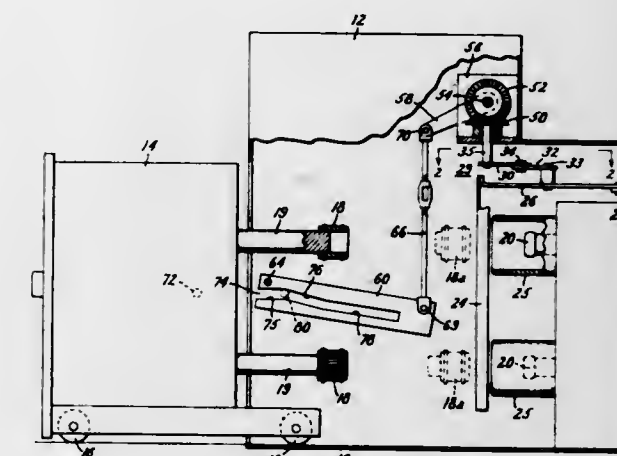
Charles D. Elchelberger, Ridley Park, Pa., assignor to General Electric Company

Filed Dec. 19, 1969, Ser. No. 886,570

Int. Cl. H01h 9/20

U.S. Cl. 200-50 AA

5 Claims



Discloses a shutter arrangement for protecting the live stationary disconnect contacts of a switchgear unit from being accidentally engaged when the circuit breaker has been removed from its surrounding cubicle. The shutter-operating mechanism is a toggle-type mechanism that responds to circuit breaker withdrawal by moving into an overcenter locking position where the shutter covers the stationary disconnect contacts and is effectively locked.

3,610,851

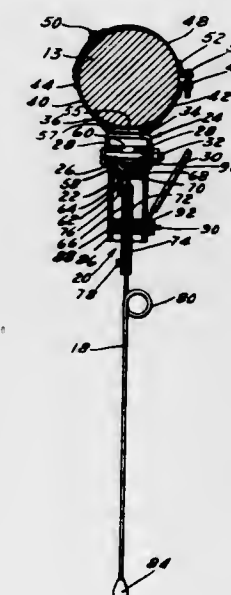
TIRE DEFLATION WARNING SIGNAL APPARATUS

Anthony L. Krupski, 17201 Gumbiner Drive, Vallinda, Calif.
Filed Sept. 19, 1969, Ser. No. 859,439

Int. Cl. H01h 35/00

U.S. Cl. 200-61.24

5 Claims



Switch apparatus for an electrical tire deflation warning system for vehicles having pneumatic tires. The switch is ac-

tuated automatically when a tire becomes under-inflated to warn the operator that the tire pressure is low and the tire requires attention. The switches of the electrical system are mounted adjacent the wheels of the vehicle and have movable contact switch members which are automatically actuated to energize a visual and/or auditory signal by engagement with the ground or road surface as the part of the vehicle supported by the tire becomes lower than normal, and/or by being engaged by the sidewall of the adjacent tire as the tire pressure becomes low and the ground-engaging part of the tire flattens or spreads out. The movable contact member of the switch is adapted to contact a fixed contact member to close the switch when the movable switch contact member is moved or swung from the normal open position in any direction.

3,610,852

PRESSURE CONTACT SWITCH

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand Puy-de-Dome, France

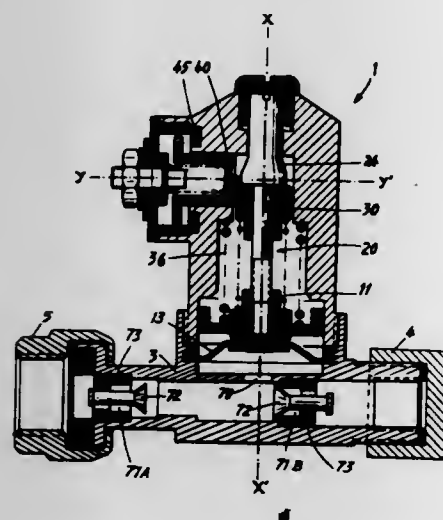
Filed July 20, 1970, Ser. No. 56,360

Claims priority, application France, July 21, 1969, 6924849

Int. Cl. H01h 35/24

U.S. Cl. 200—61.25

3 Claims



A pressure contact switch for monitoring the inflation pressure of tires comprises a piston subjected on one side to the pressure of the air in the tire and on the other side to the force of an opposing calibrated spring. A rod coaxial with the piston is formed with an inclined cam surface to push back a contact slide capable of sliding in a first bore. The rod is also formed with a guide and stop for a locking slide capable of sliding in a second bore having an axis perpendicular to that of the first bore. The two slides are urged at all times by springs in directions towards the intersection of the two bores.

3,610,853

LATCHING PRESSURE DIFFERENTIAL SWITCH WITH RESET PLUNGER

Raymond A. Reznicek, St. Joseph, Mich., assignor to The Bendix Corporation

Filed Jan. 5, 1970, Ser. No. 670

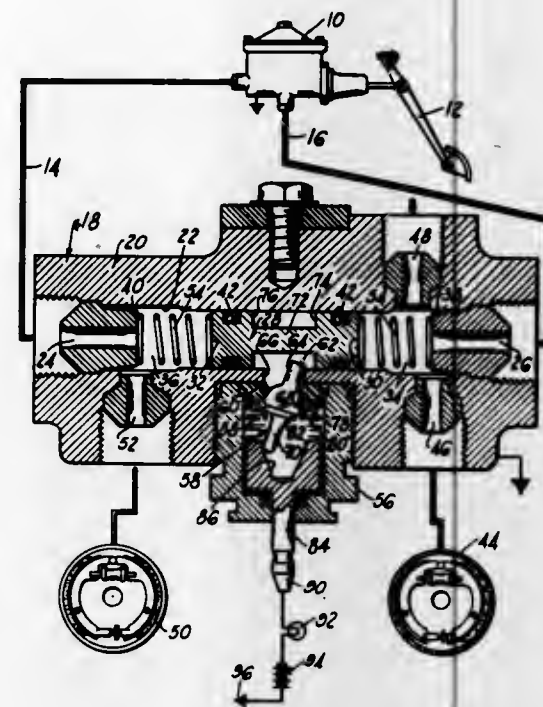
Int. Cl. H01h 35/38

U.S. Cl. 200—82 D

4 Claims

A differential pressure warning switch for use in a vehicular braking system to indicate a malfunction thereof has a latching mechanism engaging the switch arm so that, when

activated, the warning device remains activated after the brakes are released. When the malfunction is corrected, the



3,610,854

FLUID-LEVEL SENSOR FOR A MULTIPLE FLUID-SUPPLY SYSTEM

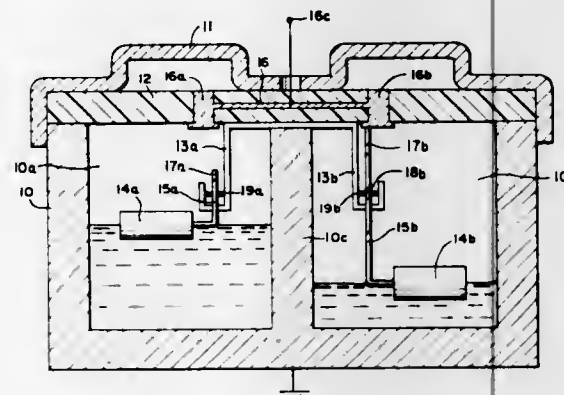
Sandord I. Greene, Massapequa, N.Y., assignor to Fairchild Camera and Instrument Corporation

Filed Feb. 18, 1970, Ser. No. 12,255

Int. Cl. H01h 35/18

U.S. Cl. 200—84 R

5 Claims



A fail-safe fluid-level sensor for a system including a plurality of independent fluid supplies comprises a housing of conductive material having two fluid-supply compartments separated by a common wall and a top closure member therefor. A pair of conductive electrically interconnected supporting brackets in the form of a unitary stirrup straddling the common wall are individually disposed in the compartments and the supporting brackets are conductively connected to the housing. A float is disposed in each of the compartments. A contact structure includes two contact elements each extending through the top closure member into one of the housing compartments. An arm is connected to each of the floats and pivotally and conductively connected to its respective bracket, each of the arms having a conductive extension disposed to engage the contact element in its respective compartment only when the fluid level therein reaches a predetermined value, thereby to complete an electrical circuit between said brackets and said contact structure.

3,610,855

OIL CIRCUIT BREAKER INCLUDING CONTACT BRAKING DEVICE

Takumi Mitsuhashi, and Kenichiro Sasaki, both of Kyoto, Japan, assignors to Inoue Electric Mfg. Co., Ltd., Kyoto, Japan

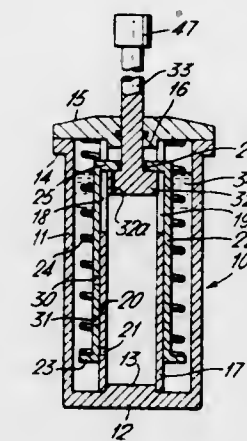
Filed Dec. 29, 1969, Ser. No. 888,750

Claims priority, application Japan, Dec. 30, 1968, 43/482

Int. Cl. H01h 33/68

U.S. Cl. 200—150 B

1 Claim



An oil circuit breaker includes stationary contacts and a movable contact disposed in an arc-quenching chamber. When the movable contact is separated from the stationary contacts, a braking device coupled to the movable contacts limits the rate of travel thereof through the quenching chamber so that the movable contact remains in an area most suitable for current interruption by oil flow during at least one zero crossing of the current therethrough. The braking device comprises an oil-filled housing including a stationary, inner cylinder, a piston slidable in the inner cylinder which is coupled to the movable contacts, and a spring-loaded, outer cylinder surrounding the inner cylinder. Various apertures are provided in the cylinders and in the piston to furnish a braking action which increases with increases in the rate of initial movement of the movable contact. In any case, once the movable contact has moved out of the area of most suitable current interruption, the braking force exerted on the movable contact is decreased.

3,610,856

MOLDED CASE CIRCUIT BREAKER HAVING AN AUXILIARY CONTACT SEPARATING SPRING

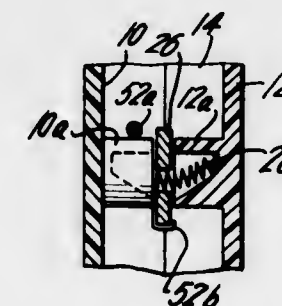
John De Torre, Albemarle, N.C., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Aug. 25, 1970, Ser. No. 66,726

Int. Cl. H01h 3/00, 71/16

U.S. Cl. 200—153

3 Claims



A circuit breaker of the molded case type incorporating a spring that accelerates movement of the movable contact to the open circuit position without greatly increasing the manual effort required for closing the circuit breaker.

3,610,857

PULSE-PRODUCING SNAP ACTION SWITCH

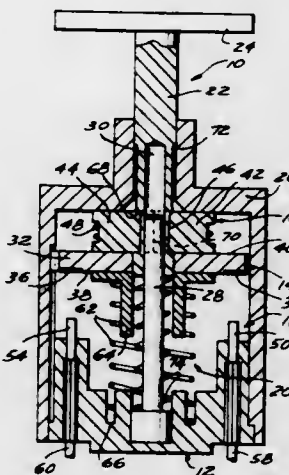
Robert N. Nannings, Canoga Park, Calif., assignor to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Oct. 21, 1969, Ser. No. 868,083

Int. Cl. H01h 13/52

U.S. Cl. 200—160

20 Claims



A snap action switch comprises actuating means operative-ly connected to a base member and movable from a first position to a second position, a first electrical contact operative-ly connected with the actuating means and movable therewith from a first to a second position, and a second electrical contact engageable by the first contact at the second position thereof. A resilient member which engages the actuating means carries the first contact with the actuating means until the first and second contacts engage. At this point the resilient member is flexed and released from the actuating means for a period sufficient for a spring to cause the first contact to disengage from the second contact and to snap back to its first position.

3,610,858

DISCONNECTING DEVICE FOR FULLY INSULATED HIGH-VOLTAGE ELECTRICAL SWITCHGEAR WITH INDIVIDUALLY RECIPROCAL CONTACTS

Lothar Gruber, Mannheim-Seckenheim, and Wolfgang Schmitz, Birkenau, both of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Kaferthal, Germany

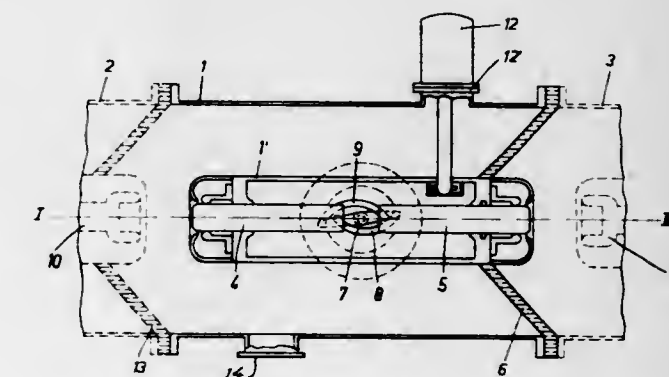
Filed Oct. 2, 1968, Ser. No. 764,446

Claims priority, application Germany, Oct. 3, 1967, P 16 15 598.5

Int. Cl. H01h 31/24, 3/46

U.S. Cl. 200—163

10 Claims



Disconnecting device for fully insulated high-voltage electrical switchgear includes an electrically conductive middle portion and a pair of contact members located in said middle portion and electrically connected in series with one another, the contact members being displaceable individually through a partial disconnect gap into and out of a disconnect position so as to respectively break and make electrical contact with an adjacent electrical contact member.

3,610,859

COMPOSITE CONTACT STRUCTURE FOR VACUUM-TYPE CIRCUIT INTERRUPTERS

Horst Schreiner, Nuremberg, and Helmut Ohmann, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

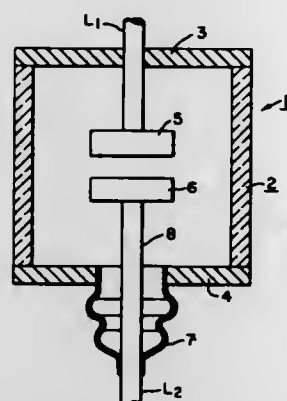
Filed July 29, 1968, Ser. No. 748,460

Claims priority, application Germany, Aug. 5, 1967, P 15 58 647.7

Int. Cl. H01h 1/02

U.S. Cl. 200-166 C

5 Claims



A composite contact for a vacuum-type circuit interrupter is formed from a porous sintered refractory structure, such as tungsten or molybdenum, infiltrated with an impregnating metal having a liquid phase below 400° C. To assure a wetting action between the porous refractory sintered structure and the infiltrant stock, preferably an auxiliary agent, or an additive, of small quantity is utilized, such as silver, cobalt, copper, iron, nickel, titanium and zirconium in small quantities, for example, a few tenths of one percent.

In use in a vacuum-type circuit interrupter such a composite contact results in a vaporization of the low-melting-point infiltrant. For certain constructions, a reservoir may be provided interiorly of the composite contact to provide an additional quantity of the low-melting-point infiltrant.

3,610,860

ELECTRICAL SWITCHES INCORPORATING POSITION-INDICATING MEANS

John Granville Baldwin, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

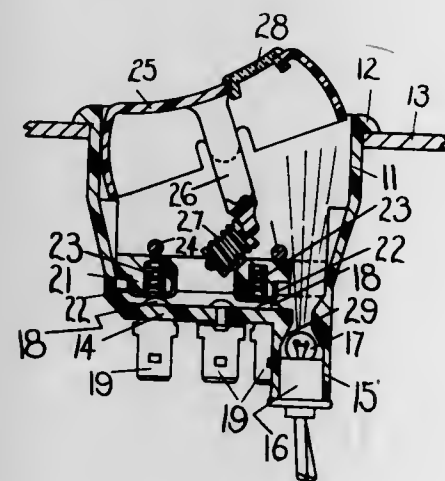
Filed May 12, 1969, Ser. No. 823,561

Claims priority, application Great Britain, May 20, 1968, 23836/68

Int. Cl. H01h 9/18

U.S. Cl. 200-167 A

1 Claim



An electrical switch incorporating position-indicating means includes a casing having a base. The base carries fixed contacts, and slidable within the casing is a movable contact carrier carrying a movable contact engageable with the fixed contacts. The contact carrier and the movable contact are movable by an operating member which in turn is movable manually to operate the switch. In order to indicate the operating position of the switch, there is provided a light

source carried by the base of the switch, and a lens positioned in the operating member of the switch. In one operating position of the switch the contact carrier prevents light from the light source shining through the lens, and so the lens is not illuminated. However, in a second operating position of the switch the contact carrier is displaced from the light source, and so light from the light source shines through the lens, thereby illuminating the lens and giving an indication of the operative position of the switch.

3,610,861

INDUCTION HEATING OF ELONGATED BARS

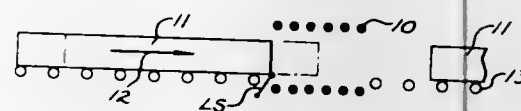
Robert M. Storey, Warren, and Andrew J. Kocjan, Niles, both of Ohio, assignors to Ajax Magnethermic Corporation, Warren, Ohio

Filed Nov. 19, 1970, Ser. No. 91,119

Int. Cl. H05b 5/00, 1/02

U.S. Cl. 219-10.77

9 Claims



There is disclosed herein a method and means for heating a semicontinuous line of elongated bars passing through a relatively shorter induction coil whereby the ends of the bars will be heated to substantially the same temperature as the midportions thereof. A signal from the generator current is directed to a regulating device which maintains the generator current at predetermined values during periods when the lead end portion of a bar is entering or the trailing-end portion of a bar is leaving the coil and during passage of the bar through the coil, the heating of the bar being controlled by voltage regulation when the midportion of a bar is passing through the coil.

3,610,862

METHOD AND APPARATUS FOR RESISTANCE WELDING UTILIZING APPLICATION OF HIGH PRESSURE

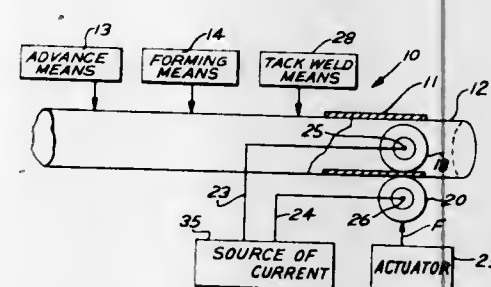
Paul M. Erlanson, Palos Park, Ill., assignor to Continental Can Company, New York, N.Y.

Filed Jan. 31, 1969, Ser. No. 795,515

Int. Cl. B23k 31/06

U.S. Cl. 219-67

2 Claims



A method and apparatus are disclosed herein for electrical resistance welding wherein a high pressure is applied by the welding electrodes to the overlapped portions of metallic blanks concurrently as a high current is supplied to the electrodes.

3,610,863

APPARATUS FOR PREPARING THE EDGES OF THIN TUBES FOR WELDING

Noel Fernand Doublet, La Croix Saint Leu, France, assignor to Societe Tubest, Paris, France

Filed Nov. 20, 1969, Ser. No. 878,279

Claims priority, application France, Nov. 20, 1968, 174435

Int. Cl. B23k 31/06

U.S. Cl. 219-59

11 Claims

Apparatus for the production of thin metal tubes comprises a forming device converting a strip of sheet metal into a split tubular blank having welding lips projecting outwardly

3,610,865

METHOD AND APPARATUS FOR REMOVING MATERIAL BY MEANS OF SPARK EROSION

Cornelis Van Osenbrugge, Emmasingel, Elmhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

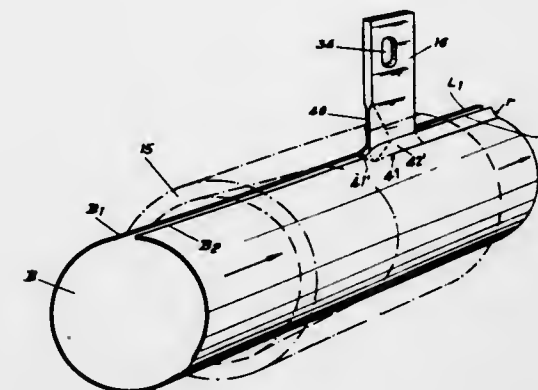
Filed June 9, 1969, Ser. No. 831,633

Claims priority, application Netherlands, June 15, 1968, 6,808,468

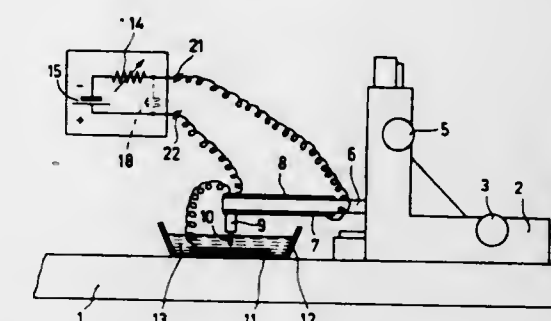
Int. Cl. B23k 9/16

U.S. Cl. 219-69 V

12 Claims



the blank and its intermittent stationary positions. The forming and welding devices are fitted with special forming dies and clamping means ensuring uniform welding lips and a consistent welding seam along the blank.



An electric discharge machining apparatus utilizing a piezoelectric element having two metal coatings which form a capacitor. A voltage is applied to the coatings which causes the piezoelectric element to oscillate, and by controlling the current to the piezoelectric element, the gap distance can be varied. The oscillation frequency is determined by the current supplied and the gap discharge rate.

3,610,864

SPARK-ERODING MACHINE FOR MAKING APERTURES IN WORKPIECES MADE OF ELECTRICALLY CONDUCTING MATERIALS

Evgeny Vasilievich Kholodnov, ulitsa Vokzalnaya, 21, kv. 30, Fryazino Moskovskoi Oblasti, U.S.S.R.

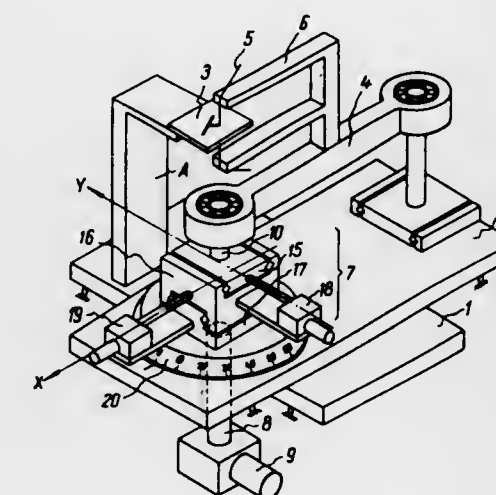
Filed Sept. 23, 1968, Ser. No. 761,625

Claims priority, application U.S.S.R., Sept. 30, 1967, 1186984

Int. Cl. B23p 1/08

U.S. Cl. 219-69 V

1 Claim



A machine for spark-erosion machining of current-conducting materials by means of a wire used as the tool electrode, in which the wire electrode is displaced by means of a crank gear circumferentially, and along straight lines disposed at various angles in relation to each other; and in which the workpiece is displaced relative to the crank gear by a coordinate table in two mutually perpendicular directions. These displacements are made in the controlled feed mode which makes it possible to cut orifices representing any possible combination of straight lines and circumferences.

**ELECTRIC-ARC-BURNING LANCE WITH OR WITHOUT FLUID FLOW PASSAGEWAYS**

Kenneth H. Harvey, Riverdale, and Marshall J. McCullough, Hazel Crest, both of Ill., assignors to United States Steel Corporation

Filed Aug. 8, 1969, Ser. No. 848,536

Int. Cl. B23k 9/24; H05b 31/30

U.S. Cl. 219-70

6 Claims

The lance includes an electrically conductive metal outer tube and an electrically conductive metal rod or tube inner element, which has an electrically insulating sleeve therearound, telescoped within the outer tube. A short-circuiting means is disposed between the outer tube and the inner element adjacent one end thereof. To initiate an arc between the outer tube and the inner element at one end thereof, an electric circuit is passed through the outer tube and through the inner element. The short-circuiting means shorts out the circuit causing an arc to be initiated adjacent the end of the lance between the outer tube and the inner element. Where the inner element is a tube, the electric arc initiated in accordance with the invention may be utilized to ignite oxygen or other gas flowing through the inner tube element so that the lance can be used in a manner similar to

that in which an oxygen lance is used. The initiated electric arc provides the temperature necessary to bring the tip of the lance with the tubular inner element to reaction temperature for igniting the oxygen after which the power source may be disconnected. If desired, the flow of current from the power source may be maintained continuously while oxygen is flowing through the inner element of the lance so as to provide the necessary high temperature for melting through refractory and slag where the flow of burning oxygen alone would be relatively ineffective.

3,610,867

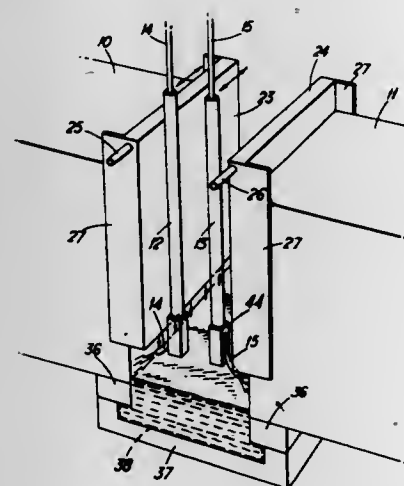
ELECTROGAS WELDING

Peter Morley Bartle, Haverhill, England, assignor to The Welding Institute, Cambridge, England

Filed Feb. 9, 1970, Ser. No. 9,744

Claims priority, application Great Britain, Feb. 1, 1969, 7333/69

Int. Cl. B23K 9/18; B23K 25/00; B23K 9/12
U.S. Cl. 219-73



In a method of welding by melting a consumable electrode in a vertical gap between two joint faces, the weld pool being confined by shoes on each side of the gap, a boxlike gas port having an open lower end is placed against the joint face or faces requiring shielding and a shielding gas is passed through the port and is discharged from the open lower end, which extends across the whole width of the joint face. The port may be consumable or may be hoisted as the weld progresses. The consumable electrode or electrodes may be directed towards the joint face or towards opposite joint faces respectively.

3,610,868

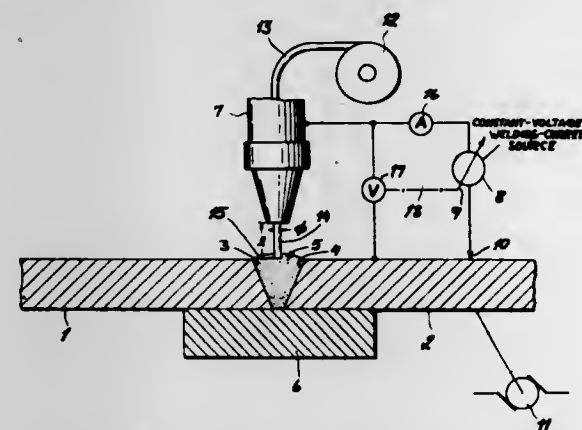
SUBMERGED-WELDING METHOD

Wilhelm Mantel, Munich; Marjan Mursic, Lohhof, and Anton Buchmeier, Lohhof, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Dec. 11, 1969, Ser. No. 884,265

Claims priority, application Germany, Dec. 12, 1968, P 18 14 325.4

Int. Cl. B23K 9/18; B23K 25/00
U.S. Cl. 219-73



A submerged-arc-welding method using a bare metal welding electrode at high speeds and currents above 1,000 am-

peres in which the voltage across the arc is held sufficiently small to eliminate the positive column of the welding arc which then consists only of anode fall or drop and cathode fall or drop. The voltage is established between 22 and 24 volts with currents of 1,000 to 4,000 amperes and weld wire thicknesses of 6 to 8 mm. are used when the current is between 1,500 and 2,500 amperes but above 7.0 mm. with currents above 2,500 amperes.

3,610,869

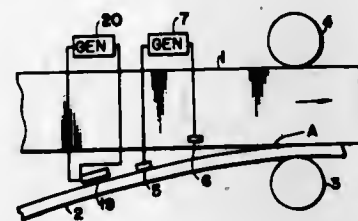
HIGH FREQUENCY CURRENT RESISTANCE WELDING METHOD FOR MAKING SHAPED PRODUCTS

Teiji Ito; Takeshi Nishi; Arimobu Yamada; Kunimasa Jono; Hikaru Aihara; Takashi Maeba, and Nobuji Kawae, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 21, 1969, Ser. No. 792,316

Claims priority, application Japan, Jan. 20, 1968, 43/3596

Int. Cl. B23K 13/00
U.S. Cl. 219-107



In the high frequency current resistance welding of the materials requiring different heat capacities, a method for pressure welding of the materials after preheating the material requiring more heat at a position before the welding point to a temperature between 250° and 1,050° C. in an area more than one-third wider than the thickness of the material requiring less heat.

3,610,870

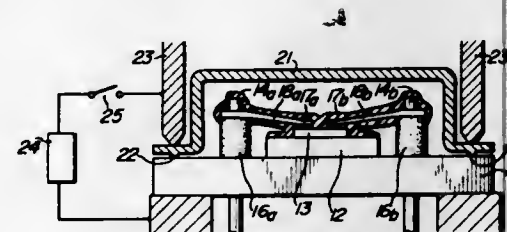
METHOD FOR SEALING A SEMICONDUCTOR ELEMENT

Makoto Sakamoto, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 5, 1969, Ser. No. 804,552

Claims priority, application Japan, Mar. 13, 1968, 15842/68

Int. Cl. B23K 11/14
U.S. Cl. 219-117 R



A method for sealing a semiconductor device comprising the steps of fixing a semiconductor element onto a metal supporting plate, placing a metal cap over the metal supporting plate so as to enclose said semiconductor element and carrying out electric resistance welding at the overlapping portion for sealing said element, which method is characterized in that leads projecting from the metal supporting plate are covered by an insulator, electrodes of the element and top portions of said leads are connected by connectors, and then the surface of said element, connectors and leads are covered by an insulating material before the metal cap is placed over the metal supporting plate.

3,610,871

INITIATION OF A CONTROLLED FRACTURE

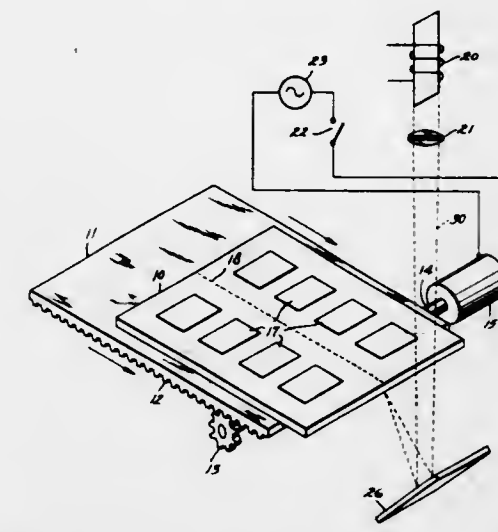
Robert Miller Lumley, Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,667

Int. Cl. B23K 27/00
U.S. Cl. 219-121 L

Ceramic substrates, and the like, are parted by reflecting a focused laser beam off a mirrored surface so that the focal

point of the beam impinges upon the lower surface of the substrate at an extreme edge thereof. The impingement of the focused beam creates a precisely defined localized fracture in the substrate. Next, the substrate is displaced, relative to the laser beam, to intercept the beam before it is reflected from the mirrored surface. The laser beam is now intercepted



by the upper surface of the substrate before the beam reaches its focal point, resulting in the beam energy being distributed over a larger area of the substrate. As the relative displacement of the laser beam with respect to the substrate continues, the localized fracture is controllably propagated along the substrate to part the substrate.

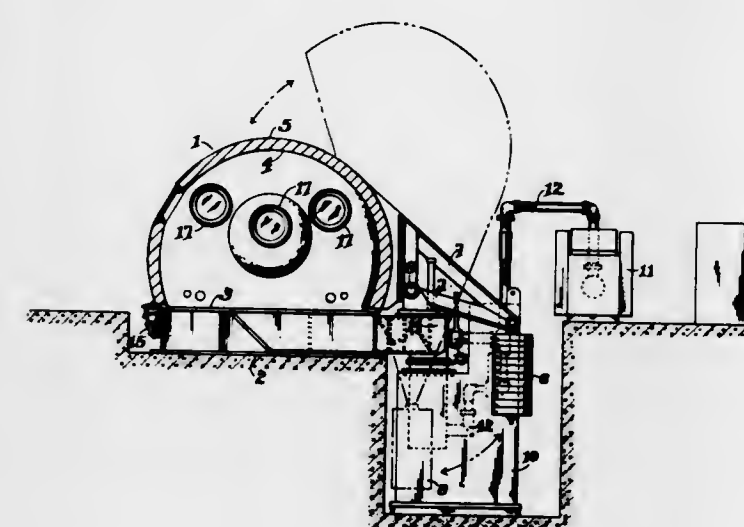
3,610,872

ELECTRON BEAM WELDING MACHINE OF CLAMSHELL CONSTRUCTION

David Sclaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed Oct. 7, 1968, Ser. No. 765,366

Int. Cl. B23K 15/00
U.S. Cl. 219-121 EB



This invention relates to electron beam welding machines and, in particular, to an electron beam welding machine of a clamshell configuration. The apparatus of the present invention has particular utility for the electron beam welding of very large structures such as are used in components of the aerospace and aircraft industry. The apparatus comprises a heavily reinforced floor which functions as an immense tooling bed plate and, at the same time, as one wall of the vacuum chamber. A single-piece clamshell structure which is arranged to swing open or shut against the floor by rotation about a pivot is sealed effectively to the floor by means of a continuous seal arranged close to the edges of the floor which seals against the lip of the open side of the clamshell structure. The vacuum chamber formed by the floor and the clamshell is evacuated from below the floor through gridded openings in the floor. The electron beam gun is mounted on a carriage, having several degrees of motion, which itself is

mounted on a gentry which, in turn, is mounted on a ball screw mechanism so that the gantry may be transported from one end of the chamber to the other.

3,610,873

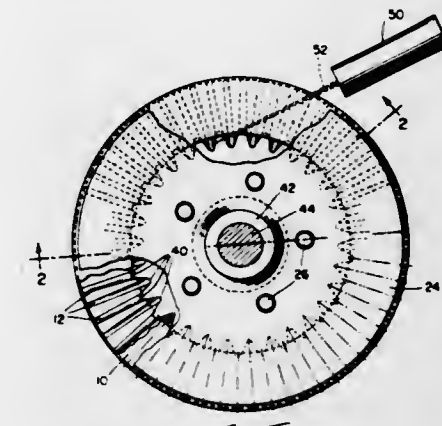
ELECTRON BEAM-WELDING METHOD OF FABRICATING A BRAKE DISK

Rene H. Vansteenkiste, Grosse Pointe Woods, Mich., assignor to The Budd Company, Philadelphia, Pa.

Filed Nov. 27, 1968, Ser. No. 779,418

Int. Cl. B23K 15/00
U.S. Cl. 219-121 EB

2 Claims



A method of joining metal stampings and roll-formed parts into a fabricated brake disk. This method utilizes an electron beam welder for joining the various components of the brake disk assembly into an assembled brake disk by clamping the various formed parts in a holding fixture and applying the welding electron beam to the adjoining portions thereof to weld them into a complete brake disk structure.

3,610,874

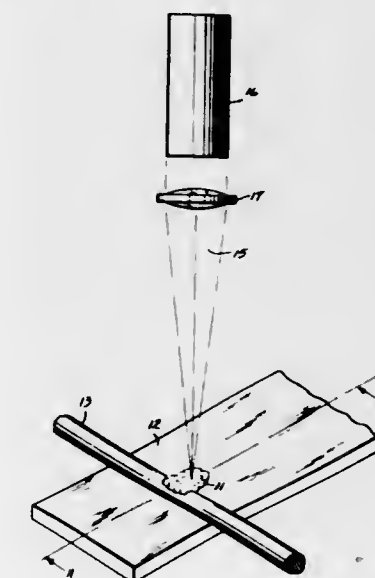
LASER WELDING TECHNIQUE

Francis Patrick Gagliano, Mountlake, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,634

Int. Cl. B23K 9/00
U.S. Cl. 219-121 L

5 Claims



In bonding a conductive metal tab to a fusible fine gauge metal wire of a strip potentiometer, a beam of radiant energy such as a laser beam is applied onto a surface of the tab adjacent a region of contact between the wire and the tab. The tab is tilted so that the tab surface forms an acute angle of between 30° to 50° with respect to the laser beam, and the wire and the tab are so positioned with respect to each other that a portion of the tab immediately adjacent to the wire is rendered molten by the laser beam and flows to the region of contact between the tab and the wire and over the wire by

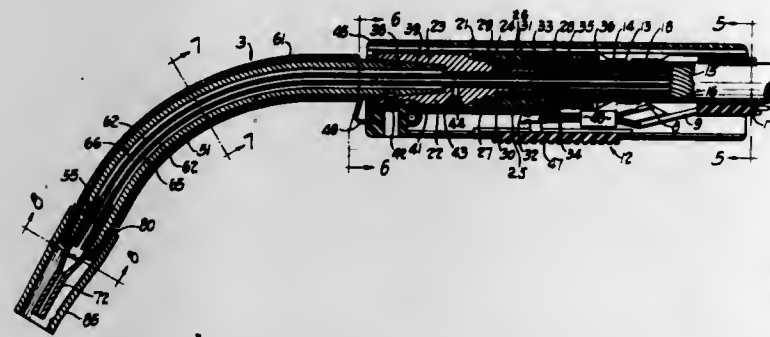
force of gravity, and effect a strong fusion bond between the wire and the tab without melting an entire cross section of the wire.

3,610,875 APPARATUS FOR CONDUCTING GAS AND ELECTRICAL CURRENT

Guido A. Dal Molin, Westlake, Ohio, assignor to Unitec Corporation. Continuation-in-part of Ser. No. 672,794, Oct. 4, 1967, Pat. No. 3,544,758.
Filed Feb. 11, 1970, Ser. No. 10,389
Int. Cl. B23k 9/16

U.S. Cl. 219-130

15 Claims



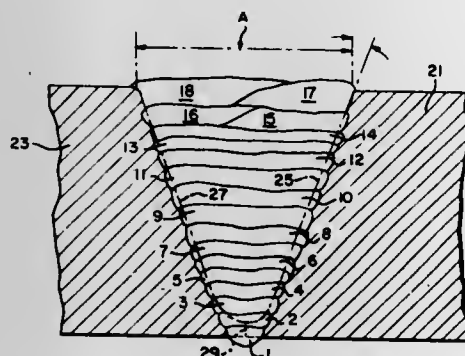
Cable apparatus for conducting gas and electricity, and if desired, an electrode wire, having at least at one end of the cable means for making a quickly disconnectable connection to connectable means such as a gun or the like that emits electrical current, gas, and electrode wire if desired. Such cable end means, and the gun or other means connected to the cable, are so constructed that when released the gun or the like can be rotated with respect to the cable about the axis of the cable, and then resecured by quickly actuated locking means in a desired rotational position. The gun or other means connected to the cable end means can also be readily disconnected from the cable. Notwithstanding the rotational and quick disconnect and connect features, the gun or other means connected in the cable makes a gastight connection.

3,610,876 VARIABLE PARAMETER TUNGSTEN-INERT GAS WELDING

Gopal Krishna Bhat, 172 Boxfield Road, Pittsburgh, Pa.
Filed Dec. 22, 1969, Ser. No. 886,998
Int. Cl. B23k 9/00

U.S. Cl. 219-137

14 Claims



There is disclosed herein a modified Tungsten-Inert Gas welding process for joining relatively thick high-strength steel plates by depositing multiple layers of weld metal in a groove between the plates. For each layer, the arc voltage, arc current and feed rate of filler material are adjusted to provide uniform heat input to the weld for varying size weld deposits. The weld layers formed from the successive passes extend along the length and across the width of the weld groove, and are of substantially uniform thickness. The top one or two weld layers may be side-by-side weld deposits which extend along the length of the joint and overlap intermediate the

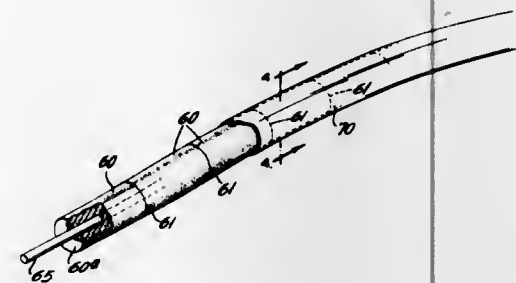
width of the groove. The weld groove is V-shaped and wide enough at its top to permit clearance of the welding electrodes when depositing the lowermost layer.

3,610,877 FLEXIBLE ELECTRODE STRUCTURE

John J. Driscoll, 422 South 18th St., Allentown, Pa.
Filed Jan. 2, 1970, Ser. No. 157
Int. Cl. B23k 35/00, 9/24, 11/30

U.S. Cl. 219-145

5 Claims



An electrode for use in cutting or gouging metal by means of the Air carbon arc-cutting process. The electrode has a flexible structure which enables it to be stored on a reel and to be continuously fed therefrom into a metal-cutting zone by an automatic holder. The electrode comprises a series of relatively short, tubular segments of carbonaceous material disposed in end-to-end relation on a consumable metal wire extending lengthwise through the centers of the segments, and an electrically conductive, flexible covering surrounds and extends along the segments to protect them from damage. The carbonaceous segments carry the major portion of the current supplied to the electrode with the metal wire and covering providing secondary and tertiary electron flow paths for improving the current-carrying capacity of the electrode.

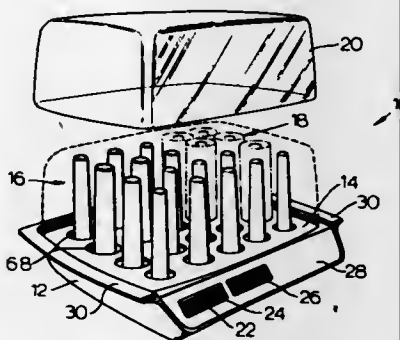
3,610,878 ELECTRICALLY HEATED HAIRSETTER

Allan Trevor Thomas, Downsview, Ontario, and James Spencer Vernon, Scarborough, Ontario, both of Canada, assignors to Samson-Domimion Limited, Scarborough, Ontario, Canada

Filed Feb. 24, 1969, Ser. No. 801,492
Int. Cl. H05b 1/02; A45d 2/12, 4/12

U.S. Cl. 219-222

7 Claims



An electrically heated hairsetter wherein a plurality of solid, plastic, hair curlers are heated over a plurality of posts; each curler adapted to fit intimately over the post of the appropriate diameter. The posts are part of the casting which includes an electric heated element in its base, and which is cast therewithin in a single casting operation. The base of the heater element portion is configured to fit beneath the top panel of the hairsetter cabinet by cooperating with legs beneath the top panel in a relative sideways motion relationship, with provision for driving a locking pin so as to hold the heater element portion and top panel fitted together.

A thermostatically controlled state-of-temperature indicator is mounted within the cabinet of the hairsetter and is of an appropriate material so as to approximate the heating

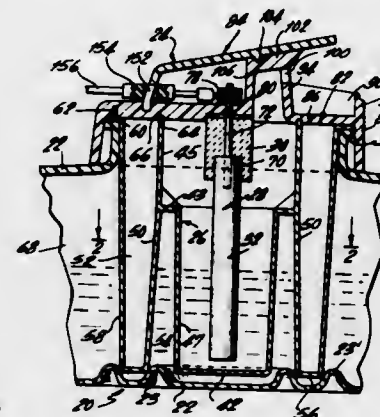
characteristic of the curlers placed over the posts, and closes a switch at a predetermined setting to provide an indication that the hair curlers are ready for use.

3,610,879 INSULATED HEATING CHAMBER FOR VAPORIZERS

Lawrence Katzman, 101 Central Park West, New York, N.Y., and Edward Briggan, 720 East 84th St., Brooklyn, N.Y.
Filed Dec. 15, 1969, Ser. No. 884,911
Int. Cl. H05b 3/60

U.S. Cl. 219-271

8 Claims



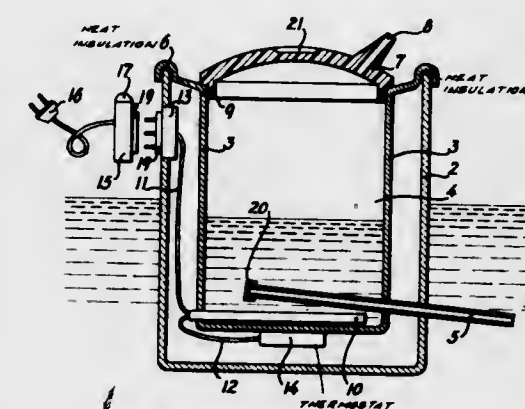
An electric steam vaporizer has a water container with a top opening covered by a removable cap having depending therefrom a heating chamber. The heating chamber includes a lower portion of lesser cross section containing an electrode assembly for vaporizing water entering the chamber through an inlet in the lower portion. The cap has secured thereto a double-walled air-filled insulating chamber surrounding the heating chamber and spaced from the lower portion thereof. The insulating chamber forms a thermal insulation barrier between the heating chamber and the water in the outer parts of the container. The insulating chamber engages a pair of ribs arising from the container bottom to limit water flow out of the space between the insulating and heating chambers.

3,610,880 WATER VAPORIZER UNIT

Oskar Alfred Krelberg, Kalkovnsvej 8, 6100 Hadersley, Denmark
Filed July 30, 1969, Ser. No. 845,966
Claims priority, application Denmark, July 31, 1968,
3694/68

Int. Cl. F22b 1/28; H05b 3/00
U.S. Cl. 219-273

7 Claims



In an immersion-type water-vaporizer unit from which the vapor is ejected in a well-defined jet, a high efficiency is obtained by using a long narrow connection tube between the water reservoir in which the unit is immersed and the vaporizing space in the unit. The latter is surrounded by a double-walled vessel, the cavity of which is hermetically sealed. A partial vacuum may be provided in the cavity and the remaining gas may be inactive. The connection tube is positioned at an oblique angle with respect to the bottom portion of the vaporizing space and the greater part of the length of the tube is positioned inside of the vaporizing

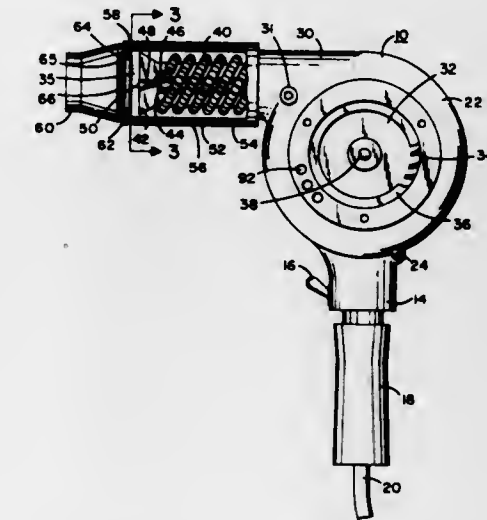
space. An electric heating element is provided within the vaporizing space to vaporize water therein. A thermostat located within the cavity in proximity to the heating element maintains the temperature of the heating element within a predetermined range.

3,610,881 PORTABLE ELECTRIC AIR-HEATING GUN AND OVEN

Trigg Stewart, 511 Mesquite Road, San Diego, Calif.
Filed July 29, 1968, Ser. No. 748,317
Int. Cl. F24h 3/04; H05b 1/02, 3/02

U.S. Cl. 219-370

9 Claims



A portable hand-carried air gun having a fan that forces volumes of air through a casing. The casing has heating coils therein for heating the air passing therethrough. A plate in the discharge end of the casing blocks the direct flow of air out of the discharge end and forces the air to move through an annular space between the outer edge of the plate and the casing. The plate and casing thus forms a chamber between the plate and the heating coils for mixing the airflow after passing through the heating coils and prior to passing out through the annular space. A temperature-sensitive element responsive to the temperature of the air in the chamber adjusts the current to the heating coils to hold the air in the chamber to a set temperature. An oven container for receiving the discharge end of the portable air gun provides a quick and easily heated oven.

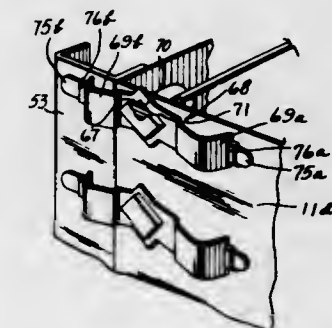
3,610,882 ELECTRIC SPACE HEATER

William A. Omohundro, Westport, Conn., assignor to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,606
Int. Cl. F24h 3/04; H01c 1/02; H05b 3/32

U.S. Cl. 219-377

10 Claims



An electric heater of the space heating type. The heater includes a housing containing an open-faced reflector. The reflector has within it a heating element suspended in front of a reflective surface between spaced opposing insulator members that pass through forwardly extending walls of the reflector. Some of the insulator members that pass through the reflector walls also pass through individual leaf springs located outside the reflector, which springs are secured

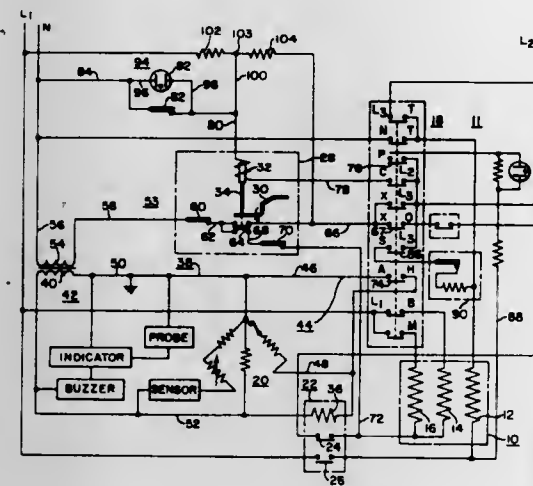
within the heater in such a manner that the heating element can be positioned in close proximity to the reflective surface for maximum heat output.

3,610,883

SELF-CLEANING OVEN WITH DOOR LOCK LIGHT
Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 9, 1970, Ser. No. 45,098

Int. Cl. A21b 1/02

U.S. Cl. 219-413



A heat-cleaning oven circuit is disclosed having a door lock thermostat which opens above a predetermined minimum temperature such as 550° to ensure that the latching assembly for the oven cannot be unlocked until the temperature within the oven has again dropped below 600°. A door lock indicating light is provided connected directly across the normally closed contacts of the door lock thermostat so the door lock thermostat shorts out the door lock indicating light at all temperatures below door-locking temperatures, while the door lock light provides a positive indication when the locking assembly is in an unlockable condition and the contacts of the door lock thermostat are open. Nuisance lighting during operation other than heat cleaning is prevented by a circuit arrangement which connects opposite sides of the light to neutral.

3,610,884

ELECTRIC FOOD WARMER

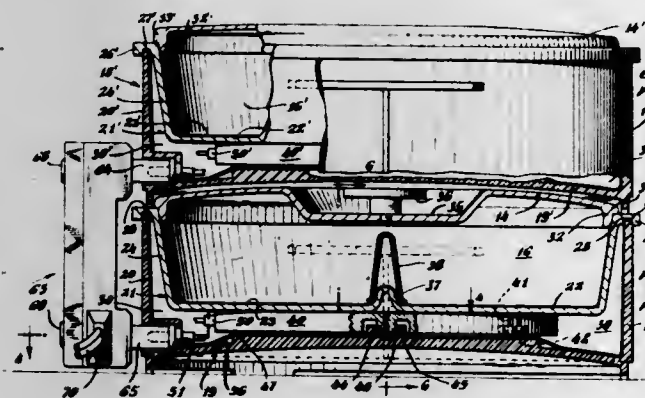
Raymond J. Evans, Fairfield, and Raymond T. Cassidy, Stratford, both of Conn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,212

Int. Cl. F27d 11/02

U.S. Cl. 219-439

14 Claims



A portable electrical unit for maintaining precooked food at serving temperatures comprising an outer casing within which is arranged a food storage container. Means are provided to interconnect and suspend the container within the outer casing and provide an air chamber therebetween with means for heating the food storage container to a predetermined temperature housed within the air chamber. Thermal

insulating barrier means are included for maintaining the precooked food contents of the inner container at said serving temperatures for extended periods of time after the heating means has been deactivated. Electrical interconnecting means are provided whereby a plurality of similar units may be utilized simultaneously in stacked relationship one upon the other.

3,610,885

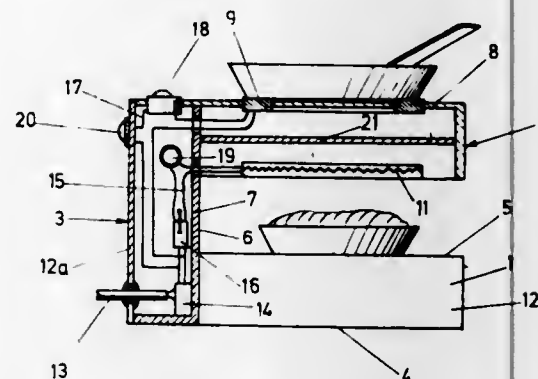
HEATER GRILL

Adolphe Zingg, 15 Beauregard 3960, Sierre, Switzerland
Filed Oct. 13, 1969, Ser. No. 865,882
Claims priority, application Switzerland, Oct. 14, 1968, 15,368/68

Int. Cl. H05b 3/68

U.S. Cl. 219-461

4 Claims



A heater grill comprises a pedestal and a structure fixed thereabove. On the upper side of the structure is an electric element heating by conduction whilst on the lower side is an electric element for radiating heat towards the pedestal. A column located laterally of both pedestal and structure joins these but allows easy access for placing dishes to be heated on the pedestal.

3,610,886

POWER DIVIDER CIRCUIT FOR TWO-UNIT HOTPLATE
Nelson J. Pansing, Clayton, Ohio, and Donald C. Siegle, Utica, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 54,993

Int. Cl. H05b 1/02

U.S. Cl. 219-486

3 Claims



In preferred form, an electric hotplate with dual resistance-type heating elements which produce a maximum power output at a predetermined current level when operated separately. When operated simultaneously, the current is divided between the elements to energize them at less than the maximum power output without exceeding the predetermined current level. The hotplate circuit includes two parallel branches each containing a heating element, a heat control switch and a diode for energizing one element with the positive half wave of alternating current and the other element

with the negative half wave of alternating current. A current-responsive bypass circuit which is normally in parallel with the diodes opens when both elements are energized simultaneously.

3,610,887

CONTROL ARRANGEMENT FOR HEATING UNIT IN AN ELECTRIC RANGE OR THE LIKE
Cloyd L. Betzer, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.

Filed Jan. 21, 1970, Ser. No. 4,523

Int. Cl. H05b 1/02

U.S. Cl. 219-501

17 Claims



A control device for a heating unit in an electric range in the form of a low-power resistor and switch in a tubular capsule recessed in a convenient position near the unit. The capsule has a presented wall which is flexible so that a portion of the resistor therein may be shorted out to change the resistance value simply by pressing at a desired point along the length of the capsule. The capsule is sealed and contains a fluid so that when the capsule is pressed at a second point, for example, at the end of the capsule, pressure is developed resulting in release at the first point. The resistor is controllably included in the input of a solid-state circuit having the heating unit in the output.

3,610,888

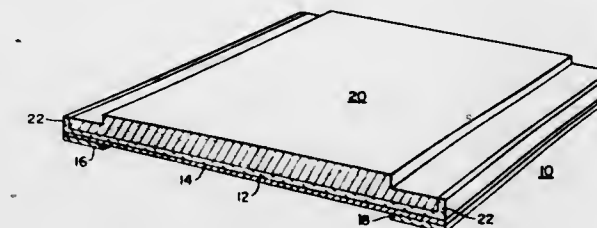
OXIDE RESISTOR HEATING ELEMENT

Daniel D. Button, Westborough, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 640,529, May 23, 1967, now abandoned. This application Jan. 30, 1970, Ser. No. 7,151

Int. Cl. H01b 1/00, 1/08

U.S. Cl. 219-543

10 Claims



Mixed oxides composed of ions of alkaline earth, rare earth, and transition elements having perovskite crystal structures, the electrical conductivity of which make them useful as heating elements or as electrical conductors for use in high-temperature environments.

This invention results from work done under contract OCR14-01-0001-303 with the Office of Saline Water of the United States Department of the Interior.

3,610,889

IDENTIFICATION CARD CONTROL SYSTEM

Robert N. Goldman, Pacific Palisades, Calif., assignor to Telecredit, Inc.

Filed June 16, 1966, Ser. No. 558,127

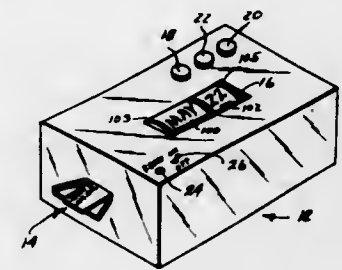
Int. Cl. G06b 1/00; G06k 17/00

U.S. Cl. 235-61.7 B

5 Claims

A system is disclosed for use with credit cards which carry a magnetic recording medium and utilizes time or discrete use intervals to regulate the use of a card. A register for indicating a time, e.g., month and day, is associated with structure for providing electrical reference signal indicative of such time. A time is also sensed from the card in the form of

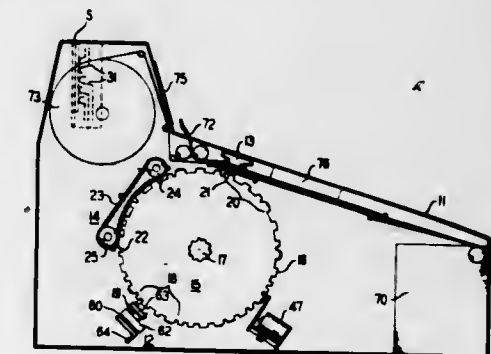
electrical subject signals which are compared with the reference signals. The result of the comparison is indicated as



DATA INPUT APPARATUS
Walter E. Strimling, Weston, Mass., assignor to United States Dynamics Data Engineering Inc., Needham Heights, Mass.
Filed Nov. 18, 1968, Ser. No. 776,436
Int. Cl. G06k 1/02, 1/12

U.S. Cl. 235-61.9 R

31 Claims



Punched tape, printout, and display implementations are realized with common character bearing apparatus in which simultaneous positioning of a variety of character representations is achieved primarily by mechanical linkages.

3,610,891

OPTICAL CODE-READING DEVICES

Andre Racłazek, Paris, France, assignor to Compagnie Generale D'Automatisme, Paris, France

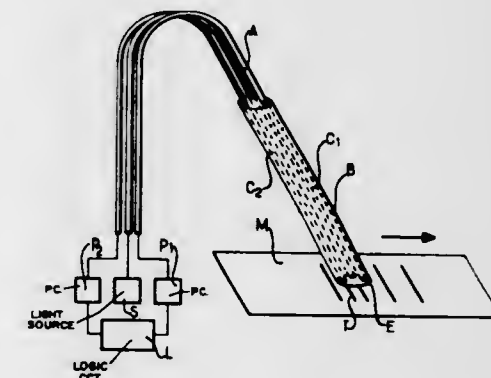
Filed July 10, 1968, Ser. No. 743,841

Claims priority, application France, July 13, 1967, Dec. 6, 1967, 114,397;131,244

Int. Cl. G01n 21/30; G06k 7/10

U.S. Cl. 235-61.11 E

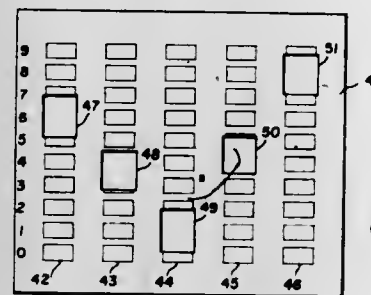
7 Claims



Apparatus for reading binary-coded information presented as a group of spaced markings on a support having different light-reflecting properties to the markings, has a light source for illuminating two areas of the support spaced in the direction of code reading by a distance equal to a distance between two markings on the support and significant of one binary symbol. The other binary symbol is represented by a larger distance and the apparatus has light-sensitive cells which view respective areas. A logic circuit receives output

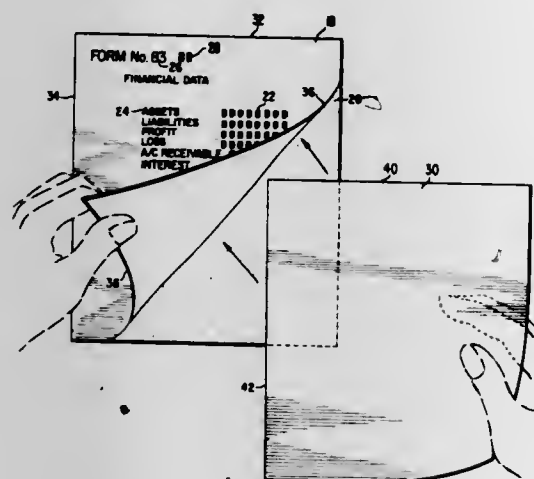
signals from the cells and detects the presence of a symbol by an output of one cell and the identity of that symbol from the presence or absence of the same output from the other cell.

3,610,892
ANALOG-TO-DIGITAL DATA PROCESSING SYSTEM
 James R. Flannaca, Rochester, N.Y., assignor to Metrix Data Systems, Inc., Rochester, N.Y.
 Filed May 6, 1969, Ser. No. 822,128
 Int. Cl. G06k 7/015
 U.S. Cl. 235—61.11 R 16 Claims



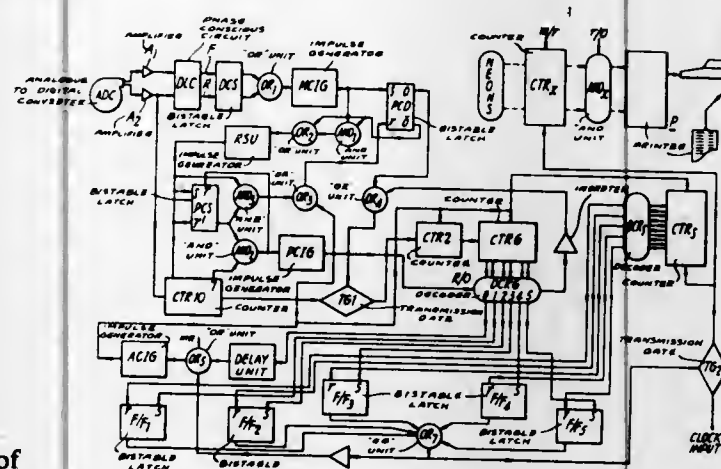
Elements in a recorder move through an infinite number of locations as an analog function of a process and are actuated at a selected time to make record bits in a record medium corresponding to the elements' locations at the selected time. The record bits are long enough in the direction of travel of the elements to overlie at least one of the digital data areas of sensitivity of a digital reader that senses the record bits and is programmed to acknowledge a single value for each of the bits, even when a bit overlies more than one digital data area.

3,610,893
TEMPLATE METHOD FOR PREPARING ALPHANUMERIC RECORDS
 Chris A. Clark, II, and Peter R. Cowger, both of Santa Barbara, Calif., assignors to Automation Technology, Inc., Santa Barbara, Calif.
 Filed Oct. 13, 1969, Ser. No. 865,688
 Int. Cl. G06k 7/10, 7/19/06
 U.S. Cl. 235—61.11 E 3 Claims



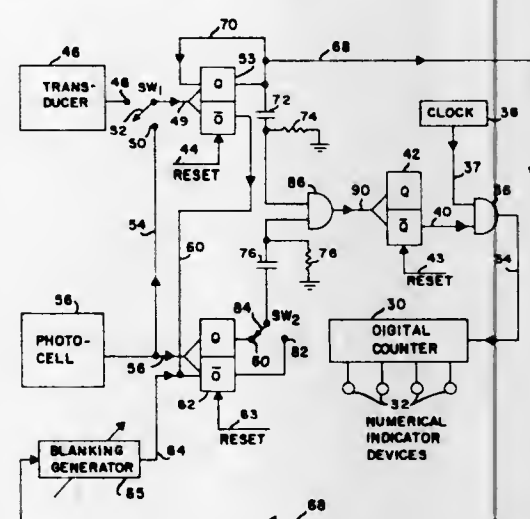
A method for preparing a computer tax data compilation comprises the steps of aligning a record medium with a template having tax form information imprinted thereon, manually recording arabic numerals representative of tax information on the record medium through openings in the tax form template, aligning the record medium in a predetermined manner for passage by an optical scanner, optically scanning the manually recorded numerals on the record medium, generating signals representative of the manually recorded numerals, and electronically storing the signals representative of the manually recorded numerals in order to prepare a computer tax data compilation.

3,610,894
PEAK ANALYSIS SYSTEMS
 Geoffrey Stuart Drury; Norman Jamieson MacLeod; Jack Allenby, and Gregory Charles Wilson, all of York, England, assignors to British Railways Board, London, England, by said MacLeod, Allenby and Wilson
 Continuation of application Ser. No. 561,455, June 29, 1966, now abandoned. This application Apr. 8, 1970, Ser. No. 24,436
 Int. Cl. H03k 13/20
 U.S. Cl. 235—92 NT 7 Claims



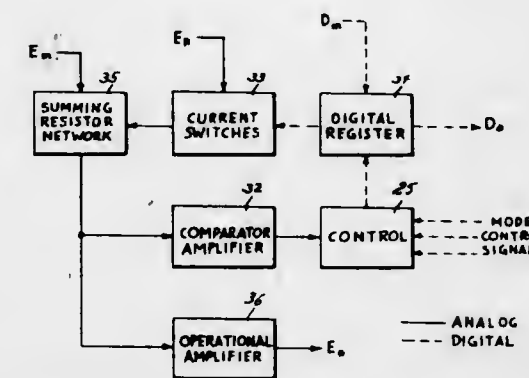
A peak analysis system for analyzing the peaks and troughs of a variable comprising an analog-to-digital converter for producing a train of impulses, each impulse digitally representing a predetermined incremental variation of the variable, a digital counting system for counting the impulses from the converter and a resetting circuit for resetting the counting system in response to a reversal of trend in the variable, and recording means responsive to the count made by the counting system between successive resetting operations for recording a digital value related to the count.

3,610,895
TIMER
 Donald L. Wollesen, San Jose, Calif., assignor to ARE Incorporated, San Jose, Calif.
 Filed Apr. 24, 1969, Ser. No. 818,965
 Int. Cl. H03k 21/30
 U.S. Cl. 235—92 AE 7 Claims



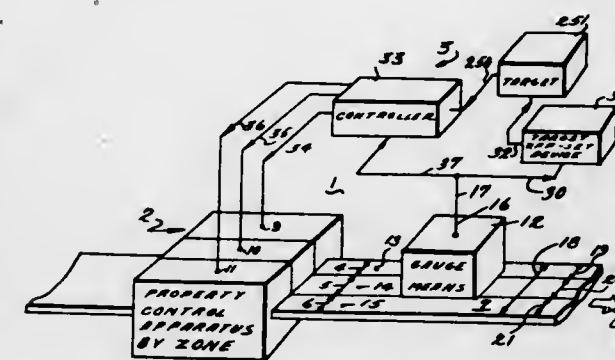
Timing of a vehicle between two points from a standstill or between two points while moving is accomplished by using a first bistable device to provide pulses to a counter and a second bistable device to prevent application of pulses to the counter. The first bistable device is actuated by a radiation-responsive device or a vehicle movement responsive device whereas the second bistable device is only actuated by the radiation-responsive device. The bistable devices are interconnected to prevent both from being actuated simultaneously and means are provided to prevent the second bistable device from being inadvertently actuated by extraneous sources of radiation.

3,610,896
SYSTEM FOR COMPUTING IN THE HYBRID DOMAIN
 Joseph P. Held, Wynnewood, Pa., assignor to Advanced Associates, Inc., Bridgeport, Pa.
 Filed May 20, 1969, Ser. No. 826,160
 Int. Cl. G06j 1/00; G06g 7/26
 U.S. Cl. 235—150.5 11 Claims



A programmable, sequential-step electronic computing system is disclosed which utilizes, for its basic mathematical capability, a hybrid computing element having an operational amplifier, comparator amplifier, summing resistor network, current-switching network and digital register, being interconnected by control circuitry to provide a plurality of mathematical operations. An input multiplexor and output distributor provide the hybrid computing element with capability to interface with analog and digital systems. Programmed memory and logic circuitry effect sequential step-by-step operation of the hybrid computing element upon the multiplexed signals, providing the program flexibility of a digital system.

3,610,897
METHOD AND CONTROL APPARATUS FOR REGULATING THE PROPERTY OF A MATERIAL ZONE TO A TARGET PROPERTY
 George R. Gerhard, Columbus; James E. Reider, Columbus, Ohio, and Charles S. Walker, Sparta, N.J., assignors to Industrial Nucleonics Corporation
 Filed Mar. 31, 1964, Ser. No. 356,176
 Int. Cl. G06g 7/66
 U.S. Cl. 235—151.1 29 Claims

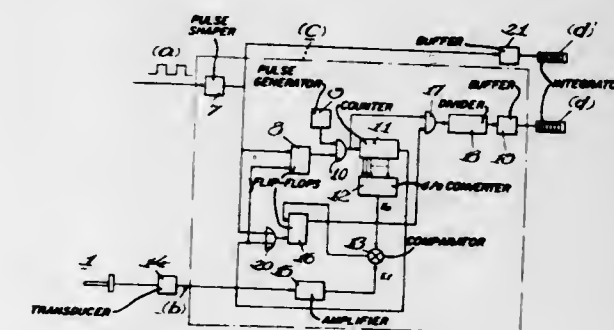


In one form the method of the present invention provides for the control of a material zone property where the property at one location in the zone is measured by a stationary gauge. The measured property is compared with a desired target property and the regulating apparatus is adjusted to change the measured location property to the desired target property. The target property is adjusted as a function of the difference between the average property of at least a portion of the material across the material width, including the measured location in the zone, and the measured location property to bring the average material property in the zone to the desired target property.

One embodiment of control apparatus in accordance with the present invention comprises a gauge means for indicating the property at one location in a zone of the material and for indicating the property average at least partially across the material dimension including the location. A regulating

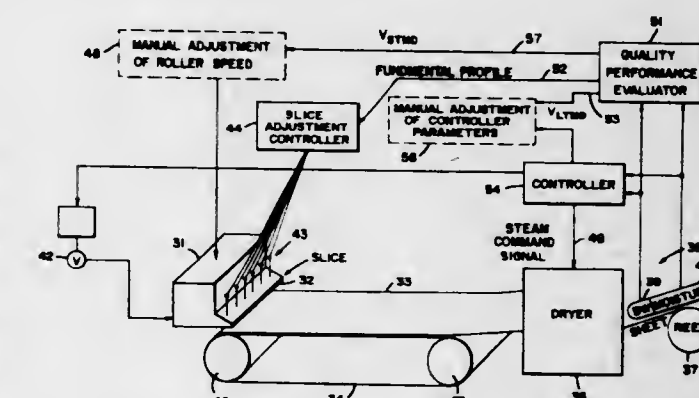
means can be adjusted to vary the property in the zone. A controller means compares the location property indication with a target signal and actuates the regulating means to change the material property in the zone and reduce the difference between the target signal and the location property indication to substantially zero. Means is provided to offset or change the target signal as a function of the difference between the property average and one target signal representing a desired target property to another target signal representing a desired target property to another target signal to cause the controller means to compare the indicated property with another target signal that brings the average zone property to the desired target property.

3,610,898
SYSTEM FOR CORRECTING EACH UNIT AMOUNT OF A QUANTITY BEING MEASURED AND INTEGRATING CORRECTED VALUES
 Hiroshi Yamamoto; Keiichi Ohashi, and Minoru Kanbara, all of Tokyo, Japan, assignors to Oval Kiki Kogyo Kabushiki Kaisha, Tokyo, Japan
 Filed June 20, 1968, Ser. No. 738,677
 Int. Cl. G06f 7/38
 U.S. Cl. 235—151.34 15 Claims



Fluid flow is measured and a pulse generated for each unit of fluid. A correction signal, either voltage or a second pulse sequence, is generated to correspond to a correction factor for adjusting the fluid to a standard temperature. An arithmetic circuit furnishes an output pulse sequence which corresponds to the pulse sequence generated by the flow of fluid decreased by a percentage of these pulses corresponding to the correction signal.

3,610,899
METHOD OF OBTAINING VARIANCES OF A CHARACTERISTIC OF A SHEET MATERIAL
 Erik B. Dahlin, Saratoga, Calif., assignor to Measurex Corporation, Santa Clara, Calif.
 Filed Feb. 17, 1969, Ser. No. 799,886
 Int. Cl. G01n 25/56
 U.S. Cl. 235—151.35 7 Claims

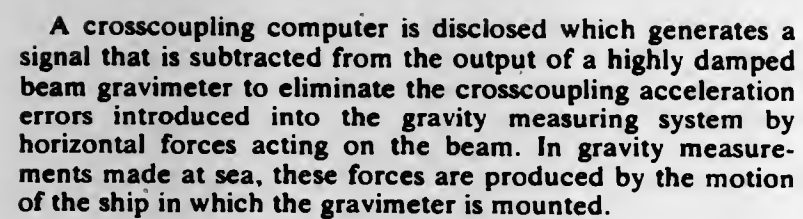


A method of maintaining the basis weight of paper produced by a machine constant by determining a true profile of the paper by use of exponential filtering, the true profile controlling slice adjustment. A total variance measurement is decomposed, by use of the true profile, into a long term machine direction variance for indicating control stability, cross direction variance for an indication of the

3,610,900
CROSSCOUPLING COMPUTER

Filed Nov. 24, 1969, Ser. No. 879,469
Int. Cl. G01m 1/12; G06g 7/78

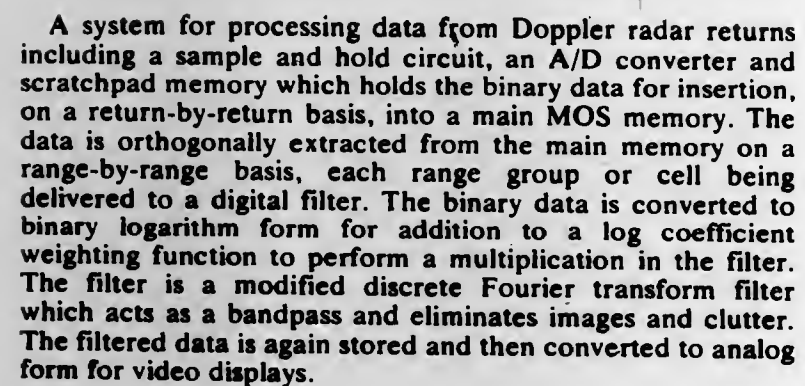
6 Claims



**DIGITAL MODIFIED DISCRETE FOURIER TRANSFORM
DOPPLER RADAR PROCESSOR**

Filed Sept. 9, 1969, Ser. No. 856,252

U.S. Cl. 235-152

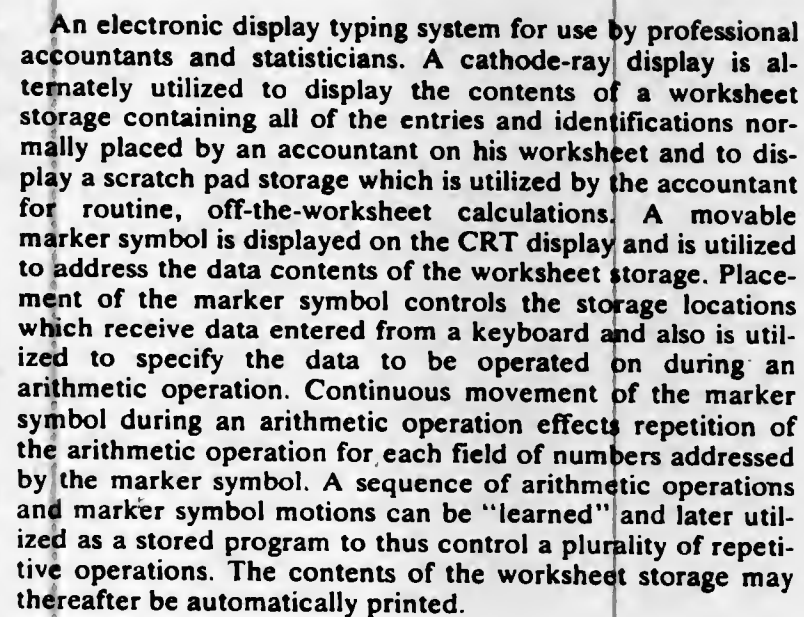


Robert A. Rahenkamp, and William R. Stewart, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,326
Int. Cl. G06f 7/38 7/06

U.S. Cl. 235-152

13 Claims



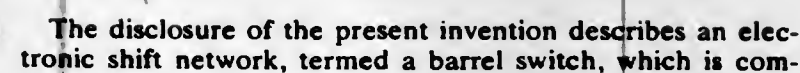
ELECTRONIC BARREL SWITCH FOR DATA SHIFTING

Richard A. Stokes, West Chester, Pa.; Vernon H. Tyger, Jr., Houston, Tex.; Robert L. Davis, West Chester, Pa., and Ulbe Faber, Honeybrook, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 8, 1969, Ser. No. 789,886
Int. Cl. G06f 5/00

U.S. Cl. 235-154

12 Claims



system. The most significant characters of the dividend and the divisor are used to develop a trial quotient and the trial

SQUARE-ROOT-EXTRACTING SYSTEM

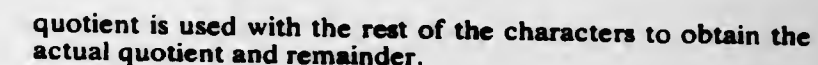
**Takafumi Kumagai, Kawasaki-shi, Japan, assignor to Nippon
Columbia Company, Limited, Tokyo, Japan**

Filed May 16, 1969, Ser. No. 825,157

Claims priority, application Japan, May 25, 1968, 43/35394

U.S. Cl. 235-158

10 Claims



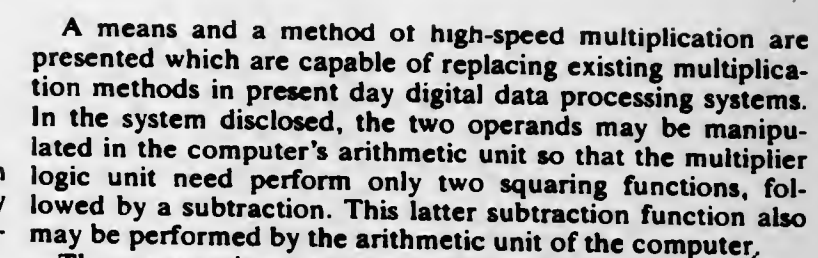
BINARY MULTIPLICATION UTILIZING SQUARING TECHNIQUES

William A. Stamper, Hatboro, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 7, 1968, Ser. No. 774,138

U.S. Cl. 235-164

5 Claims



There are various ways in which this squaring can replace multiplying two different operands. Generally in the preferred method, operands a and b are added together and squared. Next the two original operands are subtracted and squared. Finally the second product is subtracted from the first and effectively divided by four to obtain the result. Variations of this method are more specifically described as they are used in this invention.

MULTIPURPOSE SERIAL/PARALLEL MULTIPLIER
Lloyd A. Taylor, Santa Clara, Calif., assignor to North American Rockwell Corporation

Filed Jan. 16, 1969, Ser. No. 792,237

U.S. Cl. 235-164

7 Claims

A multiplier for multiplying an n -bit multiplicand number which comprises an n -number of input terminals with means for storing one bit of the n -bit number in parallel at each input terminal, a multiplier terminal and means for applying multiplier bits serially to the multiplier terminal, with an n -number of gates with one gate receiving one bit from one input terminal and with each gate connected to receive the serial bits from the multiplier terminal. A first delay means is connected to the output of the first gate. An $n/1$ number of adders, each connected to receive as an input the output of the remaining gates. The output of the first delay means connected to the input of the first adder, the adders being serially connected with delay means interposed between each

3,610,905
DIVISION SYSTEM GENERATING A VARIABLE
LENGTH QUOTIENT IN WHICH THE UNIT OF
INFORMATION EXCEEDS THE CAPACITY OF THE
OPERATING REGISTERS

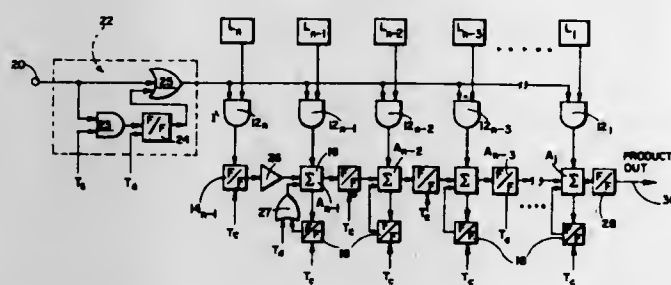
Edwin W. Herron, Phoenix, Ariz.; Robert D. Hunter, Wayland, Mass., and David E. Keefer, Scottsdale, Ariz., assignors to Honeywell Information Systems Inc.

Filed Apr. 15, 1965, Ser. No. 448,539

U.S. Cl. 235-159

Division apparatus in a data processing system includes the selection of a number of quotient characters to be formed and employs operating registers of the data processing

adder to enable the sum output from a preceding adder to be summed with the output from a succeeding gate. Delay



means connected in feedback relation to each adder to store a carry bit from the adder for one bit and to feed the carry back to the adder during the next clock time.

3,610,908

ELECTRONIC INTEGRATOR SYSTEM

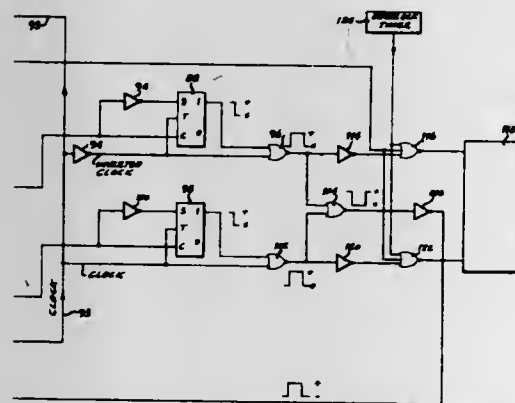
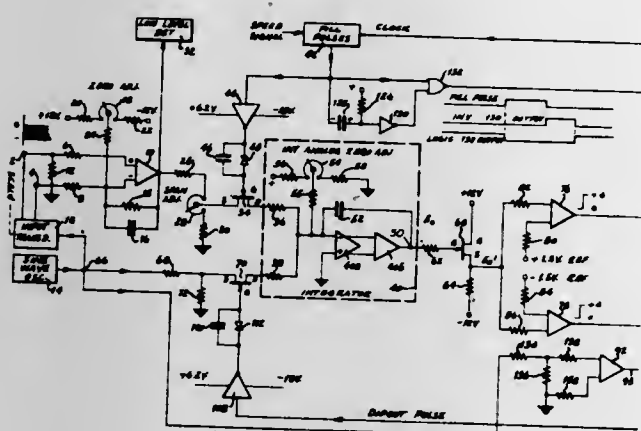
Raymond Karosas, Quincy, Mass., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Feb. 9, 1970, Ser. No. 9,901

Int. Cl. G06g 7/18; G01g 1/14

U.S. Cl. 235—183

14 Claims



A solid-state integrator that receives two information signals, namely, a weight signal and a speed signal, integrates these signals and provides an output signal proportional to the product thereof that is indicative of total weight of material that has passed a scale. The weight signal comes from the scale and is a negative DC voltage having an amplitude proportional to the weight per unit length of conveyor belt. The speed signal comes from a belt rider measuring wheel operated pulse generator and consists of 100 uniform width pulses per foot of belt travel. An amplifier at the integrator input amplifies the weight signal and has an input bias adjusting potentiometer for zero calibration and an attenuation adjusting potentiometer at its output for span calibration. Span refers to the correct total weight of a run of several belt circuits with a test weight. Zero refers to zero total weight of a run of several belt circuits empty. For integration purposes, the speed pulses are shaped, get in step with the clock, and are stretched to desired width by a clock controlled preset pulse width generator. This pulse, called "fill" pulse, whose width is precisely controlled by the clock, operates an analog gate via a gate driver, allowing DC voltage representing weight on a scale to enter the integrator and charge the integrating capacitor therein. The integrator is

bidirectional and will accumulate both positive and negative charges and will provide a DC voltage having a polarity and amplitude proportional to the algebraic sum thereof. The integrator receives two control signals, namely, a fill pulse described previously and "dipout" pulses, the latter being essential in an integration process -- without them the integrator would saturate. Dipout pulses can be in step with the clock pulse, or in step with the inverted clock pulse, depending on demand. The dipout pulses operate the other analog gate via a gate driver which allows the positive or negative half-cycles of the sine wave voltage to discharge the integrator capacitor. Dipout is started by a voltage level detector so that the integrator does not exceed its capacity in continuous running. The uniform dipout quantities are counted in a forward-backward operable weight totalizer to provide a running indication of the total weight of material that has passed over the scale and for other control and indication purposes. This method of integration -- where the sine wave drives the transducer, generates clock and inverted clock pulses, controls the pulse width of the fill pulse and the pulse width of the dipout pulse, and the same sine wave is used for dipping out the integrator -- all this provides "bridging action," that is, automatic self-compensation in response to frequency or amplitude variation in the sine wave voltage so that no error will be introduced in the output.

3,610,909

DATA CONVERSION SYSTEM

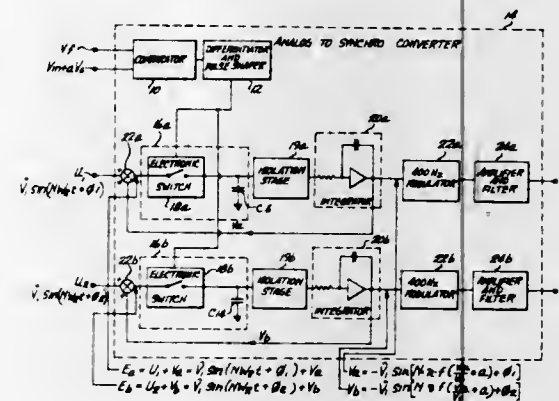
Jan Jeppsson, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 30, 1970, Ser. No. 23,633

Int. Cl. G06g 7/22

U.S. Cl. 235—189

9 Claims



An electronic system for converting an analog input signal into typical synchro or resolver-type signals. The input voltage is compared with function waveform such as a ramp voltage of a given frequency which is synchronized to the alternating current and power source. When the input voltage balances out the ramp voltage, a sampling pulse is generated. With this pulse, the instantaneous values of two-power frequency sine waves are measured and held in sample-and-hold circuits. The two-power frequency signals are phase-locked to the ramp voltage and can be derived from a biphasic oscillator. Coupled to the sample-and-hold circuits are power frequency modulators and output amplifiers with active filters which provide a pair of synchro or resolver-type output signals. The ramp voltage generator and sine wave generator are commonly utilized in the case of a plurality of converter channels.

3,610,910

TIME-DIVISION MULTIPLYING CIRCUIT ARRANGEMENTS WITH PHASE COMPENSATION

Anthony John Shawcross Udall, Ashford, England, assignor to Electric & Musical Industries Limited, Hayes, Middlesex, England

Filed Apr. 30, 1969, Ser. No. 820,371

Claims priority, application Great Britain, May 1, 1969, 20,609/68

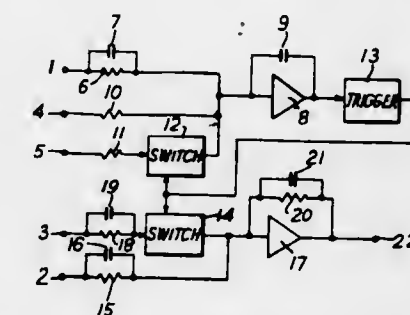
Int. Cl. G06g 7/16

U.S. Cl. 235—194

4 Claims

There is provided an electrical analogue multiplying circuit arrangement for multiplying a first quantity, represented by a first electrical analogue input signal and a second quantity,

represented by a second electrical analogue input signal. Time delays introduced between the application of said two input signals and the production of the output signal representing the product of said two input signals cor-



3,610,911

LAMP HOLDERS

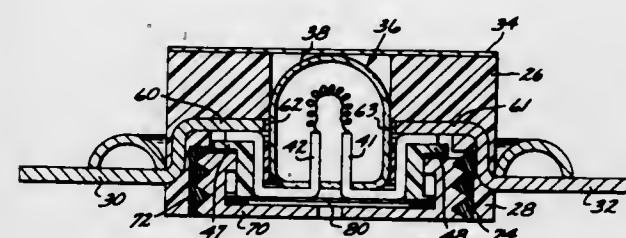
Gerald A. Curl, Orange, Calif., assignor to Symbolic Displays, Inc., Orange, Calif.

Filed May 20, 1969, Ser. No. 826,140

Int. Cl. B60q 3/04

U.S. Cl. 240—1 EL

12 Claims



This invention relates to improvements in lamp holders and assembly of lamp holders and edge-lighted panels. In the embodiment illustrated, the lamp is housed in a lamp positioner having conformations to hold the lamp leads with a given orientation relative to the filament of the lamp. These conformations, and the lamp leads they hold, fit in complementarily formed recesses in a light-receiving member or light filter in engagement with conductor leads embedded in the light receiver and exposed at those complementary formed conformations. The light receiver is provided with a skirt forming a recess within which the lamp positioner is housed. The recess of the light receiver is closed by an end cap of which bears, through a bias spring, upon the lamp positioner to insure contact between the lamp leads and the conductor leads of the light receiver. An incompletely metallized layer of material overlying the light receiver reflects some of the light emanating from the lamp and permits passage of other light.

3,610,912

LOW PROFILE OPTICAL SYSTEM

Alfred H. Schwartz, San Mateo, Calif., assignor to Varian Associates, Palo Alto, Calif.

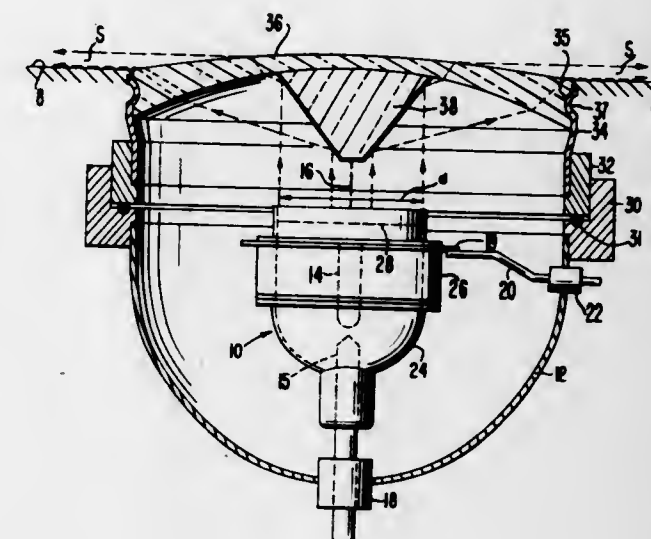
Filed Aug. 14, 1968, Ser. No. 752,629

Int. Cl. B64f 1/18

U.S. Cl. 240—1.2

13 Claims

The optical system consists of a negative meniscus lens mounted with its rim flush with the surface of a runway or other large area to be illuminated and its convex side facing upward. A conical mirror is coaxially mounted on the lower, concave surface of the lens. Directly beneath the conical mirror and facing upward is a coaxially mounted high-intensity, short arc lamp producing a parallel beam of light of a diameter equal to or slightly less than the largest diameter of the conical mirror. In use virtually all of the light from the lamp



3,610,913

PHOTOGRAPHIC FLASH APPARATUS

Kenneth Bowen, London, England, assignor to Bowens Sales & Service Limited

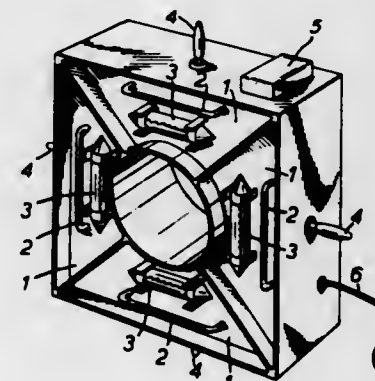
Filed May 28, 1969, Ser. No. 828,687

Claims priority, application Great Britain, Sept. 27, 1968, 46058/68

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3

3 Claims



Electronic flash apparatus of generally ring flash form, comprising annular reflector means divided into successive reflector compartments in the circumferential sense, each compartment mounting a respective flash discharge tube therein controlled by respective selectively operable switch means therefor.

3,610,914

ILLUMINATED INDICATING INSTRUMENT WITH FRONT REPLACEABLE LAMPS

Dana J. Blackwell, c/o The Lewis Engineering Company, Church St., Naugatuck, Conn.

Continuation-in-part of application Ser. No. 718,097, Apr. 2, 1968, now abandoned. This application Apr. 27, 1970, Ser. No. 32,087

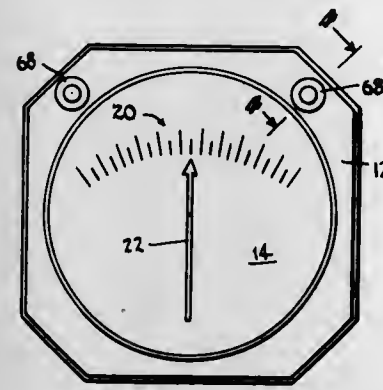
Int. Cl. G01d 1/28

U.S. Cl. 240—2.1

10 Claims

An indicating instrument having at the front of its casing a bezel surrounding the front window, and having illuminating lamps within the casing. The bezel has one or several small removable cover pieces or plugs which, when removed, carry

with them the illuminating lamps. The sockets for the lamps remain in the instrument, the removed lamps being readily accessible for replacement without requiring dismantling of the instrument casing.

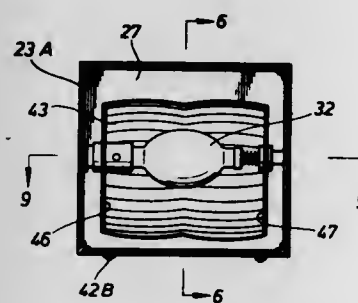


3,610,915 LIGHT FIXTURE

Buell Moore, Houston, Tex., assignor to Esquire, Inc., New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,155
Int. Cl. F21p 5/00

U.S. Cl. 240-3

14 Claims



A floodlight having a housing with an opening through a sidewall intermediate its oppositely facing end walls to pass a lamp into and out of the housing, and a closure removably disposable across the opening to enclose the housing. An electrical socket is mounted on one of the end walls for receiving the electrical end of the lamp, and a means is mounted on the other of the end walls to provide a face of heat insulating and cushioning material for engaging the opposite, nonelectrical end of the lamp. The mounting means for the face providing means enables the face to be moved relatively to the socket between a first position in which the opposite end of the lamp is normally engaged by the face when its electrical end is received in the socket, and a second position in which the socket and face are spaced apart a distance sufficient to permit the electrical end of the lamp to be moved into and out of the socket. There is a window area in the housing intermediate the end walls, and a reflector is swingably mounted at one end on the socket and at the other end on the means for mounting the face providing mean to permit it to be moved between selected positions on the side of the lamp opposite the window area. The housing is cubical in shape, and the window area comprises windows in adjacent sidewalls.

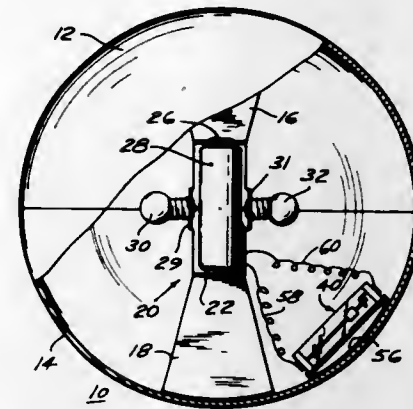
3,610,916
ILLUMINABLE BALL WITH A TIME DELAY DEVICE
Frank P. Meehan, 203 Cathedral Ave., Hempstead, N.Y.
Filed May 5, 1970, Ser. No. 34,751
Int. Cl. F21v 33/00; A63b 43/06

U.S. Cl. 240-6.4 R

7 Claims

Within the translucent housing of a ball, there is an inertia switch which is connected to a lighting unit. The lighting unit

includes a lamp and a battery which can be connected to form a series circuit by a time delay switch. Whenever the

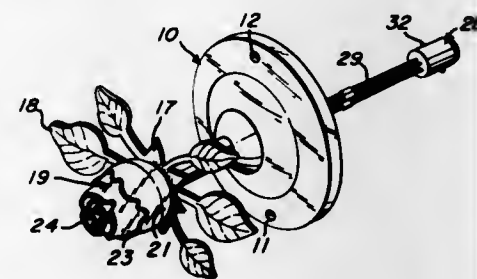


3,610,917 LIGHTING FIXTURE

John D. Hunt, 6186 Sandbury Drive, Dayton, Ohio
Filed May 22, 1968, Ser. No. 731,041
Int. Cl. B60g 1/26

U.S. Cl. 240-10 P

3 Claims

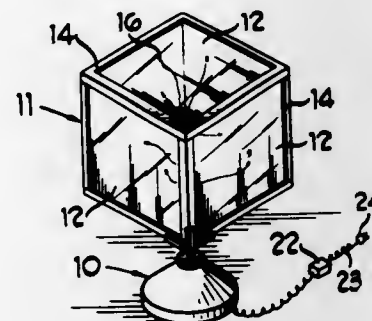


A lighting fixture particularly adaptable for use as a rear light on automotive vehicles. The fixture has a mount serving as a closure for a normal lens opening. In connection with the mount and spaced therefrom is a relatively projected, hollow, ornamental lens body, illuminated from within.

3,610,918
NOVELTY LIGHT DEVICE
Gordon A. Barlow, Evanston, Ill., assignor to Martin Glass & Associates
Filed Dec. 12, 1969, Ser. No. 884,517
Int. Cl. A47g 33/16

U.S. Cl. 240-10

7 Claims

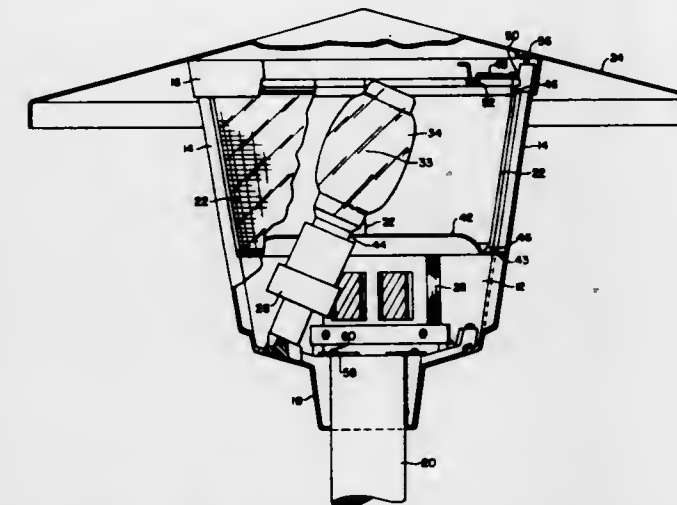


A novelty-type light device which includes a generally hollow body mounted on a support means and within which is disposed a light source. The hollow body is defined by a plurality of generally planar panels angularly oriented relative to each other. The panels are semireflective, at least semitransparent whereby when the light source is viewed through any one of the panels a reflection of the light source is seen on one or more of the other panels through said one section to provide multiple reflections to give an "infinity" effect.

3,610,919
COMPACT AREA LIGHTING LUMINAIRE
Joseph L. Wimpisinger, Rocky River, Ohio, and Edmund L. Izzi, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 20, 1968, Ser. No. 761,022
Int. Cl. F21s 1/10

U.S. Cl. 240-25

8 Claims

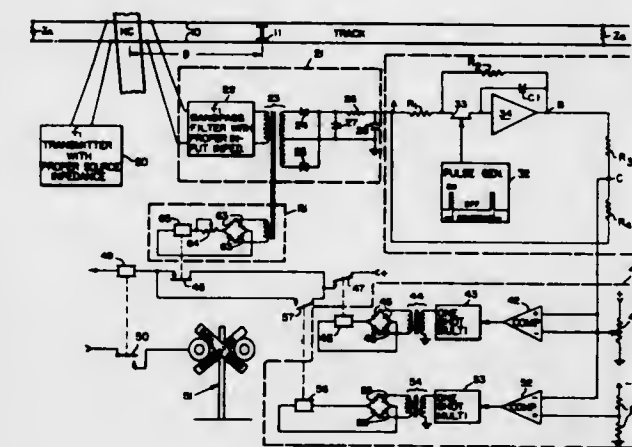


A compact area lighting luminaire substantially externally symmetrical about a vertical axis and having a base portion, an optical cavity above the base portion and a cover closing off the upper end of the optical cavity. The light source is located at the vertical centerline of the luminaire in the optical cavity with the base of the light source and the lamp socket tilted away from the vertical and located within the base portion toward one side thereof in a horizontal plane in which the lamp ballast and the photocell are also located at spaced locations about the luminaire centerline.

3,610,920
APPARATUS AND METHOD FOR DERIVING A UNIFORM TIME WARNING
Klaus H. Frielinghaus, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Dec. 4, 1969, Ser. No. 882,183
Int. Cl. B611 1/02

U.S. Cl. 246-128

16 Claims



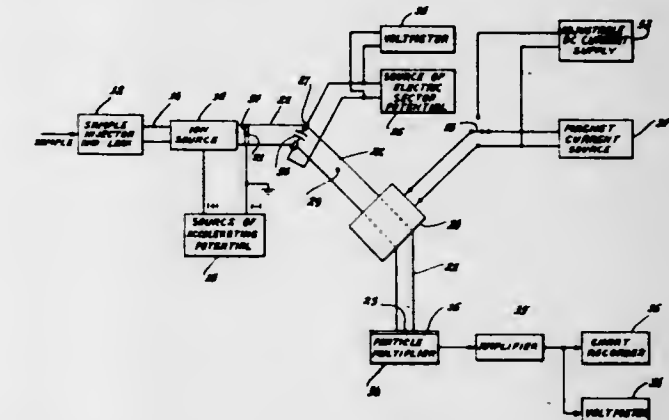
An improved warning system has been provided for activating crossing signal as a function of train speed. A transmitter coupled to the rails generates an input signal which is modified by the shunting of the rails by the railroad vehicle wheels. A receiver coupled to the transmitter through the rails converts the modified signal into a receiver signal. The improvement for providing a uniform warning time includes a detector which periodically samples the receiver signal and provides an output signal for energizing the crossing signal when the difference between any successive pair of samples is greater than a predetermined value indicative of the uniform warning time. The amplitude of the receiver signal

decreases logarithmically as the train approaches the crossing. The variation provides a characteristic to the system such that for increasing vehicle speeds the crossing signal is activated at increasing vehicle distances from the crossing such that the warning time is substantially the same for any vehicle speed. The logarithmic variation is achieved by selective impedance manipulation of the coupling between the transmitter and receiver.

3,610,921
METASTABLE MASS ANALYSIS
Harold W. Major, Jr., Lisle, Ill., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed May 1, 1968, Ser. No. 725,752
Int. Cl. B01d 59/44; H01J 39/34

U.S. Cl. 250-41.9 ME

3 Claims

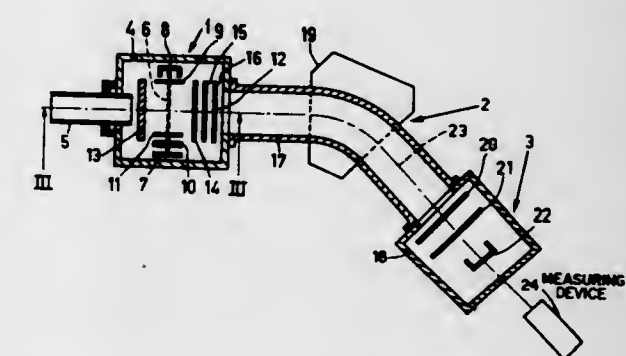


Identification of metastable ion transitions with a double focusing mass spectrometer having an electric and a magnetic analyzer is accomplished by initially identifying an ion m^* and subsequently modifying the electric analyzer in a manner for causing transition ions of mass m_1 to be focused at an object of the magnetic analyzer. The daughter ion can then be identified and the precursor ion m_0 is determined from the relationship $m^* = m_1^2/m_0$. This measurement of m^* and attending maintenance of ion energy levels while identifying m_1 advantageously functions to maintain sensitivity and resolving power at normal operating values.

3,610,922
COMBINED MASS SPECTROMETER AND IONIZATION MANOMETER
Helmut Wilhelm Werner Werner, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1969, Ser. No. 866,878
Claims priority, application Netherlands, Oct. 26, 1968, 6815348
Int. Cl. H01J 39/34

U.S. Cl. 250-41.9 G

2 Claims



A mass spectrometer of the sector type which can be changed to an ionization manometer in which the ion collector current is a measure of the overall pressure of the gas to be analyzed utilizes a supply circuit for the system of accelerating electrodes in the ion source. The supply circuit

provides the system of accelerating electrodes with a constant voltage or a pulsatory voltage in accordance with use as a mass spectrometer or an ionization manometer respectively.

3,610,923 CANTED MAGNETIC FIELD FOR CALUTRON ION SOURCE

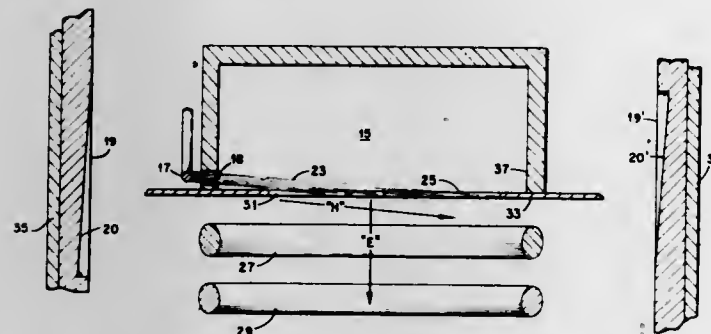
William A. Bell, Jr., and Allen M. Veach, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 17, 1969, Ser. No. 885,790

Int. Cl. H01j 39/34

U.S. Cl. 250-41.9 SA

4 Claims

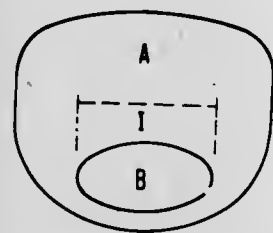


In a calutron-type ion source, enhanced ion production and extraction are accomplished by orienting the ionizing electron beam in a nonparallel relationship to the arc slit from which the ions are extracted. This may be accomplished by canting the ion source a few degrees with respect to the magnetic field that confines the ionized beam or, preferably, by positioning the ion source conventionally and canting the magnetic field with respect to it.

3,610,924 METHOD OF MAKING BIFOCAL LENSES COMPRISING TREATING A PRESELECTED AREA OF A SINGLE FOCAL LENGTH LENS WITH IONIZING RADIATION

Philippe Sinat, 112, quai Louis Bleriot, 75 Paris 16eme, France
Filed Jan. 9, 1970, Ser. No. 1,864
Claims priority, application France, Jan. 15, 1969, 6,900,594
Int. Cl. G02b 3/10; G02c 7/06
U.S. Cl. 250-49.5 TE

22 Claims



A method for obtaining corrective glass lenses which are provided with at least two zones having different powers so that one zone serves to view nearby objects and the other Zone serves to view distant objects wherein, in order to carry out a modification of power in a predetermined region of a corrective lens without entailing any alteration in the shape of said lens, said region is exposed to a radiation flux which results in a modification of its refractive index.

3,610,925 APPARATUS FOR COMPUTING CONVEYOR BELT MASS FLOW RATE INCLUDING A RADIOACTIVE SOURCE DETECTOR AND SLIDE-WIRE LINEARIZER MULTIPLIER

Richard E. Brelin, Mount Clemens, and Lawrence F. Wooden, Detroit, both of Mich., assignors to The Detroit Edison Company, Detroit, Mich.

Filed Oct. 15, 1969, Ser. No. 866,474

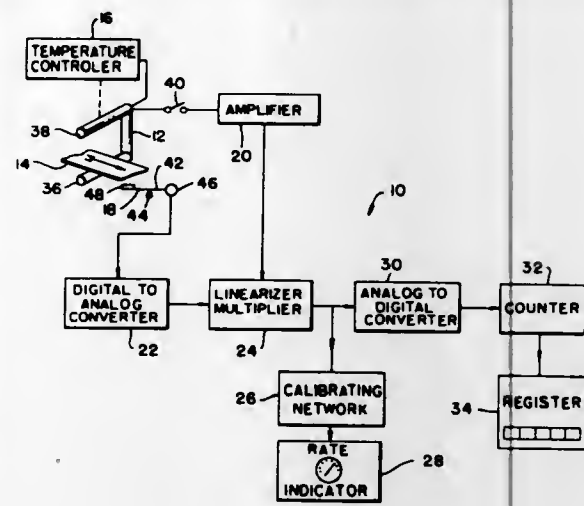
Int. Cl. G01t 1/16

U.S. Cl. 250-52

5 Claims

Structure for, and a method of determining the mass of material moving past a predetermined point on a conveyor

belt including a radioactive C-frame through which the conveyor belt passes operable to provide a signal proportional to the density of the material on the belt passing through the C-frame, rotating wheel structure maintained in contact with the conveyor belt for providing a signal proportional to the



speed of the conveyor belt as it passes through the C-frame, and structure for linearizing the signal from the C-frame and providing a functional multiplication of the density signal and conveyor belt speed signal to provide an output signal proportional to the mass of material passing through the C-frame. A mass rate indicator and a total mass register provides desired indications of the mass moving on the conveyor belt in response to the output signal proportional to the mass of material.

3,610,926 DOSIMETER FORMED OF A RADIATION SENSITIVE THERMOLUMINESCENT MATERIAL AND METHOD OF READING THE SAME

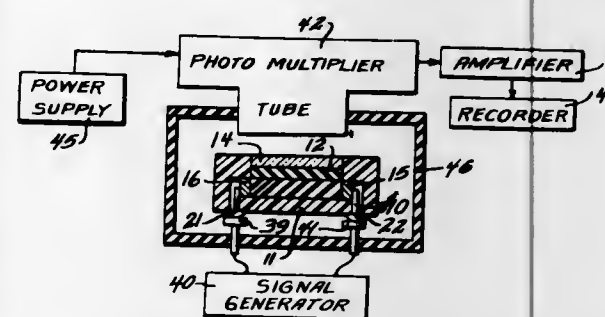
Jacob Kastner, Downers Grove, and Billie G. Oltman, Worth, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 9, 1969, Ser. No. 856,278

Int. Cl. G01n 23/00

U.S. Cl. 250-71

6 Claims



A dosimeter incorporates a crystalline thermoluminescent structure to store radiant energy. The crystalline thermoluminescent material can be a combination of different materials or a single material. The dosimeter is read out by applying energy to the crystal to cause mechanical vibration or crystal lattice vibration at the natural resonant frequency of the crystal. The energy applied may be an alternating current or coherent light energy as desired.

3,610,927 SAMPLE-HANDLING MECHANISM FOR LIQUID SCINTILLATION COUNTING APPARATUS

Donald C. Hauser, Chicago, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Apr. 11, 1966, Ser. No. 541,763

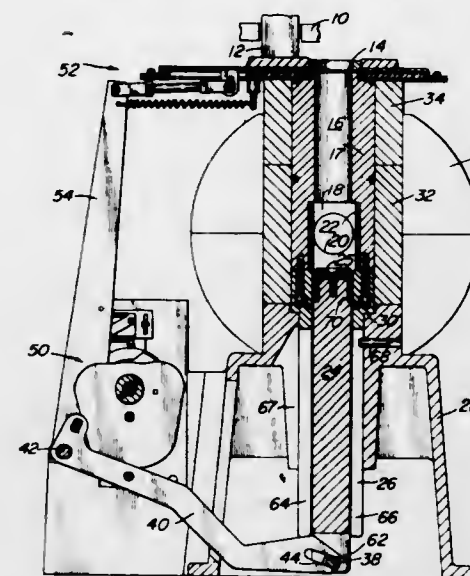
Int. Cl. G01t 1/20

U.S. Cl. 250-71.5

9 Claims

The mechanism of an automatic liquid scintillation counting system employs a cam-driven lever arm to position the

elevator to form a vertically compact elevator drive suitable for tabletop use. Precision positioning of samples in the counting position is accomplished at relatively low cost without impairment of reliability by the cam-drive construc-



tion which controls the time of operation of the mechanical elements of the system. The light-seal shutter portion of the cam-drive prevents damage due to jamming and jammed samples are detected by abnormality of the camming action thus produced.

3,610,928 QUENCH COMPENSATION IN LIQUID SCINTILLATION SPECTROMETRY

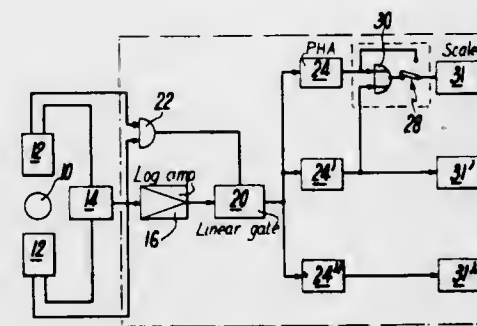
Edward Wherry Thomas, Morris Plains, N.J., assignor to Intertechnique S.A., Plaisir, France
Filed July 18, 1968, Ser. No. 745,816

Claims priority, application France, July 19, 1967, 114 876

Int. Cl. G01t 1/20

U.S. Cl. 250-71.5

9 Claims



For constant efficiency counting of variably quenched sample labeled with ¹⁴C or more energetic isotopes, the counts in two nonadjacent energy ranges, one of which corresponds to the spectrum of the most quenched sample, are added.

3,610,929 ANTISTATIC FLUORESCENT SCREEN FOR RADIOGRAPHY

Masaaki Fujimoto, Tokyo, and Shizuo Hayashi, Kawasaki-shi, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

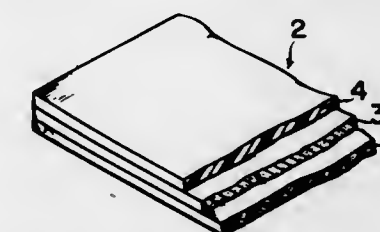
Filed Sept. 26, 1968, Ser. No. 762,700

Claims priority, application Japan, Sept. 29, 1967, 62232/67
Int. Cl. H01j 1/62

U.S. Cl. 250-80

2 Claims

This antistatic fluorescent screen for radiography comprises a substrate mainly consisting of plastic material and a fluorescent layer laminated thereon. The substrate contains



of finely divided inorganic powders having a surface area of more than 400 m²/g.

3,610,930 INDEPENDENT INFRARED LANDING MONITOR

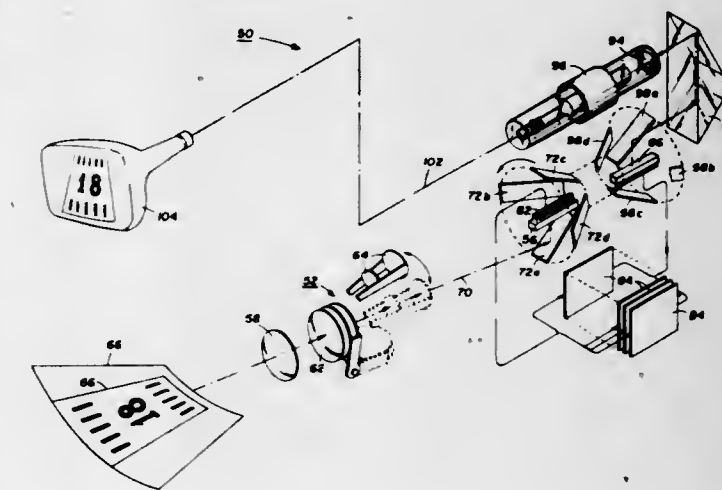
Dennis C. Lacy, Garland, and Curt F. Neukam, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,183

Int. Cl. B64c 19/00

U.S. Cl. 250-83.3 HP

8 Claims



A method and system for landing an aircraft in substantially all meteorological conditions affecting visibility is disclosed. The method and system are the result of the discovery that infrared radiation in the 8-14 micron range from the runway and related objects penetrate clouds, rain, snow, fog, smog, dust, etc. with sufficiently greater efficiency than the human eye to make safe landings during visibility conditions that would otherwise prevent the landings. The aircraft is navigated to a predetermined position on an approach path to a runway either manually or automatically by onboard radio equipment and radio beacons from the ground. The predetermined point is normally the point at which a missed approach is executed during a standard instrument approach in the event the pilot does not have visual contact with the ground. The approach is then continued to a landing by visually monitoring the infrared image of the runway and the surrounding terrain through a real time system for converting the infrared image to a visible image displayed within the aircraft. The visual display permits safe touchdown either by manual or automatic control in substantially all weather conditions.

3,610,931 THERMISTOR CIRCUIT FOR DETECTING INFRARED RADIATION

Martin G. Woolfson, 3411 Merle Drive, Baltimore, Md.

Filed Feb. 11, 1969, Ser. No. 798,308

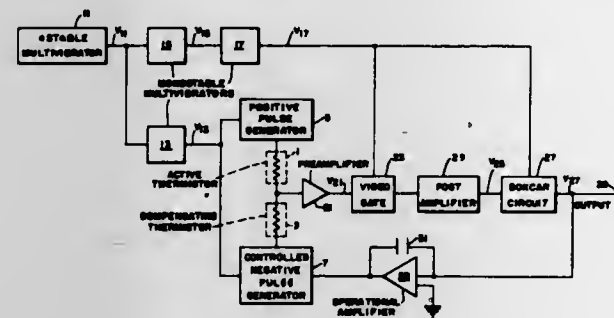
Int. Cl. G01j 5/20

U.S. Cl. 250-83.3 H

8 Claims

A radiation-detecting circuit including a first thermistor voltages to be exposed to the radiation to be detected and a second thermistor connected to the first thermistor and ar-

ranged to be isolated from such incoming radiation while being subjected to the same ambient thermal conditions as the first thermistor, the circuit being arranged to apply opposite polarity biasing pulses to the thermistors, to produce an amplified version of the difference between the voltages



across the two thermistors during the occurrence of the biasing pulses, and to vary the amplitude of the pulses applied to the second thermistor in response to the circuit output so as to balance the voltages across the two thermistors with respect to low frequency thermal variations.

3,610,932

FREQUENCY CONVERSION OF NONCOHERENT RADIATION WITH A NONCOHERENT PUMP

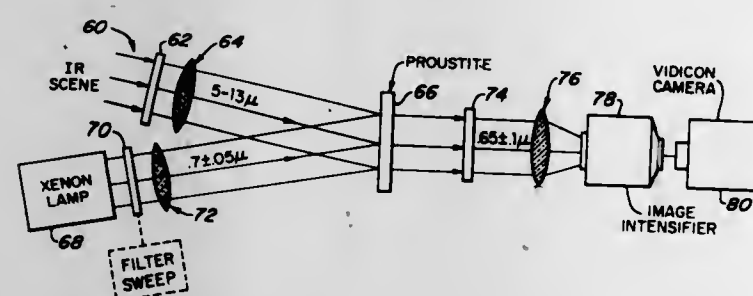
Edward P. Morse, Norwood, and Frederick C. MacNeil, Sudbury, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 27, 1969, Ser. No. 853,351

Int. Cl. G01J 3/00

U.S. Cl. 250-83.3 H

10 Claims



A noncoherent image in the infrared region is noncollinearly up-converted to the visible portion of the spectrum in a nonlinear crystal utilizing a noncoherent radiation pump. The noncoherent radiation from a target image in the infrared range at a frequency f_1 is directed onto a nonlinear crystal such as KDP or Proustite. Radiation at a frequency f_2 from a crystal. The two sources of radiation are mixed in the crystal to provide, among other frequencies, the sum frequency f_1+f_2 which lies in the visible portion of the spectrum. The output from the crystal is filtered to yield only the sum frequency. The image at the sum frequency is then fed through an image intensifier, after which it may be sensed in either a videoscope, a camera or by eye.

3,610,933

COUPLING DEVICE FOR TRANSMITTING ELECTROMAGNETIC ENERGY FROM FLOOR COVERING

John A. Shaver, 405 East Park Lane, Salina, Kans.; Edwin K. Dole, 3505 Kersey Lane, Sacramento, Calif.; Robert S. Osmond, 909 East Minneapolis St., Salina, Kans., and Thomas G. Morrissey, 5700 West 28th Ave., Denver, Colo. Continuation-in-part of application Ser. No. 549,758, Apr. 21, 1966, now Patent No. 3,401,469, which is a continuation-in-part of application Ser. No. 493,345, Oct. 6, 1965, now abandoned. This application Aug. 8, 1968, Ser. No. 751,212

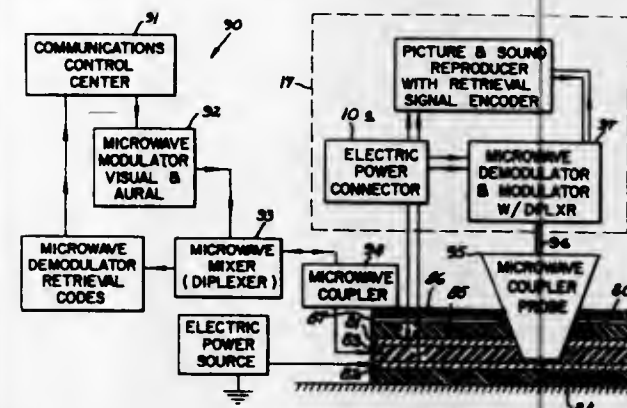
Int. Cl. H04b 9/100

U.S. Cl. 250-199

9 Claims

A coupling device for penetrating a laminated floor covering, carrying electromagnetic energy and thereby trans-

mitting power or signal or both from the floor covering to a receiving unit located on the covering. The coupling device has an enlarged upper body with a probe portion extending downwardly therefrom having a tapered conductive tip and an upper conductive member above the tip and separated therefrom by an insulating member. When the coupling is properly inserted in the floor covering, the tip and the upper conductive member on the probe due to their predetermined spacing automatically contact conductive layers of the floor



covering. In a composite version of the coupling, a microwave signal receiving rod embedded within the probe portion between its tip and its upper conductive member becomes automatically located within a microwave signal propagation layer of the floor covering that is provided between conductive layers. A coupling device with a plurality of probe legs for providing multiple signal and power pickups is also provided.

3,610,934

AUTOMATIC FOCUSING SYSTEM UTILIZING MEANS FOR ALTERNATELY DIRECTING LIGHT OVER TWO PATHS HAVING SLIGHTLY DIFFERENT LENGTHS

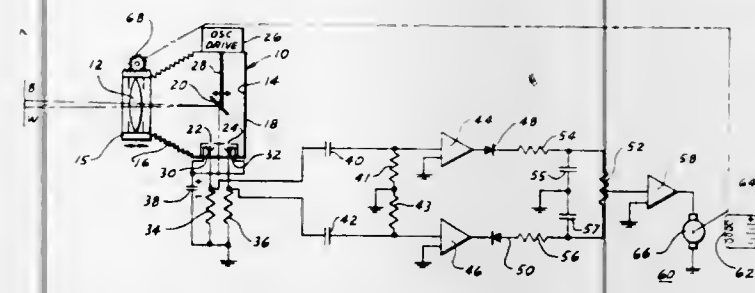
Wheeler M. Turner, Montecito, Calif., assignor to Century Geophysical Corporation, Los Angeles, Calif.

Filed Aug. 22, 1969, Ser. No. 852,244

Int. Cl. G03b 3/00; H01J 3/14, 5/16

U.S. Cl. 250-201

7 Claims



Apparatus for sensing changes in the high-frequency content of a video signal with changes in sharpness of focus of an optical system where the video signal is generated by transducer means scanning an area of the image produced by the optical system. A null-balance servo is used to adjust the focus, the control signal for the servo being derived by summing two such video signals generated by effectively scanning the image slightly in front of and behind the focal plane of the optical system.

3,610,935

INCREMENTAL OPTICAL CURVE TRACER WITH SEQUENTIAL LOGIC COMPRISING PLURAL COMPARATORS AND MEANS FOR LIMITING LENGTH OF STEPWISE MOVEMENT

Geza Von Voros, Glen Rock, N.J., assignor to Optograms, Inc., Glen Rock, N.J.

Filed Mar. 23, 1970, Ser. No. 21,861

Int. Cl. G06k 1/102

U.S. Cl. 250-202

20 Claims

An incremental optical curve tracer with sequential logic is disposed to guide a precision machining operation and/or

produce a drawing in which any of one-, two- or three-dimensional curves, lines or combinations thereof are converted stepwise into a corresponding linear or rectilinear equivalent. The curve or line of a drawing or master print is illuminated to obtain a brightness difference between the edge of the curve being followed and the adjacent print area. An optical reading head having a single optical fiber has a miniature photosensor attached thereto and is adapted to receive a magnified image of a portion of the line being read upon an optical decoding matrix disposed in the focal plane of the magnified optical image. This head is driven by stepping motors or equivalent stepping actuators for each coordinate axis relative to the line being "read." The electrical signal or output from the photosensor is fed to a logic system which determines the subsequent commands to the actuators. As the optical head is moved so also is a secondary

of said system and comprising a wedge-shaped reticle having mutually parallel, uniformly spaced, alternate masking and nonmasking strips, all said strips commonly parallel to a radial edge of said reticle, said reticle being rotatably mounted for rotation in the plane thereof and about the apex thereof for modulation of said field of view. There is also provided means responsive to the time-phase occurrence of said modulations for indicating an angular position of said target within said field of view, and means responsive to the number of modulations per reticle cycle for indicating the radial position of said target in said field of view relative to said apex.

3,610,937

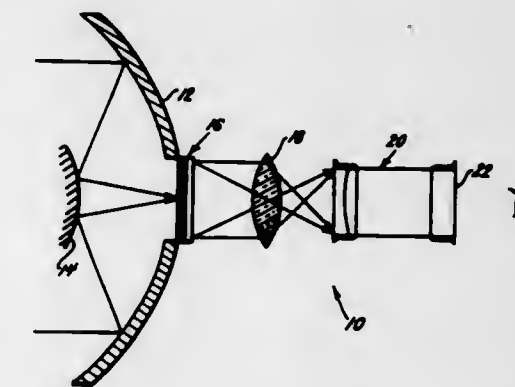
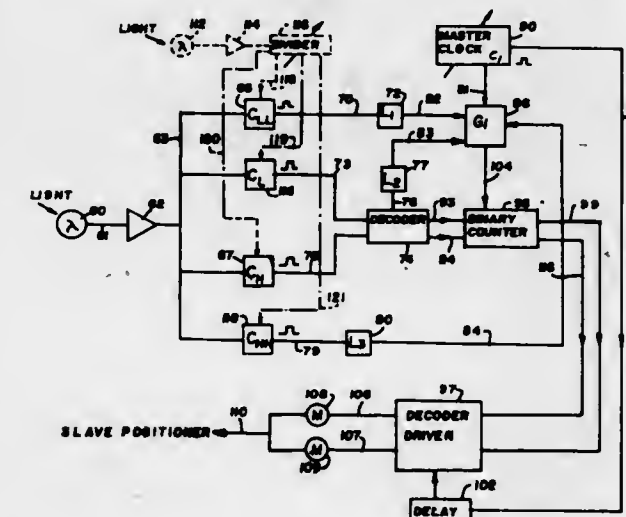
DYNAMIC RANGE COMPRESSOR IMAGE AMPLIFIER

James E. Ducker, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, Saint Louis, Mo. Continuation-in-part of application Ser. No. 573,657, Aug. 19, 1966, now abandoned. This application Mar. 4, 1969, Ser. No. 806,018

Int. Cl. H01J 17/00

U.S. Cl. 250-213

10 Claims



A photoconductor-electroluminescent light-responsive device capable of responding to incident input light illumination images over a wide range of image intensities without distorting or blurring the image being produced thereby on the output.

3,610,938

APPARATUS FOR MONITORING OPERATIONAL PARAMETERS OF HIGH-VOLTAGE VALVES

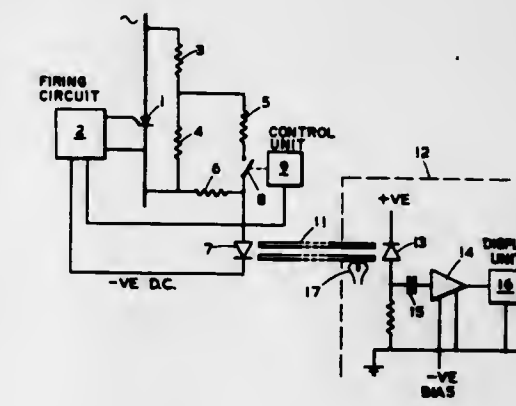
Michael Anthony Cook; John James Laurence Weaver, and Arnaud Michael Eccles, all of Stafford, England, assignors to The English Electric Company Limited, London, England

Filed Oct. 7, 1969, Ser. No. 864,378

Int. Cl. H01J 39/12

U.S. Cl. 250-214 R

9 Claims



APPARATUS FOR DETERMINING THE POSITION OF A DISCRETE TARGET OCCURRING WITHIN A FIELD OF VIEW

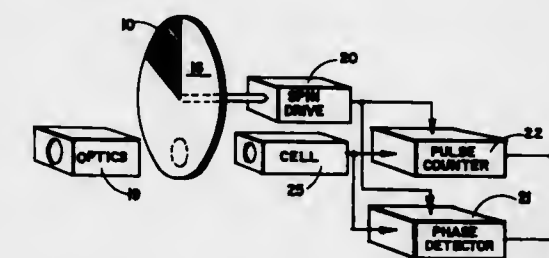
David L. Fried, Yorba Linda, Calif., assignor to North American Rockwell Corporation

Filed Mar. 20, 1969, Ser. No. 808,913

Int. Cl. G01b 19/56; G01J 1/24

U.S. Cl. 250-203

8 Claims



In a radiant energy-sensing system, means for determining the position of a discrete target sensed within a field of view

This invention relates to apparatus for monitoring various parameters of thyristor valves, e.g. voltage, current and temperature.

In particular a sensing circuit is associated with a said thyristor and is operable to develop a signal proportional to the monitored quantity, and a light emitter is energized by this signal and transmits a light signal proportional thereto

along an optical path to a detector, the detector determining the monitored quantity from the received signal.

The invention is of particular utility in high-voltage DC transmission schemes.

3,610,939

ELECTRO-OPTICAL SWITCH STRUCTURE

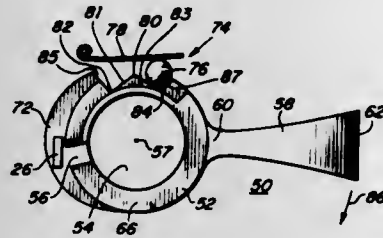
Kenneth E. Fitzgerald, Sudbury, Mass., assignor to GRI Computer Corporation, Newton, Mass.

Filed Mar. 19, 1970, Ser. No. 21,086

Int. Cl. G01d 5/34, 5/36; H01j 1/56

U.S. Cl. 250—229

11 Claims



An integrally formed switch structure for changing the level of light upon an electrical impedance from an elongated light source. The switch structure comprises a rotatable sleeve positioned snugly for sliding rotation around the elongated light source, the sleeve having light-opaque and light-transmissive portions. A resiliently biased detent mechanism is used for providing two fixed positions for the sleeve, one of the positions permitting light to pass from the source through the light-transmissive portion of the sleeve to the impedance and the other of the positions interposing the light-opaque portion of the sleeve between the source and the impedance to prevent light from the source from being transmitted to the impedance. The detent mechanism includes a ridge substantially parallel to the axis of rotation of the sleeve. The ridge is formed by the intersection of two surface areas on the outer surface of the sleeve so that the sleeve may be held in its operative and inoperative positions by the detent mechanism which bears against a selected one of the surface areas to retain the sleeve in one of the fixed positions. A masking projection extends from the outer surface of the sleeve adjacent the light-transmissive portion of the sleeve for optically isolating the electrical impedance from optical interference from adjoining sleeves. Finally, a lever arm is connected to the sleeve which is manually engageable to rotate the sleeve from one fixed position to the other fixed position.

3,610,940

OPTICAL CODING SYSTEM USING ROTATABLE LIGHT SOURCES AND CODE ELEMENTS

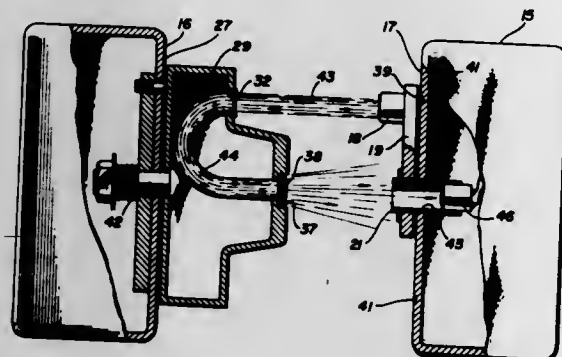
Francis P. Dunigan, Holden, Mass., assignor to MEKontrol, Inc., Northboro, Mass.

Filed June 23, 1969, Ser. No. 835,334

Int. Cl. G08c 9/06

U.S. Cl. 250—219 D

7 Claims



This invention has to do with an identification system and, more particularly, to an optical coding system for use in con-

veyors and the like for identifying articles for subsequent treatment. Two code elements are rotatable to predetermined angular positions on a signal device which moves past a scanning station with two rotatable light sources.

3,610,941

ROTATABLE GROOVED LIGHT-CONDUCTING ROD FOR PROGRAM CONTROL

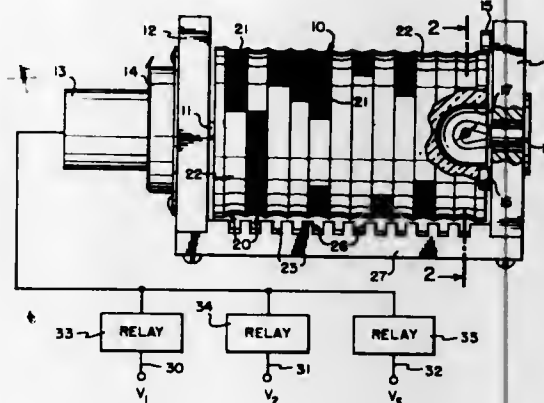
Erich West, Mississauga, Ontario, Canada, assignor to Peabody Engineering Corporation of Canada Ltd., Mississauga, Ontario, Canada

Filed June 29, 1970, Ser. No. 50,741

Int. Cl. G02b 5/14

U.S. Cl. 250—227

6 Claims



A program control system comprising a glass or plexiglas rod illuminated at one end and having circumferential grooves which appear luminous due to the light rays within the rod. A selected portion of each groove is blackened or otherwise rendered opaque so that a selected area only remains luminous. A photoelectric cell is actuated by the luminous portion of each groove in sequence as the rod rotates and is connected to actuate a selected function in the program.

3,610,942

PHOTOCONTROL BAFFLE MOUNTED IN THE LIGHT ENTRANCE APERTURE AND COMPRISING SMALL APERTURES OF SUCH DEPTH AND WIDTH THAT THE ANGLE OF INCIDENCE IS LIMITED TO 35°

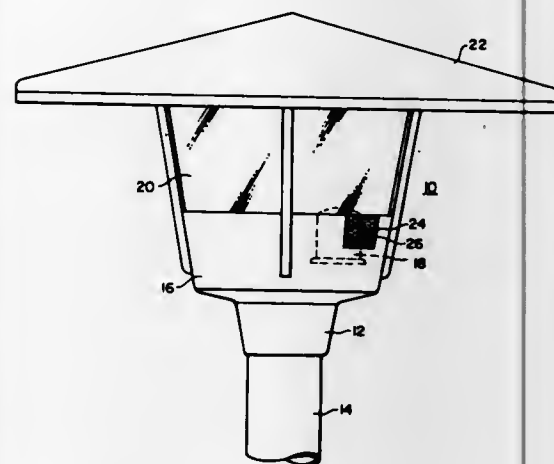
John B. Arens, Cleveland, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1969, Ser. No. 850,200

Int. Cl. H01j 3/14, 5/02; G02b 5/00

U.S. Cl. 250—237

2 Claims



In a street-lighting luminaire operable in response to ambient light levels through a photocontrol mounted on or within the luminaire, the improvement which comprises a baffle mounted in the aperture through which light reaches the photocontrol to limit the angle of incidence of light rays

reaching the light-sensitive element of the photocontrol, the baffle being preferably in the form of a honeycomb.

3,610,943

VEHICLE OPERATION INHIBITOR CONTROL SYSTEM

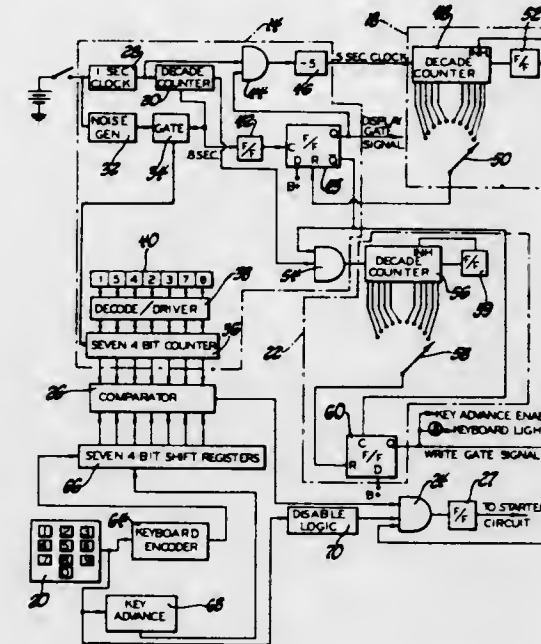
Trevor O. Jones, 9609 North Lake Drive, Milwaukee, Wis.

Filed May 11, 1970, Ser. No. 35,981

Int. Cl. H02g 3/00

U.S. Cl. 307—10

6 Claims



A noise generator is energized from the ignition switch of a vehicle to generate a random frequency which is gated at fixed intervals to a plurality of binary counters and decoders which convert the frequency to a digital representation of a random number. The random number is displayed for a fixed interval of time after which the number is removed. In order to energize the starter circuit of the vehicle, the operator is required to operate keyboard pushbuttons corresponding to the digits previously displayed and in their proper sequence. The number entered by the operator is converted to a binary representation thereof and compared with that stored in the binary counters. The correct number must be entered within a fixed interval of time in order to provide a control signal which energizes the vehicle starter circuit.

3,610,944

SYSTEM-INTERCONNECTING ARRANGEMENT

Tsunao Mitsui, Tokyo; Jun-ichi Baba, Kobe; Ikuo Yamada, Kobe, and Hiromichi Kinoshita, Kobe, all of Japan, assignors to Tokyo Denryoku Kabushiki Kaisha, Tokyo, Japan and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

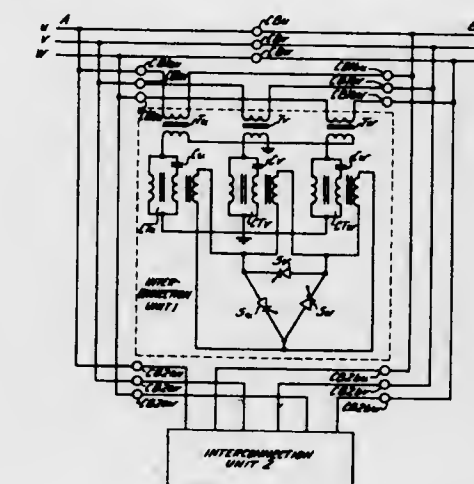
Filed Mar. 20, 1970, Ser. No. 21,345

Claims priority, application Japan, Mar. 26, 1969, 44/22899

Int. Cl. H02j 3/06

U.S. Cl. 307—17

8 Claims



Two electric power systems are interconnected through primary windings of series transformers connected in parallel

with each other. A shunt transformer is across the connecting series transformers and includes three windings of which two are connected across the secondary winding of each of the series transformers with a capacitor disposed between the secondary windings of both transformers. A thyristor is connected across the tertiary winding of the shunt transformer. The thyristor is in a closed condition to perform the normal interconnected system operation and assumes an opened condition upon the occurrence of a short circuit on either power system.

3,610,945

OPTICAL BACKWARD-WAVE OSCILLATOR EMPLOYING S6 SI AND PROCESS FOR MAKING CRYSTAL

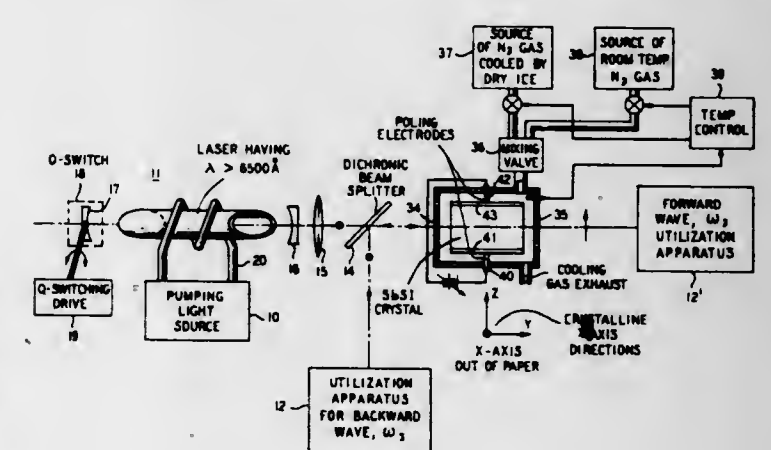
Gary D. Boyd, Rumson; Stewart K. Kurtz, Yorktown Heights, N.Y., and Kurt Nassau, Bernardsville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 7, 1970, Ser. No. 1,250

Int. Cl. H03f 7/04

U.S. Cl. 307—88.3

4 Claims



A backward-wave parametric oscillator is disclosed in which the active medium is an antimony sulfur iodide (SbSI) single crystal of high resistivity. The crystal is cut into a cubical shape with faces normal to its principal crystalline axes. Preferably, a collinear phase match of two near-infrared forward waves and one backward wave is obtained in the Y-crystalline axis direction, which is a principal axis direction. A strong nonlinear effect is obtained without double refraction. A technique is disclosed for growing SbSI crystals in a special configuration imposing a liquid surface in the path of growth, to circumvent the needle-forming growth-rate anisotropy.

3,610,946

BROADBAND VARACTOR UPCONVERTER

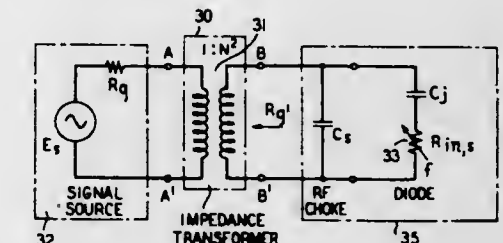
Thomas L. Osborne, Holmdel, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 2, 1969, Ser. No. 821,399

Int. Cl. H03f 7/04

U.S. Cl. 307—88.3

8 Claims

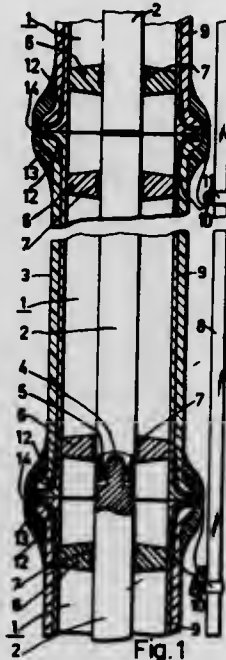


In a varactor upper sideband upconverter a frequency-dependent impedance mismatch between the constant impedance of the signal source and the inherently frequency-dependent impedance of the varactor upconverter is used to regulate the power into the upconverter so that the ratio of the varactor output power to the available power of the signal source is constant.

3,610,947 ENCAPSULATED GAS-INSULATED HIGH-VOLTAGE LINE

Viktor Herbert Stephanides, Zurich, and Richard Thaler, Unterentfelden, both of Switzerland, assignors to Sprecher & Schuh, Aargau, Switzerland
Filed July 14, 1970, Ser. No. 54,737
Claims priority, application Switzerland, July 15, 1969, 10,720/69

Int. Cl. H02b 1/20
U.S. Cl. 307-147



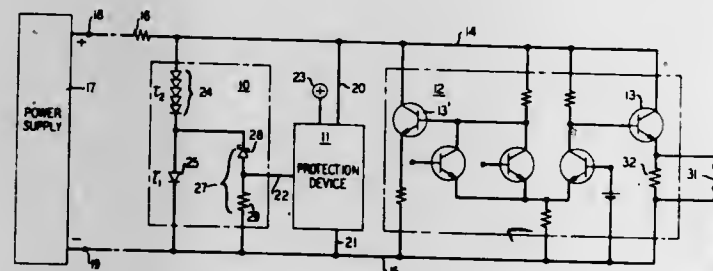
An encapsulated gas-insulated high-voltage line for three-phase alternating-current energy transmission which is of the type incorporating a plurality of assembled longitudinal elements for each phase. Each such longitudinal element possesses an internally arranged conductor surrounded by a substantially tubular jacket formed of an insulator and filled with an insulating gas. Further, insulating support means serve to secure the internally arranged conductor within each associated tubular jacket. A ground wire is arranged parallel to the aforesaid longitudinal elements along the entire length of the high-voltage line. The invention further contemplates that at least one lining means formed of electrically conductive material and enclosed by an insulating material is embedded in the entire wall of each tubular jacket, this lining means being galvanically connected at least at one location with the ground wire.

3,610,948 CURRENT-SWITCHING DETECTOR

Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 23, 1969, Ser. No. 868,839
Int. Cl. H02h 7/20

U.S. Cl. 307-202

7 Claims



A series of charge-storage diodes having different minority-carrier lifetimes are connected between power supply lines and are arranged so that a normally nonconducting signal branch is in parallel with the shortest minority-carrier-lifetime charge-storage diode. The charge-storage diodes and the signal branch respond to a short circuit condition across

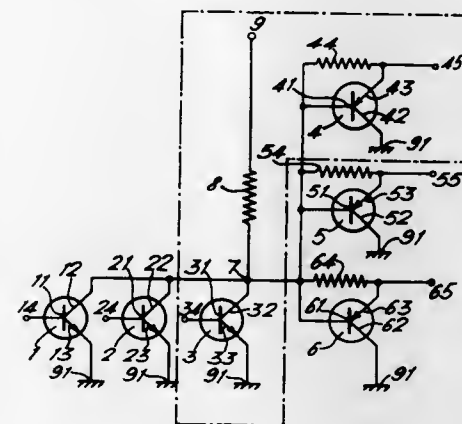
the power supply lines by switching reverse polarity minority-carrier current, conducted through the charge-storage diodes, from the short minority-carrier-lifetime diode to the signal branch. A signal then is developed in the signal branch for enabling a protection device to short circuit the power supply lines or for taking other desired action.

3,610,949 CIRCUIT FOR PERFORMING LOGIC FUNCTIONS

Dietrich Armgarth, Dresden, Germany, assignor to Arbeitss-telle fur Molekularelektronik, Dresden, Germany
Filed Mar. 19, 1970, Ser. No. 20,952
Int. Cl. H03k 19/08

U.S. Cl. 307-203

4 Claims



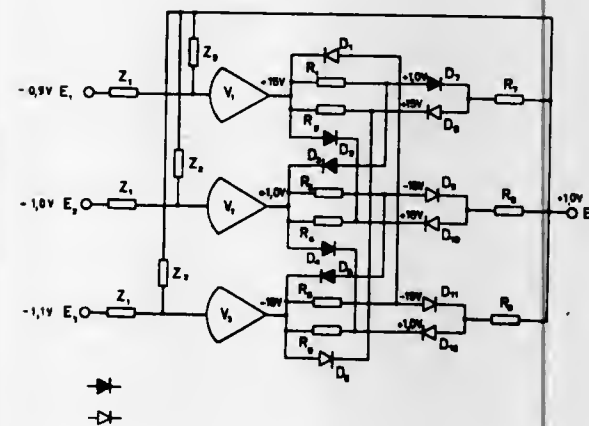
This disclosure relates in general to a circuit for performing logic functions, and more in particular to a logic solid-state integrated circuit.

3,610,950 SIGNAL SELECTION CIRCUIT

Manfred Keller, Uberlingen, and Edgar Matejka, Singen, Hohentwiel, both of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Uberlingen am Bodensee, Germany
Filed Sept. 17, 1969, Ser. No. 858,737
Claims priority, application Germany, Oct. 10, 1968, P 18 02 218.9

Int. Cl. G06f 11/08; H03k 5/20
U.S. Cl. 307-204

4 Claims



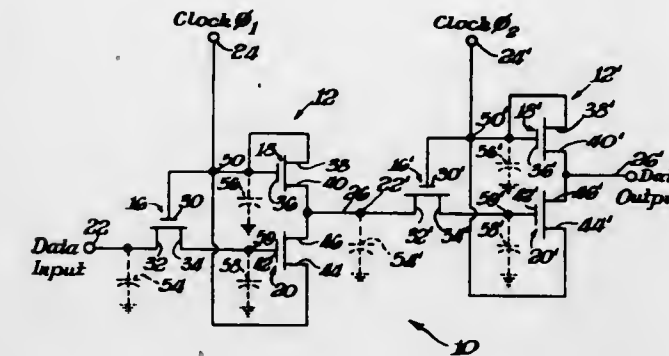
The apparatus selects the intermediate one of three input signals of different voltages and delivers that intermediate signal to an output. Each input signal is delivered to a respective operational amplifier. In addition to the effect of the input signals, the amplifiers are controlled by feedback from the apparatus output. A diode and resistor network is connected between the outputs of the amplifiers and the apparatus output so that only the intermediate of the three signals appears at the apparatus output and the remaining two are blocked.

3,610,951 DYNAMIC SHIFT REGISTER

Robert E. Howland, Stamford, Vt., assignor to Sprague Electric Company, North Adams, Mass.
Filed Apr. 3, 1969, Ser. No. 813,020
Int. Cl. G11c 19/00

U.S. Cl. 307-221

4 Claims



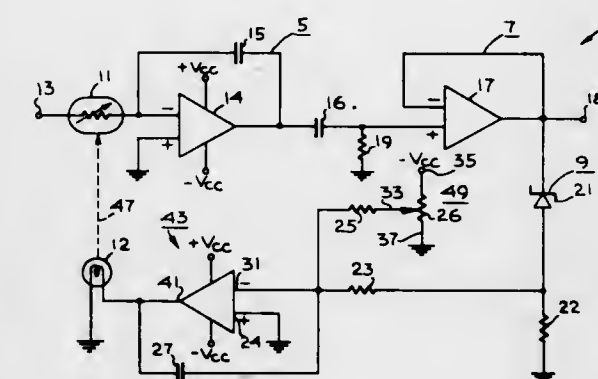
A pair of charge transfer stages are serially connected and alternately triggered by out-of-phase clock pulses for transfer of a single information bit. Each stage includes a pair of clock-controlled transistors and a data-controlled transistor interconnected such that the output of the transfer stage is first charged to clock voltage and then selectively discharged to clock ground in accordance with the data input signal.

3,610,952 TRIANGLE WAVE GENERATOR

Robert E. Chandos, Santa Barbara, Calif., assignor to Electro-Optical Industries, Inc.
Filed Apr. 7, 1970, Ser. No. 26,399
Int. Cl. H03k 4/08

U.S. Cl. 307-228

8 Claims



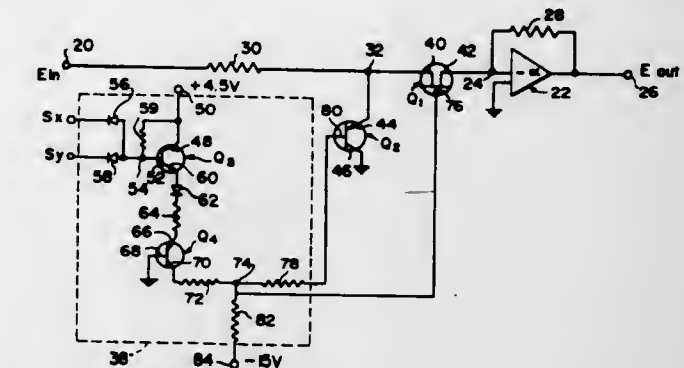
A waveform converter for automatically producing constant amplitude triangular wave signals from 50-50 square wave signals of varying amplitude and frequency. A variable-resistance device transfers the input signal into a fast integrator circuit that produces a triangle wave signal. A buffer stage removes the DC component and produces a buffered output triangular wave signal. A clipped portion of the output triangular wave signal is combined with a bias reference level. A slow integrator circuit integrates this combined signal and controls the resistance of the variable-resistance device. Negative feedback is provided to the variable-resistance so as to increase or decrease the amplitude of the triangular output signal in order to maintain a constant amplitude output signal.

3,610,953 SWITCHING SYSTEM

Bernard M. Gordon, Magnolia, Mass., and Bruce K. Smith, Londonberry, N.H., assignors to Gordon Engineering Company, Waltham, Mass.
Continuation of application Ser. No. 628,875, Apr. 6, 1967, now abandoned. This application Mar. 3, 1970, Ser. No. 18,787

Int. Cl. H03K 13/14; G06g 7/12
U.S. Cl. 307-230

9 Claims



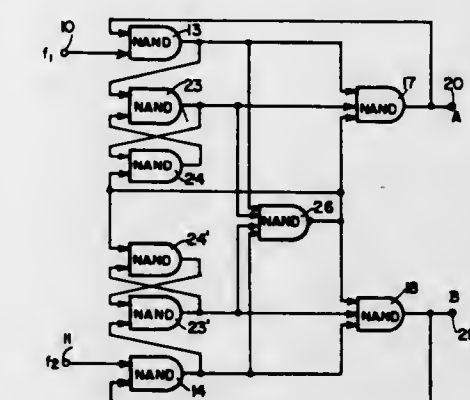
A current-switching system having an input terminal connected to a resistance, the latter being connectable by a first switch to ground, and connectable by a second switch to a summing junction at the input of an operational amplifier, the two switches being driven so that their conduction states are substantially mutually exclusive, both switches exhibiting substantially zero voltage drops during conduction.

3,610,954 PHASE COMPARATOR USING LOGIC GATES

Ronald L. Treadway, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 12, 1970, Ser. No. 88,905
Int. Cl. H03d 13/00

U.S. Cl. 307-232

7 Claims



A digital frequency/phase detector employs a plurality of NAND gates interconnected to respond to changes in logic level of two input signals, the frequency/phase of which is to be compared. The detector is responsive to changes in the trailing edges of the input waveforms and produces outputs that are related to the repetition rate and relative phase of the inputs. The duty cycle of the input waveforms is unimportant since the circuit responds only to the trailing edge transitions in the input signal; and when the input signals are of the same frequency and are in phase, the output of the phase detector is a constant DC level.

3,610,955 BALANCED SYNCHRONOUS DETECTOR

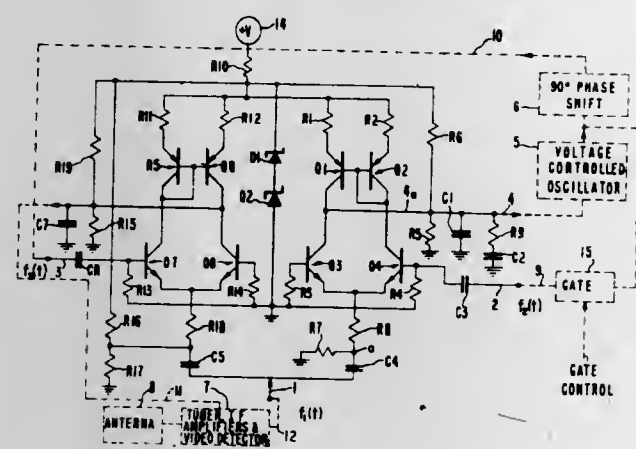
Lawrence M. Blaser, Mountain View, and Norman P. Doyle, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed July 31, 1970, Ser. No. 60,019
Int. Cl. H03K 5/20

U.S. Cl. 307-235

11 Claims

A balanced synchronous detector circuit is constructed of two pairs of transistors. The first pair of transistors are inter-

connected so that the collector currents of these transistors are equal. The second pair of transistors contains one transistor, the collector current of which is controlled by the amplitude of the input signal applied to the emitters of the transistors in the second pair. The collectors of the first and second transistors in the first pair are connected to the collectors of the first and second transistors of the second pair.



The difference between the collector current drawn by one of the transistors in the second pair and the collector current supplied by the corresponding transistor in the first pair is used to charge or discharge a capacitor, the voltage level on which is used to correct the frequency, phase, or amplitude of one signal to match the frequency, phase, or amplitude of a second signal.

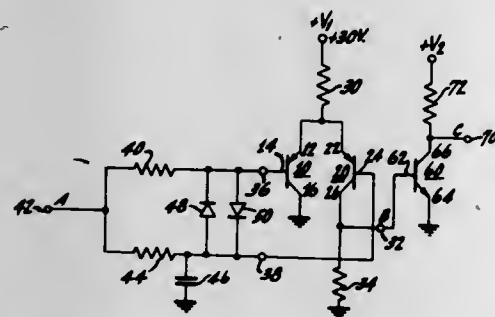
3,610,956

DRIFT-COMPENSATED AVERAGE VALUE CROSSOVER DETECTOR

Raymond Louis Giordano, Berlin, and Donald John Poitras, Haddonfield, both of N.J., assignors to RCA Corporation
Filed Oct. 31, 1969, Ser. No. 873,018
Int. Cl. H03K 5/20

U.S. Cl. 307-235

7 Claims



A signal source having positive and negative excursions about an average voltage which may itself vary in amplitude, is coupled directly to one input of a differential amplifier and via a low-pass filter to the second input of the differential amplifier. The amplifier conducts equal currents, when both inputs are at the average voltage of the signal source. When the source voltage "crosses over" from a value on one side of this average to a value on the other side of the average, the amplifier becomes unbalanced. The change from balanced to unbalanced condition may be employed to produce a pulse indicative of this crossover.

3,610,957

BRAKING SYSTEMS FOR VEHICLES

Leonard R. Hiscox, Birmingham, England, assignor to Girling Limited, Tysley, Birmingham, England
Filed July 14, 1969, Ser. No. 841,252

Claims priority, application Great Britain, July 29, 1968,

36031/68

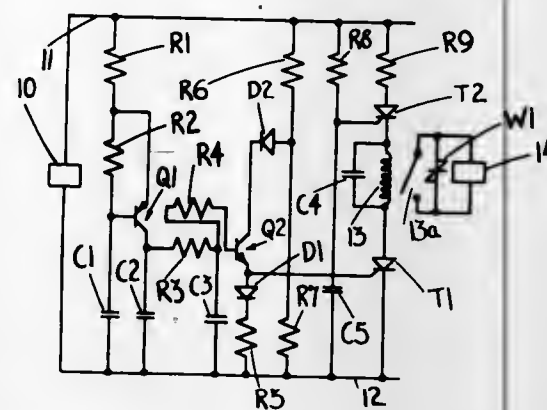
Int. Cl. H03k 5/20; H03b 3/04

U.S. Cl. 307-233

2 Claims

A frequency-sensitive circuit has first and second input terminals and first and second output terminals with the second

input and output terminals interconnected. Between the input terminals is connected a phase-shifting network, and a transistor has its base connected to the phase-shifting net-



work, its emitter connected to one of the input terminals and its collector connected to the other input terminal through an impedance. The output from the circuit changes polarity at a predetermined frequency.

3,610,958

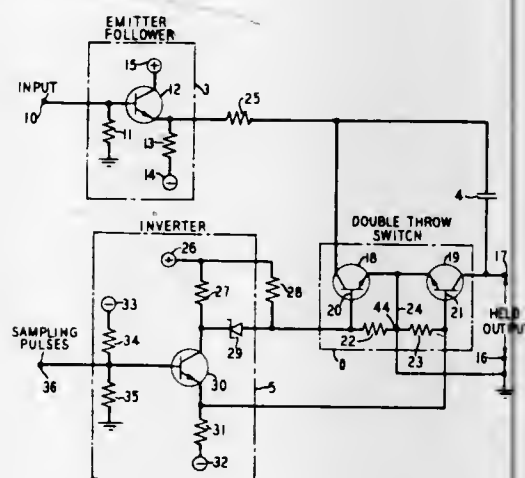
SAMPLE AND HOLD CIRCUIT

Paul A. Reiling, New Providence, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed May 19, 1969, Ser. No. 825,552

Int. Cl. G11c 11/34

U.S. Cl. 307-238

9 Claims



In a sample and hold circuit the fixed contacts of a double-throw switch are connected to the terminals of a storage capacitor. The movable contact of the double-throw switch is connected to ground, and the capacitor is connected to a source of input signals. When the switch is in one position, the input signal is sampled. When the switch is in the other position, the discharge path for the capacitor is blocked, and the signal sample is held thereon. Activation of the double-throw switch may be from a grounded or unbalanced source, and hence, there being no need for pulse transformers or similar circuitry, the entire circuit can be constructed readily using thin film or integrated circuit techniques.

3,610,959

DIRECT-COUPLED TRIGGER CIRCUIT

John A. Palmieri, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 16, 1969, Ser. No. 833,267

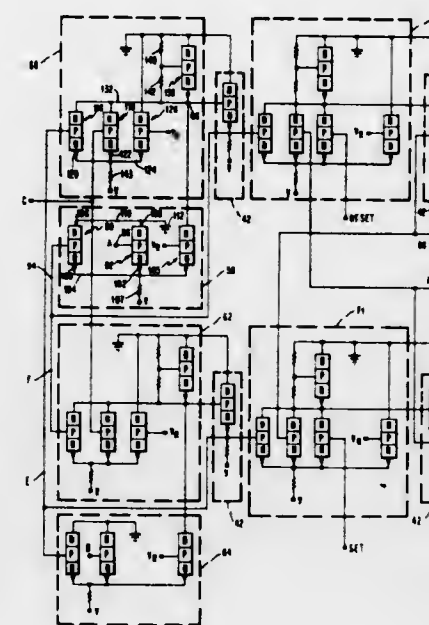
Int. Cl. H03k 17/00, 19/34

U.S. Cl. 307-247

5 Claims

A symmetrical direct-coupled trigger circuit comprising first and second interconnected stages, each including current switch logic means. In the first stage, a plurality of current switches have selected respective collector output lines

and emitter output lines interconnected to provide logic signals at a pair of nodes; the nodes are connected to the fier to be turned on at an appropriate time. Controls for single phase, half- and full-wave control and three-phase systems are illustrated. Modifications to assure operation



3,610,960

SCAN GENERATOR CIRCUIT

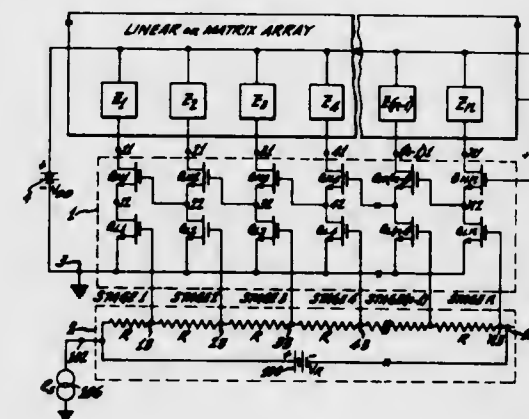
Steven R. Hofstein, Princeton, N.J., assignor to RCA Corporation

Filed May 21, 1968, Ser. No. 730,840

Int. Cl. H03k 17/60, 13/25, 17/62

U.S. Cl. 307-251

8 Claims



A circuit for converting an analog signal into sequentially spaced digital pulses. The circuit includes a chain of "N" identical stages which convert a signal amplitude to pulses and sequencing control means which determine the conduction sequence of the "N" stages. Each stage, comprising two active devices having their conduction paths direct current connected in series, is serially excited as a function of the signal amplitude and produces a corresponding sampling pulse on one of "N" output lines.

3,610,961

SCR PHASE CONTROL SYSTEM

Clarence Wilson Hewlett, Jr., Hampton, N.H., assignor to General Electric Company

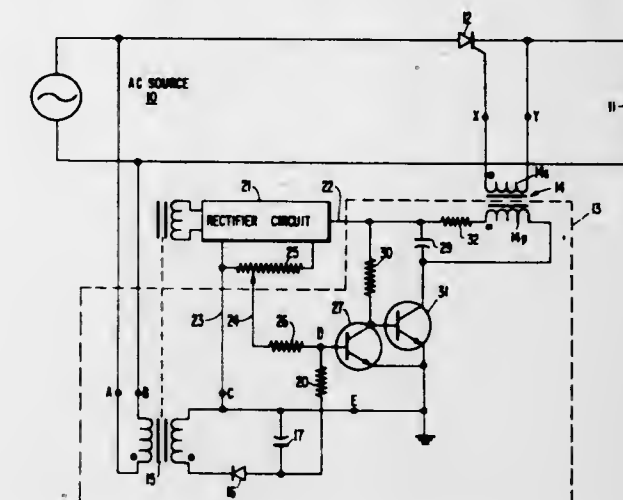
Filed June 26, 1969, Ser. No. 836,718

Int. Cl. H03k 17/00

U.S. Cl. 307-252 N

19 Claims

A silicon controlled rectifier phase control system. While a load-controlling silicon controlled rectifier is reversed biased, a capacitive circuit is charged and then discharges for a time including the succeeding half cycle when the silicon controlled rectifier is forward biased to generate a reference voltage. This reference voltage is compared with a control voltage to cause the load-controlling silicon controlled recti-



with overriding input signals and feedback circuit means to improve linearity and line voltage compensation are described.

3,610,962

BIPOLAR RECEIVER

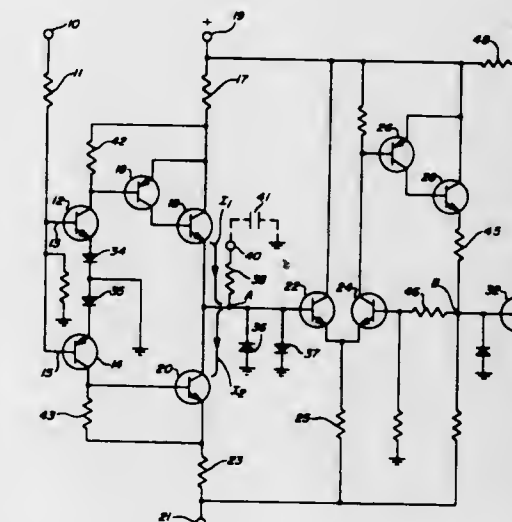
Bernhard H. Meyer, Scottsdale, and Bruce C. Keene, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc.

Filed Nov. 3, 1969, Ser. No. 873,467

Int. Cl. H03k 3/26

U.S. Cl. 307-261

4 Claims



A communication circuit for receiving and converting bipolar signals into monopolar signals is disclosed. The circuit is suitable for fabrication by integrated circuit technology and employs signal level clamping for providing accurately controlled delay times between the time at which an input signal's polarity changes and the time at which an output signal in response thereto has been provided.

3,610,963

SWITCH DRIVE CIRCUIT FOR THE TIME RATIO CONTROLLED TRANSISTOR SWITCHING CIRCUITS

Edward R. Higgins, North Linthicum, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 30, 1970, Ser. No. 33,432

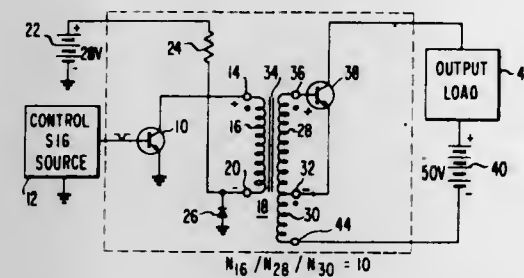
Int. Cl. H03k 3/30

U.S. Cl. 307-275

11 Claims

An output transistor switch is driven "on" and "off" by means of the secondary winding of a transformer having a relatively large primary to secondary turns ratio with the primary winding having one end coupled to another or "drive" transistor switch operated by means of a control circuit. The

other end of the primary winding is coupled back to the drive transistor switch by means of a semiconductor diode which becomes momentarily conductive when the drive transistor is driven "on" to cause a virtual short circuit to be reflected to the secondary winding which turns the output transistor switch immediately "off." An output load is connected across collector-emitter circuit of the output transistor switch in series with another secondary winding which is poled with



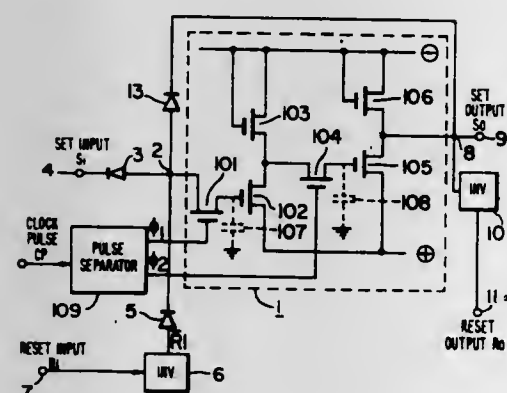
respect to the first mentioned secondary winding so as to provide a positive feedback for the base drive of the output transistor switch which is a function of the load current. The primary winding of the transformer is additionally coupled to a supply potential and a resistor in series for altering the flux state of the transformer to reset the core thereof and aid in holding the output transistor switch "off" when the drive transistor is "on."

3,610,964 FLIP-FLOP CIRCUIT

Iwao Hatano; Katsumi Iwatani, and Yasuhiko Tabata, all of Kyoto-fu, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-fu, Japan
Filed June 5, 1969, Ser. No. 830,613
Claims priority, application Japan, June 8, 1968, June 8, 1968, 43/48334; 43/48335
Int. Cl. H03k 3/26

U.S. Cl. 307-279

5 Claims



A dynamic-type flip-flop circuit having an output feedback means outside the circuit to obtain a characteristic of an R-S-type flip-flop circuit. The input is supplied to the input terminal through a diode.

3,610,965 INTEGRATED FLIP-FLOP CIRCUIT

Harold M. Martin, South Houston, and Timothy A. O'Neill, Houston, both of Tex., assignors to Shell Oil Company, New York, N.Y.

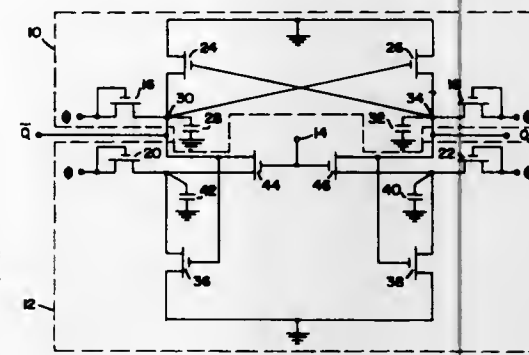
Filed June 13, 1969, Ser. No. 833,041
Int. Cl. H03k 3/26

U.S. Cl. 307-279

14 Claims

A MOSFET flip-flop circuit consisting of a slave circuit formed of a pair of cross-coupled MOSFETs and a master circuit connectable to the slave circuit by the trigger pulse is disclosed. Precharging of the slave and master circuits can be accomplished by a system clock or by DC. By substituting an analog voltage for the precharging voltage on one or both sides of the master circuit, the output pulse length and output

pulse interval can be separately regulated over a considerable range of integral numbers of trigger pulses. Several flip-flop



circuits can be connected through MOSFET gates to produce a binary counter.

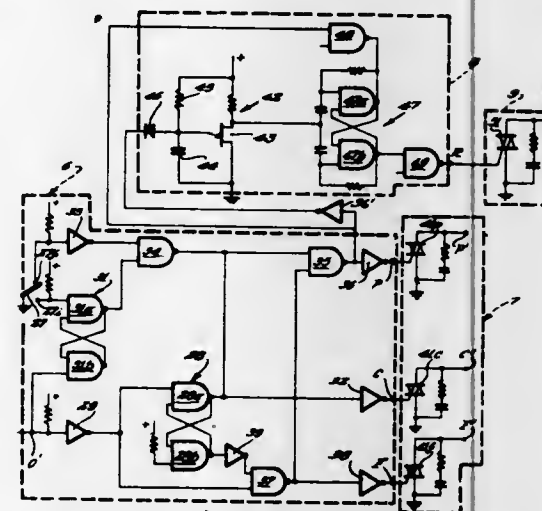
3,610,966 VARIABLE TIMING, CONTROL AND INDICATING CIRCUIT

Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed July 3, 1969, Ser. No. 839,026
Int. Cl. H03k 17/28

U.S. Cl. 307-293

19 Claims



A variable timing and control circuit providing repetitive control periods of variable duration at variable repetition rates, and providing a continuous and intermittent control function during the control periods, in which a first timing circuit comprising an adjustable relaxation oscillator and a counting circuit operable to determine the duration of a control period, and a second timing circuit comprising a second adjustable relaxation oscillator and a second counting circuit is operable to determine the interval between control periods, a decoding circuit being connected to the outputs of the counting circuits operable to alternately initiate and terminate operation of the respective timing circuits and to provide signals responsive thereto, a logic circuit, responsive to signals from the decoding circuit, comprising a plurality of gates circuited to provide control and indicator functions in dependence upon said signals and upon predetermined operation of the mechanism to be controlled, and means controlled by said logic circuit for providing an intermittent control function during said control periods.

3,610,967 INTEGRATED MEMORY CELL CIRCUIT

Thomas L. Palfi, Mountainview, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

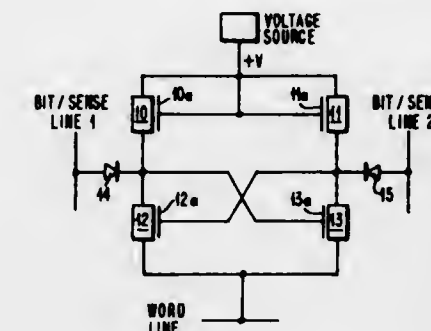
Filed Feb. 27, 1970, Ser. No. 15,004
Int. Cl. H01l 19/00

U.S. Cl. 307-304

4 Claims

Method and means for constructing memory cell circuits, comprising the addition of a single diffusion to an IGFET

wafer to form diodes in the drain or source regions of at least one of the FETS in the wafer, thus reducing the number of FETS in the cell and substantially reducing the area occupied by each cell. Three embodiments are disclosed, all using



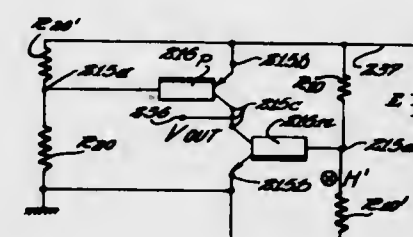
diodes as the input/output components of the cells and, in addition, one uses two diodes as the load, giving an exponential load characteristic, while another combines a diode and FET in the load to give a semiexponential load characteristic.

3,610,968 MAGNETORESISTANCE CIRCUITS AND ELEMENTS

Toshiyuki Yamada, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan
Continuation-in-part of application Ser. No. 673,658, Oct. 9, 1967, now Patent No. 3,519,899. This application June 8, 1970, Ser. No. 44,375

Int. Cl. H01l 15/00; H01r 5/00
U.S. Cl. 307-309

8 Claims



This invention discloses circuits utilizing magnetoresistance devices such as diodes and transistors with asymmetrical responses in the presence of a magnetic field connected in combinations so that the presence of a magnetic field can be detected, or alternatively, so that the circuit may be switched between one or more states when a field is present.

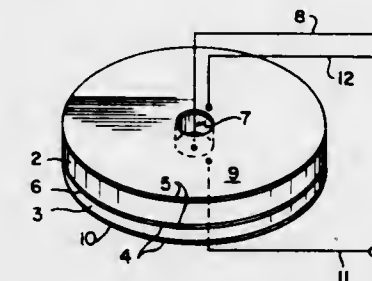
3,610,969 MONOLITHIC PIEZOELECTRIC RESONATOR FOR USE AS FILTER OR TRANSFORMER

Charles D. Clawson, and Joseph F. Riley, both of Attica, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Feb. 6, 1970, Ser. No. 9,314
Int. Cl. H01v 7/00

U.S. Cl. 310-8.1

21 Claims



A piezoelectric ceramic device including a plurality of piezoelectric ceramic plates adhered together by a metallic inner electrode. At least one of the plates has an aperture for receiving a connecting lead to the metallic inner electrode. The ceramic plates are formed as a monolithic unit by being integrally fused together through the inner electrode. The

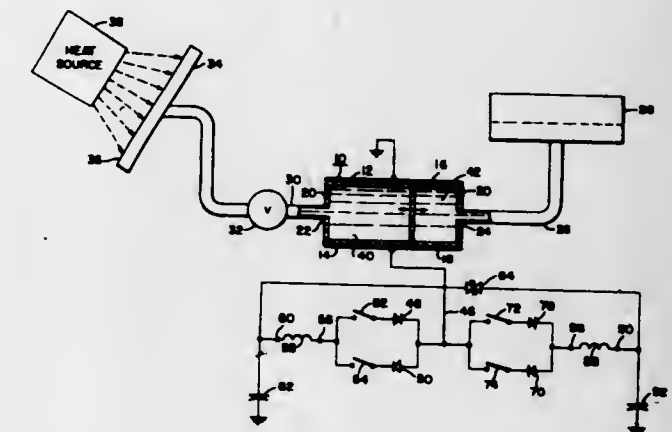
device can be used as a filter or transformer in an electrical circuit.

3,610,970 ENERGY CONVERTER

Selby M. Skinner, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 18, 1967, Ser. No. 654,243
Int. Cl. H02k

3 Claims



The invention relates to an energy converter in which electrical energy output is extracted from elements exhibiting a capacitance change in response to input energy. More particularly, the invention is directed to an energy converter in which the material between the capacitor electrodes is modified by physical movement of the material between the capacitor electrodes to modify the capacitance.

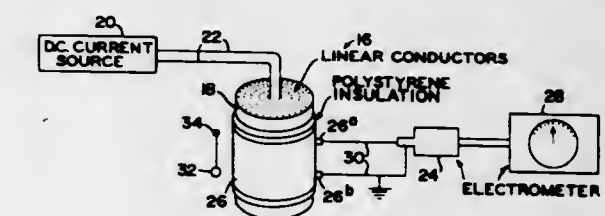
3,610,971 ALL-ELECTRIC MOTIONAL ELECTRIC FIELD GENERATOR

William J. Hooper, Sarasota, Fla., assignor to Electrodynamic Gravity, Inc.

Filed Apr. 15, 1969, Ser. No. 816,366
Int. Cl. H02n 11/00

U.S. Cl. 310-10

5 Claims



This invention relates to an all-electric generator yielding a motional electric field in the space surrounding the device, but requiring no mechanical movements of its parts in generating this field. The Theory underlying the production of such a field postulates that each moving electron constituting the current in a linear conductor carries with it a loop of magnetic field energy about it.

3,610,972 LINEAR INDUCTION MOTOR

Yves J. Pelenc, La Tronche, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

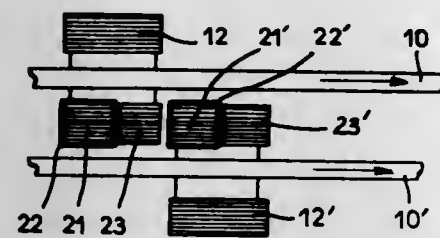
Filed Aug. 16, 1968, Ser. No. 753,237
Claims priority, application France, Sept. 1, 1967, Sept. 8, 1967, 119804; 120528
Int. Cl. H02k 41/02

U.S. Cl. 310-13

7 Claims

Linear induction motor having a fixed elongated armature disposed along a linear path and cooperating with a movable

magnetic core member. An electrical conductor disposed along said path energizes said core member by way of magnetic induction in order to produce a traveling magnetic field driving said core member.



netic induction in order to produce a traveling magnetic field driving said core member.

3,610,973 VIBRATION PICKUP DEVICE

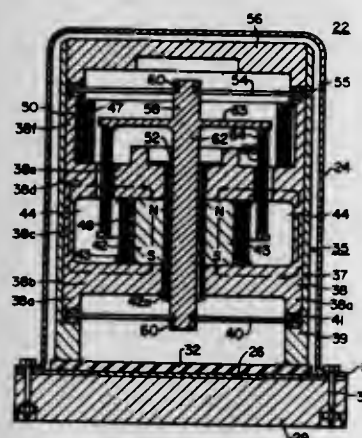
James A. Bauer, Murrysville, and Dexter V. Wright, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 8, 1970, Ser. No. 1,354

Int. Cl. H02k 35/00

U.S. Cl. 310-15

11 Claims



A vibration pickup device used to measure the vibrational velocity of a vibrating body and comprising an outer casing which acts as a magnetic shield, and an inner casing structure which is connected to an electrical ground. The inner casing structure houses a permanent magnet, a pair of bucking coils, and a pair of insulated seismic mounting springs. A coil structure is seismically mounted between the springs linking the steady magnetic field. Upon movement of the casing structures caused by the vibrations of the vibrating body, the magnetic field also moves and cuts the coil windings, producing an alternating voltage in the windings proportional to the vibrational movement. The bucking coils and the magnetic shielding minimize the effect of stray alternating electromagnetic fields and the grounded inner casing minimizes the effect of stray electrostatic fields.

3,610,974

DYNAMO-ELECTRIC STEPPING ARRANGEMENT

Keith E. Kenyon, 12943 Dickens St., Studio City, Calif.

Filed Jan. 5, 1970, Ser. No. 647

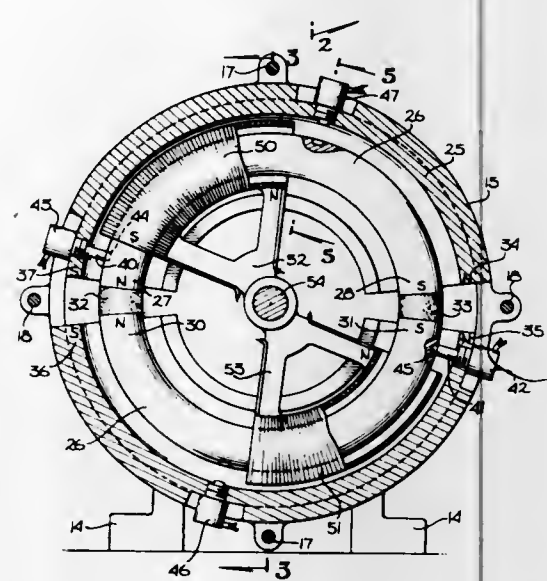
Int. Cl. H02k 37/00

U.S. Cl. 310-49

8 Claims

Dynamo-electric stepping arrangement including at least one annular, inner permanent magnet composed of a pair of semicircular segments disposed within a circular hollow outer permanent magnet similarly composed of a pair of semicircular segments whereby the opposing poles of the magnets are arranged adjacent each other in magnetic repulsion so as to create a high-density magnetic field about the inner and outer magnets approximately 180° apart. A pair of coil carried on respective quadrants are encircled about a portion of the inner magnet so as to move about the magnet between the inner and the outer magnets. A current device is operably connected to the coils for selectively and periodically pulsing the coils so as to establish an attractive magnetic force at the

respective leading ends of the coils whereby the coils and hence, the quadrants, will move in a rotary manner. By



mounting the quadrants on a shaft, a work output may be generated.

3,610,975 DYNAMOELECTRIC MACHINE WITH IMPROVED COOLING MEANS

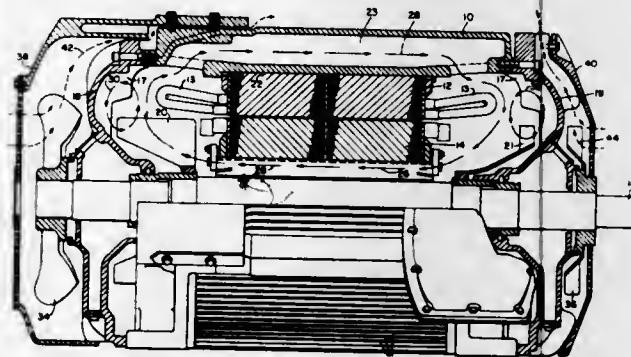
Nikolaus Onjanow, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1969, Ser. No. 846,166

Int. Cl. H02k 9/08

U.S. Cl. 310-57

7 Claims



Heat transfer from heat-producing parts to the exterior of enclosed machines, particularly totally enclosed, fan cooled machines, is improved by a structure including a channeled frame with an inner surface in essentially total contact with the stator core. The frame channels are of a number and configuration to leave a direct radial heat transfer path through metal from the core to the exterior over most of the surface. Interior fans provide internal air circulation between end bracket spaces through the frame channels and back through rotor channels. The end brackets are shaped around the interior fans for making the air turbulent and increasing heat transfer to the enclosure. Exterior fans move external air axially in and over the machine from both ends. Ribbed surfaces of the frame and end brackets help transfer heat to external air with the exterior bracket surface having ribs in an irregular and nonradial configuration to permit close placement of the exterior fan without excessive noise.

3,610,976

COOLING MEANS FOR ELECTRIC MOTORS

Lawrence W. Wightman, Saint Louis, Mo., assignor to Emerson Electric Co., Saint Louis, Mo.

Continuation-in-part of application Ser. No. 787,664, Dec. 30, 1968. This application July 6, 1970, Ser. No. 52,230

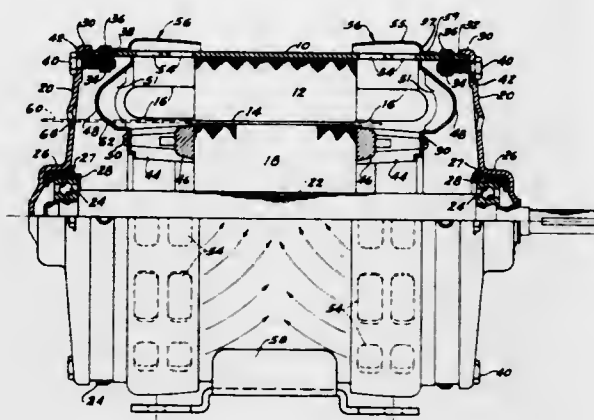
Int. Cl. H02k 9/06

U.S. Cl. 310-60

3 Claims

A drip-proof electric motor construction in which the motor casing comprises a cylindrical stator shell and rotor

supporting end walls with air vents spaced entirely around the shell near both ends and in the end walls, in which large diameter blowers in both ends of the casing cause air to flow at high velocity axially into the casing through the end wall vents, over the end faces of the rotor and stator and outward



through the shell vents, and in which a continuous circular band at each end of the shell has an axial wall portion overlying and shielding the shell vents from drip and a continuous radial wall portion spacing the axial wall portion outward from said shell and deflecting the airflow inward over the outer surface of the shell.

3,610,977

SYNCHRONOUS MACHINE HAVING SALIENT ROTOR POLES

Bror Dalmo; John Franked; Hans Landhult, and Ove Tjernstrom, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

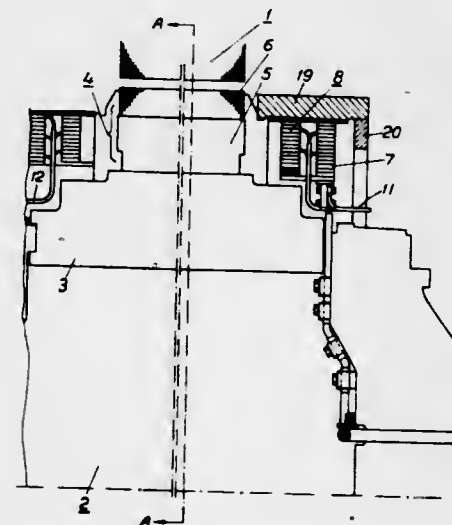
Filed Oct. 6, 1969, Ser. No. 863,855

Claims priority, application Sweden, Oct. 7, 1968, 13485/68

Int. Cl. H02k 1/32

U.S. Cl. 310-65

7 Claims



A synchronous machine includes a rotor ring with salient rotor poles each having a shoe portion and a core portion, with a plurality of gaps between the poles. Liquid cooled field windings are arranged in the gaps surrounding each of the poles. The shoe portions of the rotor poles overlap the gaps by at most 20 percent of the width of the gaps. Within the gaps are T-shaped support members which are keyed into the rotor and which have legs extending between the windings and crosspieces on the outside of the windings.

3,610,978

HYSTERESIS MOTOR

Peter-Konrad Hermann, Berlin, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

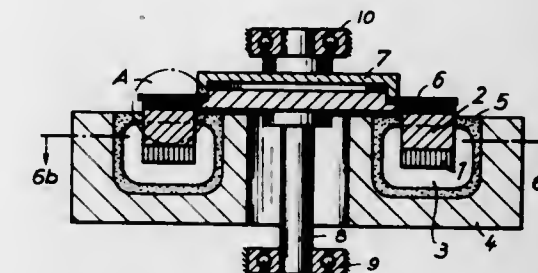
Filed Jan. 15, 1970, Ser. No. 3,110

Claims priority, application Germany, Jan. 15, 1969, P 19 02 652.9

Int. Cl. H02k 9/26

U.S. Cl. 310-163

7 Claims



An improved stator construction for a hysteresis-type motor and particularly a disc-type hysteresis motor, wherein the slot harmonics in the air gap flux density are removed or at least substantially reduced, thus reducing rotor eddy current losses, wherein a thin intermediate ring of soft magnetic material is provided within the air gap adjacent the stator pole tooth ring, which intermediate ring is firmly connected to the stator at a small distance therefrom. Further improvement in the operation of such a hysteresis motor is provided by utilizing a ring winding for the stator windings which windings enclose the stator yoke, and by varying the number of turns of the strands of the multiphase stator windings in the stator slots so that the peak values of the total flux in all of the slots is the same, and the phase sequences of the flux in adjacent slots enclose the same angle. According to still a further feature, the stator is embedded in a shielding enclosure having thick walls formed from a material with good conductive properties in order to reduce the primary stator yoke stray reactance and thereby improve the power factor of the machine to such an extent whereby less expensive hysteretic material may be utilized for the rotor.

3,610,979

ALTERNATOR HAVING STATIONARY PRIMARY AND SECONDARY WINDINGS

Serge Thomas, Paris, France, assignor to Societe Anonyme Pour L'Equipe Electric Des Vehicules S.E.V. Marchal and S.E.V. Mobrola S.A., Issy Les Mouleneaux, France

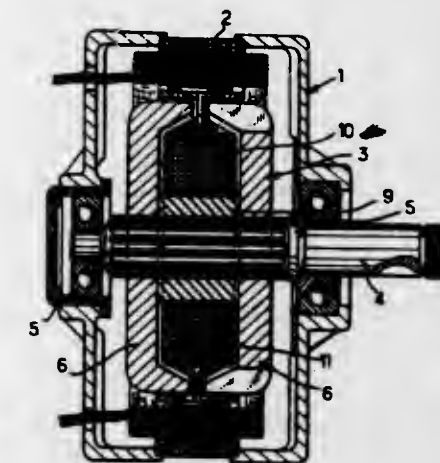
Filed Oct. 22, 1969, Ser. No. 868,527

Claims priority, application France, Oct. 31, 1968, May 13, 1969, May 16, 1969, Aug. 14, 1969, 172,096; 6,915,370; 6,915,850; 6,928,096

Int. Cl. H02k 19/24

U.S. Cl. 310-168

33 Claims



An alternator comprises stationary primary and secondary windings and a rotor of magnetic material. The rotor comprises two peripherally toothed cheek plates, the teeth on which project toward each other parallel to the axis of the ro-

tor, with the teeth on one cheek plate opposite the spaces between the teeth on the other cheek plate. The windings for the rotor is supported by radial tabs extending through the gap between the teeth on the two cheek plates and the ends of the tabs extending into slots in the stator.

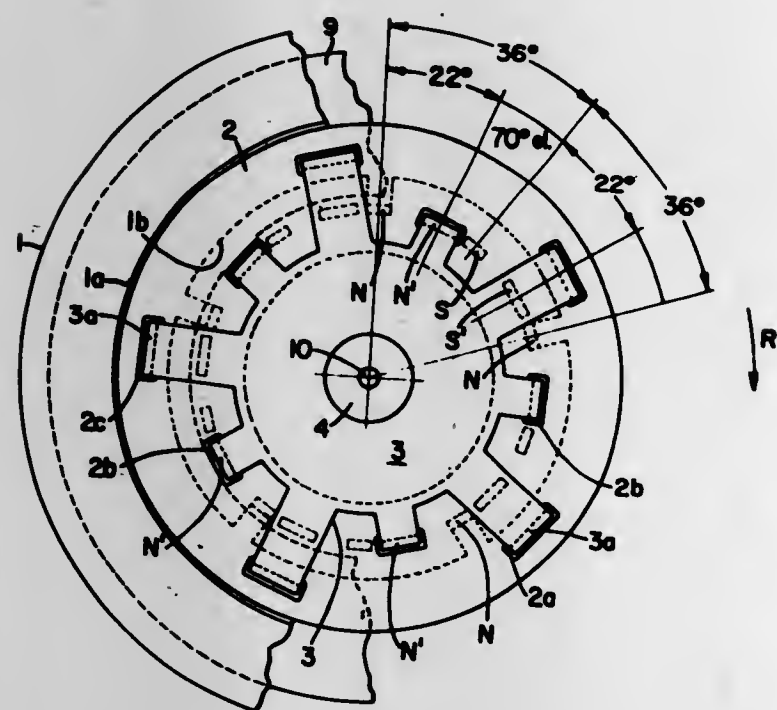
3,610,980
SINGLE-PHASE SYNCHRONOUS MOTORS WITH PERMANENT MAGNET AND PHASE-DISPLACEMENT RINGS

Georges Astic, Saint-Marcel-les-Valence, and Jacques Vergues, Valence, both of France, assignors to Crouzet, Paris, France

Filed Dec. 1, 1969, Ser. No. 881,116
Claims priority, application France, Dec. 2, 1968, 176470
Int. Cl. H02h 17/10

U.S. Cl. 310—172

1 Claim



A self-starting single-phase synchronous motor having phase-displacement rings and unidirectional rotation, in which a multipole magnetized rotor is housed in a stator unit constituted by two interjacent half-stators with a field coil. Each half-stator two magnetic armatures which are phase-displaced by short-circuited nonmagnetic conducting rings and each armature is provided with perpendicular strips suitably spaced over a same circumference so as to constitute main poles and auxiliary poles in uniformly spaced relation, wherein on the one hand the auxiliary poles of each half-stator pass through a first ring so as to undergo a phase displacement Φ' then through a second ring so as to undergo a phase displacement Φ'' and on the other hand the auxiliary poles having opposite polarities are shunted magnetically after passing through the first rings so as to produce a magnetic leak as well as a reduction in reluctance. The respective cross sections of the rings are such that the phase displacement Φ' is substantially equal to the phase displacement Φ'' and that the flux attenuation produced in the first rings is substantially equal to the flux attenuation which is produced in the second rings.

3,610,981
RADIANT ENERGY RESPONSIVE CIRCUIT PROVIDING LOGARITHMIC RESPONSE CHARACTERISTIC

Lawrence Henry Gilligan, Nashua, N.H., assignor to Ittek Corporation, Lexington, Mass.

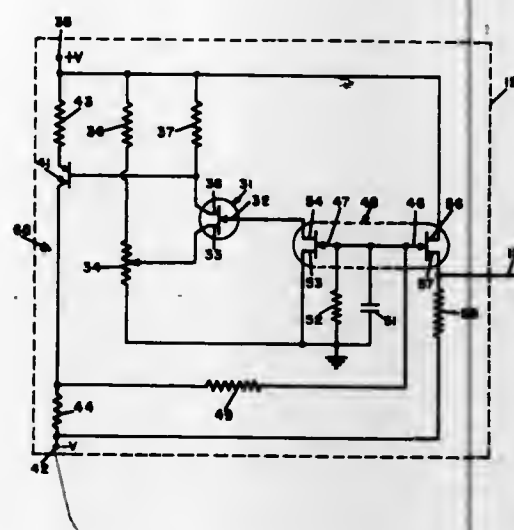
Filed Feb. 26, 1970, Ser. No. 14,351
Int. Cl. H01j 39/12

U.S. Cl. 250—214 P

10 Claims

Disclosed is logarithmically responsive radiant energy measuring system employing a photosensitive field effect

transistor. A feedback circuit induces output voltage respon-



sive variations in the field effect transistor's gate impedance to provide the desired logarithmic response characteristic.

3,610,982
QUATERNARY PHASE DIFFERENCE SIGN DETERMINING DEVICE

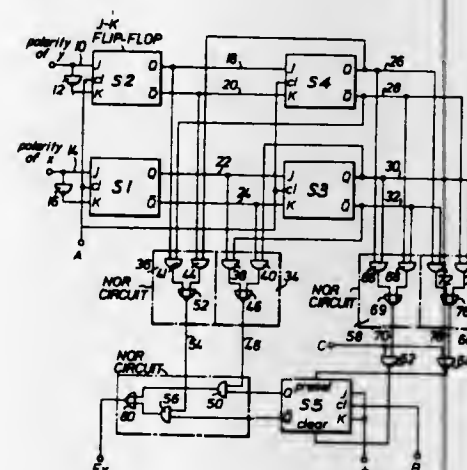
Bernhard Rall, Ulm/Donau, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Apr. 29, 1970, Ser. No. 32,965
Claims priority, application Germany, Apr. 30, 1969, P 19 22 072.5

U.S. Cl. 307—232

Int. Cl. H03k 5/20

4 Claims



A device which interprets the sign components of pairs of consecutive pulses which have been demodulated from pulse data transmitted with quaternary phase difference keying, the device employing a pair of flip-flops with preliminary memory whose outputs are connected to a second pair of similar flip-flops. For each pair of consecutive pulses, NOR gates are used to determine the coincidence or lack of coincidence of the sign components of the pair of pulses and further NOR gates are used to determine the coincidence or lack of coincidence of the sign components of the first of the pulse pair. The second set of NOR gates controls a device which determines the sequence of transmission of the bits determined by the first set of NOR gates, thus clearly identifying and transmitting the binary word according to the phase difference.

3,610,983
RESTARTING ARRANGEMENT FOR HIGH-PRESSURE MERCURY-VAPOR LAMP WHICH INCLUDES METALLIC HALIDE ADDITIVES

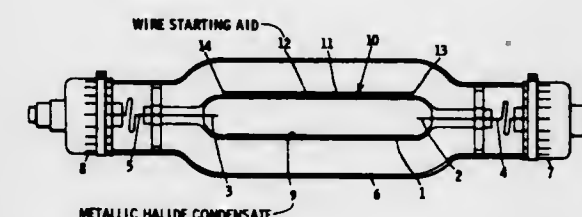
Horst Grabner, and Herbert Konow, both of Munich, Germany, assignors to Patent-Trevhand-Gesellschaft Fur Elektrische Gluhlampen m.b.H., Munich, Germany

Filed Aug. 14, 1969, Ser. No. 850,199
Claims priority, application Germany, Aug. 21, 1968, P 17 64 866.7

Int. Cl. H01j 61/12, 61/34, 61/54

U.S. Cl. 313—25

7 Claims



High-pressure mercury-vapor discharge lamp which includes metallic halide additives is adapted to be operated in a horizontal orientation. To restart the lamp when it is still hot from being operated, an elongated electrically conductive refractory member is positioned proximate the outer surface of the arc tube and extending longitudinally thereof. The conductive member is electrically insulated from the lamp electrodes and is positioned generally diametrically opposite the lowest longitudinally disposed portion of the arc tube where the metallic halide has condensed.

3,610,984
ROTATING-ANODE X-RAY TUBE WITH MULTIPLE FOCAL AREAS

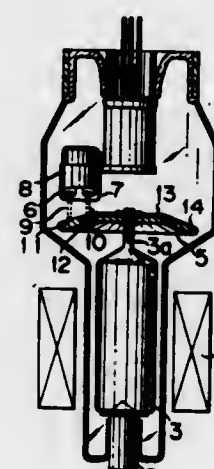
Yoshitaka Seki, and Kaname Tanabe, both of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 23, 1968, Ser. No. 786,221
Claims priority, application Japan, Dec. 28, 1967, 84998/67

U.S. Cl. 313—56

Int. Cl. H01j 35/10; H05g 1/34

9 Claims



A rotating-anode X-ray tube wherein the anode target has a first focal plane made of tungsten and a second focal plane made of molybdenum, rhodium, silver or palladium, there are disposed opposite to said first and second focal planes first and second cathodes in such a manner that each cathode impinges electrons on the corresponding focal plane, the voltage to be impressed on these cathodes can be varied by an external means, and there can be obtained, as required, a hard X-ray from the first focal plane or a soft X-ray from the second focal plane.

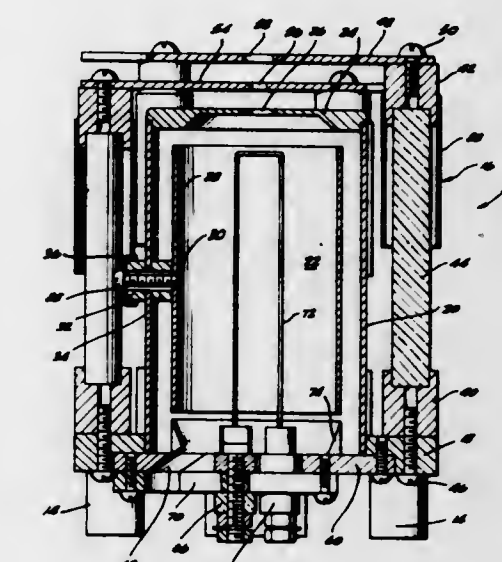
3,610,985
ION SOURCE HAVING TWO OPERATIVE CATHODES

Wayne P. Fleming, Newbury, and Stephen A. Thompson, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of application Ser. No. 832,602, June 12, 1969. This application Nov. 9, 1970, Ser. No. 87,671

U.S. Cl. 313—63

11 Claims



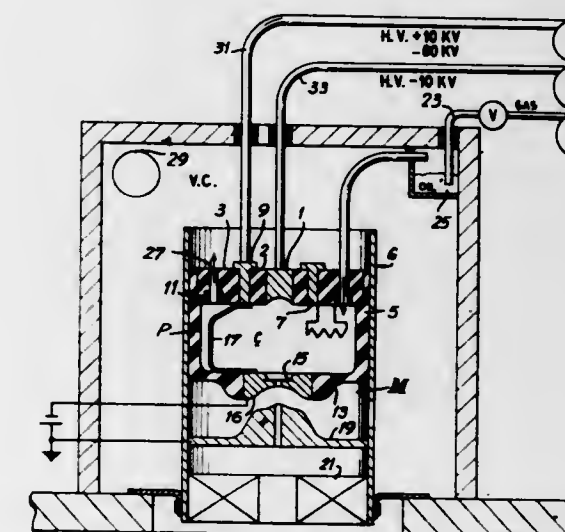
The ion source comprises a discharge chamber in which is located a tubular anode. A knife-edged cathode is mounted closely adjacent one edge of the anode to provide arc electrons for ionization of a fuel passing through the chamber. An axial magnetic field controls electron path length to provide optimum ionization. Alternatively, a hot wire cathode may be located interiorly of the discharge chamber to produce electrons by thermionic emission, thereby creating a Penning discharge. The electron source employed is chosen in accordance with the fuel to be ionized, the desired ion current level, and the desired lifetime of the ion source.

3,610,986
ELECTRON BEAM SOURCE INCLUDING A PILOT NONTHERMIONIC ELECTRON SOURCE

James R. King, Tustin, Calif., assignor to Union Carbide Corporation, New York, N.Y.

U.S. Cl. 313—63

7 Claims



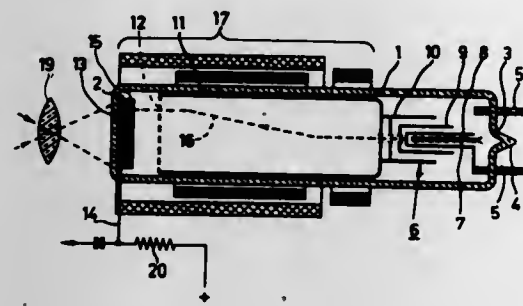
A device for generating an electron beam including a pilot gun which generates a pilot electron beam by nonthermionic means. The pilot electron beam is used to bombard a main cathode from which a main electron beam is generated.

3,610,987

PHOTOCONDUCTIVE LAYER COMPRISING A MIXED CRYSTALS OF LEAD MONOXIDE AND TIN OXIDE
Wim Kwetstroom, Johannes Van Der Broek, and Adriaan Netten, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,548

Claims priority, application Netherlands, May 27, 1969, 6,908,066

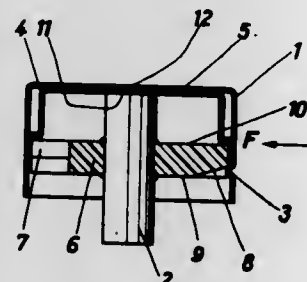
Int. Cl. H01J 31/38; H01J 15/02; H01J 31/26
U.S. Cl. 313—65 A 5 Claims

In a photoconductive device, more particularly a camera tube of the Vidicon type, comprising a photoconductive layer on the basis of lead monoxide this layer consists at least partly of mixed crystals of lead monoxide and tin monoxide. The content of tin monoxide in the mixed crystals preferably lies between 0.1 and 10 mol percent.

3,610,988

CATHODE ARRANGEMENT AND CATHODE-RAY TUBE HAVING SUCH A CATHODE ARRANGEMENT
Willy Schmitz, Ulm am Danube, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm am Danube, Germany

Filed Dec. 12, 1968, Ser. No. 783,196

Int. Cl. H01J 31/00
U.S. Cl. 313—82 R 10 Claims

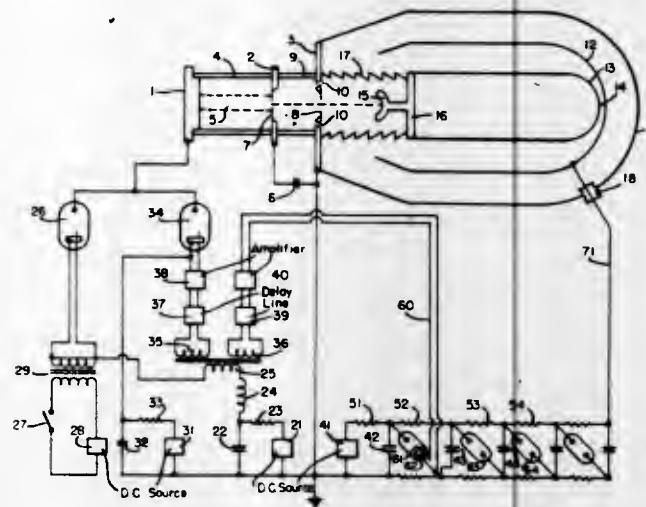
In a cathode-ray tube cathode arrangement having a cup-shaped control electrode provided with an aperture in its end wall, a cup-shaped cathode sleeve having an end face provided with emission material and arranged in the control electrode with its end face adjacent the aperture, and a disc of insulating material arranged within the control electrode to support the cathode sleeve therein, with the end face of the cathode sleeve spaced from the apertured wall of the control electrode by a suitable spacing means, the ceramic disc is provided with a plurality of wedge surfaces and associated recesses to permit the disc to be inserted into the control electrode past a plurality of projections formed on the inner wall of the control electrode and to then be turned so as to become removably wedged into place between the spacing means and the projections.

3,610,989

PRODUCTION AND UTILIZATION OF HIGH-DENSITY PLASMA
Willard H. Bennett, 5500 North Hills Drive, Raleigh, N.C.
Continuation-in-part of Ser. No. 657,986, Aug. 2, 1967
Filed Mar. 12, 1969, Ser. No. 806,459

Int. Cl. H01J 29/46
U.S. Cl. 313—83 15 Claims
The disclosure relates to apparatus for producing pulsed beams of electrons which, by linear pinched techniques, are

focused down to very small diameters, for example, to less



than 1 millimeter, thereby making possible the generation of an extremely high power density on a selected target.

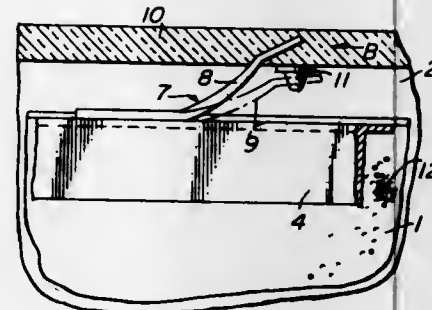
3,610,990

LEAF SPRING ARRANGEMENT FOR COLOR SELECTION ELECTRODE

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 14, 1970, Ser. No. 28,472

Claims priority, application Japan, Apr. 18, 1969, 44/35033
Int. Cl. H01J 1/96, 19/50, 29/46

U.S. Cl. 313—85 3 Claims



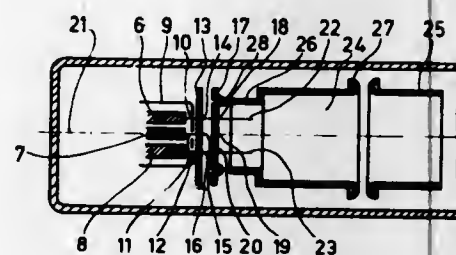
A color cathode-ray tube which is provided with leaf springs for supporting a color selection electrode, such as a shadow mask or lattice-shaped grid, within the tube.

3,610,991

CATHODE-RAY TUBE PROVIDED WITH AT LEAST ONE ELECTRON GUN FOR PRODUCING A NUMBER OF INDIVIDUALLY PREFOCUSED ELECTRON BEAMS
Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands

Filed Feb. 3, 1970, Ser. No. 8,286

Claims priority, application Netherlands, Feb. 8, 1969, 6902024

Int. Cl. H01J 29/46
U.S. Cl. 313—85 8 Claims

A cathode-ray tube provided with an electron gun system for producing two or more electron beams that are individually prefocused by two common, substantially circular-

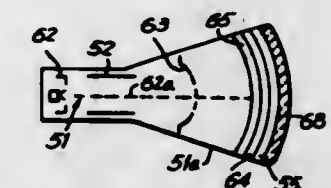
cylindrical electrodes. The beams are in a common plane so that the distance from the beams to the axis of the circular-cylindrical electrodes is not the same for all of the beams. The beams are individually prefocused and this prefocusing diminishes as the distance from the beam to the axis of the circular electrodes increases. A common, plate-shaped grid serves as a prefocusing electrode having apertures which increase in size as the distance therefrom to the axis of the circular-cylindrical electrode increases. Alternatively, the spacing between the prefocusing electrode and an adjacent electrode is made greater as the distance of the axis of the beam to the axis of the cylindrical electrode increases.

of parallel equally spaced wires positioned at a positive angle of 50° to 70° to the linear scan of the beam and a second set of parallel equally spaced wires positioned at a positive angle of 110° to 130° to the linear scan.

3,610,994

IMPROVEMENTS IN CATHODE-RAY TUBES OF TELEVISION TYPE FOR X-RAYS PROTECTION
Edward Emanuel Sheldon, 30 E. 40th St., New York, N.Y.
Division of Ser. No. 700,607, Jan. 1, 1968,
Pat. No. 3,543,073.

Filed Aug. 31, 1970, Ser. No. 68,188. The portion of the term of the patent subsequent to Nov. 24, 1987, has been disclaimed.

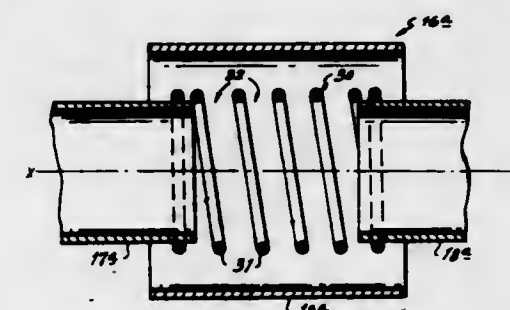
Int. Cl. G21F 1/00, 7/02; H01J 29/28
U.S. Cl. 313—92 10 Claims

3,610,992
CATHODE-RAY TUBE HAVING END ELECTRODES OF THREE ELECTRODES CONNECTED BY HELICAL COIL COAXIAL WITH TUBE AXIS

Senri Miyazaki, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed July 31, 1969, Ser. No. 846,533

Claims priority, application Japan, Dec. 19, 1968, 43/93,589

Int. Cl. H01J 29/02, 31/20, 29/56
U.S. Cl. 313—86 1 Claim

In a cathode-ray tube, for example, a color picture tube in which a plurality of electron beams are made to converge or cross each other substantially at the optical center of an electrostatic focusing lens by which the beams are focused on the electron-receiving screen of the tube; the focusing lens includes first and second axially spaced, annular electrodes extending around the tube axis and being at the same potential, a third annular electrode extending between the first and second electrodes and being at a different potential to establish the focusing electric field, and an auxiliary electrode disposed within the third electrode and connected with the first and second electrodes to modify the electric field so that its equivalent optical lens has relatively flatter surfaces for further reducing aberrations of the beam or beams focused thereby.

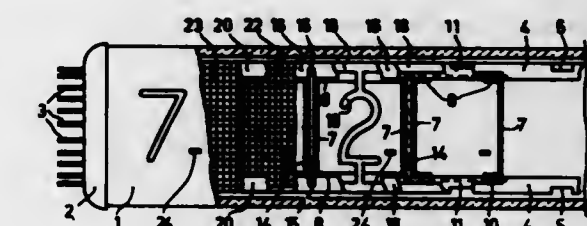
The invention relates to novel cathode-ray/vacuum tubes for color television. It was found that the present color television tubes emit considerable amount of X-radiation. The novel tubes described below are characterized by the X-ray absorbing faceplate which prevents the escape of such X-radiation or at least reduces the amount of said escaping X-radiation to the level which is safe for the public. These tubes have a construction in which their light transparent endwall on which the fluorescent screen is mounted has the X-ray absorbing power to accomplish this objective, which means to reduce the transmission of X-ray through said endwall to the amount smaller than 0.04 mr./hr. in addition the faceplate of said tubes is provided with a light partially absorbing material which means light filtering material to improve the contrast of images produced by said tubes.

3,610,995

GAS DISCHARGE TUBE COMPRISING A NUMBER OF ELECTRODES WHICH ARE UNITED TO FORM A GROUP AND ARE IN THE FORM OF CHARACTERS
Andrianus Antonius Maria Hendrika, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

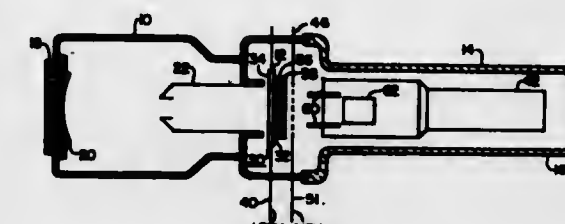
Filed Nov. 6, 1969, Ser. No. 874,570

Claims priority, application Netherlands, Nov. 13, 1968, 6816125

Int. Cl. H01J 61/66
U.S. Cl. 313—109.5 5 Claims

3,610,993
ELECTRONIC IMAGE DEVICE WITH MESH ELECTRODE FOR REDUCING MOIRE PATTERNS
Robert B. Randels, Painted Post, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,550

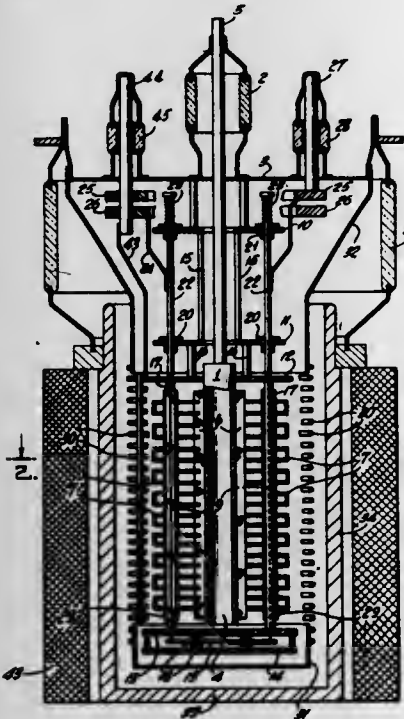
Int. Cl. H01J 1/46, 29/36, 31/26
U.S. Cl. 313—89 5 Claims

An electronic image device in which an electron beam is generated within an envelope and caused to scan a target in a predetermined linear manner, and in which a mesh electrode is positioned between said electron gun and the target or between a photocathode and the target to cause a linear charge pattern. The mesh electrode is comprised of a first set

In a multiple character tube disturbing light phenomena are avoided by providing a double gauze electrode between the electrode stacks and the envelope and the corners of the U-shaped anodes are sealed by bent edges, insulating partitions engaging in recesses of the insulating strips situated between the digit strips.

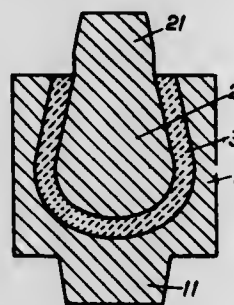
3,610,996
HIGH VACUUM ELECTRON TUBE WITH MAGNETICALLY ISOLATED CONTROL ELECTRODE
 Alexander Rusterholz, deceased, late of Zurich, Switzerland (by Batrix A. Elasser-Rusterholz, sole heir), assignor to Patenhold Patentverwertungs-Elektro-Holding AG., Glarus, Switzerland

Filed May 20, 1969, Ser. No. 827,126
 Claims priority, application Switzerland, May 21, 1968, 7552/68
 Int. Cl. H01J 1/46, 1/50
 U.S. Cl. 313-157 9 Claims



In a high vacuum electron control tube, a cathode comprised of a plurality of spaced parallel cathode wires or filaments arranged upon a generally cylindrical surface parallel to the cylinder axis cooperates with a common generally cylindrical anode concentric with the cathode structure and a control electrode composed of a plurality of planar loop-shaped control elements each arranged radially between adjacent pairs of cathode wires. Suitable oriented U-shaped metallic screens surrounding each of the cathode wires and a homogeneous magnetic field extending parallel to said wires coact to cause the electrons emitted from each cathode wire to follow cycloidal paths towards said anode with a minimum of electrons reaching said control electrode even in case of relatively high positive control voltages, while at the same time ensuring a high amplification factor of the tube.

3,610,997
SEMICONDUCTOR ELEMENT
 Dick Lundquist, and Marius Widakowich, both of Bromma, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
 Filed Apr. 7, 1970, Ser. No. 26,377
 Claims priority, application Sweden, Apr. 8, 1969, 4874/69
 Int. Cl. H01m 27/00
 U.S. Cl. 313-325 9 Claims



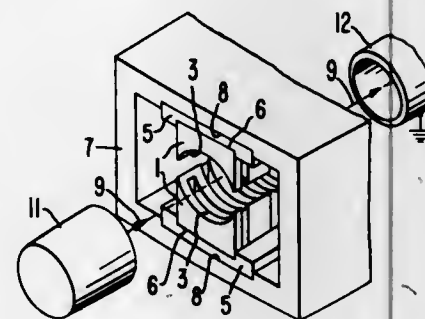
A semiconductor element for a thermoelectric heat pump, with a body of semiconducting material which is shaped as a

shell with essentially constant wall thickness, a first cup-shaped metal electrode in contact with the outer surface of the body, a second metal electrode in contact with the inner surface of the body, both electrodes having smaller cross sections at the open end of the cavity defined by said first electrode, whereby forces tending to pull the electrodes apart are prevented from exerting any tensile or shear stresses on the semiconductor material.

ERRATA

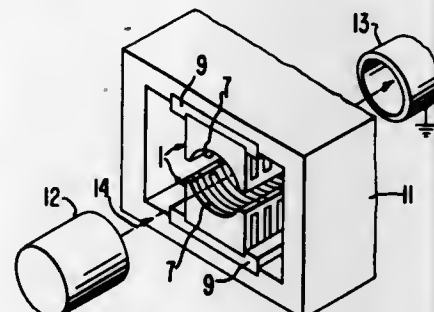
For Classes 315-92 and 315-161 see:
 Patent Nos. 3,611,432 and 3,611,433

3,610,998
SLOW WAVE CIRCUIT AND METHOD OF FABRICATING SAME
 Louis R. Falce, Redwood City, and Allan W. Scott, Los Altos, both of Calif., assignors to Varian Associates, Palo Alto, Calif.
 Filed Feb. 5, 1970, Ser. No. 8,793
 Int. Cl. H01J 25/34
 U.S. Cl. 315-3.5 13 Claims



A ceramic supported slow wave circuit for a microwave tube is disclosed. A slow wave circuit includes a serpentine-shaped ribbon of a refractory metal, preferably rhodium, bonded to the surface of a similarly serpentine-shaped ceramic support structure. The serpentine-shaped ceramic support structure is in turn bonded to a metallic support member having a coefficient of thermal expansion matching that of the ceramic support. A composite ring and bar circuit is formed by disposing two of such serpentine-shaped semicylindrical curved slow wave circuits in mutually opposed relation and in transverse registration with each other. The slow wave circuit is conveniently deposited on the dielectric support structure either before or after slotting the ceramic support from opposite sides to form the serpentine-shaped dielectric support.

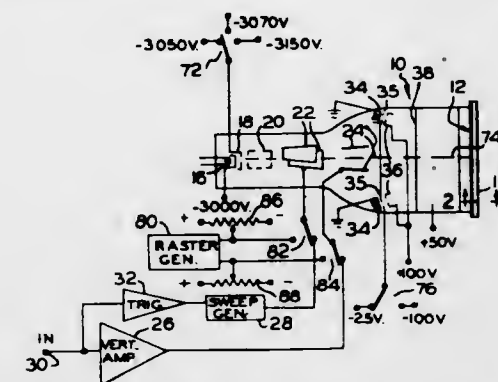
3,610,999
SLOW WAVE CIRCUIT AND METHOD OF FABRICATING SAME
 Louis R. Falce, Redwood City, and Allan W. Scott, Los Altos, both of Calif., assignors to Varian Associates, Palo Alto, Calif.
 Filed Feb. 5, 1970, Ser. No. 8,792
 Int. Cl. H01J 25/34
 U.S. Cl. 315-3.5 7 Claims



The slow wave circuit for a microwave tube is fabricated by slotting transversely through an alumina or beryllia ceram-

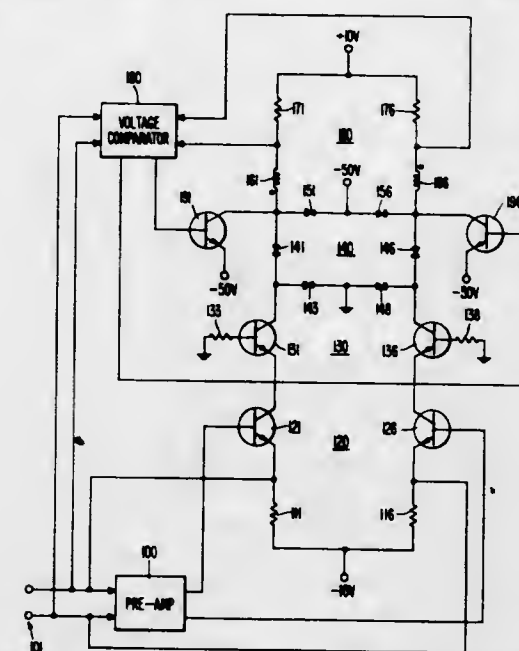
ic body with the slots intersecting with the bottom of a longitudinally directed trough in one side of the body to form a comb-shaped dielectric support having a generally concave ladder-shaped spine joined to an array of vane-shaped rungs. A serpentine-shaped ribbon of metal is deposited on the concave ladder-shaped spine and two such ladder supported circuits are disposed in mutually opposed facing relation for interaction with an electron beam. In the composite circuit, the ribbon-shaped slow wave circuit element is everywhere supported, in intimate contact, by the ceramic support structure.

3,611,000
SELECTIVE ERASURE OF A BISTABLE STORAGE TUBE
 Kent H. Johnston, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
 Filed Dec. 17, 1969, Ser. No. 885,752
 Int. Cl. H01J 29/41
 U.S. Cl. 315-12 15 Claims



A bistable cathode-ray storage tube including a phosphor storage layer with a collector electrode in contact with the image storing side thereof is selectively erased with the same electron beam employed for writing stored images. Emission from the tube's flood guns is discontinued, while the relative voltage differential between the collector electrode and a target electrode underneath the phosphor layer is altered for increasing the voltage difference between written areas of the charge image and the potential of the collector electrode. The writing beam is then deflected in a raster configuration for erasing a selected portion of a stored image by charging down such selected portion.

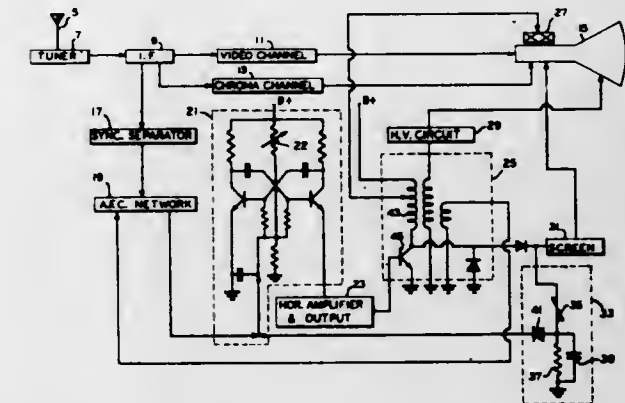
3,611,001
HIGH-SPEED CURRENT-SWITCHING AMPLIFIERS
 James R. Bacon, Philadelphia, Pa., assignor to Burroughs Corporation, Detroit, Mich.
 Filed May 5, 1969, Ser. No. 821,608
 Int. Cl. H01J 29/70
 U.S. Cl. 315-18 15 Claims



Deflection control amplifiers for display devices having opposed deflection control windings, including a differential

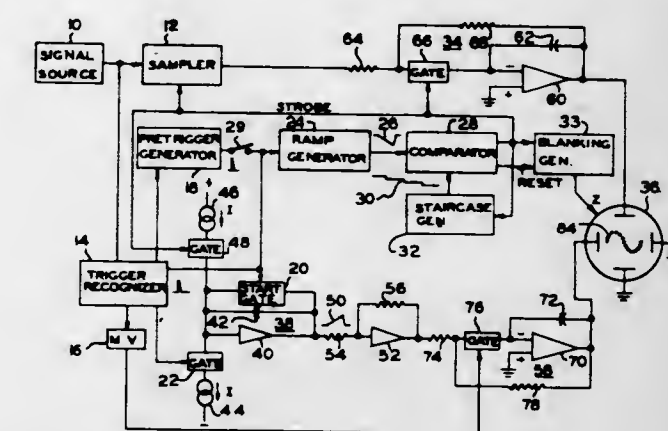
amplifier stage, a two-stage output amplifier electrically connected for receiving control signals from the differential amplifier stage and for providing feedback signals to it, and current switch means electrically connected to the amplifier output terminals, to a source of switching potential and to the deflection control terminals for rapidly switching current between them, responsive to the control signals. Also provided is means for applying an increased bias potential to the deflection control terminals whenever the output signal is less than a predetermined percentage of the control signal magnitude.

3,611,002
HIGH VOLTAGE PROTECTION CIRCUITRY
 Werner Franz Wedam, Batavia, N.Y., assignor to Sylvania Electric Products Inc.
 Filed Mar. 9, 1970, Ser. No. 17,781
 Int. Cl. H01J 29/70 10 Claims



Circuitry is provided for developing and applying control signals to a signal generator to alter the frequency of the signals therefrom causing reduction of high-voltage potentials and excessive distortion of scanning in an image display device in response to undesired increase in the high-voltage potentials applicable to the display device.

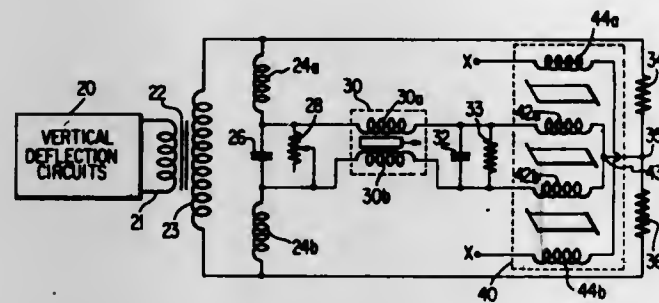
3,611,003
OSCILLOSCOPE SIGNAL SAMPLING SYSTEM
 George J. Frye, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
 Filed May 26, 1969, Ser. No. 827,824
 Int. Cl. H01J 29/70
 U.S. Cl. 315-25 19 Claims



Horizontal deflection in a sampling oscilloscope is accurately determined by measuring the time difference between the occurrence of a triggering signal and the occurrence of a strobe or sample-producing signal. For measuring this time difference, a net charge of a first polarity is accumulated in response to a first sequence of these signals, the value of the charge accurately indicating such time difference. If the signal sequence is reversed, a charge of a second polarity is accumulated with the value of the charge again being an accurate measure of the time difference. The charge value controls the magnitude of the oscilloscope's horizontal deflec-

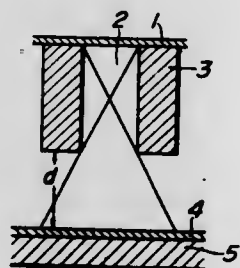
tion, and the charge polarity controls the deflecting direction.

3,611,004
BILATERAL PINCUSHION CORRECTION CIRCUIT
Lawrence Edward Smith, and Anibal Mayor, both of Indianapolis, Ind., assignors to RCA Corporation
Filed Aug. 20, 1969, Ser. No. 851,652
Int. Cl. H01J 29/70
U.S. Cl. 315—27 SR



A bilateral pincushion correction circuit utilizes a two window saturable reactor having a control winding wound on a center leg and serially coupled to the vertical deflection windings of a television receiver and outer windings wound in series relation to one another on outer legs and parallelly coupled to the horizontal deflection winding of a television receiver. Current from the horizontal deflection generator flows in the outer windings to induce a flux of horizontal frequency (f_h) alternately poled at the vertical deflection rate and varying in magnitude in the control winding. This induced flux produces a voltage which is applied to an impedance network and lags the induced current in the control winding. The impedance network coupled to the control winding further provides isolation and independence of control between top and bottom and side pincushion adjustments. A series resonant circuit tuned to f_h and coupled in parallel relation to the control winding develops a top and bottom pincushion correction voltage which is applied to the vertical deflection winding. Current flowing in the vertical deflection winding and through the control winding varies at the vertical deflection frequency (f_v) and effects a change of inductance of the outer windings at a frequency f_v to produce a side pincushion correction.

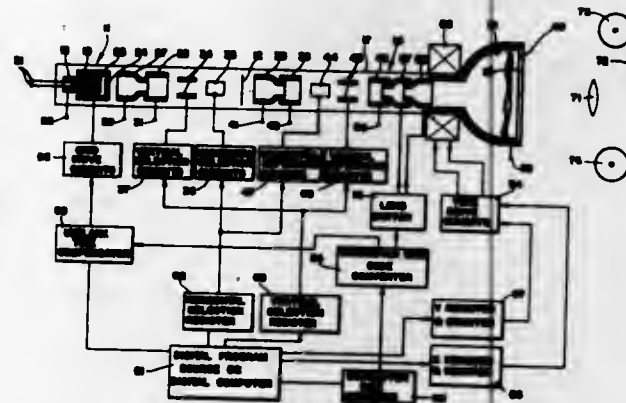
3,611,005
RECORDING CATHODE-RAY TUBE HAVING AN ELECTRON PENETRATIVE WINDOW
Yoshihiro Uno, Machida-shi; Haruo Maeda, Tokyo, and Yujiro Kolke, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka, Japan
Continuation of application Ser. No. 671,039, Sept. 27, 1967, now abandoned. This application Dec. 16, 1969, Ser. No. 882,394
Claims priority, application Japan, Oct. 3, 1966, 41/65873
Int. Cl. H01J 29/56
U.S. Cl. 315—31



There is disclosed a recording cathode-ray tube having an electron beam penetrative window which permits the electron beams of low energy level to pass it, and which has sufficient physical strength against breakage because of a unique

supporting or reinforcing means applied to the electron penetrative membrane. Such device has several other advantages which are also disclosed. There are also disclosed combinations of such device and a magnetic field, which present improved resolution to the record.

3,611,006
CATHODE-RAY TUBE SYSTEM
Joseph E. Eichberger, San Diego, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed July 14, 1969, Ser. No. 841,356
Int. Cl. H01J 29/56
U.S. Cl. 315—31 R



A cathode-ray tube system is described for producing a graphic image having areas of different tone levels. The image is produced by a plurality of dots of different sizes, each size corresponding to one of the tone levels. The cross section of the electron beam is shaped by passing it through an aperture, and the size of the cross section is regulated by controlling the degree of magnification thereof.

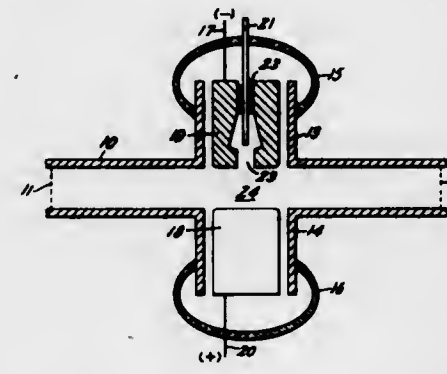
3,611,007
CURRENT LIMITING SPARK GAP ASSEMBLY HAVING ELECTROMAGNETIC MEANS FOR RETARDING ARC MOVEMENT THEREIN
Stanley A. Miske, Jr., Pittsfield, Mass., assignor to General Electric Company
Filed Mar. 3, 1970, Ser. No. 16,161
Int. Cl. H01t 1/04; H02h 3/22
U.S. Cl. 315—36



A current limiting spark gap that is normally operative to quickly lengthen and extinguish arcs formed therein is provided with a unique arrangement of its adjacent respective pairs of horn gap electrodes to afford an electromagnetic

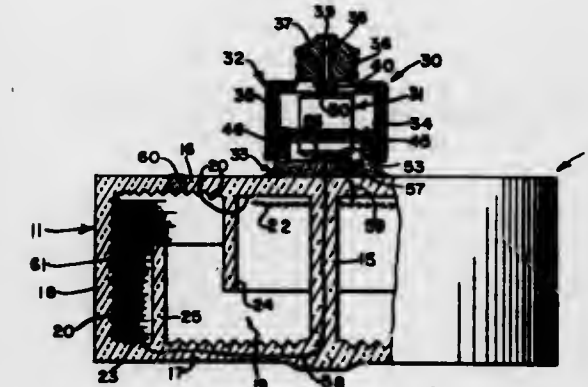
means for regulating the movement of arcs in the assembly. At least one electrode of a horn gapped spark gap is formed to have a sharply curved current conducting section that concentrates electromagnetic flux at a predetermined area in the arc-moving path of the current limiting spark gap adjacent thereto. The concentrated magnetic flux in this preselected area retards movement of an arc outward from said adjacent current limiting spark gap during the interval of time that a current in excess of a predetermined size is being discharged through the discharge circuit of the assembly.

3,611,008
METAL VAPOR ARC MICROWAVE SWITCH
John M. Anderson, Scotia, N.Y., assignor to General Electric Company
Filed Mar. 27, 1970, Ser. No. 23,256
Int. Cl. H01J 7/46, 17/0
U.S. Cl. 315—39



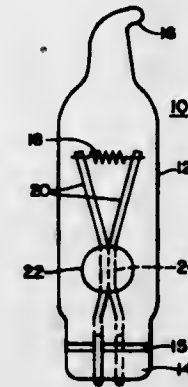
An improved microwave switch is disclosed wherein an arc is struck between metallic electrodes creating a metal vapor or plasma therebetween. This plasma, in one embodiment, is allowed to diffuse into the waveguide, thereby opening the switch and shortcircuiting the waveguide. A septum within the waveguide is used to deflect the plasma from the windows at either side of the switch, thereby preventing a metallic layer from building up on the windows which would induce reflection within the waveguide.

3,611,009
FLUORESCENT LIGHT FIXTURE
William J. McNeil, 719 Kahl Bldg., Davenport, Iowa
Filed June 17, 1969, Ser. No. 834,048
Int. Cl. H01J 7/44
U.S. Cl. 315—57



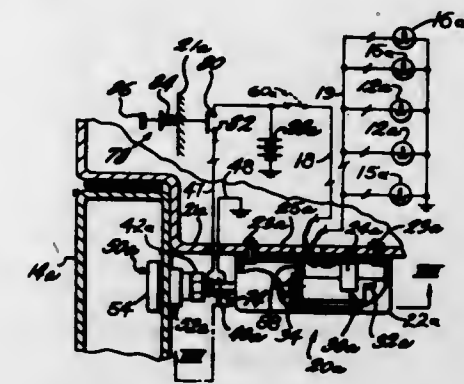
A fluorescent lighting fixture composed of a drum-shaped globe with an internal phosphor coating and composed of upper and lower walls, interjoined by a central glass core and an outer annular wall to provide a hermetically sealed chamber. A ballast-containing chamber is provided above and integral with the globe and has provision thereon for connection to a conventional incandescent light socket. Provided in the globe are cathode and anode filaments and a mercury gas. The cathode and anode filaments are connected to the ballast.

3,611,010
SERIES-TYPE ELECTRIC INCANDESCENT LAMP WITH INTEGRAL AUTOMATIC CUTOFF MEANS
Rudolf F. Strobel, Union, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 15, 1969, Ser. No. 857,945
Int. Cl. H01k 1/70
U.S. Cl. 315—75



Selected portions of the lead wires located within the envelope are provided with a coating of electrically nonconductive material, such as copper oxide, and are held in contact with one another by a glass bridging member. The intervening layers of nonconductive material insulate the leads under the low voltage conditions which prevail during series-operation of the lamp but break down when the filament burns out and full line voltage is applied to the lead wires. The leads are thus automatically short-circuited and the remaining lamps in the circuit continue to operate. In the case of miniature lamps of the type used to decorate Christmas trees and the like, the leads are made of oxidized dumet wire and are thus inherently provided with a copper oxide coating which serves as the insulating means.

3,611,011
AUTOMATIC HEADLIGHT SHUTOFF SYSTEM
Louis J. Postula, R. F. D. #3 Partello Road, Marshall, Mich.
Filed Nov. 14, 1969, Ser. No. 876,761
Int. Cl. B60q 1/00
U.S. Cl. 315—84



A switch having an actuator which is releasably latched against a door of the vehicle having headlights, et cetera, and a spring for biasing the actuator away from the door to open the switch and deenergize the headlight circuit. One embodiment utilizes a magnetic latch on the door itself, while the other utilizes a latch housed with the switch, with a spring causing the latch to be biased toward the door and away from the switch actuator. Still another embodiment utilizes a switch with door movable actuator for controlling headlight operation, and which is connected in parallel to the ordinary headlight switch leaving the latter to be operated as usual, if desired, or turned off to allow the second switch with door movable actuator to turnoff the lights when the door is opened. The actuator can be moved against its spring bias either manually or by a solenoid to close the switch and energize the headlights.

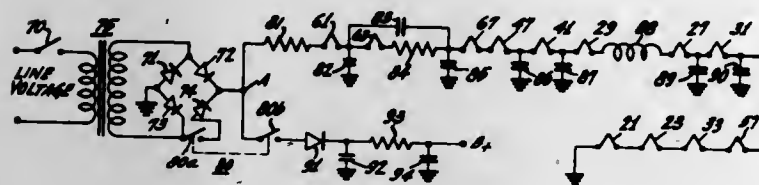
3,611,012 POWER SUPPLY

Richard Charles Lemmon, West Lafayette, Ind., assignor to RCA Corporation

Filed Mar. 19, 1970, Ser. No. 20,929
Int. Cl. H04n 5/44; H05b 41/16

U.S. Cl. 315-96

8 Claims



In a television receiver employing vacuum tubes, and which includes a fullwave bridge rectifier circuit for developing the required direct operating potential for the circuits, and for energizing the filaments, an instant-on circuit delivers one-half wave rectified voltage to the filaments of the vacuum tubes during standby operation by opening the circuit in one leg of the bridge rectifier using one section of a standby switch. The circuit delivers fullwave rectified voltage to the filaments during normal operation. A second section of the standby switch disconnects the bridge rectifier from the power supply filter during standby operation thereby preventing the application of the operating potential to the circuits during the standby operating mode.

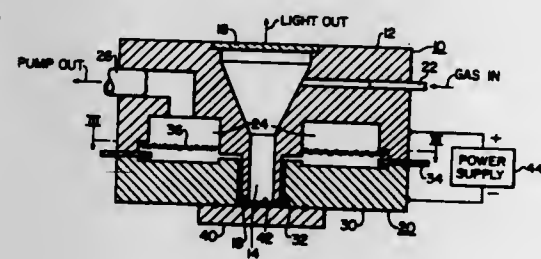
3,611,013 BREAKDOWN POTENTIAL CONTROL ASSEMBLY FOR GAS FLOW-THROUGH ELECTRICAL DISCHARGE DEVICE

Charles Herbert Gleason, and George K. Yamasaki, both of Horseheads, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1970, Ser. No. 9,562
Int. Cl. H01j 61/10, 61/24

U.S. Cl. 315-108

5 Claims



An electrical discharge device having a circulating gas medium and which incorporates gas permeable electrode members for permitting increased pumping speed of the circulating gas to thereby reduce the gas pressure while maintaining the desired distance between electrodes to obtain an increase in the breakdown potential.

3,611,014 METHOD AND APPARATUS FOR STARTING A LONG ARC BETWEEN HOLLOW ELECTRODES

Harden Henry Trouse, Indianapolis, Ind., and Ledford H. Day, Jr., Mohegan Lake, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

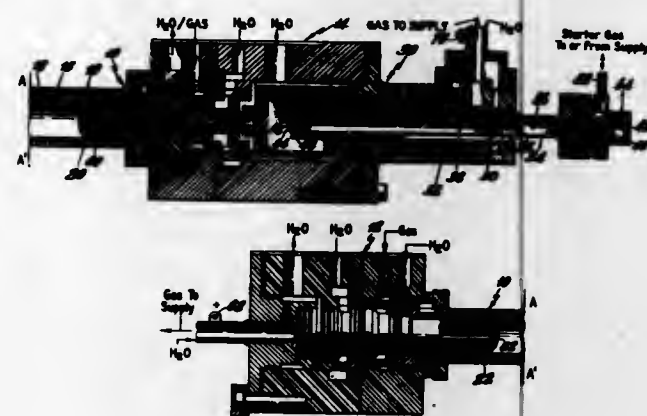
Filed May 4, 1970, Ser. No. 34,382
Int. Cl. H01j 7/24, 7/36

U.S. Cl. 315-111

14 Claims

An arc is initiated between a pair of hollow electrodes spaced a relatively substantial distance apart and contained at opposite ends in a quartz tube by passing a rod through the bore of one electrode and into the bore of the other electrode, establishing a swirling gas vortex about the rod sufficient to cause the rod to make continuous internal rotational

contact with the bore of each electrode, and impressing thereafter a relatively low voltage across the electrodes while



withdrawing the rod. The rod is connected to a piston assembly externally connected at one end of the torch.

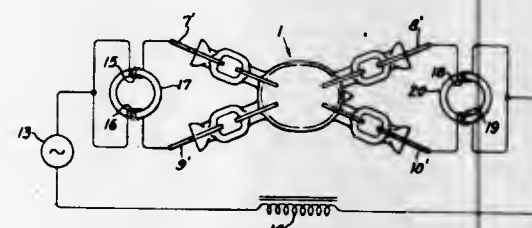
3,611,015 HIGH INTENSITY MULTIPLE ARC LAMP

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,761
Int. Cl. H01j 17/14; H05b 41/23

U.S. Cl. 315-265

10 Claims



Multiple arc discharges are maintained in a single envelope by means of mutual inductance in the circuits of the several arc paths. The trajectories or paths of the arcs are stabilized forming segments of circles and the stabilization force increases with the current. Considering a double arc discharge, when the direction of the current in the two arcs is the same, they attract each other and bow inwardly in a concave pattern. This permits large currents in a small envelope without danger of overheating the wall by arc contact.

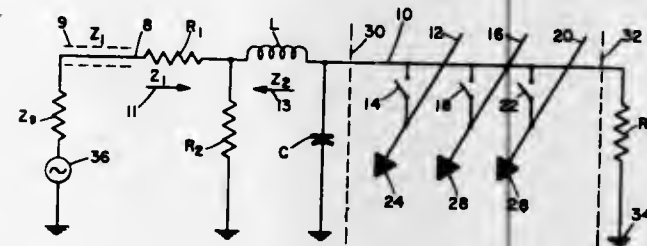
3,611,016 MATRIX SWITCH WITH IMPROVED TRANSMISSION CHARACTERISTICS

Stanley Rogers, La Jolla, and Eric R. Woods, San Diego, both of Calif., assignors to General Dynamics Corporation

Filed Mar. 30, 1970, Ser. No. 23,674
Int. Cl. H01p 1/10

U.S. Cl. 333-7

4 Claims



A matrix switch circuit for switching a plurality of output buses to an input bus having the impedance of the input bus substantially lower than the impedance of any one of the output buses, having the output impedance of the line circuit matched to the input bus and with the input bus terminated in its characteristic impedance, thereby reducing the voltage-

standing-wave ratio, and having means in the input line for reducing the effect of capacitance loading on the input bus resulting from opening or closing of switches electrically connecting the first bus to each of the second buses.

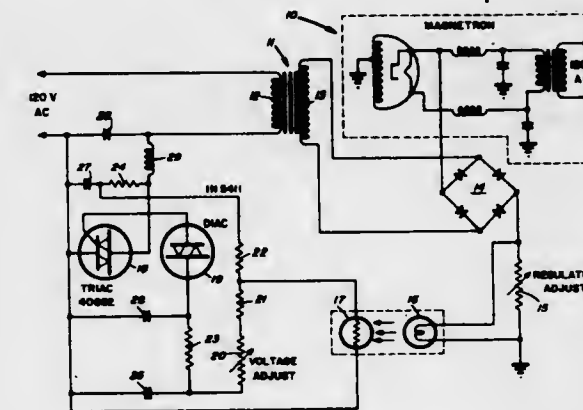
3,611,017 REGULATED MAGNETRON POWER SUPPLY

Royden R. Freeland, Oklahoma City, Okla., assignor to International Crystal Manufacturing Company, Oklahoma City, Okla.

Filed Mar. 10, 1970, Ser. No. 18,060
Int. Cl. H02m 7/12

U.S. Cl. 315-107

3 Claims



A means for regulating a magnetron power supply in which a portion of the magnetron power is used to energize a lamp. As the power increases the lamp will glow brighter. A photocell senses the glow of the lamp to decrease in resistance as the lamp glows brighter. The photocell is in the circuit of the transformer primary where its changing resistance will cause a correction in the voltage being fed to the magnetron.

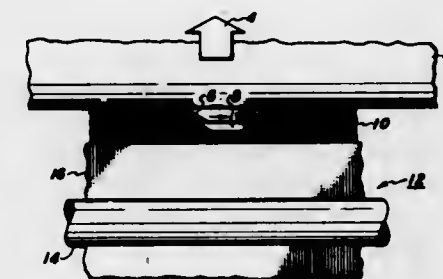
3,611,018 ELECTROGRAPHIC RECORDER WHEREIN IMAGE IS INSTANTANEOUSLY RENDERED VISIBLE

Howard D. Ring, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,096
Int. Cl. G01d 15/06; G03g 13/06, 15/10

U.S. Cl. 346-74 ES

5 Claims



In an electrographic recording apparatus, a stylus support member having a leading extremity and trailing extremity in the direction of recording scan separated by a distance sufficient to prevent the fibers of a developing applicator from being pinched by the recording stylus at their point of contact with the recording medium.

3,611,019 GAS PANEL APPARATUS AND METHOD

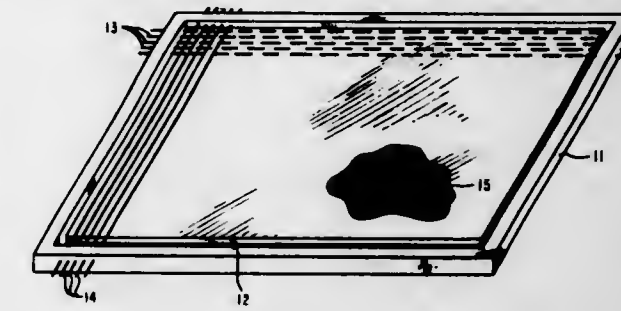
George M. Krembs, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1968, Ser. No. 785,210
Int. Cl. H01j 6/00

U.S. Cl. 313-201

14 Claims

A gas panel display device having a micropanel disposed between first and second sets of electrical grid wires has one set of grid wires oriented orthogonally to the other set with the crossover points defining coordinate intersections. The



closed within the envelope. The gas in the regions of the coordinate intersections define gas cells which may be selectively illuminated by electrical signals on the grid wires.

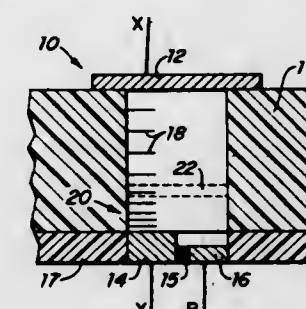
3,611,020 READOUT OF GAS CELL

William L. Cotter, Beverly, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 1, 1969, Ser. No. 862,735
Int. Cl. H05b 37/00

U.S. Cl. 315-169

10 Claims



A system for determining whether a particular gas cell in a matrix of gas cells forming a display or data storage system is firing. When a gas cell fires, the uniform distribution of electric field gradients in the cell changes, and most of the voltage drop across the cell appears closely adjacent to the cathode in a region called the cathode fall region. If a particular gas cell were firing, a cathode fall region would be present. The presence of the cathode fall region is tested for by positioning a readout electrode closely adjacent to the cathode. The anode is pulsed, and if a cathode fall region is present, an output pulse can be detected from the readout electrode. If no cathode fall region is present, the pulsing of the anode will have no effect on the output from the readout electrode.

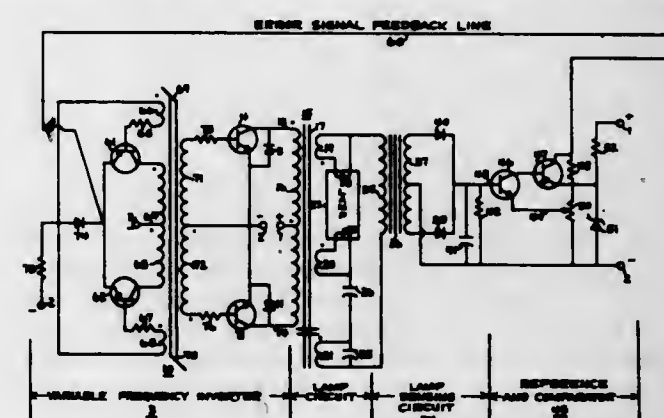
3,611,021 CONTROL CIRCUIT FOR PROVIDING REGULATED CURRENT TO LAMP LOAD

Kenneth A. Wallace, Columbus, Ohio, assignor to North Electric Company, Gallon, Ohio

Filed Apr. 6, 1970, Ser. No. 25,684
Int. Cl. H03k 3/28; H05b 41/14

U.S. Cl. 315-239

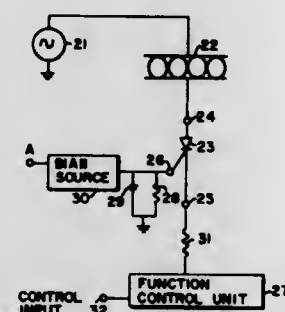
15 Claims



Control circuit for gaseous discharge lamps including a variable frequency inverter for driving a high-reactance

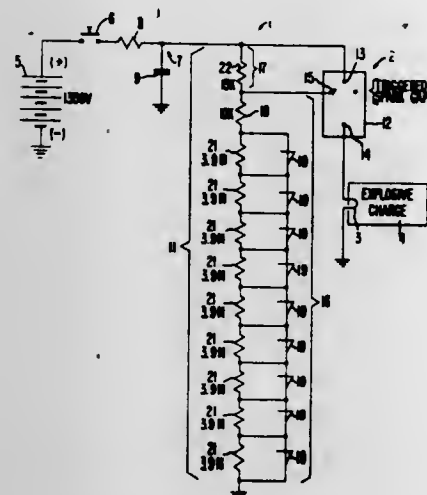
transformer having a first capacitor in the transformer secondary tuned to a harmonic of the supply voltage to provide ignition voltage for the lamps, and a second capacitor in near series resonance with the fundamental frequency of the supply voltage to provide series impedance at the fundamental frequency for stable operation after ignition, and lamp current sensing means for providing a feedback signal to a variable reference comparator circuit which adjusts the frequency output of the inverter to provide regulated lamp current for changes in input voltage and lamp voltage.

3,611,022
POWER CONTROL CIRCUIT
Wayne F. Galusha, Reeds Ferry, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Sept. 5, 1969, Ser. No. 855,605
Int. Cl. H05b 37/00
U.S. Cl. 315-320 10 Claims



A power control system incorporating a silicon-controlled rectifier for selectively applying electrical power to an electroluminescent device so as to cause illumination thereof. The silicon-controlled rectifier is selectively switched between its nonconducting and conducting state by a controlled bilevel signal applied to the cathode and by selectively controlling the bias values, the silicon-controlled rectifier will have a 360° conduction angle thereby applying maximum power to the electroluminescent device.

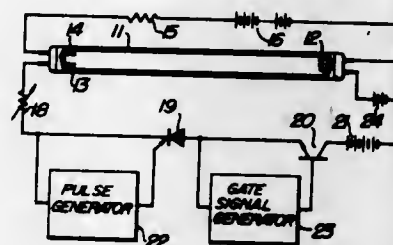
3,611,023
CIRCUITRY FOR TRIGGERING A SPARK GAP
Jesse A. Souza, Jr., San Jose, and Robert D. Culbertson, Campbell, both of Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed Feb. 19, 1970, Ser. No. 12,550
Int. Cl. H05b 37/00; C06c 3/00
U.S. Cl. 315-200 3 Claims



A circuit for triggering breakdown of an arc path through a gaseous atmosphere between a pair of spark gap defining electrodes is disclosed. The spark gap includes an auxiliary triggering electrode disposed between the pair of spark gap defining electrodes. A voltage divider network is connected across the pair of spark gap defining electrode with the output of the voltage divider being applied to the triggering electrode. The voltage divider includes a series connection of a first resistive means and a second resistive means. The first

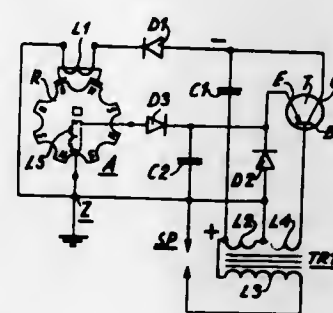
resistive means includes one or more four-layer diodes which switch rapidly from a nonconductive state to a conductive state at a certain threshold voltage applied thereacross, whereby when the potential applied across the spark gap defining electrodes reaches a certain predetermined value the four-layer diodes break into conducting to apply the triggering output potential to the trigger electrode to trigger an arc across the pair of electrodes defining the spark gap.

3,611,024
SEMICONDUCTOR APPARATUS FOR CONTROLLING THE BRIGHTNESS OF A DISCHARGE LAMP
Hiromasa Nakatsu, Tondabayashi-shi; Takeshige Ichida, Kadoma-shi; Teruhisa Kaneko, Kadoma-shi; Sadao Matsumoto, Hirakata-shi; Tokuyuki Wakiyama, Moriguchi-shi, and Kenzi Murata, Kadoma-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed July 17, 1969, Ser. No. 842,501
Claims priority, application Japan, July 23, 1968, Aug. 14, 1968, 43/52068; 43/57913
Int. Cl. H05b 41/30, 41/392
U.S. Cl. 315-205 5 Claims



A fluorescent lamp lighting apparatus which comprises a DC fluorescent discharge lamp having one hot negative electrode and two positive electrodes, a first DC source for constantly generating a glow discharge between said negative electrode and one of said positive electrodes, a second DC source for generating an arc discharge between said negative electrode and another one of said positive electrodes, and semiconductor control means for intermittently interrupting the power supply from said second DC source to the discharge lamp and controlling the magnitude of its voltage, said semiconductor control means being used for on-off control of the fluorescent discharge lamp and for brilliance modulation of the same in response to a video signal of a television signal; and which enables the blinking frequency of the fluorescent discharge lamp to be reduced to several tens of microseconds to several hundreds of microseconds and can be used as a light source for display apparatus.

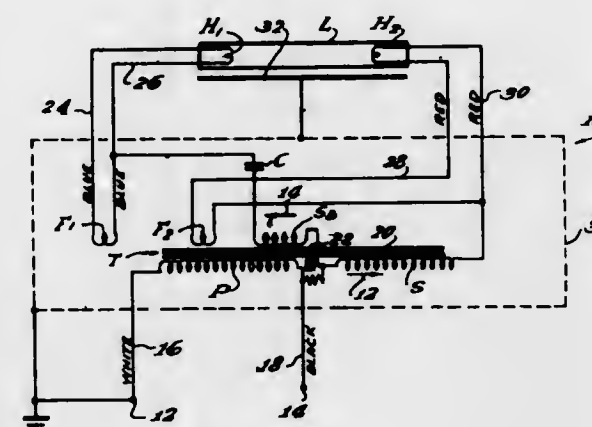
3,611,025
IGNITION SYSTEM UTILIZING TRANSISTOR FOR INTERNAL COMBUSTION ENGINES
Karol Longauer, Bratislava, Czechoslovakia, assignor to Povaské Strojárne, narodný podnik, Povazska, Bystrica, Czechoslovakia
Filed Sept. 30, 1968, Ser. No. 763,645
Claims priority, application Czechoslovakia, Oct. 24, 1967, 7514-67
Int. Cl. F02p 3/08, 7/06
U.S. Cl. 315-209 CD 9 Claims



A transistor has a control electrode connected to the feedback winding of an ignition transformer. A storage capacitor

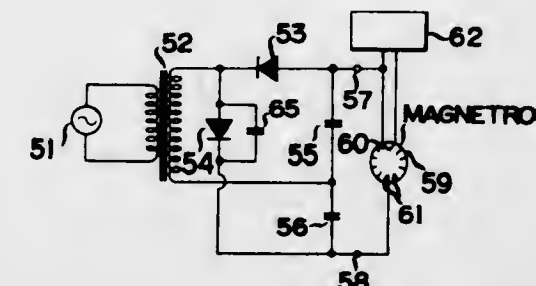
is connected to the primary winding of the ignition transformer via the input-output path of the transistor and a starting stabilization diode.

3,611,026
BALLAST CIRCUIT FOR LOW WATTAGE GASEOUS DISCHARGE DEVICE
Joseph A. Crawford, Chicago, Ill., assignor to Advance Transformer Company, Chicago, Ill.
Filed Nov. 7, 1969, Ser. No. 874,899
Int. Cl. H05b 41/14
U.S. Cl. 315-239 14 Claims



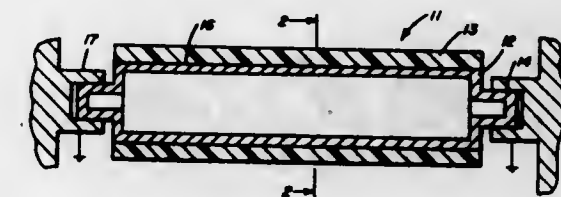
A ballast circuit for a low-wattage gaseous discharge device, for example, a rapid start fluorescent lamp, comprises an iron core having a primary winding and a secondary winding, the principal part of which is loosely coupled relative to the primary winding, the primary winding being isolated from the secondary winding. A lesser portion of the secondary winding is closely coupled relative to the primary winding, and arranged in bucking relationship to the principal part of the secondary winding. The circuit provides leads for connecting the gaseous discharge device in series with the secondary winding and a series condenser of such value to provide a leading current in the gaseous discharge device. There are also filament windings closely coupled with the primary winding and arranged to be connected for continuous energization of the heater filaments of the lamp.

3,611,027
MAGNETRON OPERATING CIRCUIT
Tokuju Koinuma, and Tadashi Itahashi, both of Kawasaki-shi, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan
Filed Feb. 10, 1969, Ser. No. 797,866
Claims priority, application Japan, Feb. 10, 1968, 43/8243
Int. Cl. H01J 29/00, 25/50
U.S. Cl. 315-307 4 Claims



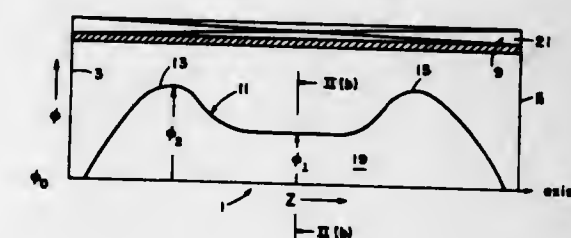
In a circuit for operating a magnetron tube by energizing it by the use of a voltage-doubler rectifier circuit, means is provided to temporarily reduce the anode voltage below the normal oscillation voltage after the cathode electrode has been warmed up to normal electron emission temperature.

3,611,028
NONCHARGING ROLLER
Thomas C. Whitmore, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 28, 1969, Ser. No. 880,832
Int. Cl. H05f 1/00; B65g 39/02
U.S. Cl. 317-2 R 7 Claims



A device for guiding and handling an article such as a web so that the transfer of static electric charge to or from the web is kept to a minimum when the web and the device are in moving contact. In one embodiment the device comprises a roller with an electrically grounded conductive inner member and an outer member of an elastomeric plastic comprising a mixture of a vinyl chloride resin and alkyl phthalyl alkyl glycolate. The device is particularly useful in the guiding of photographic film since the elastomeric properties of the plastic prevent slip between the device and the web and contact of the film with the device will result in very little static charge being imparted to the film. The device is also antistatic in that no appreciable charge will accumulate on its surface when in use.

3,611,029
SOURCE FOR HIGHLY STRIPPED IONS
Thomas H. Stix, Rehovot, Israel, assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 9, 1969, Ser. No. 856,337
Int. Cl. H05b 41/14
U.S. Cl. 317-4 5 Claims

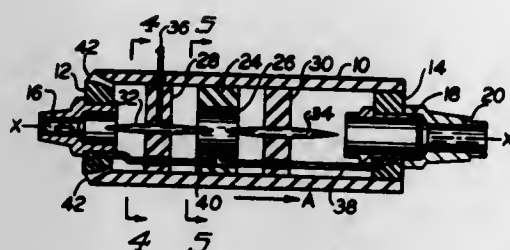


Apparatus for producing highly stripped ions by sufficient exposure of these ions to a cloud of energetic electrons, for producing an electrostatic negative potential well capable of confining these ions during the stripping process, for creating magnetic and electrostatic forces capable of confining the energetic electrons forming the electron cloud with only a low rate of electron loss and a slow dissipation of electron energy, and contemplating means for producing a transverse electric field that removes electrons undesirably trapped in electrostatic positive potential maxima.

3,611,030
IONIZATION APPARATUS
William C. Herbert, Jr., Mill Neck, N.Y., assignor to Herbert Products, Inc., Westbury, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,814
Int. Cl. H05b 3/00
U.S. Cl. 317-4 10 Claims

An ion-cell having an elongated hollow body having an inlet at one end and an outlet at the other for the passage of a stream of compressed air therethrough, a wall located downstream of the inlet having a central opening therein, a conductive sleeve or lining secured in the central opening, an

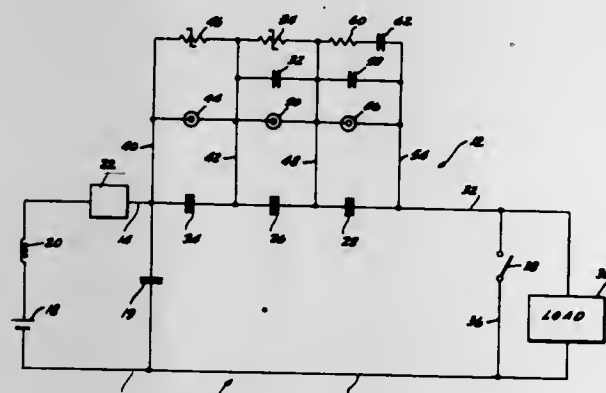
electrode member supported in the body between the inlet and wall member, and means for inducing an ion field with a resistive circuit isolating the high-voltage power supply from damaging high-voltage transient surges and providing



between the electrode and the conductive sleeve to saturate the gas stream.

3,611,031
SERIES SEQUENTIAL CIRCUIT BREAKER
Michael A. Lutz, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 11, 1970, Ser. No. 45,460
Int. Cl. H02h 7/22
U.S. Cl. 317-11 C

10 Claims

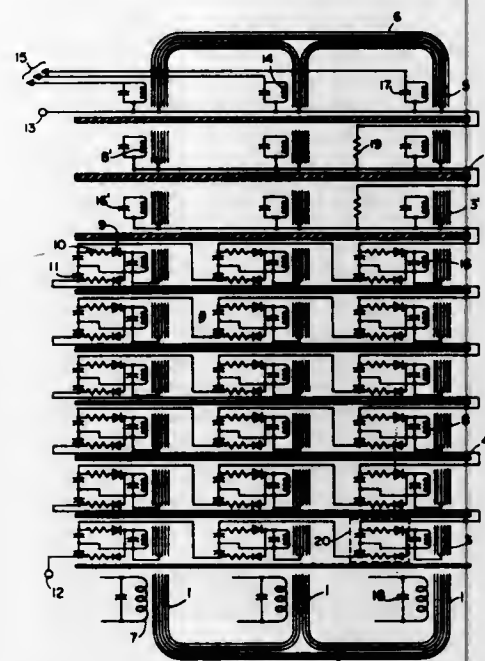


The circuit breaker for high-voltage, high-current DC circuits comprises at least two serially connected transfer switches, an electronic switch connected in parallel across each of said transfer switches, an energy absorbing resistor connected in parallel across each electronic switch except the last electronic switch so that successive opening of the first transfer switch and first electronic switch, followed by successive opening of the remaining transfer switches and electronic switches, causes current reduction and subsequent interruption.

3,611,032
ELECTROMAGNETIC INDUCTION APPARATUS FOR HIGH-VOLTAGE POWER GENERATION
Brian Skillicorn, Topsfield, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.
Filed June 16, 1969, Ser. No. 833,436
Int. Cl. H07h 9/02
U.S. Cl. 317-14

16 Claims

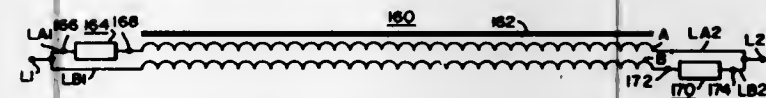
The power capability of insulating core-type transformers is greatly increased by creating additional magnetomotive force in certain secondary coils without any consequent power loss. At the same time, surge protection is provided for the primary power source without adversely affecting the auxiliary power source by using additional secondary cores



artificial capacitance between the additional secondary cores and ground potential.

3,611,033
CONTINUOUS-TYPE WINDINGS WITH HIGH-IMPEDANCE PARALLEL CIRCUITS FOR HIGH-FREQUENCY SURGE CURRENTS
Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 782,637, Dec. 10, 1968, Pat. No. 3,564,471.
Filed July 2, 1970, Ser. No. 51,969
Int. Cl. H02h 9/04
U.S. Cl. 317-15

10 Claims



Electrical windings of the high series capacitance, interleaved-turn type, having at least first and second parallel paths between its electrical ends. The windings include a plurality of pancake coils, each having at least two parallel electrical paths, with all of the pancake coils being of the continuous type. Each parallel path includes impedance means which have substantially the same impedance as each of the pancake coils at surge frequencies, but negligible impedance at line frequency. A voltage difference between adjacent turns of the first and second parallel circuits is thus created only when it is required, i.e., during a surge potential.

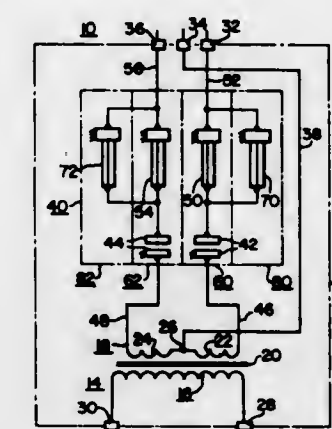
3,611,034
ELECTRICAL TRANSFORMER
John J. Astleford, Jr., Sharon, and William J. Willis, Sharpville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 23, 1969, Ser. No. 887,706
Int. Cl. H02h 7/04
U.S. Cl. 317-15

7 Claims

A transformer having a casing, a liquid dielectric in the casing, and an electrical winding in the casing having at least two circuits protected by a circuit breaker. The circuit breaker has contacts in each protected circuit, with the con-

tacts in each circuit being electrically connected to a different pair of parallel-connected, like thermal responsive ele-

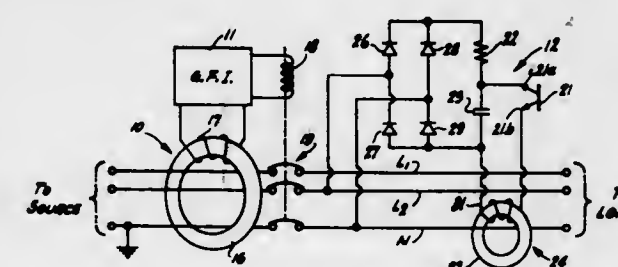
power lines through diodes in series with neon lamps and current-limiting resistors. A ground in the motor produces a current flow through one or both lamps. A photosensitive resistor, in response to the light from the lamps, activates a relay control circuit to open the input line to the motor, so that the motor cannot be turned on.



ments. Only one thermal-responsive element of each pair is operative to trip the circuit breaker.

3,611,035
GROUND FAULT PROTECTIVE SYSTEM HAVING GROUNDED NEUTRAL PROTECTION
Ellwood S. Douglas, Orinda, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed June 8, 1970, Ser. No. 44,187
Int. Cl. H02n 3/16
U.S. Cl. 317-18 D

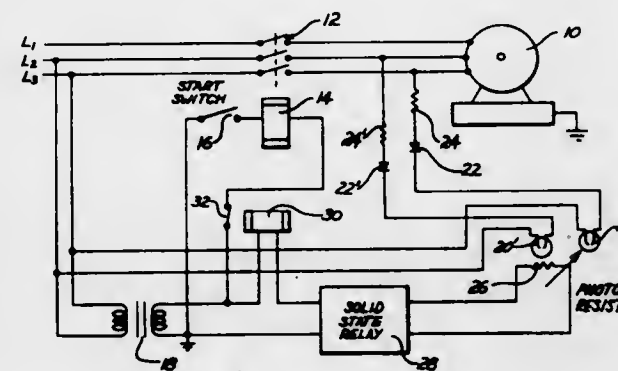
11 Claims



Ground fault protective system and method in which a high frequency tickler voltage is induced on the neutral conductor of a distribution system to indicate inadvertent grounding of that conductor and/or to interrupt the flow of current in the distribution system in response to grounding of the neutral conductor.

3,611,036
GROUND FAULT DETECTOR FOR ELECTRIC MOTORS
Robert W. Edson, Tracy, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.
Filed Jan. 21, 1970, Ser. No. 4,619
Int. Cl. H02h 3/16
U.S. Cl. 317-18 R

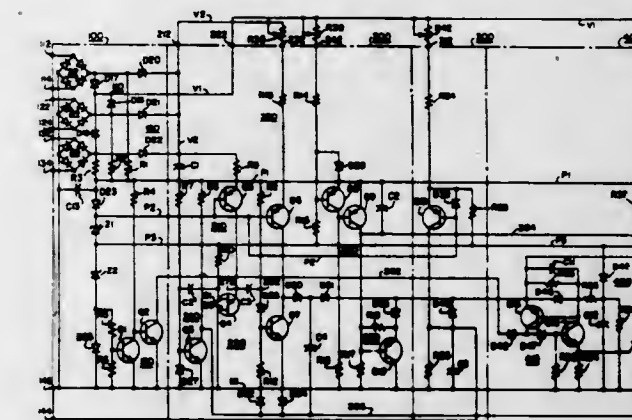
5 Claims



There is described a ground-detecting circuit for a motor or other electrical load wherein, before the motor is turned on, two terminals of the motor are connected to two input

3,611,037
GROUND FAULT PROTECTIVE DEVICE
John D. Watson, Purbrook, England, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of application Ser. No. 765,583, Oct. 7, 1968, now abandoned. This application June 24, 1970, Ser. No. 49,501
Int. Cl. H01h 47/18; H02h 3/16
U.S. Cl. 317-18 R

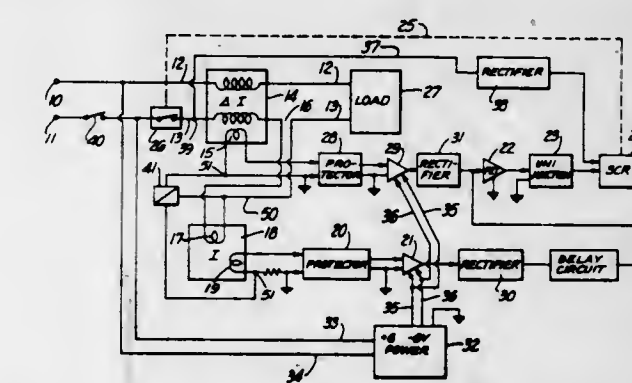
16 Claims



A protective relay device for detecting ground faults in a polyphase alternating current system. Aided for producing an output when the ground current in the system being protected increases above a predetermined level. A current transformer is arranged to provide the energy or power necessary for the output of the device and also to provide a signal which varies with the ground current in the system being protected and to which the device responds at the predetermined level.

3,611,038
GROUND FAULT AND HIGH CURRENT RESPONSIVE CIRCUIT BREAKER UTILIZING AMPLIFIED SIGNALS
Ralph E. Benham, Arcadia, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Sept. 8, 1969, Ser. No. 855,975
Int. Cl. H02h 3/10
U.S. Cl. 317-18 D

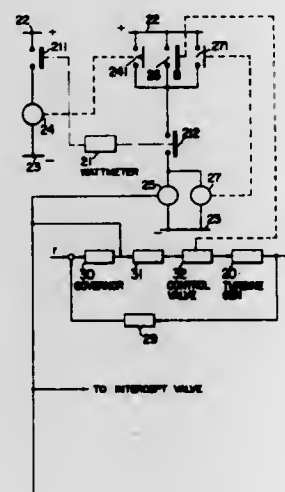
5 Claims



This invention relates to protective circuit means wherein a differential transformer and a current transformer are interposed between the AC line and a load device connected thereto, the transformers being adapted to respond, respectively, to leakage conditions and to overload conditions in the load devices. The protective circuit includes separate sensing amplifiers respectively responsive to the leakage or overload conditions, whichever occurs at any time, to produce a fault signal, and a trip signal generator responsive to the fault signal and to open circuit breaker contacts in the AC line and so remove power from the load device in the

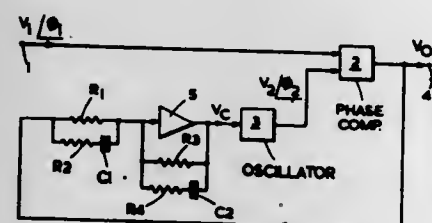
presence of the undesirable leakage and overload conditions until they have passed. A feature of the novel circuit is a simple test circuit simulating the fault conditions.

3,611,039
APPARATUS FOR PREVENTING OVERSPEED OF ELASTIC FLUID TURBINE DRIVEN GENERATORS
 Tetsuzo Sakamoto, Yokohama-shi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa-ken, Japan
 Filed Nov. 12, 1968, Ser. No. 774,617
 Claims priority, application Japan, Nov. 14, 1967, 42/72,816
 Int. Cl. H02h 3/42
 U.S. Cl. 317-19 4 Claims



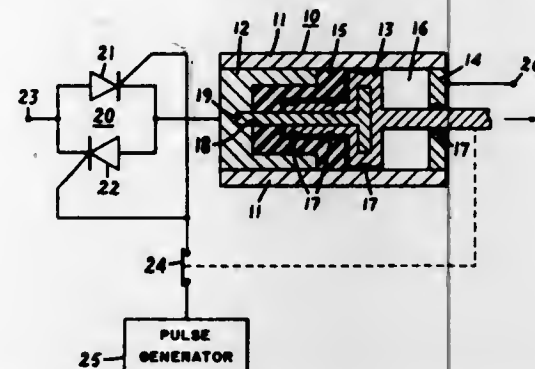
An apparatus for preventing overspeed operation of a turbine in response to the output of a turbine-driven generator comprises a control valve for controlling the motive fluid supply to the turbine and an electric control system. The electric control system includes a first switch responsive to the generator output above a first value and a second switch responsive to the generator output below a second value within a predetermined time period and cooperative with the first switch to provide a control signal to accordingly actuate the control valve.

3,611,040
APPARATUS FOR DERIVING A SIGNAL PROPORTIONAL TO A CHANGE-FUNCTION OF PHASE ANGLE
 John Desmond Ainsworth, Stafford, England, assignor to The English Electric Company Limited, London, England
 Filed Apr. 27, 1970, Ser. No. 31,952
 Claims priority, application Great Britain, Apr. 25, 1969, 21,247/69
 Int. Cl. H02h 3/26
 U.S. Cl. 317-20 7 Claims



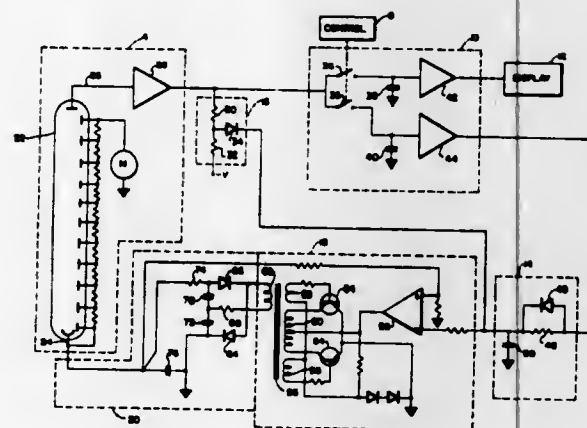
Apparatus for deriving an output signal proportional to a particular change-function of absolute phase angle of an alternating input signal comprises a phase comparator which generates the output signal as a result of comparison of the phase angle of the input signal with the phase angle of a signal from an oscillator. The phase angle of the oscillator output is controlled by a signal derived from an operational amplifier in response to the output signal.

3,611,041
CURRENT-LIMITING DEVICE
 Toshio Itoh; Toshio Miyamoto, and Yuichi Wada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed July 29, 1969, Ser. No. 845,862
 Claims priority, application Japan, July 30, 1968, 43/53851
 Int. Cl. H02h 5/04; H01h 3/736
 U.S. Cl. 317-20 10 Claims



A current-limiting material fills a hole extending through a solid insulation interposed between stationary and movable electrodes to normally effect electrical interconnection of both electrodes. When two controlled rectifiers of opposite polarity connected serially to the stationary electrode are in their closed position by a pulse generator a flow of overcurrent through the limiting material causes it to vaporize to insulate the stationary electrode from the movable electrode while the latter is moved away from the former to disconnect the rectifiers from the generator to open them. After interruption of the overcurrent reclosure of the rectifiers causes the associated two terminals to be electrically interconnected.

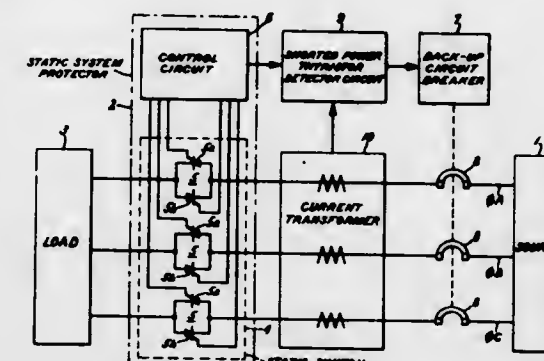
3,611,042
RADIANT ENERGY ANALYZER FEEDBACK SYSTEM
 Attila Denes Boronkay, La Habra, Calif., assignor to Beckman Instruments, Inc.
 Filed Feb. 2, 1970, Ser. No. 7,807
 Int. Cl. H02h 3/20, 7/20
 U.S. Cl. 317-31 13 Claims



A radiant energy analyzer is disclosed in which a feedback loop is included to vary an electrical bias to a radiant energy detector in response to selected conditions associated with an electrical signal generated by the detector. The electrical signal is directed to a selective detector where predetermined portions of the signal are detected to develop a control signal. A time constant compensating circuit is connected to receive the control signal from the selective detector. An amplitude modulated oscillator is connected to the time constant compensating circuit and in turn to a rectifier circuit which provides electrical bias for the radiant energy detector in response to the oscillator signal amplitude. An overload protection circuit is provided to connect the signal from the radiant energy detector to the oscillator when the signal exceeds a predetermined threshold. The time constant compensating circuit provides compensation for unequal rise and fall

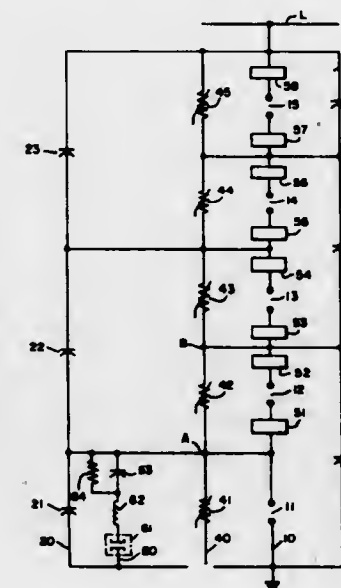
time constants associated with the rectifier circuit so as to include the rectifier circuit within the feedback loop.

3,611,043
PROTECTIVE CIRCUIT FOR STATIC SWITCH
 Floyd L. Steen, Lansdowne, Pa., assignor to General Electric Company
 Filed July 16, 1970, Ser. No. 55,334
 Int. Cl. H02h 7/14
 U.S. Cl. 317-33 SC 3 Claims



Disclosed is a protective circuit adapted for utilization in a power system including a thyristor switch which is intended selectively to permit or block the flow of electric current from a power source to a load. A backup circuit breaker is provided in the system in series with the thyristor switch. The protective circuit includes logic means adapted for causing the backup circuit breaker to interrupt in the abnormal event that the thyristor switch becomes disabled.

3,611,044
SURGE PROTECTION APPARATUS WITH IMPROVED CIRCUIT FOR RELIABLE SPARKOVER
 Joseph C. Osterhout, and Richard E. Kennon, both of Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed June 30, 1970, Ser. No. 51,096
 Int. Cl. H02h 9/06
 U.S. Cl. 317-70 7 Claims



Surge protection apparatus such as a lightning arrester is provided with a plurality of serially connected, power-handling spark gaps with a network of voltage-grading capacitors connected thereacross. A control spark gap is connected across one of the power-handling spark gaps and has a controlled and reliable sparkover characteristic. In circuit with the control spark gap are inductive and capacitive circuit elements to assure sparkover of the entire series string of power-handling spark gaps quickly upon sparkover of the control spark gap while avoiding damage to the control spark gap from excessive current flow.

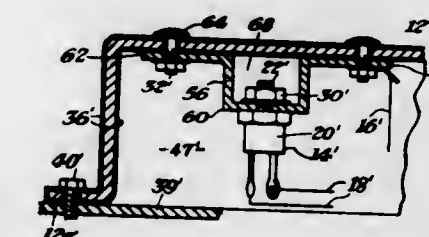
3,611,045
LIGHTNING ARRESTER SPARKGAP ASSEMBLY HAVING OPPOSED ELECTROMAGNETIC FIELD-GENERATING MEANS FOR CONTROLLING ARC MOVEMENT

Eugene C. Sakshing, Lanesborough, Mass., assignor to General Electric Company
 Filed Feb. 24, 1970, Ser. No. 13,317
 Int. Cl. H02h 1/00
 U.S. Cl. 317-74 10 Claims



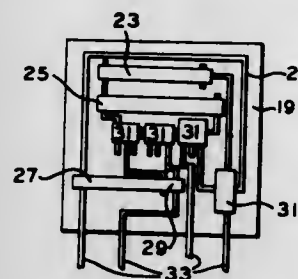
A current-limiting sparkgap assembly of the type that utilizes a magnetic field to stretch arcs in the discharge circuit of the assembly thereby forcing the arcs against cooling surfaces to extinguish them, characterized by having an auxiliary electromagnetic field-generating means that selectively resists the arc-stretching movement of arcs in the assembly to delay the extinguishing operation of the assembly until the surge current has been completely discharged to ground.

3,611,046
APPARATUS FOR MOUNTING AND/OR COOLING ELECTRICAL DEVICES
 Paul W. Covert, Butler, Pa., assignor to Cross Electronics, Inc., Wexford, Pa.
 Continuation-in-part of application Ser. No. 580,097, Sept. 16, 1966, now abandoned. This application Jan. 24, 1969, Ser. No. 18,359
 Int. Cl. H01h 1/12
 U.S. Cl. 317-100 4 Claims



I disclose method and means for mounting and cooling a heat-producing electrical device and arranged such that a considerable quantity of heat can be conducted across an electrically isolating coating, although the unit heat transfer coefficient of the coating is relatively low. This is accomplished with mounting members associated with the device and having a relatively large area of the coating sandwiched therebetween. The dielectric strength is therefore improved, while the total heat transfer coefficient is improved to the extent that considerable heat can be transmitted from one mounting member to the other without large temperature differentials. Also disclosed are novel methods for coating and disposing the mounting members in optimum heat transfer arrangement. One of the mounting members, which may be in the form of a chassis or base structure, is provided with sufficient area that heat is convected and/or radiated therefrom without the use of bulky cooling fins or other convecting structures.

3,611,047
PRINTED CIRCUIT WITH COMPONENTS
 Joseph Burton Buzard, Emporium; Kenneth W. Coleman, North Warren, Pa., and Martin Leroy Zelenz, Seneca Falls, N.Y., assignors to Sylvania Electric Products, Inc.
 Division of Ser. No. 737,179, June 14, 1968, abandoned.
 Filed Mar. 6, 1970, Ser. No. 17,215
 Int. Cl. H02b 1/04
 U.S. Cl. 317-101 C 3 Claims



A process for fabricating resistor material includes the steps of casting a suspension to provide a film casting, heating to provide a film, cutting the film to size, attaching the film to a substrate, and firing to provide resistor material. A resistor is fabricated by a process of selecting a substrate, depositing a conductor pattern thereon, applying an adhesive, attaching a self-supporting cut film to the substrate, and firing the substrate and attached film and conductors to provide a resistor. An electrical circuit is provided by applying a solder layer to the conductor pattern on the substrate, attaching electrical components to the solder layer, and encapsulating the structure to provide an electrical circuit. A resistor includes a substrate, electrical conductors affixed thereto, and a layer of resistor material affixed to the conductors and conforming to the contour of the substrate.

3,611,048
PANELBOARD FOR CIRCUIT BREAKER LOAD CENTERS WITH INSULATOR BLOCK SUPPORTING CONNECTOR AND CONNECTOR SUPPORTING BUS BAR
 Bertrum S. Shelvik, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
 Filed July 7, 1970, Ser. No. 52,856
 Int. Cl. H02b 1/20; H01r 9/16
 U.S. Cl. 317-119 15 Claims

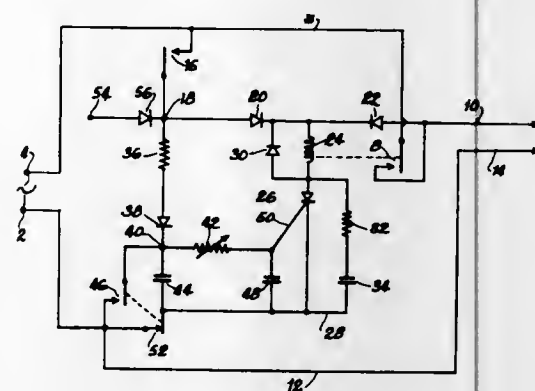


A selected plurality of two distinct insulating base members are secured to a sheet metal pan in a longitudinal row to form a desired one of the various types of panelboard arrangements. Adjacent bases are spaced and their opposite external surfaces cooperate to provide an additional circuit breaker mounting space. Electric branch connectors for the circuit breaker are electrically connected to longitudinally extending bus bars and the resulting physical connections therebetween cooperate with interlocking structure formed on the connectors and bases to mount the bus bars to the bases. The line terminal ends of the bus bars are provided with wiring connectors and an insulating headblock which are also designed to cooperatively interlock with the bus bars to support the latter.

3,611,049
AUTOMATIC POWER CONTROL CIRCUIT
 Moo S. Yoon, Glenview, Ill., assignor to A. B. Dick Company, Niles, Ill.
 Filed June 29, 1970, Ser. No. 50,424
 Int. Cl. H01h 47/18; 47/32
 U.S. Cl. 317-141 S 5 Claims

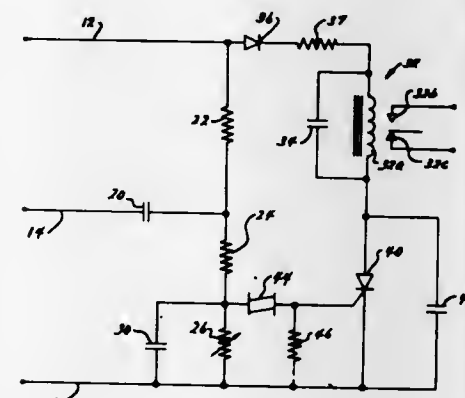
This application discloses a power control circuit effective to maintain a power circuit energized for predetermined

periods of time after the receipt of a signal pulse. The circuit includes a controllable semiconductor device controlling relay-operated contacts in the power circuit and signal



storage means operable to maintain the device conducting and therefore the contacts closed while the signals are supplied and for a predetermined period of time after the last signal is received.

3,611,050
PHASE SEQUENCE AND PHASE LOSS MONITOR
 Clement J. Weber, Vanderburgh County, Ind., assignor to Diversified Electronics, Inc., Evansville, Ind.
 Filed June 25, 1970, Ser. No. 49,863
 Int. Cl. H02h 3/26
 U.S. Cl. 317-148.5 B 5 Claims

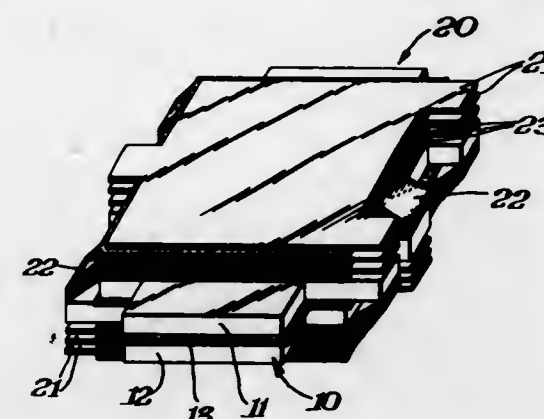


Solid-state circuitry offering protection to electrical and electronic equipment from incorrect phase sequence connection, low voltage or a phase failure on a three-phase power system. If phasing is correct and full line voltage is present on all three phases, an internal control relay is energized, where, in a contrary situation, the aforesaid control relay becomes deenergized. The monitor represents an important safety device where connection to the powerline is critical, or where loss of voltage or of one or more phases may cause damage to electrical equipment.

3,611,051
FEED-THROUGH, ELECTROLYTIC, BOOK CAPACITOR
 Henry F. Puppolo, N. Adams, and Mark Markarian, Williamstown, both of Mass., assignors to Sprague Electric, North Adams, Mass.
 Filed Mar. 13, 1970, Ser. No. 19,192
 Int. Cl. H01g 9/14
 U.S. Cl. 317-230 6 Claims

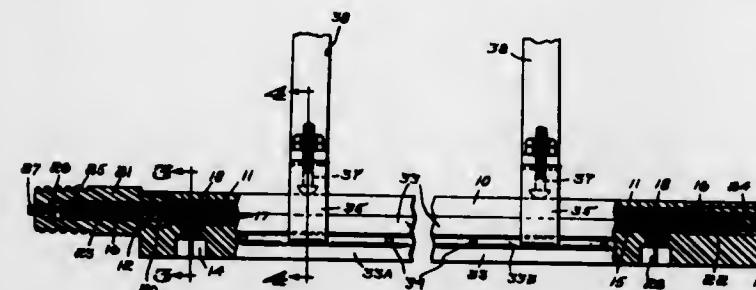
An electrolytic, book capacitor having two pairs of feed-through terminals extending from a stripline which consists of two thick conductive plates separated by an insulative layer, each plate of the stripline being overlaid with al-

ternately stacked anode and cathode foils separated from each other by paper spacers with each stack of anode and



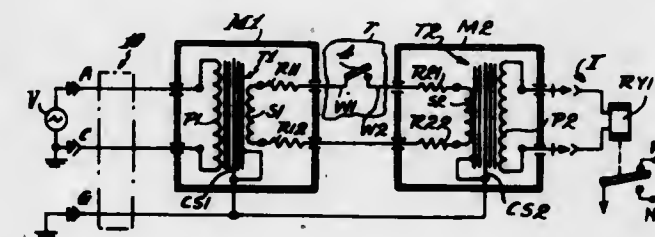
cathode foils connected both electrically and physically to its respective stripline plate.

3,611,052
STATIC NEUTRALIZER
 Peter Bishop; Arthur S. Christy, Jr., and Virgil E. Linnell, all of Portland, Maine, assignors to United Industrial Syndicate Inc., Portland, Maine
 Filed Jan. 7, 1970, Ser. No. 1,268
 Int. Cl. H05f 3/06
 U.S. Cl. 317-2 F 15 Claims



A static electric neutralizer is disclosed in which a bar of a dielectric material has a lengthwise chamber open at least at one end and a series of bores in communication with the chamber. A sheathed conductor is confined in the chamber and discharge devices, one for each bore, are held capacitatively coupled to the sheathed conductor by plugs in the bores, the discharge points of the devices extending through the plugs. The open end of the chamber is closed by a terminal through which the contact section of the conductor extends. The bar, terminal, and plugs are of dielectric material and bonded together to prevent surface electrical leakage except along the discharge points.

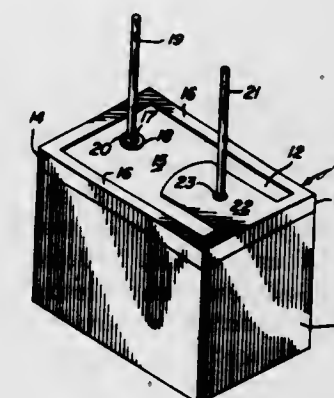
3,611,053
INTRINSICALLY SAFE CIRCUIT
 William G. Rowell, Canton, Mass., assignor to Farmer Electric Products Co., Inc., Natick, Mass.
 Filed Oct. 10, 1969, Ser. No. 865,457
 Int. Cl. G08b 19/00
 U.S. Cl. 317-123 9 Claims



A circuit for use with a sensor located in a hazardous area such as in an atmosphere of explosive gases, organized to prevent electrical power at the sensor from exceeding

prescribed levels even upon reasonably foreseeable failures of parts of the circuit. The circuit, which is located in a non-hazardous area, includes an indicator, such as a relay-controlled alarm, to respond to the sensor, and terminals for connection to a source of line voltage. Two voltage stepdown transformers have their secondaries connected in series with one another and with the sensor. The primary of one transformer is connected to the line voltage source; and the primary of the other transformer is connected to the indicator. Each transformer secondary lies intermediate a pair of current-limiting resistors, and the primary and secondary windings of each transformer are isolated by means of a grounded conductive sheet. Each transformer, along with its associated current-limiting secondary resistors, is embedded in potting material to form a self-contained isolating circuit module. The circuit is intended to be connected to a remote ground terminal as well as the ground terminal of the line voltage source. A ground integrity detector circuit interrelates these three terminals by means of resistances and a neon glow tube is provide a signal whenever one of the ground circuits is lost, as well as a signal upon failure of one of the resistances forming the ground integrity detection circuit. The remote ground connection has a path extending through the circuit chassis to insure that its ground is maintained.

3,611,054
HERMETICALLY SEALED SOLID ELECTROLYTIC CAPACITOR
 John Piper, and Roger J. Raschiotto, both of Greenville, S.C., assignors to Union Carbide Corporation, New York, N.Y.
 Filed Mar. 2, 1970, Ser. No. 15,410
 Int. Cl. H01g 9/05
 U.S. Cl. 317-230 10 Claims

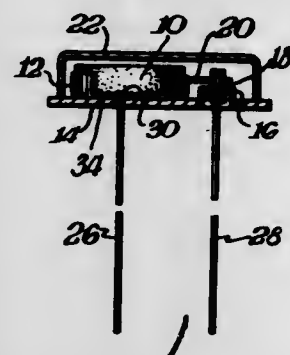


The fabrication of hermetically sealed, solid electrolytic capacitors by first forming a high-temperature hermetic seal between a metallized ceramic header and a metal sleeve, and then inserting a solid electrolytic capacitor having a first lead wire welded to the capacitors anode lead in the sleeve with the nickel lead wire extending through a metallized opening in the header, solder sealing the other end of the metal sleeve, bonding the first nickel wire to the header as an anode lead and bonding a second nickel wire to the header as a cathode lead.

3,611,055
SOLID ELECTROLYTE CAPACITOR
 Dominik J. Zeppleri, and Albert Barbato, both of North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.
 Filed Apr. 24, 1970, Ser. No. 31,470
 Int. Cl. H01g 9/08
 U.S. Cl. 317-230 8 Claims

A flat solid electrolyte section is bonded within a metal tray, which is mounted on and directly connected to the

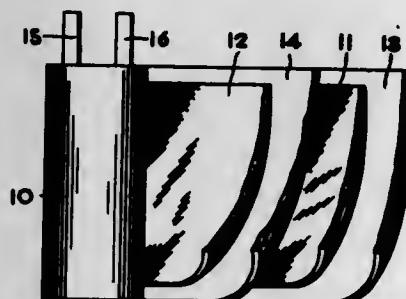
baseplate of the package. An anode lead extends laterally from the section to a glass-to-metal terminal of the plate, and



3,611,056
ELECTROLYTIC CAPACITOR
Ferdinando Belloni, Milan, Italy, assignor to Sprague Electric Company, North Adams, Mass.
Filed May 21, 1970, Ser. No. 39,200
Int. Cl. H01g 9/02

U.S. Cl. 317-230

6 Claims

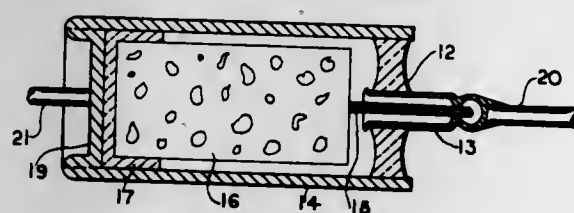


An electrolytic capacitor has a capacitance section having a plurality of electrodes, at least one electrode of which is a valve metal having on its surface an insulating oxide layer, said section being impregnated with an electrolyte. The electrolyte comprises a solvent and an ionogen which is a mixture of: (1) the reaction product of a member selected from the group consisting of ammonium hydroxide, an alkali metal hydroxide and an alkaline earth metal hydroxide with a C₃-C₆ aliphatic polyhydroxy carboxylic acid or the lactone thereof; and (2) boric acid or a salt thereof; wherein the mol ratio of said reaction product to boric acid or salt thereof is between 0.1-2.

3,611,057
HERMETICALLY SEALED, WET ELECTROLYTIC CAPACITOR
Alan G. Cooper, John L. Moreau, and Gediminas John Velyvis, all of North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.
Filed Nov. 14, 1969, Ser. No. 876,718
Int. Cl. H01g 9/06

U.S. Cl. 317-230

5 Claims

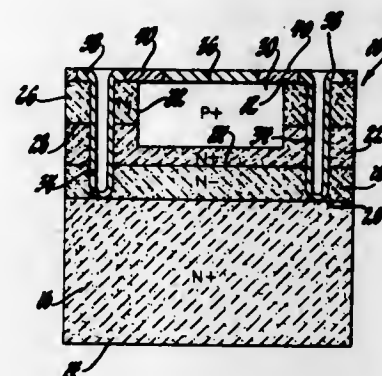


A wet pellet electrolytic tantalum capacitor having a single matched hermetic glass to tantalum seal and provided with a reverse voltage capability.

3,611,058
VARACTOR DIODE
Larry Lee Jordan, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1970, Ser. No. 36,210
Int. Cl. H011 5/02

U.S. Cl. 317-234

5 Claims

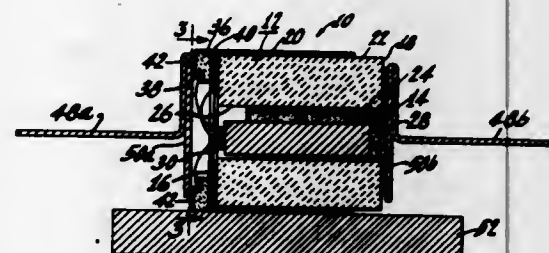


This disclosure relates to a planar-type junction varactor, and a method for making same, having improved voltage breakdown and leakage current characteristics which can be used as a tuning element in vehicular-type battery operated AM radios. One form of the device can be made by successively depositing semiconductor layers of high and low resistivities onto a low-resistivity substrate including a substantially intrinsic layer, and forming a PN junction within the deposited layers extending to the front surface of the device. A groove from the active surface of the device down to the substrate permits coplanar ohmic contacts on the active surface of the device.

3,611,059
TRANSISTOR ASSEMBLY
Donald Raymond Carley, Somerville, N.J., assignor to RCA Corporation
Filed June 11, 1970, Ser. No. 45,434
Int. Cl. H011 1/12

U.S. Cl. 317-234

10 Claims

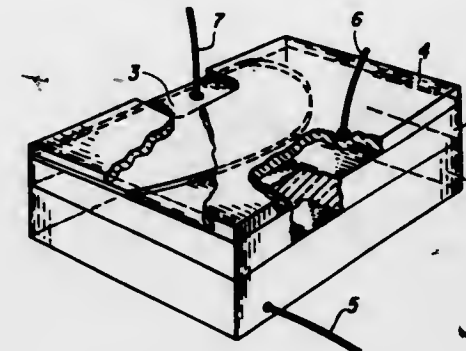


A transistor assembly for high-frequency operation includes a housing of an electrically insulating and thermally conductive material having a passage therethrough from one end to the other end. A transistor element having collector, emitter and base electrodes is mounted in the passage adjacent one end of the housing, and is thermally connected to the housing. A separate contact terminal having a head on one end is secured to each end of the housing with the terminals being in the same plane and the heads extending across the ends of the passage so as to hermetically seal the transistor element within the housing. A metal plate is secured to the outer surface of the housing. The metal plate serves as the mounting means for the assembly, a heat dissipator and a third terminal. The electrodes of the transistor element are electrically connected to separate ones of the terminals.

3,611,060
THREE TERMINAL ACTIVE GLASS MEMORY ELEMENT
Rowland E. Johnson, Dallas, and Robert W. Halsty, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 17, 1969, Ser. No. 877,291
Int. Cl. H011 1/100

U.S. Cl. 317-234 R

5 Claims

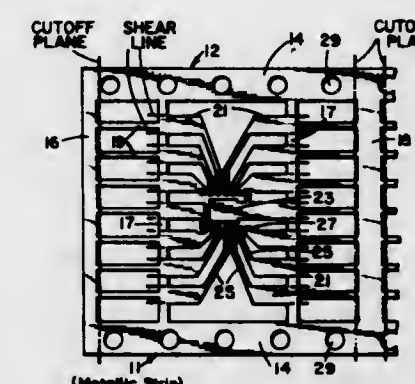


Disclosed is a three terminal switching device using a nonoxide glass as the active elemental material therein. In one specific embodiment the switch includes a first nonoxide active glass film evaporated on a conductive base of aluminum. A conductive gold strip is formed over a portion of the first nonoxide glass film and a second nonoxide active glass film is formed partially over the gold strip and the first glass film. Electrical contacts are made to the conductive base, the conductive strip and the second nonoxide glass film. With a biasing voltage applied to the base contact and the film contact, a voltage pulse of proper polarity applied to the gold strip contact turns the device on, and while in this on condition, a voltage pulse of the opposite polarity turns the device off.

3,611,061
MULTIPLE LEAD INTEGRATED CIRCUIT DEVICE AND FRAME MEMBER FOR THE FABRICATION THEREOF
Eugene E. Segerson, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of application Ser. No. 534,752, Mar. 16, 1966.
This application July 7, 1971, Ser. No. 156,347
Int. Cl. H011 5/00

U.S. Cl. 317-234 R

21 Claims



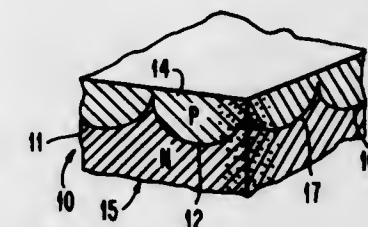
A semiconductor device, and more specifically an integrated circuit device, is fabricated by mounting on a one-piece metallic frame member one or more integrated circuit structures or semiconductor units. The frame member is provided with a plurality of groups of metallic parts, and each group comprises a mounting portion or portions for corresponding integrated circuit structure and frame means for the group. Each such group in the frame member also comprises in its metallic parts, metal means or lead portions which are electrically connected with contacts on the integrated circuit structure. To help to stabilize the position of the lead portions in a group while the ultimate device is being fabricated and to serve as a plastic-flash-limiter when the active parts of the semiconductor devices are being plastic-encapsulated in a mold cavity under pressure molding, integral

metallic lead spacers extend between adjacent lead portions. The frame means and lead spacers are severed during the complete fabricating cycle.

3,611,062
PASSIVE ELEMENTS FOR SOLID-STATE INTEGRATED CIRCUITS
Arthur J. Rideout, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 17, 1968, Ser. No. 722,126
Int. Cl. H011 5/02

U.S. Cl. 317-234

6 Claims

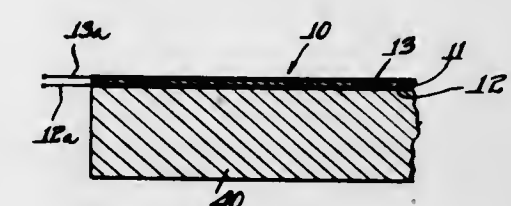


A capacitor is formed for a monolithic integrated circuit with an increased capacitance without a decrease in breakdown voltage by forming the junction in a plurality of curved portions rather than a straight portion. The junction may be formed by either a single or double diffusion through parallel slots in a mask to permit diffusion. It also may be formed by either a single or double diffusion through orthogonal families of parallel slots. A resistor is formed by two diffusions to form the junction rather than a single diffusion whereby the gradient of the doping profile in the depletion layer of the junction is reduced. This reduces the parasitic capacitance at the junction for a given resistance whereby the resistor may be utilized at a higher cutoff frequency to permit the resistor to be utilized in higher frequency circuits.

3,611,063
AMORPHOUS ELECTRODE OR ELECTRODE SURFACE
Ronald George Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Filed May 16, 1969, Ser. No. 825,235
Int. Cl. H011 3/00, 7/00, 9/00

U.S. Cl. 317-234 R

5 Claims



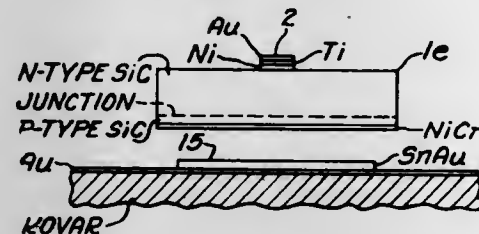
A semiconductor switch device includes an active semiconductor material, which is substantially disordered and generally amorphous and of high resistance, and which is interposed between a pair of electrodes, the switch device blocking current flow. When a voltage greater than a threshold voltage value is applied to the electrodes, at least one current conducting path is established between the electrodes to cause the switch device to conduct. The switch device may be a nonmemory type or memory type, the former reverting to the blocking state when the current therethrough decreases below a minimum current holding value, and the latter remaining in its conducting state until it is reentered to the blocking state by the application of a current pulse to the electrodes. The active semiconductor material and the electrodes are deposited as films on a suitable substrate. To assure that the active semiconductor material assumes the substantially disordered and generally amorphous state and remains in that state and to assure maximum electrical contact with and strong mechanical adhesion with the electrodes, the electrodes are also made in a substantially disordered and generally amorphous state.

3,611,064

OHMIC CONTACT TO N-TYPE SILICON CARBIDE, COMPRISING NICKEL-TITANIUM-GOLD
John W. Hall, II, Mentor, and William E. Tragert, Chagrin Falls, both of Ohio, assignors to General Electric Company
Filed July 14, 1969, Ser. No. 841,342
Int. Cl. H011

U.S. Cl. 317-234 R

5 Claims



A light-emitting silicon carbide diode comprising a chip of SiC containing a PN junction in which ohmic contact is made to the N-side by thin evaporated films of nickel, titanium and gold superposed one on the other and fired to provide a ternary alloy thereof. This allows thermocompression bonding of a gold wire to the excess of gold at the top of the contact. The contact to the P-side may consist of a thin film of evaporated nickel chrome.

3,611,065

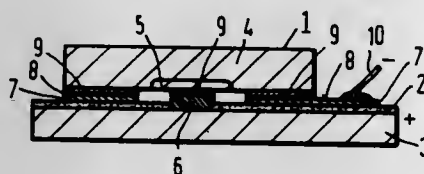
CARRIER FOR SEMICONDUCTOR COMPONENTS
Karl-Heinz Zschauer, and Gunter Winstel, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 30, 1969, Ser. No. 862,264
Claims priority, application Germany, Sept. 30, 1968, P 17 89 063.0

Int. Cl. H011 5/00

U.S. Cl. 317-234 R

3 Claims



A carrier for semiconductor components which improves the electrical properties and the lifetime of the semiconductor components. The carrier is characterized by a carrier portion comprising electricity and heat conducting material and by a thin adhesive electrical insulation layer, at least on that surface of the carrier member that faces the semiconductor component.

3,611,066

THYRISTOR WITH INTEGRATED BALLASTED GATE AUXILIARY THYRISTOR PORTION
Rudolph Knaus, Auburn, N.Y., assignor to General Electric Company

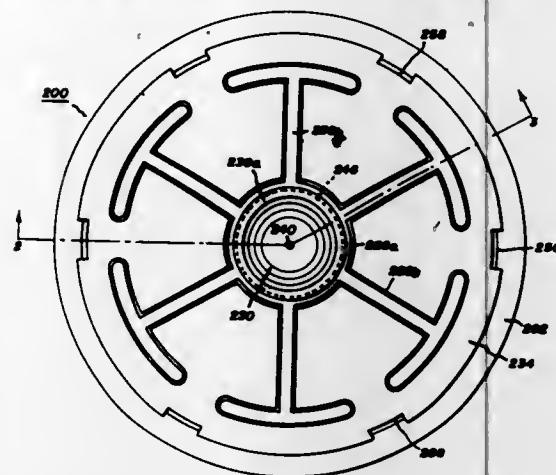
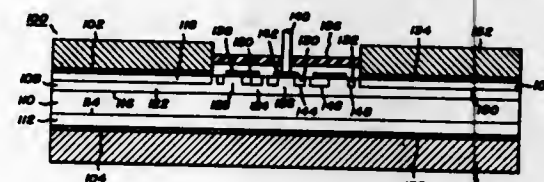
Filed Dec. 12, 1969, Ser. No. 884,590
Int. Cl. H011 11/00, 15/00

U.S. Cl. 317-235 R

12 Claims

A thyristor comprised of a main current carrying thyristor portion and an auxiliary thyristor portion integrated therewith for tuning on the main thyristor portion is provided with a passive ballast segment interposed between the gate and an adjacent edge of the emitter layer to increase lateral resistance in series with the emitter junction thereby to laterally distribute turn-on current and to retard turnoff current. A second ballast segment may be provided between the auxiliary and main thyristor portions or the lateral resistance between these thyristor portions may be increased by con-

stricting the width of the adjacent integral base layer extending between the thyristor portions. The auxiliary and main



thyristor portions may be interdigitated to accelerate turn-on response.

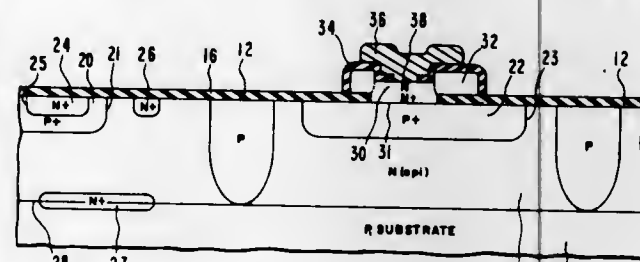
3,611,067

COMPLEMENTARY NPN/PNP STRUCTURE FOR MONOLITHIC INTEGRATED CIRCUITS
David W. Oberlin, San Jose, and Theodore I. Kamins, Mountain View, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Apr. 20, 1970, Ser. No. 29,817

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

6 Claims



NPN and PNP transistors are fabricated in the same monolithic semiconductor substrate without compromising the electrical characteristics of the NPN or the frequency response of the PNP. The NPN has a double-diffused structure, while the PNP has a diffused emitter, an epitaxial base, and a Schottky-barrier collector-base junction.

3,611,068

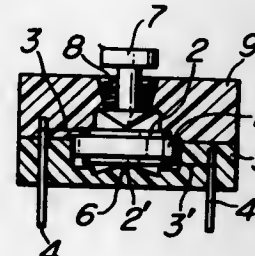
CONTACTLESS PRESSURE SENSITIVE SEMICONDUCTOR SWITCH

Takashi Fujita, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Continuation of application Ser. No. 749,019, July 31, 1968, now abandoned. This application May 20, 1970, Ser. No. 37,491

Int. Cl. H011 15/00, 11/00

U.S. Cl. 317-235 R

2 Claims



A contactless switching device in which the conventional switch contacts are replaced by a semiconductor element

whose resistivity is remarkably reduced when a pressure is imposed thereon.

3,611,069

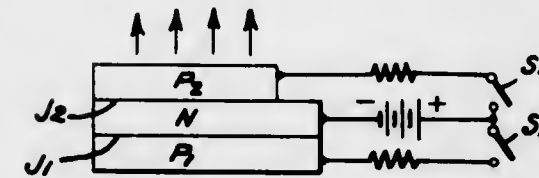
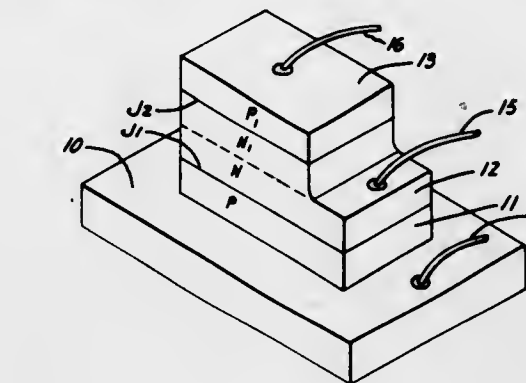
MULTIPLE COLOR LIGHT EMITTING DIODES
Simeon V. Galgalaits; Gunther E. Fenner, and Roger S. Ehle, all of Schenectady, N.Y., assignors to General Electric Company

Filed Nov. 12, 1969, Ser. No. 875,917

Int. Cl. H011 15/00

U.S. Cl. 317-235 R

7 Claims



Multiple color light-emitting semiconductor structures and methods for fabricating them are disclosed. The light-emitting structures comprise multiple-layered regions of differing conductivity-type semiconductor materials such as compositions of gallium phosphide which are made to emit light of selectively different wavelengths. The characteristics of the light-emitting structures are enhanced by lowering the optical absorption of high-energy photons by the use of a material with an increased band-gap.

3,611,070

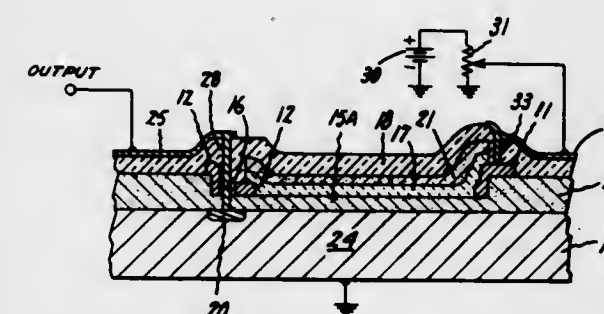
VOLTAGE-VARIABLE CAPACITOR WITH CONTROLLABLY EXTENDIBLE PN JUNCTION REGION
William E. Engeler, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 766,546, Oct. 10, 1968, now abandoned. This application June 15, 1970, Ser. No. 46,021

Int. Cl. H011 11/14

U.S. Cl. 317-235

11 Claims



A PN junction region formed in a portion of a semiconductor wafer extends beneath the edge of a resistive layer coated on an insulating layer atop the wafer. Voltage applied across the resistive layer may be adjusted in amplitude, with respect to the wafer, to invert at least a fraction of the wafer surface extending from the PN junction beneath a proportionate fraction of the resistive layer. By varying this voltage, the area of the wafer which is inverted is made to vary accordingly, thereby varying capacitance measured across the

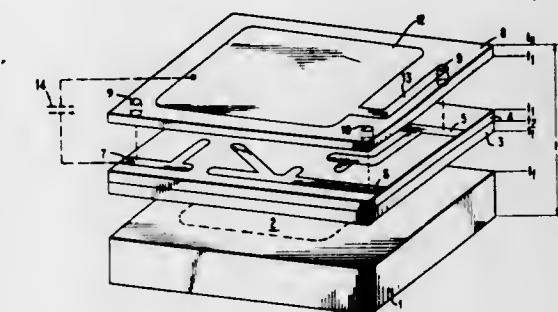
device. By appropriately shaping the resistive layer, a predetermined capacitance-voltage characteristic may be obtained.

3,611,071

INVERSION PREVENTION SYSTEM FOR SEMICONDUCTOR DEVICES
Benjamin Agusta, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 10, 1969, Ser. No. 814,980
Int. Cl. H011 19/00; H01c 7/14

U.S. Cl. 317-235 R

3 Claims



A passivated coated semiconductor device in which a phosphosilicate layer, included to retard inversion in P-type areas or enhancement in N-type areas of the device, is supplemented by a negatively charged electrode to prevent inherent but undesirable positive mobile charges accumulated during fabrication or originated by an overlying encapsulating layer from passing through the phosphosilicate layer and reaching the P-type areas, where they could cause inversion.

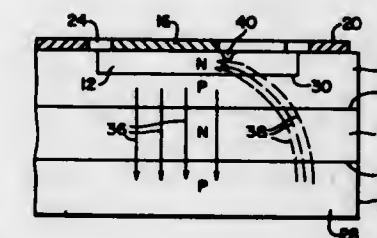
3,611,072

MULTICATHODE GATE-TURNOFF SCR WITH INTEGRAL BALLAST RESISTORS

Donald R. Hamilton, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 27, 1969, Ser. No. 853,424
Int. Cl. H011 5/02, 9/12, 11/10

U.S. Cl. 317-235

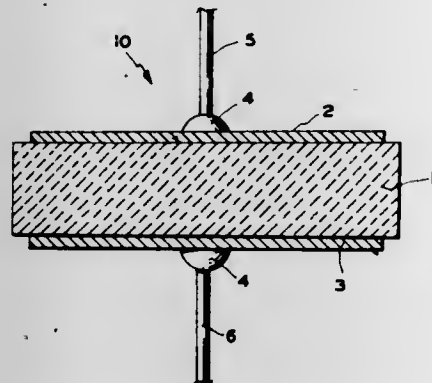
8 Claims



A gate controlled switch has a plurality of cathode regions distributed throughout but electrically isolated from the gate region of the switch. Each cathode region has an integral resistive portion which enables the region to control the last current flow which occurs when the switch is turned off so that each cathode region has two distinct separate regions integral with each other, and each having its own individual function. During normal operation of the switch, substantially all of the forward current flows through essentially all of the cathode except for the integral resistive portion of the region. During turnoff of the switch the last current to flow in the switch is caused to flow through the integral resistive element portion of the cathode region.

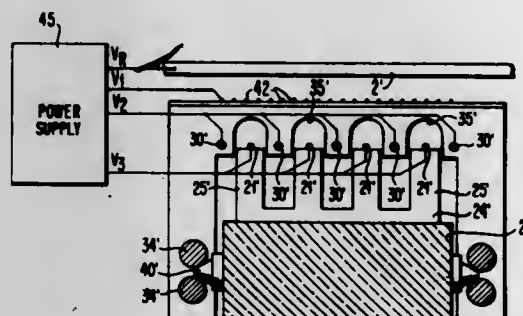
3,611,073
DIODE COMPRISING ZINC OXIDE DOPED WITH GALLIUM OXIDE USED AS A VOLTAGE VARIABLE RESISTOR

Kazuo Hamamoto, Osaka; Michio Matsuoka, Osaka, and Takeshi Masuyama, Takatsuki-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan
 Filed Nov. 28, 1969, Ser. No. 880,759
 Claims priority, application Japan, Dec. 2, 1968, 43/88826
 Int. Cl. H01l 3/22, 7/62, 3/00
 U.S. Cl. 317-238 8 Claims



Voltage variable resistors having nonohmic resistance comprising a sintered wafer consisting essentially of zinc oxide with 0.05 to 10.0 mole of gallium oxide and two electrodes applied to opposite surfaces of said sintered wafer, at least one of said two electrodes being a silver paint electrode.

3,611,074
CORONA DISCHARGE DEVICE
 Heinz H. Weichardt, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Nov. 24, 1969, Ser. No. 879,054
 Int. Cl. G03g 15/02
 U.S. Cl. 317-262 A 9 Claims

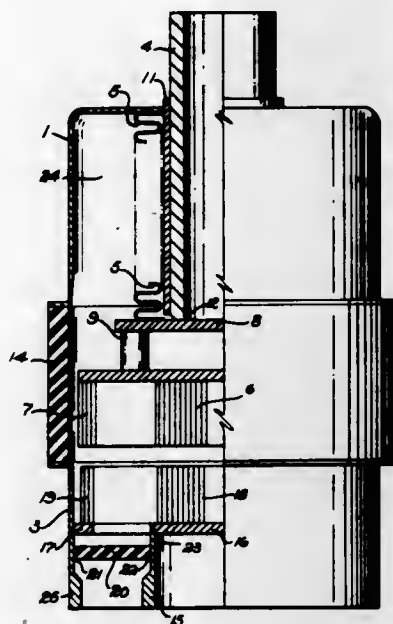


A corona generator for providing a uniform and highly efficient corona discharge for use in such apparatus as electrophotographic printers.

3,611,075
HIGH-FREQUENCY VARIABLE VACUUM CAPACITOR
 Wesley N. Lindsay, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
 Filed June 15, 1970, Ser. No. 46,261
 Int. Cl. H01g 5/04 10 Claims

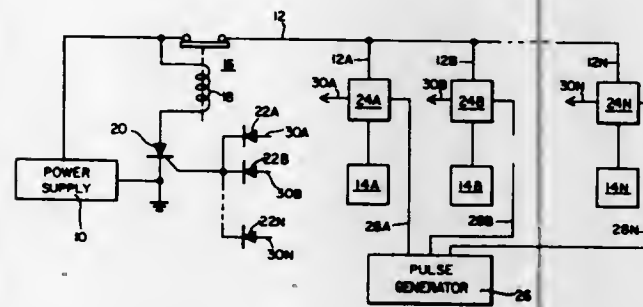
A vacuum or hermetically sealed variable capacitor in which a set of floating movable concentric cylindrical plates are insulated from but mechanically connected to the axially movable shaft and bellows assembly. The fixed plates are divided into two concentric sets of plates, one generally central and closest to the axial centerline of the device and the other radially spaced and generally adjacent to the housing. The insulating (preferably ceramic) central body section is opposite the area of axial movement of the movable plates in the substantially unmeshed position to obtain low minimum capacitance. Unique support and isolation of the fixed plates permits short connections to the two fixed plate sets, both from one end, to form the terminals of the unit in coaxial

form. Accordingly, the capacitor is particularly adapted for high-frequency operation, in that lead inductance is low. The



terminal of the capacitor assembly can be integral with a coaxial transmission line which itself may be a circuit element in a system.

3,611,076
OVERLOAD PROTECTION OF MULTIPLE DEVICES WITH A SINGLE CIRCUIT BREAKER
 James Fred Darrow, Henrietta, N.Y., assignor to General Electric Company
 Filed Jan. 27, 1970, Ser. No. 6,115
 Int. Cl. H02h 3/08
 U.S. Cl. 317-33 SC 1 Claim



A plurality of circuits or devices which may have different power requirements are protected against small overloads by a single circuit breaker. Overload detectors associated with each of the devices provide a circuit breaker opening signal when excessive current flows to its associated device.

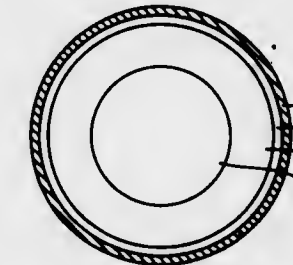
3,611,077
THIN FILM ROOM-TEMPERATURE ELECTRON EMITTER
 Sidney T. Smith, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy
 Filed Feb. 26, 1969, Ser. No. 802,527
 Int. Cl. H01j 1/14, 19/06
 U.S. Cl. 315-94 12 Claims



A vacuum enclosure containing an anode and a cathode, wherein a first embodiment of the cathode comprises a con-

tinuous thin film of semiconductive material deposited on an electrically insulating substrate and adapted to have a potential difference placed thereacross. A break in the film exists so as to produce a high impedance to the flow of current. A second embodiment of the cathode comprises a noncontiguous thin film of semiconductive and metallic material deposited at random in small droplets on a substrate and adapted to have a potential difference placed thereacross.

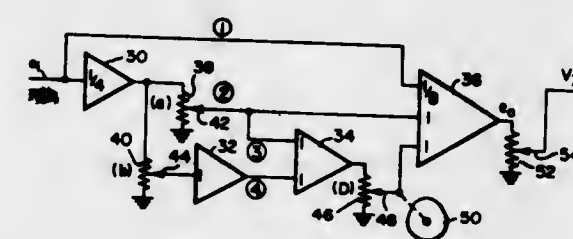
3,611,078
STABILIZED AC SUPERCONDUCTOR
 Ernst Massar, and Claus-Peter Parsch, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
 Filed Apr. 1, 1969, Ser. No. 812,039
 Claims priority, application Germany, Apr. 4, 1968, P 17 65 109.1
 Int. Cl. H01v 11/06; H02h 7/26
 U.S. Cl. 317-13 D 12 Claims



Described is an AC superconductor, comprised of a superconducting layer of type I or II intended for the load current, which is placed with a minimum contact resistance upon a metallic stabilizing layer which during overloading absorbs the current at least partially and temporarily. The stabilizing layer is comprised of a superconducting material of type III.

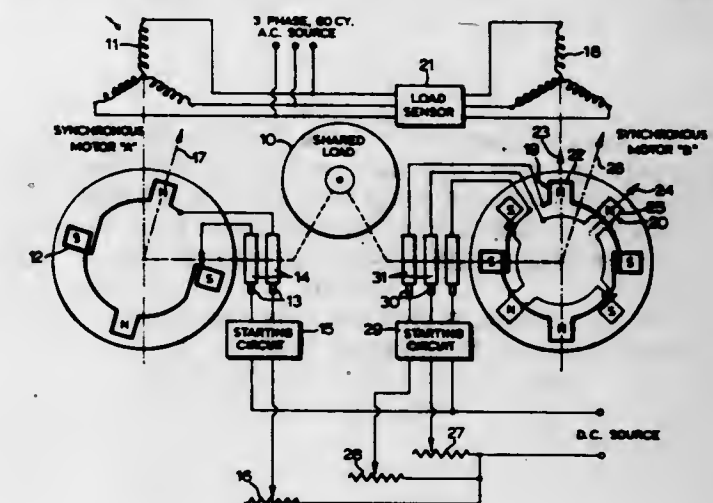
ERRATUM
 For Class 318-227 see:
 Patent No. 3,611,434

3,611,079
WINDING APPARATUS WITH PROGRAMMED TORQUE CONTROL
 Curtis L. Ivey, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed July 13, 1970, Ser. No. 54,258
 Int. Cl. H02p 5/46; B65h 59/00
 U.S. Cl. 318-7 8 Claims



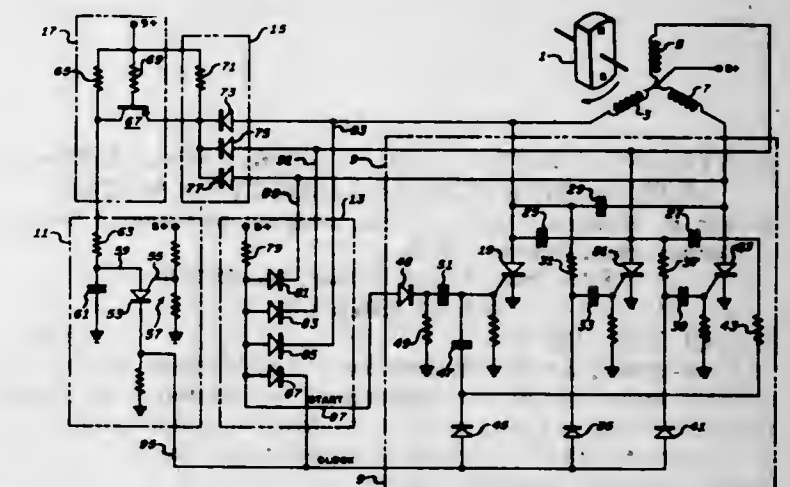
This disclosure relates to a programmed torque control system for winding a web of material supplied at constant tension, into a roll of material having predetermined tensile gradations throughout, by controlling the magnitudes of the torques developed by a pair of drum winders, in accordance with a selected program.

3,611,080
COMMON LOAD SHARING BY TWO OR MORE SYNCHRONOUS MOTORS
 Gordon William Herzog, and Peter Duncan Fox-Thomas, both of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada
 Filed Sept. 19, 1969, Ser. No. 859,328
 Int. Cl. H02p 5/50 7 Claims



A drive comprises at least two synchronous motors coupled for driving a load. Each of the motors has an armature winding for producing a rotating magnetic field when energized with alternating current, and a main field winding for producing a multipolar steady state magnetic field when energized with direct current. At least one of the motors also has an auxiliary field winding displaced with respect to the main winding. When energized with direct current the auxiliary winding produces a second multipolar steady state magnetic field having its polar axes displaced with respect to the polar axes of the main field. In one embodiment of the invention, axial slots centrally disposed within the pole piece heads serve to retain one side of two adjacent auxiliary field coils having a span of approximately one pole pitch while in a second embodiment of the invention, one side of the auxiliary field coils extend through a plurality of axial slots in the pole piece head with the other side of the coil being situated between the head and the main field coil disposed about the body of the pole piece. Load sharing is accomplished by varying the relative values of the direct current applied to said main and auxiliary windings of the one motor.

3,611,081
COUNTER EMF COMMUTATED SELF-STARTING BRUSHLESS D.C. MOTOR
 Tritus F. Watson, Charlottesville, Va., assignor to Sperry Rand Corporation
 Filed Apr. 6, 1970, Ser. No. 25,812
 Int. Cl. H02k 29/00 4 Claims



The stator windings of a brushless DC motor are energized through individual silicon controlled rectifiers arranged in a

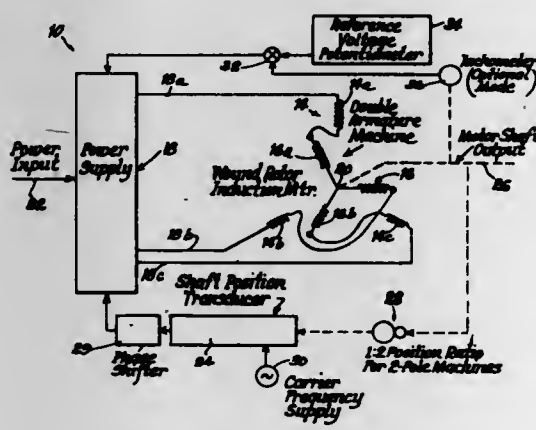
ring counter circuit which is triggered from a pulse source. When the motor is to be started, an AND gate forces the first pulse to trigger a specific silicon controlled rectifier. The AND gate then permits subsequent pulses to be steered to various silicon controlled rectifiers in the desired sequence. The pulse source is synchronized through an OR gate coupled to receive signals from each stator winding. When a given silicon controlled rectifier is turned off, the corresponding stator winding is deenergized. The motion of the rotor, however, induces a counter EMF in the deenergized winding. This counter EMF is applied through the OR gate to synchronize the pulse source.

3,611,082
VARIABLE SPEED ELECTRIC MOTOR SYSTEM
HAVING STATOR AND ROTOR WINDINGS ENERGIZED
IN OPPOSITE PHASE SEQUENCE WITH ALTERNATING
CURRENT CORRESPONDING IN ANGULAR VELOCITY
TO ONE-HALF THE ANGULAR VELOCITY OF THE
ROTOR

Norbert L. Schmitz, Middleton, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
 Filed Dec. 15, 1969, Ser. No. 884,934
 Int. Cl. H02p 7/46

U.S. Cl. 318-187

15 Claims



The motor system utilizes a conventional wound rotor induction motor but achieves operating characteristics similar to those of a series field direct current motor. Both the stator coils and the rotor coils of the motor are supplied with alternating current power from a variable frequency power supply. However, the phase sequence of the rotor coils is reversed with respect to that of the stator coils. The voltage phase and the frequency of the power delivered to the motor are determined by a shaft position transducer coupled to the motor shaft. The adjustment of the transducer determines the torque angle between the alternating voltage phase and the position of the shaft. This torque angle is maintained constant at all speeds. The speed of the motor can be varied by varying the voltage of the alternating current supplied to the motor. A tachometer governor arrangement can be used to hold the speed constant. The shaft position transducer may utilize rotary variable capacitors supplied with a carrier signal, or magnetodiodes positioned adjacent to a rotary magnet.

3,611,083
REVERSING CONTROL CIRCUIT FOR A SINGLE-PHASE
ALTERNATING CURRENT INDUCTION MOTOR

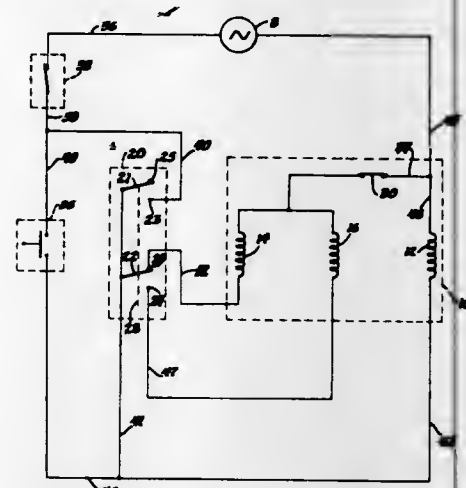
Edwin H. Haksted, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
 Filed Nov. 12, 1970, Ser. No. 88,830
 Int. Cl. H02p 1/42

U.S. Cl. 318-207 A

1 Claim

A reversing control circuit for a single-phase alternating current induction motor operatively connected to a driven member which is operated thereby from an initial position to an extreme position at which it encounters a restraint of sufficient force to stall the motor and returned to the initial position. Upon the closing of a momentary contact switch, supply potential is applied therethrough across the main motor winding and also across the motor first direction phase

winding through one movable contact and the corresponding alternate condition stationary contact of a double pole-double throw switch, maintained in the alternate condition of operation by the driven member in the initial position, and a series centrifugal switch. The energized motor rotates in the first direction to operate the driven member toward the extreme position and away from the double pole-double throw switch which returns to the normal condition of operation to connect the motor main winding across the supply potential through a movable contact and the corresponding normal condition stationary contact thereof and the centrifugal



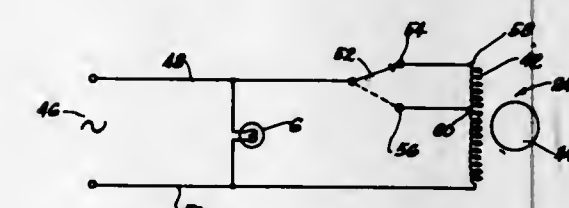
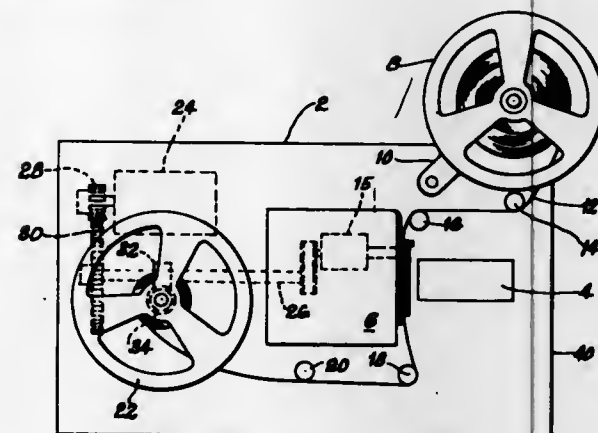
switch opens to disconnect the motor first direction phase winding. When the driven member has been operated to the extreme position at which it encounters a restraint of sufficient force to stall the motor, the centrifugal switch closes to apply supply potential across the motor second direction phase winding through a movable contact and the corresponding normal condition stationary contact of the double pole-double throw switch to reverse the direction of rotation of the motor to return the driven member to the initial position at which the double pole-double throw switch is operated thereby to the alternate condition in which all motor circuits are open.

3,611,084
SELECTIVE CYCLE MOTOR WINDING FOR MOVIE
PROJECTOR

George C. Kent, Lake Oswego, Oreg., assignor to GAF Corporation, New York, N.Y.
 Filed Dec. 29, 1969, Ser. No. 888,736
 Int. Cl. H02p 5/28

U.S. Cl. 318-225 R

2 Claims



This application discloses a motion picture projector driven by an alternating current motor. The motor by

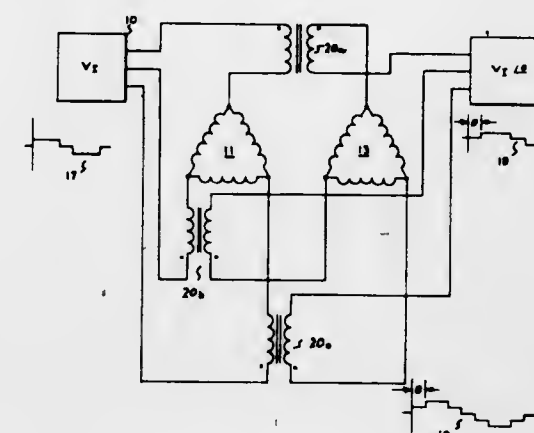
manipulation of a switch altering the effective number of turns in the field winding can operate at different frequencies without undesirable variations in speed, torque and temperature.

3,611,085
PREVENTING TORQUE PULSATION IN INVERTER-FED
POLYPHASE

George M. Rosenberry, Jr., Elmora, N.Y., assignor to General Electric Company
 Filed Nov. 5, 1970, Ser. No. 87,118
 Int. Cl. H02p 5/40

U.S. Cl. 318-225 R

7 Claims



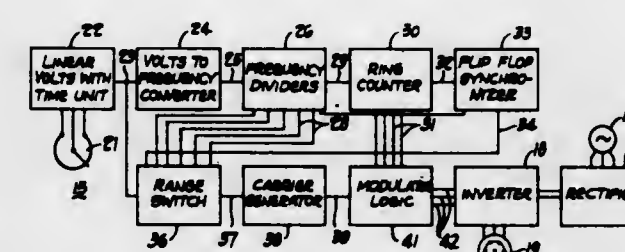
Separate sets of armature windings in a polyphase motor are individually supplied with square-wave alternating current from separate inverters. The inverter outputs are phase shifted with respect to one another and paralleling transformers are provided to average the line-to-line waveforms; or, in another embodiment, the windings are angularly displaced within the motor by an amount corresponding to the phase shift between the inverter outputs. The summing of the phase-shifted waveforms effects a cancellation of harmonic components which produce undesirable torque pulsations.

3,611,086
INTEGRAL CARRIER RATIO INVERTER

Boris Mokrytzki, Highland Heights, and Dennis L. Szymanski, Willoughby, both of Ohio, assignors to Reliance Electric Company
 Filed Jan. 14, 1970, Ser. No. 2,780
 Int. Cl. H02p 5/40; H02m 7/52, 1/08

U.S. Cl. 318-227

29 Claims



A pulse width modulated inverter is described wherein an integral ratio carrier is used, the carrier frequency dictating the on and off periods of thyristors in the inverter system and the modulation frequency on the carrier is the fundamental output frequency of the inverter determining the speed at which a motor connected to the inverter will run. A control signal having a variable maximum amplitude establishes a variable and high clock frequency which varies directly with the control signal. A frequency divider divides this clock frequency into a plurality of output signals each being a predetermined multiple or ratio of the modulation frequency. A carrier range switch means is a selecting means connected to different outputs of the frequency divider to be responsive

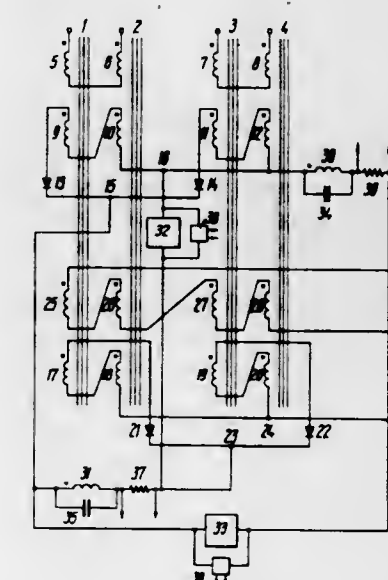
to different frequency ratios and to pass a selected signal to carrier generator means. The carrier generator output is applied to an integrator to develop an inverter thyristor gating signal. This controls the conduction periods of the thyristors to establish the modulation frequency output of the inverter. Synchronizing means is provided to establish changing from one frequency ratio to another at a time when the output of the carrier generator integrator is at zero and at a time when the frequency divider outputs are zero, thereby to minimize current surges in the output of the inverter.

3,611,087
FREQUENCY-CONTROLLED AC DRIVE

Isaak Maximovich Shtein, 9, Parkovaya ulitsa, 47, korpus 1, kv. 18, Moscow, U.S.S.R.
 Continuation of application Ser. No. 656,897, July 28, 1967, now abandoned. This application May 12, 1970, Ser. No. 37,413
 Int. Cl. H02p 7/40

U.S. Cl. 318-229

8 Claims



As is well known, a six-phase thyristor circuit of a so-called cycloconverter provided with 36 thyristors allows an output frequency at the order of 15 to 20 c.p.s. to be produced with the network frequency being equal to 60 c.p.s. A frequency-controlled AC drive of the invention is based on the use of modulation apparatus of nonreversible magnetic amplifiers with an output of second harmonics and diodes, which simultaneously perform functions of demodulators and internal feedback tubes. Thyristors are employed for varying the direction of current in the windings of the motors. For a three-phase motor provided with six-phase magnetic amplifiers, there are required in total 6 thyristors and 36 non-controlled diodes. Thus an output frequency is obtained ranging from 0 to 90 percent of the network frequency. Hence, at a frequency of 60 c.p.s. it is possible to achieve a gradual variation in frequency from 0 to 50-55 c.p.s. Efficiency of the modulators based on double magnetic amplifiers attains even with low powers a value of the order of 80 percent. Even with low frequencies and voltages, the output voltage will approximate a sinusoidal one. The present invention may be used at increased network frequencies of the order of 400 to 500 c.p.s. for driving induction and synchronous alternating current motors of an increased rotation speed.

3,611,088
MULTIPLE SPEED INVERSE PARALLEL CONNECTED
SILICON CONTROLLED RECTIFIER MOTOR
CONTACTOR STRUCTURE

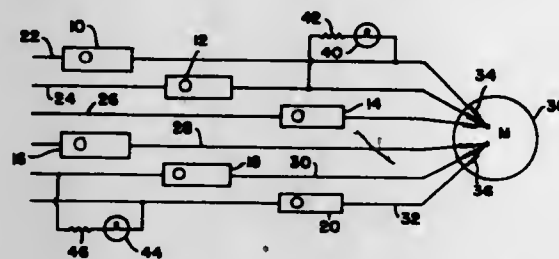
Warren R. Hill, Dearborn, and John R. Madsen, Mount Clemens, both of Mich., assignors to The Detroit Edison Company, Detroit, Mich.
 Filed Nov. 18, 1969, Ser. No. 877,622
 Int. Cl. H02p 5/40

U.S. Cl. 318-227

6 Claims

Solid-state motor contactor structure including a pair of inverse parallel connected silicon controlled rectifiers having

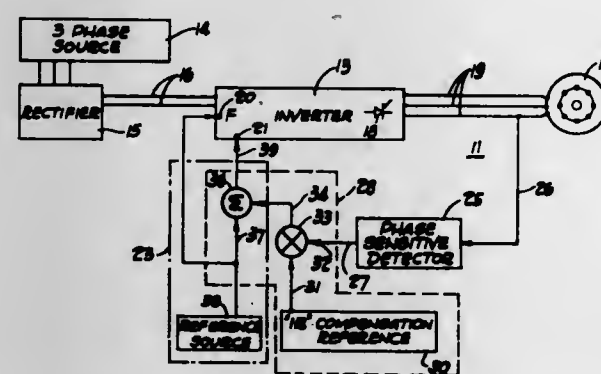
gate electrodes shorted together through relay contacts and a thyrector voltage surge protector connected in parallel with the silicon controlled rectifiers. The solid-state contactor structure is adapted to be inserted in series in each phase of a multiple phase electrical motor in each winding thereof.



Separate control structure is provided for actuating the solid-state contactor structure for alternatively energizing the contactor structure in either a slow speed motor winding or a high-speed motor winding and positively preventing energizing of the motor contactor structure in the other motor winding.

3,611,089
PHASE SENSITIVE MOTOR CIRCUIT UTILIZING REAL CURRENT COMPONENT
Boris Mokrytzki, Highland Heights, and Peter W. Hammond, Chagrin Falls, both of Ohio, assignors to Reliance Electric Company

Filed Oct. 6, 1969, Ser. No. 863,903
Int. Cl. H02p 5/40
U.S. Cl. 318-227 15 Claims

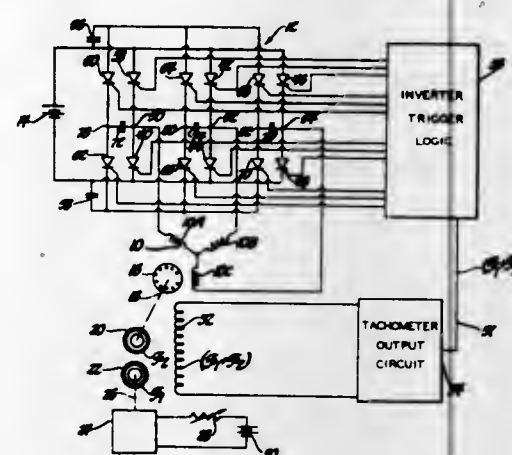


An induction motor energization circuit is disclosed with energization from a variable frequency device such as an inverter. The load current to the induction motor has a considerable lagging power factor and a phase sensitive detector detects only the in-phase or directly out-of-phase component of this load current and applies it as a control to regulate the variable frequency device. At high frequency, the constant volts per cycle operation of the motor is satisfactory but at low speeds the usual energization system of adjusted constant volts per cycle results in overexcitation of the motor causing considerable losses and overheating. By the present invention the use of only the real component of the motor load current as a feedback signal results in considerably lower losses in the motor. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,611,090
MOTOR CONTROL SYSTEM UTILIZING A SHUTTER WHEEL TACHOMETER
Richard W. Johnston, Troy; Gary L. Winebrener, Fraser, Mich., and Roland O. Davis, Goleta, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1970, Ser. No. 60,398
Int. Cl. H02p 5/34, 5/00
U.S. Cl. 318-231 4 Claims
An electric tachometer for providing an indication of the combined rotational speed of two rotatable members. In this

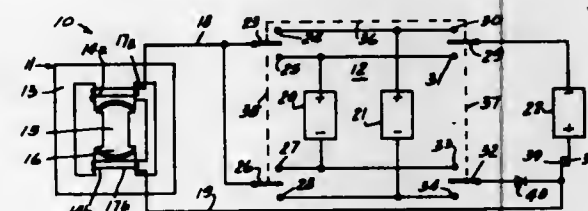
tachometer, the rotatable members are connected respectively with two wheels or discs each of which has conductive teeth on its perimeter. These wheels are disposed in a confronting relationship interior to a spiral wound inductive coil. As the wheels rotate and the teeth alternately are in alignment and misalignment, the instantaneous inductance of the



coil is caused to vary. Output terminals connected with the ends of the coil provide a variable inductance whose frequency of variation is correlated with the combined rotational speed of the two rotatable members. This inductance variation is detected by impressing an RF signal across the coil and detecting the resultant amplitude modulation of the RF signal.

3,611,091
DC MOTOR WITH PLURAL BATTERY SUPPLY
Salvatore Genovese, 3744 S. Gunderson, Berwyn, Ill.

Filed Aug. 20, 1969, Ser. No. 851,544
Int. Cl. H02p 7/20
U.S. Cl. 318-248 6 Claims

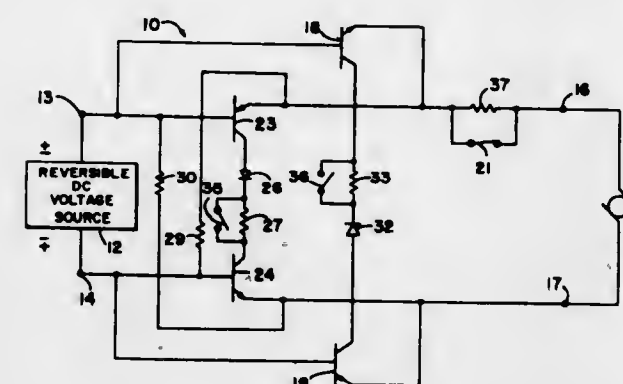


A direct current electric motor system employs a controlled energizing circuit having a plurality of sources of direct current, one of which is connected with alternate ones of the other sources to energize the stator winding while the other of the alternately connected sources is simultaneously placed in a charging circuit. The motor comprises a plurality of stators and a corresponding plurality of rotors with the rotors mounted on the common shaft and angularly disposed relative one another so that there is a time overlap in their periods of influence by their corresponding stator field windings.

3,611,092
ELECTRONICALLY SWITCHED DYNAMIC BRAKE FOR A DC MOTOR
Alan R. Willmunder, Palo Alto, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

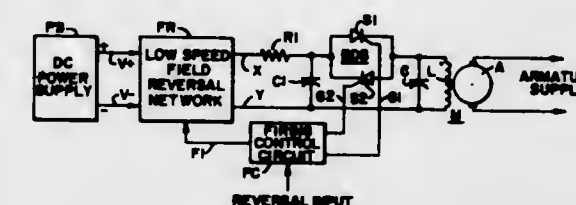
Filed Feb. 17, 1970, Ser. No. 11,995
Int. Cl. H02p 5/00
U.S. Cl. 318-258 7 Claims
A switching circuit comprising transistors arranged to conduct driving current of either polarity to a DC motor and

further arranged to be biased by the back e.m.f. of the motor, determine the energization of the three brushes of the DC when the driving voltage falls below the back e.m.f., to motor. A cam-actuated switch provides a park function to



3,611,093
HIGH-SPEED CURRENT REVERSAL SYSTEM
Alec H. B. Walker, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

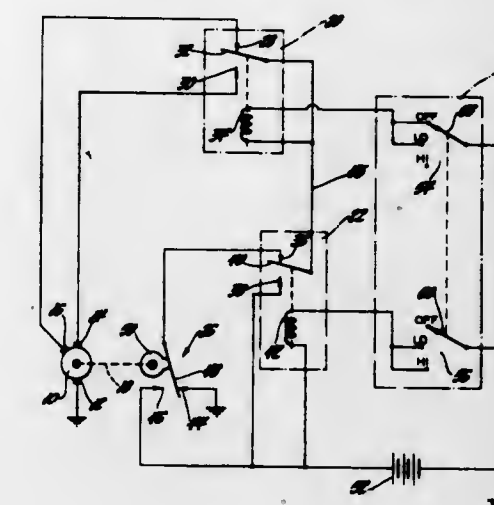
Filed Mar. 25, 1970, Ser. No. 22,581
Int. Cl. H02p 5/00
U.S. Cl. 318-258 8 Claims



A high-speed current reversal system and method wherein the current through an impedance element including inductance, such as the field winding of a DC motor, may be rapidly reversed as compared to the normal reversal time required by reversing the polarities of the power supply, the rapid reversal being effected by open circuiting the impedance element in the direction of current flow, establishing a resonant oscillation at a predetermined resonant frequency, for example, so that the half period at the resonant frequency is equal to the desired rapid reversal time, translating the current in the reverse direction back to the source when it reaches a predetermined magnitude, reversing the polarity of the power supply to sustain the reverse direction of current flow and reclosing the open circuit prior to the time of the next current reversal.

3,611,094
DC MOTOR SWITCHING ARRANGEMENT
Leo E. Biehoff, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

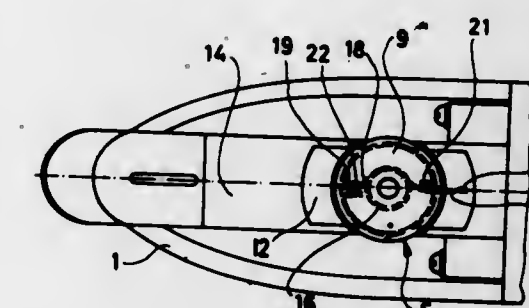
Filed July 17, 1970, Ser. No. 55,762
Int. Cl. H02p 7/08
U.S. Cl. 318-305 1 Claim
A switching arrangement for controlling the operation of a two-speed three-brush DC motor in a motor vehicle windshield wiper system. This switching arrangement utilizes two electrical relays in conjunction with a selector switch to



terminate motor operation and dynamically brake the motor at the end of an operating interval.

3,611,095
SPEED CONTROL AND OVERLOAD PROTECTION DEVICE FOR AN ELECTRIC POWER TOOL
Albrecht Schnitzler, Murlingen, Wurtemberg, Germany, assignor to Metabowerke KG, Closs, Rauch & Schnitzler, Nurlingen, Germany

Filed May 28, 1969, Ser. No. 828,522
Claims priority, application Germany, May 31, 1968, P 17 63 455.8
Int. Cl. H01h 21/22; H02p 7/00
U.S. Cl. 318-305 6 Claims

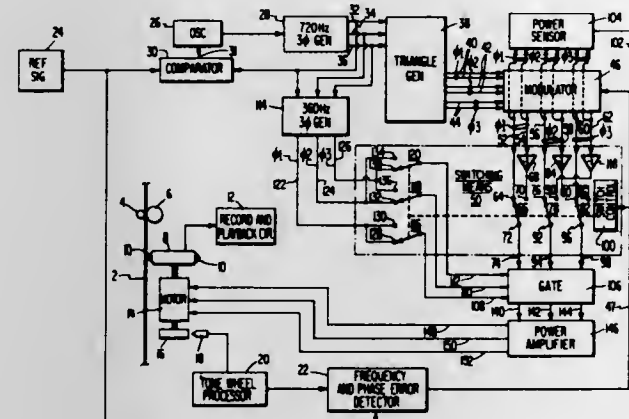


A device for protection against overload and burnout in electric power tools having electronic regulating means. A spring-biased speed selector is rotatable from an intermediate position which defines a minimum operating speed in either a clockwise or counterclockwise direction. The speed selector is rotated in one direction from the intermediate position to set the operating speed and is opposed by the bias of the spring during rotation in an opposite direction to select a speed below the minimum operating speed which might cause overload or burnout of the tool.

3,611,096
SERVO SYSTEM FOR RECORDER-REPRODUCER APPARATUS UTILIZING FREQUENCY AND PHASE SYNCHRONIZING
Keiichi Sadoshige, Berlin, N.J., and Masaru Horii, Kyoto-ku, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 857,506
Claims priority, application Great Britain, Mar. 21, 1969, 14946/69
Int. Cl. H02p 5/32, 5/34
U.S. Cl. 318-314 9 Claims
A servosystem for synchronizing the rotary operation of a motor to a reference signal. The system provides continuous positive controlled drive for both acceleration and deceleration to effect performance corrections in minimal time. Means are provided for generating a group of polyphase

signals phase correlated to a command reference input. The polyphase signals are pulse width controlled and switched in

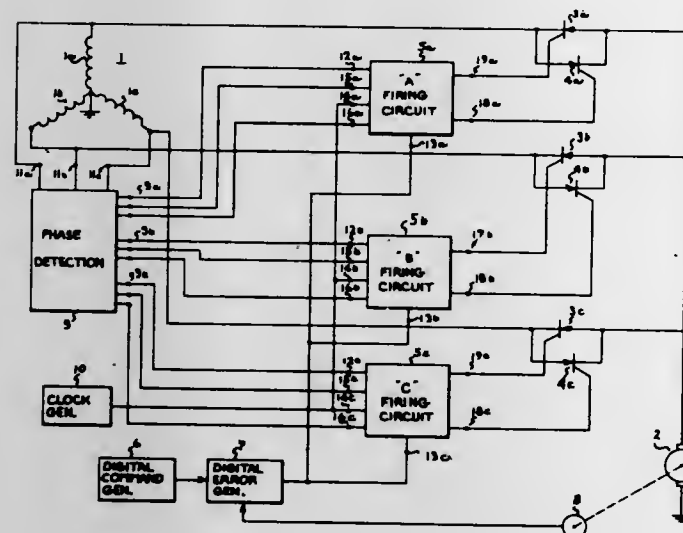


accordance with an error signal, to provide continuous magnitude and sense drive control of the motor.

3,611,097
DIGITAL CONTROL SYSTEM FOR AC TO DC POWER CONVERSION APPARATUS
John A. Joslyn, Dalton, Mass., assignor to General Electric Company

Filed Feb. 5, 1970, Ser. No. 8,927
Int. Cl. H02p 5/16; H02m 7/52
U.S. Cl. 318-318

12 Claims



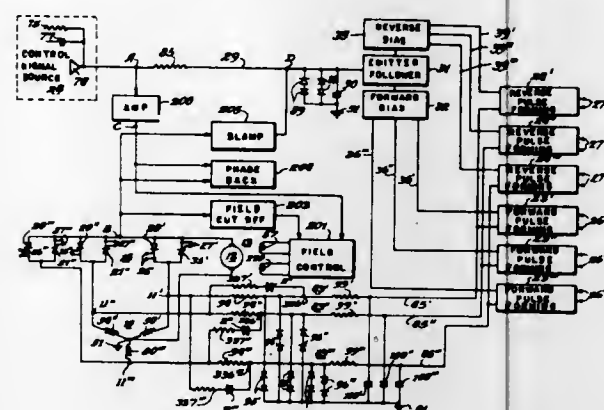
A digital control system for controlling the conversion of electric power from AC power to DC power for delivery to a load. A digital command signal is compared with a digital feedback signal indicative of motor speed so as to generate a digital error signal. A phase detection circuit examines the three phases of the AC source so as to synchronously load the digital error signal into the digital firing circuit associated with each phase at the appropriate time. The digital firing circuits include a plurality of reversible counters which count up during one portion of an excitation cycle and count down for another portion of an excitation cycle. When counting up, if a reversible counter reaches a preset number, a firing pulse is generated for a positively poled SCR. On the other hand, if the reversible counter is counting down, when the counter reaches a preset number, a firing pulse is generated for a negatively poled SCR.

3,611,098
CONTROL CIRCUIT FOR DC MOTOR AND GATABLE CONDUCTION DEVICES
Donald G. Fair, Belvidere, and Bertil T. Anderson, Rockford, both of Ill., assignors to Sundstrand Corporation
Division of Ser. No. 586,426, Oct. 13, 1966, and a continuation-in-part of 586,426, Oct. 13, 1966, which is a continuation-in-part of application Ser. No. 478,701, July 1, 1969, now Patent No. 3,453,523.

Filed Oct. 17, 1969, Ser. No. 867,347
Int. Cl. H02p 7/06

U.S. Cl. 318-338

56 Claims



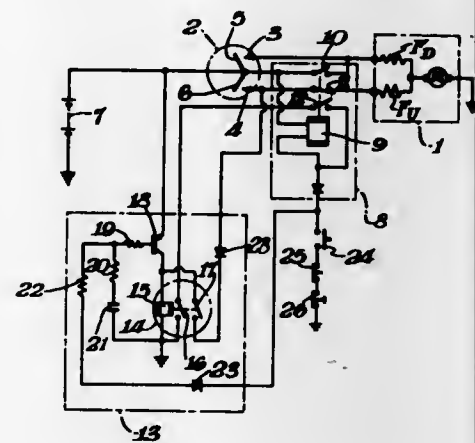
A control circuit for energizing the armature and field of a DC motor from a three-phase AC source. Each phase of AC is coupled to a pair of reverse poled SCR's which pass up to 120° of the AC waveform, in either polarity, to the motor armature. For high motor speeds, the armature voltage is held constant while a field control circuit varies the magnitude of DC current to the motor field winding. A clamp safety circuit prevents the SCR's from being fired to brake the motor when back e.m.f. exceeds a predetermined level. A field cutoff safety circuit dissipates excessive back e.m.f. by shunting the motor field, without affecting the speed of rotation of the armature. Other safety circuits control the deceleration of the motor, insure that the SCR's for the motor armature turn off after energization, and cancel magnetic interaction between the armature and field.

3,611,099
POWERED WINDOW REGULATOR
Toshinobu Kuroyama, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi Prefecture, Japan

Filed Dec. 8, 1969, Ser. No. 882,923
Claims priority, application Japan, Dec. 7, 1968, Dec. 10, 1968, 43/106889; 43/107711
Int. Cl. H02h 7/085

U.S. Cl. 318-476

2 Claims



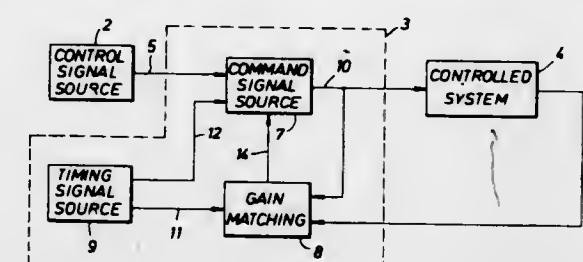
Powered window regulator comprises motor assembly having window raising and window-lowering circuits for raising and lowering window glass. Start switch for motor has contact for connecting window-raising circuit with motor and second contact for connecting window-lowering circuit with motor. Overload detection switch associated with motor

closes when load on motor exceeds predetermined normal value. Motor field control relay is activated when overload detection switch is closed to thereby break window-raising circuit and close window-lowering circuit. Delay relay circuit maintains motor field control relay activated predetermined time after overload detection switch opens whereby window glass continues to lower. Safety circuit cancel switch enables raising of window glass regardless of load on motor.

3,611,100
SERVOCONTROL METHODS AND APPARATUS FOR COMPLEX SYSTEMS
Albert N. McQuown, Jr., 309 McConnell Drive, Austin, Tex.
Filed May 20, 1970, Ser. No. 38,836
Int. Cl. G05b 1/101

U.S. Cl. 318-561

21 Claims

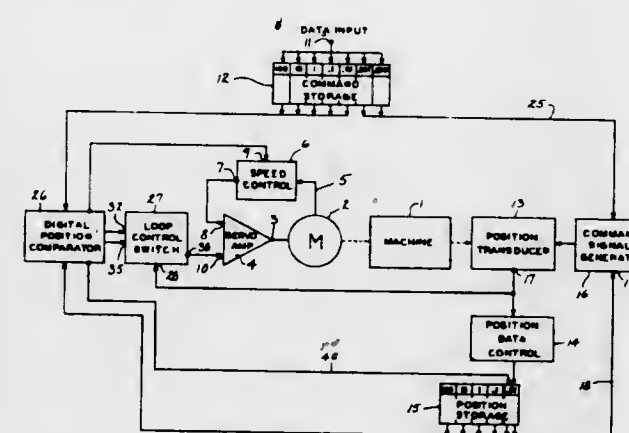


Improved servocontrol methods and apparatus are provided for adjusting one or more operating parameters in a regulated system having a gain-dependent characteristic and a time-dependent characteristic. In one form of the invention, means is provided for regulating each selected parameter by generating an initial command signal in response to any selected control signal, but which is modulated according to a preselected gain-dependent characteristic independent of the gain-dependent characteristic of the regulated system. Thereafter, and after a delay selected to compensate for any time-dependent characteristic of the regulated system, a gain-matching feedback adjustment is made to provide a second command signal having a gain-dependent characteristic corresponding to the gain-dependent characteristic of the regulated system.

3,611,101
MULTILOOP POSITIONING CONTROL SYSTEM
William Kiffmeyer, Bayside; Odo J. Struger, Milwaukee; Joseph D. Radtke, Milwaukee, and Harold Windler, Hales Corners, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 16, 1970, Ser. No. 19,942
Int. Cl. G05b 1/118
U.S. Cl. 318-594

9 Claims



A servoamplifier forming part of a multiple feedback control system drives an electric motor to move a machine to a programmed final position in response to an error signal. A position transducer connected to sense the movement of the machine generates an analog error signal determined by the distance between the machine position and the transducer reference point. A position data control senses the level of the analog error signal and enters a digit into a position storage when the machine moves a unit distance. The posi-

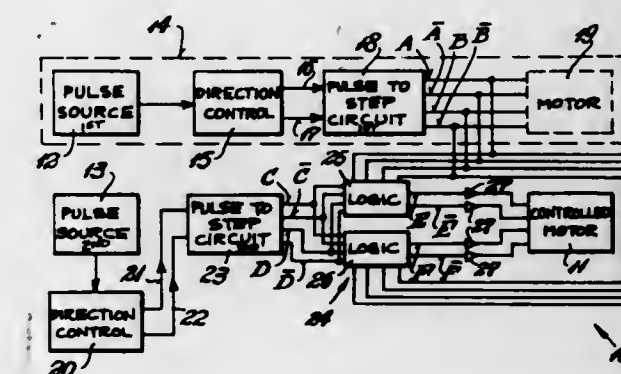
tion storage compiles these entries and produces a digital absolute feedback signal that indicates the present position of the machine. A command signal generator, in response to each such entry into the position storage, electrically shifts the transducer reference point a unit distance in the-direction of machine travel. A digital position comparator generates a digital error signal to a loop control switch when the distance between the programmed final position is greater than two units. When the digital error signal is at a predetermined level, the loop control switch connects the analog error signal coming from the position transducer to the servoamplifier input to drive the machine to its final position.

3,611,102
PLURAL COMMAND SOURCES FOR CONTROL OF A STEPPING MOTOR
Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed July 1, 1970, Ser. No. 51,578
Int. Cl. G05b 19/40

U.S. Cl. 318-696

8 Claims



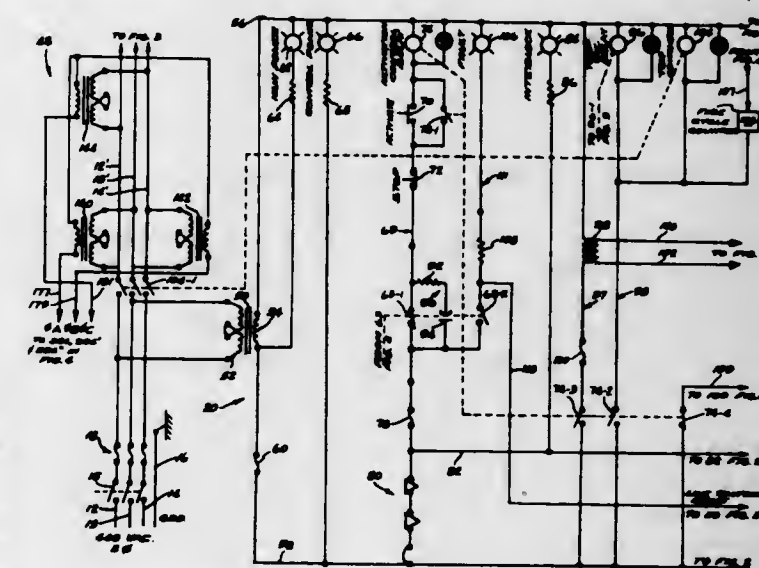
A system for controlling incremental movement of a stepping motor from at least two command sources with each command source being capable of simultaneously or individually controlling the motor and with the motor moving the algebraic sum of the movement commanded by both sources by having each command source produced the same repeatable series of changes of energizations required to progressively increment the motor and using a logic circuit for combining the changes into an identical series of changes of energizations that are applied to the motor.

3,611,103
CAPACITOR CHARGING AND DISCHARGING CONTROL SYSTEM
Richard A. Ayers, Cajon, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

Filed July 29, 1968, Ser. No. 748,324
Int. Cl. H03k 6/04

U.S. Cl. 320-1

34 Claims



A control system is disclosed for controlling the production of high-magnitude current pulses to a load, such as a

magnetic pulse-forming work coil, at high-pulse rates by selectively charging a capacitor bank and then discharging the same through the load, the operation of the system taking place in a predetermined manner. A logic system automatically deactivates the control system in the event that the operation is other than in this predetermined manner, and antiringing circuitry eliminates ringing effects in the load circuit. A low-inductance, high-current damping resistor safely dissipates certain undesirable high-surge currents in the system to provide long component life and high-speed operation.

3,611,104

CONTROLLED RECTIFIER TRIGGERING SYSTEM

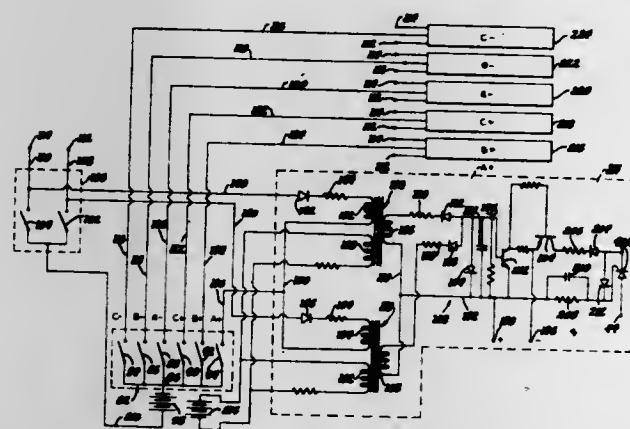
Sallal T. Jalal, Birmingham, and George J. Spix, Clawson, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,143

Int. Cl. H02m 5/40

U.S. Cl. 321-2

10 Claims



A triggering system for a controlled rectifier converter such as a nonsynchronized cycloconverter utilized to supply a variable frequency alternating voltage to an induction motor from a source of alternating current. In this system the converter is comprised of 36 controlled rectifiers connected in six three-phase full-wave bridge circuits. The direct current output terminals of the respective bridge circuits are connected respectively with the phase windings of a polyphase induction motor. The triggering system for gating the controlled rectifiers includes a plurality of transformers having secondary windings coupled to the gate-cathode circuits of the controlled rectifiers. The transformers have control and bias primary windings. The control windings are connected with a plurality of switches controlled to provide a three-phase sequence and also by a chopper which provides a pulsating input to pairs of primary windings. When the chopper deenergizes a respective primary winding the bias winding serves to reset the core of the transformer.

3,611,105

STABILIZED OUTPUT DIRECT-CURRENT VOLTAGE CONVERTER

Auguste A. Sautel, 13 Rue Anatole, Bonneuil-sur-Marne, and Eugene M. Tinture, 34 Avenue Victor Cresson, Issy-les-Moulineaux, both of France

Filed Aug. 24, 1970, Ser. No. 66,184

Claims priority, application France, Oct. 20, 1969, P.V. 69 35909

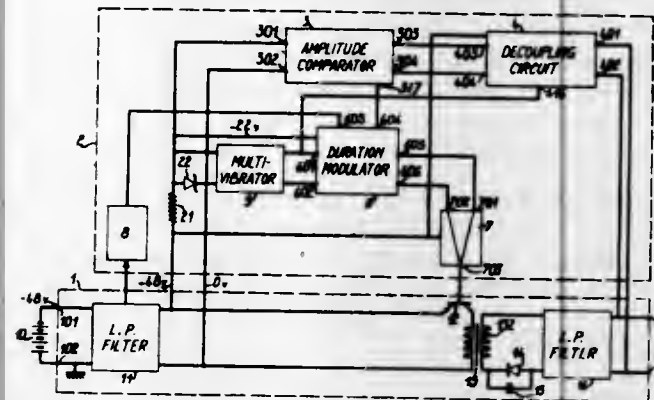
Int. Cl. H02m 3/32

U.S. Cl. 321-2

4 Claims

A direct-current voltage converter for converting an unstable voltage into a stable voltage at a floating potential with respect to ground. It comprises means for periodically chopping a current delivered by the source of said unstable voltage, a transformer fed from the chopped current, a rectifier connected to the output circuit of the transformer and delivering a rectified voltage, a circuit including a Zener

diode and supplying a reference voltage, means for comparing said reference voltage with said rectifier voltage and



3,611,106

FAST RISE TWO-TRANSISTOR CONTROLLED RECTIFIER TRIGGER CIRCUITRY WITH CONTROL CIRCUIT ISOLATION

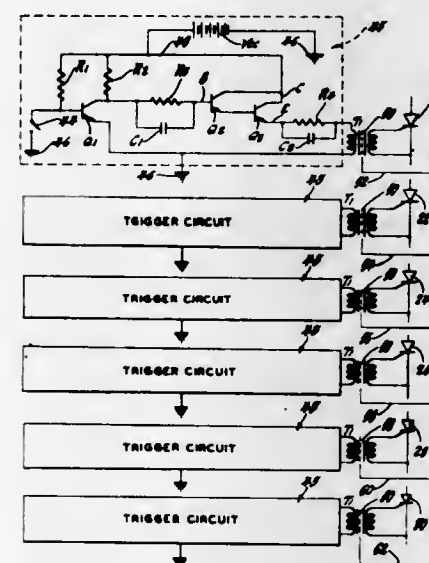
Robert J. Mooney, Southfield, and Richard W. Johnston, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1970, Ser. No. 16,646

Int. Cl. H02m 7/52

U.S. Cl. 321-5

3 Claims



A trigger system for gating controlled rectifiers to a conductive state. In this trigger system, a plurality of controlled rectifiers are controlled by trigger circuits each of which employs two transistor-switching means in conjunction with a source of control voltage. In each of the trigger circuits, a first transistor-switching means is biased to its conductive mode by a DC source until, in response to a control signal from the control source, it switches to its nonconductive mode. This mode change by the first switching means causes the second transistor-switching means to become conductive which results in a gate signal being applied by means of a pulse transformer to a controlled rectifier. Each of the pulse transformers employed to couple the controlled rectifiers with their respective trigger circuits is provided with an electrostatic shield interposed between its primary winding and its secondary winding. These electrostatic shields are conductively interconnected to provide isolation between the controlled rectifier circuitry and the trigger circuitry.

3,611,107

CONVERTER BUS STRUCTURE AND STUD-MOUNTED DIODES AND FUSES THEREFOR WITH IDENTICAL BUSES HAVING THREADED OPENINGS

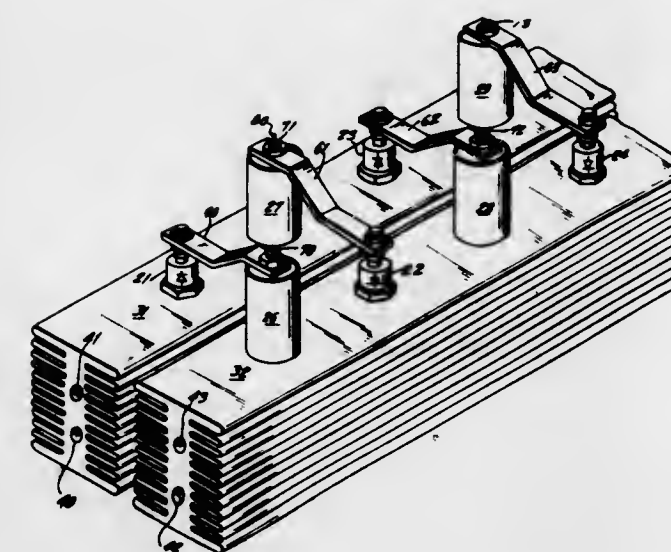
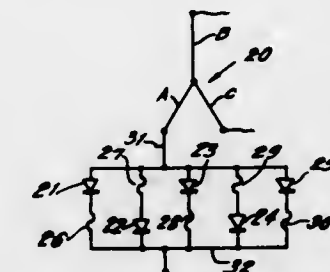
James R. Ruckel, King of Prussia, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Oct. 7, 1969, Ser. No. 864,381

Int. Cl. H02m 5/42

U.S. Cl. 321-8

4 Claims



Adjacent, elongated buses of a rectifier are connected to one another by parallel circuits, each including a series-connected fuse and diode. Each of the buses is provided with spaced, tapped openings and each of the diodes and fuses are connected to their respective bus by a threaded connector extending from the diode and fuse. The fuse and diode of each parallel-connected group is threaded directly into a respective one of the two bus bars so that each fuse and diode is connected to a heavy heat sink.

3,611,108

SYSTEM FOR DETECTING AND GENERATING AN OUTPUT INDICATIVE OF A SIMULTANEOUS CONDITION OF THE SERIALY CONNECTED THYRISTORS

Tadakuma Susumu, Yokohama; Tanaka Shigeru, Kamakura; Kunlyoshi Masateru, Yokohama, and Inagaki Junpei, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 10, 1970, Ser. No. 88,293

Claims priority, application Japan, Nov. 10, 1969, June 8, 1970, 44/89634; 45/48911

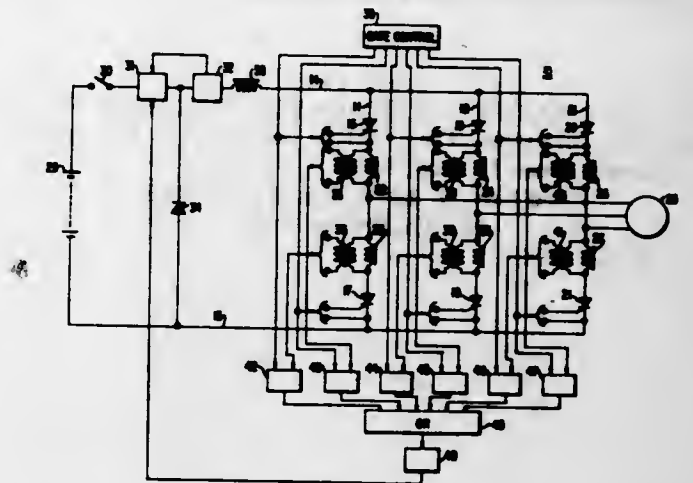
Int. Cl. H02m 1/18

U.S. Cl. 321-11

10 Claims

An inverter device is disclosed which has at least two thyristors which are serially connected in one arm of a bridge across a DC voltage supply. A device is provided for detecting and generating an output indicative of a simultaneous conduction of the serially connected thyristors. The output from the detecting device is added to an input control device for the inverter so as to interrupt the DC input applied thereto for a desired time interval. The input control device

for the inverter also functions to automatically restart the operation of the inverter by again connecting the DC voltage



supply to the input of the inverter at the end of the aforesaid time interval.

3,611,109

FREQUENCY CONVERTOR

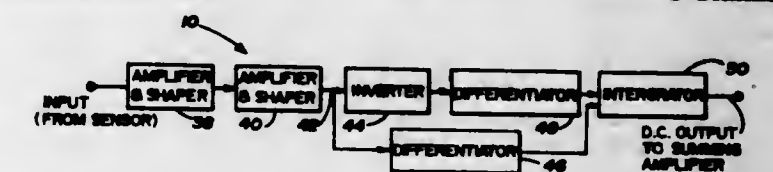
James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 30, 1969, Ser. No. 837,433

Int. Cl. H02m 5/00

U.S. Cl. 321-65

8 Claims



A vehicle skid control braking system of the type that includes a circuit for generating a signal varying in accordance with braking conditions, such as vehicle speed, wheel speed and road surface conditions. The system includes a frequency converter that has a pulse-generating circuit responsive to the variable signal for generating time-displaced pulses related thereto, and a signal-producing circuit responsive to the time-displaced pulses for producing a DC signal having a magnitude related to and varying with the frequency of the variable signal.

3,611,110

VARACTOR MULTIPLIER COMPRISING PARALLEL SELF-BIASING RESISTOR AND NONLINEAR RESISTANCE CIRCUIT

Colin Douglas Corbey, London, and Robert Davies, Copthorne, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

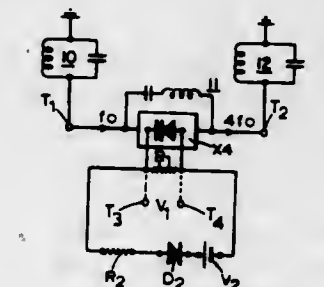
Filed Jan. 9, 1970, Ser. No. 1,626

Claims priority, application Great Britain, Jan. 10, 1969, 1564/69

Int. Cl. H02m 5/00; H03H 7/00

U.S. Cl. 321-69 NL

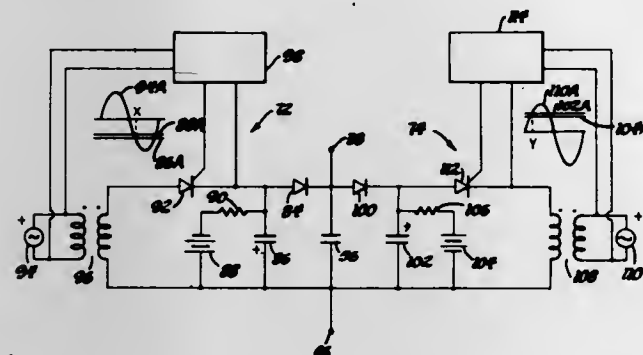
4 Claims



A varactor frequency multiplier has a self-biasing resistor and a nonlinear resistance circuit to control the output

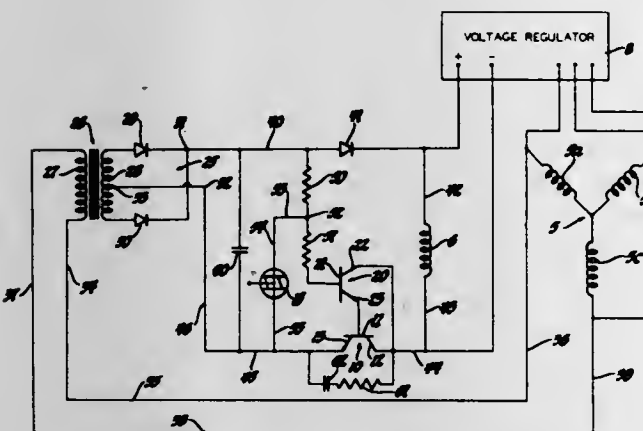
power. The nonlinear circuit features a series circuit of a resistor, diode, and source of reverse bias. By properly selecting the values of the resistors a constant, or other desired output power function can be obtained.

3,611,111
INVERTER COMMUTATION VOLTAGE LIMITER
Richard W. Johnston, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 9, 1970, Ser. No. 87,983
Int. Cl. H02m 2/48
U.S. Cl. 321-45 C 7 Claims



A voltage-limiting circuit to limit the voltage accumulated on a capacitor. The capacitor is connected serially with a controllable switching device such as a controlled rectifier and an alternating-current source, and energy is transferred from the capacitor through the controlled rectifier to the alternating current source to limit the voltage across the capacitor by gating the controlled rectifier at predetermined times. This voltage limitation system can be used to limit the voltages on commutating capacitors in inverter arrangements which include controlled rectifiers and in this application is useful to ensure against the application of excessive voltages to inverter controlled rectifiers.

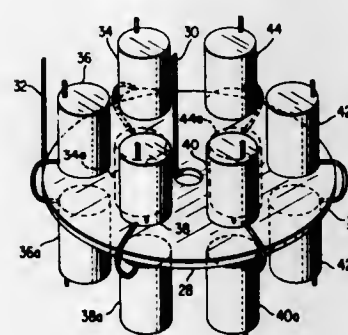
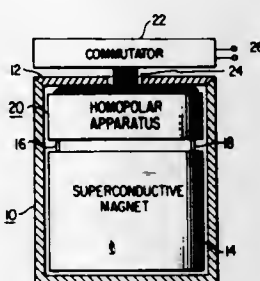
3,611,112
SOLID-STATE ALTERNATOR STATIC BUILDUP CIRCUIT
Richard N. Lehinhoff, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 31, 1969, Ser. No. 872,856
Int. Cl. H02p 9/08; H02d 9/30
U.S. Cl. 322-28 4 Claims



A solid-state alternator static buildup circuit. At least one output phase of an alternating current alternator is rectified and applied across the base-emitter junction of a transistor and the exciter shunt field winding through the current-carrying electrodes of a series transistor. With low alternator output potential, the transistor conducts through the current-carrying electrodes to complete an auxiliary exciter shunt field winding excitation circuit. When the alternator output reaches a predetermined magnitude, a potential-sensitive bilateral switch, connected across the control electrode and one of the current-carrying electrodes of the transistor, con-

ducts and extinguishes the transistor to interrupt the auxiliary energizing circuit.

3,611,113
HOMOPOLAR APPARATUS WHICH REQUIRES NO MOVING PARTS FOR PRODUCING DIRECT CURRENT
William Henry Cherry, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed June 6, 1969, Ser. No. 830,944
Int. Cl. H02p 9/00; H02k 31/00
U.S. Cl. 322-48 10 Claims



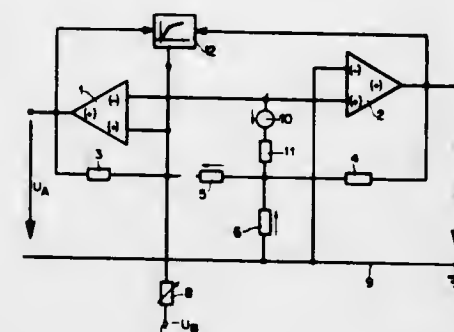
Apparatus for producing direct current of the homopolar type is provided in which the field moves and both the armature and the field-producing means are stationary whereby no brushes are required. Superconductive material may be used for the armature and for the winding of the field structure, whereby the apparatus is particularly adapted to energize a superconductive magnet.

3,611,114
SHUNT RECTIFIERS FOR INTRODUCING, TRAPPING AND MAINTAINING AN ELECTRIC CURRENT WITHIN A SUPERCONDUCTING CIRCUIT
Jean Sole, Clamart, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Dec. 24, 1969, Ser. No. 887,933
Claims priority, application France, Dec. 27, 1968, Dec. 27, 1968, PV 181,325; PV 181,326
Int. Cl. G05f 3/02
U.S. Cl. 323-8 11 Claims



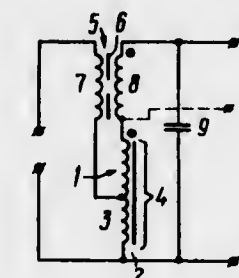
Arrangements for introducing, trapping and maintaining in a superconducting circuit an electric current supplied by a voltage generator which is connected directly to circuit terminals. Connected in parallel across the terminals of the superconducting circuit is a current rectifier which is connected so that its forward direction should correspond to a negative voltage which is established between the circuit terminals.

3,611,115
THREE-POINT REGULATOR COMPRISING OPERATIONAL AMPLIFIERS WITH COMMON INPUT
Holger Siebers, Friedbach, Switzerland, assignor to Landig & Gyr, AG, Zug, Switzerland
Filed Aug. 26, 1970, Ser. No. 67,037
Claims priority, application Switzerland, Sept. 12, 1969, 13,781/69
Int. Cl. G05f 1/12
U.S. Cl. 323-19 7 Claims



A three-point regulator utilizing two zero threshold switches having symmetrical switching characteristics and having threshold voltages simultaneously, symmetrically adjustable by a single circuit element. A feedback network common to both threshold switches may also be employed to control the characteristics of the regulator.

3,611,116
FERRORESONANT VOLTAGE REGULATOR WITH SATURABLE AND UNSATURABLE TRANSFORMERS
Roblen Khorenovich Balian, Leningrad; Igor Efimovich Brusilovsky, Moscow; and Mark Isaakovich Roshal, Leningrad, all of U.S.S.R.
Filed Jan. 15, 1970, Ser. No. 2,987
Int. Cl. G05f 3/06
U.S. Cl. 323-45 5 Claims

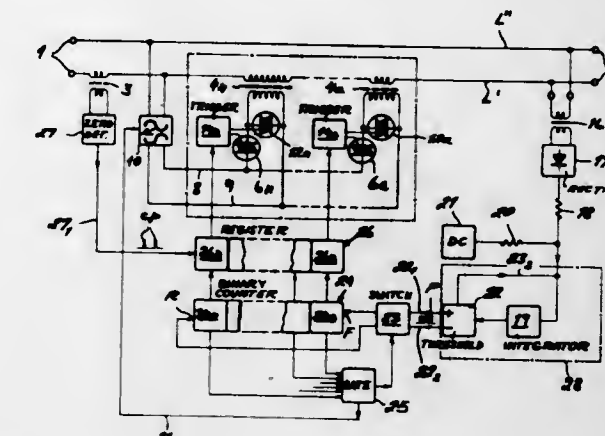


A ferroresonant voltage regulator has one of the secondaries of an unsaturable transformer connected in series-aiding with one of the windings of a saturable transformer or autotransformer and is included directly in a ferroresonant circuit. A capacitor is connected across the series connection of the secondary winding to form the ferroresonant circuit.

3,611,117
VOLTAGE STABILIZER WITH REVERSIBLE BINARY COUNTER FOR ALTERNATING-CURRENT LINES
Heinz Schneider, Enningen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany
Filed Nov. 20, 1969, Ser. No. 878,334
Claims priority, application Germany, Nov. 21, 1968, P 18 10 099.7
Int. Cl. G05f 1/30
U.S. Cl. 323-45 12 Claims

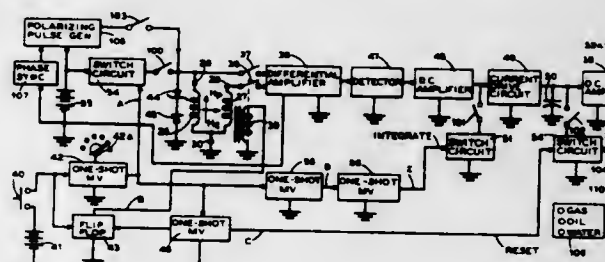
A plurality of transformers, having their secondary windings cascaded in either or both conductors of an AC line to be regulated, have graded voltage-transformation ratios corresponding to binary voltage increments to be impressed in aiding or opposing relationship upon the line in order to compensate for deviations of its output voltage from a predetermined magnitude. The transformers are fed from a

common source of alternating current, synchronized with the line current, via enabling circuits responsive to the setting of respective stages of a reversible binary counter which is stepped forward or backward by pulses from a voltage-level



sensor, a switchover circuit reverses the sense of the count upon the arrival of the counter in its zero positions, with simultaneous reversal of the phase of the impressed compensating voltages, to provide both positive and negative counts and to prevent discontinuities in the compensating voltage.

3,611,118
MUD FILTRATE NUCLEAR MAGNETIC ANALYSIS
William E. Youngblood, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 534,509, Mar. 15, 1966, now abandoned. This application Feb. 5, 1969, Ser. No. 796,689
Int. Cl. G01n 27/78
U.S. Cl. 324-0.5 1 Claim

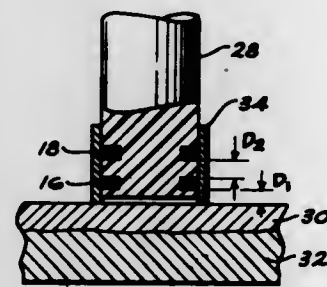


An illustrative embodiment of the invention discloses a method that identifies gas, oil or water in earth formations penetrated by a borehole. A sample of the fluid drawn from the zone flushed by the mud filtrate adjacent to the borehole is taken to the earth's surface. The sample is subjected to magnetic polarizations which are in a direction that is at right angles to the earth's magnetic field. These polarizations are of various time durations in order to indicate the thermal relaxation time of the sample. The relaxation time identifies the nature of the virgin formation fluid before contamination by the flushing action of the borehole liquid.

3,611,119
METHOD FOR MEASURING THE FERRITE CONTENT OF A MATERIAL
George R. Madewell, Hixson, Tenn., and Walter G. Hill, Jr., Rossville, Ga., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed May 19, 1969, Ser. No. 825,792
Int. Cl. G01r 33/12
U.S. Cl. 324-34 6 Claims

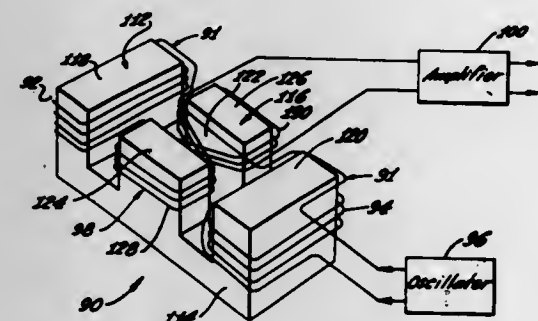
The apparatus and method for measuring the relative ferrite content of materials. The system is particularly applicable in determining the relative delta ferrite content of austenitic stainless steel weld metal, castings, or wrought products. The instrument is of the eddy current type and employs a pair of AC energized coils located near and dif-

ferentially spaced from the test material for inducing eddy currents in said material. The loading of each coil is affected by its location with respect to the test material and by the ferrite content of said material. A bridge network which in-



cludes the two coils, may be null balanced for a sample of particular ferrite content and samples of different ferrite contents will unbalance the bridge and result in a bridge output voltage which has a substantially linear relationship to the relative ferrite content of the material being tested.

3,611,120
EDDY CURRENT TESTING SYSTEMS WITH MEANS TO COMPENSATE FOR PROBE TO WORKPIECE SPACING
Friedrich M. O. Forster, Der Schoene Weg 144, 741 Reutlingen, Germany
Continuation of application Ser. No. 641,658, May 26, 1967.
This application Feb. 24, 1970, Ser. No. 14,752
Int. Cl. G01r 33/12
U.S. Cl. 324—37 6 Claims

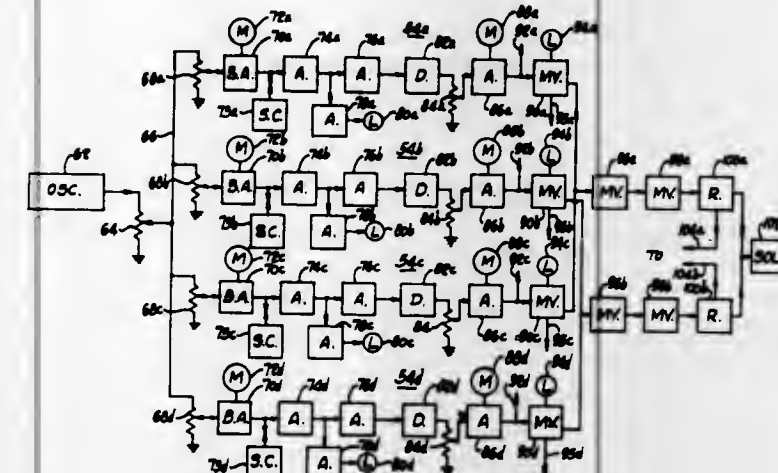


A nondestructive testing system is disclosed for inspecting the surface of a workpiece for hidden defects. The system includes a probe for creating eddy currents in the surface and precisely resolving the fields which are reradiated therefrom. The probe includes a single primary winding for creating the driving or current inducing field and a pair of differential pickup windings which are responsive to variations in the eddy currents at two different locations whereby very small defects can be resolved.

3,611,121
EDDY CURRENT DEFECT DETECTOR AND MARKING DEVICE
Joseph Vild, Lyndhurst, and Edward J. Shupek, Mayfield Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Jan. 6, 1969, Ser. No. 789,204
Int. Cl. G01r 33/12
U.S. Cl. 324—37 10 Claims

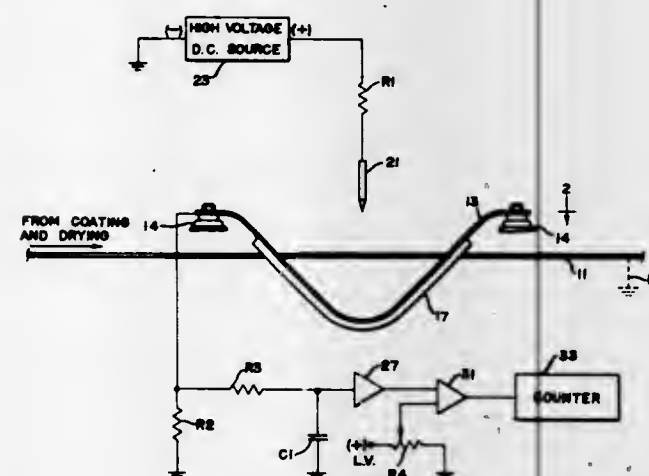
In eddy current defect detecting and marking apparatus, a plurality of search coils are mounted for rotation about a longitudinal axis coincident with the axis of an elongated article being inspected. The search coils are all energized by one oscillator and are so arranged that there is no interaction between them and the oscillator. Output signals from the plurality of search coils are sent through an equal plurality of

processing channels, are then partially combined to actuate a recorder, and fully combined to actuate a marking device for



physically marking on the article itself the approximate location of a detected defect.

3,611,122
TESTING OF WIRE INSULATION BY CORONA DISCHARGE
Henry D. Pahl, Jr., 99 Cross St., Belmont, Mass.
Filed Sept. 17, 1969, Ser. No. 858,578
Int. Cl. G01r 31/12
U.S. Cl. 324—54 15 Claims

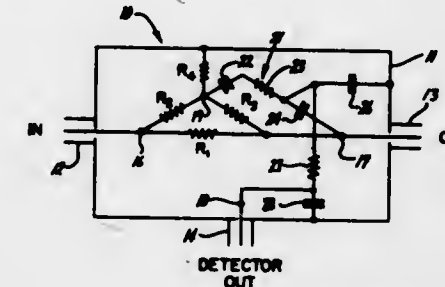


In the apparatus disclosed, flaws in the insulation of a moving strand of insulated electrical wire are detected by means of a corona discharge. The discharge current is shared between the wire and an adjacent electrode so that the proportioning of the current between the electrode and the wire varies as a function of the quality of the insulation. Accordingly, a flaw in the insulation is indicated when the current picked up by the electrode falls below its normal level.

3,611,123
LOW INSERTION LOSS DIRECTIONAL DETECTOR
Robert B. Mouw, Sherman Oaks, and Franklin S. Coale, Pasadena, both of Calif., assignors to Syston-Donner Corporation, Concord, Calif.
Filed May 26, 1969, Ser. No. 827,635
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R 7 Claims

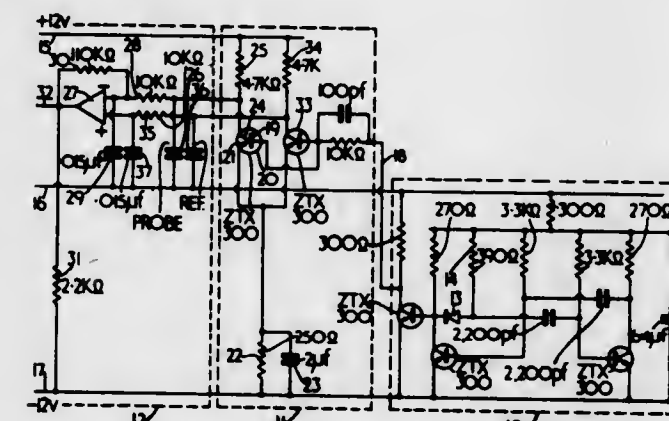
The directional detector includes input and output terminals connected by a bridge resistance R_1 . A pair of diagonal resistances R_2 , R_3 having the same impedance as the transmission line to which the device is connected are connected to a common node and across to each of the input and output terminals respectively. A third resistance R_4 is connected from the common node to ground node which also connects the ground side of the input and output terminals. The resistances R_1 and R_4 are related by the equation

$Z_1^2 = R_1 R_4$. Otherwise R_1 , R_4 can be chosen arbitrarily to provide specified insertion loss and attenuation. A detecting element is connected in parallel across one of the diagonal resistors for providing a voltage indication of power reflected into the node to which that diagonal resistance is connected, either input or output. Typically, the detecting



element is a high frequency, high-impedance diode connected in series with a resistance and DC blocking capacitor to provide enhanced flat frequency response over a wide bandwidth. Another embodiment of the invention utilizes printed circuit techniques in stripline to obtain higher frequency of operation.

3,611,124
MEASURING CIRCUIT INCLUDING SWITCHING MEANS FOR CHARGING A CAPACITANCE WITH ALTERNATE POLARITIES IN EACH SWITCHING CYCLE
Bernard Bollons, Warwick, England, assignor to Cape Engineering Company Limited, Warwick, England
Filed July 16, 1969, Ser. No. 842,301
Claims priority, application Great Britain, Aug. 28, 1968, 41012/68
Int. Cl. G01r 27/26, 27/02
U.S. Cl. 324—60 C 6 Claims

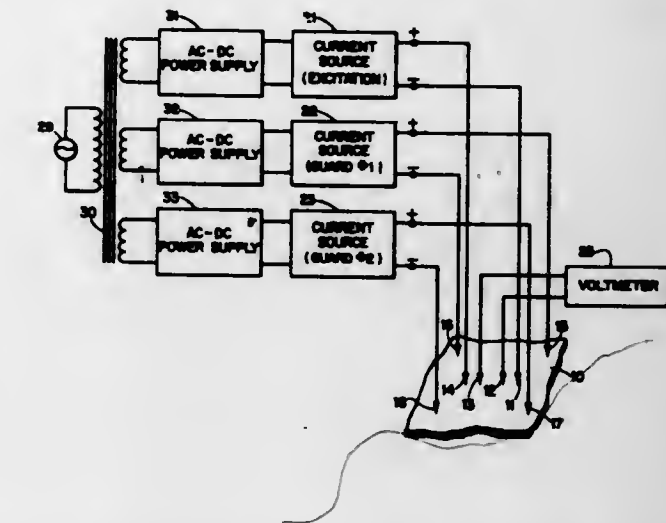


An electrical circuit includes a condenser, resistor switching means and constant voltage source. One plate of the condenser is at constant voltage, the switching means connects the other plate alternately to a different constant voltage and to a constant voltage different from the latter. In one of the switch connecting conditions the resistor is switched in series with the condenser. The means voltage across the resistor while current passes through it can be used to measure the condenser capacity, resistor resistance, switching frequency or value of one constant voltage.

3,611,125
APPARATUS FOR MEASURING ELECTRICAL RESISTANCE
Meyer Press, Sharon, and Roy P. Sellen, Wayland, both of Mass., assignors to Sylvan Electric Products, Inc.
Filed June 4, 1969, Ser. No. 830,234
Int. Cl. G01n 27/14
U.S. Cl. 324—64 7 Claims

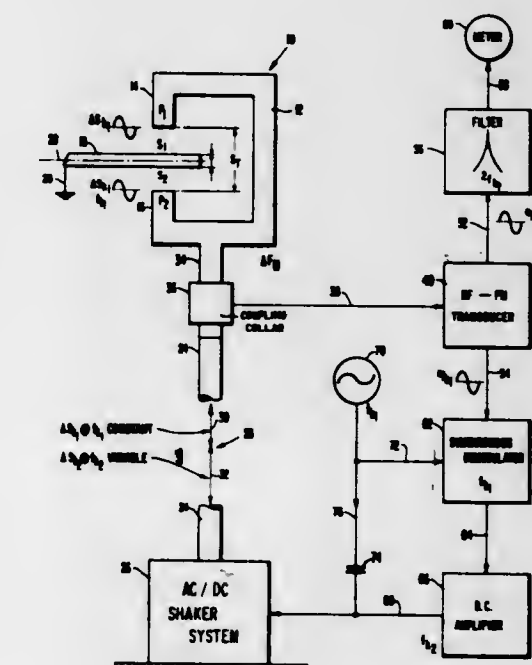
Eight-point probe apparatus for measuring surface resistivity of a specimen including four electrodes arranged in a straight line in a manner similar to a four-point probe and four additional electrodes arranged at four points forming the

corners of a rectangular pattern encircling the first four electrodes. Current is passed through the specimen between the additional electrodes, limiting the effect that edges or other discontinuities in the resistance of the specimen outside the



pattern of the electrodes have on the measurements. Thus, accurate measurements of resistivity may be made closely adjacent the edges or other discontinuities in the resistance of a specimen.

3,611,126
SERVO CENTERED NONCONTACT THICKNESS MEASURING GAUGE
Eugene R. Lucka, Columbus, Ohio, assignor to Reliance Electric Company, Columbus, Ohio
Filed May 26, 1969, Ser. No. 827,561
Int. Cl. G01n 27/26
U.S. Cl. 324—61 R 17 Claims



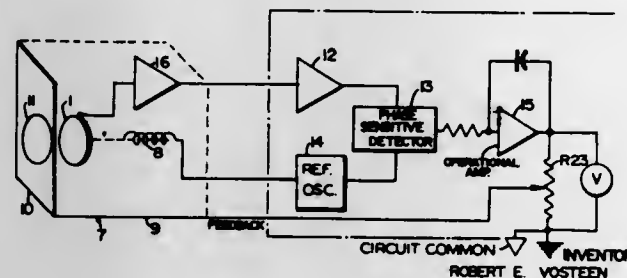
Disclosed is a noncontacting gauge for measuring material thickness. The gauge comprises a pair of opposed capacitive probes mounted on a common support and vibrated at a constant amplitude and frequency. The probe responses produce a double frequency output whose amplitude is indicative of the thickness of material between the probes. A feedback signal to the probe shaker maintains the material being measured midway between the two probes.

3,611,127
ELECTROSTATIC POTENTIAL AND FIELD MEASUREMENT APPARATUS HAVING A CAPACITOR DETECTOR WITH FEEDBACK TO DRIVE THE CAPACITOR DETECTOR TO THE POTENTIAL BEING MEASURED

Robert E. Vosteen, 315 W. Center St., Medina, N.Y.
 Filed Sept. 16, 1968, Ser. No. 759,913
 Int. Cl. G01r 31/02

U.S. Cl. 324-72

11 Claims



An electrostatic meter arrangement to selectively operate as an electrostatic fieldmeter or voltmeter having a vibrating capacitor detector to detect the function to be measured. The vibrating capacitor detector comprises part of a probe assembly which may also have a preamplifier associated therewith for mounting in a compact housing. A power supply having associated circuits to prevent dangerous buildup of excessive energy is provided to insure operational safety of the meter arrangement for use in hazardous locations, such as locations having atmospheres conducive to explosions, is provided. The meter arrangement operates in noncontacting arrangement with the surface having an electrostatic potential to be measured. Safety circuits are associated with the preamplifier to prevent damage to elements thereof in the event that overload operating conditions occur.

3,611,128
PROBE HEADER FOR TESTING INTEGRATED CIRCUITS

Minoru Nagata, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

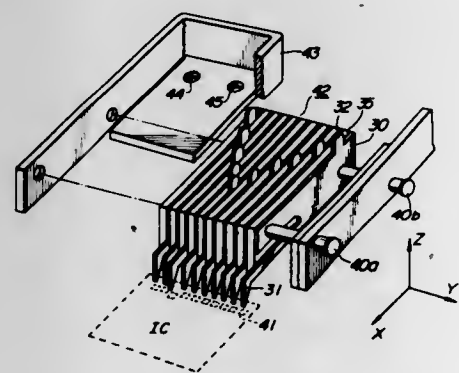
Filed July 23, 1969, Ser. No. 844,098

Claims priority, application Japan, July 26, 1968, 43/52466

Int. Cl. G01r 31/02

U.S. Cl. 324-72.5

5 Claims



A probe header having a plurality of probes for effecting a temporary test connection with integrated circuits on a semiconductor wafer, the probes of which are assembled into a plurality of integral units, each unit being mounted on a position adjusting means thereby enabling simultaneous adjustment of a plurality of probes at each probe unit.

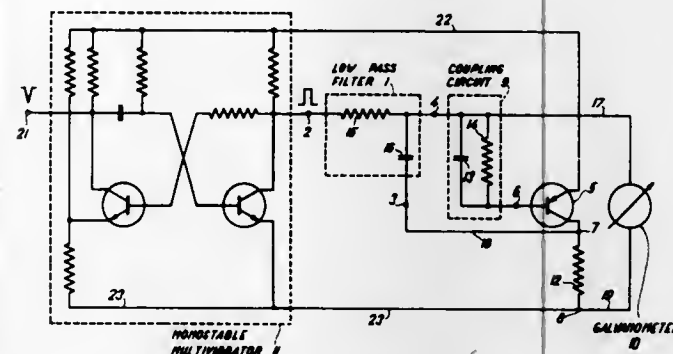
3,611,129
LOW FREQUENCY MEASURING CIRCUIT
 Jiri Simurda, Brno, Czechoslovakia, assignor to Vyzkumny ustav zdravotnicke techniky, Brno, Czechoslovakia
 Filed Jan. 31, 1969, Ser. No. 795,475
 Int. Cl. G01r 23/02

U.S. Cl. 324-78 I

10 Claims

An amplifier is coupled to the filter and connected to the frequency-measuring indicator of a frequency meter. A

coupling circuit couples the filter to the amplifier. The amplifier is a transistor and has a current amplification factor which is highly dependent upon the instantaneous working point of the amplifier whereby the equivalent effect of the



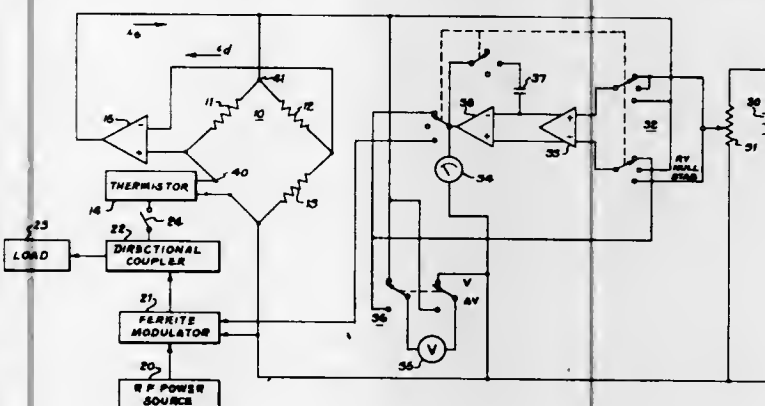
filter and the amplifier is a function of the direct current component output of the filter, and the filter and amplifier function as a filter with an automatically controlled filtering effect.

3,611,130
POWER MEASURING AND LEVELING SYSTEM USING A SELF-BALANCING BRIDGE

Neil T. Larsen, Broomfield, and Frederick R. Clague, Boulder, both of Colo., assignors to The United States of America as represented by the Secretary of Commerce
 Filed Mar. 17, 1970, Ser. No. 20,312
 Int. Cl. G01r 5/26, 17/02

U.S. Cl. 324-106

6 Claims



With no RF power applied to a bolometer positioned in a self-balancing DC bridge, the voltage across a diagonal is nulled with the output of a potentiometer. The diagonal voltage V is measured. The output of the potentiometer is applied to a unity gain buffer amplifier. Part of the power in the output of an RF power source is applied to the bolometer, and the difference ΔV between diagonal and the amplifier output voltages is measured. Using V and ΔV , the power applied to the bolometer is calculated. The diagonal and potentiometer voltages are compared to derive a difference signal used to adjust the level of power applied to the bolometer. Part of the power in the output of the RF source is also applied to a load.

3,611,131
INSTRUMENT HAVING HIGH DYNAMIC SENSITIVITY FOR THE MEASUREMENT OF DIRECT-CURRENT VOLTAGES OR CURRENTS

Andre Burkhardt, 187 Avenue du Maine, 75-Paris 14eme; Francois Guillot, 1 Rue du Parc du Moulin de Chamols, 91-Etampes, and Andre Vitez, 15 Domaine du Chanteloup, 91-Saint Germain les Arpajon, all of France
 Filed Mar. 14, 1969, Ser. No. 807,215
 Claims priority, application France, Mar. 15, 1968, Feb. 27, 1969, 144111; 905193
 Int. Cl. G01r 15/08, 15/10

U.S. Cl. 324-115

11 Claims

An instrument for measuring direct-current voltages or currents comprising an amplification chain, a linear negative

feedback chain and a logarithmic negative feedback chain which are associated with said amplification chain, a device for reading the voltage delivered by said amplification chain,

rounded by the cast solid insulation system of the body portion of the bushing.

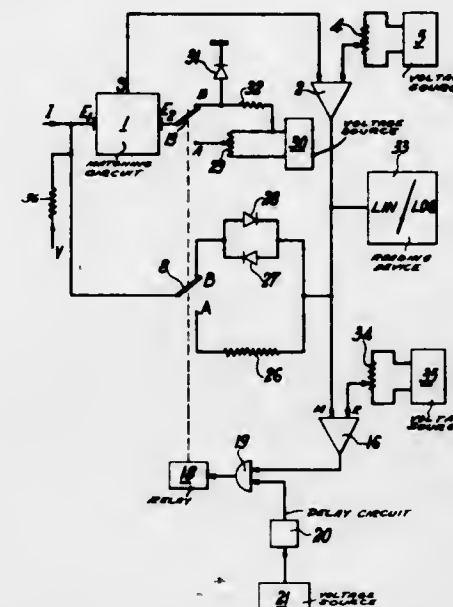
3,611,133
DUAL VOLTAGE TOOL TESTER
 Athanasios N. Tsergas, Wood Dale, and Walter J. Kleszczewski, Chicago, both of Ill., assignors to Ram Tool Corporation, Chicago, Ill.

Filed July 25, 1969, Ser. No. 845,011

Int. Cl. G01r 31/02, 31/08

U.S. Cl. 324-158 R

12 Claims



means for automatic switching of the operating zone of the instrument and means for displacing the reading device in order to ensure continuity of reading in spite of any switching of the operating zone.

3,611,132
PLUG-IN ELECTRICAL BUSHING
 Leonard L. Wright, and John J. Astleford, Jr., both of Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

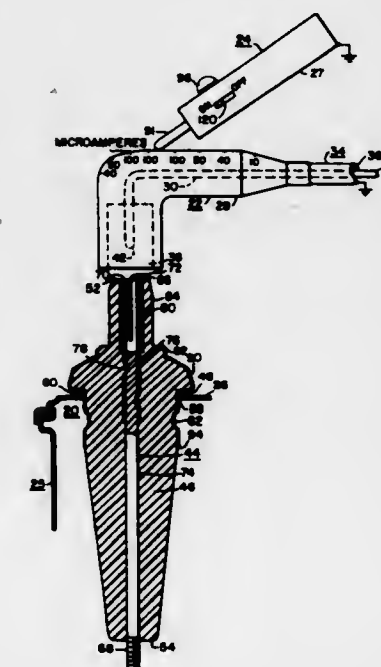
Continuation of application Ser. No. 489,339, Sept. 22, 1965.

This application Sept. 30, 1969, Ser. No. 863,038

Int. Cl. G01r 13/36; H01r 11/22

U.S. Cl. 324-122

3 Claims



A plug-in-type high-voltage bushing assembly having a body portion formed of a cast resin insulation system, and a conductor assembly. The conductor assembly includes a conductor, a pressure type terminal disposed on one end of the conductor, and resilient, compressible means disposed about the pressure terminal. The conductor assembly is embedded in the cast resin system of the body portion, with the conductor and resilient compressible means being in contact with the cast resin system. The resilient means surrounds and protects the pressure terminal from the cast resin, enabling the pressure terminal to retain its ability to provide tight electrical joints with a mating plug-in connector, while being sur-

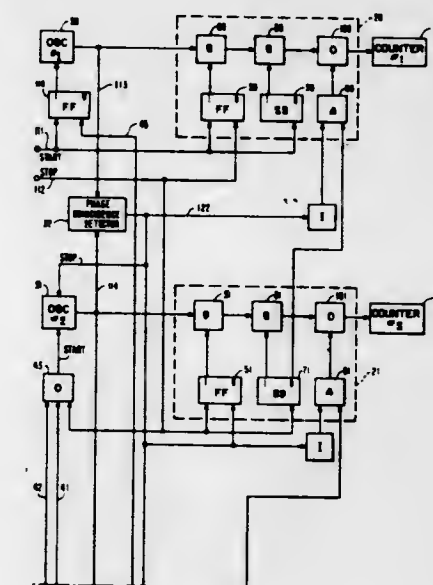
A tool tester for testing tools of multiple voltages and current ratings in which a series of tests are performed on the tool in such a manner that if a fault is located in the tool the succeeding tests will be suspended. The tester may be utilized to test grounded tools or doubly insulated tools and has automatic time delay circuits for allowing the rapid testing of tools.

3,611,134
APPARATUS FOR AUTOMATICALLY MEASURING TIME INTERVALS USING MULTIPLE INTERPOLATIONS OF ANY FRACTIONAL TIME INTERVAL

Allen W. McDowell, Ulster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Apr. 30, 1969, Ser. No. 820,367
 Int. Cl. G04f 9/00, 11/06

U.S. Cl. 324-187

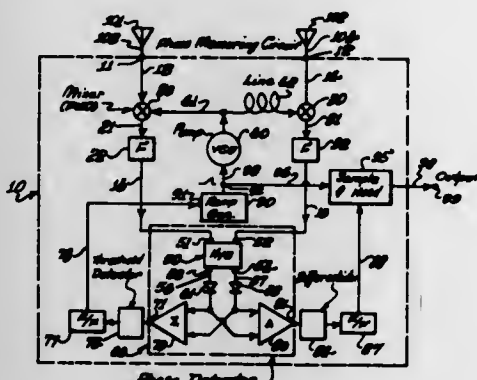
12 Claims



An apparatus for measuring a time interval between first and second pulses includes a counter which counts pulses from a first oscillator which is turned on by the first pulse. When the second pulse occurs a second oscillator operates a second counter to determine the fractional time interval, if

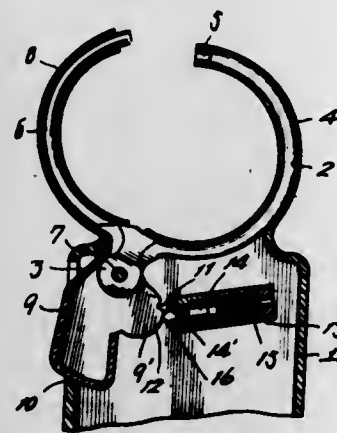
any, resulting whenever the second pulse occurs between pulses of the first oscillator. A coincidence detector arrangement determines when the first and second oscillators are in phase. At such time the second oscillator is stopped for a fixed period of time, and then it is connected to a third counter for another vernierizing operation. Successive vernierizing operations may be performed by connecting the second oscillator to successive counters in turn under control of the coincidence detector arrangement.

3,611,135
BROAD BAND PHASE MEASURING SYSTEM FOR MICROWAVE PULSES
Donald L. Margerum, Woodland Hills, Calif., assignor to Singer-General Precision, Inc.
Filed Oct. 23, 1967, Ser. No. 682,708
Int. Cl. G01r 25/02
U.S. Cl. 324-85 10 Claims



Microwave pulse phase-measuring apparatus having a pump or local oscillator feeding a pair of up-converters or mixers in a heterodyne conversion technique, the pump or local oscillator output being fed to the up-converters, down converters, or mixers by transmission lines having different effective lengths. The pump or local oscillator is frequency modulated with a voltage ramp initiated by the received signals, thereby causing a continually increasing relative phase shift of the up-converter signals through a point of phase coincidence, the magnitude of the voltage ramp at the instant of phase coincidence being sampled to provide a measurement.

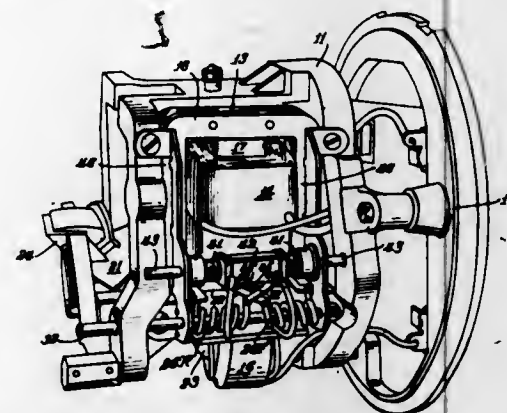
3,611,136
SPRING-OPERATED FIELD STRENGTH MEASURING DEVICE IN AN ELECTROMAGNETIC-TYPE AMPEREMETER
Tomosuke Ito, 166 Suwa, and Shinobu Hirose, 1420 Kamikotanaka, both of Kawasaki-shi, Kanagawa-ken, Japan
Filed Sept. 29, 1969, Ser. No. 861,931
Int. Cl. G01r
U.S. Cl. 324-127 5 Claims



A spring-operated field strength-measuring device in an electromagnetic-type amperemeter comprising a stationary

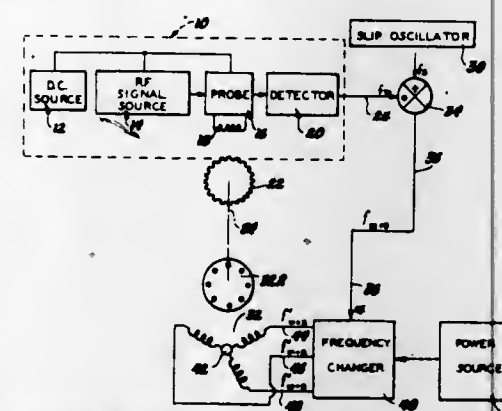
core member fixedly mounted on the housing of said amperemeter, a movable core member pivotally mounted on said housing for movement toward and away from said stationary core member, an operation handle portion integrally formed with said movable core member, a cam portion integrally formed with said movable core member, and a spring-loaded cam-engaging member abutting against said cam portion, said cam portion including a cam surface which is adapted to increase its radius of curvature from the rotation axis of said movable core member toward the point of action of the spring of said spring-loaded cam-engaging member.

3,611,137
WATT-HOUR METER WITH SHIFTING-RELUCTANCE LIGHT LOAD ADJUSTMENT
Russell F. Graefitz, Lafayette, and George N. Burkhart, Jr., Brookston, both of Ind., assignors to Duncan Electric Company, Inc., Lafayette, Ind.
Filed July 9, 1969, Ser. No. 840,263
Int. Cl. G01r 11/02
U.S. Cl. 324-138 19 Claims



A watt-hour meter for alternating current is adjusted for accuracy of measurement of light loads. The former shiftable plate is replaced by a fixed plate combined with means for varying the current flow therein between different paths oppositely displaced from center. The current-varying means includes a loading coil connected in series with each of oppositely displaced paths. A magnetic core can be shifted between loading coils with opposite effects on the oppositely displaced paths while the total current remains approximately constant. The adjustment is by a screw having its head accessible from the front of the meter and provided with backlash prevention. The fixed plate advantageously has narrow portions serving as spacers in the potential magnet stack. A stainless steel strip forming a passageway for a balance screw is extended to provide relative insulation for, and to retain, each of the spacer portions.

3,611,138
TACHOMETER SYSTEM INCLUDING AN RF SIGNAL MODULATOR AND DETECTOR
Gary L. Winebrener, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 5, 1970, Ser. No. 16,809
Int. Cl. G01p 3/48
U.S. Cl. 324-173 4 Claims



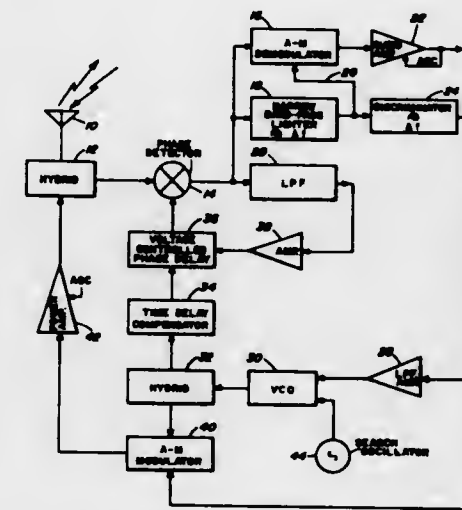
A tachometer system for detecting the speed of rotation of a rotating member. In this tachometer system, an LC tank

circuit is excited by an RF signal. The inductance of the coil incorporated in the LC tank circuit is varied in accordance with the rotation of the rotating member and, accordingly, an amplitude modulated RF signal is developed across the tank circuit in response to rotation of the rotating member. This modulation is doubled in amplitude and detected to provide a signal whose frequency is related to the speed of rotation of the rotating member.

ERRATUM

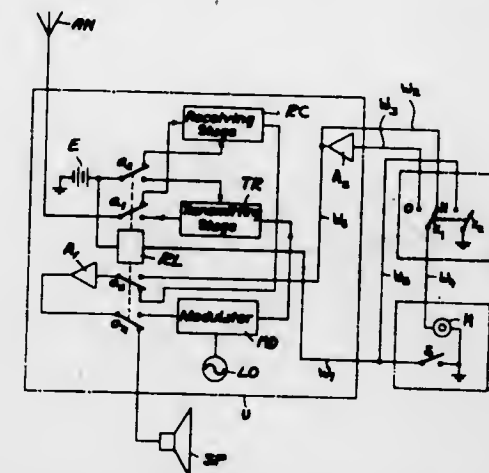
For Class 325-6 see:
Patent No. 3,611,435

3,611,139
ORTHOGONAL MIXER F.F. REPEATER
Quintin H. George, Sudbury, Mass., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 25, 1970, Ser. No. 14,158
Int. Cl. H04b 7/20
U.S. Cl. 325-6 5 Claims



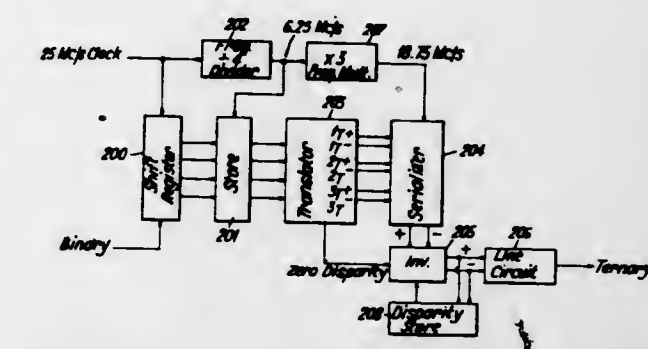
This device is a repeater and is used to acquire, amplify and retransmit amplitude or frequency modulated radio signals using overlapping transmit-receive bandwidths. In brief, a received signal is acquired, slightly offset, and retransmitted. The retransmitted signal is rejected by the receiver since the retransmitted carrier signal has been shifted in phase by 90°.

3,611,140
RADIO TRANSCIVER WITH VARIABLE AUDIO AMPLIFICATION
Masatoshi Shimada, 78 Todorokicho 2-chome, Tamagawa, Setagaya-ky, Tokyo-to, Japan
Filed July 28, 1969, Ser. No. 845,240
Int. Cl. H04b 1/44
U.S. Cl. 325-15 10 Claims



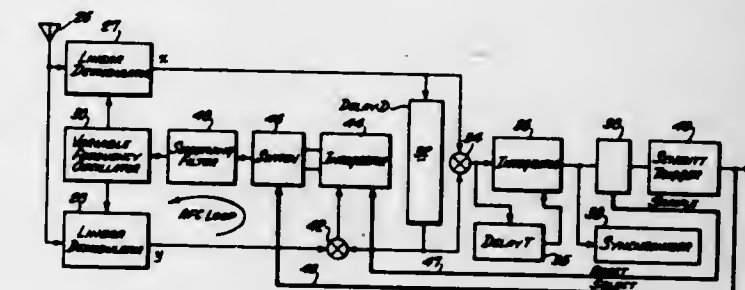
A radio transmitter, especially for vehicular two-way communication, has a fixed unit including an amplifier system

3,611,141
DATA TRANSMISSION TERMINAL
Derek Brian Waters, Chelmsford, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 15, 1968, Ser. No. 776,062
Claims priority, application Great Britain, Dec. 20, 1967, 57,880/67
Int. Cl. H03k 3/24
U.S. Cl. 325-41 9 Claims



In the transmitter, a code translator translates four digit binary code groups into three digit ternary code groups having either zero or positive disparity only and a lower digit rate than the binary groups. The cumulative line disparity is monitored and if the positive disparity rises then certain of the ternary groups with positive disparity are complemented to reduce disparity. At the receiver zero disparity ternary groups and positive disparity ternary groups are translated directly to binary groups, while any negative disparity ternary group is independently translated into binary groups corresponding to the original positive disparity ternary group before it was complemented.

3,611,142
COMMUNICATION SYSTEM WITH ADAPTIVE RECEIVER
George R. Welti, Newton, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 27, 1960, Ser. No. 58,681
Int. Cl. H04b 1/10
U.S. Cl. 325-42 13 Claims



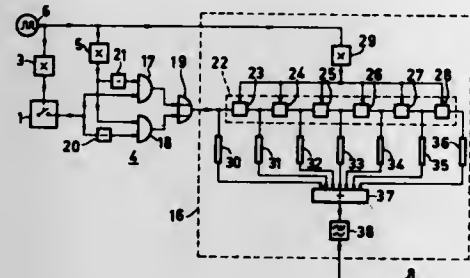
1. In a transmission system comprising a radio transmitter and receiver, wherein said transmitter includes means for producing binary pulse signals of baud duration and means for producing phase modulated radio waves in response to said signals, a receiver including radio wave receiving means, a pair of demodulators connected to said receiving means, a variable frequency oscillator having two phase displaced outputs connected to the demodulators, respectively, a delay means having a delay substantially equal to the period of said binary signals, a multiplier circuit connected to the output of one of said demodulators, said delay means being connected between the other demodulator and the multiplier circuit, an automatic frequency control circuit connected from the out-

put of said multiplier circuit to said oscillator, and means connected to the output of the delay means and said other demodulator for deriving the transmitted signals.

3,611,143
DEVICE FOR THE TRANSMISSION OF RECTANGULAR SYNCHRONOUS INFORMATION PULSES
Petrus Josephus Van Gerwen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,409
Claims priority, application Netherlands, July 9, 1968, 6,809,708

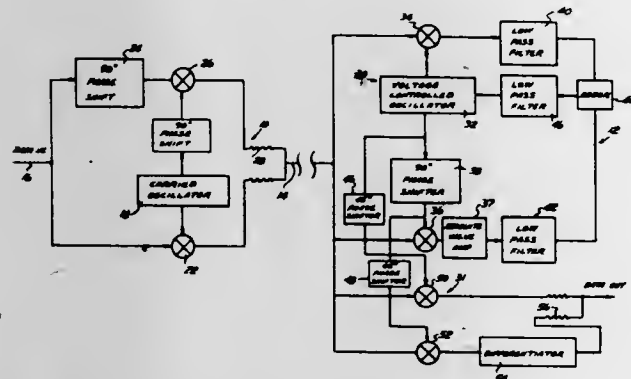
Int. Cl. H03K 7/00; H04b 1/04
U.S. Cl. 325-42



A system for the transmission of rectangular synchronous information pulses from an information source to an information consumer within a prescribed frequency band in which the information pulse is in coincidence with different pulses from a series equidistant clock pulse generator, in which system use is made of a switching modulation device for the direct modulation of rectangular information pulses on to a rectangular carrier oscillator. A band-pass filter and a correction circuit follow the switching modulation device for the suppression of unwanted modulation products generated in the switching modulation device.

3,611,144
SIGNAL TRANSMISSION SYSTEM WITH COHERENT DETECTION AND DISTORTION CORRECTION
Samuel T. Harmon, Jr.; James R. Ackley, and Kenneth E. Monroe, all of Ann Arbor, Mich., assignors to Datamax Corporation, Ann Arbor, Mich.

Filed Mar. 3, 1969, Ser. No. 803,788
Int. Cl. H04b 1/68; H03d 1/22
U.S. Cl. 325-50



Digital or analog data to be transmitted is employed to amplitude modulate a carrier to generate a single-side-band signal which is provided to a receiver over a communication channel. At the receiver a signal having the frequency of the carrier component of the received signal and a constant phase with respect to the carrier component is derived by multiplying the incoming signal by both the output of a local oscillator and the oscillator output phase shifted by 90° and then comparing the two products to derive a feedback signal for adjusting the phase of the local oscillator. The oscillator output and the 90°-shifted oscillator signal are each phase shifted by 45° and separately multiplied by the received

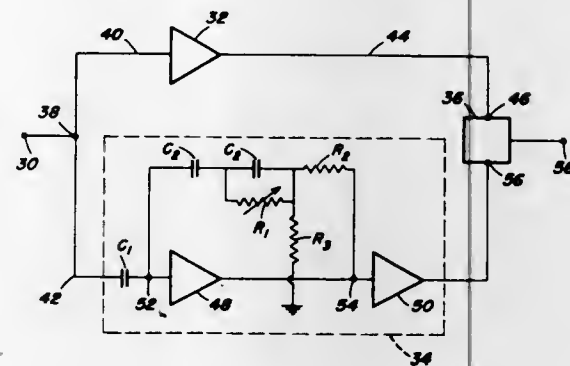
signal and the output of the 90° multiplication is differentiated and summed with the other product to derive the original transmitted signal.

In an alternate embodiment of the invention a double-side-band signal is detected by a pair of product multipliers having inputs which respectively lead and lag the carrier component of the received signal by 45°. The output of the product multiplier which has the 45° leading input is then differentiated and summed in a weighted manner with the output of the other multiplier to derive the original transmitted signal.

3,611,145
METHOD AND APPARATUS FOR THE SUPPRESSION OF NOISE IN PROCESS CONTROL SYSTEMS
Ward F. O'Connor, Denville, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Aug. 5, 1968, Ser. No. 750,211
Int. Cl. H04b 1/10

U.S. Cl. 325-65

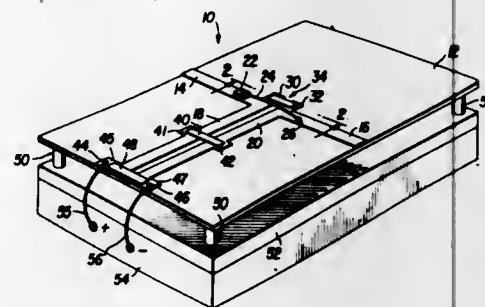


A method of noise suppression and the apparatus therefor is provided wherein the distinctive rate of change of the noise signal is relied upon to achieve the isolation and suppression thereof. In one embodiment of the disclosed invention, the composite waveform including the noise and information component signals is applied to both a linear and a nonlinear signal transfer means. The nonlinear transfer means is designed so that it will only pass the entire magnitude of signal components having a relatively high rate of change and thus only the noise component is wholly passed thereby. Thereafter, the isolated noise component signal is subtracted from the composite waveform as passed by the linear transfer means and a substantially noise-free information signal is thereby obtained.

3,611,146
INTEGRATED MICROWAVE RADIATOR AND GENERATOR
Herbert Warren Cooper, Hyattsville, Md., and Charles Moskowitz, Randallstown, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 20, 1969, Ser. No. 826,170
Int. Cl. H03b 7/08

U.S. Cl. 325-105



A hybrid integrated microwave radiator includes a negative resistance semiconductor element mounted on a dipole radiator. The hybrid integrated circuit provides an impedance-transforming network whereby energization of the

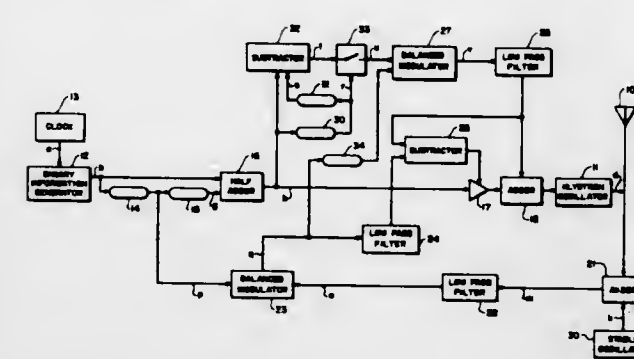
semiconductor element through connections to the radiator produces oscillations in the circuit of the semiconductor element for driving the radiator.

3,611,147
PHASE-MODULATED BINARY DATA TRANSMISSION SYSTEM EMPLOYING A VARIABLE FREQUENCY OSCILLATOR
Otto E. Rittenbach, Neptune, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Nov. 24, 1969, Ser. No. 879,476
Int. Cl. H04b 1/04

U.S. Cl. 325-159

4 Claims



A phase-modulated, high-power binary data transmission system includes a variable frequency oscillator klystron generating a carrier signal under the control of a binary information generator. The frequency of the oscillator is periodically varied a small amount sufficient to cause a gradual linear change in the phase of the carrier signal such that the carrier signal at specific clock times is of opposed phase in accordance with the binary information. The oscillator output is continuously sampled and compared in a mixer to the output of a highly stable oscillator operating at the carrier frequency to produce a signal having an average value which is a function of the difference in phase between the mixed signals. This signal is then analyzed and compared to the output of the binary information generator to determine if the klystron is operating at the correct frequency and phase, and if the change in frequency is correct. If an error in any of these parameters is detected an error signal is generated which is then used to shift the value of the klystron input signal to correct the output thereof.

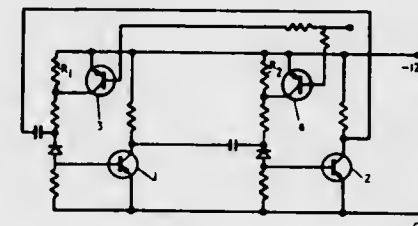
The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,611,148
DATA TRANSMISSION SYSTEM FOR BINARY CODED DATA USING SINGLE FREQUENCY SHIFT OSCILLATOR

George H. L. Cox, Warwick, England, assignor to Serck Controls Limited, Queensway, Leamington Spa, England
Continuation-in-part of application Ser. No. 565,872, July 18, 1966, now abandoned. This application July 1, 1969, Ser. No. 838,255

Int. Cl. H04l 27/12
U.S. Cl. 325-163

2 Claims



In a two frequency data transmission system for the transmission of binary coded data in the form of successive "marks" and "spaces," "marks" are represented by one

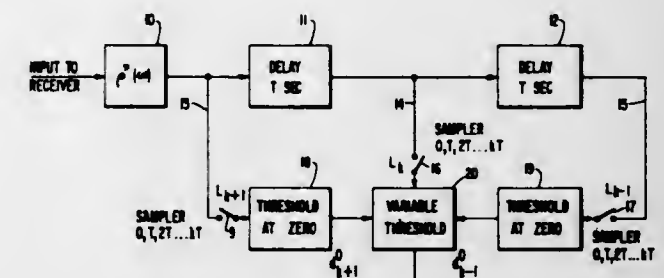
frequency and "spaces" by a second frequency and each "mark" or "space" consists of an integral number of cycles of its respective frequency, the number of cycles being the same for both, which number is preferably one.

3,611,149
ITERATED SWITCHED MODE RECEIVER
Christopher V. Kimball, Ann Arbor, Mich., assignor to The Bottelle Development Corporation, Columbus, Ohio

Filed June 6, 1969, Ser. No. 830,964
Int. Cl. H04b 1/10

U.S. Cl. 325-323

10 Claims



There is disclosed an iterated switched mode receiver which operates on a received distorted serial binary sequence to diminish or eliminate inter symbol interference. The operation of the receiver is predicated upon making two decisions on each symbol. The preliminary or "first guess" decisions on adjacent symbols are used to eliminate the effects of these symbols on the final decision for each symbol. Signal delays are employed so that it is possible to work with the successor digit as well as the predecessor digit. The preliminary decisions on the succeeding and preceding digits are made by threshold circuit having thresholds at zero. The final decision is made by a variable threshold circuit which receives as its inputs outputs representative of the digit immediately preceding, the digit immediately succeeding and the digit to be processed.

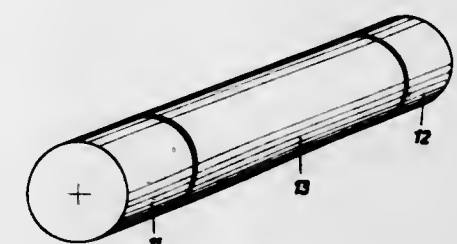
3,611,150
RADIO RECEIVER HOUSING FORMING A CONTINUOUS SHAPE WITH CONTROL KNOBS
Hermann Martin Timm, Schumannstrasse 34a, Frankfurt/Main, and Gunter Wolf, Bruckenstrasse 16, Steinhelm/Main, both of Germany

Filed May 31, 1968, Ser. No. 733,586
Claims priority, application Germany, June 2, 1967, P 15 91 679.9

U.S. Cl. 325-361

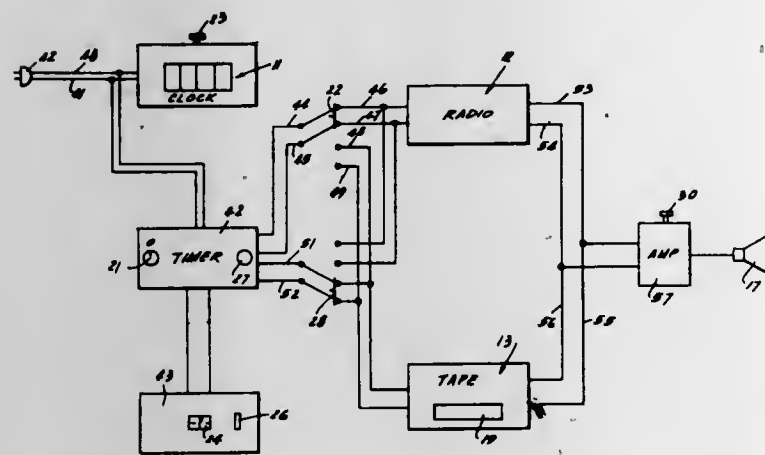
Int. Cl. H04b 1/08

2 Claims



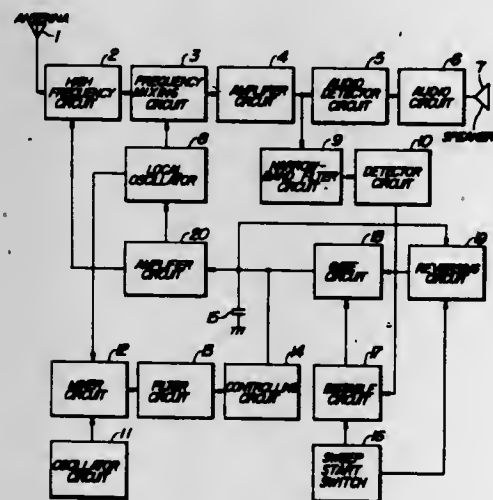
A radio receiver in which the housing for the electronic circuit elements and the control knobs for variable condensers, switches and the like jointly form a body symmetrical relative to the axis of the rotation of the control knobs or of each control knob and circular in cross section perpendicular to the axis. The housing jointly with the knob or knobs may thus have the shape of a cylinder, sphere, ellipsoid of revolution and the like.

3,611,151
CLOCK RADIO WITH TAPE PLAYER
 Jose L. Fernandez, 615 Westgate Terrace, Streamwood, Ill.
 Filed Feb. 24, 1970, Ser. No. 13,589
 Int. Cl. G11b 31/00; H04b 1/16
 U.S. Cl. 325—396 6 Claims



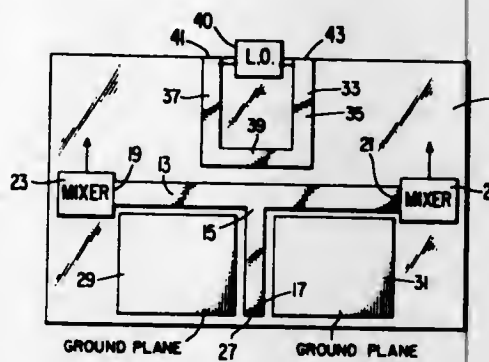
A unitary home appliance including within a single cabinet an electric alarm clock, a radio and a cartridge-type tape receptacle and playback head mechanism. Also included are an "awake" switch and a "sleep" switch of the type normally included in a present-day clock radio and a selector switch for selectively operating the radio or the tape mechanism in the morning and in the evening.

3,611,152
STABILIZED AUTOMATIC TUNING RECEIVER
 Yasuhide Sakai, Kawasaki-shi; Yoshinori Takagi, Yokohama, and Masahiro Watanabe, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
 Filed July 12, 1968, Ser. No. 744,465
 Claims priority, application Japan, July 25, 1967, July 25, 1967, Apr. 3, 1968, Apr. 3, 1968, Apr. 3, 1968, Apr. 3, 1968, Apr. 5, 1968, Apr. 4, 1968, 42-48280; 42-48279; 43-22489; 43-22494; 43-22495; 43-22492; 43-23010; 43-23036
 Int. Cl. H04b 1/16
 U.S. Cl. 325—421 9 Claims



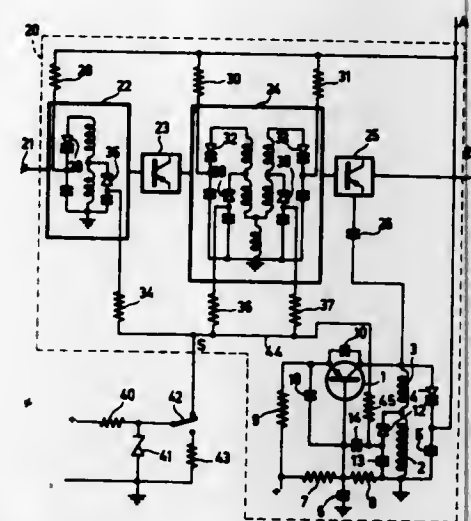
An automatic tuning device using pure electrically variable reactance elements as tuning elements for an antenna-tuning circuit, high-frequency tuning circuit, local oscillator circuit and the like in a receiver, said automatic tuning device being capable of positively maintaining the receiver tuned to a received frequency even if a field intensity varies or becomes extinct and effecting correction control to provide accurate tuning constants concurrently with signal selection during the automatic signal-seeking operation.

3,611,153
BALANCED MIXER UTILIZING STRIP TRANSMISSION LINE HYBRID
 Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation
 Filed Nov. 12, 1969, Ser. No. 876,001
 Int. Cl. H04b 1/26
 U.S. Cl. 325—446 8 Claims



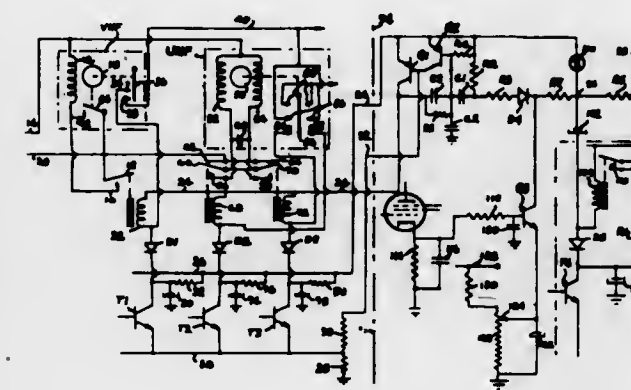
A microwave hybrid in a strip transmission line configuration is provided. Two narrow striplike conductors are joined together to form a T-configuration. Another narrow striplike conductor is positioned parallel to one of the conductors along the crossed portion of the T-configuration. A ground plane is placed to form with the narrow striplike conductors a plurality of transmission lines for propagating signal energy in an electromagnetic mode.

3,611,154
DIODE SWITCHING OF TUNED CIRCUITS WITH BACK-BIAS DERIVED FROM OSCILLATOR RECTIFICATION
 Karl-Heinz Kupfer, Huk, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
 Filed Feb. 24, 1970, Ser. No. 13,589
 Claims priority, application Germany, Dec. 9, 1967, P 43575
 Int. Cl. H03j 3/28; 5/00
 U.S. Cl. 325—459 4 Claims



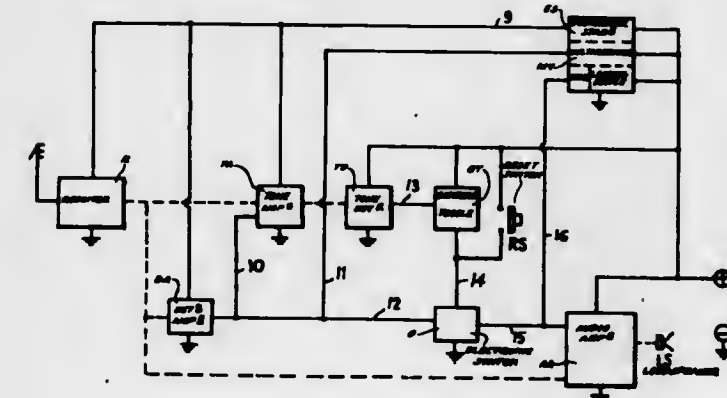
A tuning circuit particularly for a superheterodyne receiver capable of operating within two widely separated frequency ranges by using a single voltage source to bias switching diodes located within electronically tunable frequency selective and oscillator resonant circuits. For operation within a first frequency range, the single bias source only is connected to the switching diodes. For operation within a second frequency range, the single bias source is disconnected from the switching diodes which are then biased into a blocked condition by a voltage of opposite polarity produced from rectifying the oscillator signal through its switching diode. Tuning within either frequency range is implemented by varying the control voltage for variable capacitance diodes within the frequency selective and oscillator circuits. The local oscillator is provided with an additional resonant circuit tuned to frequencies outside of the two frequency ranges to facilitate the effect of the oscillator when the switching diodes are initially disconnected from the single bias source.

3,611,155
SEARCH-TUNING SYSTEM SENSITIVE TO A DC VOLTAGE CHANGE
 Louis F. Mayle, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
 Filed Feb. 24, 1969, Ser. No. 801,686
 Int. Cl. H04b 1/32
 U.S. Cl. 325—471 7 Claims



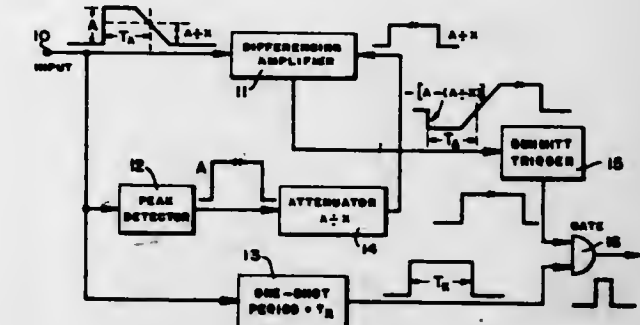
The invention relates to a search-tuning system in which the coils of the relays which control the tuning motors are supplied with electrical energy via a flip-flop circuit. The flip-flop circuit is changed to its other condition to interrupt the supply of energy to the relay coils in response to the rise in DC voltage on the cathode of the FM quadrature demodulator tube in the sound system of the receiver. The circuit may be combined with an automatic turnoff circuit for turning the set off when there is no 4.5 MHz. sound I-F carrier being produced from the channel to which the tuner is tuned.

3,611,156
BATTERY ECONOMY APPARATUS
 Michael H. E. Ward, Cambridge, England, assignor to Pye Limited, Cambridge, England
 Filed Nov. 18, 1968, Ser. No. 776,729
 Claims priority, application Great Britain, Nov. 30, 1967, 54686/67
 Int. Cl. H04b 1/06
 U.S. Cl. 325—492 5 Claims



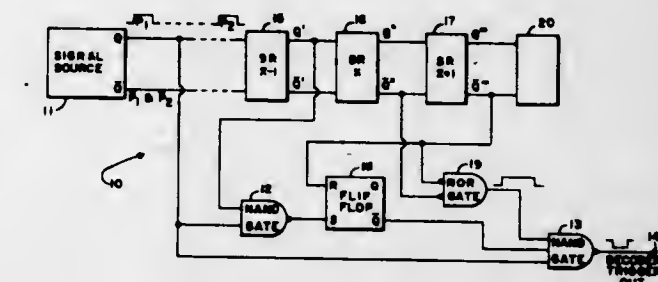
This invention provides a battery economizer circuit, particularly for a tone call radio receiver, wherein a multivibrator controls a semiconductor switch device for rendering the direct-current path to the receiver alternately conductive and nonconductive and the multivibrator has a repetition rate which may be altered, but in which the mark/space ratio remains substantially constant irrespective of the repetition rate.

3,611,157
PULSE WIDTH DISCRIMINATOR
 Richard Smith Hughes, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
 Filed June 9, 1969, Ser. No. 833,244
 Int. Cl. H03k 5/20
 U.S. Cl. 328—112 2 Claims



A pulse width discriminator for discriminating between pulses on the basis of pulse width, even though the pulse width may be ill defined, incorporating a differencing amplifier, peak detector, one-shot, attenuator and Schmitt trigger.

3,611,158
SIGNAL PULSE TRIGGER-GATING EDGE JITTER REJECTION CIRCUIT
 Lyle R. Strathman, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
 Filed Nov. 12, 1969, Ser. No. 875,609
 Int. Cl. H03k 13/00
 U.S. Cl. 328—119 8 Claims

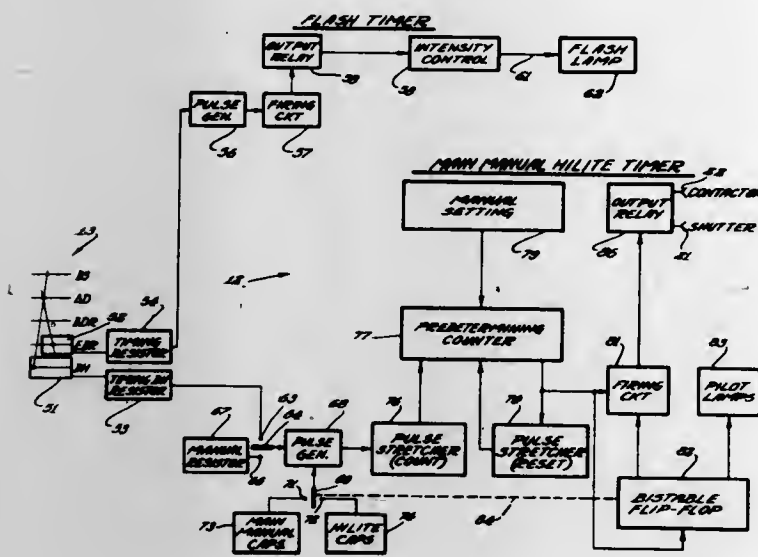


Gated logic circuit used as an antijitter circuit in a transponder system with a delay line chain having multiple signal connections from various locations before, between, and after at least three serially connected shift register units of the delay line. The logic circuitry is arranged to gate an output coincident with the leading edge of the second pulse of a two-pulse input, however, should a predetermined signal not have been developed within the logic circuitry prior to appearance of the leading edge of the second input signal pulse, the appearance thereof immediately initiates an inhibit signal through logic circuitry preventing the development of a decoder trigger output for that signal cycle.

3,611,159
AUTOMATIC-EXPOSURE PROGRAMMING APPARATUS FOR A CAMERA
 Leonard S. Florsheim, Jr., Lake Forest, Ill.; Harold B. Archer, Henrietta; Philip F. Le Presti, Henrietta, and Thurlow J. Sutherland, Rochester, N.Y., assignors to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.
 Filed Dec. 23, 1968, Ser. No. 786,280
 Int. Cl. G01r 29/02; H03k 5/00; G03b 27/06
 U.S. Cl. 328—129 14 Claims

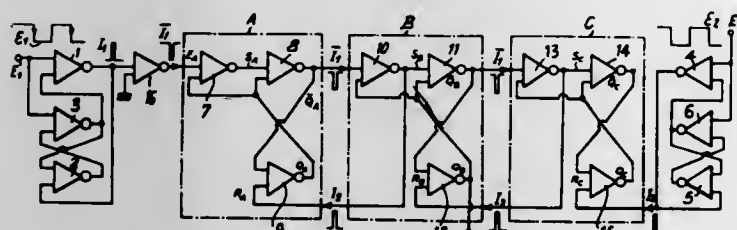
Apparatus for automatically establishing the exposures in halftone screen photography in which a control unit is set to indicate one of a discrete number of highlight densities, and a second setting is set to one of a discrete number of shadow densities and in which the settings control, remotely, a master timing unit to establish the proper exposures. A con-

trol unit allows the various exposures to be made after the master timer has been set. The settings are obtained and stored mechanically and then, at the operator's convenience and, if desirable, at a relatively remote location, are used as a



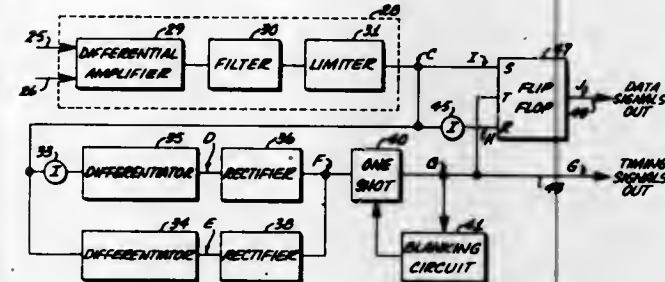
computer input; the computer is the part of the device which then converts this input (after conversion into electrical form) into an output which represents exposure time intervals which, in turn, control camera operation.

3,611,160
SIGNAL COMPARATOR
Jean Pierre Beauviala, 3 Rue Hache, Grenoble, France
Filed Jan. 21, 1969, Ser. No. 792,373
Claims priority, application France, Jan. 26, 1968, 137494
Int. Cl. H03b 3/04; H03d 3/02; H03k 9/00
U.S. Cl. 328-133 20 Claims



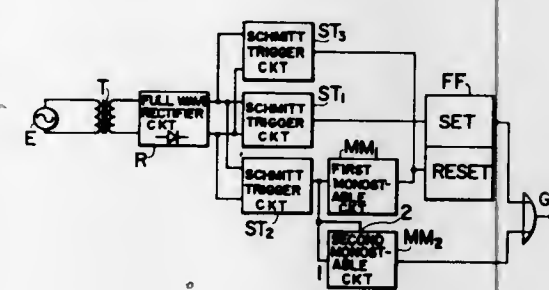
A device for comparing the phase of a first and of a second pulselike electrical signal comprises a channel having at least two extreme binary elements coupled in cascade and capable of assuming a first or a second stable state, the first binary assembly comprising a first input and a first output for the first signal and a second input for the second signal, while the second binary assembly comprises a second input and a second output for the second signal and a first input for the first signal, the first output and the second input of the first binary assembly being respectively connected to the first input and to the second output of the second binary assembly, and at least one of the assemblies comprising a control output producing a signal indicating the state of said assembly, the first and second assemblies comprising first means responsive to the first signal to trigger the assemblies from the second state to the first state, or hold the assemblies in the first state, and second means responsive to the second signal to trigger the assemblies from the first state to the second or hold said assemblies in the second state, the first signal appearing at the first output only when the first assembly has triggered while the second signal appears at the second output only when the second assembly has triggered.

3,611,161
APPARATUS FOR SEPARATING DATA SIGNALS AND TIMING SIGNALS FROM A COMBINED SIGNAL
Brian H. Claxton, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.
Filed June 16, 1969, Ser. No. 833,509
Int. Cl. H03k 5/20
U.S. Cl. 328-139 6 Claims



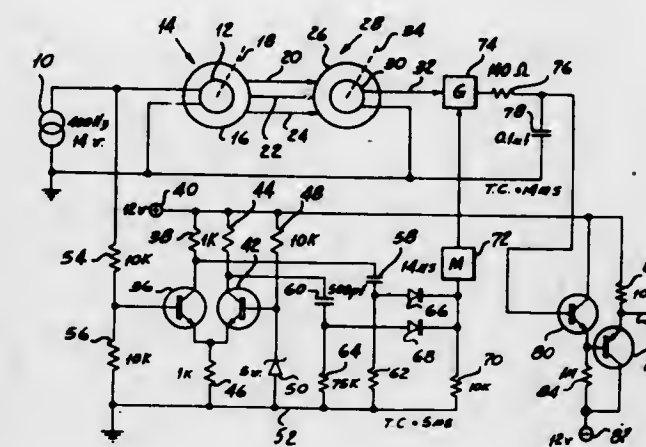
A data signal and a timing signal are combined and transmitted over a single pair of wires to apparatus for separating data signals and timing signals from the combined signal. The apparatus for separating data signals and timing signals from a combined signal has means for differentiating and rectifying the combined signal. The rectified signal applied to a one-shot causes the one-shot to produce a timing signal identical to the original timing signal. The timing signal and the combined signal applied to a flip-flop causes the flip-flop to produce a data signal identical to the original data signal.

3,611,162
APPARATUS FOR DETECTING ABNORMAL CONDITIONS OF AC SOURCES
Yutaka Tochitani, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan
Filed July 9, 1970, Ser. No. 53,525
Int. Cl. H03k 5/20
U.S. Cl. 328-150 3 Claims



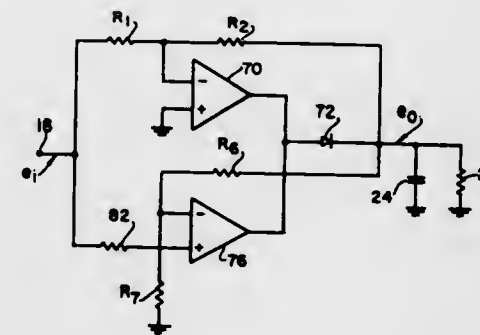
Apparatus for detecting abnormal conditions of an AC source comprises first and second Schmitt trigger circuits respectively responsive to first and second levels of the rectified voltage of the source voltage, a first monostable circuit responsive to the end of the output pulse from the second Schmitt trigger circuit for producing a pulse of a constant width which is longer than the spacing between output pulses from the second Schmitt trigger circuit at the normal frequency of the source, a bistable circuit which is set at the beginning of the output pulse from the first Schmitt trigger circuit and reset at the end of the output pulse from the first monostable circuit, a second monostable circuit responsive to the beginning of the output pulse from the second Schmitt trigger circuit for producing a pulse of a constant width which is longer than the spacing between output pulses from the bistable circuit at the normal frequency of the source and a gate circuit responsive to the output pulses from the bistable circuit and the second monostable circuit for producing an abnormal signal in the absence of these two output pulses.

3,611,163
CARRIER PEAK AMPLITUDE INSENSITIVE SYNCHRO DETECTOR
Marshall Wataick, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 6, 1969, Ser. No. 864,096
Int. Cl. H03k 5/00
U.S. Cl. 328-151 5 Claims



A carrier-insensitive synchro detector in which the modulating envelope of a modulated carrier signal is detected by sampling the modulated carrier signal at instants at which the reference carrier amplitude is equal to a reference potential which is less than the peak amplitude of the reference carrier thus to eliminate the effect of possible carrier amplitude variations on the detected output.

3,611,164
ABSOLUTE MAGNITUDE PEAK DETECTOR
Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 23, 1969, Ser. No. 887,519
Int. Cl. H03k 3/50
U.S. Cl. 328-151 1 Claim

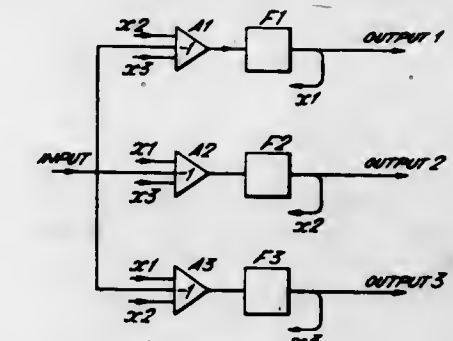


An absolute magnitude peak detector having a pair of operational amplifiers with only a single additional diode and only a single pair of matched resistors. The input signal is coupled to a different polarity input of each amplifier. The amplifier outputs are tied together and coupled through the diode to an output capacitor. The potential of the junction of the diode and the capacitor is fed back to an input of each amplifier, with the same diode thus being included in both feedback paths.

3,611,165
PARALLEL PASSBAND FILTERS HAVING MULTIPLE NEGATIVE FEEDBACK PATHS
Michael Hills, Colchester, England, assignor to National Research Development, London, England
Filed June 30, 1970, Ser. No. 51,212
Int. Cl. H03b 1/04
U.S. Cl. 328-167 9 Claims

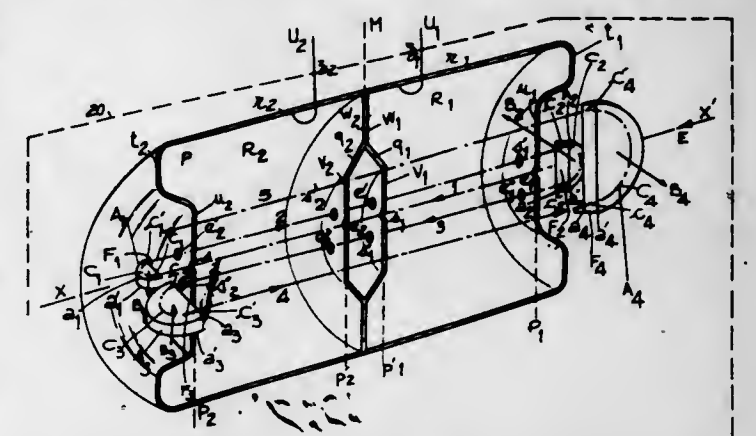
An electrical frequency filter of the kind having several

filter units covering adjacent passbands has negative feed-



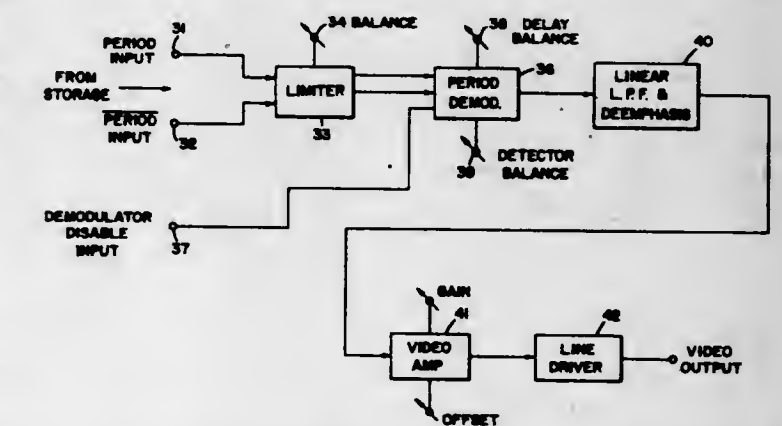
back between adjacent units to tend to cancel unwanted frequencies.

3,611,166
ACCELERATOR FOR RELATIVISTIC ELECTRONS
Bernard Epstein, and Jacques Pinel, both of Paris, France, assignors to CSF Compagnie Generale de Telegraphie Sans Fil
Filed Nov. 8, 1968, Ser. No. 774,406
Claims priority, application France, Nov. 21, 1967, 129070
Int. Cl. H01j 23/10, 25/10, 29/76; H05h 9/00
U.S. Cl. 328-233 13 Claims



An electron accelerator supplied with H.F. energy comprising one or more resonators in series through which an electron beam is propagated several times, along parallel trajectories with deflection by 180° at each end of the accelerator.

3,611,167
PERIOD DEMODULATOR FOR SAMPLING ADJACENT PAIRS OF PULSE EVENTS
Richard W. Calfee, and E. Troy Hatley, both of San Jose, Calif., assignors to Data Disc Incorporated, Palo Alto, Calif.
Filed July 22, 1969, Ser. No. 843,381
Int. Cl. H03k 9/08
U.S. Cl. 329-106 7 Claims



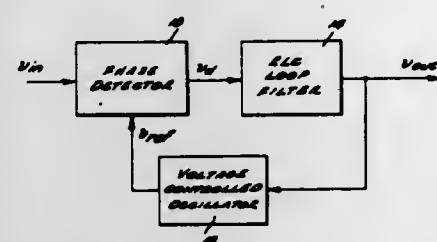
A modulator and demodulator system for video recording in which the modulated signal is a train of pulses with the

distance between any two pulse events proportional to the amplitude of the sampled video signal. By the use of appropriate sample and hold means in the demodulator any high frequency fundamental component of the modulated signal is nulled out during demodulation.

3,611,168 THRESHOLD EXTENSION PHASE-LOCK DEMODULATOR

Theodore F. Haggal, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 24, 1970, Ser. No. 24,046
Int. Cl. H03d 3/24

U.S. Cl. 329—122



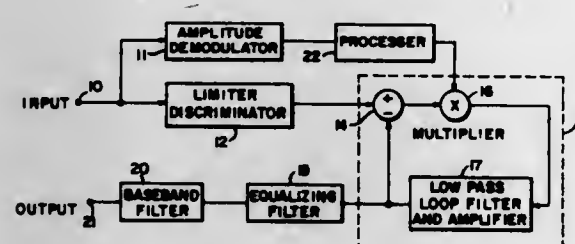
A phase detector, a filter and a voltage-controlled oscillator are coupled in a phase-lock loop. The filter, which may be active or passive, has a complex frequency signal transfer function $F(s)$ given essentially by:

where K_f is a preselected scale factor, ω_z and ω_p are frequencies of conjugate complex zeros and poles, respectively, with $\zeta_z > 0$ and $\zeta_p < 1$, and ζ_z, ζ_p are damping ratios of the complex zeros and poles, respectively, with $\zeta_z < \zeta_p < 1$.

3,611,169 FREQUENCY DEMODULATOR FOR NOISE THRESHOLD EXTENSION

Donald T. Hess, Ozone Park, and Kenneth K. Clarke, New York, both of N.Y., assignors to Polytechnic Institute of Brooklyn, Brooklyn, N.Y.
Filed Aug. 15, 1968, Ser. No. 824,013
Int. Cl. H03d 3/00

U.S. Cl. 329—135



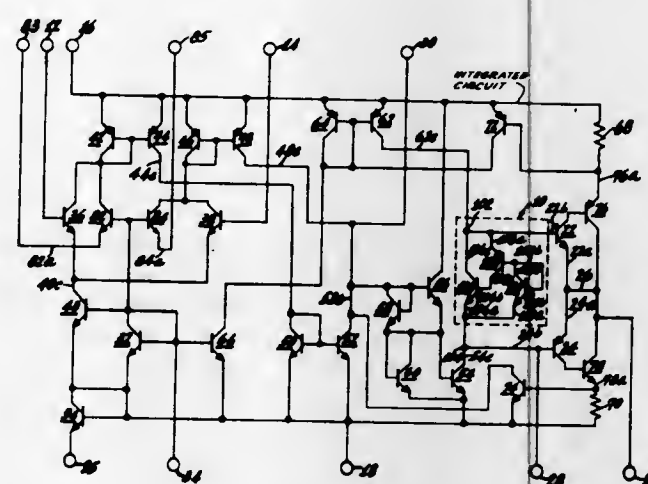
Described herein is a frequency modulation signal demodulation system which utilizes the amplitude modulation information inherent in a noise-corrupted frequency modulation carrier to control the parameters of a feedback loop, through which the demodulated FM information is passed, during the occurrence of large noise-induced, pulse-like disturbances in the demodulated frequency modulation information. This function is performed by a circuit configuration which includes an amplitude modulation demodulator and a frequency modulation demodulator supplied in parallel from the input to the system for deriving information signals which are respective functions of the instantaneous envelope information and the instantaneous frequency modulation information. The control of the parameters of the feedback loop may be accomplished by the instantaneous envelope information directly or by the envelope information on which some process has been performed. The description also refers to the fact that the envelope detector may have linear

or nonlinear characteristics. One way in which the envelope information may be processed is by a nonlinear quantizer followed by a time delay circuit which is interposed between the envelope demodulator and the means for controlling the feedback loop which modifies the frequency modulation information signals. The final output signals may be taken from the output of the feedback loop through a low-pass filter. If desired, an equalizing filter may also be interposed between the output of the feedback loop and the final low-pass filter.

3,611,170 BIAS NETWORKS FOR CLASS B OPERATION OF AN AMPLIFIER

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation
Filed Oct. 27, 1969, Ser. No. 869,708
Int. Cl. H03f 3/18

U.S. Cl. 330—13

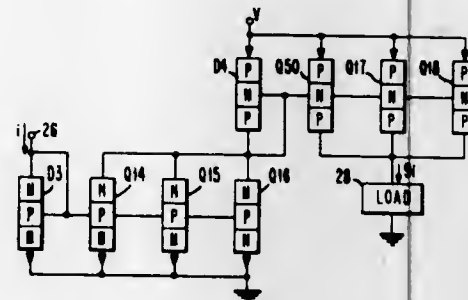


A means for biasing a complementary Class B transistor amplifier which has the capability of maintaining the amplifier at a minimum distortion operating point over large ambient temperature variations.

3,611,171 INTEGRATED CIRCUIT VIDEO AMPLIFIER

John C. Black, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 11, 1969, Ser. No. 884,092
Int. Cl. H03f 3/18

U.S. Cl. 330—17



A low cost, linear video amplifier requires no resistors making it especially adaptable for heavily integrated monolithic fabrication, and is characterized by wideband response, low and equal power dissipation in each transistor in the same stage for minimum local temperature gradients, gain substantially independent of voltage supply levels, supply variations and, within limits, ambient temperature variations. The transistors of each stage are physically identical to provide matched base-emitter voltage-current characteristics. Each stage of the amplifier comprises m transistor amplifiers with n transistors operated as diodes (i.e., short-circuited base-collector electrodes) and connected in parallel between the base and emitter electrodes of the amplifiers to provide a current gain of m/n . One or more succeeding stages of generally similar construction are comprised of

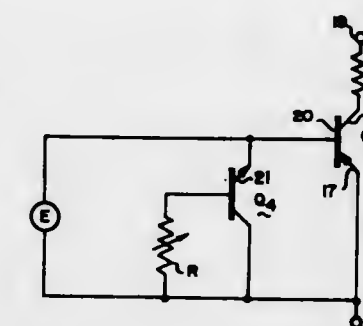
transistors of the same conductivity type and the transistor-diodes of each stage are connected to and receive their input current from the diodes and the emitter electrodes of the next preceding stage.

The improved amplifier is particularly useful as an accurate, single or multiple constant current source or as a resistorless wideband gain element providing for more complex amplifier circuits.

3,611,172 TEMPERATURE-COMPENSATING SHUNT FOR SOLID- STATE DEVICES

Godfrey R. Gauld, Richmond, Ind., assignor to Avco Corporation, Cincinnati, Ohio
Filed Nov. 24, 1969, Ser. No. 879,185
Int. Cl. H03f 1/32

U.S. Cl. 330—23



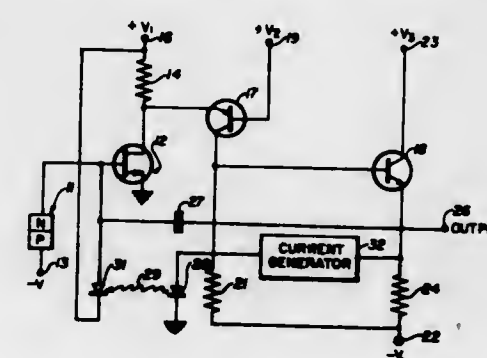
The base emitter circuit of a transistor or the gate-cathode circuit of an SCR, operative as active elements of a circuit, are shunted by a temperature-compensating circuit consisting of a shunting transistor having a resistance connected across its base-collector circuit, the gains of the active elements and of the shunting transistor and the value of the resistance being selected to maintain gain of the active elements constant as a function of temperature. In either case for switching applications in which case the switching current is maintained constant for a wide range of temperatures, while in the case of a transistor employed for proportional amplification, gain is maintained constant and drift is avoided.

3,611,173 CHARGE-SENSITIVE PREAMPLIFIER USING OPTOELECTRONIC FEEDBACK

Frederick S. Goulding, Lafayette; William L. Hansen, Walnut Creek, and John T. Walton, Orinda, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 3, 1969, Ser. No. 873,221

U.S. Cl. 330—59



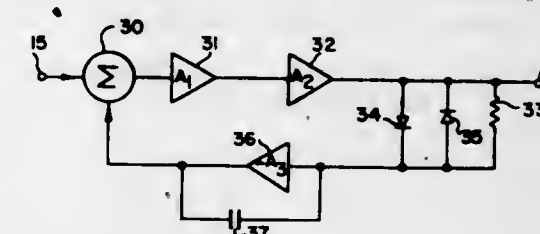
A low-noise integrating preamplifier particularly useful for the processing of signals in semiconductor detector nuclear radiation spectrometers to provide a significant improvement in the energy resolution thereof. Noise reduction and increased resolution are achieved by employment of optoelectronic feedback to simulate a pure resistance in place of the component resistor conventionally employed as the DC feedback element of a conventional preamplifier.

3,611,174 ELECTROCARDIOGRAPHIC MONITORING AMPLIFIER

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Dec. 9, 1969, Ser. No. 883,411
Int. Cl. H03f 1/36

U.S. Cl. 330—85

11 Claims



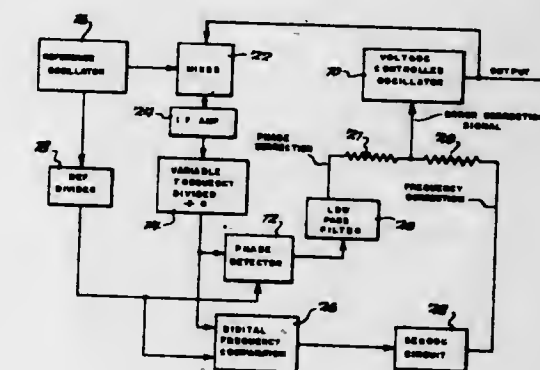
An electrocardiographic monitoring amplifier. A forward path DC-coupled amplifier is provided between the input and output terminals, and a negative feedback circuit is provided to null the effect of any input offset. The feedback circuit includes an integrator whose time constant is large enough to permit the transmission to the output of low frequency components in the ECG signal. However, if the output signal goes off scale, the time constant of the integrator is lowered to permit rapid base line stabilization. The forward path amplifier is slew-rate limited to prevent charging of the capacitor in the integrator from spikes appearing at the input terminal.

3,611,175 SEARCH CIRCUIT FOR FREQUENCY SYNTHESIZER

Gilbert L. Boelke, West Seneca, N.Y., assignor to Sylvania Electric Products Inc.
Filed Mar. 26, 1970, Ser. No. 22,839
Int. Cl. H03b 3/04

U.S. Cl. 331—4

13 Claims



In an indirect digital frequency synthesizer comprising a voltage-controlled oscillator, a feedback loop connected from the oscillator output to its phase control input via a frequency divider, phase detector and low-pass filter, a reference frequency pulse source connected as a second input to the phase detector, and a digital comparator network for comparing the frequency of the feedback and reference pulses and generating output pulses when the feedback and reference pulses are not interlaced, a search circuit responsive to the frequency comparator output pulses for providing an error correction signal to the oscillator, whereby the oscillator is coarse tuned to within a frequency allowing the phase detector to accomplish phase lock of the feedback pulse train with the reference pulse train. For bidirectional tuning, two outputs are taken from the comparator, pulses at one output indicating the feedback frequency is too low and pulses at the other output indicating the feedback frequency is too high, and the search circuit comprises a capacitor having two pulse-controlled constant current sources, one responsive to pulses at one of the comparator outputs for charging the capacitor in a stepwise manner and the other responsive to pulses at the second comparator output for providing stepwise discharging of the capacitor. For unidirectional tuning, only one pulse output is taken from the comparator, and the search circuit comprises

a capacitor having a pulse-controlled constant current source operative in response to comparator output pulses to stepwise charge the capacitor, with a dump circuit being provided to discharge the capacitor upon its charging to a predetermined maximum voltage level.

3,611,176

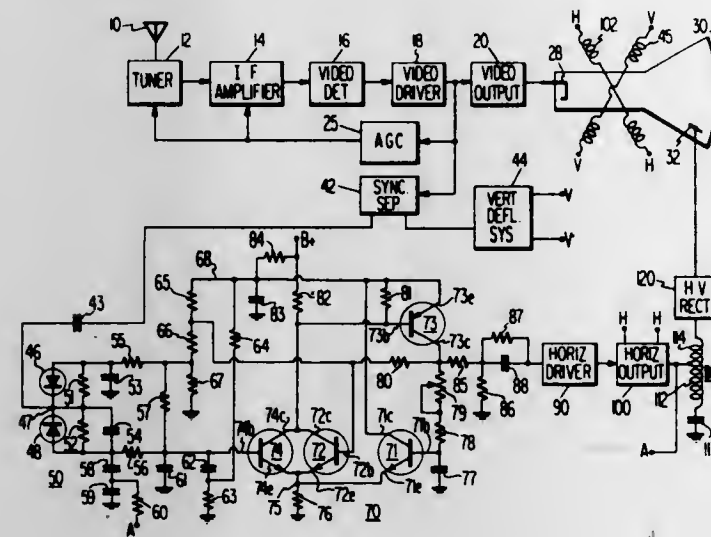
FREQUENCY CONTROLLED OSCILLATOR

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation

Filed July 31, 1970, Ser. No. 60,064
Int. Cl. H03k 3/282

U.S. Cl. 331-111

9 Claims



An oscillator circuit employs first and second emitter coupled transistors in a switch configuration. First and second trip voltages are developed by a voltage divider network in conjunction with a third transistor and are applied to the base of the second transistor. The third transistor regeneratively aids in switching conduction states of the second transistor and changes the trip voltage applied to the base of the second transistor as well as in the input signal to an integration network coupled to the base of the first transistor to sustain oscillations. Frequency control is effected by coupling the collector-to-emitter current path of a fourth transistor in parallel with the collector-to-emitter current path of the second transistor. An automatic frequency control (AFC) voltage is applied to the base of the fourth transistor in response to the AFC control signal instead of the fixed lower trip voltage, thereby varying the frequency oscillation of the circuit.

3,611,177

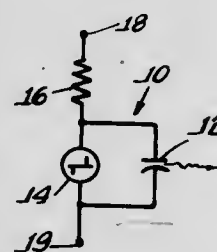
ELECTROLUMINESCENT RELAXATION OSCILLATOR FOR DC OPERATION

Jan Helbers, Rochester, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 16, 1969, Ser. No. 825,234
Int. Cl. H01j 1/62; H03k 3/57

U.S. Cl. 331-46

12 Claims



An electroluminescent circuit for DC operation comprising a discrete electroluminescent element the capacitive reactance characteristic of which is utilized in a circuit con-

taining a bidirectional threshold switching device having inherent turn-on time delay and inherent recovery time delay characteristics and, together with suitable circuit resistance form a bistable electroluminescent relaxation oscillator circuit which has stable ON and stable OFF conditions with a DC operating potential continuously applied thereto. When a start signal, which may be a pulse of predetermined time duration and amplitude, is applied to the electroluminescent circuit the circuit will begin to oscillate at a frequency determined by, among other things, the electrical values of the circuit components and the amplitude of the applied voltage and will continue to oscillate as a relaxation oscillator after termination of the start signal to energize the electroluminescent element of the circuit so that light will be emitted therefrom. When a stop signal of the proper time duration is applied to the electroluminescent relaxation oscillator circuit the circuit will stop oscillating and the electroluminescent element will no longer emit light.

3,611,178

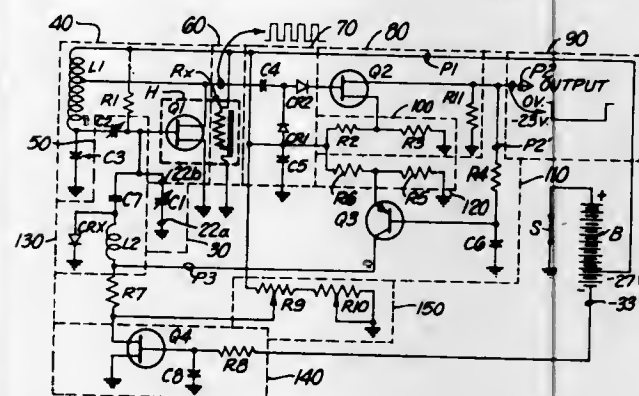
PRESSURE-SENSING SIGNAL GENERATOR

Gerald L. McConnell, Riverside, Calif., assignor to Bourns, Inc.

Filed Oct. 13, 1969, Ser. No. 865,919
Int. Cl. A62b 7/04; G01n 27/22; H03b 5/12

U.S. Cl. 331-65

5 Claims



Extremely sensitive apparatus for detecting effort of a patient to inhale and to produce a powerful output signal of very short duration in response for initiating action of a respirator, with means immunizing the apparatus against adverse temperature change effects, means for stabilizing operation of the apparatus, and means for varying the sensitivity of the apparatus to pressure differential.

3,611,179

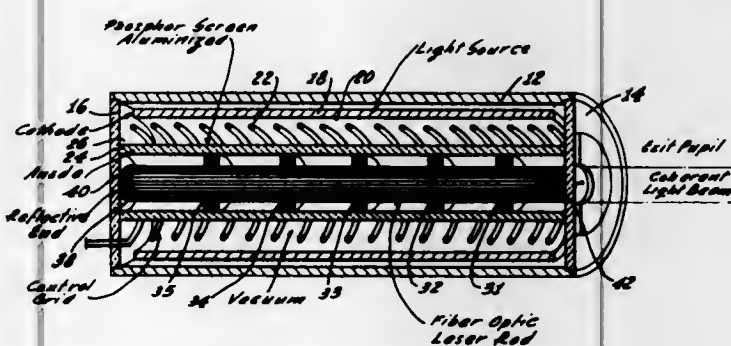
OPTICAL MASER

Norman F. Fyler, Menlo Park, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed July 31, 1961, Ser. No. 127,983
Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

10 Claims



1. A laser comprising a central fiber optic core including a plurality of individual optic fibers responsive to light of a predetermined spectral distribution for excitation into higher energy states and for the emission of coherent radiation upon discharge into lower energy states; a vacuum tube including a

sleene line elongated anode, a grid and a sleene like elongated cathode surrounding said core and mounted concentrically and successively spaced outwardly from said core; said anode including a phosphor coating having a light output distribution of the same general range as said predetermined spectral distribution; and means for directing coolant between said core and said anode.

3,611,180

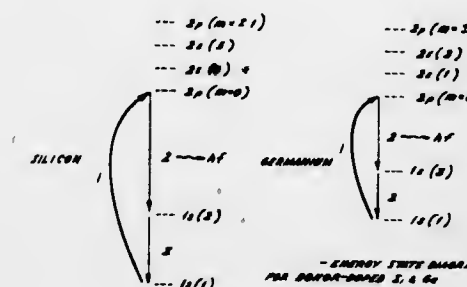
COHERENT FAR INFRARED GENERATOR

Marvin E. Lasser, Potomac, Md., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 2, 1968, Ser. No. 725,976
Int. Cl. H01s 3/18

U.S. Cl. 331-94.5

4 Claims



Coherent far infrared generator comprising solid state laser using supercooled doped semiconductor crystal pumped by impact ionization to create population inversion of impurity charge carriers from valence level to higher energy level within forbidden band.

3,611,181

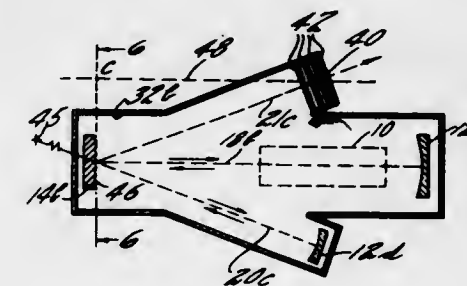
LASER DIFFRACTION GRATING COUPLING MIRROR

Edmund C. Lary, Glastonbury, Conn., and Harvey R. Worthington, Jr., Cambridge, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 10, 1968, Ser. No. 766,408
Int. Cl. H01s 3/05

U.S. Cl. 331-94.5

2 Claims



A diffracting mirror having a shallow surface modulation pattern in the form of a grating is used in a laser cavity partly to sustain resonance by specular reflection and partly to divert power into an external beam by diffraction. Diffractive coupling permits the external beam to emerge without passing through the mirror, thereby avoiding certain limitations of the present art. Various embodiments provide for single or multiple external beams, for collimated or convergent beams, and for modulated beams.

3,611,182

OPTICAL CHIRP PULSE GENERATOR

Edmond B. Treacy, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

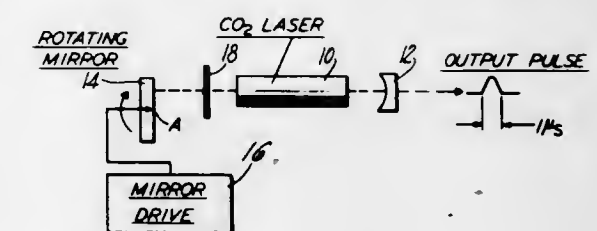
Filed Nov. 19, 1968, Ser. No. 777,002
Int. Cl. H01s 3/11

U.S. Cl. 331-94.5

8 Claims

Pulses of light are generated by a laser oscillator, and the pulses are swept in frequency or chirped by rotating one of

the resonator mirrors in such a way as to change the oscillation frequency continuously during the generation of the pulse.



3,611,183

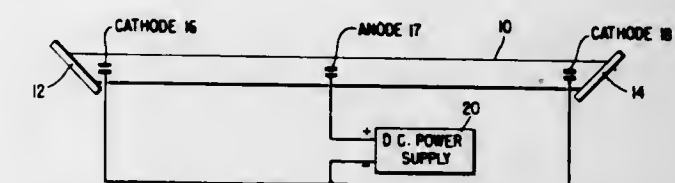
DOUBLE-ENDED ION LASER TUBE

James R. Fendley, Jr., Trenton, N.J., assignor to RCA Corporation

Filed Jan. 27, 1969, Ser. No. 793,935
Int. Cl. H01p 3/02

U.S. Cl. 331-94.5

1 Claim



Contamination of an optical element, such as a Brewster window, at the end of a high power gas discharge tube, which is presently due to the proximity of this optical element to the tube anode structure, is avoided by locating the anode structure centrally between the ends and employing two cathodes located respectively at the opposite ends of the tube. This results in significantly increasing the useful life of the gas discharge tube.

3,611,184

LASER OPTICAL SYSTEM HAVING DIVERGENT COMPONENT

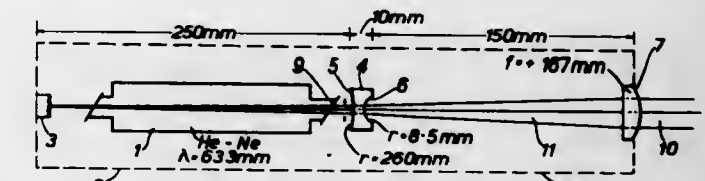
William T. Moore, London, England, assignor to The Rank Organization Limited, London, England

Filed Mar. 10, 1969, Ser. No. 805,725
Claims priority, application Great Britain, Mar. 20, 1968, 13523/68

U.S. Cl. 331-94.5

Int. Cl. H01s 3/08

9 Claims



A laser optical system has, in place of the normally plane-parallel partly transmitting output reflector element, an element having a concave or convex forward face, and a concave rear face, such that internally reflected light is deflected outwardly away from the axis of the system, thereby avoiding interference with directly transmitted laser output light.

3,611,185

UNITARY LASER SYSTEM WITH OVAL-SHAPED ROD OF LASER GLASS

C. Gilbert Young, Southwood Road, Storrs, Conn.

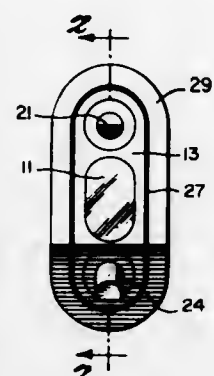
Filed Apr. 10, 1969, Ser. No. 815,061
Int. Cl. H01s 3/06, 3/09, 3/02

U.S. Cl. 331-94.5

14 Claims

This specification discloses a glass laser system comprising a rod of laser glass with two flashlamps one on each side of

the rod. The flash lamps and the rod are combined in a unitary construction. The rod is oval in cross section to increase



the length of the path of the pump light from the flashlamps through the rod.

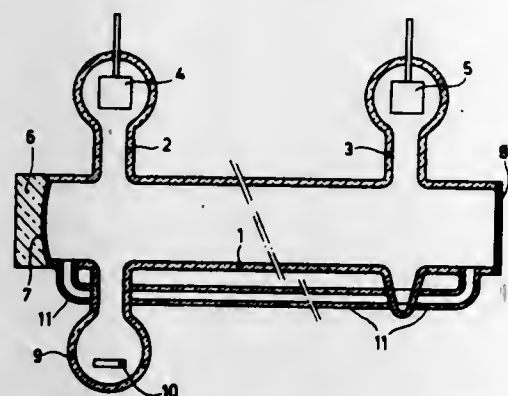
3,611,186
LASER INCLUDING A TUBE INTERCONNECTING THE ENDS OF THE DISCHARGE TUBE
Wilhelmus Jacobus Witteman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,681
Claims priority, application Netherlands, Apr. 25, 1968, 6805921

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

4 Claims



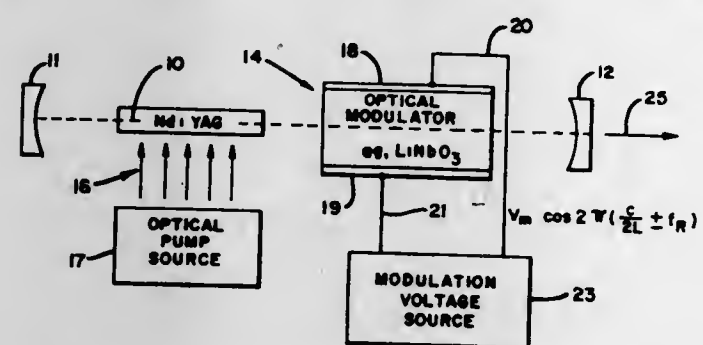
An infrared emission production device having a mixture of carbonic acid gas, nitrogen, helium and water vapor in a closed discharge tube, the ends of the discharge tube connected by a connection tube extending parallel to the discharge tube, the diameter of the connection tube being at most one-third the diameter of the discharge tube.

3,611,187
MODE-LOCKED LASER MODULATED BY A TRAIN OF STABILIZED NONDAMPED RELAXATION PULSES
Larry M. Osterink, Mountain View, and Jack D. Foster, Los Altos, both of Calif., assignors to Sylvania Electric Products, Inc.

Filed May 14, 1969, Ser. No. 824,622
Int. Cl. H01s 3/10

U.S. Cl. 331-94.5

2 Claims



The intracavity LiNbO_3 optical modulator in this mode-locked Nd:YAG laser is modulated at a frequency that is dif-

ferent from the laser intermode frequency $c/2L$ by the natural relaxation oscillation frequency associated with the lasing medium.

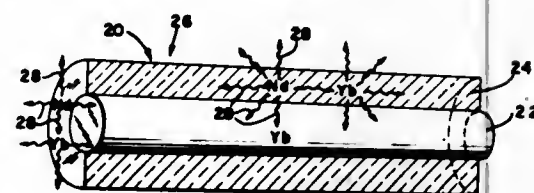
3,611,188
YTTERBIUM LASER DEVICE
Elias Snitzer, Wellesley, Mass., and Richard F. Woodcock, South Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 19, 1969, Ser. No. 825,765

Int. Cl. H01s 1/09, 1/02, 3/16

U.S. Cl. 331-94.5

6 Claims



Yb^{3+} doped laser device which emits radiation at wavelengths shorter than 1.06 microns at high temperatures. The device includes a laser-active component doped with ytterbium ions and a sensitizer component proximately disposed in relationship to the laser-active component doped with neodymium ions.

3,611,189
DIFFUSE SOLID STATE LASER CAVITY
James H. Stone, Malden; John C. Carmody, Wakefield; Donald R. Gorsuch, Chelmsford, Mass., and Victor A. Misk, Hudson, N.H., assignors to Sanders Associates Inc., South Nashua, N.H.

Filed Oct. 7, 1969, Ser. No. 864,317

Int. Cl. H01s 3/02, 3/09

U.S. Cl. 331-94.5

9 Claims



A diffuse solid state laser cavity comprises an outer dielectric cylinder and a transparent inner cylinder concentrically disposed within the first. A liquid coolant is circulated through the inner cylinder and the annular between the inner and outer cylinders is filled with a diffuse reflecting material. Electrically conductive end cap assemblies having means for mounting a laser crystal and flashlamp are disposed on each end of the concentric cylinders. There is a provision in one end cap for threading in the flashlamp to assure electrical contact and facilitate lamp replacement.

3,611,190
LASER STRUCTURE WITH A SEGMENTED LASER ROD
John E. Keefe, Jr., Charlton Ckty, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 16, 1969, Ser. No. 867,005

Int. Cl. H01s 3/02

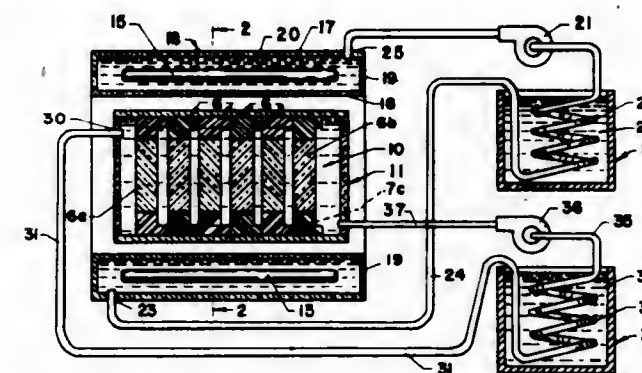
U.S. Cl. 331-94.5

6 Claims

An optical maser or laser structure is provided with a segmented laser rod and is immersed in a coolant fluid for maintaining the operating temperature of the laser rod segments at a substantially uniform temperature. The segmented struc-

ture is formed or segments of zero lens power, spaced apart a sufficient distance to permit free passage of sufficient coolant for temperature maintenance but close enough to prevent

prevent the formation of domains when a longitudinal electric field sufficient to bias the center portion into a region of negative differential mobility is applied. A DC voltage supply coupled to contacts on either end of the slab provides this field.



pump light from passing through the spaces between the segments. The laser-glass portion of the segments is edge-embedded in (or coated with) a flexible material.

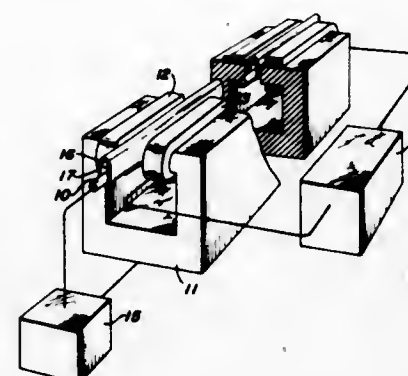
3,611,191
SELECTIVELY CONTROLLABLE RADIANT ENERGY DEVICE
Daniel E. Altman, and Myer Geller, both of San Diego, Calif.

Filed Nov. 3, 1969, Ser. No. 873,323

Int. Cl. H01s 3/09; H01J 1/50

U.S. Cl. 331-94.5

11 Claims



A gaseous discharge device is connected to a suitable source of electrical energy which may typically be of the pulsed DC type to generate the emission of radiant energy having a determinable spectral character. A magnetic field is caused to perpendicularly intercept the electric field resultant from the flow of current through the gaseous discharge device causing a controllable and predictable change in the spectral character of the emitted radiant energy in accordance with the strength of the magnetic field. By increasing the strength of the magnetic field, two or more peaks of radiant energy of different spectral character may be generated so that peak emitted power may be realized within a desired spectral region to be employed as the excitation energy for a laser, for example.

3,611,192
BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE DEVICE AMPLIFIERS AND OSCILLATORS
George Allan Swartz, Princeton, N.J., assignor to RCA Corporation

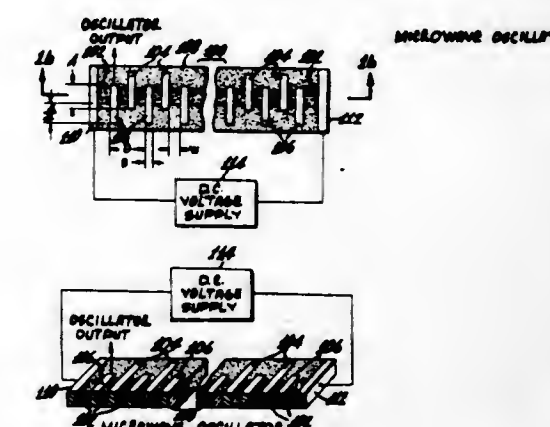
Filed Dec. 23, 1969, Ser. No. 887,521

Int. Cl. H03b 7/14

U.S. Cl. 331-96

7 Claims

A microwave device comprising a meander line in cooperative surface relationship with a slab of material, such as GaAs having an N-type semiconducting longitudinally distributed center portion and intrinsic insulating outer portions. The thickness of the slab is sufficiently thin and the density of electrons in the center portion is sufficiently low to



The microwave device, which is simply fabricated by integrated circuit techniques, operates as a negative resistance loaded slow wave structure, wherein the phase velocity of a propagated wave is many times the carrier drift velocity, to cause a wave to experience gain when propagated by the meander line slow wave structure of the microwave device.

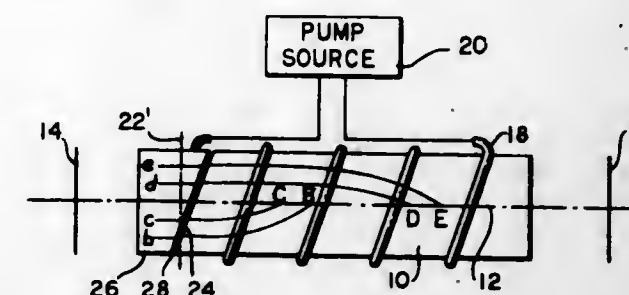
3,611,193
HEADER FOR A LASER ROD
Paul G. De Baryshe, Lincoln, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 30, 1969, Ser. No. 889,094

Int. Cl. H01s 3/05

U.S. Cl. 331-94.5

10 Claims



A laser rod having a header coaxial therewith and abutting the rod at a cut which is oblique to the axis of the rod to substantially prevent focusing of the laser light at any single point in the rod. The focusing could cause damage to the rod.

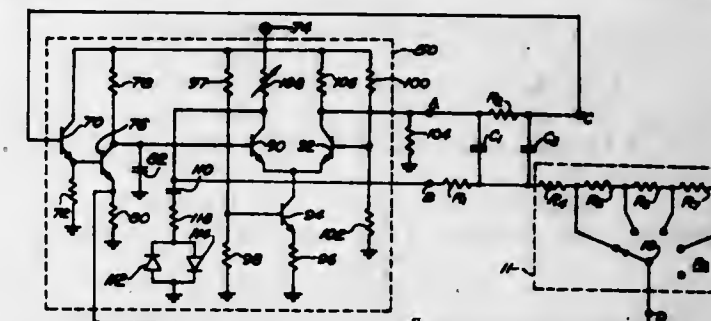
3,611,194
TUNABLE OSCILLATOR CIRCUIT EMPLOYING AN ACTIVE RC NOTCH FILTER CIRCUIT
W. Alfred Codd, Rochester; Koho Ozone, Webster, and Donald C. Rimlinger, Holcomb, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,408

Int. Cl. H03b 5/26

U.S. Cl. 331-108 R

22 Claims



A tunable oscillator circuit employing a resistor capacitor (RC) active notch filter in the feedback path. Two variable

resistances are included in the oscillator circuit, one for independently setting the notch depth of the filter, and the other for independently adjusting the frequency of oscillation.

ERRATA

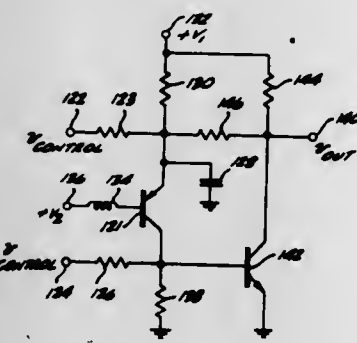
For Classes 331—94, 331—111, 331—H3, 331—113 and 331—116 see:
Patent Nos. 3,611,204 thru 3,611,206, 3,611,231 and 3,611,436

3,611,195
VARIABLE FREQUENCY OSCILLATOR AND MODULATOR CIRCUITS INCLUDING COLPITTS TRANSISTOR AND FEEDBACK TRANSISTOR
O. D. Parham, Downey, Calif., and Hughes Aircraft Company, Culver City, Calif., assignor to Hughes Aircraft Company Culver City, Calif.

Filed Sept. 3, 1969, Ser. No. 855,007
Int. Cl. H03c 3/08

U.S. Cl. 332—16 T

10 Claims



The basic variable frequency oscillator circuit includes a transistor connected in a Colpitts configuration. An effective tank circuit capacitance is varied in accordance with a control signal to vary the circuit oscillation frequency. When the effective capacitance is provided by the transistor base-emitter capacitance, the frequency variation may be achieved by varying the transistor emitter current or the collector-base voltage. Alternatively, the effective capacitance may be varied by varying the transconductance of a second transistor coupled in a feedback arrangement with the Colpitts transistor. Frequency modulation may be achieved when a modulating voltage is used as the control signal. Circuit variations involving phase locking of the feedback employing embodiment onto an input signal include a frequency demodulator, a phase modulator and an amplitude modulation limiter. Further variations include a harmonic signal generator and frequency multiplier/divider circuits.

ERRATUM

For Class 333—7 see:
Patent No. 3,611,016

3,611,196
INTEGRATED MICROWAVE SYSTEM HAVING A HYBRID STRUCTURE WITH A NONMAGNETIC DIELECTRIC CERAMIC SUBSTRATE
Wolfgang Tolkdorf, Tornesch, and Peter Holst, Pinneberg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,104
Claims priority, application Germany, Feb. 27, 1969, P 19 09 936.6

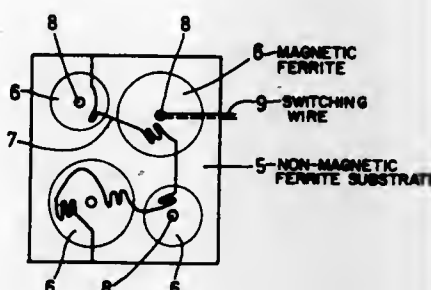
U.S. Cl. 333—1.1

Int. Cl. H01p 1/32

9 Claims

An integrated microwave system having a hybrid structure using a nonmagnetic dielectric ceramic substrate consisting of a sintered ferrite having a lower Curie point than the

lowest operating temperature of the system. The system includes two or more interconnected elements integrally united



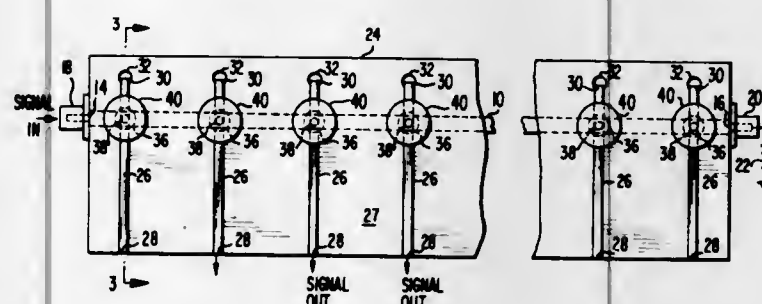
with the substrate. Each of these elements consists essentially of a soft magnetic ferrite which is sintered to the substrate.

3,611,197
YIG RESONATOR MICROSTRIP COUPLING DEVICE
Robert A. Moore, Severna Park; Theodore M. Nelson, Catonsville, and James M. Flaherty, Catonsville, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,514
Int. Cl. H01p

U.S. Cl. 333—1.1

11 Claims



A microstrip manifold providing a plurality of frequency selective outputs from a single input signal including a common input microstrip transmission line terminated at one end and a plurality of output microstrip transmission lines disposed substantially normal to the input transmission line and coupled thereto by means of respective yttrium iron garnet (YIG) sphere resonators, each being tuned to a predetermined resonant frequency by a separate magnetic field to provide isolation between each of the output transmission lines. Additionally, each of the output transmission lines are terminated at a short circuit in proximity to the respective YIG sphere. The input conductor is not grounded at the YIG spheres but is terminated at the end of the line.

3,611,198
FREQUENCY-SELECTIVE COUPLING CIRCUIT FOR ALL-CHANNEL TELEVISION ANTENNA HAVING UHF/VHF CROSSOVER NETWORK WITHIN UHF TUNER

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 4, 1970, Ser. No. 34,035
Int. Cl. H03h 7/46

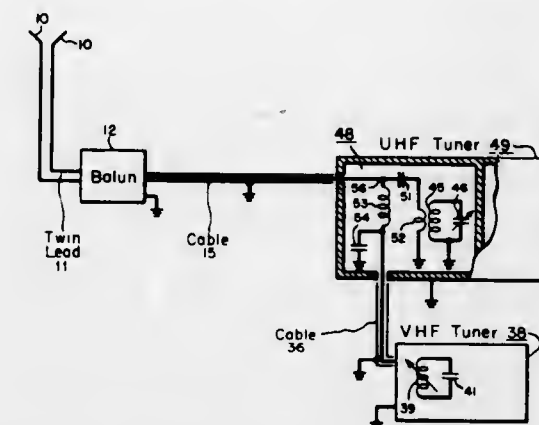
U.S. Cl. 333—6

8 Claims

UHF and VHF television signals, picked up by a common all-channel antenna, are separated by high- and low-pass filters of a crossover network for application to tunable frequency selector input circuits of UHF and VHF tuners. By placing the crossover network within the UHF tuner irregularities or discontinuities are minimized in the transmission line from the antenna to the UHF tuner's input circuit and

the length of the transmission line from the high-pass filter to the UHF tuner's input circuit is made substantially zero. This

mounted on first and second side surfaces of the body that extend perpendicular to said boundary surfaces. The body thickness is less than five times the wavelength of the wave energy. The transducers are polarized parallel to both the



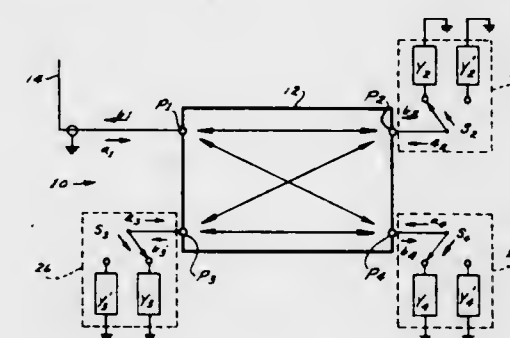
results in maximum signal transmission of the UHF television signals to the UHF tuner and of the VHF television signals to the VHF tuner.

3,611,199
DIGITAL ELECTROMAGNETIC WAVE PHASE SHIFTER COMPRISING SWITCHABLE REFLECTIVELY TERMINATED POWER-DIVIDING MEANS
Paul Safran, Chesterfield, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 30, 1969, Ser. No. 862,382
Int. Cl. H01p 1/18 5/14

U.S. Cl. 333—10

14 Claims



A digital phase shifter of the reflection type is disclosed which includes a directional coupler, hybrid network or other power division network with switchable load means coupled to ports of the coupler for effecting changes in reflection coefficients of the network to provide incremental phase shifts or delays in the output wave relative to the input wave. A four-port hybrid network is provided with switchable loads, such as diodes, at some of the ports, and the diodes are controlled by control signals. In one arrangement switchable loads are connected to three of the four ports to provide eight states of phase shift spaced 45° apart. Some other arrangements include more than one hybrid network to provide a greater number of incremental phase shifts.

3,611,200
ULTRASONIC DELAY LINE
Theodorus Bartholomeus Antonius Maria Silepenbeek, and Manfred Franz Karl Gammel, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

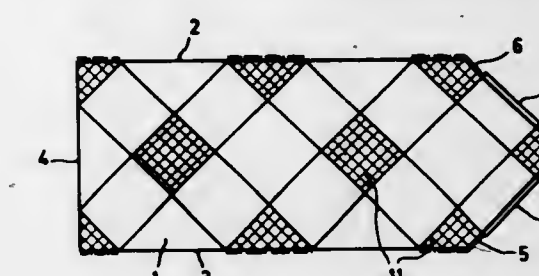
Filed Oct. 31, 1969, Ser. No. 872,913
Claims priority, application Netherlands, Nov. 9, 1968, 681-6005

U.S. Cl. 333—30

Int. Cl. H03h 9/30

6 Claims

A thin flat ultrasonic delay line comprising a solid glass body in the shape of a parallelepiped with pentagonal top and bottom boundary surfaces extending perpendicular to the thickness dimension of the body and substantially parallel to the desired propagation path in the body for the ultrasonic wave energy. An input and an output transducer are



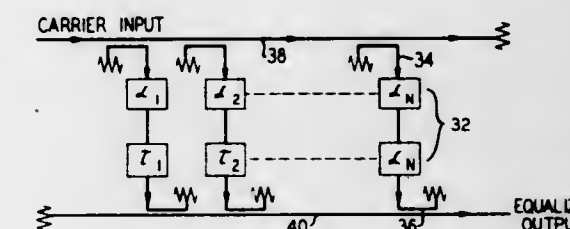
boundary surfaces and the first and second contact surfaces. Parts of the aforesaid boundary surfaces outside of the desired energy propagation path are arranged to attenuate wave energy impinging thereon.

3,611,201
CARRIER TRANSVERSAL EQUALIZER
James E. Goell, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,034
Int. Cl. H03h 7/10, 7/30; H04b 3/04

U.S. Cl. 333—18

18 Claims



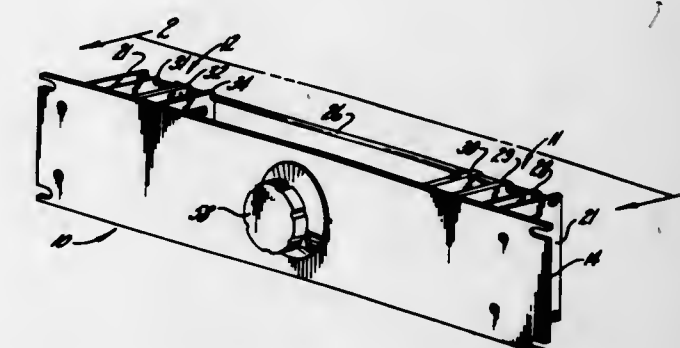
A carrier transversal equalizer includes a plurality of parallel modules each comprising the series combination of an attenuator and a time-delay element. The need for phase shifters is obviated provided that the equalizer is designed such that its complex gain function is periodic, its phase characteristic is odd about the origin and its gain characteristic is even about the origin.

3,611,202
VARIABLE DECAY REVERBERATION UNIT
Johan Van Leer, 520 West Belden Ave., Chicago, Ill.

Filed Feb. 24, 1969, Ser. No. 801,372
Int. Cl. H03h 9/30

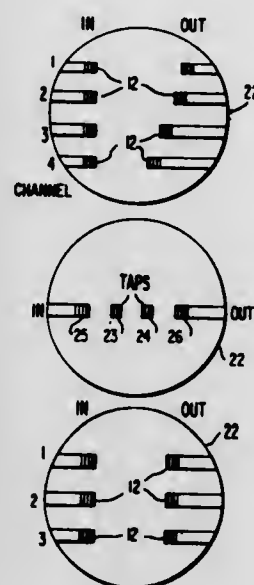
U.S. Cl. 333—30

11 Claims



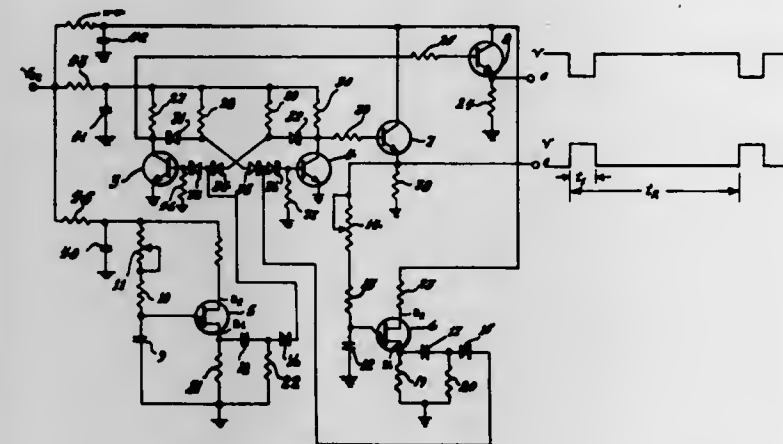
An electromechanical reverberation unit for musical devices having adjustable damping members which may be selectively positioned with respect to the ends of the vibratory spring coils to permit selection of different rates of spring vibration decay for the particular music or effect desired.

3,611,203
INTEGRATED DIGITAL TRANSDUCER FOR VARIABLE MICROWAVE DELAY LINE
 Herbert W. Cooper, Hyattsville, and Robert A. Moore, Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Apr. 16, 1969, Ser. No. 816,723
 Int. Cl. H03h 9/30
 U.S. Cl. 333-30 4 Claims



The storage of digital, multiple-tap, variable delay pulse compression and coding is carried out directly at microwave frequencies. Nondispersive acoustical delay crystals are employed with surface wave acoustical grating transducers having a periodic equivalent to an acoustic wavelength. An arrangement employing a plurality of channels is disclosed. In another arrangement, a series of aligned transducers is used to obtain variable delays.

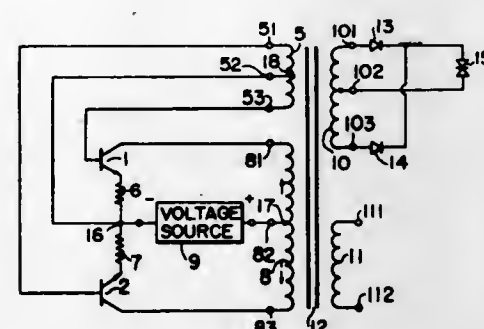
3,611,204
WIDE PULSE LOW PRF PULSE GENERATOR
 Robert A. Boenning, Timonium, Md., and Robert W. McNiel, Brodbeck, Pa., assignors to the United States of America as represented by the Secretary of the Air Force
 Filed Mar. 20, 1969, Ser. No. 808,824
 Int. Cl. H03k 3/26, 3/28
 U.S. Cl. 331-111 1 Claim



A pulse generator capable of producing wide low PRF pulses having fast rise and fall times is realized by circuits which alternately drive a bistable device. A multivibrator is periodically placed in a first stable state by a unijunction transistor relaxation oscillator having a slow period of oscillation. The multivibrator is returned to its second stable state by a unijunction transistor circuit that is activated by the first stable state voltage condition of the multivibrator. A time delay circuit associated with the unijunction transistor circuit

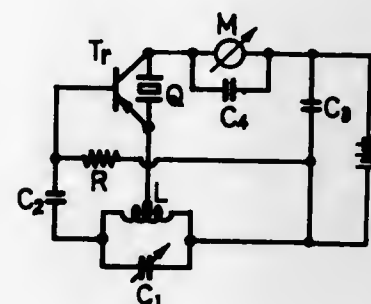
delays actuation of the unijunction transistor and thus establishes the pulse width of the pulse generator.

3,611,205
MAGNETIC MULTIVIBRATOR CIRCUIT
 Shinichi Ogawa, Tokyo, and Fumiyuki Inose, Hachioji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed June 30, 1969, Ser. No. 837,838
 Claims priority, application Japan, July 8, 1968, 43/47109
 Int. Cl. H03k 3/16
 U.S. Cl. 331-113 A 9 Claims



A magnetic multivibrator circuit having a pair of transistors provided with feedback winding means from the collector electrodes to the base electrodes respectively in order to cause on-off operation thereof, which further comprises a zener diode connected across a winding which is electromagnetically coupled with said feedback-winding means, thereby the multivibrator has a high-input impedance.

3,611,206
TRANSISTOR CRYSTAL OSCILLATOR OPERABLE AT A SUBHARMONIC FREQUENCY OF THE CRYSTAL
 Yasutomo Miyake, Kohoku-ku; Toshio Shinada, Chofu-shi, and Kunimoto Ito, Tokyo, all of Japan, assignors to Kabushiki-Kaisha Kinseki-Kaisha-Kenkyu, Tokyo, Japan
 Filed Aug. 20, 1969, Ser. No. 851,621
 Claims priority, application Japan, Aug. 24, 1968, 43/60208
 Int. Cl. H03b 5/34, 5/36
 U.S. Cl. 331-116 R 2 Claims

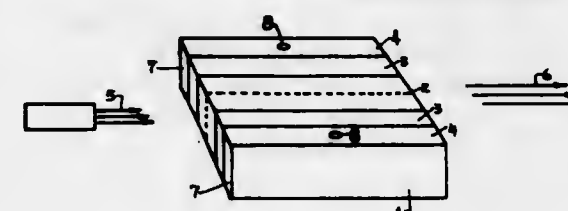


A transistor oscillator has a piezoelectric crystal vibrator incorporated therein for the stabilization of the oscillation frequency and for producing an oscillator which may oscillate with a subharmonic of said crystal vibrator and with a middle wave range frequency.

3,611,207
WIDE APERTURE ELECTROOPTIC MODULATOR
 Carl N. Klahr, 678 Cedar Lawn Ave., Lawrence, N.Y.
 Filed Jan. 5, 1970, Ser. No. 606
 Int. Cl. H01s 3/05, 3/18
 U.S. Cl. 332-7.51 10 Claims

This invention consists of a P-N junction electrooptic modulator in a semiconductor exhibiting the Pockels effect.

The modulator has a relatively wide optical aperture surrounding the junction. This wide aperture is obtained by use



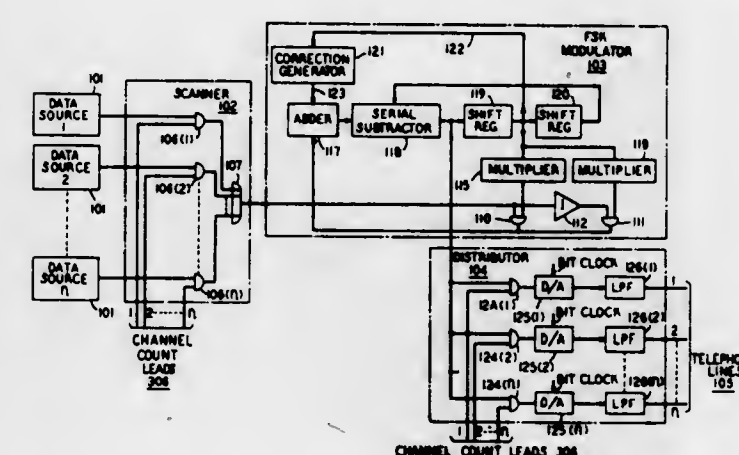
of a junction with a relatively shallow concentration gradient of dopant impurities.

3,611,208
ANALOG TO DIGITAL CODE CONVERTER USING MICROPLASMA DIODE
 Paul Zuk, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
 Filed Jan. 23, 1970, Ser. No. 5,241
 Int. Cl. H03k 7/08
 U.S. Cl. 332-9 9 Claims



A diode that conducts current by the microplasma effect is used as an analog modulation to pulse code modulation converter. The analog signal is superimposed on a constant reverse-bias diode current to give a modulated microplasma pulsed output from the diode. This output, in the form of constant amplitude pulses of varying width and frequency, is converted back to the original analog signal by a low-pass filter.

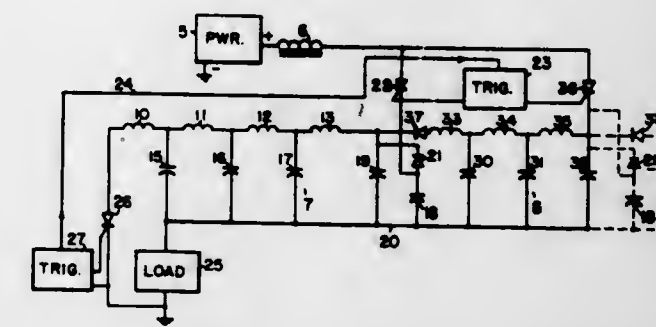
3,611,209
DIGITAL FILTER FREQUENCY SHIFT MODULATOR
 Burton R. Saltzberg, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
 Filed Dec. 11, 1969, Ser. No. 884,128
 Int. Cl. H04L 27/12
 U.S. Cl. 332-9 11 Claims



Feedback circuitry is designed to place a digital filter on the borderline of stability. The filter, therefore, oscillates in a numerical sense. Other feedback circuitry includes two independent multipliers, each capable of determining different central coefficients, and thus different oscillation frequencies. Switch means operated by DC baseband data signals alternatively insert one or the other of the multipliers in the feedback path whereby the output frequency of the filter is shifted in accordance with the input data. Amplitude varia-

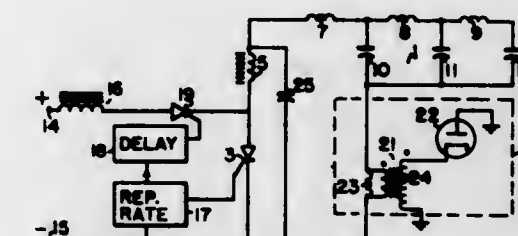
tions due principally to quantizing noise are stabilized by a correction generator which checks the amplitude of the filter output number and modifies the multiplied feedback number when the output number varies from a predetermined limit. The modulator is advantageously arranged to be time shared by a plurality of channels.

3,611,210
SECTIONALIZED PULSE MODULATOR
 Charles Theodore, Los Angeles, Calif., assignor to LTV Ling Atec, Inc., Anaheim, Calif.
 Filed June 11, 1970, Ser. No. 45,515
 Int. Cl. H03k 3/57
 U.S. Cl. 332-9 7 Claims



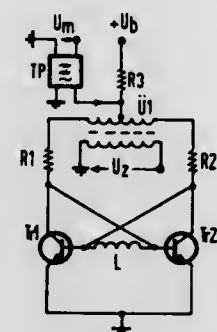
A solid-state pulse modulator for producing power pulses, the duration of which pulses may be selected by charging one or more of a plurality of series-connected pulse-forming networks (PFN). Desired rectangular pulse shape for each duration of the pulses is retained by dividing the capacitance of the terminating capacitor of each PFN into a basic value that remains connected to the PFN and into a larger terminating value that is charged through a diode when the terminating capacitor is included in the PFN, but which is blocked from receiving a charge by the same diode when there is another PFN following the first one, for the purpose of obtaining pulses of longer duration. Selectively triggerable SCRs that determine pulse duration are connected to each PFN for charging an appropriate number of sections of PFN.

3,611,211
PROTECTED PULSE MODULATOR
 Charles Theodore, Los Angeles, Calif., assignor to LTV Ling Atec, Inc., Anaheim, Calif.
 Filed June 11, 1970, Ser. No. 45,516
 Int. Cl. H03k 3/57
 U.S. Cl. 332-12 9 Claims



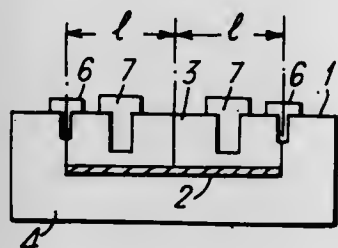
An electrical pulse modulator having a saturable reactor and a shunting capacitor in addition to the known pulse-forming network. The saturable reactor is in service with a discharge triggerable solid-state device and causes the circuit to operate within the rating of the same by initially switching the current "on" at discharge, thereby reducing the di/dt requirement upon the device. The saturable reactor and the capacitor in shunt thereto also act as a second pulse-forming network. When the reactor saturates this network acts as if it was short-circuited and so rapidly swings toward reversal of polarity. This results in a very fast rise of the discharge pulse despite relaxed di/dt requirements upon the triggerable solid-state device.

3,611,212
BROADBAND FREQUENCY MODULATOR HAVING A NEGLIGIBLE HYSTERESIS, AIR-CORE INDUCTANCE
 Otmar Ringelhaan, Munich-Neubau, and Siegmund Kreil, Stockdorf, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
 Continuation of application Ser. No. 482,301, Aug. 24, 1965, now abandoned. This application May 16, 1969, Ser. No. 827,115
 Int. Cl. H03c 3/00
 U.S. Cl. 332—16 T



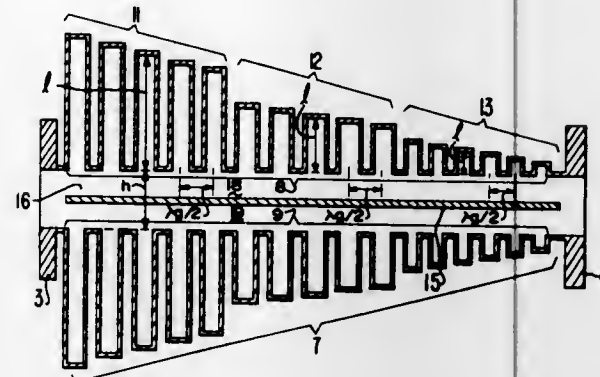
A wide band frequency modulator having an a-stable multivibrator for the generation of carrier oscillations, the multivibrator comprising two amplifier elements having control and output electrodes crossconnected. A common modulation voltage is applied to each amplifier element. The apparatus also includes a rechargeable storer having an inductance operatively connecting the control electrodes of both amplifier elements. The inductance has a negligible hysteresis and is preferably of the air-core type. A transformer is connected with the output electrodes of the amplifier elements to provide modulated carrier frequency.

3,611,213
MICROWAVE FILTER
 George Frederick Craven, Harlow, Essex, and Richard Finnie Skedd, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
 Filed Dec. 19, 1969, Ser. No. 886,688
 Claims priority, application Great Britain, Mar. 7, 1969, 12220/69
 Int. Cl. H03h 7/00
 U.S. Cl. 333—73 W



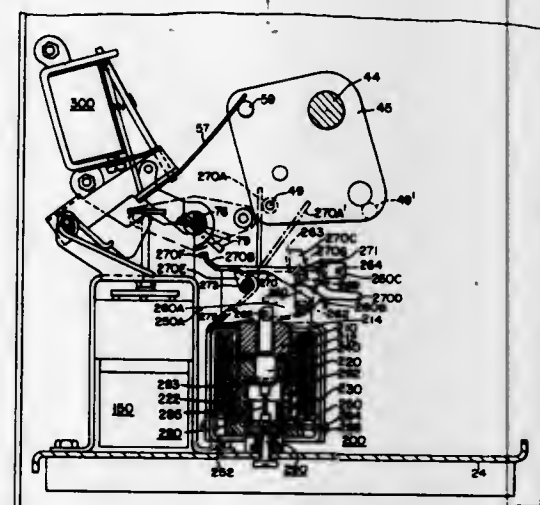
A microwave filter of the type wherein an H-plane bifurcation provides a first and second channel within a length of rectangular waveguide for the separate propagation of incident energy. In a preferred embodiment, the width of said first channel is reduced and two screws are inserted therein to convert said first channel into a 180° phase shift evanescent filter. Said evanescent filter is coupled to the rectangular waveguide by inserting in said waveguide a screw at each longitudinal end of said bifurcation. The combined outputs of said first and second channel cancel, thereby providing a rejection filter. In a modification of said preferred embodiment, a ferrite is positioned along the sidewalls of said evanescent filter and is subjected to a magnetic field. The strength of said magnetic field controls the phase shift of said evanescent filter and consequently the amount of cancellation achieved, and enables use as a switch.

3,611,214
WAVEGUIDE REFLECTIVE HARMONIC FILTER
 Richard Z. Gerlack, Cupertino, Calif., assignor to Varian Associates, Palo Alto, Calif.
 Filed Aug. 18, 1969, Ser. No. 850,843
 Int. Cl. H01p 1/16, 1/20; H03n 7/02
 U.S. Cl. 333—73 W



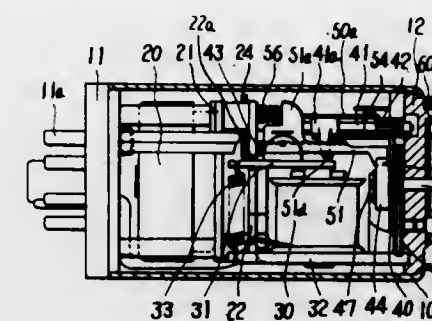
A waveguide reflective harmonic filter is disclosed. The filter includes a primary hollow waveguide to be connected in circuit between a source of microwave energy and a load. An array of secondary waveguides are coupled through the walls of the primary guide, such secondary waveguides being resonant for reflecting harmonic band energy toward the source. The array of secondary waveguides includes a first portion of the array being resonant within the second harmonic, a second portion being resonant within the third harmonic band and a third portion being resonant within the fourth harmonic band. A septum, parallel to the broad walls of the primary guide, divides the primary guide into two parallel sections to improve the power handling capability and to suppress certain undesired modes.

3,611,215
CIRCUIT BREAKER INCLUDING IMPROVED UNDERVOLTAGE TRIP MEANS
 Nagar J. Patel, Penn Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Aug. 21, 1970, Ser. No. 65,984
 Int. Cl. H01h 83/12
 U.S. Cl. 335—20



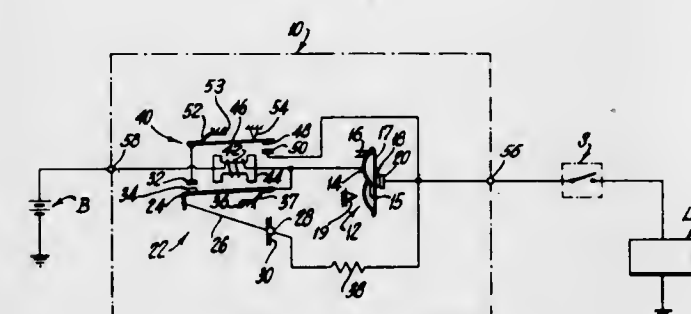
A circuit breaker comprising separable or relatively movable contact means, and operating means releasable to open said contact means, and an undervoltage device responsive to a predetermined loss of voltage to actuate the release of said operating means to open said contact means upon said loss of voltage.

3,611,216
TIMING DEVICE
 Shunsuke Matsuo, and Shunichi Agatahama, both of Kyoto-fu, Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan
 Filed Nov. 25, 1969, Ser. No. 879,876
 Claims priority, application Japan, Nov. 30, 1968, Nov. 6, 1969, 43/87765; 44/105703
 Int. Cl. H01h 3/54
 U.S. Cl. 335—68



A timing device in which a motor drives a driven gear by way of a drive gear; the driven gear is provided along its periphery with a toothless portion into which the drive gear can detachably engage; an electromagnet causes the drive gear to engage with or to disengage from the driven gear while a time-limit switching mechanism controlling an electric circuit is operated at a predetermined time in accordance with the rotation of the driven gear, thereafter the drive gear rotates with a lost motion in the toothless notched portion of the driven gear for the purpose of cutting off the power transmission from the drive gear to the driven gear.

3,611,217
VOLTAGE AND LOAD COMPENSATED FLASHER
 Hemming G. Silberg, Summit, N.J., assignor to Wagner Electric Corporation
 Filed Feb. 24, 1970, Ser. No. 13,485
 Int. Cl. H01h 61/06
 U.S. Cl. 335—141



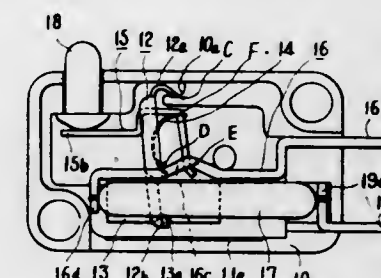
A flasher unit comprising a series flasher which is connected in series with the coil of an electromagnetic relay, and a shunt-type thermal switch which, in combination with the electromagnetic relay, controls a shunt path around the series flasher for extending the time period during which the contacts of the series flasher are closed. The ON time of the flasher unit corresponds to the combined heating time of the pull member of the series flasher and the period of time during which aforementioned shunt path is closed. The OFF time of the flasher unit corresponds to the cooling time of the pull member of the series flasher.

3,611,218
ELECTROMAGNETIC RELAY
 Teizo Fujita, 3-34, Naka, Tezukayama, Sumiyoshi-ku, Osaka, Japan
 Filed Jan. 30, 1970, Ser. No. 7,043
 Claims priority, application Japan, July 19, 1969, 44/69003
 Int. Cl. H01h 50/02
 U.S. Cl. 335—202



An electromagnetic relay which is so designed that the connecting terminals which have heretofore been mounted on an insulating mounting plate can be directly mounted on an insulating baseplate to which pin-shaped bayonet terminals are fixed.

3,611,219
ELECTRIC SNAP SWITCH
 Yasuhiko Iwami, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan
 Filed Nov. 25, 1969, Ser. No. 879,706
 Claims priority, application Japan, Nov. 29, 1968, Nov. 29, 1968, 43/87,430; 43/104,129; 43/104,130
 Int. Cl. H01h 5/02, 5/04, 5/128
 U.S. Cl. 335—205

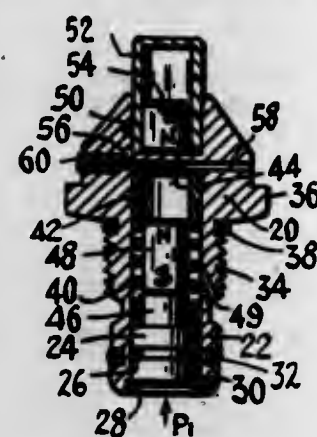


An electric snap switch having a snap-acting mechanism for shifting a permanent magnet to operate a reed switch which is always positioned within the effective magnetic flux of the magnet so as to open the reed switch by applying vertically generated magnetic flux and to close reed switch by applying the horizontally generated magnetic flux upon displacement of the magnet by means of the snap action of the snap-acting mechanism, resulting in that the shifting stroke of the magnet is reduced to improve the sensitivity and endurance of the switch.

3,611,220
CONDITION-RESPONSIVE MONITOR
 Leslie J. Hoffman, 821 Derby-Milford Road, Orange, Conn.
 Filed July 20, 1970, Ser. No. 56,592
 Int. Cl. H01h 5/02, 35/38
 U.S. Cl. 335—207

A fluid pressure responsive device having two magnets with like poles facing each other. A first magnet is mounted with a piston to be movable in response to fluid pressure toward the other magnet to thus cause the other magnet to

move due to repelling forces of the adjacent magnetic poles. A fixed armature, which may be adjustable, is located in the



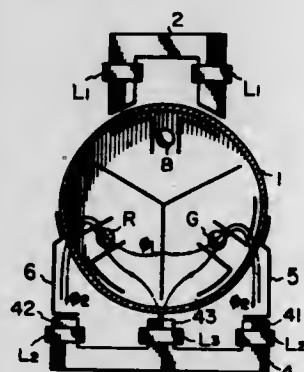
field of influence of said poles to control the repelling force which occurs between the magnets. The second magnet may be used to actuate an indicating device.

3,611,221 CONVERGENCE YOKE APPARATUS FOR COLOR TELEVISION RECEIVER

Hiroshi Ikeuchi, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed Aug. 13, 1970, Ser. No. 63,387
Claims priority, application Japan, Aug. 15, 1969, 44/77277
Int. Cl. H01f 1/00

U.S. Cl. 335-212

1 Claim



In a convergence yoke apparatus for color television receivers comprising two magnetic cores, one of the cores cooperating with an electron gun B and the other with electron guns R and G contained in a color cathode-ray tube, the other core is formed to have a letter E configuration, horizontal and vertical coils are wound upon two outer legs of the E-shaped core and a compensation coil is wound on the central leg.

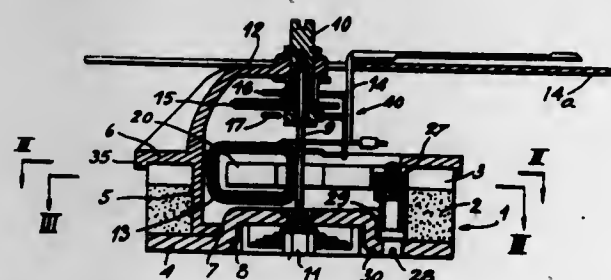
3,611,222 MAGNETOELECTRIC INDICATING DEVICE WITH A GREAT SCALE RANGE

Henri Joseph Sauvignat, Paris, and Rene Auguste Joseph Goyon, Mancy, both of France, assignors to Compagnie des Compteurs, Paris, France

Filed June 8, 1970, Ser. No. 44,518
Claims priority, application France, June 13, 1969, 69 19635
Int. Cl. H01f 7/14; G01r 1/16

U.S. Cl. 335-222

5 Claims



The device comprises a magnetic circuit formed by an annular permanent magnet secured between the peripheral rims of two cheek members of which one is divided into two equal

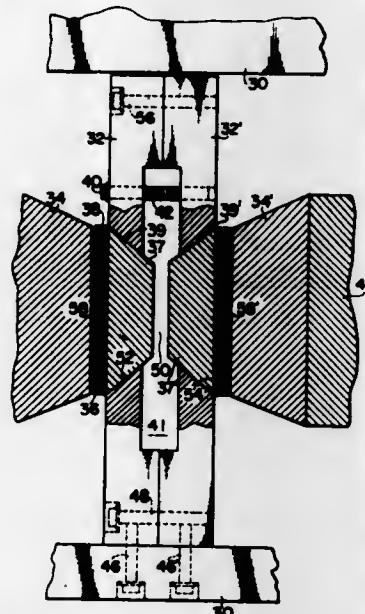
parts, the frame of a mobile assembly being engaged on one of the rims and the device being provided with an adjustable magnetic shunt.

3,611,223 MAGNETIC APPARATUS FOR PRODUCING HOMOGENEOUS FIELD

Yoshiharu Utsumi, and Goh Miyajima, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 11, 1969, Ser. No. 856,939
Claims priority, application Japan, Sept. 11, 1968, 43/64954
Int. Cl. H01f 3/00

U.S. Cl. 335-298

5 Claims



A magnetic apparatus comprising a rectangularly shaped yoke through which flux passes; a pair of magnetic poles for producing a strong unidirectional field therebetween; and a pole piece assembly comprising a pair of pole pieces and a supporting member provided with a pair of holes; the pole pieces being inserted into respective holes and fixed to the supporting member.

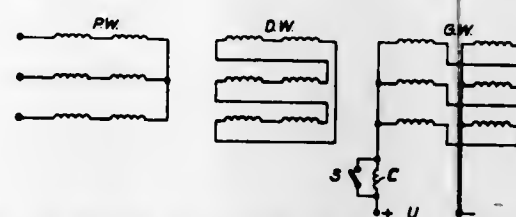
3,611,224 CONTROLLABLE REACTIVE CURRENT GENERATOR

Hans Ludwig Becker, Darmstadt, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Aug. 26, 1968, Ser. No. 755,239
Claims priority, application Germany, Aug. 24, 1967, P 16 38 407.9
Int. Cl. H01f 33/00

U.S. Cl. 336-5

18 Claims



Apparatus, containing no moving parts, for generating controllable sinusoidal reactive currents in an n -phase mains. The apparatus includes a primary winding, connected to each phase of the mains, having $2n$ windings which are associated, in groups of two, with each respective phase of mains. The apparatus also includes either the second one alone or both of the following two auxiliary windings: (1) a delta-connected alternating current winding having $2n$ windings which are connected serially in groups of two, each group being associated with a respective phase of the mains, and (2) a direct current winding also having $2n$ windings which are connected serially, in groups of two with each group being associated with a respective phase of the mains. The two windings in each group of the direct current winding are wound in opposition. Each of the windings of the primary winding excites a separate magnetic circuit which contains respectively the one of the windings of the auxiliary winding or windings.

3,611,225 ELECTRICAL INDUCTIVE APPARATUS HAVING LIQUID AND SOLID DIELECTRIC MEANS

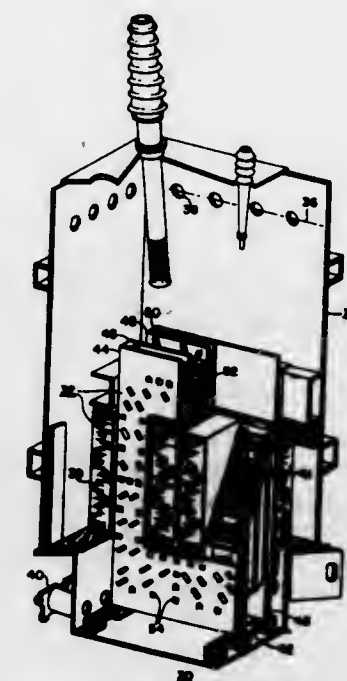
Thomas W. Dekin, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1970, Ser. No. 49,442

Int. Cl. H01f 27/10

U.S. Cl. 336-58

11 Claims



Electrical inductive apparatus of the type which includes an insulating structure comprising liquid dielectric means in series with solid insulating means. The solid insulating means is formed of a first organic resin and a filler which includes a second organic resin. The first organic resin is selected to provide the required chemical resistance and mechanical properties and the second organic resin is selected to have a dielectric constant which is lower than the first organic resin, to provide solid insulating means having a composite dielectric constant which more closely matches that of the liquid dielectric means than that of the first organic resin alone.

3,611,226 ENCAPSULATED ELECTRICAL WINDINGS

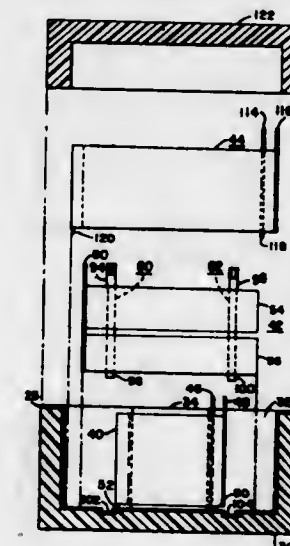
John F. Cotton, Athens; Edgar R. Eley, Athens, Ga., and Robert A. Kurz, West Middlessex, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1969, Ser. No. 883,114

Int. Cl. H01f 27/108, 15/10

U.S. Cl. 336-60

3 Claims



Electrical windings encapsulated in a cast solid electrical insulating material. Support means extends from the bottom

of the windings to an outer surface of the cast solid insulation, with the support means including extensions on the winding terminals, to space certain of the windings from the outer surface of the insulation.

3,611,227 TRANSFORMER WITH TUBULAR CONDUCTOR COIL

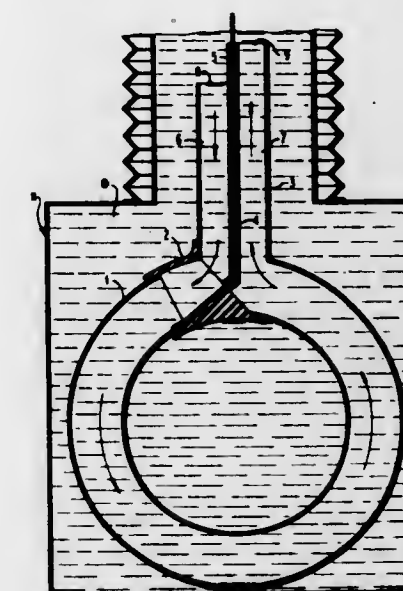
Jean Trabat, Aix-Les-Bains, France, assignor to Alsthom-Savoie, Saint-Ouen, France

Filed Mar. 4, 1970, Ser. No. 16,444

Claims priority, application France, Mar. 7, 1969, 6906347
Int. Cl. H01f 27/08

U.S. Cl. 336-62

4 Claims



A transformer capable of resisting, without deformation, strong short circuit currents. The current transformer is immersed in an insulating liquid inside a container. Its primary winding consists of a tubular coil which is cooled by the circulation of insulating liquid, such as a suitable oil, through the tubular coil. An elongated tubular portion of the coil is separated into inlet and outlet channels for the cooling oil by an elongated flat conductor positioned within the tubular portion and insulated therefrom.

3,611,228 ELECTRICAL TRANSFORMER

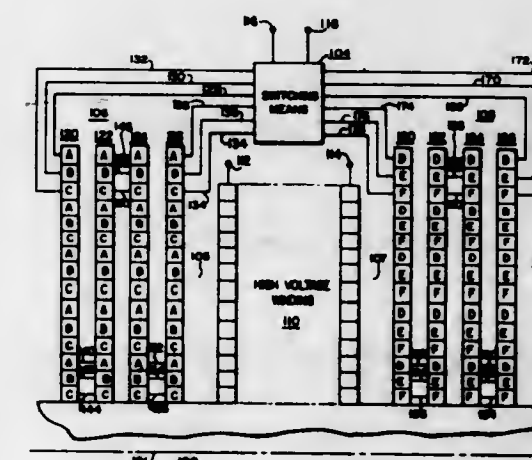
John A. Walling, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 5, 1970, Ser. No. 61,107

Int. Cl. H01f 15/14

U.S. Cl. 336-70

5 Claims



An electrical transformer including first and second windings, and a switch connected to the first winding for selectively providing a plurality of different output voltage ratings, such as required by mobile transformers. The first winding includes a plurality of discrete or separate electrical

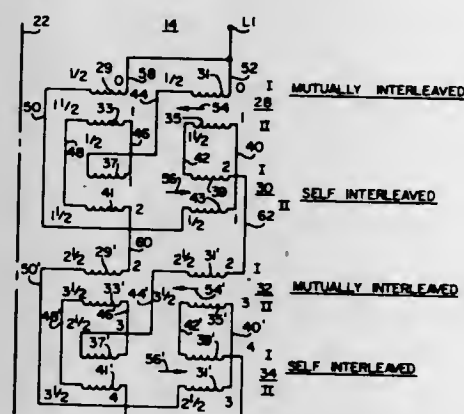
paths constructed to provide a substantially equal leakage reactance from each electrical path to the adjacent winding. The plurality of electrical paths are connected in various series-parallel arrangements by the switch, with each arrangement providing maximum KVA per pound of electrical conductor, and reduced oscillatory voltage magnitudes, by actively utilizing each electrical path in each switching arrangement.

3,611,229 ELECTRICAL WINDING WITH INTERLEAVED CONDUCTORS

Dean A. Yannucci, Niles, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,384
Int. Cl. H01f 15/14

U.S. Cl. 336—70

5 Claims



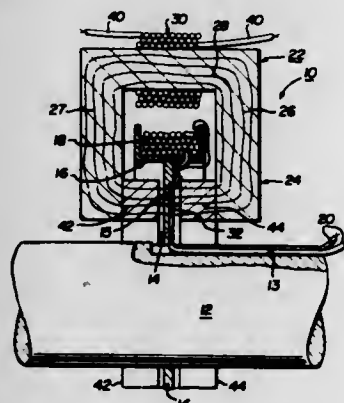
An electrical winding having a plurality of pancake coils of the interleaved turn, high-series capacitance type. Each pancake coil has first and second radially interleaved coil sections, each of which are severed to provide first and second radial portions. The radial portions of the pancake coils are interconnected to provide a plurality of basic pairs, and the adjacent coils of adjacent basic pairs are interconnected, to provide first and second electrical paths or circuits through the winding. The interleaving arrangement directs the electrical paths inwardly in the first pancake coil of the basic pair, with the turns of the two paths being mutually interleaved, and outwardly in the second coil of the basic pair, with the turns of the two paths each being self-interleaved.

3,611,230 ROTARY TRANSFORMER STRUCTURE

Douglas Manke, Troy, Mich., assignor to Lebow Associates, Inc., Troy, Mich.
Filed Nov. 23, 1970, Ser. No. 91,836
Int. Cl. H01f 21/04

U.S. Cl. 336—120

8 Claims



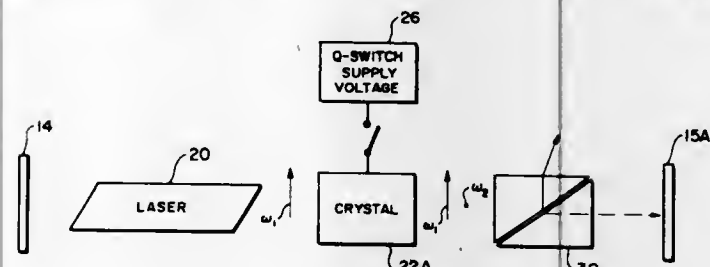
An apparatus for coupling electrical energy between a stator and rotor member without physical contact between relatively moving current carrying members and without relative rotation of any magnetic structure comprises a rotor shaft on which is mounted a nonconductive, nonmagnetic rotor coil-supporting flange which extends between stationary magnetically permeable stator core halves. The stator core is provided with a stator coil for transmission of electrical signals between the rotatable rotor coil and the stationary stator coil. Alternatively, the magnetically permeable core halves can each be secured to the rotor shaft for rotation therewith, while a nonconductive nonmagnetic and stationary stator coil-supporting flange extends between such core halves from the apparatus housing.

3,611,231 Q-SWITCHED FREQUENCY DOUBLING LASER

Claire E. Burke, Keyport, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Nov. 17, 1969, Ser. No. 877,343
Int. Cl. H01s 3/10

U.S. Cl. 331—94.5

8 Claims



This invention relates to a Q-switched laser wherein a single nonlinear optical crystal positioned in a laser cavity performs both the functions of Q-switching and frequency multiplication.

3,611,232 CASCADE CONNECTED TRANSFORMER

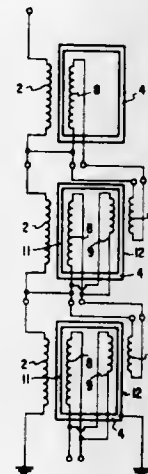
Telchi Sakamoto, and Jun Nishida, both of Kyoto, Japan, assignors to Nissin Electric Company Limited, Kyoto, Japan
Continuation of application Ser. No. 758,910, Sept. 10, 1968, now abandoned. This application Apr. 24, 1970, Ser. No. 29,739

Claims priority, application Japan, Oct. 26, 1967, 42/68921

Int. Cl. H01f 27/28

U.S. Cl. 336—170

3 Claims



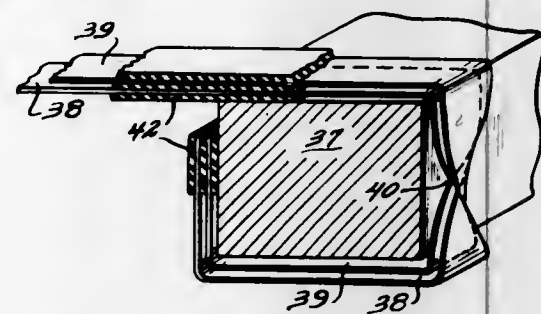
A cascade connection transformer having main primary and secondary windings closely coupled to each other, an auxiliary primary winding having the same number of turns as the main primary winding and connected in parallel therewith, and a tertiary winding closely coupled with the auxiliary primary winding.

3,611,233 PULSE TRANSFORMER USING STRIPLINE WINDINGS

Merle Haldeman, Jr., Downers Grove, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 14, 1969, Ser. No. 849,984
Int. Cl. H01f 27/28

U.S. Cl. 336—188

6 Claims



A pulse transformer uses a stripline to form the windings. In order to achieve symmetry and minimize reflections, the

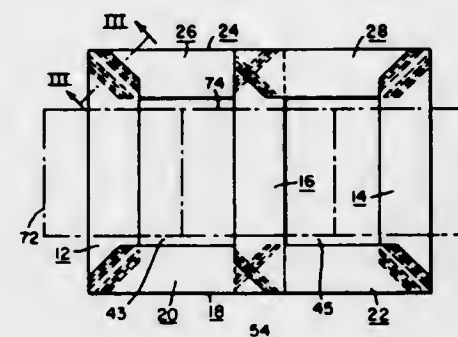
stripline is twisted at predetermined points in the winding so that the position of the stripline conductors relative to the core is changed. In one embodiment the stripline is twisted 180° each time it passes through the center of the toroidal core.

3,611,234 MAGNETIC CORE STRUCTURES

Angelo A. De Laurentis, Sharpville, and John C. Gumpfer, Jamestown, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 23, 1969, Ser. No. 887,543
Int. Cl. H01f 27/24

U.S. Cl. 336—217

15 Claims



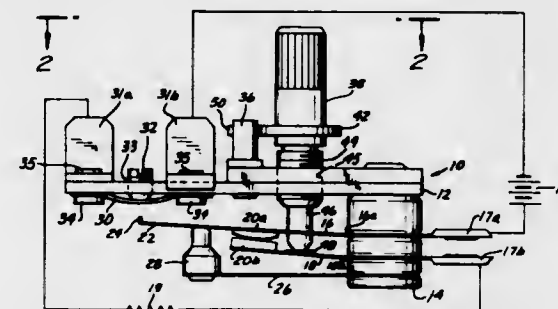
A magnetic core structure of the stacked type having a plurality of like dimensioned layers of laminations which are superposed with their edges in alignment, to provide a magnetic core having square inner and outer corners with no voids or protrusions. The inner joints between the leg and yoke portions are of the stepped-lap type, having at least three successive steps in one direction before the direction is changed or the pattern repeated.

3,611,235 THERMOSTAT WITH BUILT-IN CIRCUIT BREAKER

Melvin J. Rose, Athens, N.Y., assignor to American Thermostat Corporation, South Cairo, N.Y.
Filed July 1, 1970, Ser. No. 51,621
Int. Cl. H01h 85/00

U.S. Cl. 337—35

17 Claims



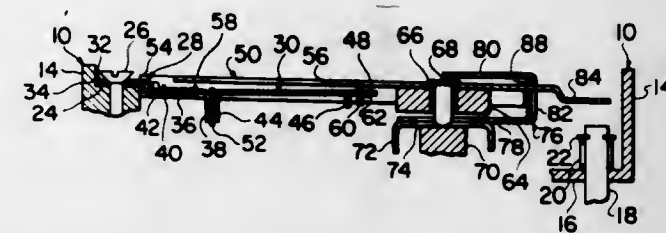
A thermostat assembly which normally opens and closes an electrical circuit over a predetermined temperature range, and which provides a circuit breaking member to break the circuit in the event the circuit remains closed even though the upper temperature limit has been exceeded. Fixed and movable contact arms, alternately opened and closed by the action of a temperature sensitive bimetal member, are mounted on a stack which is suspended from a plate. A safety means in the form of a fusible element is mounted on the plate in the path of movement of the movable arm. In the event the contacts do not separate when the upper temperature limit is exceeded, the movable arm continues to move in the same direction and engages the fusible element, producing a short circuit and causing the fusible element to burn out, thereby to open the circuit.

3,611,236 HEATMOTOR OPERATOR

Hollis L. Randolph, Lakewood; Bradford N. Hall, Long Beach, and William W. Chambers, Anaheim, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Division of Ser. No. 813,684, Apr. 4, 1969, Patent No. 3,556,462.
Filed Apr. 23, 1970, Ser. No. 31,118
Int. Cl. H01h 37/10, 37/52, 6/013

U.S. Cl. 337—101

10 Claims



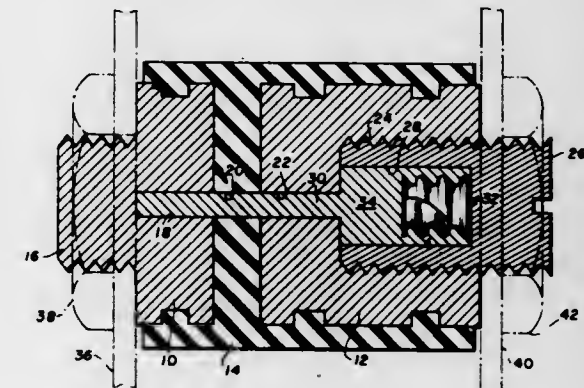
A heatmotor operator comprising a bimetal assembly having a bimetal motor arm connected with a bimetal compensating arm through an insulator, a lever carrying a magnet which is disposed between primary and secondary armatures, the lever being connected to the bimetal assembly and a pivot pin, and actuating means connected with the bimetal assembly whereby the bimetal assembly is actuated to move the lever and cause the magnet to move with snap action from the primary armature to the secondary armature.

3,611,237 CURRENT LIMITING DEVICE

Kiyoshi Yamagata, Fukuyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 31, 1970, Ser. No. 24,321
Claims priority, application Japan, Apr. 2, 1969, 44/25374
Int. Cl. H01h 85/06, 87/00

U.S. Cl. 337—114

2 Claims



The current limiter comprises two spaced opposite electrodes interconnected into a unitary structure by an insulation. A compartment formed within the electrodes and insulation is hermetically closed by a plug screw threaded into one of the electrodes and provided with a hole forming a part of the compartment. Disposed within the compartment are a current limiting material normally put in a liquid or solid state and a pressure relief member. The material responds to a short circuit current to be evaporated to limit the current after which it returns to its original state.

3,611,238 HIGH-VOLTAGE FUSE HAVING HIGH SPEED RATIO

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed July 28, 1970, Ser. No. 58,823
Int. Cl. H01h 85/04

U.S. Cl. 337—159

4 Claims

A high-voltage fuse having a high speed ratio, i.e. a speed ratio of 5-6. The latter is achieved without resorting to multiple pulverulent arc-quenching fillers, by merely structuring the helically wound fusible element. The latter includes axially outer ribbon sections provided with serially related rela-

tively short neck portions having equal cross-sectional areas. The fusible element further includes an axially inner section formed by parallel-connected round silver wire having a length which is a multiple of the length of said short neck

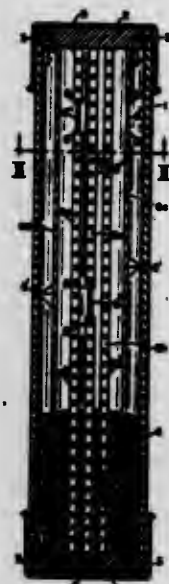


portions, a cross-sectional area which is less than the cross-sectional area of said short neck portions and a silver-severing overlay of a low fusing point metal arranged adjacent the center thereof.

3,611,239
HIGH-VOLTAGE FUSE HAVING INNER CORE AND OUTER SHELL FUSE LINKS
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed June 5, 1970, Ser. No. 43,904
Int. Cl. H01h 85/12

U.S. Cl. 337-161

8 Claims



A high-voltage fuse has ribbon fuse links forming a radially inner core of fuse links and has ribbon fuse links forming a radially outer shell of fuse links. The inner core fuse links are provided with long overload current interrupting neck portions positioned substantially midway between the terminal elements of the fuse. The outer shell fuse links are provided with long overload current interrupting neck portions positioned relatively close to one of the terminal elements of the fuse. The long overload current interrupting neck portions of contiguous outer shell fuse links are arranged in staggered relation.

3,611,240
DROPOUT FUSE
Harvey W. Mikulecky, Racine, Wis., assignor to McGraw-Edison Company, Elgin, Ill.
Filed May 4, 1970, Ser. No. 34,240
Int. Cl. H01h 71/10

U.S. Cl. 337-169

20 Claims



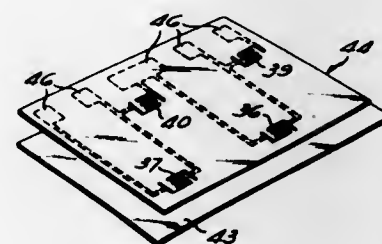
An open type dropout fuse has full range fault clearing capability, with fuse operation being confined within the fuse tube. An explosive charge is used to hold the fuse in a closed circuit position and, upon detonation, releases the fuse for drop-open movement to physically open the circuit. An electric igniter for the explosive charge is switched in for detonation after fuse operation has been initiated within the fuse tube. Initial drop-open movement of the fuse is opposed to retard physical opening of the fuse.

3,611,241
MOUNTING ASSEMBLY FOR PLURALITY OF STRAIN GAGES
Edward E. Herceg, Lakewood, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Division of Ser. No. 781,872, Dec. 6, 1968, Patent No. 3,527,099.

Filed Feb. 16, 1970, Ser. No. 11,468
Int. Cl. G01h 1/22

U.S. Cl. 338-2

6 Claims

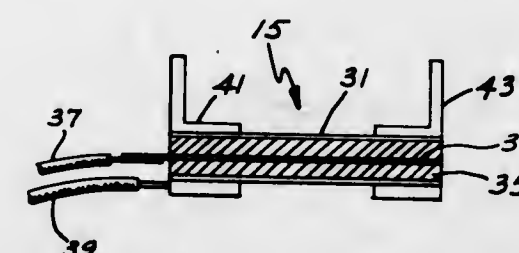


A temperature-compensated strain gage pressure transducer is disclosed which includes a cylindrical pressure vessel having a thin-walled pressure chamber and a solid end portion. Two active strain gages are bonded to the thin-walled chamber to measure strain resulting from fluid pressure therein, and two temperature-compensating strain gages are bonded to the unstressed solid end portion. An adhesive-coated web serves as a mounting vehicle for carrying all of the strain gages simultaneously and for positioning them on the pressure vessel in predetermined positions. The adhesive-coated web holds the strain gages in position on the pressure vessel during curing of a strain gage adhesive which bonds the strain gages to the pressure vessel, and then serves as a permanent protective blanket for the gages. The entire strain gage assembly is then encapsulated by a heat-shrinkable polyolefin tubing and assembled within a metallic protective shroud.

3,611,242
OVERLOAD PROTECTION APPARATUS
Robert E. Obenhaus, South Easton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 663,709, Aug. 28, 1967, Patent No. 3,526,809.
Filed Nov. 7, 1969, Ser. No. 871,268

U.S. Cl. 338-23

4 Claims



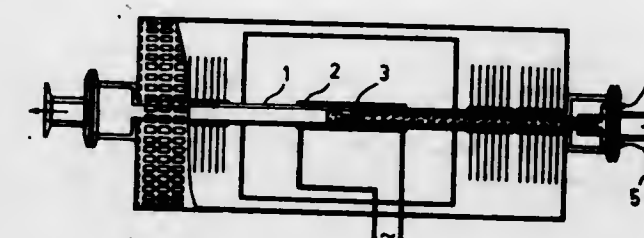
The apparatus disclosed is operative to protect an electrical load from overload conditions. The apparatus employs a coaxial current sensor having a tubular shell and an elongate electrode concentric therewith, the space between the shell and the electrode being filled with a semiconductor material having a resistance which varies with temperature. The load current is passed longitudinally through the shell thereby to heat the sensor so that the resultant variations in the resistance of the semiconductor material provides a signal when the load draws an overload current.

3,611,243
ELEMENT FOR THE DETERMINATION OF THE PARTIAL OXYGEN PRESSURE
Karl Heinz Hardt, Aachen, Germany, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,024

Claims priority, application Germany, Apr. 2, 1968, P 17 73 110.1
Int. Cl. H01c 15/00

U.S. Cl. 338-34

2 Claims



An apparatus for determining partial oxygen pressure in a gas mixture by the measurement of electrical conductivity of titanium dioxide doped to have N-type conductivity and exposed to the gas.

3,611,244
STABILIZING MEANS FOR ELECTRIC POWER SYSTEMS
Kazumi Morimoto, Hachiro Miyao, and Takeo Kuwabara, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

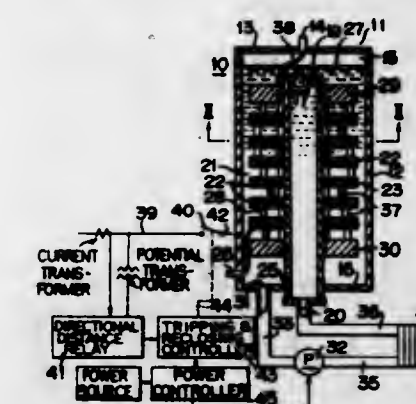
Filed Apr. 24, 1968, Ser. No. 723,865
Claims priority, application Japan, Apr. 27, 1967, Apr. 25, 1967, June 3, 1967, 42/34,963; 42/34,220; 42/46,864
Int. Cl. H01c 1/08

U.S. Cl. 338-55

7 Claims

A breaking resistor is connected to an electric power circuit remaining with light load condition during the reclosing period in the faults of said circuit. The breaking resistor comprises a coiled resistive wire wound around an axis inserted in an insulator cylinder, a plurality of insulating spacers in said coiled wire placed in such a manner that each of the adjacent

turns of said coiled wire is spaced apart from the adjacent turn so that a duct to flow a cooling medium is defined by



3,611,245
CONTROL UNIT WITH IMPACT CONTROL MOUNTING CUSHION

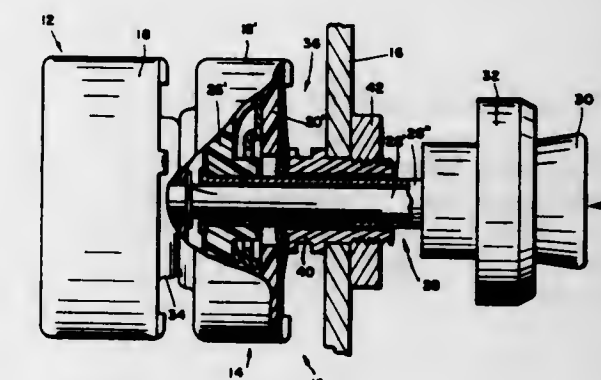
George O. Fuerner, Frankfurt, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Feb. 16, 1970, Ser. No. 11,694

Int. Cl. H01c 9/02

U.S. Cl. 338-134

5 Claims



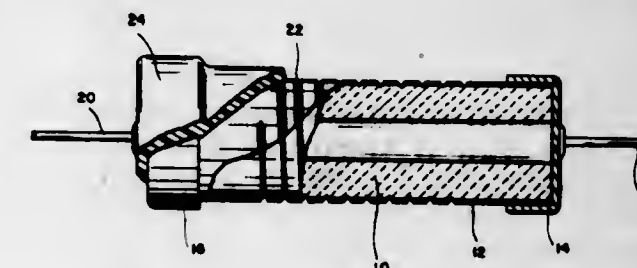
A control unit having two variable resistors connected in tandem with one each connected to concentric shafts utilizes an impact cushioning means to absorb shock loads imposed on the central shaft.

3,611,246
CHROMIUM-CARBON AND CHROMIUM-NICKEL-CARBON RESISTIVE FILMS
James M. Booe, 548 N. Audubon Road, Indianapolis, Ind.
Continuation-in-part of application Ser. No. 757,512, Aug. 5, 1968, now abandoned, which is a continuation of application Ser. No. 371,765, June 1, 1964, now abandoned. This application Dec. 22, 1969, Ser. No. 886,968

Int. Cl. H01c 7/00

U.S. Cl. 338-308

10 Claims

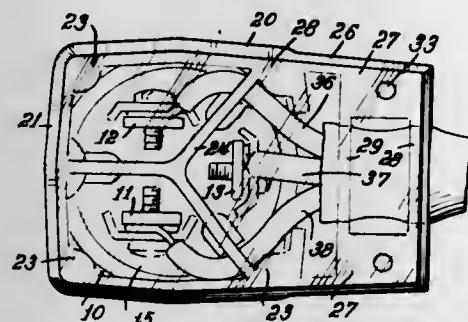


A resistor which includes a film consisting essentially of 1-15 percent, by weight, carbon and the remainder a material selected from the group consisting essentially of chromium and nickel-chromium.

3,611,247
SAFETY ELECTRICAL PLUG
 James S. Adams; John W. Heidacher, and Ralph G. Blanken,
 all of Batesville, Ind., assignors to Hill Rom Company, Inc.,
 Batesville, Ind.

Filed Aug. 11, 1969, Ser. No. 849,102
 Int. Cl. H01r 3/06, 33/04
 U.S. Cl. 339-14 P

3 Claims

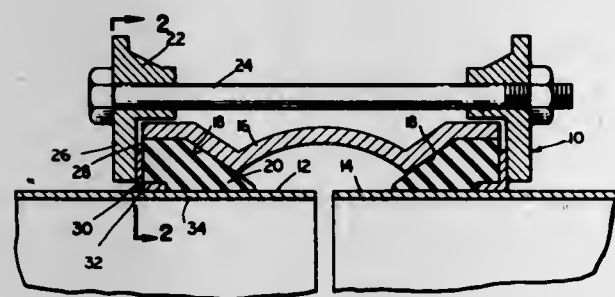


A safety plug, for connecting an electrical appliance to a source of power, having a plurality of chambers each individual to one of the three terminals of the plug and having a transparent cover for said chambers to permit visual inspection of the connections therein without disassembling the plug.

3,611,248
ELECTRICAL CONNECTOR STRIP FOR PIPE COUPLING
 Frank E. Turner, San Mateo, Calif., assignor to Smith-Blair Inc., Pittsburgh, Pa.

Filed Oct. 24, 1969, Ser. No. 869,011
 Int. Cl. H01r 3/04
 U.S. Cl. 339-15

2 Claims



An expandable conductive strip forming adjustable connectors for use in combination with ring gaskets to provide electrical continuity through both the followers and the interconnecting bolts or sleeve of a coupling mounted on a pipe.

3,611,249
COMPLETELY MECHANICAL SOLDERLESS ELECTRICAL TERMINAL ASSEMBLY FOR CONNECTING A WIRE TO A CIRCUIT BOARD
 Robert L. Lovrenich, Novi, Mich., assignor to Magnum Electric Corporation, Erie, Mich.

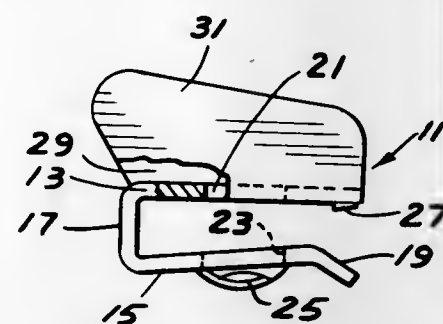
Filed Oct. 16, 1968, Ser. No. 768,024
 Int. Cl. H05k 1/07

U.S. Cl. 339-17 R

3 Claims

The invention relates to an electrical terminal assembly including a clip of electrically conducting material having one portion in engagement with a conductor on a circuit board,

such as a printed circuit board, and having another portion associated with a threaded screw member, the assembly making possible a rapid, easy electrical connection between a

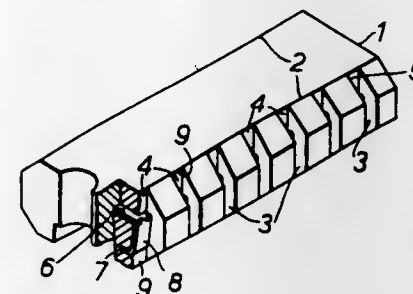


relatively large wire affixed to the screw member, and the small conductor positioned on the relatively thin circuit board. The assembly is completely mechanical and requires no soldering.

3,611,250
INTEGRATED CIRCUIT MODULE AND ASSEMBLY
 Norman Leonard Reed, Aylesbury, England, assignor to AMP Incorporated, Harrisburg, Pa.
 Continuation-in-part of application Ser. No. 696,736, Jan. 10, 1968. This application Sept. 10, 1969, Ser. No. 856,629
 Int. Cl. H01r 13/50; H05k 1/00

U.S. Cl. 339-17 CF

1 Claim



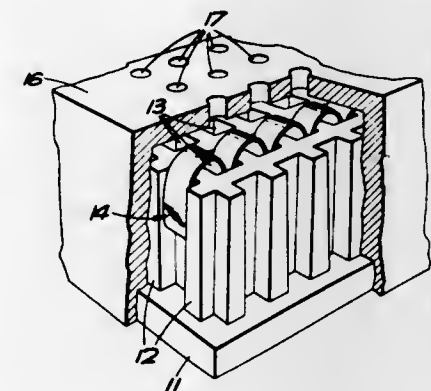
An integrated circuit module in which the circuit elements are encapsulated in a block of dielectric material having a number of channels in each of a pair of opposite sides. The leads from the elements extend into the channels, the walls of which protect the leads. The module is designed to be wedged between rows of post contacts fixed in a block with the posts extending along the channels in contact with the leads.

3,611,251
ELECTRICAL CONNECTOR
 Robert Downhill, 19 Sherborne Ave., Norwood Green, Middlesex, England

Filed Dec. 18, 1969, Ser. No. 886,244
 Int. Cl. H01r 29/00

U.S. Cl. 339-18 C

10 Claims



An electrical connector comprising a block having a matrix of square section recesses. Flat strips of resilient con-

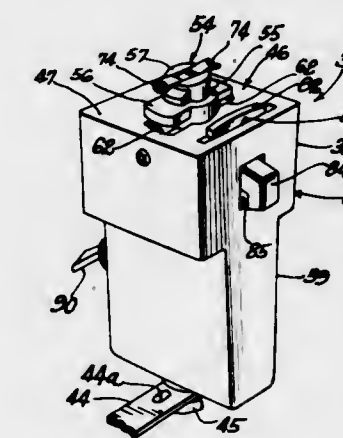
ductive material formed into open loops are arranged so that each loop fits into one of the recesses to form a pair of flexible electrical contacts; each strip interconnecting a row or part of a row of recesses. A cover over the matrix having apertures over the recesses through which electrical components can be inserted to make contact with, and be held by the flexible contacts of the strip of conductive material.

3,611,252
ATTACHMENT MEMBER FOR A POWER DISTRIBUTION TRACK
 Robert S. Fremont, Wilmette, Ill., assignor to Halo Lighting Division, Rosemont, Ill.

Filed Nov. 19, 1969, Ser. No. 878,007
 Int. Cl. H01r 9/00

U.S. Cl. 339-21 R

6 Claims



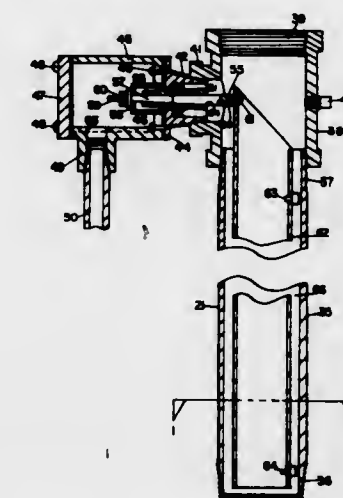
An attachment member for use with a power distribution track of the type having a pair of spaced parallel conductors, the attachment member having a pair of diametrically opposed supporting flanges which engage and extend into one of the channels of the track and a pair of diametrically opposed contact fingers which extend and engage the spaced parallel conductors to establish electrical contact and wherein the attachment member has latching means engaging the track to maintain the attachment member in an electrical conducting condition and against removal from the power track unless the latch is manually retracted.

3,611,253
MOISTURE CONTROLLER FOR DRYCLEANING SYSTEM
 Robert A. Gillespie, Skaneateles, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 730,855, May 21, 1968, Patent No. 3,522,718.
 Filed Jan. 26, 1970, Ser. No. 10,700
 Int. Cl. H01r 13/60

U.S. Cl. 339-22 R

2 Claims



A drycleaning system which includes a washer for cleaning fabrics, a filter, conduit means interconnecting the washer

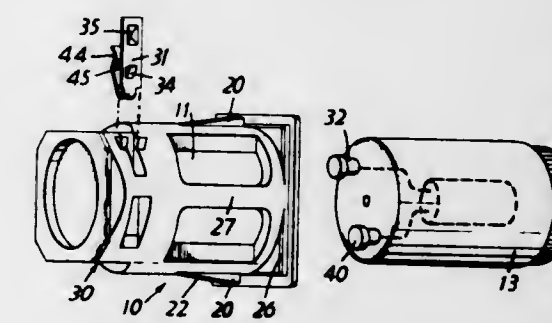
and filter and a pump for circulating a volatile organic drycleaning solvent having a drycleaning detergent and water added thereto through the washer and filter. An impedance electrode is connected into the conduit means which is electrically connected to an impedance controller that controls a water supply unit for adding water to the drycleaning system. The impedance electrode means consists of a housing having a single concentric electrode positioned therein and a mounting means for holding said concentric electrode within the housing.

3,611,254
MOLDED SOCKET FOR ELECTRICAL COMPONENTS
 John Sidney Barnes, and Roman Fryderyk Szafranski, both of London, England, assignors to Thorn Lighting Limited of Thorn House, London, England

Filed Feb. 6, 1970, Ser. No. 9,266
 Int. Cl. H01r 33/08

U.S. Cl. 339-52 R

5 Claims



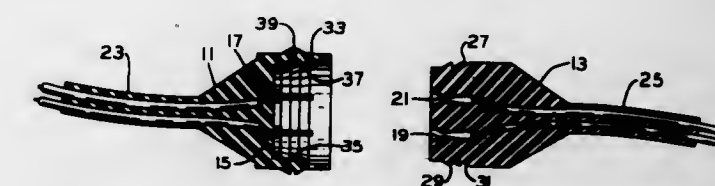
A molded socket for accommodating plug-in electrical components requires no screws or other fastenings to secure it in an apertured panel of an electrical apparatus. The socket includes a locking arrangement comprising one or more integrally molded, outwardly projecting legs and a flange with a gap therebetween, the or each leg being resiliently displaceable inwards to enable the socket to be pushed into a closely embracing aperture and when the aperture-adjacent portion of the panel abuts the flange, the or each leg automatically returns to a nondisplaced position trapping the said portion of the panel in the said gap, thus securing the socket and panel together. It is arranged that once a component is accommodated in the socket, the or each leg is incapable of being inwardly displaced ensuring that the socket remains firmly held in place.

3,611,255
MOISTURE RESISTANT ELECTRICAL CONNECTOR
 Larry L. Shroyer, Kendallville, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed Nov. 19, 1969, Ser. No. 878,020
 Int. Cl. H01r 13/52, 13/54

U.S. Cl. 339-60 R

5 Claims



A moisture resistant electrical connector of partially conventional design but having improved moisture resistant characteristics is disclosed. The connector comprises first and second members having male and female electrical connectors disposed therein, one of said members having a forwardly extending surrounding portion which conforms to the lateral exterior of the other member and which serves to protect the connector from dirt and moisture as well as to improve the mechanical connection between the two members.

3,611,256

ELECTRICAL CONNECTOR AND ASSEMBLY

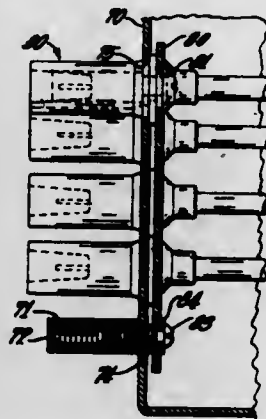
Raymond L. Abair, Toledo, Ohio, assignor to Rave Industries Incorporated

Filed Dec. 24, 1969, Ser. No. 887,815

Int. Cl. H01r 13/52

U.S. Cl. 339—60 M

6 Claims U.S. Cl. 339—72



A connector for disconnectable joinder of electrical terminals adapted to establishment of a sealed relation with the container wall of fluid encased circuitry wherein at least one terminal has an elastomeric body with an integral sealing gasket and either or both terminals have resilient shoulder configurations for accommodating the terminal bodies for snap-in mounted relation on their respective support panels.

3,611,257

ELECTRIC PLUG CONSTRUCTION AND METHOD OF MANUFACTURING SAME

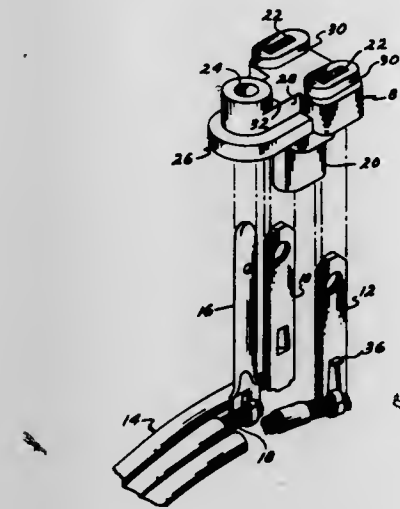
Carlton L. Carkhuff, Evansville, Ind., assignor to Springfield Wire of Indiana, Inc., Evansville, Ind.

Filed Aug. 26, 1969, Ser. No. 853,170

Int. Cl. H01r 13/08

U.S. Cl. 339—63 M

5 Claims



Electrical outlet plug which includes a core member encapsulated within a sheath. The core is formed with electrical contact blade-retaining bores through said core member opening in one direction to receive and retain the portion of the contact blades connected to a conductor wire, and opening in the other direction in close fitting peripheral relation about said blades. A pedestal projects outwardly of said core in a direction opposite the blades and is of sufficient size to serve as a base for supporting the core in a mold. The surfaces of the core peripheral to said blades extend outwardly of the core in a direction opposite the pedestal sufficiently to extend through said sheath and provide with the pedestal, mold bearing surfaces when the core is disposed in a mold cavity.

3,611,258

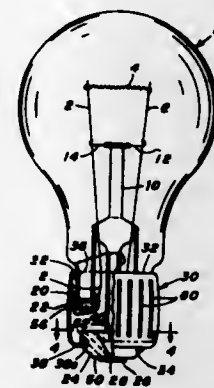
ELECTRIC LAMP STRUCTURE

Ronald L. Kolakowski, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 13, 1969, Ser. No. 849,625

Int. Cl. H01r 19/00

9 Claims



A lamp structure having a sealed enclosure provided with a source of radiant energy. An annular resilient electrically conductive base member adapted to yield upon insertion into an electrical socket. The base member having a peripheral configuration which is substantially symmetrical with respect to its central vertical axis. At least one series of circumferentially spaced openings in the base member. The base member having an upper annular edge and a lower annular edge. At least one of the upper and lower annular edges being secured directly to a portion of the remainder of the lamp structure. An upper electrical insulator element secured to the sealed enclosure. A lower electrical insulator element separating the lower annular edge and a lower lamp contact element. Circuit means connecting the radiant energy source with the lower lamp contact element and the annular base member.

3,611,259

ZERO INSERTION FORCE RECEPTACLE FOR FLAT CIRCUIT BEARING ELEMENTS

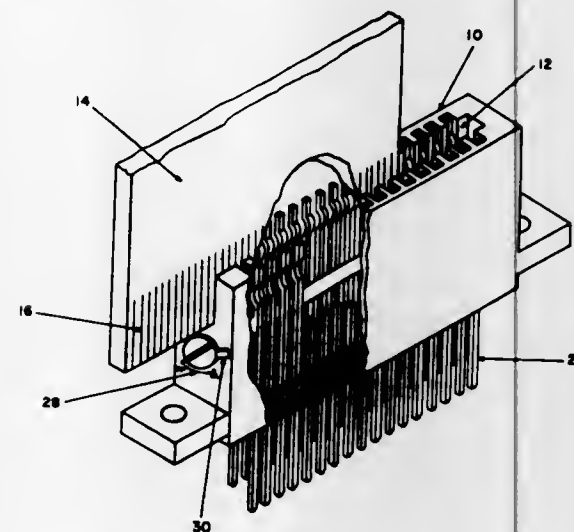
Vincent James Palecek, Cicero, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed July 31, 1969, Ser. No. 846,496

Int. Cl. H01r 13/62

U.S. Cl. 339—74 R

2 Claims



A zero insertion and withdrawal force receptacle for flat circuit bearing elements such as printed circuit boards. A slot is provided in the receptacle which is adapted to receive the element. At least one contact is normally biased to make physical and electrical contact with the element when it is in the slot and a cam is provided which is operable to cam the contact to a position where it does not contact the element when the element is either partially or fully inserted in the slot.

3,611,260

COUPLING DEVICE HAVING A CAPTIVATED NUT

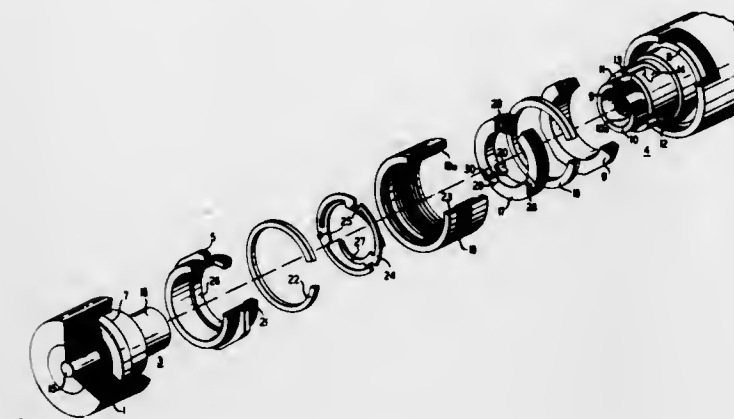
Roger J. Colardeau, Florham Park, and Don M. Shupe, Hopatcong, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 28, 1969, Ser. No. 870,041

Int. Cl. H01r 13/54

U.S. Cl. 339—89 R

7 Claims



An improved coupling device having two mating parts which are adapted to be fastened together. The improvement comprises a nut captively held within a barrel which is rotatably attached to one of the mating parts. The inner surface of the nut has lugs which are adapted to engage re-entrant sections formed in the other mating part. A plurality of spring fingers are mounted inside the barrel and engage notches cut in the nut for impeding its rotation in one direction. The fingers also press against the nut to provide friction for forcing the nut to rotate with the barrel in the opposite direction. This causes the lugs to lock inside the re-entrant sections. Further rotation of the barrel advances the barrel over the nut thereby pulling the two mating parts tightly together.

3,611,261

ELECTRICAL CONNECTORS

Kenneth Laurence Gregory, Luton, England, assignor to General Motors Corporation, Detroit, Mich.

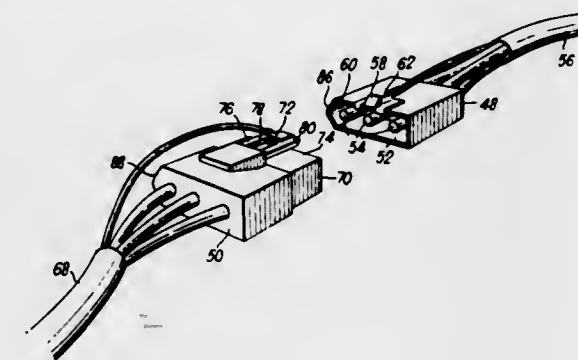
Filed May 4, 1970, Ser. No. 34,376

Claims priority, application Great Britain, May 8, 1969, 23546/69

Int. Cl. H01r 13/54

U.S. Cl. 339—91 R

6 Claims



An electrical connector comprises two contact-bearing blocks connectable together, one of the blocks has at least one barbed resilient limb, the other at least one apertured lug. One limb and one lug each have a contact. Engagement of the limbs by the lug upon passage of the barb through the aperture brings these contacts into engagement. These contacts complete an electrical circuit for continuity testing to check the proper connection together of the blocks and thus afford a check on the circuits completed through the block contacts.

3,611,262

ELECTRICAL CONNECTOR HAVING INTEGRAL WIRE SEVERING MEANS

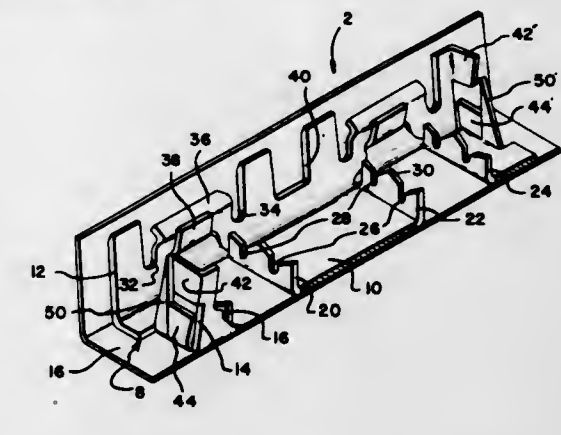
James Earl Marley, Harrisburg, and John Ambrose Ward, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1969, Ser. No. 797,083

Int. Cl. H01r 5/10, 7/04

U.S. Cl. 339—97 C

5 Claims



Electrical connector, adapted to be crimped on to wires extending towards each other comprises a channel-shaped member having a web and sidewalls. Wire cutting means are provided at each end of the channel-shaped member on opposite sides of the longitudinal axes thereof, these wire cutting means being adapted to cut a wire positioned in the channel-shaped member when the sidewalls are bent inwardly and downwardly towards the web. Wires extending towards each other can thus be positioned between the sidewalls such that their entering portions pass besides a cutting means and their emergent portions pass through a cutting means. Upon crimping, the end portions of the wires are trimmed adjacent to the ends of the connector.

3,611,263

CLIP CONNECTOR TERMINAL FOR INSULATED CONDUCTORS

Heinz Krone; Joachim Rott; Horst Hahn, and Lothar Zerrner, all of Berlin, Germany, assignors to Krone Kommanditgesellschaft, Berlin, Germany

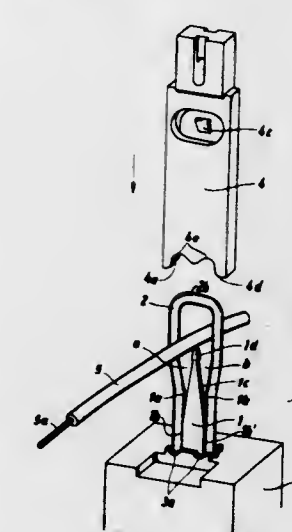
Filed June 13, 1969, Ser. No. 833,024

Claims priority, application Germany, June 14, 1968, P 17 65 584.4

Int. Cl. H01r 9/08

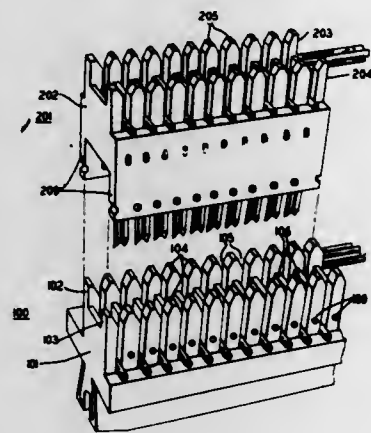
U.S. Cl. 339—97 R

3 Claims



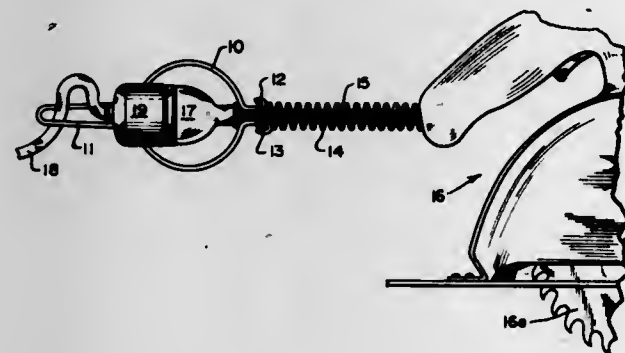
The terminal element of a clip connector for insulated conductors includes a centrally positioned, upstanding, sharp-edged contact blade surrounded by a resilient wire yoke, each leg of which forms with an adjacent edge of said blade a clamping gap into which a conductor is forced by a pusher slide which, in turn, locks in place on said terminal element. As the conductor is forced into said clamping gap, the insulation of the conductor is penetrated by metal parts forming said clamping gap. An electric contact of permanent pressure is established.

3,611,264
WIRE CONNECTING BLOCKS
 Benjamin C. Ellis, Jr., Baltimore, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Dec. 27, 1968, Ser. No. 787,453
 Int. Cl. H01r 9/08
 U.S. Cl. 339—99 R 4 Claims



This disclosure describes an indexing strip and connecting block scheme for equipment and station interconnections for key telephone systems. The indexing strip is a plastic molding with two narrowly spaced rows of teeth. The insulated line wires are placed across the slots between the teeth. The connecting block straddles the teeth and its pin connectors are each guided into piercing contact with a respective wire. The blocks and strips lock, once engaged. Wall mountings for the strips include bases with V-shaped insertion tracks.

3,611,265
CORD HOLDER
 Lloyd L. Shurtz, Box 754, Hurricane, Utah
 Filed Jan. 21, 1969, Ser. No. 792,462
 Int. Cl. H01r 13/58
 U.S. Cl. 339—103 1 Claim

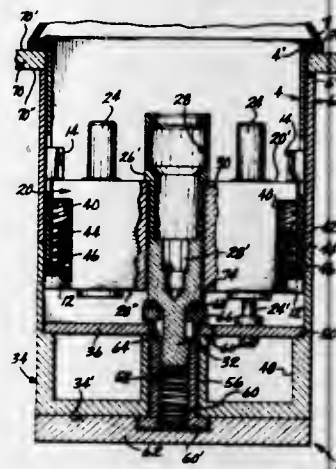


A spring holder having an enlarged loop portion to allow a connector plug to pass freely through and at least one elongate extension portion arranged to clamp a cord connected to the plug and to hold it against withdrawal.

3,611,266
TELESCOPICALLY ASSEMBLED ELECTRICAL CARTRIDGE WHICH IS YIELDABLY CLAMPED TO A PANEL
 James W. Amis, Jr., Bellevue; Maurice D. Fuller, Mercer Island, and James B. Dobson, Seattle, all of Wash., assignors to Korry Manufacturing Company, Seattle, Wash.
 Filed May 22, 1969, Ser. No. 826,964
 Int. Cl. H01r 13/60
 U.S. Cl. 339—132 R 15 Claims

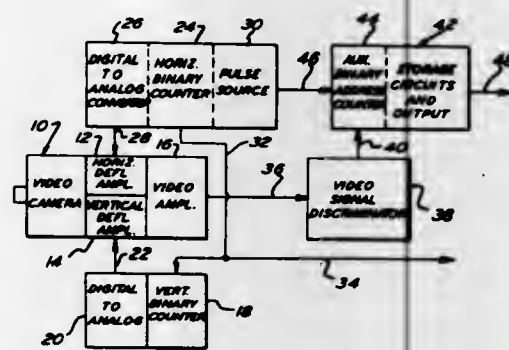
A tubelike cartridge is disclosed for mounting an electrical assembly on a panel having an opening therein. The cartridge

comprises a pair of telescoping inner and outer sleeves, and a clamping mechanism which is yieldably biased to clamp the



edge of the panel opening between the sleeves against the bias thereon.

3,611,267
APPARATUS FOR OPTICAL CHARACTER RECOGNITION
 Ellsworth A. Edling, Willow Grove, Pa., assignor to Transducer Systems, Inc., Willow Grove, Pa.
 Filed Oct. 16, 1969, Ser. No. 867,045
 Int. Cl. G06r 9/00
 U.S. Cl. 340—146.3 Y 7 Claims

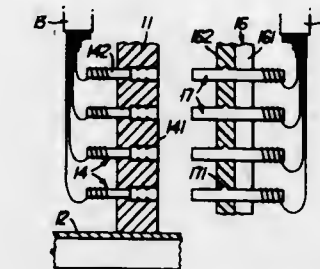


A method and apparatus for optical character recognition including a video camera for scanning a page of printed matter along a scanning pattern which progresses across the page from side-to-side along a plurality of lines which are spaced apart from top to bottom of the page. Means is provided for creating a count which indicates the position of the camera along the scanning pattern. A discrimination means is provided for the recognition of color reversals sensed by the camera during the scan. A data output section provides an output signal which is the count of the counter each time that the camera senses a color reversal. The count of the output signal is in binary digital form which can be easily transmitted to a receiver device.

3,611,268
ELECTRONIC CONNECTOR DEVICES
 Charles Duncan Heary Webb, Valentine Park, Ilford, Essex, England
 Filed Aug. 1, 1968, Ser. No. 749,423
 Int. Cl. H01r 13/62
 U.S. Cl. 339—151 M 6 Claims

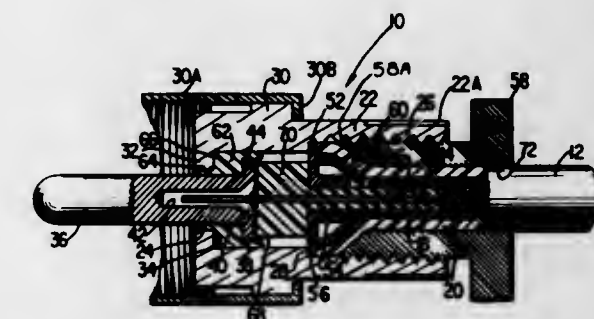
An electric connector system for equipment involving many connecting wires uses a transfer connector on the equipment to be installed in an equipment rack. The transfer connector supports a number of contact pins by means of removable comblike plates with slots at right angles to one another to support an array of pins. These can be entered

into a similar array of sockets in a connector block fixed to the rack and to which the permanent wiring is attached. The



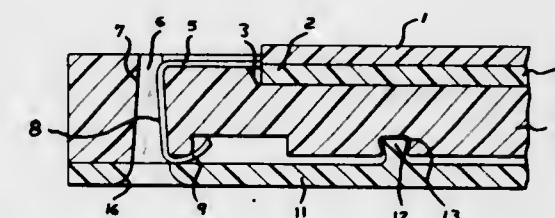
blocks then being inserted into an associated housing wherein matching lug contacts of the blocks are aligned for electrical contact with each other, with contact strips in the housing, or with terminal strips of a printed circuit board inserted in the housing.

3,611,271
CONNECTOR FOR COAXIAL TRANSMISSION LINES
 Donald C. Knapp, Danbury, Conn., assignor to Gold Line Connector, Inc., Norwalk, Conn.
 Filed Apr. 7, 1969, Ser. No. 813,924
 Int. Cl. H01r 17/04, 9/08
 U.S. Cl. 339—177 E 3 Claims



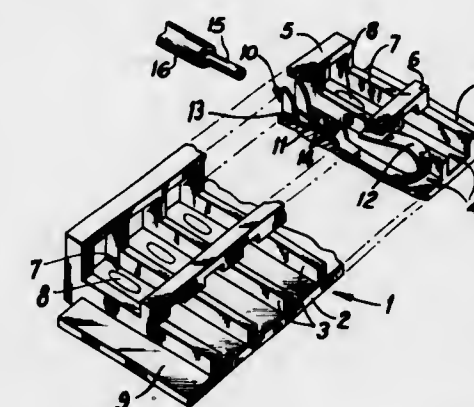
A connector for coaxial transmission lines wherein a thin flexible disk is bowed to receive the center conductor and then flexes back to secure the conductor and make electric contact with a contact pin. Other features include a simple metallic eyelet member for making the outer connection to the transmission line and a connector of relatively few parts which are secured in assembled and reusable position by merely screwing a nut into a body member.

3,611,269
ELECTRICAL CIRCUIT ASSEMBLY
 Norman Leonard Reed, Aylesbury, England, assignor to AMP Incorporated, Harrisburg, Pa.
 Continuation of application Ser. No. 663,732, Aug. 28, 1967.
 This application Mar. 19, 1970, Ser. No. 19,539
 Int. Cl. H01r 9/16
 U.S. Cl. 339—176 S 3 Claims



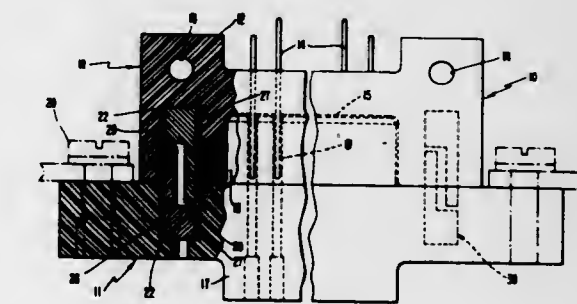
An electrical circuit assembly comprises an insulating support upon one side of which is disposed an electrical circuit component having leads extending through apertures in the support with portions of the leads extending from the opposite side of the support. The portions of the leads are bent over to engage the opposite side of the support and the leads are sufficiently stiff to ensure that the circuit component is thereby secured to the support. The support with the circuit component in place thereon can be releasably mounted of an insulating member and posts positioned in the apertures, the posts pressing the leads against the walls of the apertures thereby effecting electrical engagement therebetween.

3,611,270
ELECTRICAL WIRING CONNECTOR BLOCK
 Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Apr. 8, 1969, Ser. No. 814,349
 Int. Cl. H01r 25/04, 13/54, 5/08
 U.S. Cl. 339—176 10 Claims



An improved electrical wiring connector block in which the terminal lugs are preassembled at the factory, the blocks having knoblike protrusions formed thereon shaped and located to serve as anvils for crimping the lug ends on electrical conductors inserted therein, one or more connector

3,611,272
POLARIZING MEANS FOR MATEABLE UNITS SUCH AS ELECTRICAL CONNECTORS
 Le Roy W. Fairbairn, Sidney, and Wayne R. Thompson, Bainbridge, both of N.Y., assignors to The Bendix Corporation
 Filed July 1, 1970, Ser. No. 051,550
 Int. Cl. H01r 13/64
 U.S. Cl. 339—184 M 11 Claims

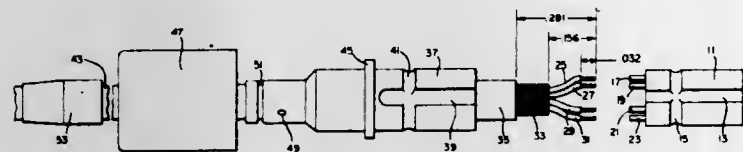


Polarizing means for mateable units or parts, such as the separable plug and receptacle units of an electrical connector, said means comprising readily removable and replaceable complementary elements selectively oriented and mateably positioned in said units wherein all of said elements may be substantially of identical construction.

3,611,273
MULTIWIRE SHIELDED CABLE CONNECTOR
 Vernon F. Allibert, Ivy Lane, Chester Heights, Pa.
 Filed Mar. 26, 1969, Ser. No. 810,448
 Int. Cl. H01r 13/50, 13/54
 U.S. Cl. 339—186 M 3 Claims

The present device is a combination of elements and features an insert member made of electrically insulating material in which a plurality of electrical conductor elements are disposed. Each conductor protrudes from the insert and is available for connection to an associated wire of a multiwire shielded cable. A hollow housing member is included in the combination which is formed with internal protrusions relief

One of the protrusions snaps into and interlocks with a groove formed in the insert member and the other protrusion comprises a key which meshes with a keyway in the insert member. The latter protrusion provides an alignment means



for aligning the housing member with the insert element and conductor elements of the connector assembly when it is engaged with another connector assembly. In addition the housing member has an aperture therein which serves as a means to solder or metalically fuse the housing member to the shield of the cable so that the housing member becomes the strain relief element as well as the protecting and alignment element.

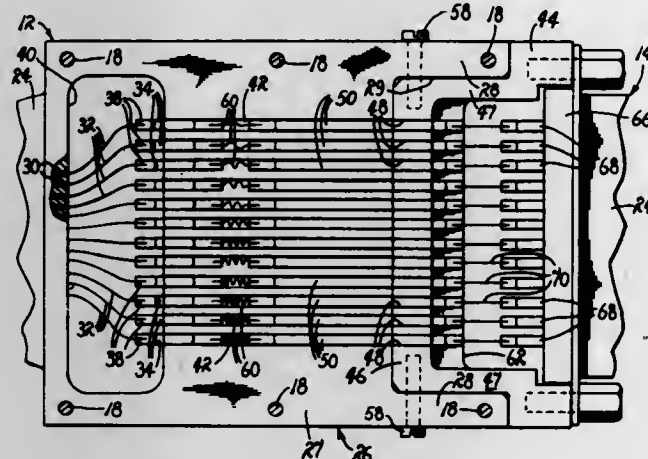
3,611,274

BREAKAWAY CONNECTOR

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, Leonard Katzin, Beverly Hills, Calif.
Filed Feb. 29, 1970, Ser. No. 15,019
Int. Cl. H01r 3/02

U.S. Cl. 339-278 M

10 Claims



A breakaway connector particularly suited for use in connecting cable ends of multiwire cables characterized by a separable pair of juxtaposed connector units, each including a plurality of laterally spaced electrical terminals coupled with adjacent ends of selected circuit leads, a feature of the connector being an inclusion of a plurality of flexible connector leads, each being of a unique length and serving to interconnect adjacent terminals of the mated units in a manner such that as the pair of units is separated the flexible leads sequentially are tensioned for developing a stress sufficient to achieve a rupture thereof, whereby a sequential separation of the plurality of leads is achievable through an application of a tensioning force having a magnitude sufficient for rupturing a single lead as separation of the connector units occurs.

3,611,275

THIN FILM CLIP-LEAD DEVICE

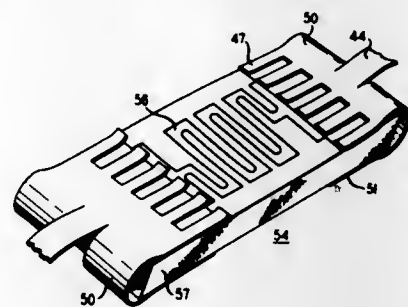
Ernest John Leddy, Upper Montclair, and Nathan George Lesh, Livingston, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 15, 1970, Ser. No. 3,139
Int. Cl. H01r 13/12

U.S. Cl. 339-258 P

2 Claims

A clip-lead of unitary construction for use in making connections to thin film circuits and devices is described. The lead is of a flat design which makes it amenable to all types

of external connecting means. The clip has a pincerlike head comprising a lower contacting member and multifurcated



upper contacting members bonded to the mating bonding surface of the substrate.

ERRATUM

For Class 340-173 sec:
Patent No. 3,611,437

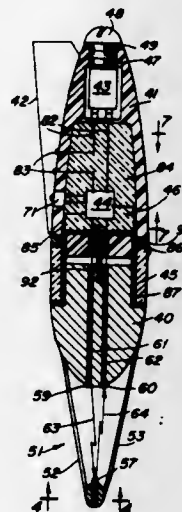
3,611,276

INSTRUMENT FOR DIRECT MEASUREMENT OF THE VELOCITY OF SOUND IN A FLUID

Frank Massa, Cohasset, Mass., assignor to Massa Division Dynamics Corporation of America, Hingham, Mass.
Continuation-in-part of application Ser. No. 790,965, Jan. 14, 1969, now Patent No. 3,561,268. This application Feb. 11, 1969, Ser. No. 798,310
Int. Cl. G01s 9/06

U.S. Cl. 340-3 R

18 Claims



The invention provides a free-falling underwater body which has a weight-drag characteristic that causes a stable rate of fall through water. The body contains an oscillator connected to a piezoelectric transmitting transducer for radiating sound waves outwardly through the water at the oscillator-output frequency. Two sensors alter the oscillator-output frequency as a function of both the depth and speed of sound in the water. A receiver on the surface of the water receives the radiated sound waves and prints out a record of the depth and speed of sound in the water through which the falling body is then passing.

3,611,277

SENSITIVE HYDROPHONE

Max N. Yoder, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy

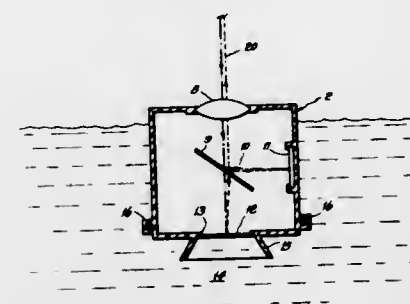
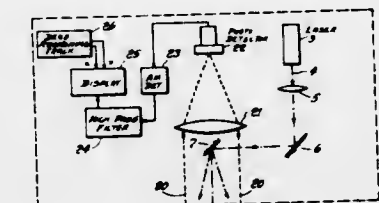
Filed Apr. 30, 1969, Ser. No. 820,405
Int. Cl. G01v 1/00

U.S. Cl. 340-14

5 Claims

An optically interrogated acoustic ASW surveillance system is disclosed in which a laser beam is used to illuminate floating acoustic transducers. These transducers have beam-

splitting optics and a submerged monocrystalline diaphragm which modulates one portion of the split beam in response to acoustic signals arriving through the water. When this por-



tion of the beam is colinearly recombined with the unmodulated portion of the split beam, an amplitude-modulated light signal is produced which is directed back to and detected at the laser source.

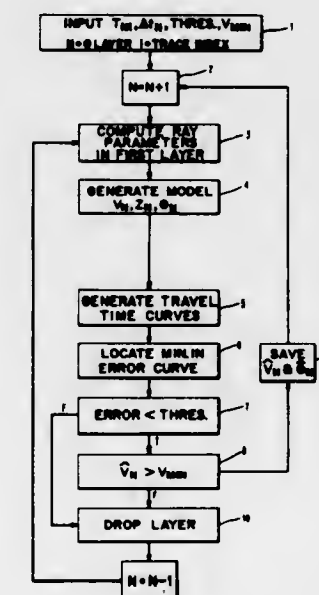
3,611,278

INTERVAL VELOCITY DETERMINATION

Norman J. Guinzy, Austin, and William H. Ruehle, Duncanville, both of Tex., assignors to Mobil Oil Corporation
Filed July 17, 1969, Ser. No. 842,523
Int. Cl. G01v 1/00

U.S. Cl. 340-15.5

6 Claims



In geophysical exploration, a suite of seismograms is converted to values of interval velocity and dip for each of the subsurface layers. An iteration process fits an arbitrarily dipping Snell's Law layered model to the observed field seismograms. Use of the velocity model permits a migration of original data into its true spatial positions.

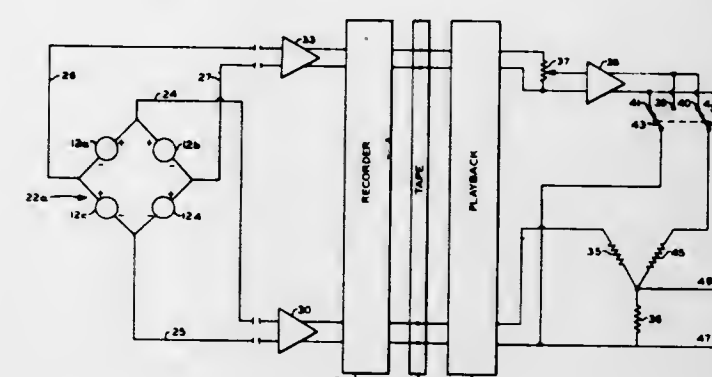
3,611,279

NOISE ELIMINATION FROM SEISMIC SIGNALS

William A. Hensley, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 13, 1969, Ser. No. 865,599
Int. Cl. G01v 1/00

U.S. Cl. 340-15.5

4 Claims



Seismometers at a given location are connected in a bridge network so that two output signals are obtained. The first signal represents the sum of the desired measured signals plus noise. The second signal represents noise. Means are provided for subtracting the second signal from the first.

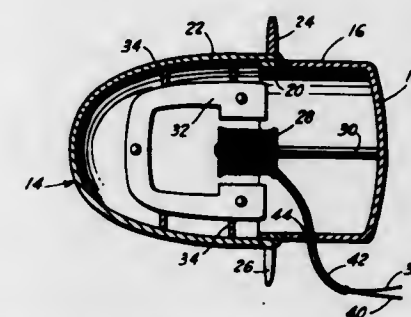
3,611,280

DETECTION MEANS

Marshall E. Sheehy, 112 West Scott St., Grand Ledge, Mich.
Division of Ser. No. 392,166, Aug. 26, 1964.
Filed May 10, 1968, Ser. No. 739,601
Int. Cl. G08b 13/00

U.S. Cl. 340-16 R

4 Claims



A sonic detector for sensing substantially horizontally moving sonic waves comprising a sectional housing having a transducer means carried therein. One section of the housing is provided with an outwardly extending radial flange for intercepting the horizontal sonic waves and transmitting sliding movement to the section with respect to the other housing section. The sliding movement of the said housing section provides activation of the transducer means for producing a signal.

This invention relates to improvements in detection methods and means and, more particularly, but not by way of limitation, to a system and means for detecting unwanted personnel or intruders encroaching upon an area surrounding and at a distance from a given site.

3,611,281

RAILROAD YARD INFORMATION SYSTEM

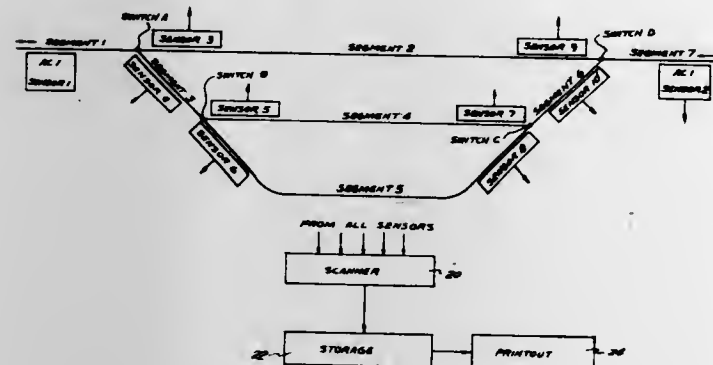
Thomas V. Evanoff, 11661 Riverdale, Detroit, Mich.
Filed May 26, 1969, Ser. No. 827,701
Int. Cl. B61 17/02

U.S. Cl. 340-23

9 Claims

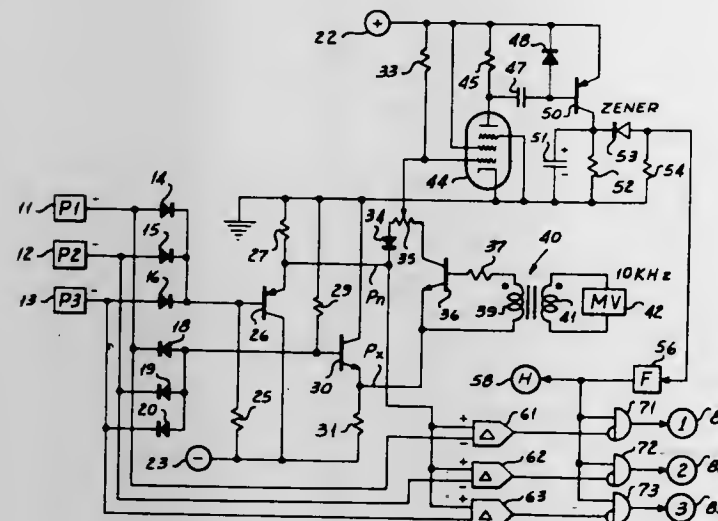
A system for indicating the positions of a number of railroad cars situated within a yard which has a pair of inlets and outlets and a plurality of track segments between the inlets and outlets, connected to one another by switches, includes first sensors at the inlets and outlets which scan indicators fixed to passing cars to provide electrical signals identifying

the car and the direction of its motion. A second type of sensor is disposed at two of the three track segments which adjoin each switch point to provide signals indicative of the direction of motion of passing cars. The outputs of both forms of sensors are provided by a scanning unit to a general purpose computer which has a core storage area assigned to each track segment. Each core area stores words identifying



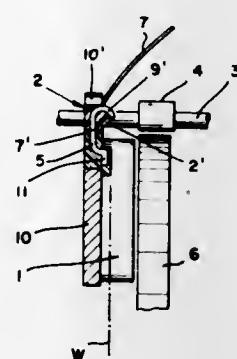
the cores presently in the track segment it represents. Car identification numbers are added or subtracted from the list of cars contained within the segments adjoining the inlets and outlets under control of the first sensors and car-identifying numbers are manipulated between the core areas under control of the second sensors. A variety of reporting readouts may be obtained from the computer.

3,611,282
FLAMEOUT DETECTOR
Stanley J. Hill, Ridgefield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 8, 1969, Ser. No. 848,615
Int. Cl. G08g 5/00
U.S. Cl. 340-27
19 Claims



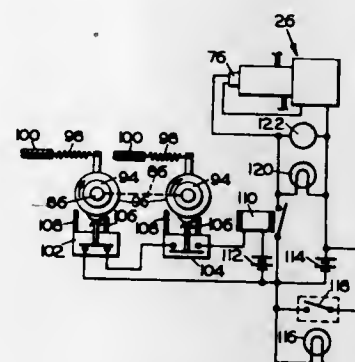
A flameout detector for aircraft having a plurality of jet engines comprises a corresponding plurality of transducers, each providing an output voltage in accordance with a turbine-discharge pressure. The transducer outputs are compared to determine the maximum and minimum voltages. If the ratio of the minimum to the maximum voltage is appreciably less than unity, a warning signal is provided to indicate that a flameout has occurred in one of the engines. The minimum voltage is compared with each of the transducer outputs to identify the particular engine which is malfunctioning.

3,611,283
BRAKE-WEAR-INDICATING SYSTEM
Hans Joachim Anders, and Heinz Hahm, both of Frankfurt am Main, Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 7, 1969, Ser. No. 805,124
Claims priority, application Germany, Mar. 8, 1968, P 16 55 483.9
Int. Cl. B60t 17/22
U.S. Cl. 340-52 A
9 Claims



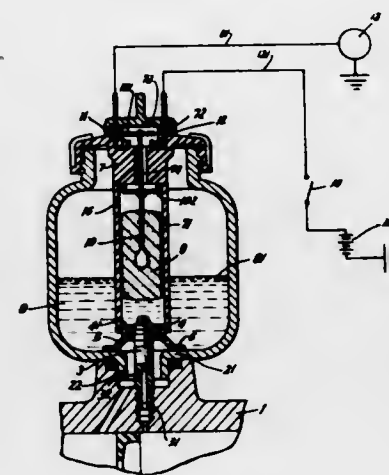
An indicating system for the wear of the lining of the brake shoe of a disk brake in which the brake shoe carries a contact which, upon substantial frictional erosion of the brake lining, engages a second contact resiliently during advance of the brake shoe whereby the resilient interengagement of the contacts maintains an electrical connection after release of the brake. The contacts are connected in circuit with the warning lamp on the dashboard of the vehicle. The brake shoe contact is a conductive member encased in a wearable (synthetic resin) insulating shell embedded in the lining material and exposed by contact with the disk, to establish an electrical connection, after a predetermined amount of brake shoe wear. The resilient contact member of the brake shoe lies outside the lining and engages a fixed portion of the brake housing, e.g., the spring clip holding the brake shoes in place.

3,611,284
MOTION-SENSING DEVICE
Jeffrey G. Lewis, Vancouver, Wash., assignor to Jolley Construction Co., Inc., Milwaukie, Ore.
Filed Aug. 5, 1968, Ser. No. 750,029
Int. Cl. B60t 8/02
U.S. Cl. 340-53
12 Claims



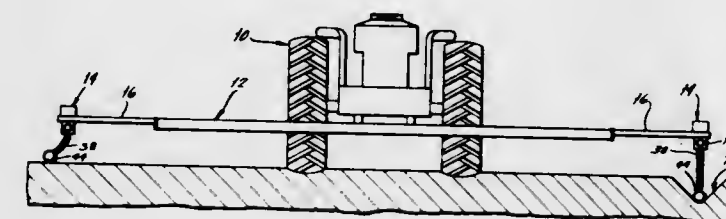
A rotary sensor wheel engages a moving part of a vehicle wheel and is coupled through a friction bearing to an actuator for an electric sensor switch which is closed by the actuator when the sensor wheel is rotating below a predetermined speed. The switch is in an electric control circuit for an electrically actuated device for relieving braking action on the vehicle wheel. A monitor wheel may be mounted for rolling contact with the road and is coupled through a friction bearing to an actuator for an electric monitor device associated with the control circuit for opening the latter when the monitor wheel is rotating below a predetermined speed greater than the said predetermined speed of the associated sensor wheel.

3,611,285
SIGNAL ARRANGEMENT FOR HYDRAULIC BRAKES
Giorgio Eggstein, Ospedaletti, San Remo, Italy, assignor to Ernst Heinkel Aktiengesellschaft, Stuttgart-Zuffenhausen, Germany
Filed July 3, 1968, Ser. No. 742,253
Claims priority, application Germany, July 5, 1967, P 16 30 037.1
Int. Cl. B60t 17/22
U.S. Cl. 340-59
6 Claims



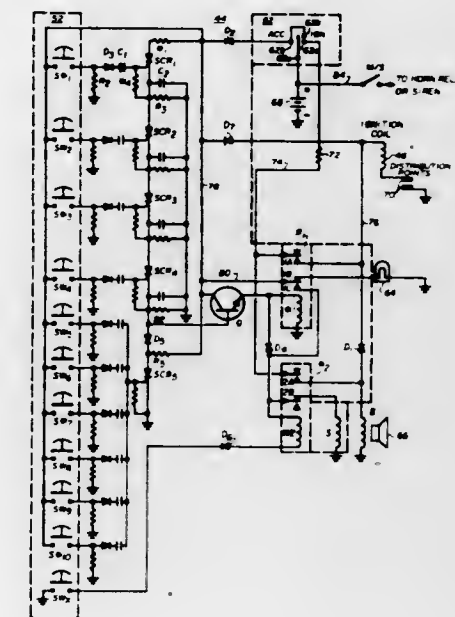
Signal arrangement for hydraulic brakes including an upright refill container adapted to be filled with a brake fluid, such as oil, the container being connected to and communicating at its bottom end with a braking cylinder and having a top end closed by a cover constructed to form a downwardly extending float housing communicating at its bottom end with the interior of the container and a contact housing upwardly spaced from the float housing, a float in the interior of said float housing, contact means in the contact housing and connected to the float to be moved thereby between an open and a closed position depending on the vertical position of the float, and a signal device in circuit with the contact means to be actuated when the latter are moved to the closed position.

3,611,286
DEVICE FOR SENSING THE POSITION OF A MOVING VEHICLE WITH RESPECT TO A FURROW
Arthur B. Cleveland, Route 1, Cotter, Ark.
Filed Mar. 20, 1970, Ser. No. 21,440
Int. Cl. B60q 1/00
U.S. Cl. 340-61
13 Claims



A device for sensing the relative position of a moving vehicle with respect to a furrow in the ground includes a mounting frame adapted to be mounted on the vehicle, a vertically disposed elongated member swingably mounted to the mounting frame, and a bearing member rotatably mounted on the lower end of the elongated member. The elongated member is a helical spring and the bearing member is adapted to engage the deepest portion of the furrow. A switch is connected to the upper end of the elongated member and is adapted to respond to swinging movement of the elongated member so as to actuate indicator lights mounted on the vehicle whenever the elongated member moves out of its vertically disposed position.

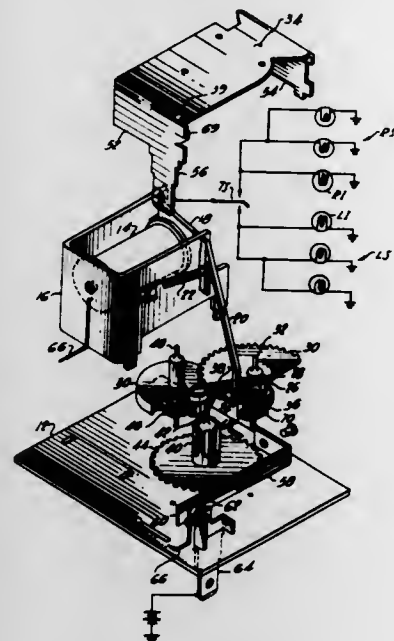
3,611,287
VEHICLE ANTITHEFT CONTROL AND SIGNAL DEVICE
Marc Hoff, 45 B Old Oak Lane, Levittown, N.Y., and Rodney J. Solomon, 400 Fulton St., Farmingdale, N.Y.
Filed Apr. 24, 1970, Ser. No. 31,592
Int. Cl. B60r 25/00
U.S. Cl. 340-63
10 Claims



3,611,288
FLASHER AND BULB OUTAGE CIRCUIT THEREFOR
Arthur J. Little, Springfield; William R. Mayer, Rochester, and Frank A. Ryder, Springfield, all of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 695,767, Jan. 4, 1968, now abandoned. This application Dec. 16, 1968, Ser. No. 785,861
Int. Cl. B60q 1/38
U.S. Cl. 340-81
6 Claims

The following specification describes a vehicle flasher utilizing a coil for driving a reciprocating spring-biased mass through a gear train to control the on-off time of a lamp. A cam moved with the mass is arranged to operate contacts for lighting the lamp after the mass is accelerated in one direction and an arm also moved with the mass is arranged to

assist in contact separation after the mass is accelerated in the return direction. Additionally, the specification describes



systems for use with the described flasher to signal lamp failure.

3,611,289

ERROR DETECTION APPARATUS

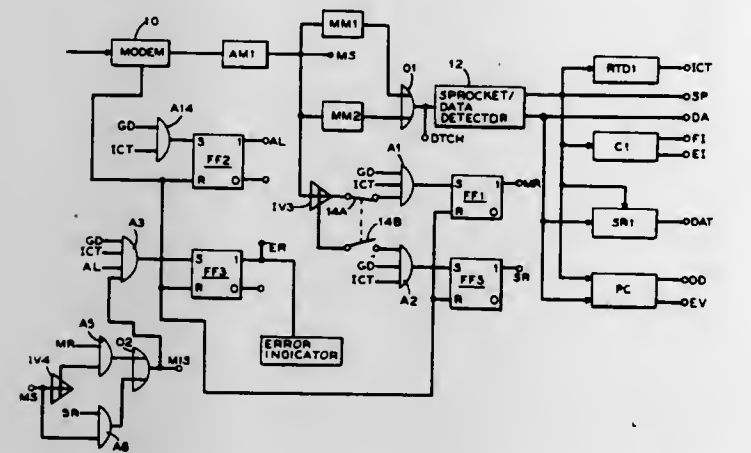
Edward M. Richards, Commack; Edward Krummenacker, Smithtown, and Francis C. Marino, Huntington, all of N.Y., assignors to Digitronics Corporation, Albertson, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,253

Int. Cl. G08c 25/00

U.S. Cl. 340-146.1

13 Claims



Error-detection apparatus for a transmission system of the type having means for transmitting data in the form of sequential characters comprising combinations of first and second signals wherein each character has the same characteristic and the characters are spaced from each other by an intercharacter signal represented by a preselected signal. The apparatus includes means for storing an intercharacter signal which follows a received character having said characteristic and comparing means for comparing the stored signal with the intercharacter signal following the next character having said characteristic and for producing an output signal when the compared intercharacter signal is represented by other than the preselected signal. Error indicating means responsive to the comparing means signal is provided for indicating a transmission equipment error.

3,611,290 FINGERPRINT MINUTIAE READING DEVICE

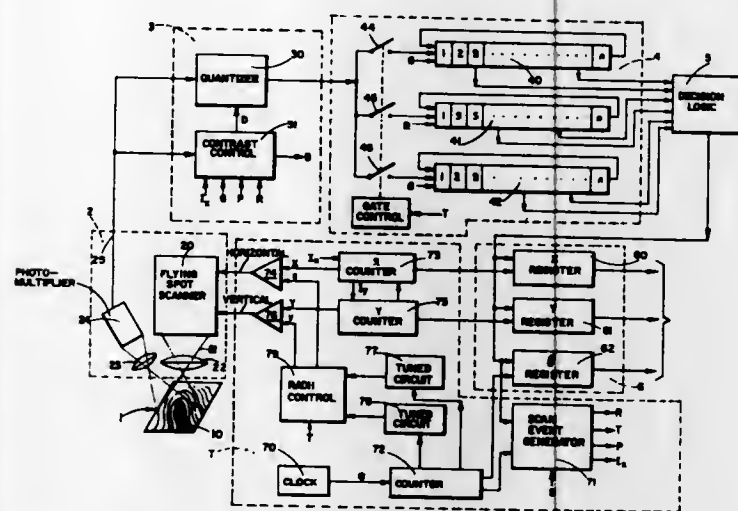
James A. Luisi, Anaheim, and Sergei M. Fomenko, Woodland Hills, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed June 3, 1968, Ser. No. 734,002

Int. Cl. G06k 9/12

U.S. Cl. 340-146.3 E

3 Claims



A fingerprint is observed, a small portion at a time, using a flying spot scanner, whose spot travels along a predetermined path at each position to provide an electrical analog signal indicative of the nature of the fingerprint at each position. The analog signal is converted into digital form and temporarily stored in a memory having a plurality of storage elements. The signal stored in the memory is constantly circulated through each of the storage elements to provide for detection of minutiae (i.e. ridge endings, bifurcations, etc.) regardless of their angular orientation. Detecting the occurrence of specified minutiae is achieved by sensing the states of selected ones of the storage elements.

3,611,291

CHARACTER RECOGNITION SYSTEM FOR READING A DOCUMENT EDITED WITH HANDWRITTEN SYMBOLS

Alan I. Frank, Philadelphia, Pa., assignor to Scan-Data Corporation, Philadelphia, Pa.

Division of Ser. No. 544,202, Apr. 21, 1966, abandoned.

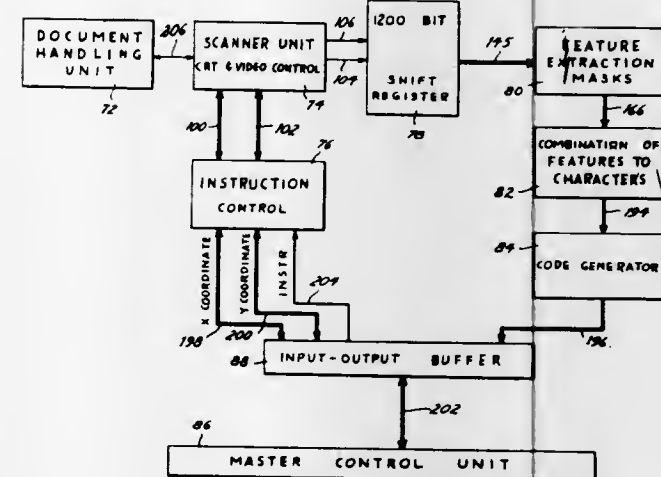
Filed Oct. 30, 1969, Ser. No. 870,800

No. 870,800

Int. Cl. G06k 9/00

U.S. Cl. 340-146.3 Z

2 Claims



A method and apparatus for editing a document having textual material thereon. A unique font of editing symbols is provided which are handwritable yet recognizable by a character recognition system. Each of the symbols is representative of an editing instruction. An appropriate symbol is inserted adjacent each portion of the textual material

which is in error. The document is then inserted into a character recognition system without requiring reproduction of the document with the alterations incorporated.

3,611,292

CREDIT CARD VALIDATION SYSTEM

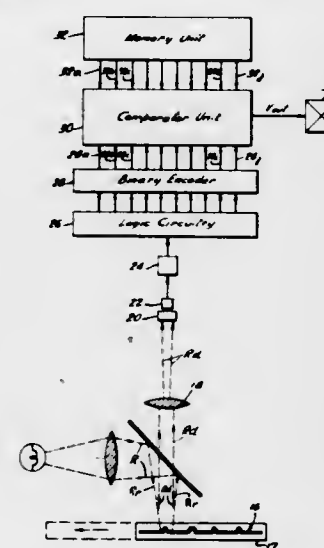
William F. Brown, Wappingers Falls; Ronald J. Goetchius, Fishkill; Jerry L. Nolting, Fishkill, and Alan D. Rouse, Pawling, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 21, 1969, Ser. No. 826,630

Int. Cl. H04q 9/00

U.S. Cl. 340-149 R

2 Claims



A credit card bearing a plurality of embossed decimal digits identifying an account number is inserted in a novel card holder which ensures accurate optical alignment or registration for character recognition purposes. The holder and the credit card contained therein are illuminated and as the holder is moved past a lens each digit is optically read one at a time; i.e. light reflected from the face of the card is directed through the lens and to a mask having a unique pattern of holes therethrough. Photodetectors associated with the mask translate reflected light passing through the holes into electrical signals representative of the card's account number. These signals are ultimately encoded in binary form and delivered to a comparator to determine whether the binary-coded account number corresponds to a like binary-coded number stored in a suitable storage means.

3,611,293

ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT

Geoffrey Ernest Patrick Constable, and Dennis Arthur Lloyd, both of Cheltenham, England, assignors to Smiths Industries Limited, London, England

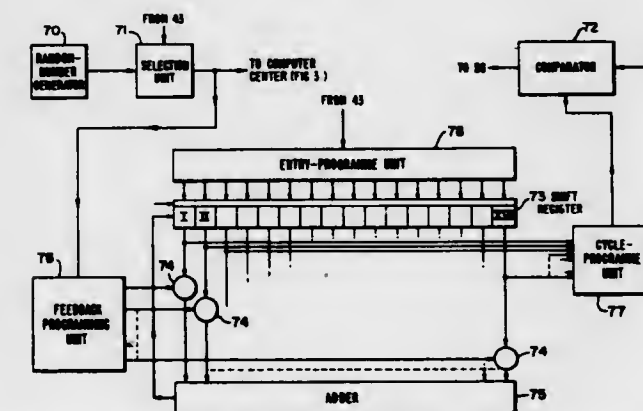
Filed Aug. 19, 1969, Ser. No. 851,187

Claims priority, application Great Britain, Aug. 30, 1968, 41425/68

Int. Cl. H04q 5/16

U.S. Cl. 340-149 A

14 Claims



A money-dispensing system is operative to dispense money in response to a bank customer's embossed credit card and

keyed entry of his personal identification number at a terminal station, only if this number accords with the customer's account number as read from an accounting record impressed from the card. Both numbers are transmitted in binary-coded form via a data link to the bank's central computer to check their accord with one another, the card validity and the customer's credit, using stored information there. If the checks are satisfied, approval for dispensing is given to the terminal station by transmission over the data link of an enciphered number that is specially generated in a binary shift register at the computer using a programmed series of shifts with intervening feedback into the register of digits derived from a programmed summation of the contents of individual register stages. The same number is generated independently using the same program in a shift register at the terminal station, and is compared for equality with the number received over the data link to recognize this as approval for the dispensing operation.

3,611,294

PORTABLE STOCK TICKER

Jerry D. O'Neill, Lake Hopatcong, and George L. Howitt, River Edge, both of N.J., assignors to Display Sciences, Inc., Upper Saddle River, N.J.

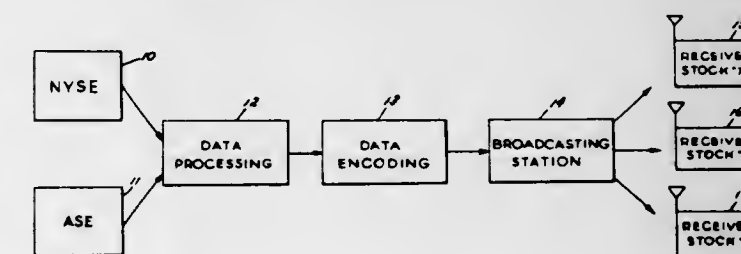
Continuation-in-part of application Ser. No. 623,007, Mar. 14, 1967, now abandoned. This application Mar. 5, 1969,

Ser. No. 806,026

Int. Cl. H04q 7/02

U.S. Cl. 340-152

6 Claims



A system of disseminating stock data and similar information transmitted and coded in form to be received by subscribers by setting a proper code on a receiving unit including decoding means.

3,611,295

FLIP-FLOP DISPLAY AND MANUAL CONTROL FOR BUS ORGANIZED COMPUTER

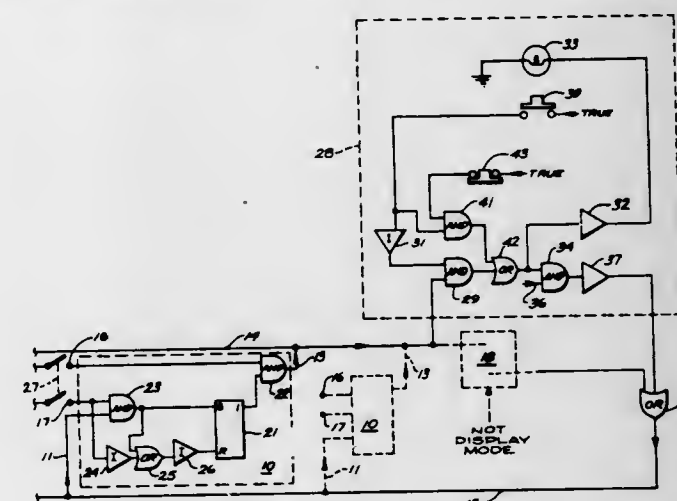
Richard S. Sharp, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 4, 1969, Ser. No. 847,073

Int. Cl. H04q 3/00

U.S. Cl. 340-166

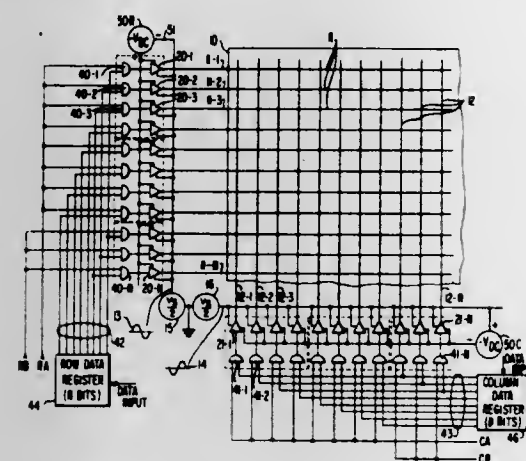
14 Claims



In a computer a plurality of flip-flops are connected to a common source bus and to a common destination bus. A combined display and manual control circuit is connected to the source bus and the destination bus in such a manner that

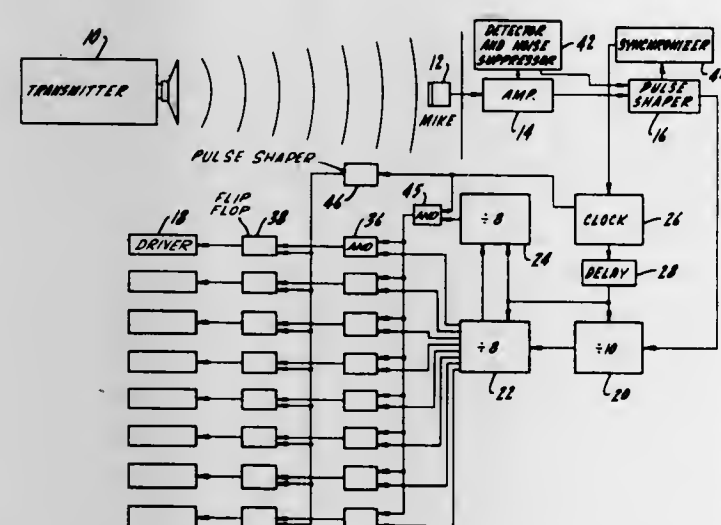
the state of one of the flip-flops can be displayed and manually controlled as selected by an addressing means. In particular, means are provided for displaying a selected flip-flop and maintaining the state of that flip-flop, with logical provisions for manually over-riding the existing state and either setting or clearing the selected flip-flop, all with only a pair of leads between the combined circuit and the matrix of flip-flops.

3,611,296
DRIVING CIRCUITRY FOR GAS DISCHARGE PANEL
William E. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Dec. 29, 1969, Ser. No. 888,743
Int. Cl. H01j 17/48 H05b 41/44; H01j 61/33
U.S. Cl. 340-166 4 Claims



Solid-state low level to high-level interfacing pulser circuits for multiple discharge gas discharge devices capable of feeding through a high-level periodic sustaining voltage to the discharge device with minimum degradation. The output is the algebraic sum of the periodic sustaining voltage and a level converted logic signal. Logic circuitry is included which may be fabricated with or included in packages containing interfacing pulser circuits. There is no mixing of active elements (NPN vs. PNP) so many circuits may be incorporated on a single wafer or chip. Consult the specification for features and details.

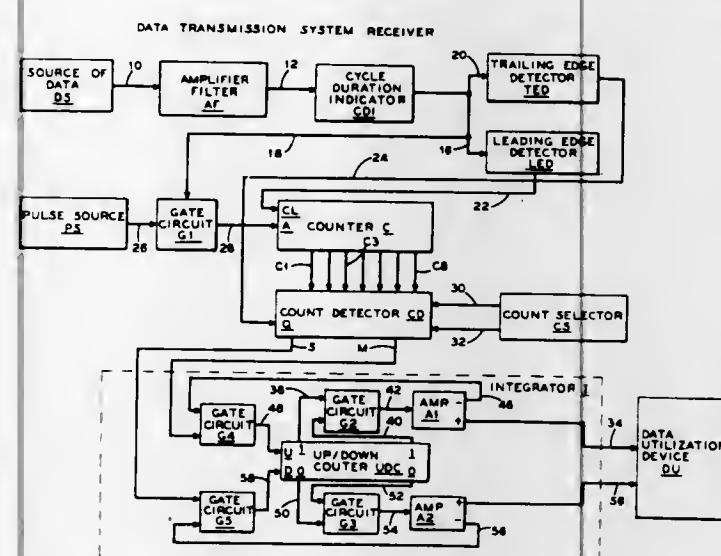
3,611,297
REMOTE CONTROL RECEIVER USING A FREQUENCY COUNTER APPROACH
Roger L. Kramer, Madison, and Roy A. Noffke, Belleville, both of Wis., assignors to Oak Electro/Netics Corp., Crystal Lake, Del.
Filed June 9, 1969, Ser. No. 831,492
Int. Cl. H03k 5/20; H04g 9/00
U.S. Cl. 340-171 R 9 Claims



A control circuit in which one of a plurality of different frequency input signals is effective to operate one of a plu-

ality of control stations. The input signals, which may be ultrasonic signals, are converted to electrical signals and then to a train of pulses, in which the frequency of the pulse train is related to the frequency of the input signal. The pulses are counted in a dividing circuit in which the divisor is equal to the number of control stations.

3,611,298
DATA TRANSMISSION SYSTEM
Allen G. Jacobson, Ramsey, N.J., assignor to Computer Transceiver Systems, Inc., Upper Saddle, N.J.
Filed Mar. 7, 1969, Ser. No. 805,338
Int. Cl. H04l 27/10; H04q 9/00
U.S. Cl. 340-171 R 4 Claims

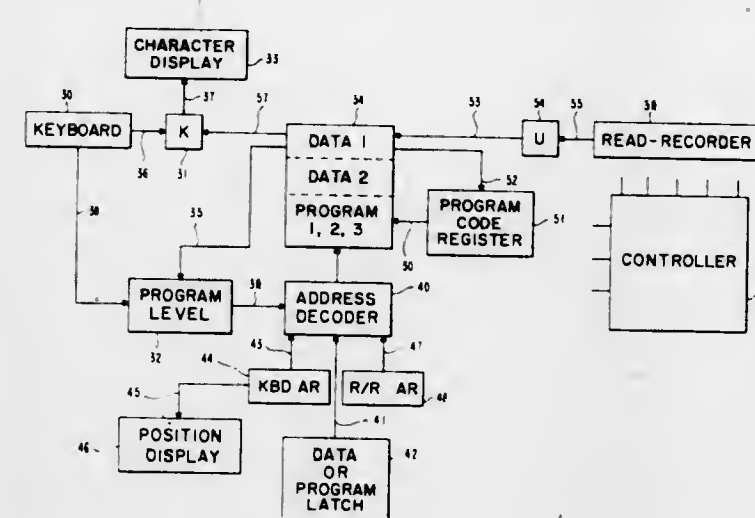


A data transmission system includes a transmitter for transmitting to a receiver data, as coded combinations of first and second bits wherein each of the first bits is represented by a group of substantially sinusoidal waveforms each having a first given period and each of the second bits is represented by a group of substantially sinusoidal waveforms each having a second given period. The receiver comprises means for detecting a given portion of each of the received waveforms, and a source of pulse signals which have a given repetition rate. A pulse counter counts the number of pulse signals occurring during the given portions of each of the waveforms. Count detector means give a first-bit indication when the count in the counter exceeds a first value and gives a second-bit indicator when the count of the pulse signals is less than a second given value. Integrator means receive the first- and second-bit indications to indicate whether the group of waveforms received in a given time interval represents a first-bit or a second-bit as determined by the number of first- and second-bit indications received during the given first-perceived In addition the receiver has the facility to detect bits that are represented by different preassigned frequencies of the waveforms.

3,611,299
MAGNETIC CARD DATA RECORDER
Royce D. Lindsey, and William L. McDonald, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,630
Int. Cl. G06f 11/00 16 Claims

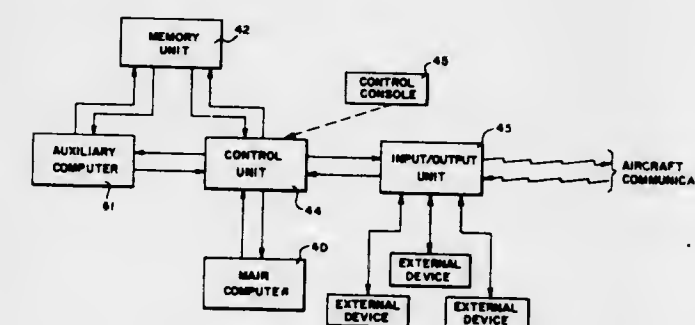
A system for use in a keypunch application. Keyed data is recorded onto a magnetic card. To prevent interruption of the keying rhythm during movement of the read-record head from track to track and during card feed, a two-sectioned memory is employed, which through selection of a single address and gated logic allows data to be transferred from one section to the other section without need of buffering or other types of temporary storage or delay. The two-sectioned single address memory is also utilized during verify and dupli-

cation operations with, in the case of the latter, the data from a first record being entered from the keyboard into the first section of memory and being transferred to the second sec-



tion for transfer to the magnetic card. During duplication into a second record from the keyboard, data is transferred back into the first section from the second section through utilization of the single address technique.

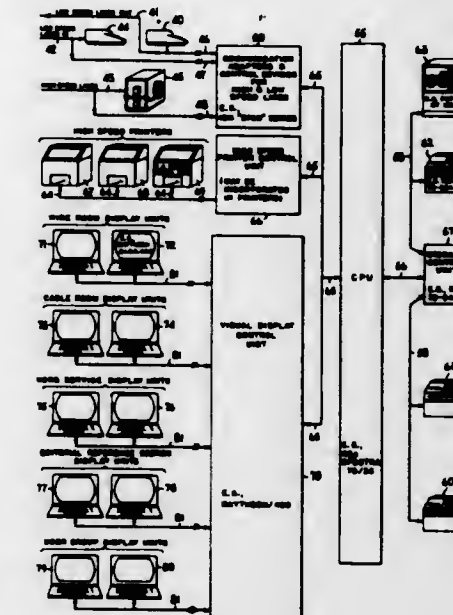
3,611,300
MULTICOMPUTER SYSTEM FOR REAL-TIME ENVIRONMENT
Richard W. Aldrich, Liverpool; Robert D. Berlin, Syracuse, N.Y., and Panos Galidas, Alexandria, Va., assignors to Honeywell Information Systems Inc.
Filed Feb. 25, 1966, Ser. No. 530,045
Int. Cl. G06f 15/16 8 Claims



A data-processing system comprising two (or more) data processors the first of which performs main processing operations on incoming data while generating instructions that enable a second (or subsequent) data processor to simultaneously perform certain auxiliary processing operations necessary for the completion of the main processing operations.

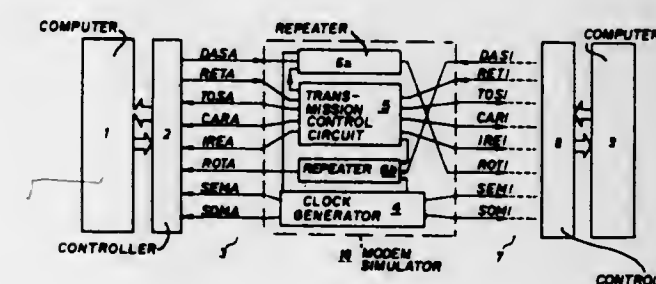
3,611,301
SYSTEMS FOR INFORMATIONAL PROCESSING OF DISPATCHES
Herman D. Parks, Norwalk, Conn., assignor to Time Incorporated, New York, N.Y.
Filed May 13, 1968, Ser. No. 728,658
Int. Cl. G06f 15/02, 15/40 4 Claims

Received dispatches are informationally processed by a system comprised of a program controlled central data-processor, high-speed printers and, also, data storage and visual display units of which both types of units are in two-way communication with the processor. Logging data concerning a received dispatch is entered via a display unit with the following results (a) determination from such data and stored distribution tables of print orders implemented by the



acts as a central file accessible through the display units for the purpose of either input or output of information.

3,611,302
HIGH SPEED MODEM SIMULATOR
Pier Mario Castello, Rho, Milan, and Giacomo Vercesi, Milan, both of Italy, assignors to General Electric Information Systems Italia S.p.A., Turin, Italy
Filed July 26, 1968, Ser. No. 747,921
Claims priority, application Italy, July 28, 1967, 18906A
Int. Cl. G06f 3/00 8 Claims

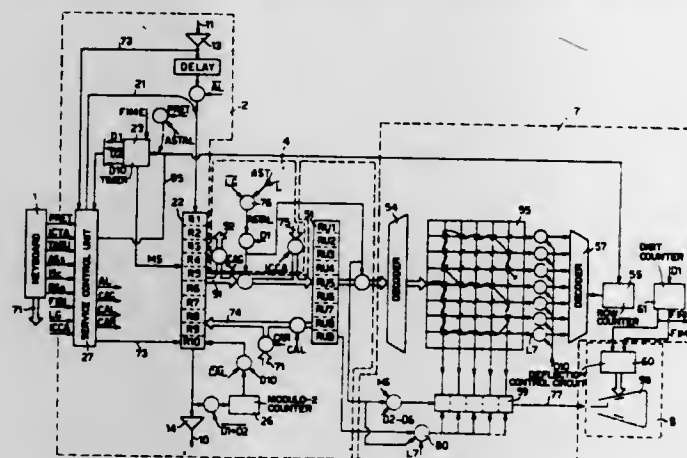


This invention relates to the interconnection of data-handling systems, which are remote from one another, by means of a modem simulator, the modem simulator including a synchronizing signal generator having means for adjusting the time ratio for the directional transmission of information signals between said data-handling systems.

3,611,303
APPARATUS FOR WRITING DATA IN A RECIRCULATING STORE
Francesco Serracchioli, Banchette, and Antonio Bartocci, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C.S.p.A., Ivrea, Italy
Filed Oct. 3, 1968, Ser. No. 764,709
Claims priority, application Italy, Oct. 3, 1967, 53222-A/67
Int. Cl. G06f 13/02 10 Claims

Apparatus for writing data in a recirculating store having a plurality of cells for storing characters. A keyboard posts characters to be written in the store which are entered in the cell currently marked by an identification sign. The identi-

cation sign may be automatically shifted to the next successive cell, or by one or more cells in response to operation of



a key shift that functions independently of the automatic shifting means.

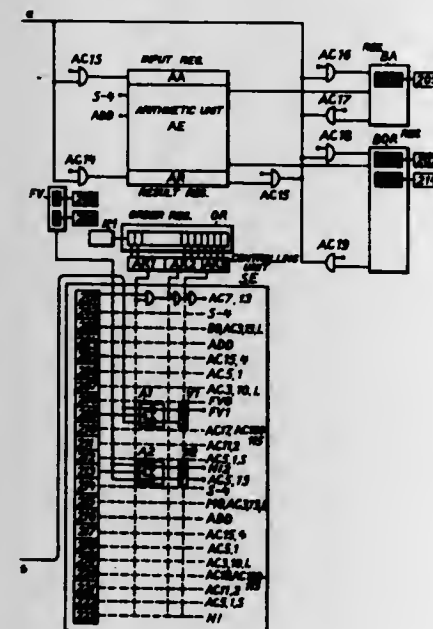
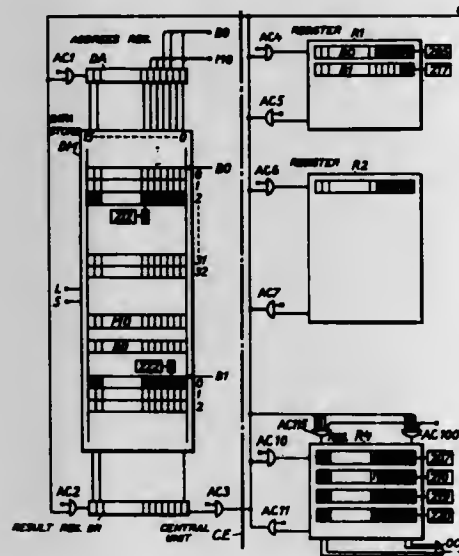
3,611,304 ADDRESS CONVERSION METHOD FOR USE IN SCANNING INPUTS TO A PROCESS CONTROL COMPUTER

Goran Anders Henrik Hemdal, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Dec. 30, 1968, Ser. No. 787,816

Claims priority, application Sweden, Feb. 7, 1968, June 17, 1968, 1574/68; 8142/68
Int. Cl. G06f 9/20

U.S. Cl. 340—172.5

7 Claims



In a computer-controlled system of cooperating devices for example a telecommunication system, the condition of each

of the devices is indicated by a unit of binary information in a position in a first storage area in the data store, and the condition of a group of positions in the first storage area is indicated in a position in a second storage area, so that instead of for example scanning the positions in the first storage area to determine the condition of the corresponding device, a faster scan can be executed by scanning the positions in the second storage area.

3,611,305 DATA PROCESSOR INTERRUPT SYSTEM

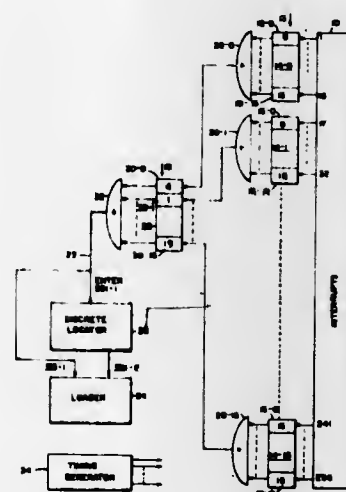
Lawrence E. Greenspan, Thorntons Ferry, and Earl J. Whitaker, Nashua, both of N.H., assignors to Scanders Associates, Inc., Nashua, N.H.

Filed Feb. 10, 1969, Ser. No. 798,033

Int. Cl. G06f 11/06

U.S. Cl. 340—172.5

9 Claims



Interrupt indicator means are arranged in a multilevel pyramid configuration. Each level contains interrupt word storage means with each of the additional levels having fewer word storage means than the previous level. An interrupt condition will set a discrete storage means of the word storage means in each level of the pyramid. These discretely are retrieved, their addresses determined in each word storage means and the discrete addresses are combined to give the complete address of the interrupt condition. In addition, the simultaneous occurrence of more than one interrupt condition is sensed, and the address of each such interrupt condition is determined.

3,611,306 MECHANISM TO CONTROL THE SEQUENCING OF PARTIALLY ORDERED INSTRUCTIONS IN A PARALLEL DATA PROCESSING SYSTEM

Earl W. Reigel, Exton, and Harvey W. Bingham, Wayne, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Feb. 5, 1969, Ser. No. 796,779

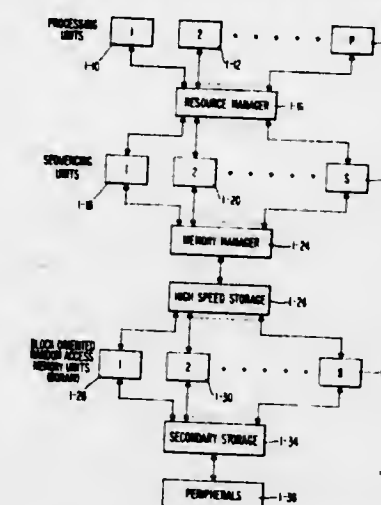
Int. Cl. G06f 9/18

U.S. Cl. 340—172.5

6 Claims

Apparatus is disclosed which controls the sequencing of partially ordered instructions in a parallel processing system and permits initiation of instructions as soon as all predecessor instructions have been executed. The device is asynchronous in the sense that there is no inessential fixed order of instruction initiation and the sequencing control is independent of variable instruction duration. The partial order information used by the mechanism is represented in Boolean matrix form. A brief description is also included of methods for the automatic detection of parallelism in pro-

grams, within and between statements, and the resulting partial order information as it relates to the mechanism. The



operation of the mechanism in a parallel processing system is also described.

3,611,307 EXECUTION UNIT SHARED BY PLURALITY OF ARRAYS OF VIRTUAL PROCESSORS

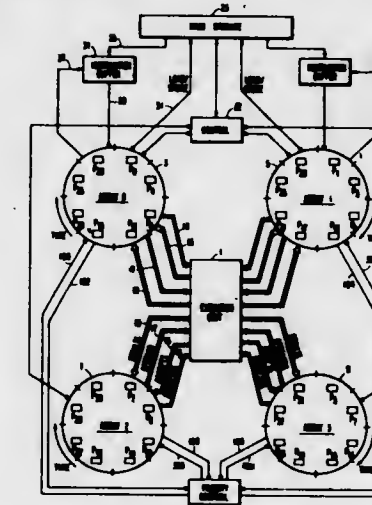
Albert Podvin, Woodland Hills, Calif., and Michael J. Flynn, Evanston, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1969, Ser. No. 813,024

Int. Cl. G06f 9/18

U.S. Cl. 340—172.5

10 Claims



A multiplicity of arrays of digital machines, said machines time sharing a single execution unit having multiple execution facilities is disclosed. A digital machine is termed a virtual processor and can be defined as a basic digital computer, absent an execution unit, secondary control and storage unit. The arrays of virtual processors time share a common execution unit. Selection means associated with each array sequentially sample each virtual processor in its given time slot. If a given virtual processor requests service during its time slot, its request becomes a candidate for presentation to the execution unit. Since there are a multiplicity of arrays, there may be a multiplicity of service requests during a given time slot. A priority controller determines priority among the arrays such that the highest priority array having a currently sampled virtual processor requesting service will gate its service request and associated operands to the execution unit. Means are provided for gating the results of the requested service back to the requesting virtual processor.

3,611,308 PRINTER TRANSLATOR SYSTEM

William T. Grinnell, Burlington, Mass., assignor to Viatron Computer Systems Corporation, Bedford, Mass.

Filed June 13, 1969, Ser. No. 833,121

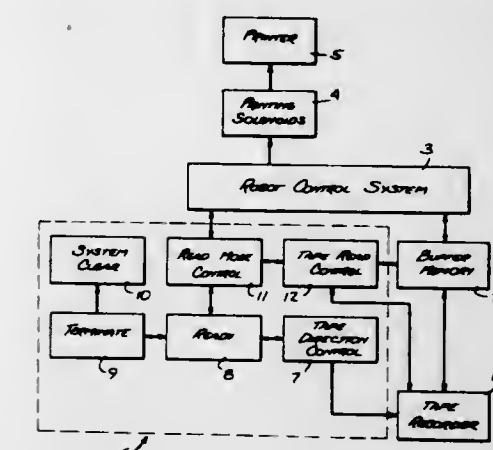
Int. Cl. G06f 3/10

U.S. Cl. 340—172.5

9 Claims

The invention is a data translation and printing system in which the printing device may be a conventional typewriter

and where the input to the system comprises encoded data of the type which may be recorded on magnetic tape or other suitable storage means capable of recording a digital or on-off electrical signal. The input terminal of this system, for example, may be fed ASCII coded data being played back from a magnetic tape recording. The system includes a buffer memory which feeds the input signal at a controlled rate to a translating circuit for converting the input to solenoid control signals to selectively drive solenoid-actuated plungers which



physically activate the typewriter keys. Means are included in the system for arranging the format of the printed data including means for operating the typewriter tabulating means, the carriage return means, and the back space and the line-indexing means by using appropriate code signals or counters. The system also includes a means by which the tabulator system may be preprogrammed to provide a preselected typing pattern independent of the particular data input.

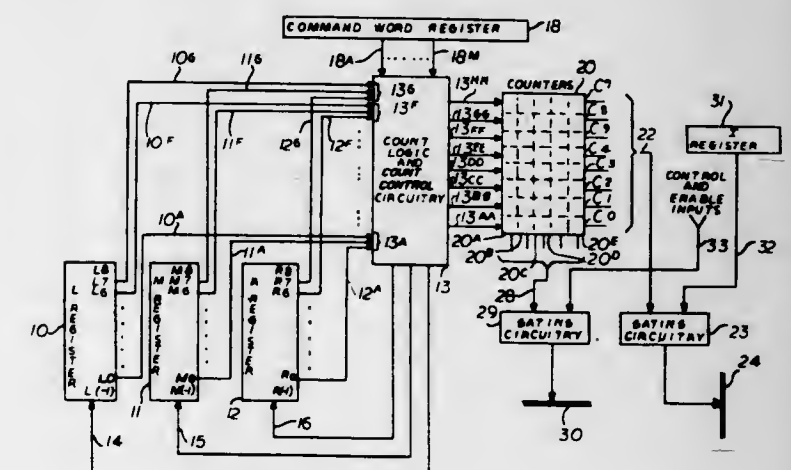
3,611,309 LOGICAL PROCESSING SYSTEM

Roy J. Zingg, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed July 24, 1969, Ser. No. 844,329

Int. Cl. G06f 7/00

U.S. Cl. 340—172.5

13 Claims



A number, M, of serial binary counters each having N bits are arranged so that individual bistable circuits of the counter define an MxN matrix. A number of shift registers, each adapted to temporarily store N+2 bits and to selectively shift a word up or down, are coupled via control circuitry to the counter matrix so that each counter is associated with a particular bit location in all of the registers for performing predetermined counting functions on that bit location. Control circuitry is provided for performing, in sequence, the steps: selectively shifting the contents of the registers, performing a predetermined logical function on the contents of the register, and then shifting the contents of the registers back to their original position. Any combinational Boolean

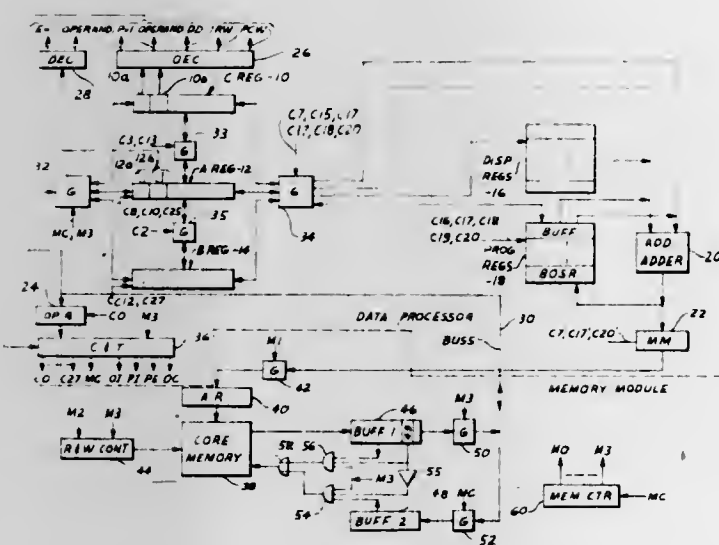
function can be performed in parallel on the contents of the registers. Gating circuitry permits the selective transfer of the contents of any one counter in the matrix to a data bus, or the selective transfer of the contents of any one bit location of all of the counters to a data bus.

3,611,310 DISCRIMINATING STORE OPERATOR METHOD AND APPARATUS FOR DATA PROCESSORS

Bobby A. Creech, Glendora; Benjamin A. Dent, Altadena, and Erwin A. Hauck, Arcadia, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed July 30, 1969, Ser. No. 846,010
Int. Cl. G06f 9/20

U.S. Cl. 340—172.5

13 Claims



A data processing system having a memory with memory locations containing words including operand words and address reference words. An operand stored in a memory location is linked to a first reference word directly or through other address reference words by a memory address signal in each reference word, each of the words contain a type signal identifying the type of the associated word. The word in the memory location referenced by the address signal in the first reference word is read, and any words referenced by the read address reference words are read until an operand word is read. The type signals of the words read are monitored for an operand type word. A desired word is stored into the memory location from which an operand word is read. The method includes the steps of reading from the memory the word referenced by the first address reference word and any words referenced by such read word until an operand word is read. The type signals of the words read are monitored for an operand type word. A desired word is stored into the memory location from which a word is read having an operand type signal.

3,611,311 INTERFACE APPARATUS

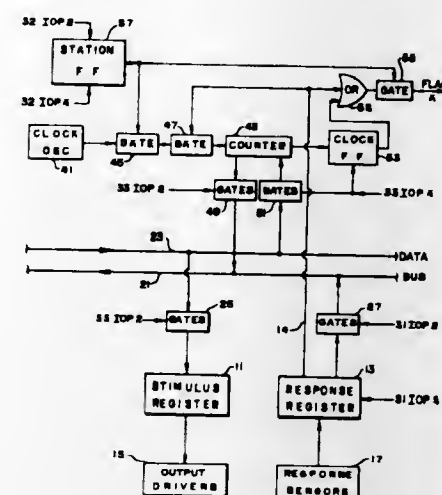
Harold G. Andrews, Reading, Mass., assignor to Grason-Stadler Company, Inc., West Concord, Mass.
Filed Aug. 15, 1969, Ser. No. 850,466
Int. Cl. G06f 9/18

U.S. Cl. 340—172.5

14 Claims

The interface apparatus disclosed herein facilitates the exchange of data between a digital computer and each of a plurality of experiment stations operating in real time by sequentially interrogating the stations to determine if a change of state has occurred, the idle program of the computer being interrupted only when a station of changed state is encountered. Each station includes not only stimulus and response registers for affecting and registering the state of the station, but also a respective digital clock so that the

computer proper is freed from any need to continuously monitor timing operations required by the stations. With re-



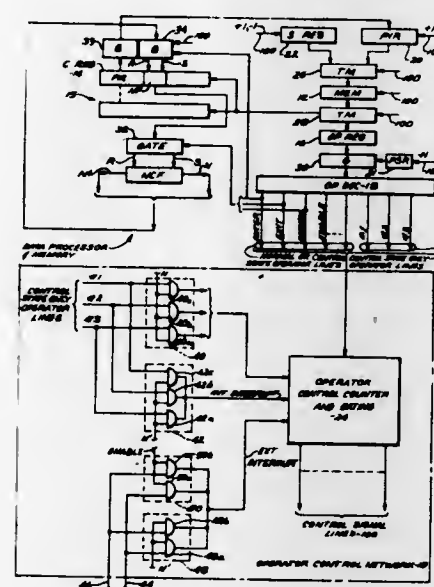
gard to each station, the reaching of a predetermined count on the digital clock constitutes one form of change of state.

3,611,312 METHOD AND APPARATUS FOR ESTABLISHING STATES IN A DATA-PROCESSING SYSTEM

Robert S. Barton, Avelon; Bobby A. Creech, Glendora; Benjamin A. Dent, Altadena; Erwin A. Hauck, Arcadia, and William M. McKeeman, Palo Alto, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of application Ser. No. 672,042, Oct. 2, 1967, now Patent No. 3,548,384. This application Aug. 21, 1969, Ser. No. 851,804
Int. Cl. H04f 11/00; G06f 1/100

U.S. Cl. 340—172.5

13 Claims



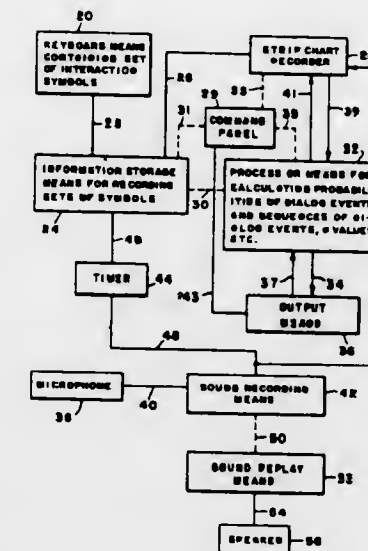
A data-processing system has a memory and a controllable operator control network operating in either of two different states for execution of operators and processing interrupts. A state control device is coupled to the controllable operator control network and has first and second states for causing the controllable operator control network to assume first and second states respectively. A first register stores operators for controlling the sequence of operation of the operator control network. A second register stores procedure reference words which have a coded signal therein indicative of either of two required states of the operator control network. The state control device is set to one state or the other depending on the coded signal in the stored reference word thereby establishing the state of the operator control network. A method for setting the state control device is also disclosed.

3,611,313 INTERACTION INFORMATION ANALYZER

Gene W. Moser, 9230 Perry Hwy., Pittsburgh, Pa., and James E. Teza, 5889 Aylesboro, Pittsburgh, Pa.
Filed Sept. 10, 1969, Ser. No. 856,608
Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

9 Claims



Apparatus is provided for the rapid ascertainment and display of values quantifying the quality of a dialogue, as respects message-block length, participation frequencies for various B_n persons, actual information, maximum information, redundancy, transmission, equivocation, and the like. The apparatus comprises means for generating signals coded corresponding to various dialogue events; information storage means such as magnetic tape and the like; function-generation means responsive to the information storage means; and suitable output means, such as an array of odometers (10-by-10), a strip-chart recorder, etc., as well as preferably also a temporary valve-identification means such as a plurality of viewplates.

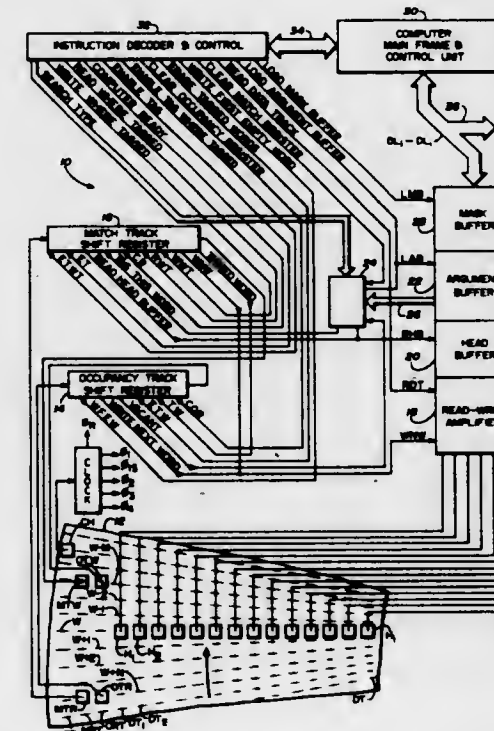
3,611,314 DYNAMIC ASSOCIATIVE DATA PROCESSING SYSTEM

John P. Pritchard, Jr., and Herschel F. Murry, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1969, Ser. No. 856,267
Int. Cl. G11b 13/00

U.S. Cl. 340—172.5

36 Claims



An associatively organized data processing system is disclosed. The bits of each data word are recorded radially on a magnetic disk by means of a separate read-write head for

each bit track. Logic circuitry is provided for each read-write head to perform associative processing. Thus, all words in memory can be associatively processed after one revolution of the disk. The match and occupancy status of each word is determined by corresponding bits on an occupancy-status track and a match-status track. The status tracks are updated as each word is logically processed by means of spaced read and write heads and shift registers to delay the bits of status data before they are updated and recorded back on the disk in accordance with the associative processing of the words.

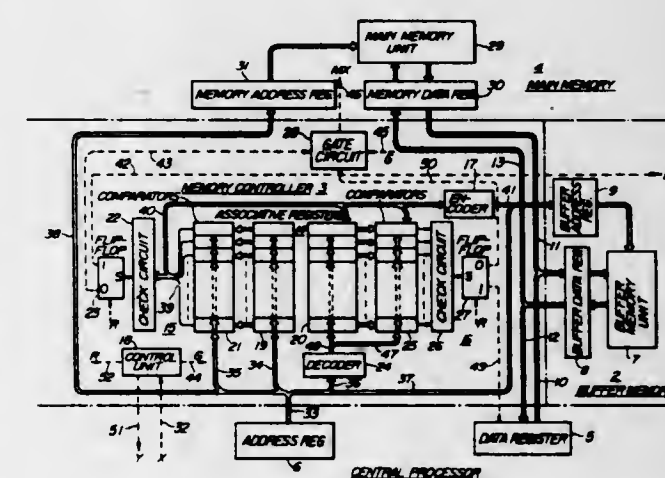
3,611,315 MEMORY CONTROL SYSTEM FOR CONTROLLING A BUFFER MEMORY

Masuo Murano, Kokubunji-shi, and Hisashi Horikoshi, Tachikawa-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1969, Ser. No. 864,649
Claims priority, application Japan, Oct. 9, 1968, 43/73129
Int. Cl. G06f 13/00

U.S. Cl. 340—172.5

8 Claims



A memory control system for a computer having a main memory, a central processor, a buffer memory and a memory controller. The buffer memory comprises a plurality of sectors each consisting of a plurality of blocks, and information for each block is read out from the main memory to be stored in the buffer memory. The memory controller includes associative registers in which the page address in the main memory of the information stored in the buffer memory and the validity indicator indicating the readout block are stored. The central processor applies a read or write request signal as an address signal to the memory controller, and upon receiving the address signal from the central processor, the memory controller checks the presence or absence of a page address which coincides with more significant bits of the address signal and when such a page address is present, the memory controller applies a read or write request signal to the buffer memory immediately. After that the memory controller checks the validity indicator, and when it is proved invalid, the memory controller operates so as not to transfer to the central processor the result of access to the buffer memory.

3,611,316 INDIRECT INDEXED SEARCHING AND SORTING

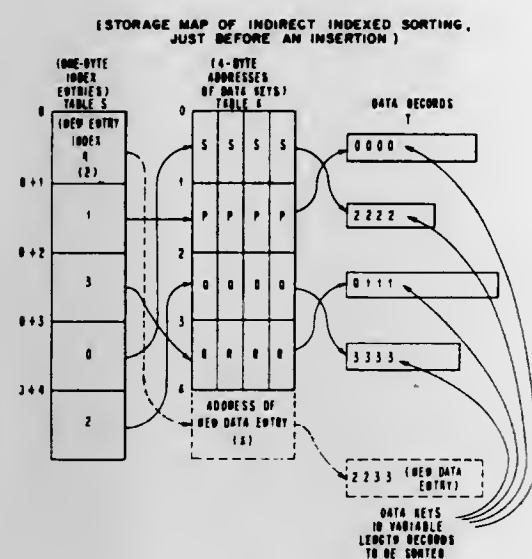
Luther J. Woodrum, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,979
Int. Cl. G06f 7/22

U.S. Cl. 340—172.5

12 Claims

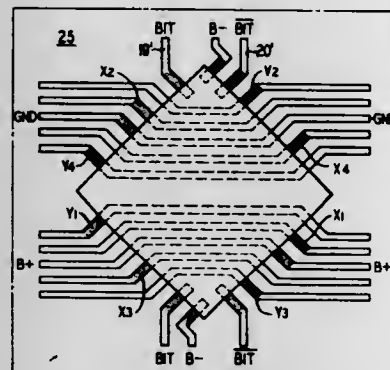
A sorting method by insertion among sequenced indexes, involving two levels of address indirection for keys T of data records being sorted. The second level comprises a table containing the addresses A of the keys T . The addresses can be in any arbitrary order in their table, and the data records can be located anywhere reachable by the addresses. However the location of each address entry in table A is indicated by an assigned index. These assigned indexes are placed in a highest-level table S in the order of the keys which they represent. An ordering operation occurs for each new key T

by placing its address into any available entry location in table A having a corresponding index. The new key is then compared to each key represented by an index entry in table S obtained by a binary search of the keys T using their order represented in table S. The binary search ends at a particular index when either the new key compares equal to a currently examined key, or when not more than i keys have been com-



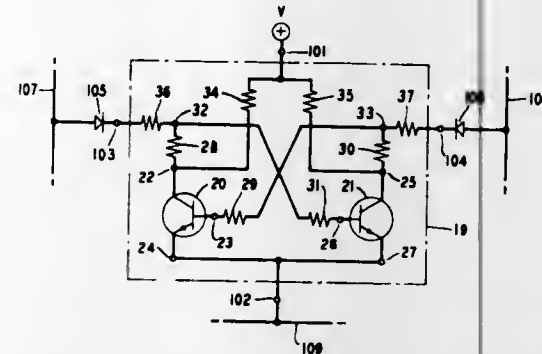
pared, where table S contains less than $-1+2^{i+1}$ entries. The new index is inserted into table S after a space is made by moving all entries from the beginning of table S up to and including the particular index, and inserting the new index into the space. More new record keys may then be obtained and inserted in the same way.

3,611,317
NESTED CHIP ARRANGEMENT FOR INTEGRATED CIRCUIT MEMORIES
Murray David Bonfield, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 2, 1970, Ser. No. 7,915
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R
13 Claims



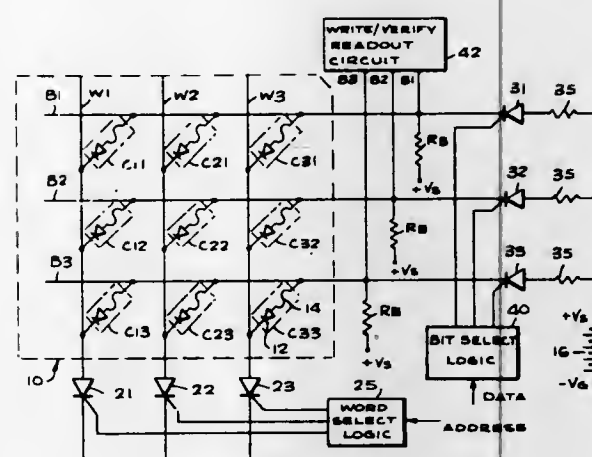
Integrated circuit, multicell, memory chips have their row and column circuits turned with respect to continuous nonintersecting circuits of a bus, which is deposited on a substrate, for convenience of bonding to those circuits. Additional chips of the same type are nested between turned chips on adjacent buses and connected to utilize half of the circuits of each adjacent bus. A first one of the buses also has half of its circuits extended to connect to additional chips nested with a second one of the adjacent buses but not otherwise connected to the first bus. External connections for power supply on each chip are symmetrically arranged with respect to chip row and column circuits.

3,611,318
SEMICONDUCTOR STORAGE APPARATUS
John Donnell Heightley, Basking Ridge; Dennis Joseph Lynes, Madison, and William Carl Stemmer, Piscataway, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Continuation-in-part of application Ser. No. 755,590, Aug. 27, 1968, now Patent No. 3,540,010. This application Feb. 17, 1970, Ser. No. 12,084
Int. Cl. G11c 11/40, 5/02, 7/00
U.S. Cl. 340—173 FF
15 Claims



An improved storage cell for use advantageously in semiconductor storage apparatus wherein nonlinear coupling means are employed between the storage cells and the information conduction paths. The storage cell includes a pair of cross-coupled transistors having a separate series-pair of resistors in each cross-coupling path. A separate resistor is connected between the nonlinear coupling means and the common terminal between the series-pair of resistors in the cross-coupling paths. The collector of each transistor is coupled through a separate load resistor to a common power source in such manner that the load current does not flow through any of the resistors in the cross-coupling paths.

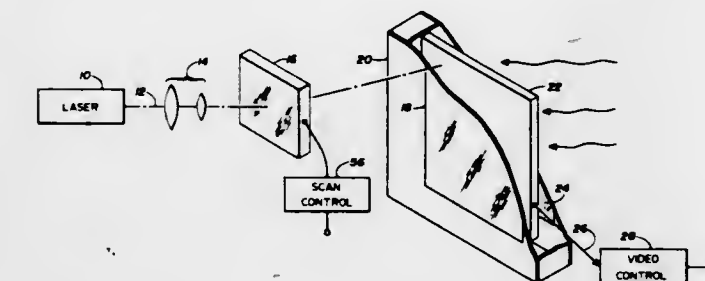
3,611,319
ELECTRICALLY ALTERABLE READ ONLY MEMORY
Gilbert P. Hyatt, Los Angeles, Calif., assignor to Teledyne, Incorporated, Los Angeles, Calif.
Filed Mar. 6, 1969, Ser. No. 804,756
Int. Cl. G11c 11/40, 17/00
U.S. Cl. 340—173 SP
9 Claims



A memory system is disclosed in which a nonvolatile, write once, nondestructive readout (NDRO) memory array or matrix is accessed by electrical control circuitry, incorporating electronic switches such as silicon-controlled rectifiers (SCR's). The array includes data-storing cells, typically in the form of diodes, with one cell connected at each junction or nodal point between a word line and a bit line of the array. One binary state is stored in a cell if current can conduct through the cell, while the other binary state is stored if current is permanently inhibited or disrupted from being conducted through the cell. In the write mode, the switches are operated to sequentially select cells, through which a sufficiently high current is supplied until the cell is affected to permanently disrupt the flow of current therethrough. Verifi-

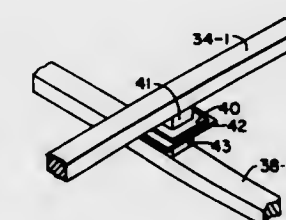
cation of the storing of any bit is automatically produced. The system further provides a capability of erasing any stored multibit combination, or word, as well as a capability of modifying the content of any word by storing a new word in a spare section of the memory array.

3,611,320
LIGHT BEAM INFORMATION STORAGE SYSTEM
Robert L. Williams, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 3, 1969, Ser. No. 813,246
Int. Cl. G11c 11/42
U.S. Cl. 340—173 LM
17 Claims



Information may be stored on a light read target of a photoconductive material with a PN junction formed over one surface and read out by a scanning light beam. The light beam lowers the resistance of the localized area of the light read target upon which the beam impinges to establish a current flow from an external source to charge the photoconductive material to a level determined by the external source. Input illumination incident on the photoconductive material of the target creates a charge density pattern by photon absorption that varies in accordance with the quantity of input illumination. In a subsequent scanning of the light beam, additional current flows through the localized low-resistance areas to reestablish the original charge level. The magnitude of current flow during the recharge cycle is related to the quantity of input illumination to the target.

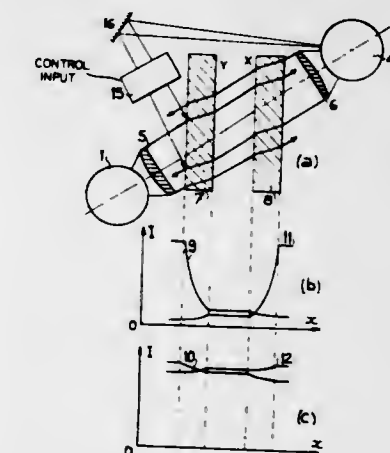
3,611,321
MEMORY DEVICE AND METHOD AND CIRCUITS RELATING THERETO
Ralph H. Baer, Manchester, N.H., and Thomas L. McCormack, Chelmsford, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Apr. 24, 1969, Ser. No. 819,070
Int. Cl. G11c 11/24, 5/04, 17/00
U.S. Cl. 340—173 SP
6 Claims



The signal-to-noise ratio of a read-only memory of the capacitive type is improved greatly by a three-dimensional structure in which capacitive coupling is achieved by members which project toward each other in a third dimension perpendicular to the planes defined by the input and the output lines. Method steps for the manufacture of a three-dimensional structure of this kind involve the use of printed circuit techniques to build up successive circuit levels which are molecularly united to form the necessary electrical connections, these levels providing the required three-dimensional relationship. The resulting capacitive memory plane is exceptionally rugged and reliable, as well as achieving a vast improvement in signal-to-noise ratio over prior art devices. In addition, various circuit approaches are disclosed to increase the effective signal-to-noise ratio even further. In one such circuit the input lines are grouped in complementary pairs, and the input signal is always of the same polarity but

is applied to a different one of a pair of complementary input lines, depending upon whether the bit is one or zero. An additional cancellation input line coupled to all the output lines is strobed with an input of opposite polarity so as to cancel noise. In another circuit the polarity of the input depends upon the binary value of a bit, and the output lines are arranged in complementary pairs, each pair coupled to a differential amplifier so as to double the signal-to-noise ratio. In still another circuit there is a common reference output line which supplies a noise reference voltage to each of several differential amplifiers connected to respective data output lines, with the result that noise voltages are cancelled. In a final circuit, the output lines are arranged in complementary pairs, each pair being connected to a differential amplifier. Then since the signal voltage exceeds the noise voltage, signal voltages can be discriminated from noise on the basis of the polarity of the net signal remaining after the smaller of these voltages is subtracted from the larger.

3,611,322
BISTABLE PHOTOTROPIC SYSTEM
Erich Spitz, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 29, 1969, Ser. No. 820,056
Claims priority, application France, May 10, 1968, 15/296
Int. Cl. G11c 11/42, 7/00
U.S. Cl. 340—173 CC
9 Claims



The invention relates to optical arrangements for storing binary information. The arrangements according to the present invention is a bistable optical storage system comprising at least two phototropic plates optically coupled with one another and arranged between two light sources, said sources being nonactinic in behavior vis-a-vis the nearest screen in each case, and being capable of causing the bleaching of the particular other screen, as the case may be. The plates may have either a variable transparency or a variable reflectivity. Writing in means are provided for bleaching at least one portion of said plates and erase means may be added for redarkening any portion of the bleached area of said plates.

3,611,323
MAGNETOSTRICTIVE DELAY-LINE MEMORY
Tadahiro Goto, and Kazuhiko Kakuta, both of Tokyo-to, Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha (also known as Iwatsu Electric Co. Ltd.), Tokyo-to, Japan
Filed May 22, 1969, Ser. No. 827,002
Claims priority, application Japan, May 27, 1968, Dec. 26, 1968, 43/35,932; 43/94,999
Int. Cl. G11c 21/02
U.S. Cl. 340—173 MS
3 Claims

A delay-line memory using a magnetostrictive delay-line, in which a pair of bidirectional pulses derived from the delay-line by the use of a magnetostrictive-electric transducer and having successive reverse polarities with respect to the successive polarities of a preceding bidirectional pulse are converted into a square wave output signal by a bistable circuit performing hysteresis switching action triggered at times

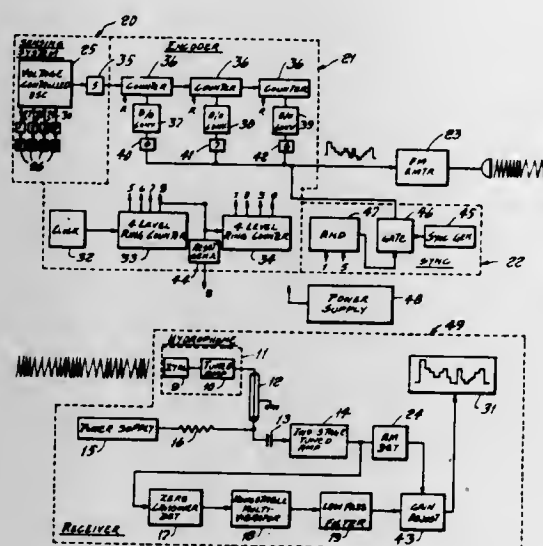
stretch a domain in response to a reorienting field in the plane of the material in which single wall domains are moved.

3,611,332

UNDERWATER TEMPERATURE TELEMETRY SYSTEM
Allan Slater, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 23, 1969, Ser. No. 844,121
Int. Cl. G08c 19/16

U.S. Cl. 340-207

5 Claims

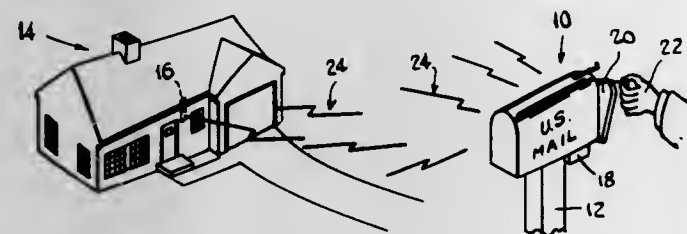


A self-contained underwater telemetry system is provided for transmitting biophysical data from a freewimming diver through the water to a receiving station. The system includes a pulse amplitude modulated FM transmitter carried on the diver and an FM receiver with an FM-to-pulse amplitude demodulation section. Also included are a precision oscillator whose frequency is controlled by sensor resistance; multiplexing circuits for monitoring several channels of biophysical information; an octal encoding system which generates the above-mentioned pulse amplitude modulated signal; a low drain voltage regulator; a hydrophone-tuned amplifier combination; and a zero crossover-multivibrator demodulation section for the FM receiver.

3,611,333

MAILBOX OPERATED ELECTRONIC SIGNAL DEVICE
Thomas S. Conigliaro, Huntington, Conn., assignor to Nicholas Conigliaro, Carbondale, Pa., a part interest
Filed Jan. 29, 1969, Ser. No. 794,897
Int. Cl. G08b 21/00; G08c 17/00; B65d 91/00
U.S. Cl. 340-224

1 Claim



A rural mail indicator signal system of the electric type, comprising a miniature solid state crystal-controlled radio signal transmitter at the mailbox, which sends out a pulselike signal when the mailbox door is opened or closed. In the residence a miniature radio receiver intercepts the pulse signal and converts it to either an audible signal, or a visual signal, or both.

3,611,334

LAMP MOUNTED FIRE ALARM
Albert M. Yankus, 6 Ardsley Lane, East Islip, N.Y.
Filed Dec. 19, 1968, Ser. No. 785,266
Int. Cl. G08b 17/06

U.S. Cl. 340-227.1

3 Claims

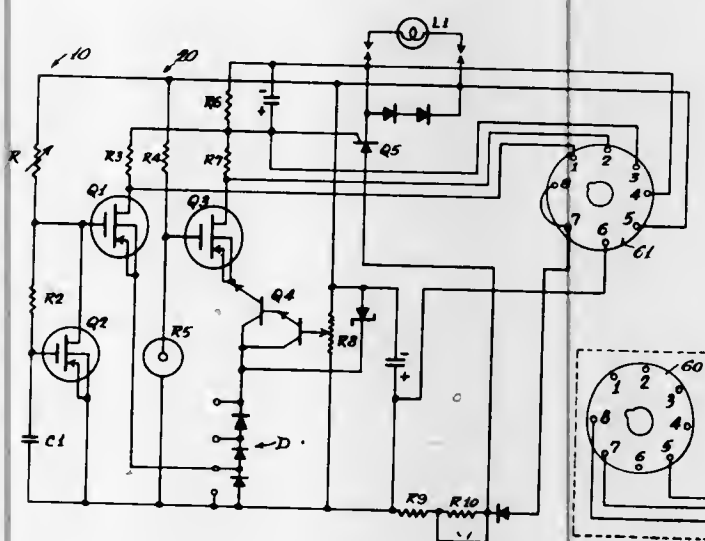


A fire-warning device is built into an extensible pole lamp assembly to sense extreme temperature conditions adjacent the ceiling. A thermal sensor and audible alarm are mounted within the pole lamp assembly and powered by the electrical energy from which the lamp bulbs are energized.

3,611,335

MULTIPLE COMBUSTION SENSING DEVICE WITH FALSE ALARM PREVENTION
Wilbur L. Ogden, and Clarence Glenn Henderson, both of Aurora, Ill., assignors to BBK Electronics, Inc., Skokie, Ill.
Filed Nov. 13, 1968, Ser. No. 775,484
Int. Cl. G08b 17/00, 17/10, 19/00
U.S. Cl. 340-228

15 Claims

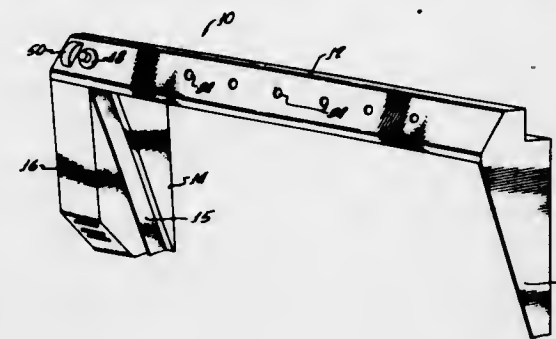


Combustion-detecting means characterized by the combination of a pair of combustion-sensing mechanisms each responsive to and adapted to emit an electric signal upon occurrence of the same incident of a fire, but each having respectively different spurious or false alarm sensitivities, and an alarm trigger device responsive only to the sum of the signals, whereby the trigger device will be energized upon occurrence of the given incident of a fire but not upon occurrence of a false alarm condition to which either mechanism is sensitive.

3,611,336

ELECTRONIC OVEN TEMPERATURE MONITORING SYSTEM
Frank C. F. Chen, Santa Ana, Calif., assignor to Technomation Controls Corporation, Orange, Calif.
Filed May 8, 1970, Ser. No. 35,725
Int. Cl. F24c 15/00; G01k 1/02, 1/14
U.S. Cl. 340-233

13 Claims

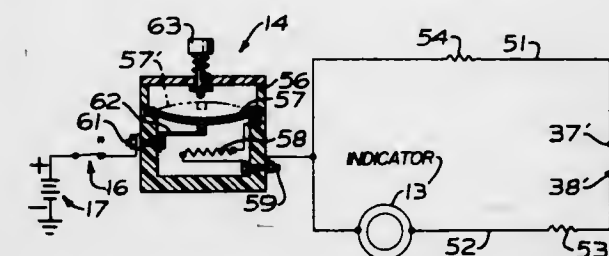


A quickly installable self-contained temperature-monitoring system for existing ovens featuring a U-shaped collar which fits between the oven opening and its partially opened door to provide access for meat temperature probes into the interior of the oven. The probes extend into the oven from the collar and are connected to individual temperature monitoring circuits and warning devices on the collar. Operational amplifier techniques are employed in the temperature-monitoring circuits for an accuracy within 2° F.

3,611,337

FILTER CONDITION INDICATOR SYSTEM
David J. Balzer, East Peoria, and Lloyd L. Phelps, Jr., Creve Coeur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 3, 1969, Ser. No. 813,159
Int. Cl. G08b 21/00
U.S. Cl. 340-239 F

7 Claims



An indicator system suitable for indicating a defective fluid filter providing excess blockage to fluid flow, including an electrical switch assembly responsive to the defective operating condition, an indicator responsive to the switch for providing a warning signal and an electrically responsive lockout mechanism for maintaining the indicator in its warning condition.

3,611,338

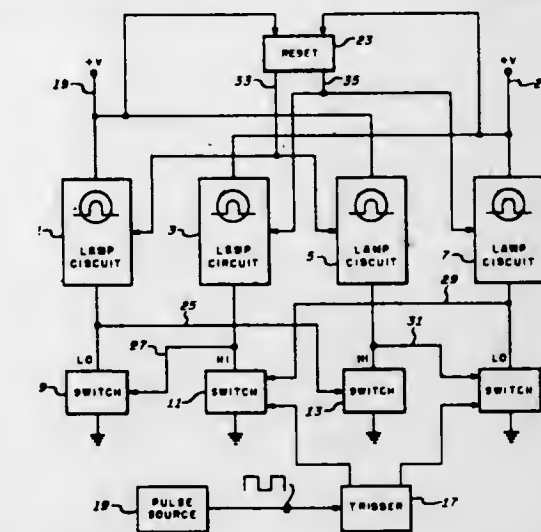
FAIL-SAFE PULSE TRAIN MONITOR
Melvin G. Kramer, Riverton, Wyo., assignor to Sperry Rand Corporation
Filed Apr. 6, 1970, Ser. No. 25,712
Int. Cl. G08b 5/36

U.S. Cl. 340-248 P

12 Claims

Apparatus for detecting interruptions in a pulse train by causing one or more of a plurality of lamps to light if failure occurs. A bistable circuit permits certain capacitors to charge when the circuit is in one state and to discharge when the circuit is in the other state. The remaining capacitors are charged and discharged in phase opposition to this. Individual lamps are energized in accordance with the charge on the associated capacitor. The average voltage applied to each lamp is insufficient to illuminate the lamp during normal operation. Interruption of a pulse train permits the bistable circuit to remain in one state so that capacitor voltages

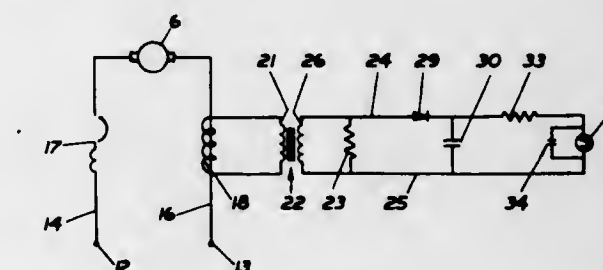
can accumulate to a level sufficient to illuminate a lamp. The apparatus is made fail-safe by interconnecting the capacitor



3,611,339

MINING MACHINE MOTOR CURRENT METER
Lee M. Richey, 328 Crestview Dr., and Melvin N. Norris, R. D. #1, both of Franklin, Pa.
Filed Sept. 6, 1968, Ser. No. 758,092
Int. Cl. G08b 21/00
U.S. Cl. 340-253 A

3 Claims

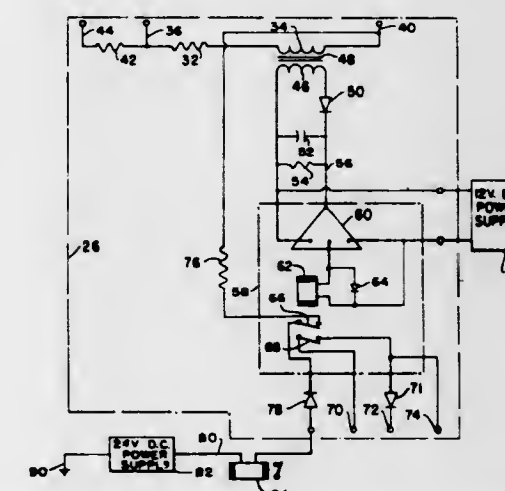


A method of preventing current overloading of electrical motors of a mining machine by means of a visible output signal which flashes at a rate proportional to the variation in current flow to such motors.

3,611,340

SERIES CIRCUIT MONITORING STRUCTURE
Robert B. Harte, Taylor; Eric M. Aupperle, Ann Arbor, and Charles C. Hoopes, Ann Arbor, all of Mich., assignors to Buhr Machine Tool Corporation
Filed Oct. 14, 1968, Ser. No. 767,335
Int. Cl. H01h 47/00; G08b 21/00
U.S. Cl. 340-255

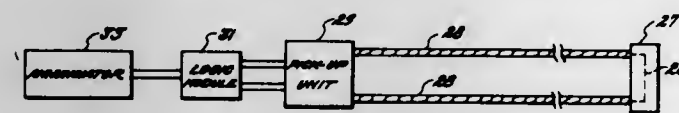
7 Claims



Structure for and method of monitoring a relay contact circuit to determine closure of each of the contacts and if a contact is opened, to determine if a ground condition exists

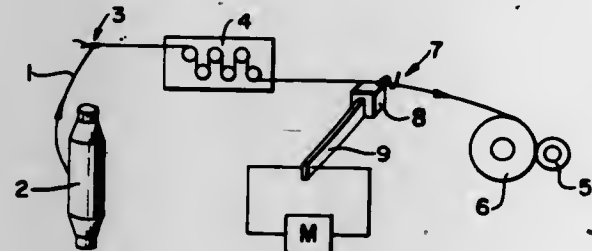
adjacent the contact, comprising a separate monitoring circuit in parallel with each of the relay contacts for sensing closure of the associated relay contact, a separate relay closed check circuit electrically connected to each monitoring circuit for indicating closure of the associated contact, and a separate ground check circuit electrically connected to the monitoring circuit for checking the ground condition at the relay contact associated with the monitoring circuit only if the associated relay contact is opened.

3,611,341
PRESSURE-MAGNETIC DETECTION SYSTEM
David T. Craig, Utica; William F. Gavin, Rome, and Robert B. Curtis, New York Mills, all of N.Y.
Filed Sept. 17, 1968, Ser. No. 760,305
Int. Cl. G08b 13/20, 13/24
U.S. Cl. 340—258



Detection system sensitive to both magnetic and pressure changes having a fluid filled hose integrated with an electrical conductor. The conductor can be either a single coiled wire, a wire mesh, or the fluid itself. Pressure changes are converted to electrical signals by a piezoelectric transducer.

3,611,342
METHOD AND APPARATUS FOR DETECTING TRANSPORT DISTURBANCES IN A CONTINUOUS MATERIAL
Dirk Jan Raaben, Dieren, and Pieter J. Van Ek, Arnhem, both of Netherlands, assignors to American Enka Corporation, Enka, N.C.
Filed June 12, 1969, Ser. No. 832,744
Claims priority, application Netherlands, June 15, 1968, 68-08471
Int. Cl. G08b 21/00
U.S. Cl. 340—259

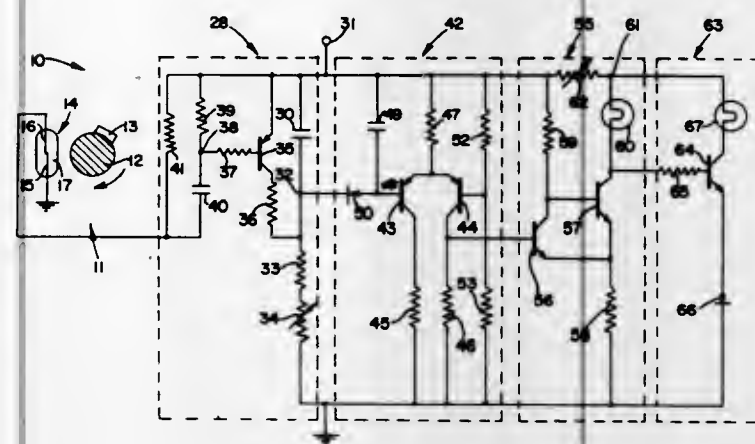


A method for detecting transport disturbances in a moving continuous material which comprises contacting a moving continuous material, e.g., a thread, with a vibration pickup means, producing a varying output signal with the pickup means during movement of the material, examining the varying output signal for the magnitude of the variations occurring therein and detecting the presence of a disturbance in the transport of the continuous material from the magnitude of the variations. Also an apparatus for carrying out this method is disclosed.

3,611,343
RATE-MEASURING SYSTEM
Herbert R. Schoenbach, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 10, 1969, Ser. No. 840,649
Int. Cl. G08b 21/00
U.S. Cl. 340—271

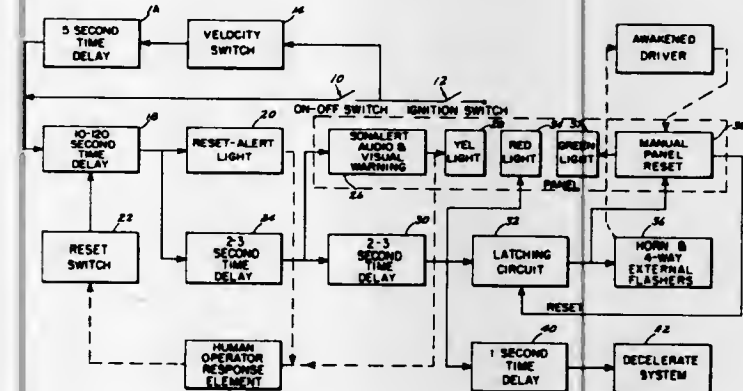
Rate-measuring system for measuring the velocity of rotation of a shaft, the rate of reciprocable movement of a part

or for similar applications. A switch, preferably a magnetically operated reed switch, responds to movement of a part to periodically discharge a capacitor of a ramp generator, the voltage to which the capacitor is charged being inversely proportional to the rate of movement of the part. The voltage is



stored by a storage capacitor connected to a voltage comparator which controls Schmitt trigger circuit operative to develop an indication as to whether the rate is less or greater than a certain value. Preferably, the ramp generator, voltage comparator and trigger circuit are connected to a common voltage supply.

3,611,344
REACTION ACTUATOR FOR VEHICLE OPERATORS
John R. Cuper, 406 W. 12th St., Loveland, Colo.
Filed Aug. 7, 1969, Ser. No. 848,166
Int. Cl. G08b 21/00
U.S. Cl. 340—279



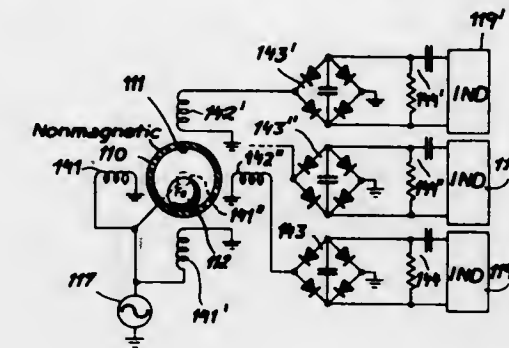
A system for initiating conscious activity of a vehicle operator utilizes a visual alarm signal which is automatically and periodically actuated and which signal must be promptly manually deactivated by the operator to prevent actuation of an audio alarm signal which in turn must be promptly manually deactivated by the operator to prevent simultaneous actuation of external emergency flashing lights, an automobile horn and an engine deactivator which temporarily deactivate the vehicle engine for stopping the engine.

3,611,345
MOTION DETECTOR
Robert H. Pintell, Congers, N.Y., assignor to Intron International Inc., Congers, N.Y.
Filed Apr. 16, 1969, Ser. No. 816,660
Int. Cl. G08b 13/14, 13/24
U.S. Cl. 340—280

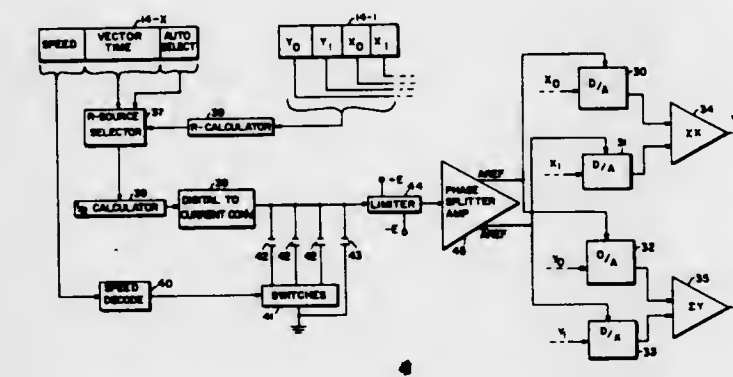
A mobile body is confined within a spherical or spheroidal chamber which forms part of an electric monitoring circuit,

displacement of the body from an initial position resulting in changes of circuit impedance (through variations in con-

turn converted into decimals in electronic form. By appropriate gating circuitry, the information is sequentially dis-



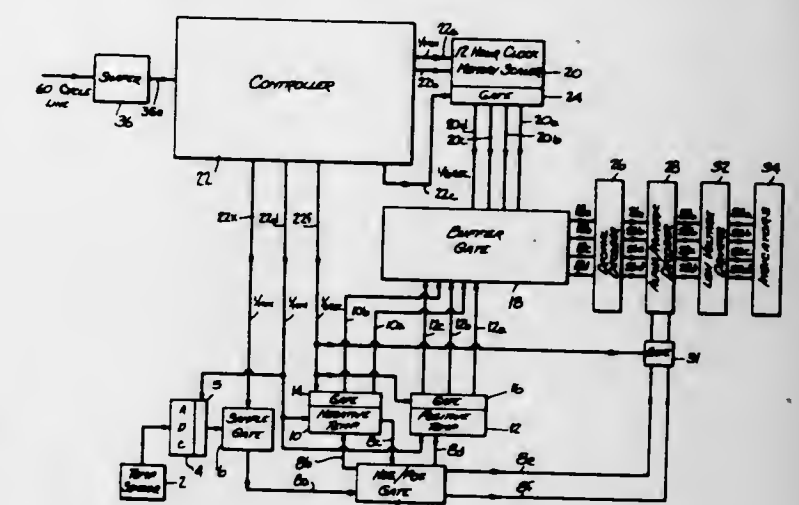
3,611,346
VARIABLE RATE LINE GENERATOR
Robert D. Stoddard, Reeds Ferry; Arnold Schumacher, Amherst, and John R. Longland, Nashua, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed Apr. 21, 1969, Ser. No. 817,786
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A



A computer controlled multistation display system utilizing a single display generator unit time shared by display indicators which have different writing rates. The display generator includes a register bank which receives and holds display indicator select and writing rate information as well as symbol tracing information. A control section routes the display select information to a display selector and the writing rate and the symbol tracing information to a function generator which produces X-, Y- and Z-axis modulating signals at a rate which corresponds to the writing rate information. The display selector routes the generated X, Y and Z signals to a display indicator having a writing rate corresponding to the rate at which the X, Y and Z signals are produced. The function generator is illustrated as including a line generator having circuitry for varying the rate at which lines or vectors are written on the display surface of the indicator.

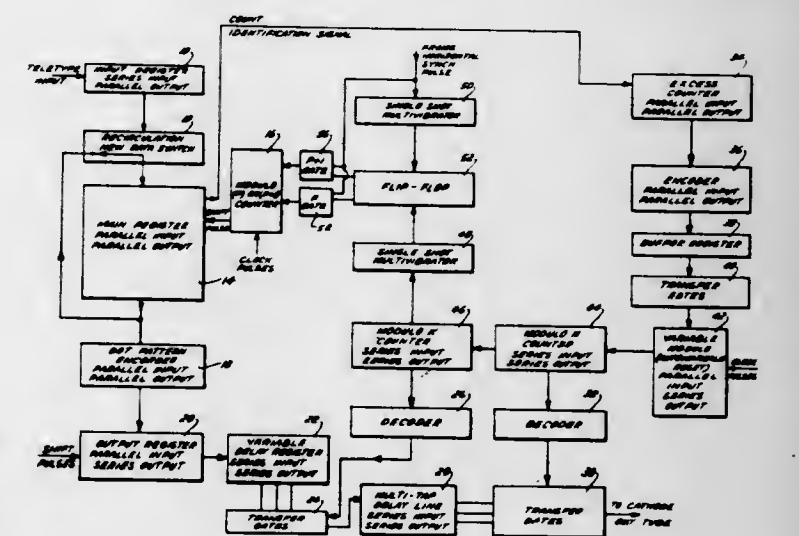
3,611,347
PROGRAM SEQUENCE INFORMATION DISPLAY DEVICE
Charles E. L. Gingell, North Haven, Conn., assignor to United Advertising Corporation, Newark, N.J.
Filed May 28, 1968, Ser. No. 732,619
Int. Cl. H05b 39/00
U.S. Cl. 340—324

An all electronic display device for sequentially displaying information. The information to be displayed is converted into the form of binary coded decimal pulses which are in



played during predetermined intervals of time and the information is updated at longer predetermined intervals of time.

3,611,348
CHARACTER DISPLAY SYSTEM
William Paul Rogers, Collingswood, N.J., assignor to Ultronic Systems Corporation
Filed Aug. 5, 1969, Ser. No. 847,612
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A

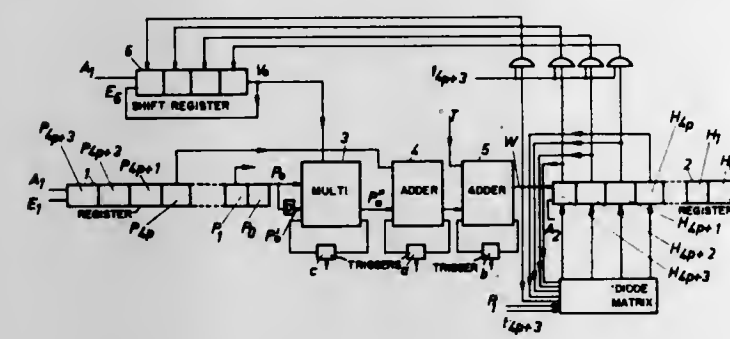


A system responsive to incoming electrical digital signals representing alpha-numeric characters and supplied in series character format at a varying rate. The system is adapted to display these characters in the form of dot matrices and to move such displayed characters in a video line across the face of a cathode-ray tube. The rate of character movement is varied in accordance with changes in the rate at which the signals are supplied to the system to eliminate visually apparent changes in the speed of movement of the displayed characters.

3,611,349
BINARY-DECIMAL CONVERTER
Jean Pierre Eugene Chinal, 6, rue Felicien David, Paris, 16 Seine, France
Continuation of application Ser. No. 607,193, Jan. 4, 1967, now abandoned. This application Aug. 5, 1970, Ser. No. 61,460
Claims priority, application France, Jan. 4, 1966, 44,692
U.S. Cl. 340—347 DD

A method and a converter for converting a binary number to its binary-coded decimal equivalent comprising a first input shift register, three adding devices of the series type in

order to determine the remainders and the partial quotients of successive divisions by 10, three carryover trigger devices associated respectively with said adding devices, a matrix for



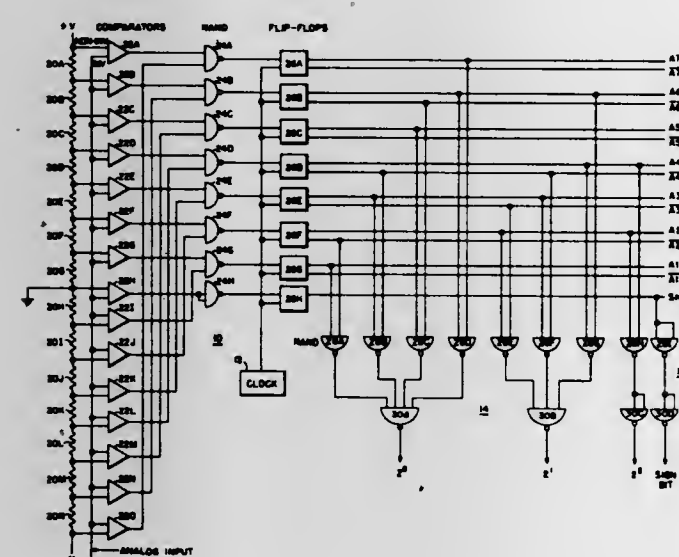
determining the said remainders, a recirculation register for the inscription of a period of correction for the determination of the quotients, an output shift register and a clock circuit cooperating with a programming device.

3,611,350 HIGH-SPEED PARALLEL ANALOG-TO-DIGITAL CONVERTER

Lawrence M. Leibowitz, Fairfax, Va., and Richard K. Baldauf, Greenbelt, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 12, 1970, Ser. No. 10,941

Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD

7 Claims



Analog-to-digital converter wherein a multilevel detector containing comparators and a resistor chain evaluates the analog voltage and produces signals which are coded into binary form by gating circuitry. Rapid conversion is obtained in a single clock pulse interval during which the clock pulse synchronizes all signals passing through a plurality of flip-flops. All signal paths have the same number of logic levels.

**3,611,351
ELECTRONIC APPARATUS**
Rudolf K. H. Panschow, Hannover, and Henning A. A. E. A. Bottcher, Ahlen B/Hannover, both of Germany, assignors to Sina AG, Zurich, Switzerland
Filed Apr. 4, 1968, Ser. No. 718,871

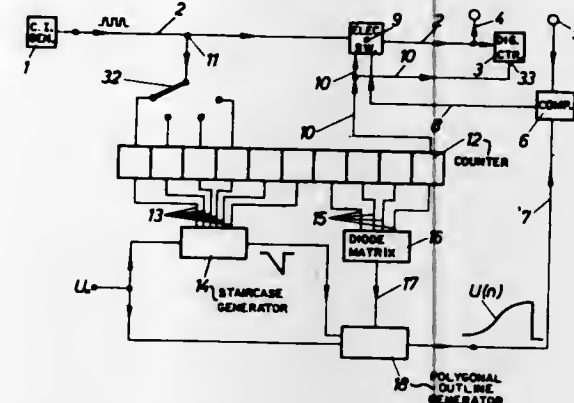
Claims priority, application Switzerland, Dec. 18, 1967, 17786/67
Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

11 Claims

An electronic apparatus, in particular an analog/digital

converter having a generator which supplies an output voltage $U(n)$ in dependence on the number n of applied control



impulses and which increases in a desired nonlinear dependence on n .

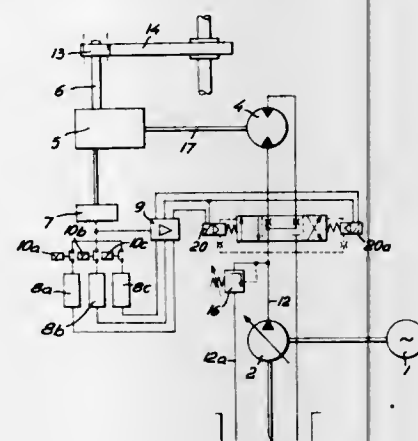
**3,611,352
DEVICE FOR AUTOMATICALLY, OR SEMIAUTOMATICALLY, CHANGING THE LENGTH OF STROKE OF THE GRATING ADVANCE MECHANISM IN WELDING MACHINES FOR WELDING WIRE GRATINGS**
Heinz Sommeregger, Josef Pohacker, and Karl Schneider, all of Graz, Austria, assignors to EVG Entwicklungs- und Verwertungs-Gesellschaft m.b.H., Styria, Austria
Filed Feb. 14, 1969, Ser. No. 799,427

Claims priority, application Austria, Feb. 16, 1968, A 1499/68

Int. Cl. H03k 13/02

U.S. Cl. 235—154

8 Claims



In a machine for welding wire gratings, a device for automatically or semiautomatically changing the stroke lengths of the grating advance mechanism for the purpose of manufacturing gratings with different crosswire spacings, comprising a hydraulic motor for adjusting the grating advance mechanism to different stroke lengths having an electromagnetically operated servo valve in the delivery duct thereof which controls the operation of the motor, an actual value sensor forming part of a comparison and amplifier circuit and measuring the stroke length to which the grating advance mechanism has been adjusted by the motor, a plurality of desired value-setting devices preadjustable to desired stroke lengths, a relay switch individually connecting each one of the desired value-setting devices to the comparison and amplifier circuit for comparing the value to which each of the desired value-setting devices has been adjusted with the actual value of the stroke length, the comparison and amplifier circuit having an output fed to actuate the electromagnetically operated servo valve in such a way that the motor readjusts the actual stroke length of the grating advance mechanism to the value to which the desired value-setting devices have been adjusted, an electronic control device for actuation and deactuation of the relay switch according to a preselectable cycle, each of the relay switches remaining actuated for a preselectable number of advance strokes of the grating advance mechanism.

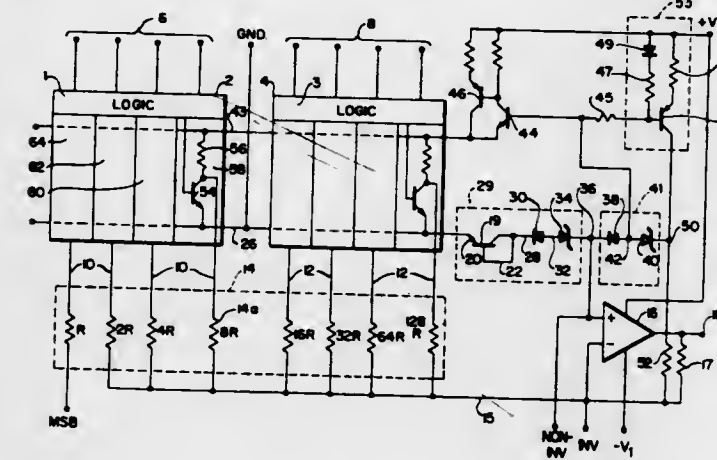
**3,611,353
DIGITAL-TO-ANALOG CONVERTER**
Richard E. Shipp, Long Beach, and George W. Smith, III, Hacienda Heights, both of Calif., assignors to Beckman Instruments, Inc.

Filed Mar. 26, 1969, Ser. No. 810,597

Int. Cl. H03k 13/02

U.S. Cl. 340—347 DA

6 Claims



This disclosure relates to a digital-to-analog converter having digital integrated circuit switches in place of the heretofore-used analog switches. A multiplicity of digital input leads are connected to at least one digital integrated circuit having a plurality of digital transistor switches. A multiplicity of resistors are connected between a common terminal and the digital switches. In order to accommodate the use of digital switches in the place of analog switches, a compensating reference voltage source is connected to the digital integrated circuit and also to a reference input of an analog operational amplifier. The signal input of the operational amplifier is connected to the common terminal of the resistors. By selective operation of the digital switches, the various resistors are connected between the compensating voltage reference source and the signal input of the operational amplifier. The currents produced thereby are summed by the operational amplifier to produce an analog output voltage in proportion to the current sum. The compensating reference voltage source in the circuit configuration disclosed allows the use of digital integrated circuit switches heretofore not possible.

**3,611,354
SERIES-SHUNT SWITCHING PAIR, PARTICULARLY FOR SYNCHRO TO DIGITAL CONVERSION, DC OR AC ANALOG REFERENCE-MULTIPLYING OR PLURAL SYNCHRO-MULTIPLEXING**

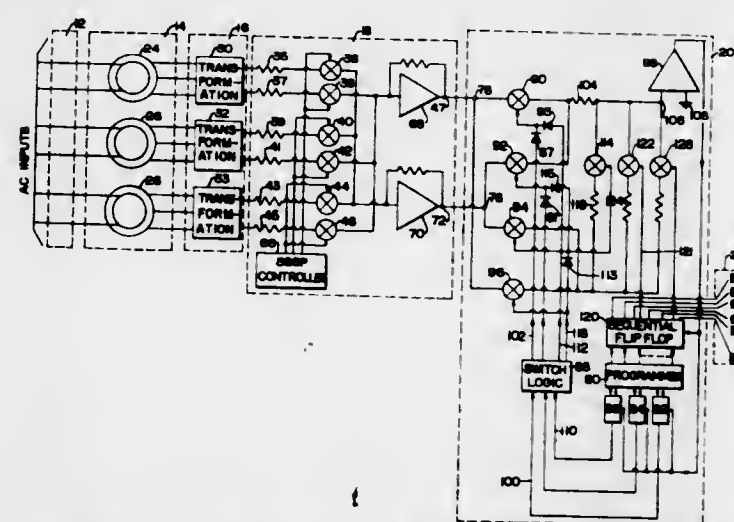
Bernard M. Gordon, Magnolia, and Leopold Neumann, Lexington, both of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Filed May 9, 1969, Ser. No. 823,421

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

15 Claims



In a multiplexing converter of synchro data to digital form, a plurality of switching devices, associated control logic, and

a single analog comparator are provided for specifying the octant in which the synchro shaft angle is located. In a device, particularly for converting synchro data to digital form, for multiplying a DC or AC analog reference signal or for multiplexing plural synchro signals, a series-shunt switching pair is provided for presenting a constant impedance to a driving source in order to eliminate transients reflected back to the driving source when a variable impedance is presented to the driving source.

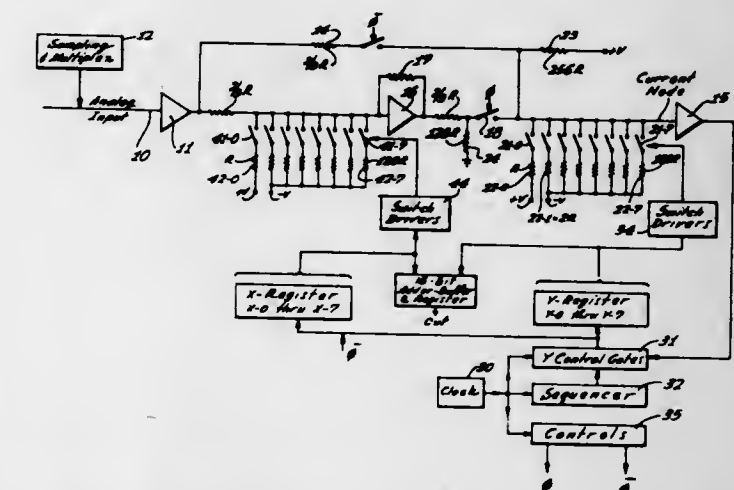
**3,611,355
ANALOG-TO-DIGITAL CONVERTER**
David H. Hartke, Monterey Park, assignor to Ralph D. Hasenbalg, Thousand Oaks, both of Calif. and Xerox Corporation, Stamford, Conn.

Filed Aug. 7, 1969, Ser. No. 848,209

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

6 Claims



An analog-to-digital converter is disclosed in which analog signals are serially digitized at resolution less than required, and an amplified analog error signal is formed from the difference of the initial digital signal and the analog input and summed with the initial digital signal to provide a high-resolution digital equivalent.

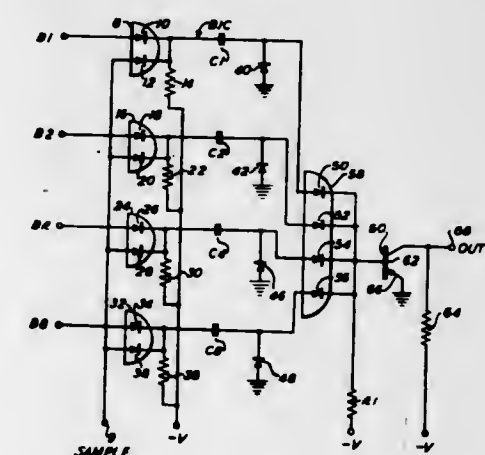
**3,611,356
DIGITAL TO ANALOG TRANSLATOR**
Alan K. Jensen, Livingston, N.J., assignor to Litton Business Systems, Inc.

Continuation of application Ser. No. 518,832, Jan. 5, 1966, now abandoned. This application Sept. 12, 1969, Ser. No. 857,606

Int. Cl. H03k 13/16

U.S. Cl. 340—347 DA

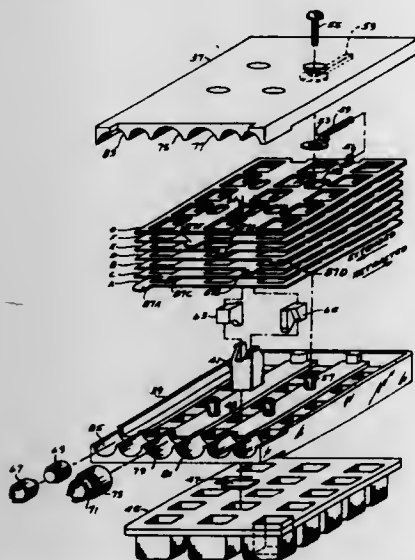
11 Claims



A translator comprises a plurality of AND gates. Each AND gate has an input for a binary and a sampling signal. Upon receipt of a binary signal and sampling signal by one of the AND gates a capacitor is charged to the voltage of the sampling signal. Thereafter, that capacitor and other similarly charged capacitors are summed through a logical

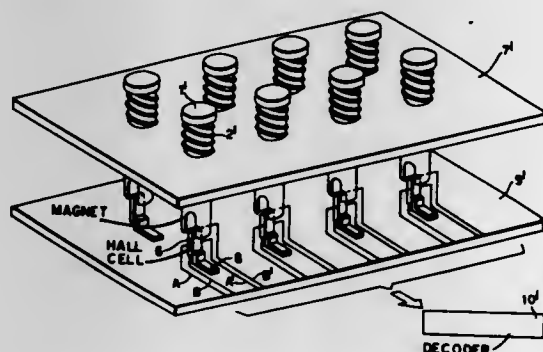
OR gate. The capacitors have values in proportion to the coded digital input. The logical OR gate in turn is tied to an output transistor which provides a signal which is the analog equivalent of the binary-coded number received at the AND gates.

3,611,357
PUSHBUTTON KEYBOARD ASSEMBLY
Henry J. Boulanger, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 16, 1970, Ser. No. 19,895
Int. Cl. G06f 3/02
U.S. Cl. 340—365



A pushbutton keyboard assembly includes a plurality of pushbuttons and a stack array of slider plates each having a plurality of apertures, the apertures in each of the plates having a corresponding aperture in each of the other plates. Aperture centering means is associated with each of the pushbuttons and extends through one aperture in each of the plates. Each of the centering means is operative in response to actuation of the associated pushbutton for causing centering of the aperture through which it extends. The plates each have a retracted position in which preselected ones of the apertures are off-center with respect to the respective centering means extending therethrough, the remaining apertures being centered with respect to their centering means. The plates are slidable from a retracted position to an extended position in response to centering of an aperture by a respective centering means, and means such as an electrical switch associated with each of the plates is responsive to movement of the plate to the extended position for indicating such sliding movement and thereby providing a discrete encoded indication of the actuation of each respective pushbutton.

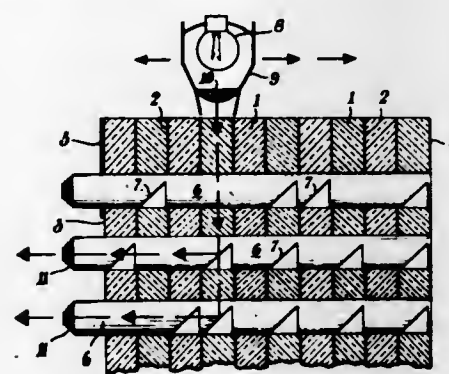
3,611,358
HALL EFFECT KEYBOARD
Claudio Daimasso, Ivrea, Italy, assignor to Inq. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Jan. 22, 1969, Ser. No. 793,109
Claims priority, application Italy, Jan. 22, 1968, 50218-A/68
Int. Cl. H04l 15/06
U.S. Cl. 340—365



A keyboard device wherein the operation of each key generates a relevant electric signal. Each key is associated

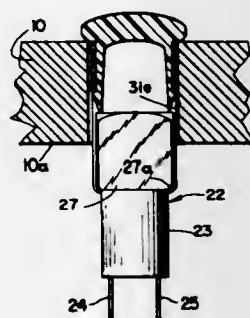
with a magnetically responsive element and is provided with means for producing a magnetic field variation in said element in response to operation of the involved key.

3,611,359
COMPACT COMPONENT DEVICE FOR THE VISIBLE DISPLAY OF LETTERS, DIGITS, SYMBOLS AND FIGURES
Maria Panerai, and Giuseppe Panerai, both of No. 2, Piazza Galileo Ferraris, Firenze, Italy
Filed Dec. 3, 1968, Ser. No. 780,719
Claims priority, application Italy, Dec. 7, 1967, 819878
Int. Cl. G08b 5/00
U.S. Cl. 340—380



A compact component device for the visible display of letters, digits, symbols and figures characterized in comprising in combination a plurality of transparent plates mounted close to one another, a plurality of transparent rods passing through the pack of said plates through their thickness, one or more luminous sources located along one or more lateral faces of said pack, and means for selectively sending back the light from said sources along said rods, axially, so that the end front surfaces of said rods will form a unit of luminous zones on the front surface of said pack, reproducing the desired visible indication.

3,611,360
READILY REPLACEABLE JEWEL LAMP ASSEMBLY FOR JACK PANELS
James R. Bailey, Chicago, Ill., assignor to Switchcraft Inc., Chicago, Ill.
Filed Nov. 19, 1969, Ser. No. 877,939
Int. Cl. G09f 9/14
U.S. Cl. 340—381



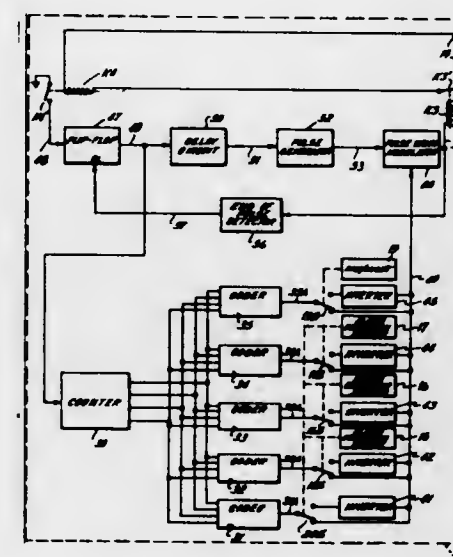
A readily replaceable jewel lamp assembly for jack panels has a metal sleeve structure and a molded jewel cap so dimensioned as to provide an assembly which will maintain itself frictionally in position in a panel aperture. The metal sleeve forming part of the assembly at all times functions to grip a miniature lamp whether the assembly is within or outside of the plastic panel support. Once the assembly and lamp are free of the panel support, the miniature lamp may be readily removed and replaced. The metal sleeve is provided with suitable slots and is so shaped that one end of such sleeve, remote from the jewel cap, may be readily sprung to insert or remove the miniature lamp. The jewel cap itself telescopes an end of the metal sleeve so that the two will remain locked so long as the assembly is disposed within the aperture of the panel. The construction essentially de-

48 Claims

8 Claims

pend upon the spring of metal as distinguished from plastic so cold flow of plastic has minimal effect upon the characteristics of the entire assembly.

3,611,361
ALARM-MONITORING SYSTEM
John H. Gallichotte, Newtown; Donald E. Hansen, Brookfield Center; James A. Marquis, Danbury, and William J. Shaughnessy, Brookfield Center, all of Conn., assignors to American Standard Inc., New York, N.Y.
Filed Nov. 3, 1969, Ser. No. 873,387
Int. Cl. G08b 25/00; H04q 9/14
U.S. Cl. 340—408

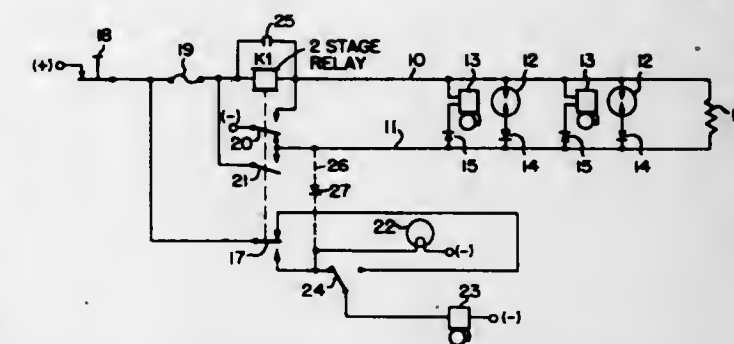


A system for monitoring at a central station the condition, alarm or nonalarm, of a plurality of alarm condition sensors located at a remote station, including interrogation signal means at the central station for interrogating the remote station prior to transmission of each signal of a multisignal train, the interrogation occurring following the expiration of the random-length delays initiated when signals are received from the remote station, thereby rendering the interrogation process and the resultant signal transmission process aperiodic in nature; a first transmitting means at said remote station responsive to the receipt of interrogation signals for transmitting a first width-modulated binary signal train when none of the alarm condition sensors is in an alarm condition and a complete inversion thereof when an alarm condition sensor is in an alarm condition; a second transmitting means at the remote station also responsive to the interrogation signals for transmitting a second width-modulated binary signal train when none of the sensors is in an alarm condition, the second width-modulated train having as many signals as there are sensors individually monitored with each sensor associated with a different signal, and for transmitting an inversion of a sensor-associated signal when the associated sensor is in an alarm condition; detecting means at the central station for analyzing the output of the first transmitting means to determine if the first signal train, or a complete inversion thereof, was transmitted and to determine if a sensor-associated signal, or the inversion thereof, was transmitted; and a plurality of alarm indicators each corresponding to a different one of the remote station sensors being individually monitored, each indicator being activated when its respective remote station sensor is in an alarm condition and both an inversion of its respective sensor-associated signal and a complete inversion of the first signal train are detected.

3,611,362
ALARM SENSING AND INDICATING SYSTEMS
Robert D. Scott, Owen Sound, Ontario, Canada, assignor to General Signal of Canada, Ltd., Owen Sound, Ontario, Canada
Filed Mar. 19, 1969, Ser. No. 808,482
Int. Cl. G08b 29/00
U.S. Cl. 340—409

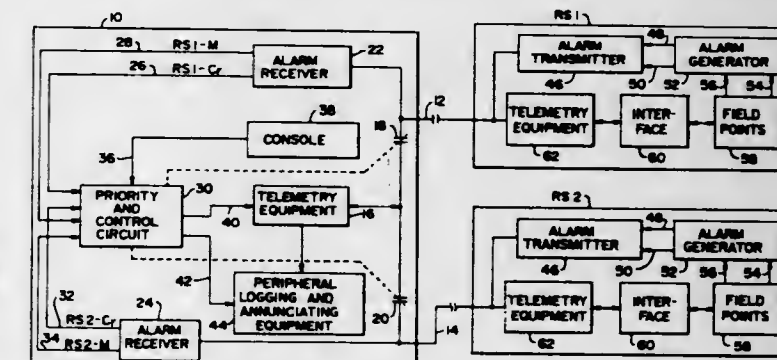
A supervised alarm circuit using low energy of one polarity for supervision. The circuit is energized at a higher level in

response to sensing an alarm condition which pole changes



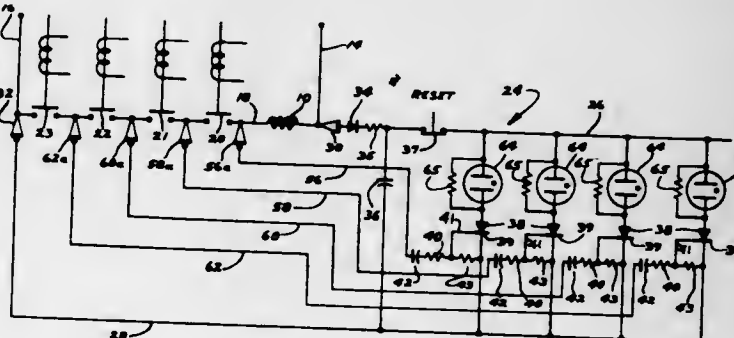
the circuit to energized alarm devices in response to the pole changing of the circuit.

3,611,363
ALARM DETECTION SYSTEM
Alan F. McCrea, and Hugh V. Snively, both of Henrico County, Va., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 15, 1970, Ser. No. 3,085
Int. Cl. G08b 19/00
U.S. Cl. 340—413



An alarm detection system including a plurality of remote stations, each of the remote stations having a group of field points and an alarm signal generator responsive to an alarm condition at the field points to generate an alarm signal, a telephone line for each of the remote stations, and a central control station communicating with the remote stations through the telephone lines and having a plurality of alarm receivers connected with each telephone line, respectively, to receive alarm signals and initiate a scan of the field points at remote stations generating alarm signals.

3,611,364
APPARATUS FOR DETERMINING THE SEQUENCE OF CIRCUIT DISCONTINUITIES IN A SEALING CIRCUIT FOR A POWER OUTPUT DEVICE
Selwyn Jones, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Feb. 5, 1969, Ser. No. 796,688
Int. Cl. G08b 5/22
U.S. Cl. 340—415



A fault-finding apparatus that acts to determine which of several of series connected contacts has opened first is com-

6 Claims

18 Claims

12 Claims

7 Claims

posed of a plurality of electronic switches, e.g. thyristors, each connected in series with an indicator such as a neon glow bulb. The thyristors are connected in parallel across a power supply which is in turn connected across the electric power circuit being monitored. The gate of each thyristor is coupled by means of a quick disconnect fastener to one of the contacts being monitored which when closed connects the gate to its cathode. When a contact opens, the change in potential of one gate causes its thyristor to fire thereby energizing the glow bulb connected to that thyristor.

3,611,365

THUNDERSTORM WARNING SYSTEM

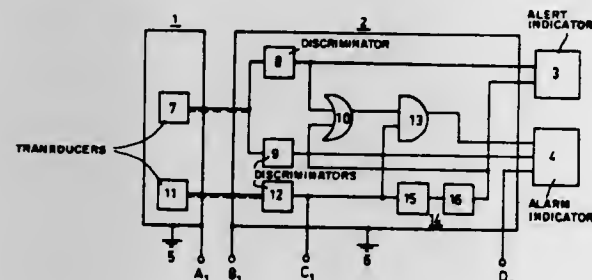
Stig Adolf Svante Lundquist, Husbyborg, Uppsala, and Victor Skuka, Uppsala, both of Sweden, assignors to Nitro Nobel AB, Gytterp, Sweden

Filed Mar. 7, 1969, Ser. No. 805,157

Claims priority, application Sweden, Mar. 18, 1968, 3517/68
Int. Cl. G01w 1/02, 1/16; G08b 19/00

U.S. Cl. 340—421

10 Claims



A thunderstorm warning system wherein signals from various detectors individually providing representations of (1) the quasistatic electric field occurring between the electric charges of a thundercloud and ground and of (2) radiofrequency radiation pulses within the longwave radiofrequency spectral range that are transmitted from lightning discharges in fully developed thunderstorms and, if desired, of (3) pulses in another spectral range, preferably the optical range, are combined in an electronic logic system so as to result in a visible or audible alert or alarm indication, respectively, under specific predetermined conditions.

3,611,366

RADAR PULSE COMPRESSION SYSTEM

Michael G. T. Hewlett, Ilford, England, assignor to The Plessey Company Limited, Ilford, Essex, England

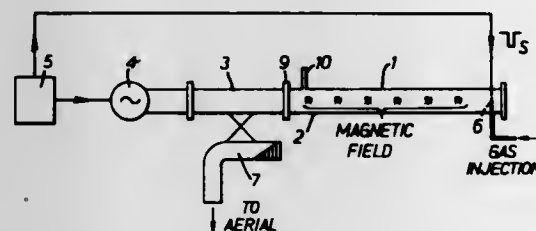
Filed Dec. 2, 1969, Ser. No. 881,360

Claims priority, application Great Britain, Dec. 6, 1968, 57982/68

Int. Cl. G01s 9/02

U.S. Cl. 343—5 R

4 Claims



A pulse compression system comprises in association with a magnetron, or other similar oscillator, transmission line means and means for accelerating an effective short circuit along said transmission line means towards the magnetron or other oscillator in order to produce a Doppler shift in the reflected wave before it is fed to an aerial coupled to said transmission line means.

The effective short circuit may be provided by an ionized gas plasma generated within a waveguide or coaxial cable and which may be accelerated along the tube at the requisite rate to produce the desired Doppler shift by applying suitable magnetic and electric forces.

3,611,367
AIRBORNE STATION FOR AERIAL OBSERVATION SYSTEM

Henri Billottet, Fontenay Aux Roses, and Marcel Kretz, Paris, both of France, assignors to Compagnie Francaise Houston-Hotchkiss Brandt, Paris, France and Giravions Dorand, Suresnes, France, part interest to each

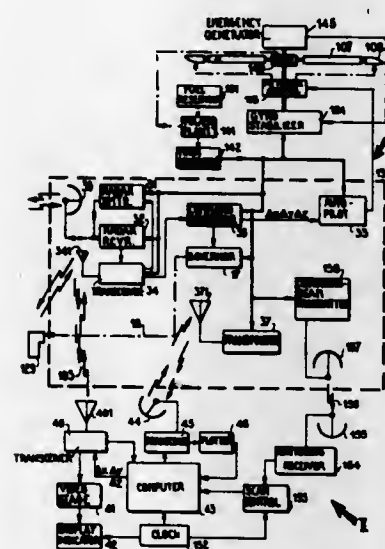
Filed Feb. 3, 1969, Ser. No. 796,234

Claims priority, application France, Feb. 1, 1968, Dec. 26, 1968, 138,277; 180,638

Int. Cl. G01s 9/02; B64c 25/00

U.S. Cl. 343—6 R

17 Claims



An airborne radar station, hovering at a fixed location above an associated ground station, comprises a supporting section with a gyro-stabilized body held aloft by helicopter blades and a supported section suspended from that body for independent rotation about a substantially vertical axis. The coupling between the two sections includes a parallelogrammatic linkage with an upper base secured to (or part of) the body and a lower base rigid with the supported section or secured thereto through an adjustable mounting automatically maintaining the verticality of a suspension shaft for that section. The downdraft generated by the swirling rotor blades acts upon adjustable fins on the supported section to rotate the latter at a rate controlled by a governor and by signals from the ground station which also includes a tracking radar trained upon the airborne station to determine deviations from its assigned position in space, such deviations giving rise to corrective signals transmitted by short waves to the airborne station for altering the attitude of the supporting section and the effectiveness of its blades by changing the direction of thrust of one or more jets of compressed air issuing from the tip of each blade. A radar antenna on the rotating supported section scans the surrounding area, especially in the region close to the ground, and retransmits incoming echo signals to receiving equipment at the ground station.

3,611,368

ELECTRONIC DISTANCE FINDER

Joseph W. Crownover, 6651 Avenida Mirola, and John I. Wilhelm, 5962 Avenida Chamnez, both of La Jolla, Calif.

Filed Apr. 24, 1969, Ser. No. 818,870

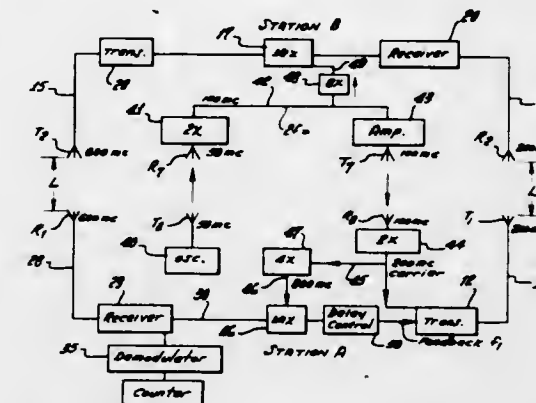
Int. Cl. G01s 9/38

U.S. Cl. 343—6 R

8 Claims

The disclosure concerns a ranging system based upon electromagnetic wave exchange between spaced stations to

establish a closed loop circuit containing amplification stages, and wherein loop transmission of carrier and sideband



frequencies is established with production of reverberations occurring at a rate which is a function of the distance between stations.

3,611,369

QUANTIZER SYSTEM WITH ADAPTIVE AUTOMATIC CLUTTER ELIMINATION

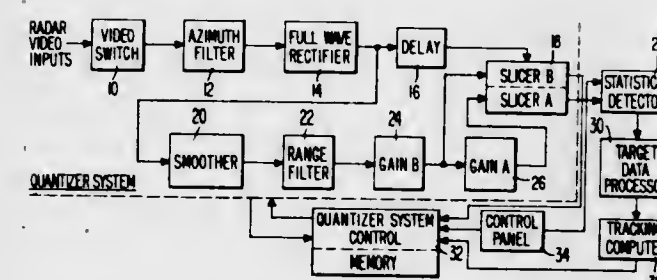
Hugh T. Maguire, Philadelphia, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 27, 1969, Ser. No. 828,319

Int. Cl. G01s 7/28

U.S. Cl. 343—7 A

14 Claims



The present disclosure describes a quantizer system applicable to radar video data processing which includes automatic clutter elimination in each of a plurality of annular sectors comprising the entire area under surveillance. The basic concepts disclosed herein are also applicable to other surveillance and detection systems, including those using phase arrayed radars, sonar and optical systems.

3,611,370

DUAL-MODE RADAR SYSTEM

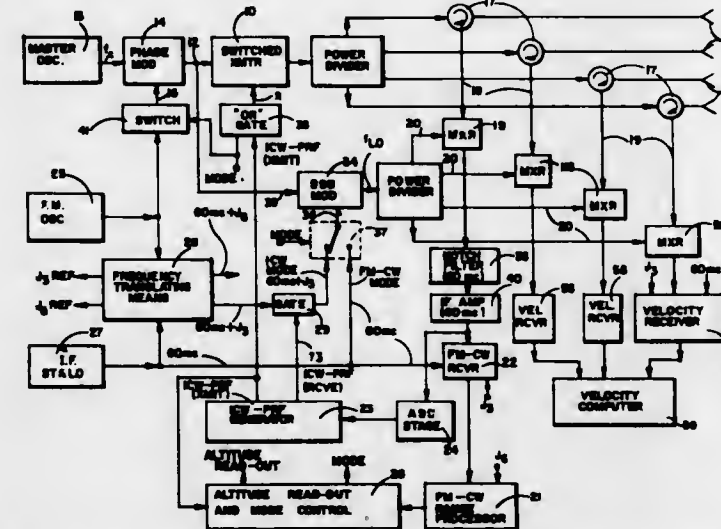
Lawrence R. Frasure, Orange, and Walter Rudolf Fried, Santa Ana, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Nov. 5, 1968, Ser. No. 773,485

Int. Cl. G01s 9/10

U.S. Cl. 343—7.5

19 Claims



A dual-mode radar velocity sensor and altimeter useful over a wide range of radar altitudes and comprising a single

common transmitter arranged for operation in an alternative one of a 50-percent duty cycle interrupted continuous wave (ICW) mode and a Bessel sideband FM-CW mode, in cooperation with switching means responsive to radar range for selecting the ICW mode under radar range conditions greater than a preselected range and selecting the FM-CW mode under radar range conditions less than such preselected radar range.

3,611,371

MOSAIC OMNIDIRECTIONAL RADAR SCANNING SYSTEM

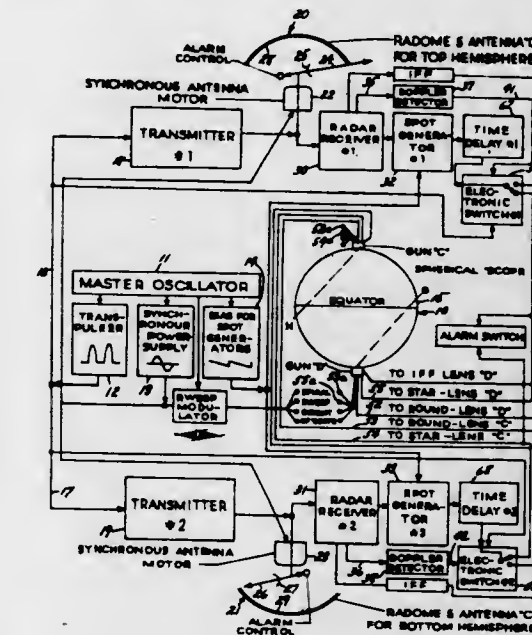
Milton Morse, 1 Horizon Road, Fort Lee, N.J.

Filed Apr. 23, 1969, Ser. No. 818,691

Int. Cl. G01s 9/42, 7/20

U.S. Cl. 343—7.7

5 Claims



A radar-type environmental warning device in which displays corresponding to objects located in the vicinity of the aircraft are presented on a spherically shaped or planar display. Means is provided for distinguishing objects which are approaching the surveillance aircraft from those which are receding therefrom, and for indicating relative distance between a sensed object and the aircraft in terms of size and shape of individually displayed received signals.

3,611,372

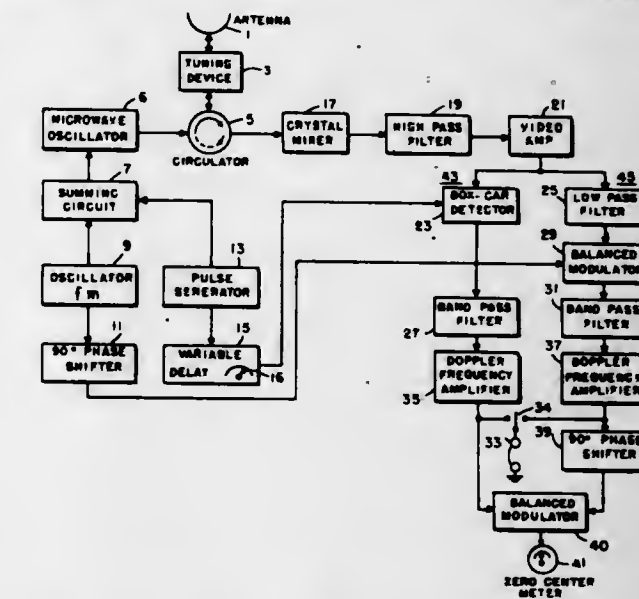
William Fishbein, New Shrewsbury, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 8, 1962, Ser. No. 217,243

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

5 Claims



1. A doppler radar system comprising, a transmitter comprising a continuously operating microwave oscillator, means

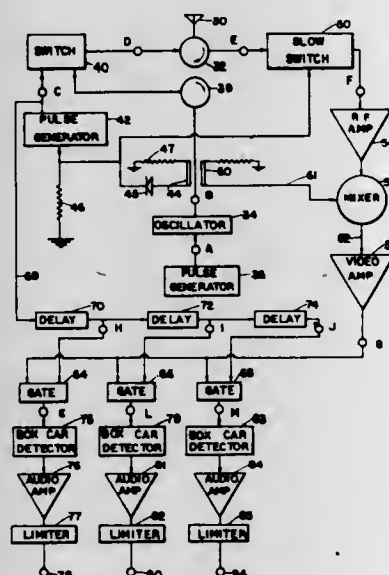
to modulate the frequency of said transmitter simultaneously by means of a sine wave oscillator and a pulse generator, the pulse generator frequency being different than and nonharmonically related to the sine wave frequency, the amplitude and duration of each modulating pulse being sufficient to advance or retard the phase of the transmitter by 360°, the sine wave modulating frequency being chosen so that the round trip transit time of a target at the maximum desired range equals one-half cycle of said sine wave modulating frequency, means to radiate the output of said transmitter to a target area and receive target echo signals therefrom, means to apply a sample of said transmitter output and said target echo signals to a mixer circuit, a high pass filter connected to the output of said mixer circuit, said high pass filter being designed to pass the sine wave modulation frequency and the pulse modulation frequency and to attenuate lower frequencies, means to separate said sine wave modulation frequency and said pulse modulation frequency into a continuous wave channel and a pulse channel, respectively, means in each of said channels to extract doppler frequency signals from the target signals therein, means to apply said doppler frequency signals alternately to a headset, and means to correlate the doppler frequency signals in each of said channels.

3,611,373

MISS DISTANCE RANGE DETECTION SYSTEM
Victor F. Cartwright, Fullerton, Calif., assignor to Babcock Electronics Corporation, Costa Mesa, Calif.
Filed June 23, 1969, Ser. No. 835,701
Int. Cl. G01s 9/42

U.S. Cl. 343-7.7

11 Claims



Ranging systems of the radar type incorporating range gates which will pass signals derived from returning echoes upon simultaneous application to the gate of a locally injected signal which is applied to each gate at a different time corresponding to a selected increment of the range of the system. The use of timed attenuation of returning echoes limits the amplitude of early returning echoes and nearby noise.

3,611,374

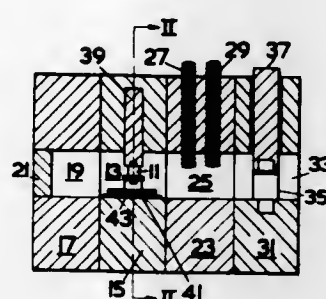
RADAR APPARATUS AND SYSTEMS
Derrick W. Draysey, Malvern, England, assignor to National Research Development Corporation, London, England
Continuation of application Ser. No. 717,357, Mar. 29, 1968, now abandoned. This application Oct. 10, 1969, Ser. No. 865,435
Int. Cl. G01s 9/42

U.S. Cl. 343-7.7

14 Claims

A radar apparatus comprised of a transferred electron oscillator in association with a cavity resonant at the frequency of oscillation of the transferred electron oscillator. A mixing diode in the signal path between the transferred electron oscillator and a transmit/receive aerial yields a difference output. The frequency of the radar may be modulated or

swept by enclosing the transferred electron oscillator within a ferrite collar whereby changing the applied voltage to the



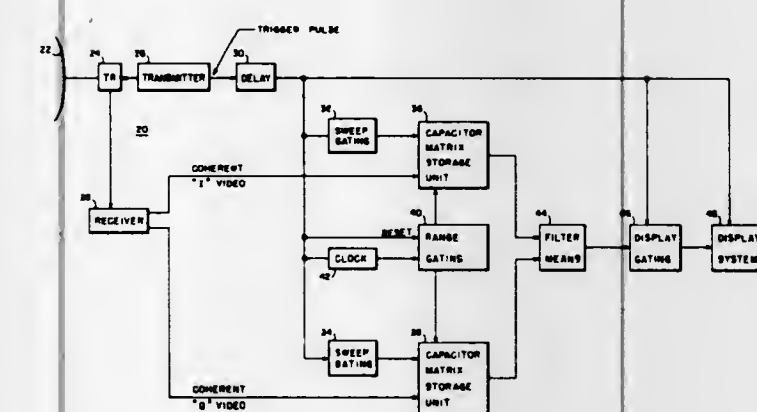
transferred electron oscillator changes the frequency of the radar.

3,611,375

RADAR USING MATRIX STORAGE AND FILTERS
Torrence H. Chambers, Washington; Lawrence F. Kalnoskas, Washington, D.C., and Garold K. Jensen, Alexandria, Va.
Filed Dec. 30, 1969, Ser. No. 889,207
Int. Cl. G01s 9/42

U.S. Cl. 343-7.7

21 Claims



A radar in which samples of the video signal are stored in capacitor matrix storage units. In one embodiment the stored signal samples are read out into filtering which provides, for display, outputs related to the doppler components in the video signal. In other embodiments, the storage readout is through filtering that provides, for display purposes, outputs which indicate the presence of a moving target (MTI). The individual filters include resistors which are weighted in value so as to have predetermined band-pass patterns and center frequencies.

3,611,376

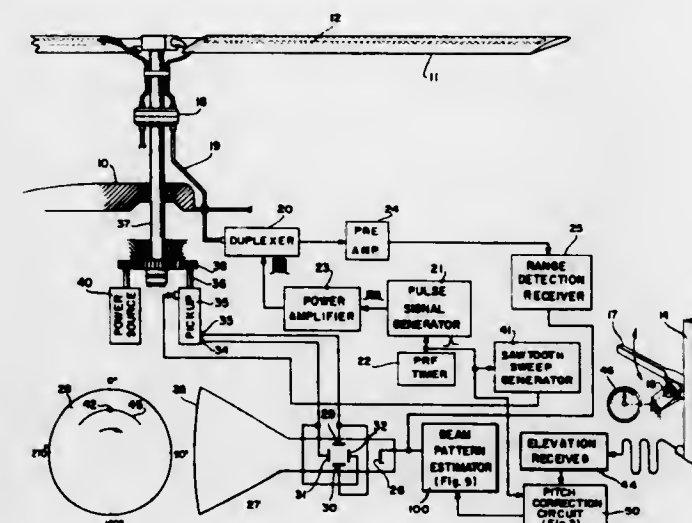
RADAR SYSTEM WITH BEAM SPLITTER AND SYNTHETIC STABILIZATION
Frank S. Gutleber, Little Silver, N.J., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Aug. 4, 1969, Ser. No. 847,136
Int. Cl. G01s 9/02

U.S. Cl. 343-11 R

25 Claims

A multifunction radar system generating a vertical fan beam of radiant energy continuously movable in azimuth for terrain mapping with a plan position indicator-type display screen and including antenna means having a fan beam energy-response pattern generally normal to the vertical fan beam and movable in elevation to intersect the vertical fan beam at selected elevation angles for detecting reflected energy and generating a range marker on the display screen defining an elevation-aiming angle for performing various target-tracking functions including establishing glide slopes, clearance planes

and direction-control information. The generated range of said multivibrator is a pulse signal at a frequency f_1 which marker is stabilized relative to pitching motion of the vehicle



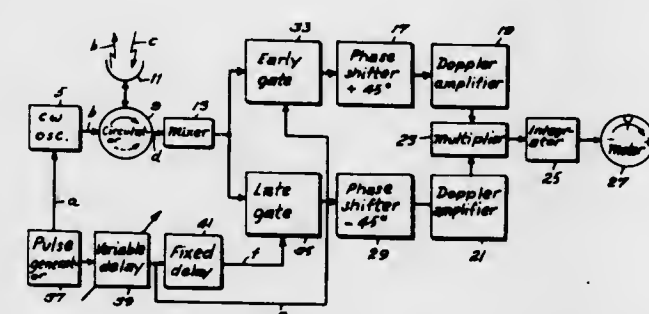
as well as referenced to the antenna boresight axis by special processing of composite return signals.

3,611,377

DOPPLER RADAR WITH TARGET VELOCITY DIRECTION AND RANGE INDICATOR UTILIZING VARIABLE DELAY LINE
Otto E. Rittenbach, Neptune, N.J.
Filed Jan. 21, 1970, Ser. No. 4,665
Int. Cl. G01s 9/04

U.S. Cl. 343-12 R

2 Claims



The CW transmitter oscillator for this radar is periodically phase modulated by means of a pulse generator. The echo signals are combined with a sample of the transmitted signals and applied to a single mixer. A pair of Doppler signals are sequentially derived from the mixer output. The phase relations of these Doppler signals determines the direction of radial target velocity and the range can be obtained from the setting of a variable delay line connected to the pulse generator.

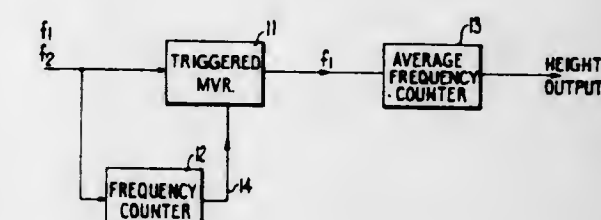
3,611,378

FM/CW RADIO ALTIMETER
Ian Frederick Howard Goult, and John Stuart Fraser Lee, both of Enfield, Middlesex, England, assignors to International Standard Electric Corporation
Filed June 11, 1969, Ser. No. 832,359
Claims priority, application Great Britain, July 15, 1968, 33674/68
Int. Cl. G01s 9/24

U.S. Cl. 343-14

1 Claim

In an FM/CW altimeter the combined beat frequency signals f_1 and f_2 ($f_2 \approx 2f_1$), due to desired ground and undesired ground-plane-ground reflections, are connected to a monostable multivibrator and to a frequency counter. Said frequency counter responds to the mean frequency of the input beat frequencies f_1 and f_2 and provides a signal to said multivibrator to control its recovery time to $2/3f_1$. The output



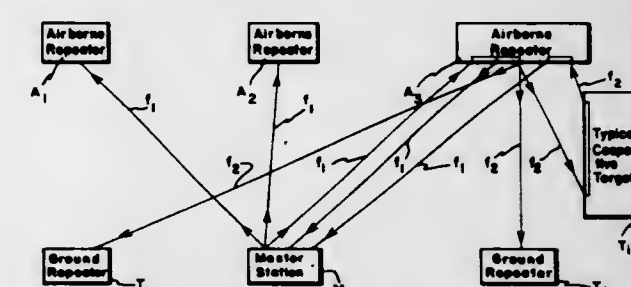
is connected to an average frequency counter. Said counter measures height.

3,611,379

TRACKING SYSTEM
Martin Deckett, Bad Godesberg, Germany, assignor to TRW Inc., Redondo Beach, Calif.
Filed Sept. 29, 1969, Ser. No. 861,936
Int. Cl. G01s 9/04

U.S. Cl. 343-15

7 Claims



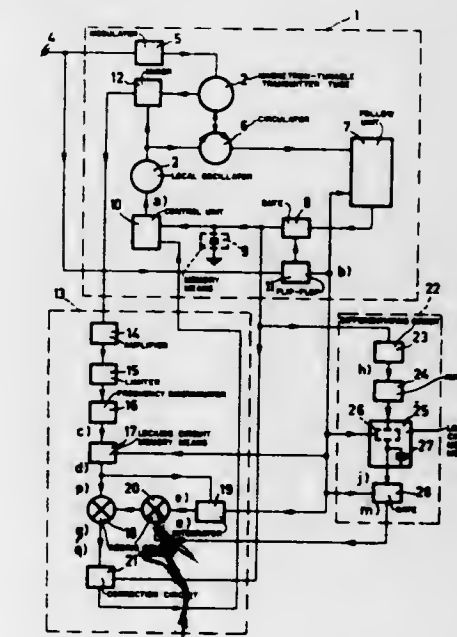
An apparatus for locating a large number of cooperative targets consisting of a ground-based master station, three airborne repeaters and as many transponder units as there are cooperative targets. The master station transmits pulses, which are received by the repeaters. The repeaters in turn transmit the pulses at a second frequency. The transponders and the repeaters transmit back to the master station. By accurately measuring the time required for the pulses from the transponders and repeaters to return, the location of each cooperative target can be determined.

3,611,380

DEVICE FOR FREQUENCY CORRECTION IN A RADAR EQUIPMENT
Nils Rune Carlsson, Stockholm, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 2, 1969, Ser. No. 829,282
Int. Cl. G01s 9/02

U.S. Cl. 343-17.2 R

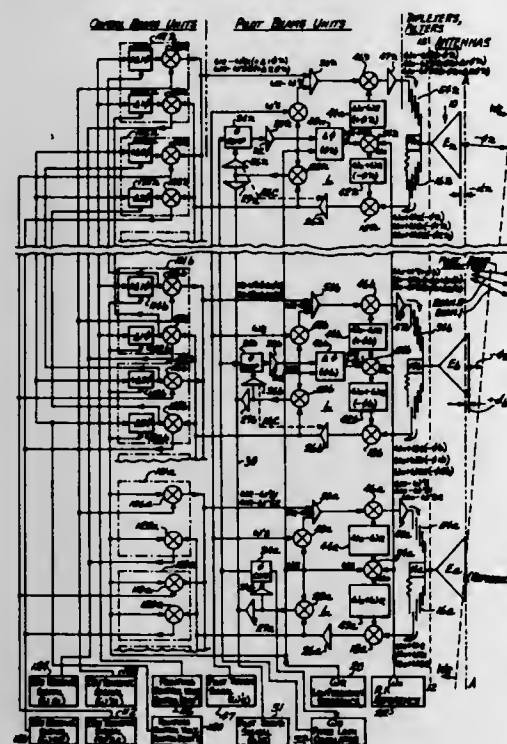
6 Claims



A device for frequency correction in radar equipment having a tunable transmitting tube with means for continually

varying the tuning frequency and triggering the transmitting tube to generate and transmit radar pulses of varying frequency. A local oscillator of a receiver is locked in frequency at the triggering moment to a value which is related in a predetermined manner to the frequency of the transmitted pulse. This value is maintained during an interval after triggering to produce a predetermined, constant intermediate frequency when combined with received echo pulses. Further corrections are produced in an automatic frequency regulation circuit to correct for the combination of slow regulation and rapid final correction, and in a correction circuit to compensate for deviations in the difference frequency dependent upon where triggering occurs on the tuning curve.

3,611,381
PILOT NORMALIZED MULTIBEAM DIRECTIONALLY SELECTIVE ARRAY SYSTEM
 Fritz K. Prekschat, Bellevue; Orral W. Ritchey, Seattle, and John H. Nitardy, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
 Filed Nov. 1, 1968, Ser. No. 772,741
 Int. Cl. H04b 7/04; H01q 3/26
 U.S. Cl. 343-100

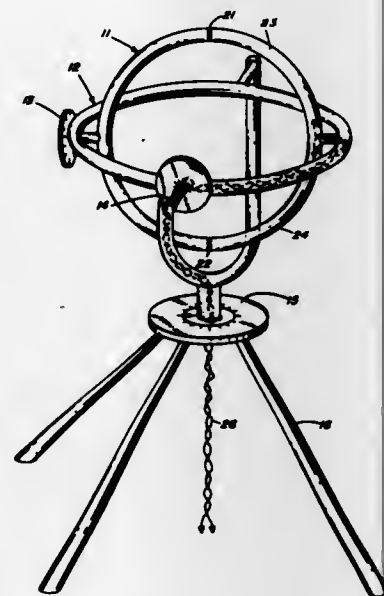


One or more independently modulated directionally controlled beams in either or both reception and transmission are simultaneously obtainable in the same frequency range from this pilot beam oriented array system which basically utilizes the retrodirective array principle. Received pilot signal RF energy at frequency $\omega_0 + \omega_s$ incident on the array is converted in each antenna module into an intermediate frequency signal $\omega_R - \omega_s$. It is then converted by ω_R into ω_s . These conversions take place in a phase-lock loop wherein such ω_s thus extracted is effectively cophased with ω_s in the other modules by mixing (1) $\omega_0 + \omega_s$ and (2) a receiver local oscillation produced in each module. This local oscillation in turn is produced by mixing ω_0 and $\omega_R(\Phi)$, where ω_0 is a high-frequency reference signal and $\omega_R(\Phi)$ is a low-frequency reference signal ω_R (common to the modules) given a phase shift Φ in each particular module corresponding to the phase difference between the received pilot signal ω_s in that module and the ω_s received in one of the antennas serving as a phase-reference in the array. Phase conjugation of the received pilot signal in each module for pilot-oriented retrodirective transmission is performed by extracting the difference product of the aforementioned mixing of ω_0 and $\omega_R(\Phi)$ and mixing this difference product with an IF signal $\omega_R - \omega_s$ to produce $\omega_0 - \omega_s$, where ω_s is a signal to be transmitted, and the resultant transmitted RF signal $\omega_0 - \omega_s$ is in a band adjacent to the received RF pilot signal $\omega_0 + \omega_s$ but is separable therefrom by RF filters in the antenna input-output channels.

Maximum array gain for other desired receiving directions related to but differing from the pilot beam direction of incidence on the array is achieved by mixing in each module: (1) the respective IF signals $\omega_R - \omega_{s1}$, $\omega_R - \omega_{s2}$, etc., resulting from the aforementioned mixing of the receiver local oscillation with the RF signals received from these other directions and (2) the low-frequency reference signal ω_R phase-shifted in the appropriate sense by predetermined different amounts corresponding to the respective receiving beam directions desired. Such amounts of phase shift for each beam direction are graduated along the series of array modules in correspondence with the phase differences between antennas resulting from antenna spacings.

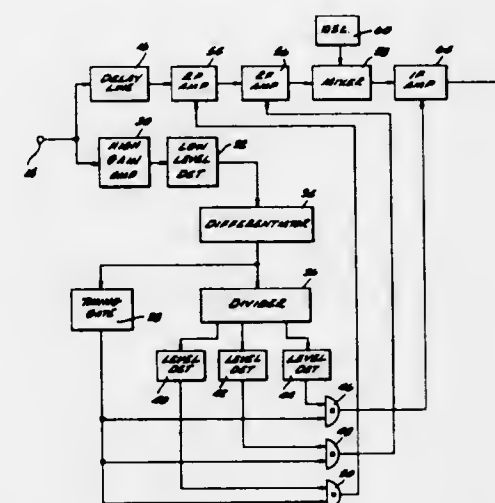
Maximum array gain for other desired transmitting directions related to but differing from the pilot beam direction of incidence on the array is achieved by mixing in each module: (1) the respective desired signals (ω_{s1} , ω_{s2} , etc.) to be transmitted in these other directions and (2) the low-frequency reference signal ω_R phase-shifted in the appropriate sense opposite that for the above case of reception by predetermined amounts corresponding to the respective transmitting beam directions desired. Such amounts of phase shift for each such beam direction are graduated along the series of array modules in correspondence with the phase differences between antennas resulting from antenna spacings. The resulting sets of IF signals to be transmitted $\omega_R - \omega_{s1}$ ($+\Delta 1$), $\omega_R - \omega_{s2}$ ($+\Delta 2$), etc., in turn, are mixed with the aforesaid difference product of the mixing of ω_0 and $\omega_R(\Phi)$ so as to produce resultant sets of antenna-energizing RF signals from the modules.

3,611,382
DETECTOR PROBE FOR MEASUREMENT OF HIGH-FREQUENCY ELLIPTICALLY POLARIZED FIELDS
 Reginald I. Gray, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy
 Filed Nov. 12, 1969, Ser. No. 875,607
 Int. Cl. H01q 15/00
 U.S. Cl. 343-100 PE



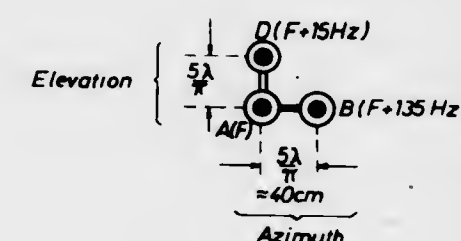
An electromagnetic probe which is particularly adapted for the measurement of the electric and magnetic vectors of an elliptically polarized field utilizes a hollow shielded loop which has a double load. The loop is mounted in nonmetallic, low perturbation gimbals so that it can take any position in any plane. The loop is rotated through a plurality of angles dictated by the ellipticity at the point at which measurements are taken. Measurements are taken at each required angle. These measurements are then utilized to calculate the intensities of the electric and magnetic vector components of the field.

3,611,383
INSTANTANEOUS PREDICTIVE AUTOMATIC GAIN CONTROL CIRCUIT USEFUL IN LORAN NAVIGATION
 Meyer Bar, Palos Verdes Peninsula, Calif., assignor to Guidance Technology Inc., Santa Monica, Calif.
 Filed Sept. 8, 1969, Ser. No. 855,810
 Int. Cl. G01s 1/24; H03g 3/20
 U.S. Cl. 343-103



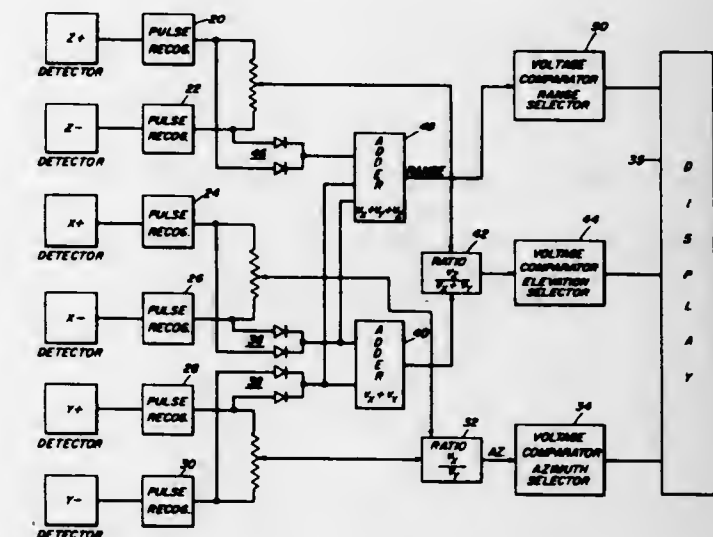
An automatic gain control circuit used in the receiver of a Loran navigational system is described which has a first channel comprising a delay line and a plurality of amplifiers and a second channel comprising an automatic gain control loop which includes a predictor circuit. In the automatic gain control loop, the signals are amplified, detected, and differentiated. The differentiator anticipates the signals' rate of growth. Growth rate is then translated to the automatic gain control level which is applied to the RF and IF amplifiers in the receiver circuit. When the signal emerges from the delay line, the automatic gain control level presents a static level to the appropriate amplifier stage.

3,611,384
SECTOR-DIRECTIONAL RADIO BEACON FOR AZIMUTH AND ELEVATION ANGLE MEASURING
 Klaus Dieter Eckert, Ludwigsburg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
 Filed Mar. 4, 1969, Ser. No. 804,169
 Int. Cl. G01s 1/30
 U.S. Cl. 343-105



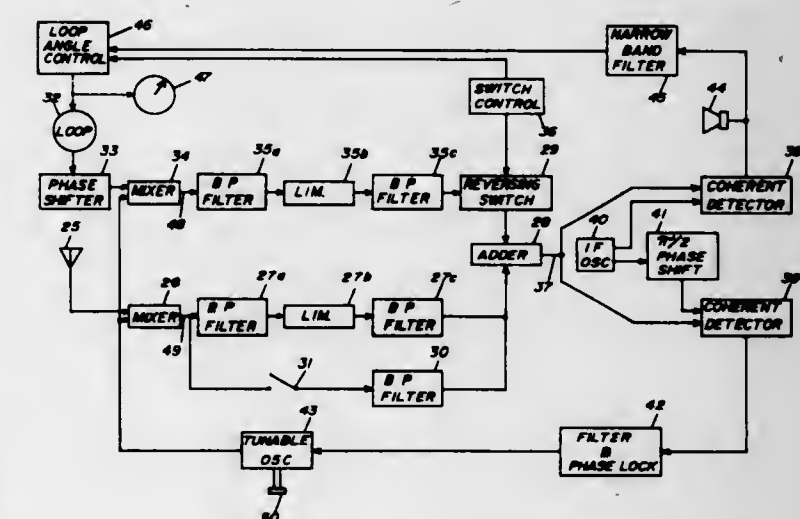
To provide a rotating radiation pattern in a predetermined sector of $\pm 18^\circ$ from which a Tacan receiver can determine azimuth and elevation angles, a first antenna which radiates a carrier frequency F is flanked horizontally by a second antenna which radiates a frequency $F + 135$ Hz. and vertically by a third antenna which radiates a frequency $F + 15$ Hz. The spacing between said first antenna and said second and third antennas being $5/\pi\lambda$, which distance is dependent upon the desired width of said sector.

3,611,385
COLLISION AVOIDANCE SYSTEM
 Thomas F. McHenry, Norwalk, Conn., assignor to Barnes Engineering Company, Stamford, Conn.
 Filed Nov. 18, 1968, Ser. No. 776,657
 Int. Cl. G08g 5/04; H01j 39/00
 U.S. Cl. 343-112 CA



Aircraft are provided with a beacon for generating predetermined repetitive signals and sensors capable of informing the pilot of the presence, direction and range of another approaching aircraft. The sensor units are comprised of at least three detector pairs positioned in three orthogonal axes which are responsive to and generate signals in accordance with the radiation received from the beacon of the approaching aircraft. Signal recognition means are coupled to the detectors for detecting the predetermined repetitive signals and discriminating against all other signals. Logic circuitry is provided for deriving signals indicative of azimuth, elevation and range of the signals from the approaching aircraft, and these signals may be utilized in a display means for providing a visual indication of the position of the approaching aircraft.

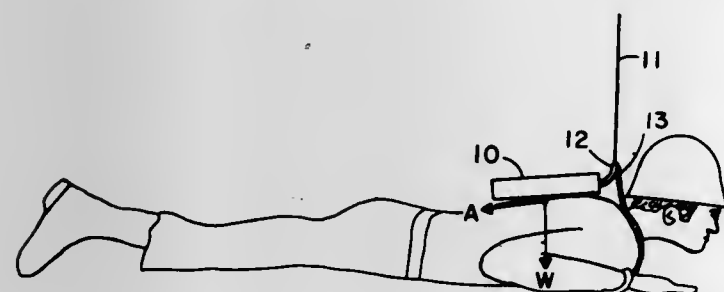
3,611,386
PREFILTERED RADIO DIRECTION FINDERS
 Lloyd J. Perper, 3725 Ironwood Hill Drive, Tucson, Ariz.
 Continuation-in-part of application Ser. No. 745,819, July 18, 1968, now abandoned. This application July 16, 1969, Ser. No. 842,188
 Int. Cl. G01s 3/42
 U.S. Cl. 343-117



An automatic radio direction finder for use under high static conditions includes two narrow-band filter units, with

limiters, one in the sensing antenna channel and one in the directional antenna channel preceding the reversing switch or modulator. Because of this filtering, after modulation and addition the sensing channel and the two directional sidebands appear at three nonoverlapping frequency locations, so that high noise in the sensing channel does not interfere with the directional sidebands. The demodulated signal is employed in the usual manner to control the position of the directional antenna but, because of the noise segregation, the position accuracy is unaffected by the presence of noise. One embodiment uses cross correlation with synchronous detection; another embodiment uses envelope detection.

3,611,387
ANTENNA POLARIZATION CORRECTING MEANS FOR BACKPACK RADIOS
 Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa
 Filed June 18, 1970, Ser. No. 47,484
 Int. Cl. H01q 1/12, 1/24
 U.S. Cl. 343-702 6 Claims



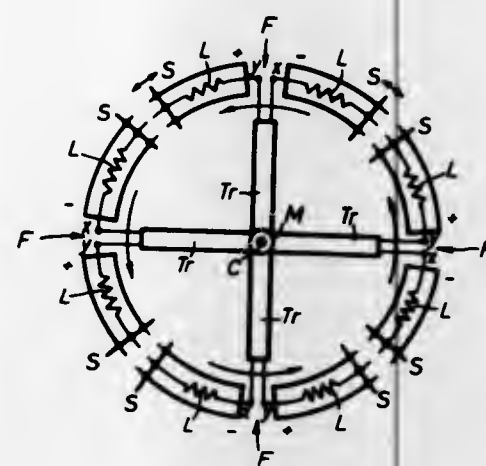
A spring mounting for a vertically polarized antenna provides vertical antenna orientation when the radio bearer is in prone position. A tension strap affixed to the antenna mount utilizes the shifting weight of the backpack radio set to urge the antenna into vertical orientation when the bearer is in upright position.

3,611,388
AUTOMOBILE ANTENNA MOUNTED ON TRUNK LID
 Osamu Okumura, Kyoto, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed June 10, 1970, Ser. No. 45,046
 Claims priority, application Japan, June 13, 1969, 46,715/1969
 Int. Cl. H01q 1/32
 U.S. Cl. 343-712 6 Claims



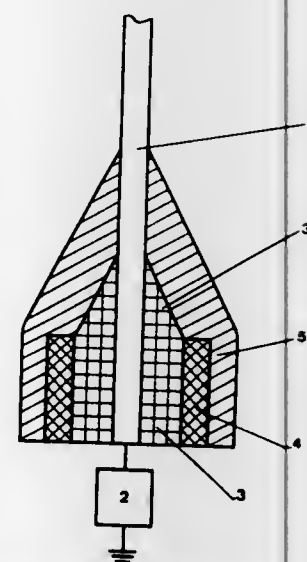
The disclosed antenna comprises a circular metallic film centrally disposed on a plastic over for a motorcar's trunk, another metallic film disposed on its remaining portion, and a coil interconnecting them. The coil exhibits a high impedance for the FM broadcasting band and a negligibly low impedance for the medium wave AM broadcasting band. Both films are effective for medium wave band while only the circular film is effective for the FM band.

3,611,389
VOR ANTENNA
 Erich Coors, and Kurt Tanzer, both of Gelsingen, Germany, assignors to International Standard Electric Corporation, New York, N.Y.
 Filed Jan. 9, 1970, Ser. No. 1,451
 Claims priority, application Germany, Jan. 22, 1969, P 19 02 884.3
 Int. Cl. H01q 9/16; H01a 7/00
 U.S. Cl. 343-726 7 Claims



A VOR antenna construction using printed circuit techniques for the radiators as well as for the balun transformers. The rotating cardioid pattern is generated by the combination of a turnstile and a loop antenna fed independent with modulated sideband energy and carrier energy, respectively. The printed circuit loop antenna includes eight arcuate sections surrounding four printed circuit half-dipoles disposed in a cross configuration to form the turnstile antenna. The arcuate sections are all fed in balance from a central feed point by printed circuit slotted transformers. The VOR antenna may be enclosed in a polarization cage.

3,611,390
WIDE BAND ROD ANTENNA WITH IMPEDANCE MATCHING
 Bernard Chiron, and Louis Duffau, both of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France
 Filed Oct. 16, 1969, Ser. No. 867,044
 Claims priority, application France, Oct. 23, 1968, 170,945
 Int. Cl. H01q 9/00
 U.S. Cl. 343-750 7 Claims



A fraction of the antenna wire is coupled with a ferromagnetic material the electrical parameters of which meet the following condition:

$$L_1 C_1 = 1/16 L^2 1/2$$

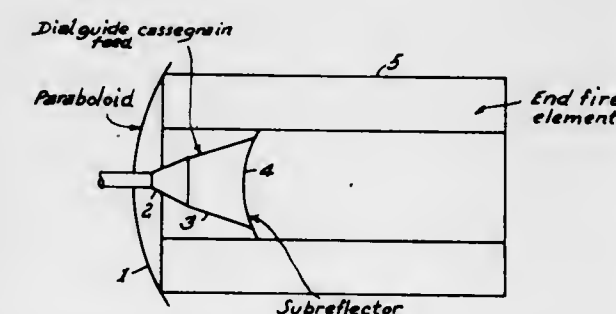
where L_1 is the unitary inductance per unit of length of the wire surrounded by the ferromagnetic material.
 C_1 is the corresponding unitary capacitance.

L is the geometrical length of the antenna.

f is the operating frequency which varies within the operating bandwidth.

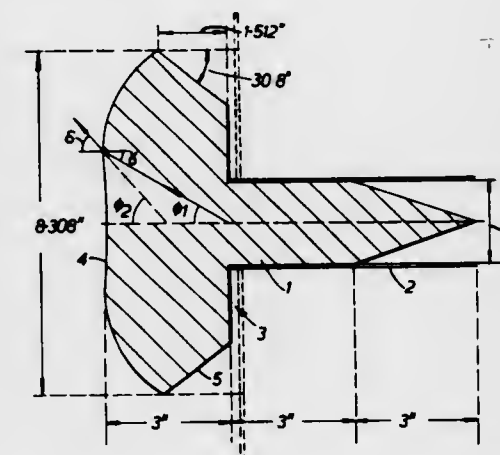
The ferromagnetic material is to be chosen so as to meet equation 1. As will be explained in further details, some ferromagnetic materials suitable for this use are commercially available. Available magnetic materials which do not comply with law (1) may be forced to comply through automatic control.

3,611,391
CASSEGRAIN ANTENNA WITH DIELECTRIC GUIDING STRUCTURE
 Homer Eugene Bartlett, Melbourne, Fla., assignor to The United States of America as represented by the Secretary of the Army
 Filed Mar. 27, 1970, Ser. No. 23,143
 Int. Cl. H01g 19/10
 U.S. Cl. 343-755 5 Claims



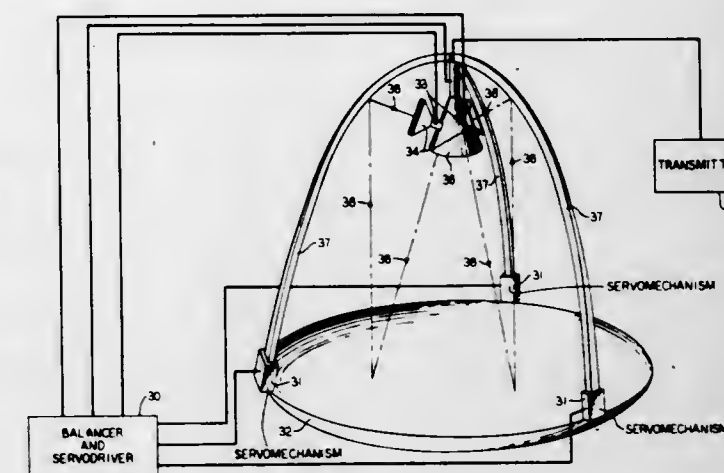
An end-fire antenna having a thick-wall dielectric tube concentrically positioned about the principal axis of a cassegrain antenna and seated on the main reflector functions as a guiding structure for focusing the antenna radiation.

3,611,392
PRIMARY FEED FOR DISH REFLECTOR HAVING DIELECTRIC LENS TO REDUCE SIDE LOBES
 Dennis Murdoch Knox, High Wycombe, England, assignor to Her Majesty's Postmaster General, London, England
 Filed Mar. 24, 1969, Ser. No. 809,795
 Claims priority, application Great Britain, Mar. 25, 1968, 14357/68
 Int. Cl. H01q 19/10
 U.S. Cl. 343-755 1 Claim



A primary feed for a front-fed aerial system, the feed comprising a mushroom-shaped fitment of dielectric material. The stalk of the mushroom enables the fitment to be coupled to a waveguide feed while the head forms a lens which projects energy towards the aerial system.

3,611,393
PARABOLIC TRIPOD FEED SUPPORT FOR PARABOLIC DISH ANTENNA
 Lynden Underwood Kibler, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Apr. 27, 1970, Ser. No. 32,072
 Int. Cl. H01q 3/12, 19/12
 U.S. Cl. 343-761 5 Claims



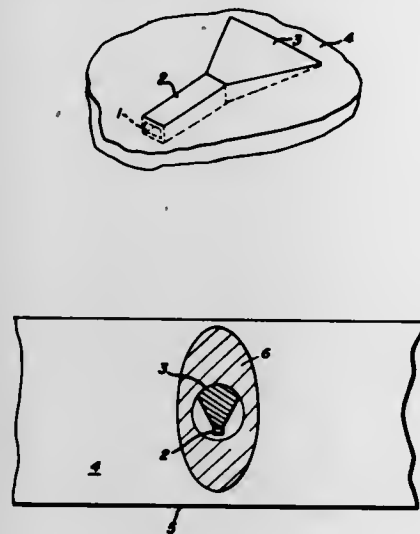
A tripod feed support structure for the front feedhorn of parabolic reflector antennas has curved members as the support structure which correspond to a paraboloid of revolution. The curved members reflect incident radio wave energy into a focal point having, for example, absorbent material. The structure substantially eliminates the residual effects of aperture blockage caused by the feed support structure.

3,611,394
LOUVERED MICROWAVE REFLECTOR
 Theodore Parker, Elwood, Ind., assignor to Marathon Oil Company, Findlay, Ohio
 Filed Dec. 22, 1969, Ser. No. 887,448
 Int. Cl. H01q 3/12
 U.S. Cl. 343-761 4 Claims



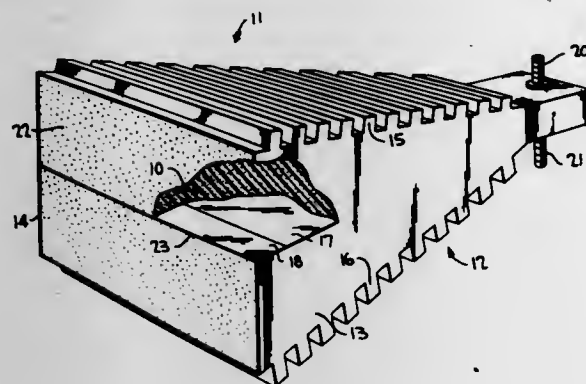
An electromagnetic radiation beam reflector which can be made transparent or reflective by rotating its elements. The reflector is used as a secondary reflector at a microwave receiving station to compensate for signal fading due to the refraction of the electromagnetic radiation beam which causes the beam to miss the primary reflector.

3,611,395
SURFACE WAVE ANTENNA WITH BEAM TILT ANGLE COMPENSATION
 Thomas F. Carberry, Jr., Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.
 Filed Feb. 3, 1969, Ser. No. 795,976
 Int. Cl. H01q 1/28 3/04, 13/02
 U.S. Cl. 343—762 7 Claims



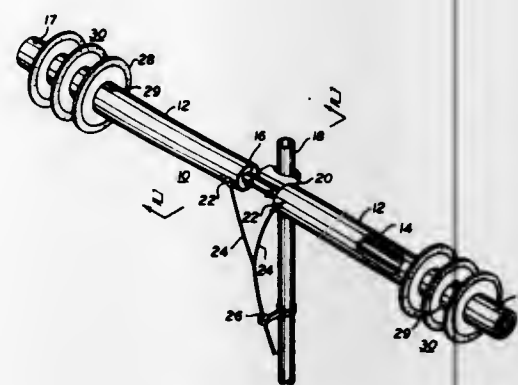
A surface wave antenna for use on a finite asymmetric ground plane of length G in the propagation direction in which an end-fired antenna projects an electromagnetic beam of wavelength λ polarized in the elevation plane and whose tilt angle varies inversely as G/λ . A correcting dielectric film is mounted on the ground plane in front of the end-fired antenna for increasing the antenna length in the propagation direction.

3,611,396
DUAL WAVEGUIDE HORN ANTENNA
 Howard S. Jones, Jr., Washington, D.C., assignor to the United States of America as represented by the Secretary of the Army.
 Filed June 18, 1970, Ser. No. 47,504
 Int. Cl. H01q 13/00
 U.S. Cl. 343—776 10 Claims



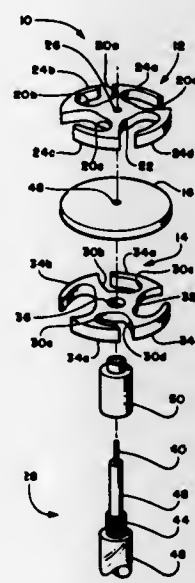
A dual waveguide horn antenna is provided with a rigid foam having a dielectric constant approximately equal to that of air and tapered to conform to the shape of a conventional horn antenna. Two tapered walls are corrugated and all four walls are covered with a thin metallic coating of sufficient thickness to carry the RF current produced by the propagation of an electromagnetic wave through the dielectric. A metallic septum divides the dielectric into first and second waveguide sections and individual coaxial inputs are provided to each of the sections. Energy coupling between the two sections of the waveguide are significantly reduced by means of a microwave resistive material secured to the septum at the enlarged end of the dielectric. The resistive strip may comprise a carbonized substrate or an insulating material coated with the resistive film. Additionally, a thin film of paint may be applied directly to the metallic septum by various techniques including vacuum deposition.

3,611,397
FOLDED DIPOLE WITH END-LOADING ELEMENTS
 George Pollakoff, Great Neck, N.Y., assignor to Aerial Electronics Corporation, East Islip, N.Y.
 Filed Sept. 12, 1969, Ser. No. 857,438
 Int. Cl. H01q 9/16
 U.S. Cl. 343—792 2 Claims



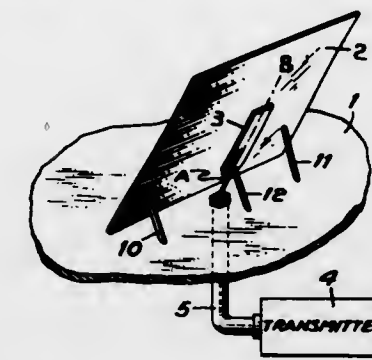
A combination Hertz and loop-type antenna which effectively receives both electromagnetic and waves of radio and TV broadcasts by virtue of oppositely extending elongated outer tubular conductors that concentrically surround an inner conductor and are held in annularly spaced relationship by conductive elements located near the ends of the conductors and insulating spacers medially thereof. The inner conductor is used to clamp onto a vertical mast by means of a clamp to thereby fix the antenna in a substantially horizontal position, and terminals are provided for connecting insulated output leads to the outer conductors adjacent their inner ends.

3,611,398
BALANCED DIPOLE ANTENNA
 George H. Schnetzer, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
 Filed Mar. 31, 1970, Ser. No. 24,289
 Int. Cl. H01q 21/20
 U.S. Cl. 343—799 6 Claims



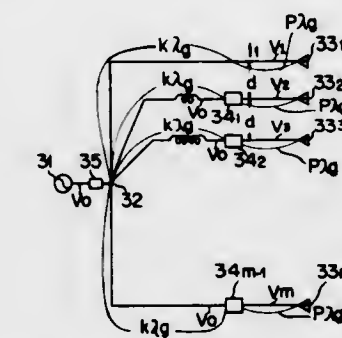
A balanced dipole antenna array comprising radiators disposed in spaced-apart parallel planes, each including at least one conductor spoke from which extends a conductive rim or arm that terminates in space, the radiators being in axial alignment and rims or arms extending in opposite directions.

3,611,399
TILTED ELEMENT AND TILTED SCREEN ANTENNA
 Arthur F. Lyle Rocke, Olney, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
 Filed Nov. 7, 1969, Ser. No. 874,743
 Int. Cl. H01q 1/48 21/00, 19/10
 U.S. Cl. 343—834 4 Claims



To provide broadband directive radiation, a spade-shaped monopole radiator and a backscreen parallel to said radiator are mounted at an angle with respect to a ground plane. Said monopole is fed against ground by an RF source. In a preferred embodiment, according to the same principle, an array of spade-shaped monopoles are mounted parallel to a backscreen and at an angle with a ground plane to provide a steerable radiation pattern. In a preferred one of a number of modifications, spade-shaped monopoles are mounted symmetrically about the plane of symmetry of a Vee-shaped reflector. In said embodiment, said monopoles are also substantially parallel to said reflector.

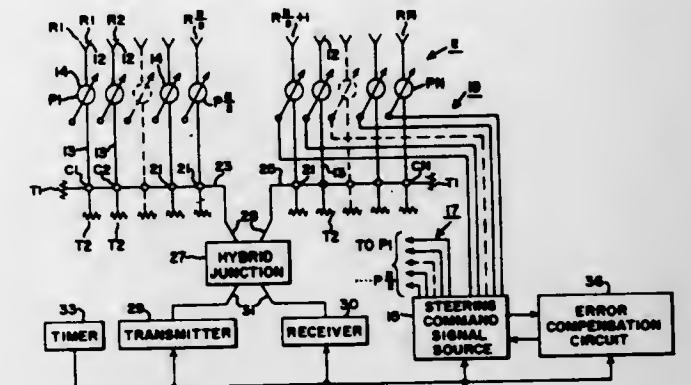
3,611,400
PHASED ARRAY ANTENNA
 Kiyoshi Nagai, Torao Nagai, and Sohji Okamura, all of Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
 Filed Oct. 14, 1969, Ser. No. 866,212
 Claims priority, application Japan, Oct. 16, 1968, Oct. 21, 1968, Oct. 21, 1968, Oct. 21, 1968, Oct. 21, 1968, Mar. 7, 1969; 74,988/68, 91062/68, 91061/68, 91063/68, 91064/68, 16817/69
 Int. Cl. H01q 3/26, 21/00
 U.S. Cl. 343—844 14 Claims



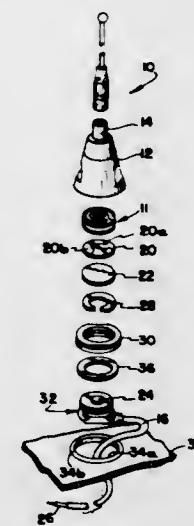
A phased array antenna device including a plurality of equally spaced antenna elements which are connected to a source of antenna power, and a plurality of impedance transforming four terminal networks capable of electrically adjusting the radiation characteristics of the antennas by varying the phase and amplitude of the antenna currents in a predetermined manner.

3,611,401
BEAM STEERING SYSTEM FOR PHASED ARRAY ANTENNA
 Terrence E. Connolly, Baldwinville, N.Y., assignor to General Electric Company
 Filed Sept. 24, 1968, Ser. No. 762,030
 Int. Cl. H01q 3/26 7 Claims
 U.S. Cl. 343—854
 A beam-steering system for phased array antennas is disclosed, wherein the phases of the signals fed to the individual

elements of the array are varied by phase shifters in selectable discrete steps to obtain directivity or steering of the array for transmitting and/or receiving. Special circuitry monitors the roundoff phasing errors of the phase shifters, and alters the settings of certain of the phase shifters at certain times in



3,611,402
ANTENNA IMPEDANCE MATCHING DEVICE
 Ronald W. Thomas, Arlington Heights, and Stanley W. Gorajczyk, Des Plaines, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
 Filed Jan. 5, 1970, Ser. No. 620
 Int. Cl. H01q 1/50 12 Claims
 U.S. Cl. 343—861



An antenna impedance matching device is formed of a pair of spaced-apart disclike conductive members which have struckout portions to form annular spirallike conductive paths beginning at the center and terminating at a point at or near the periphery thereof. Confronting surfaces of the conductive members are spaced apart by a dielectric member and form a capacitive component of the impedance matching device. At least one of the conductive members forms an inductance component as well as the capacitive component in conjunction with the other of the conductive members. The impedance matching device is circular in configuration and of a size to fit within a cavity formed in the base of an antenna structure.

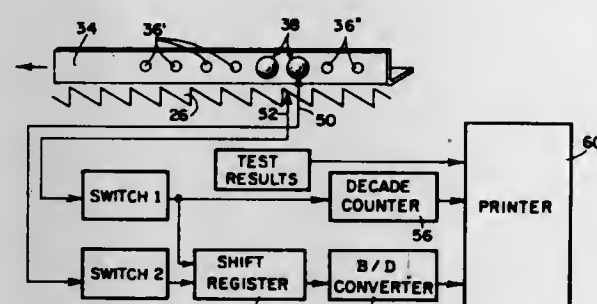
ERRATUM
 For Class 346—74 see:
 Patent No. 3,611,018

3,611,403
TEST SAMPLE CONTAINER IDENTIFICATION
METHOD AND APPARATUS
 Saul R. Gifford; Robert J. Emary, and Robert L. Gorgone, all of Oberlin, Ohio, assignors to Gifford Instrument Laboratories, Inc., Oberlin, Ohio

Filed Apr. 13, 1970, Ser. No. 27,832
 Int. Cl. G01d 5/00

U.S. Cl. 346—1

15 Claims



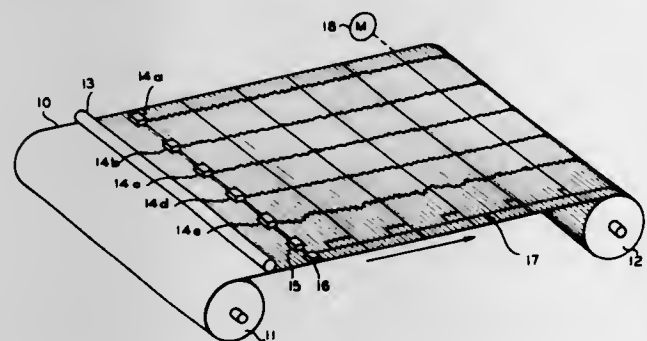
A test sample rack or carrier for supporting a plurality of sample containers and transporting the same to a testing station for the testing of each sample. The carrier has an upstanding coding flange adapted to receive projecting coding buttons at predetermined locations thereon so that the same will activate a two-digit binary counting device as the carrier passes the testing station. The binary counting device supplies data identifying the carrier in connection with the test results for each sample so that the identifying data will be recorded together with the test results.

3,611,404
MARKING TIMING INDICIA ON A RECORDING
MEDIUM
 William N. Doggett, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 15, 1970, Ser. No. 37,766
 Int. Cl. G07c 1/10

U.S. Cl. 346—1

10 Claims



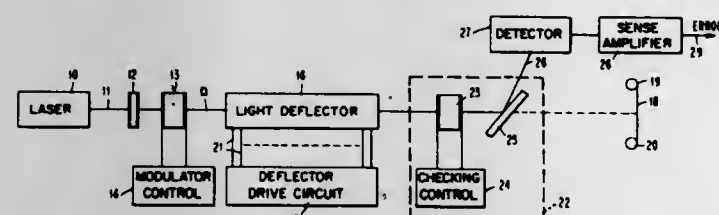
In order to identify timing lines on a recording medium, marks are made by two recording elements such as galvanometers. The deflections of the elements are regulated so that a coded timing pattern is recorded.

3,611,405
FUNCTIONAL CHECKING OF AN OPTICAL CHANNEL
 David C. Chang, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,170
 Int. Cl. G01d 1/00

U.S. Cl. 346—1

4 Claims



An arrangement for functionally checking the optical channel of an optical beam projection system. When the pro-

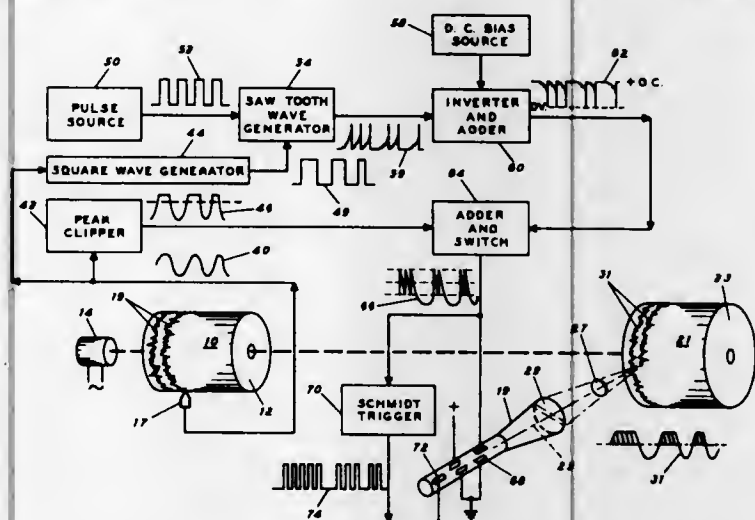
jection system is a recording system, immediate detection of a malfunction in the elements of the channel is accomplished by monitoring the intensity of the projected light beam.

3,611,406
COMBINATION VARIABLE AREA AND WIGGLE-LINE
DISPLAY OF SEISMIC SIGNALS
 James E. Hughes, La Mirada, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 26, 1969, Ser. No. 880,998
 Int. Cl. G01v 1/32

U.S. Cl. 346—1

6 Claims



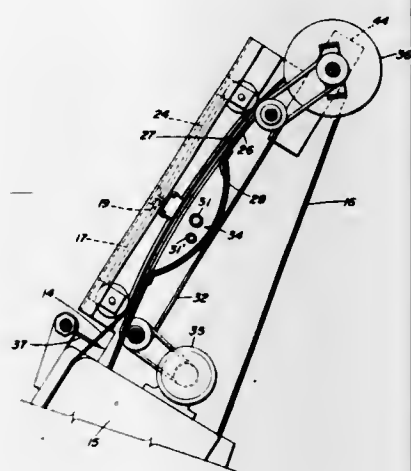
Seismograms are represented in a combined wigggle trace and variable area display for side-by-side presentation in a seismic time or depth display. Seismic wigggle traces are sine wave representations of earth motion detected by a seismometer and recorded with respect to time. The variable area display portion is presented as a truncated part of each positive going half of each sine wave forming such a seismic trace. The truncated part is filled or darkened as by exposure of a film to a cathode-ray beam under the control of a sawtooth wave. A particular advantage of the present arrangement is that the sawtooth wave is inverted so that the inherently ragged portion at the beginning of each sawtooth wave is blanked out and only the upper, clean part of each line recorded. A common peak level of the sawtooth wave is then positioned on the zero axis so that the positive portion of each half cycle of the seismic signal is cleanly filled. The resulting display is sharper and cleaner than previously known variable area-wigggle trace displays.

3,611,407
RECORDER HAVING WEB-DRYING AND DISPLAY
MEANS
 Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed Jan. 22, 1969, Ser. No. 793,129
 Int. Cl. G01d 15/06

U.S. Cl. 346—17

7 Claims



This invention has to do with a recorder having means for receiving and displaying the web which carries the visual in-

formation and stretching the web tightly as it moves while, at the same time, drying it to reduce moisture without wrinkling and shrinking to a constant width dimension.

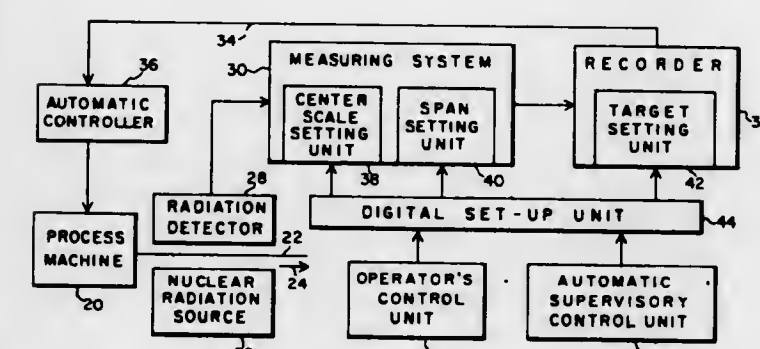
3,611,408
DIGITAL SETUP APPARATUS FOR RADIATION
GAUGING AND CONTROLLING SYSTEMS
 David J. Shoemaker, Columbus; Rex W. Dewey, Columbus; James L. Griffith, Worthington; Paul H. Troutman, Columbus, and Franklin A. Wolf, Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation

Continuation of application Ser. No. 634,594, Apr. 28, 1967, now abandoned. This application Apr. 7, 1969, Ser. No. 817,248

U.S. Cl. 346—17

Int. Cl. G01d 7/00

20 Claims



Disclosed herein is a radiation gauge equipped with a strip chart recorder for measuring the properties of moving materials. The recorder has a multiplicity of scales with selectively illuminated scale numerals, a measuring pen and pointer, and a specification target marking pen and pointer. The gauge includes a digital setup arrangement which receives decimal input numbers, indicative of the specification target value for the material to be measured and its composition, either from decimally numbered dials on the operator's control panel, or from some other input device. Digital logic circuits responsive to the input numbers automatically select the proper scale to be used and illuminate the proper scale numbers. The logic circuits use both the specification target numbers and the composition numbers to automatically and digitally select the center scale and span settings which properly calibrate the gauge for the material to be measured. The logic circuits further use these input numbers to control a digital to analog converter servomechanism which drives the specification target pen and pointer. The operation of this converter is automatically sequenced to mark successively on the moving recorder chart lines whose positions identify the scale used, the material composition measured and the specification target value. The final position of the target pen and pointer determines the set point for an automatic controller for the process machine which produces the measured material.

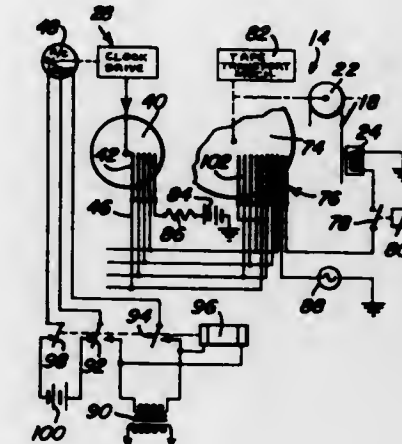
3,611,409
TIME CODE RECORDING DEVICE
 Roger C. Gildeden, Wenham, Mass., assignor to The Glidden Electric Corporation

Filed Apr. 8, 1969, Ser. No. 814,294
 Int. Cl. G07c 1/00

U.S. Cl. 346—20

12 Claims

The time at which a signal is received at a receiving station is recorded in code form on unmarked recording medium by encoding the time registered on a clock mechanism. A pulse code device driven by the recorder drive mechanism is rendered operative to record groups of signal pulse trains



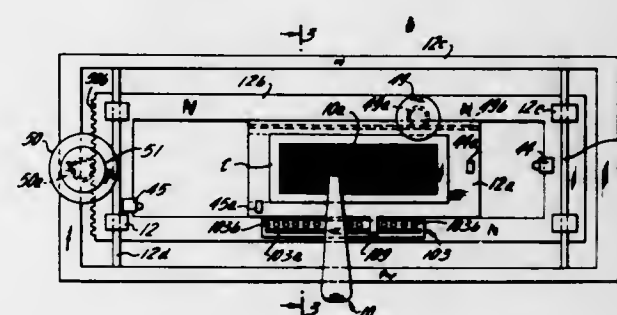
time registering positions of timing wheels associated with the clock mechanism.

3,611,410
APPARATUS FOR MAKING CONTROL CARDS
 George C. Izenour, 10 Alston Ave., New Haven, Conn., and William B. Zimmerman, Clinton, Wash.

Filed Nov. 28, 1969, Ser. No. 880,606
 Int. Cl. G01d 9/40

U.S. Cl. 346—29

10 Claims



A machine is operated cyclically to apply control elements, especially staples, in successive columns of a control card at various positions in the respective columns, to represent analog input signals. Columns can be skipped automatically. The card is adjusted along any given column in relation to the stapling head by an AC servosystem that compares the peaks of an AC feedback signal to the peaks of each AC input signal whose value is to be represented by the position of the control element along the column.

3,611,411
SPECTRUM-ANALYZING RECORDER
 Stephen L. Moshler, Cambridge; Allan K. McCombs, Arlington, and Stanley R. Rich, Worcester, all of Mass., assignors to Listening, Incorporated, Arlington, Mass.

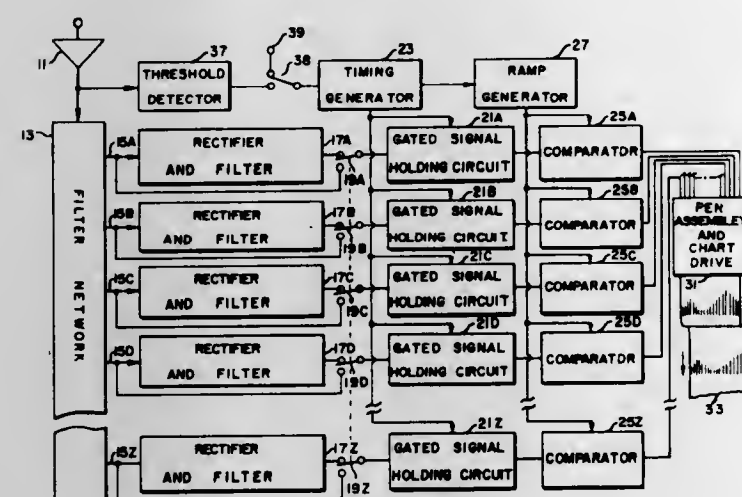
Filed Oct. 29, 1969, Ser. No. 872,102
 Int. Cl. G01r 23/18 G01d 5/243

U.S. Cl. 346—35

7 Claims

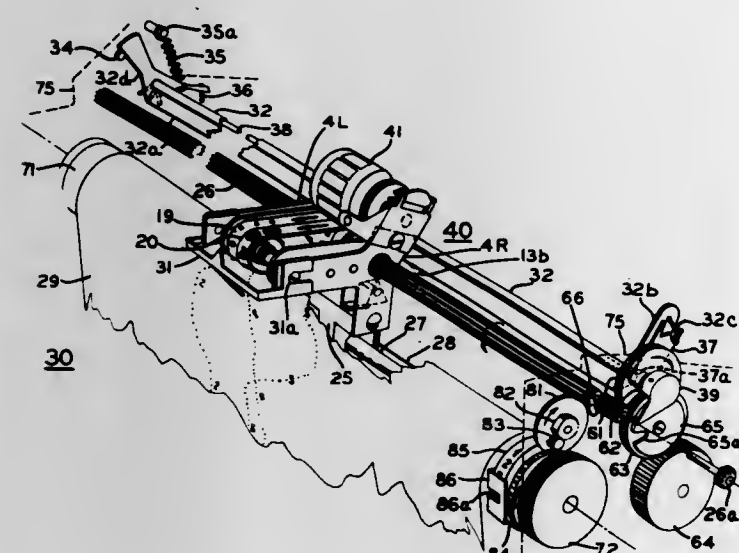
The spectrum-analyzing apparatus disclosed herein operates to generate a line or bar graph in which the length of each line represents the amplitude of a respective spectral component of a given input signal. A plurality of signal-holding circuits are employed each of which provides a continuing signal which is a function of the time-varying amplitude of a respective filter channel output signal. The various graph lines are generated starting simultaneously and, at the same

time, a ramp generator is triggered to generate a ramp voltage. Each of the held or continuing signals is compared with



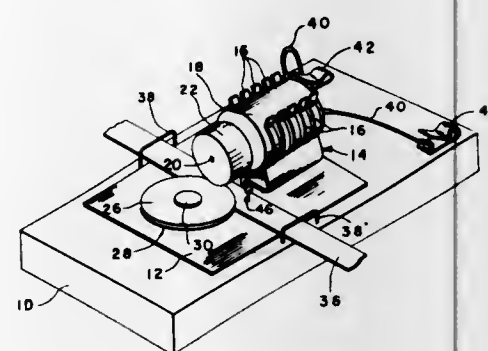
the ramp voltage and, when the ramp voltage passes each continuing signal, a respective one of the lines is terminated.

3,611,412
MULTIPOINT RECORDERS
Edgar Gentle Gibby, Wyndmoor, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.
Filed Feb. 16, 1970, Ser. No. 11,460
Int. Cl. G01d 9/34
U.S. Cl. 346-61 11 Claims



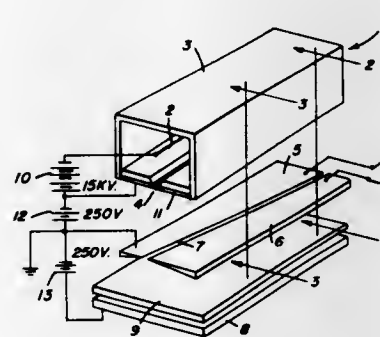
An improved multipoint print mechanism for a recorder capable of recording as a function of time the changes in magnitude of a number of different variable quantities, such as temperature, pressure, voltage, or the like at various points of a system or process. The improved print mechanism for obtaining such records is characterized by a print carriage having a type belt, or in a preferred modification a pair of separately operable type belts driven by a common drive wheel and having loops carried on guide wheels mounted on individually controlled print arms. One type belt, or a type wheel, prints marks indicating the value of a measured quantity. The other type belt or wheel prints identification symbols for the marks. Depending upon the mode or operation of the print mechanism, as selected by an operator, records of known type may be produced, i.e., records comprised of a series of marks with no identification symbols or a series of marks with an occasional identifying symbol or a series of marks each accompanied by an identifying symbol.

3,611,413
RECORDING TIMER
Charles I. Lindsay, Marlboro, Mass., assignor to D. C. Heath and Company, Lexington, Mass.
Filed Feb. 3, 1970, Ser. No. 8,201
Int. Cl. G01d 9/22
U.S. Cl. 346-71 6 Claims



A recording timer for illustrating characteristics of various types of motion with respect to time, comprising means movable at a constant rate for repetitively creating impressions on a movable media at intervals spaced according to the rate of movement of the media and variations thereof.

3,611,414
ELECTROGRAPHIC OSCILLOGRAPH
Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 3, 1969, Ser. No. 854,819
Int. Cl. G01d 9/04; H01J 37/08
U.S. Cl. 346-74 ES 6 Claims

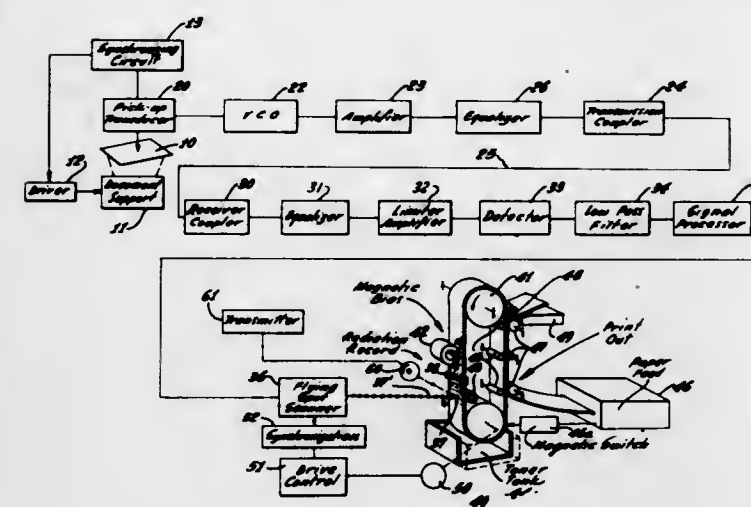


An electrographic oscillograph includes a linear corona source generally aligned with a narrow exit slit that is positioned between the source and a narrow control slit formed by two knife edges which, in turn, is arranged at an angle to the exit slit. An input signal to be recorded is impressed across the knife edges and produces an electrical field which causes deviation of the ion stream which will then pass through the control slit at different points along its length in accordance with the amplitude of the input signal. The oscillograph can be made light responsive by coating one knife edge with a photoconductor so that an electrostatic field is produced which will vary in response to the illumination incident on the knife edge.

3,611,415
FLATBED THERMOMAGNETIC FACSIMILE SYSTEM
Alfred M. Nelson, Redondo Beach, Calif., assignor to The Magnavox Company, Ft. Wayne, Ind.
Filed Apr. 25, 1968, Ser. No. 724,110
Int. Cl. G01d 15/12; H01v 3/04
U.S. Cl. 346-74 MT 19 Claims

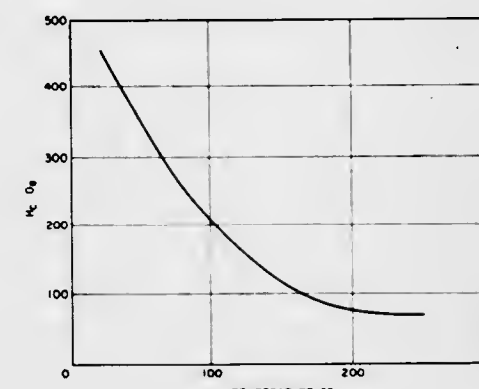
A facsimile system is disclosed using transmitter and receiver, for transmitting a line for line-scanning raster fac-

simile signal to the receiver which controls a thermomagnetic process to obtain a magnetic latent image of the document to



be duplicated. The latent image serves as storage element, as well as a printing platen using a magnetizable toner.

3,611,416
THERMOMAGNETIC RECORDING PROCESS
Irving W. Wolf, Palo Alto, Calif.; David Treves, Rehovoth, Israel, and Nathan Ballard, Santa Clara, Calif., assignors to Ampex Corporation, Redwood City, Calif.
Filed May 13, 1968, Ser. No. 739,602
Int. Cl. G01d 15/12; C23b 5/32
U.S. Cl. 346-74 4 Claims

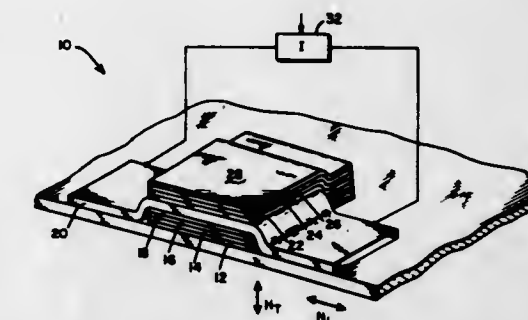


A recording process is provided for a thermomagnetic recording system wherein recording is by a combination of heating and magnetization of a medium which consists largely of cobalt in hexagonal form. The medium is plated from a cobalt electrolyte containing a small amount of phosphorous at a pH of from 5.5 to 6.6. A small amount of nickel may also be present. The resulting recording medium has strongly temperature dependent coercivity characteristics at temperatures well below the Curie point and the ratio of coercivity at 15°C. to that at 150°C. is at least two.

3,611,417
HIGH-DENSITY MAGNETIC RECORDING METHOD
Gerald F. Sauter, Maynard C. Paul, and Paul E. Oberg, all of Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed July 30, 1969, Ser. No. 846,207
Int. Cl. G11b 5/02, 5/16, 5/30
U.S. Cl. 346-74 M 3 Claims

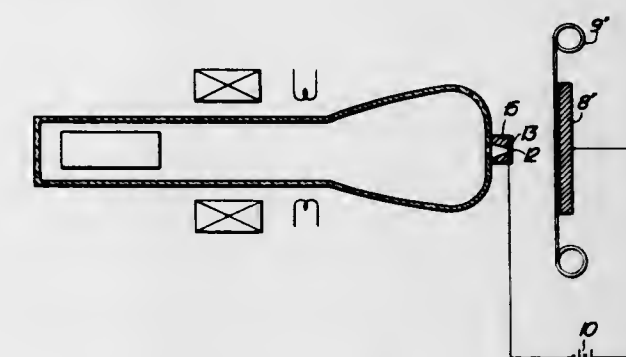
A method of high-density magnetic recording using a magnetic recording head having a recording gap that is inductively coupled to a relatively moving thin-ferromagnetic-film recording medium of a thickness that is insufficient to support Bloch walls, i.e., can only support Neel walls, between adjacent domains and having an easy axis that is orthogonal

to the direction of relative movement of, or parallel to, the recording gap. The recording medium's interdomain Neel walls are formed with the magnetization within the walls hav-



ing the same directional rotational, i.e., winding, sense, e.g., clockwise or counterclockwise, by applying orthogonal fields H_L and H_T to the recording medium.

3,611,418
ELECTROSTATIC RECORDING DEVICE
Yoshihiro Uno, Machida-shi, and Hidehiko Kawakami, Kawasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan
Filed Sept. 30, 1968, Ser. No. 763,518
Claims priority, application Japan, Oct. 3, 1967, Oct. 11, 1967, Oct. 12, 1967, Oct. 13, 1967, 42/64193; 44/65873; 42/66220; 44/66759
Int. Cl. G01d 15/06; H01J 33/04
U.S. Cl. 346-74 ES 10 Claims

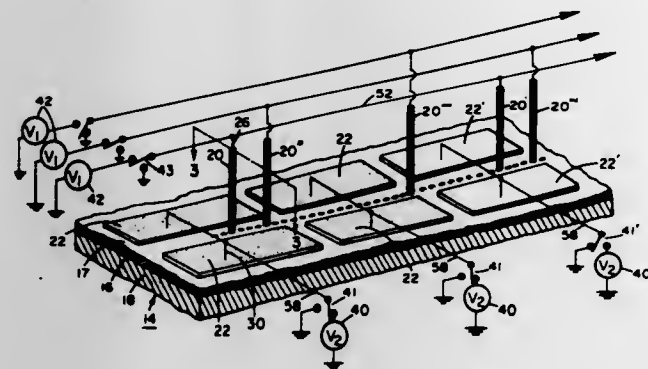


An electrostatic recording device comprising a cathode-ray tube having a thin film window opposite its electron gun, an electrode spaced from the thin film window, an electrostatic recording sheet disposed adjacent the face of the electrode toward the thin film window, a DC power supply connected between the thin film and the electrode to supply a positive voltage to the latter, and means to multiply the number of electrons between the thin film and the recording sheet by ionizing a gas disposed therebetween.

3,611,419
ELECTROGRAPHIC IMAGING SYSTEM AND HEADS THEREFOR
John Blumenthal, Wickliffe, Ohio, assignor to Clevite Corporation
Continuation-in-part of application Ser. No. 37,210, May 14, 1970. This application Apr. 2, 1969, Ser. No. 812,821
Int. Cl. G01d 15/06 12 Claims

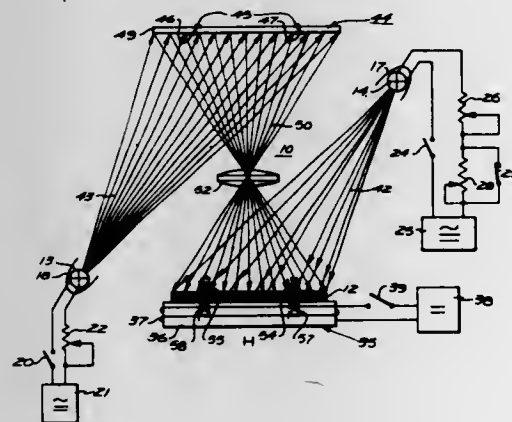
An electrographic imaging system is provided for producing an electrostatic latent image upon an electrographic record medium having dielectric and conductive layers. Electrostatic charging means are provided comprising an array of charging electrode means, some of which are interconnected and thereby are connected to fewer first voltage source means than the total number of charging electrode means in the array. Also provided is an array of complementary electrode means which is connected to second voltage source

means. The energized complementary electrode means are capacitively coupled to the conductive layer of the record medium to change the potential thereof upon a voltage pulse being applied to the complementary electrode means. The energized charging electrode means charge discrete areas of the dielectric layer of the record medium only when the complementary electrode means simultaneously are connected to the second source of voltage to effect the capacitive coupling. Also, heads are provided wherein an array of small



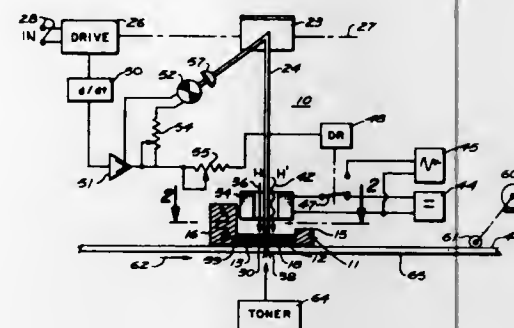
electrical conductors is supported in a dielectric material in closely spaced relation to each other with the end faces thereof exposed and substantially flush with the support. Complementary electrode means are mounted on the support adjacent to but spaced from the end faces of the electrical conductors and form with the support means a substantially flush, smooth surface over which the record medium can move. Electrical contacts for both the small electrical conductors and the complementary electrodes are provided in the support.

3,611,420
CURIE POINT RECORDING BY UTILIZATION OF SELECTIVE COOLING
Luc P. Benoit, Los Angeles, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed May 2, 1969, Ser. No. 821,232
Int. Cl. G01d 15/12
U.S. Cl. 346—74 MT 26 Claims



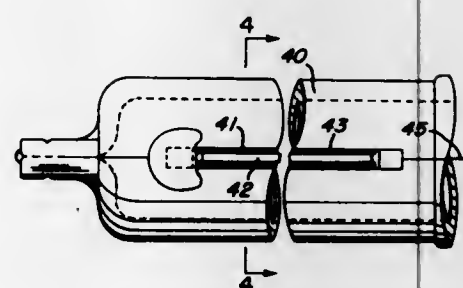
In information-recording methods and apparatus a magnetic recording medium is selectively subjected to a cooling cycle in the presence of a magnetic field to provide a magnetic record of the information. The cooling cycle is only carried out in portions of the magnetic recording medium which have been selected in response to the input information. This may be implemented by applying cooling media only to the selected portions, or by preventing complementary portions from going through the cooling cycle simultaneously with the selected portions.

3,611,421
RECORDING BY VARYING THE LOCATION OF A MAGNETIC SPOT
Luc P. Benoit, Los Angeles, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed May 2, 1969, Ser. No. 821,394
Int. Cl. H01v 3/04
U.S. Cl. 346—74 MT 21 Claims



Methods and apparatus for displaying information in which a magnetic spot having a substantially predetermined configuration is shifted in a magnetic recording medium as a magnetic spot having that predetermined configuration and in response to the information to be displayed, and in which such variations of the magnetic spot are rendered visible or are printed out on a sheet of paper.

3,611,422
INGESTING CATCHERS FOR NONCONTACTING PRINTING APPARATUS
John K. Rourke, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Nov. 17, 1969, Ser. No. 877,252
Int. Cl. G01d 15/18
U.S. Cl. 346—75 10 Claims

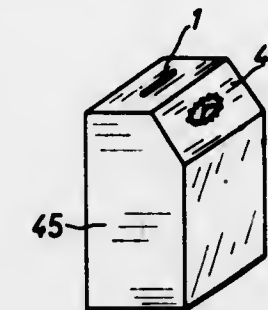


A noncontacting printing apparatus in which drops of ink are projected towards a moving web through an electrostatic field and in which certain drops may be given an electrostatic charge before passing through the field so that these drops are deflected from the web into an ink catcher. The ink catcher is formed of a tube having an elongated slot and a blade inserted in the slot with a screen member interposed between the blade and the edges of the slot so that ink droplets deflected onto the blade will pass into the interior of the tube and be withdrawn by a negative pressure imposed on the tube interior.

3,611,423
ELAPSE TIME RECORDER
Karl Rutsche, Bedastraße 44, Gossau, Switzerland
Filed June 11, 1969, Ser. No. 832,188
Int. Cl. G07c 1/08
U.S. Cl. 346—86 6 Claims

A method of, and apparatus for ascertaining time worked on stamped or punched cards wherein markings are made on

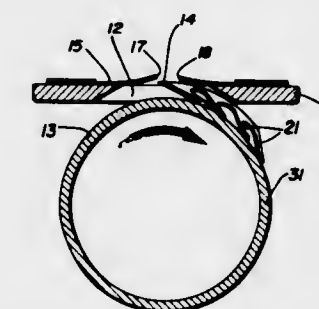
the card at the beginning and at the end, respectively, of the time worked, the later marking being displaced from the on its opposite edges both forwardly and laterally to produce tautness in the web at a marking means.



3,611,426
GRAPHIC RECORDER WITH CHART-TENSIONING MECHANISM
James F. Gordon, Arcadia, Calif., assignor to Zeta Research, Inc., Lafayette, Calif.
Filed Oct. 22, 1969, Ser. No. 868,339
Int. Cl. G01d 15/24; B65h 17/28
U.S. Cl. 346—136 5 Claims

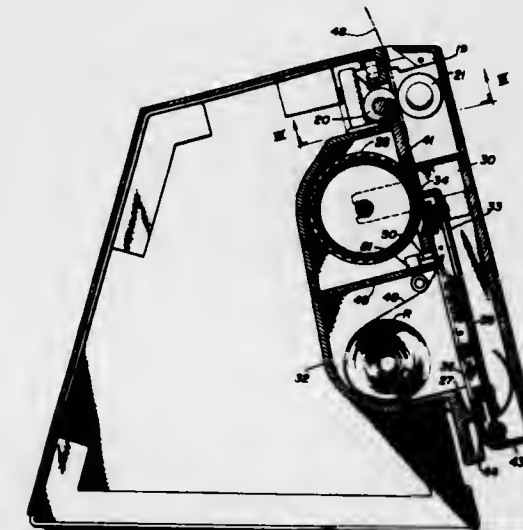
earlier one by a distance which is a directly measurable function of the time elapsed.

3,611,424
HELICAL ELECTRODE AND DRUM RECORDER
Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.
Filed Mar. 13, 1969, Ser. No. 806,795
Int. Cl. G01d 15/06
U.S. Cl. 346—101 9 Claims

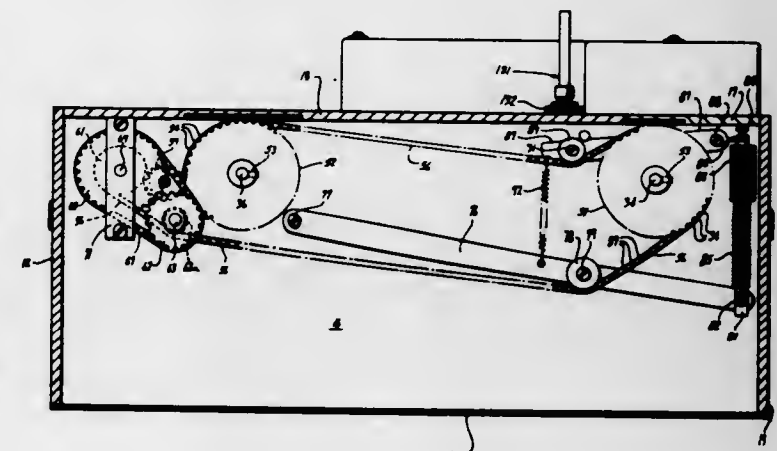


A recording capsule having a drum and helical electrode extending into a slot and having flexible shields on either side of the slot to define a narrow recording gap.

3,611,425
RECORDER
Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.
Filed Mar. 13, 1969, Ser. No. 806,801
Int. Cl. G01d 15/28
U.S. Cl. 346—101 6 Claims

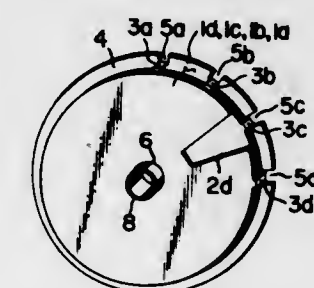


A recorder arranged to receive electrical signals and to convert them to visible indicia on a chemically treated web, wherein the web passes from a storage roll through a restricted passage and is pulled by means of rollers operating



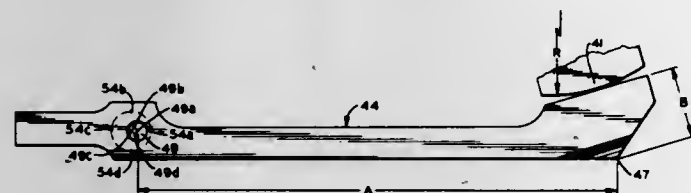
Graphic recorder for use with a strip chart having perforations along at least one edge and in which first and second sprockets are adapted to engage the perforations in the strip chart. First and second shafts are provided. The first sprocket is affixed to the first shaft and the second sprocket is mounted for yieldable rotational movement on the second shaft. Means including a flexible elongate element in the form of a belt is provided for driving the first and second shafts. Means is provided for engaging the flexible elongate element for causing rotation of said first sprocket relative to said second sprocket whereby tension can be applied to the strip chart disposed between the first and second sprockets.

3,611,427
LONGTIME RECORDING CHART SET
Masanori Kobayashi, 5-9, 2-chome, Honda Kokubunji-shi, Tokyo, and Yukimitsu Ubukata, 849-2, Asahi-cho, Funabashi, Chiba, both of Japan
Filed Mar. 3, 1970, Ser. No. 16,066
Claims priority, application Japan, Mar. 3, 1969, July 21, 1969, 44/15417; 44/68776
Int. Cl. G01d 15/32
U.S. Cl. 346—137 12 Claims



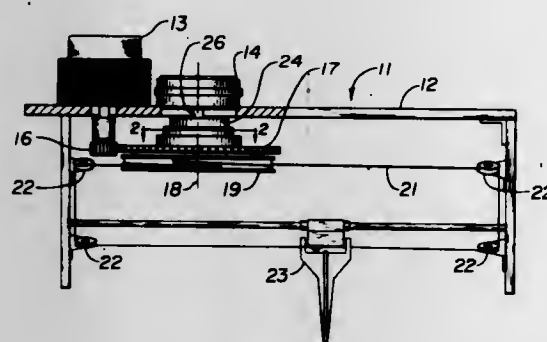
A set of longtime recording charts comprising disk-shaped charts each of which is formed with a sector-shaped cutout and a tab, and a disk-shaped chart base formed with square-shaped cutouts. The tabs are folded into the cutouts as the charts are stacked on the base, so that the assembly is joined as a unit. However, upon completion of the record on each chart, the recording operation is continued through the cutout of said chart onto the immediately underlying chart, while the already-recorded chart is separated from the set.

3,611,428
ADJUSTMENT FOR FACSIMILE RECEIVER HAVING A PLURALITY OF WRITING STYLI
 Ernest J. Okleshen, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
 Filed Nov. 22, 1968, Ser. No. 778,166
 Int. Cl. G01d 15/20
 U.S. Cl. 346-139 4 Claims



In a facsimile receiver having a plurality of writing styli which should be positioned in the same angular relation as the scanning elements of the associated facsimile transmitter, positioning of one or more of the styli is accomplished by pivoting the stylus to be adjusted on an eccentric which can be rotated until the stylus has the desired angular position, and the eccentric then locked in this position.

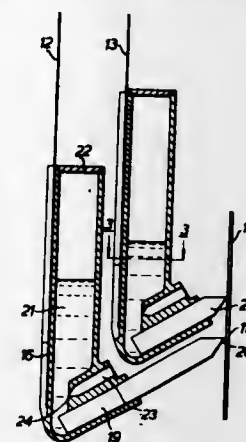
3,611,429
GRAPHIC RECORDER DRIVE ASSEMBLY
 Vincent J. East, Indianapolis, Ind., assignor to Esterline Corporation, New York, N.Y.
 Filed Feb. 13, 1969, Ser. No. 804,737
 Int. Cl. G01d 15/16
 U.S. Cl. 346-139 13 Claims



A graphic recorder has a string drive for the recording pen, the string being secured to and passing around a pulley mounted to a clutch hub. A potentiometer is also mounted to the clutch hub. A servomotor drives a bull gear having a clutch ring affixed thereto. The clutch ring drives the hub through a pair of "O"-rings, frictionally fit therebetween, the torque capacity being adjustable by an axially adjustable retainer.

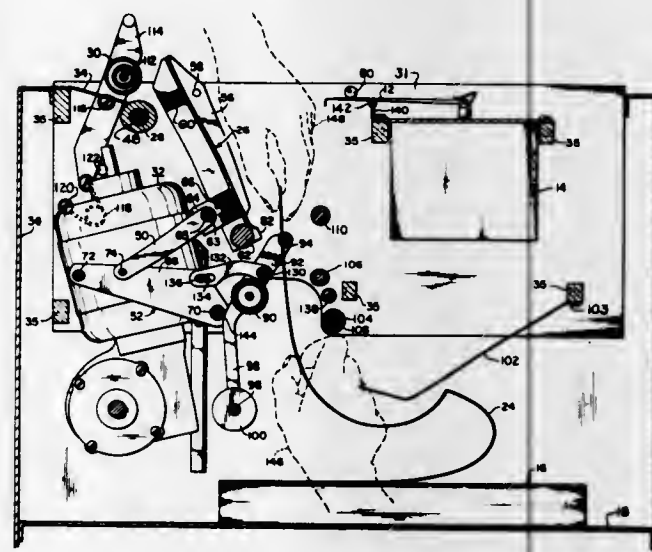
3,611,430
RECORDING PEN
 George Watchorn, Chequers Park; James John Hurley, East Barnet, and Basil Parmlinter Thornber-Rosevere, Thames Ditton, all of England, assignors to Cambridge Industrial Instruments Limited
 Filed Aug. 7, 1969, Ser. No. 848,288
 Claims priority, application Great Britain, Aug. 8, 1968, 37,959/68
 Int. Cl. G01d 15/16
 U.S. Cl. 346-140 5 Claims
 A fiber-tip pen for use in recording apparatus, having a vertical reservoir closed at its upper end, a fiber rod inclined

upwardly from the lower end of the reservoir, and an air inlet



aperture provided above and adjacent the fiber rod.

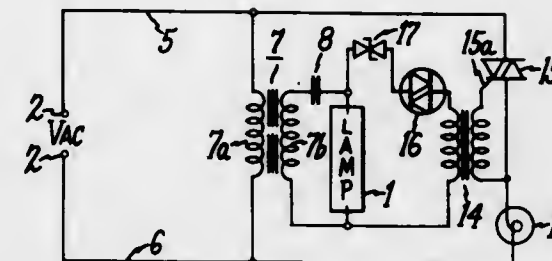
3,611,431
EASY-LOADING CHART TRANSPORT ARRANGEMENT
 Carl W. Rosmanith, Des Plaines, Ill., assignor to Beckman Instruments, Inc.
 Filed Apr. 9, 1969, Ser. No. 814,606
 Int. Cl. G01d 11/24, 15/28
 U.S. Cl. 346-145 12 Claims



The horizontal writing table, back tension roller and initial guide bar of the chart transport mechanism of a direct-writing oscillograph recorder are connected to a common actuating member which may be moved to a loading position and results in the writing table being tilted downwardly and away from the recording pens of the recorder and the back tension roller and initial guide bar being moved away from their normal positions to provide a central opening in the chart transport mechanism through which the end of a recording chart may be easily fed without damage to the recording pens. Upon movement of the actuating member back to its normal recording position the writing table, back tension roller and initial guide bar are all automatically brought back into the correct registration with the other elements of the transport.

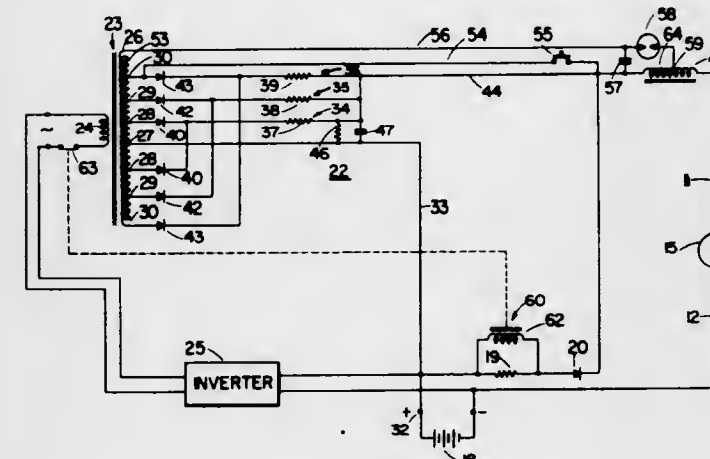
3,611,432
COMBINED OPERATING CIRCUIT FOR GASEOUS DISCHARGE AND INCANDESCENT LAMPS
 Robert E. Babcock, Hendersonville; Charlie B. Turner, Hendersonville, and Howard T. Jones, Flat Rock, all of N.C., assignors to General Electric Company
 Filed June 2, 1969, Ser. No. 829,258
 Int. Cl. H05b 41/46
 U.S. Cl. 315-92 9 Claims
 Ballast circuit for a gaseous discharge lamp is combined with an incandescent lamp circuit and relay for turning the

incandescent lamp on when the gaseous discharge lamp is DC component of the rectified current so that the motor is fed with an AC current having a higher frequency than that



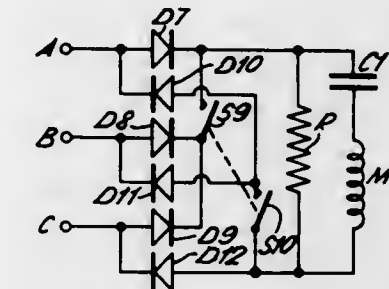
extinguished.

3,611,433
PLASMA POWER SUPPLY FOR ARC DISCHARGE DEVICE
 Stephen J. Erst, and Ralph H. Beardsley, both of Fort Wayne, Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
 Filed May 12, 1969, Ser. No. 823,802
 Int. Cl. H05b 37/00
 U.S. Cl. 315-161 16 Claims



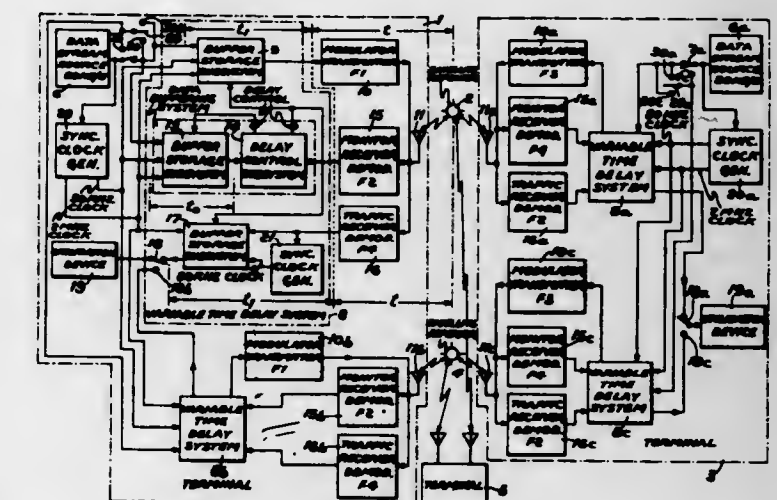
A plasma power supply for use in a starting and operating system for a high-intensity, high-pressure arc discharge lamp, such as a xenon lamp. A high-voltage, alternating current source is serially coupled in the lamp circuit for starting the lamp, and a low-voltage, direct current source is coupled across the lamp circuit by a current-limiting ballast resistor and isolating diode. The plasma power supply comprises a plurality of plasma voltage supply circuits respectively having one side coupled to progressively higher voltage points on a transformer secondary winding by diodes, the other sides being common and coupled to a common point on the transformer winding. Each of the supply circuits has a current-limiting resistor therein, the common side of the supply circuits being connected to one side of the low-voltage source and the other sides being connected together and to the lamp circuit. The supply circuit resistors are proportioned to back-bias the diodes so as sequentially to apply progressively lower voltages to the lamp circuit in response to increase in the current flow in the lamp following starting, this proportioning being such that the voltage/current characteristic of the applied voltages generally approximates the voltage/current characteristic of the lamp.

3,611,434
IMPROVED FREQUENCY MULTIPLYING ELECTRICAL CIRCUITS FOR MOTOR SPEED CONTROL
 Clive Lynn Jones, Bishopston, Wales, assignor to National Research Development Corporation
 Filed June 3, 1969, Ser. No. 829,910
 Claims priority, application Great Britain, June 7, 1968, Jan. 2, 1969, 27259/68; 325/69
 Int. Cl. H02p 5/40
 U.S. Cl. 318-227 3 Claims
 An electric motor is fed through a rectifying circuit with a bypass circuit connected across the motor for removing the



of the supply and means are provided for varying the speed of the motor.

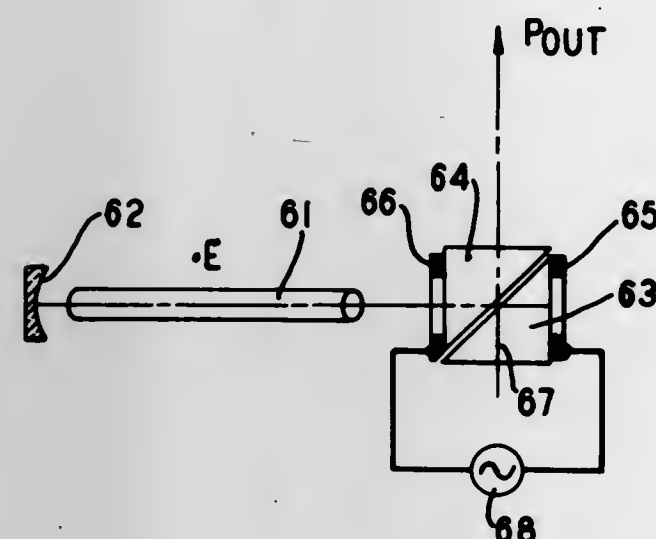
3,611,435
SATELLITE COMMUNICATION SYSTEM
 Bernard Cooper, Fair Lawn, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
 Filed Mar. 24, 1969, Ser. No. 809,921
 Int. Cl. H04b 7/20
 U.S. Cl. 325-6 28 Claims



Data time delay compensation is employed to establish a constant and equal signal path delay or length between a satellite and earth terminal on both the up and down links dependent of satellite motion. In a ground terminal, a digital data bit stream conveying information is applied to a first variable time delay circuit prior to transmission and also to a second variable time delay circuit. After passing through the satellite, a digital-analog autocorrelator receives the data stream from the satellite and also from the second variable delay circuit to produce a control signal to control, in opposite directions, the delay of the first and second variable delay circuits to maintain a constant length up link. A third variable time delay circuit is coupled to the output of the terminal receiver and is controlled by the autocorrelator, in the same sense as the first variable delay circuit, to maintain the down link constant and equal in length to the up link. Each of the variable delay circuits include magnetic core storage means with read-in and readout control with the time delay control of the data stream being provided by a readout bistable circuit wherein the bits of the data stream have their widths appropriately adjusted. The employment of a backward counting binary counter is provided in the delay circuits whose count is preset to bring the delay between the data streams into the correlator into the control range of the autocorrelator. Duplication of the above equipment in the terminal can be employed for instantaneous handover to another mutually visible satellite. At least a second terminal including duplicate equipment for data time delay compensation will enable two-way communication through any mutually visible satellite, time-division multiple access to a mutually visible satellite by the terminals involved and instantaneous communication handover to another mutually visible satellite.

3,611,436
MODE-SELECTIVE LASER USING RESONANT PRISMS
 William W. Rigrod, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
 Continuation-in-part of application Ser. No. 627,493, Mar. 31, 1967. This application Jan. 24, 1969, Ser. No. 795,137
 Int. Cl. H01s 3/08, 3/10
 U.S. Cl. 331-94.5

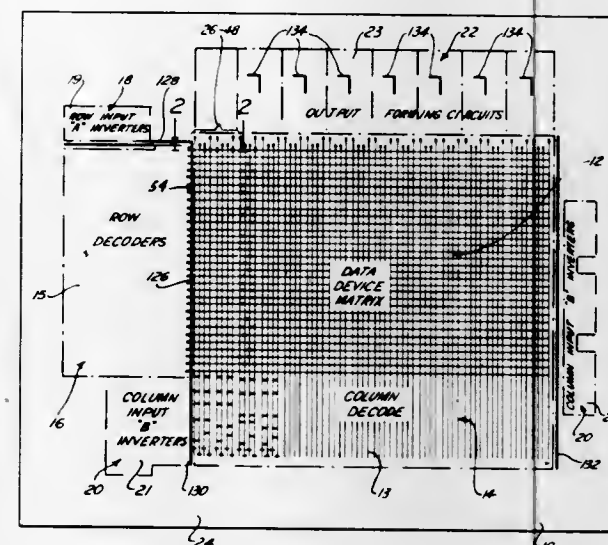
12 Claims



An interferometric axial-mode-selective laser resonator in which one or more resonant prisms form the auxiliary resonator or resonators. Tandem vernier types may provide single-axial-mode operation in solid-state lasers in situations for which it was not previously feasible. In other embodiments a single prism resonator with three reflective surfaces forms a stable and tunable filter for wavelength and axial-mode selection. Wide-band output coupling modulation can be advantageously employed with a resonant prism of electro-optic material.

3,611,437
READ-ONLY MEMORY WITH OPERATIVE AND INOPERATIVE DATA DEVICES LOCATED AT ADDRESS STATIONS AND WITH MEANS FOR CONTROLLABLY CHARGING AND DISCHARGING APPROPRIATE MODES OF THE ADDRESS STATIONS
 Andrew G. Varadi, Briarwood, Queens, and Richard B. Rubinstein, New York, both of N.Y., assignors to General Instrument Corporation, Newark, N.J.
 Filed Jan. 16, 1969, Ser. No. 791,759
 Int. Cl. G11c 11/40, 17/00
 U.S. Cl. 340-173 SP

22 Claims



A permanent storage memory unit comprises a plurality of information bits stored in a predetermined manner at a plurality of address stations at either a "0" or a "1" level. The logic level at a particular address station is determined by the presence or absence of a potentially operative data-switching device. The address stations may be defined by the respective intersections of a plurality of rows and columns. The address-selecting means include column-selecting circuitry merged with the data devices at each of the columns, and row select circuitry operatively connected to the data devices.

DESIGNS

OCTOBER 5, 1971

222,123
POCKET TOOL
 Alwin J. Stahel, New Brighton, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
 Filed June 29, 1970, Ser. No. 23,752
 Term of patent 14 years
 Int. Cl. D8-05
 U.S. Cl. D8-99



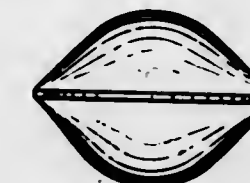
222,124
BOTTLE
 Andre Courreges, Neuilly, France, assignor to Courreges Parfums, Paris, France
 Filed Jan. 23, 1970, Ser. No. 21,054
 Term of patent 14 years
 Int. Cl. D9-01
 U.S. Cl. D9-145



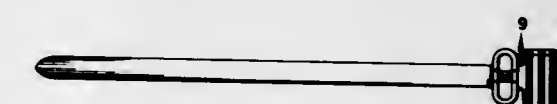
222,125
JAR
 Bruce L. Roberts, Rossford, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
 Filed May 27, 1970, Ser. No. 23,163
 Term of patent 14 years
 Int. Cl. D9-01
 U.S. Cl. D9-162



222,126
COLLAPSIBLE TUBE OR THE LIKE
 William Sheehan, 146-14 45th Ave., Flushing, N.Y. 11355
 Filed Apr. 2, 1970, Ser. No. 22,209
 Term of patent 14 years
 Int. Cl. D9-06
 U.S. Cl. D9-194



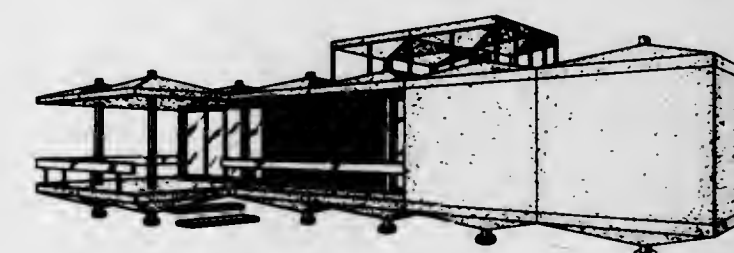
222,127
BUNDLING STRAP
 Richard S. Schwartz, Union, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Mar. 17, 1970, Ser. No. 21,930
 Term of patent 14 years
 Int. Cl. D9-06
 U.S. Cl. D9-252



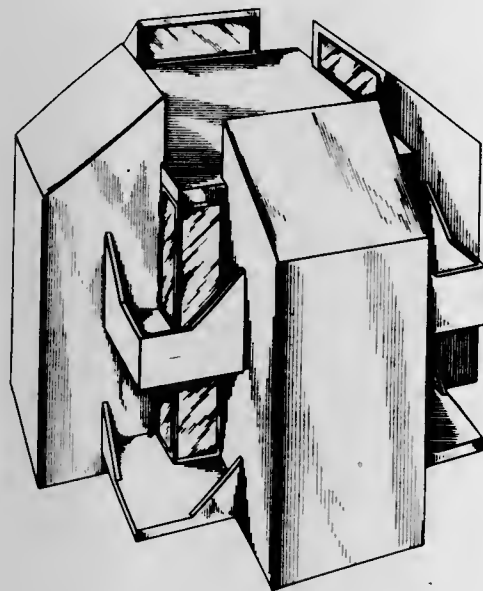
222,128
BUNDLING STRAP
 Richard S. Schwartz, Union, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Mar. 17, 1970, Ser. No. 21,931
 Term of patent 14 years
 Int. Cl. D9-06
 U.S. Cl. D9-252



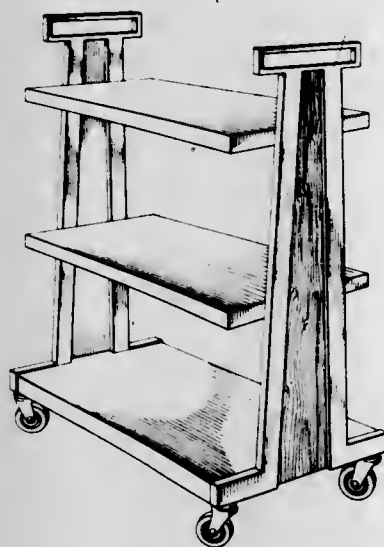
222,129
MODULAR BUILDING
 Donald V. Baker, Michael D. Reifel, and Lawrence A. Samuelson, Houston, Tex., assignors to Reifel Engineering Company, Houston, Tex.
 Filed Nov. 4, 1969, Ser. No. 19,929
 Term of patent 14 years
 Int. Cl. D25-04
 U.S. Cl. D13-1



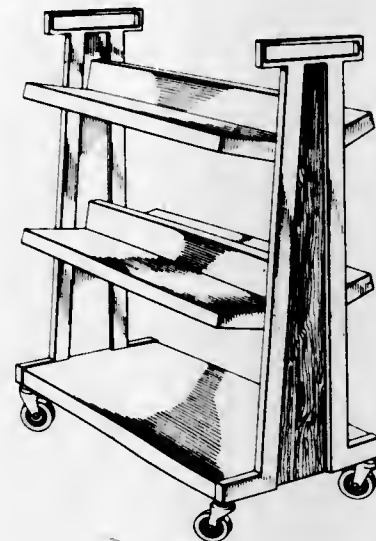
222,130
HOUSE OR SIMILAR ARTICLE
 James Reid Thomson, Philadelphia, Pa., assignor to Construction Materials International, Inc., Fort Washington, Pa.
 Continuation-in-part of design application Ser. No. 19,606, Oct. 17, 1969. This application May 8, 1970, Ser. No. 22,894
 Term of patent 14 years
 Int. Cl. D25—03
 U.S. Cl. D13—1



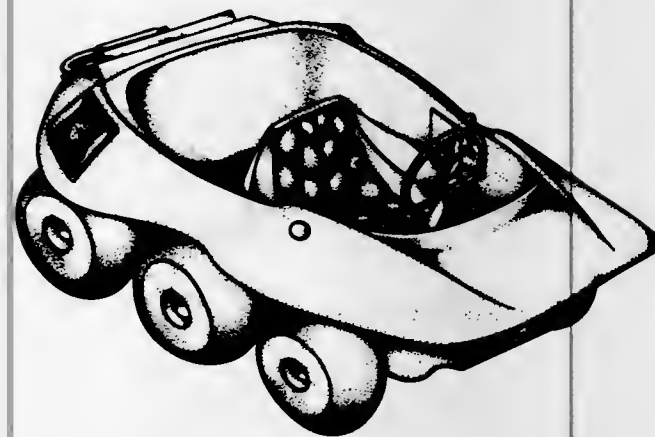
222,131
PORTABLE CART
 Raymond E. Benson, Robert L. Baumgartner, and Jay A. Wickum, Forest Park, Ill., assignors to Thomas Truck & Caster Co.
 Filed Apr. 24, 1970, Ser. No. 22,633
 Term of patent 14 years
 Int. Cl. D12—02
 U.S. Cl. D14—3



222,132
PORTABLE CART
 Raymond E. Benson, Robert L. Baumgartner, and Jay A. Wickum, Forest Park, Ill., assignors to Thomas Truck & Caster Co.
 Filed Apr. 24, 1970, Ser. No. 22,634
 Term of patent 14 years
 Int. Cl. D12—02
 U.S. Cl. D14—3



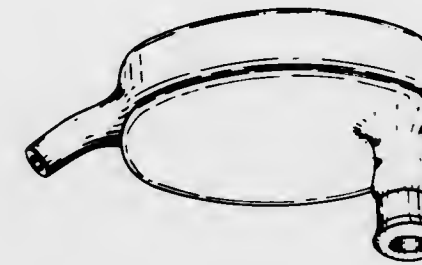
222,133
SPORTS VEHICLE
 John A. Plessinger, 3475 Village Drive, Apt. 26, Middletown, Ohio 45042
 Filed Sept. 21, 1970, Ser. No. 25,072
 Term of patent 14 years
 Int. Cl. D12—08
 U.S. Cl. D14—3



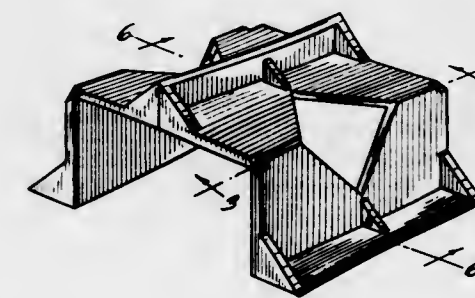
222,134
COVER FOR GEAR SHIFT MOUNTING
 George H. Hurst, Jr., Jenkintown, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.
 Filed Dec. 5, 1969, Ser. No. 20,379
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D14—6



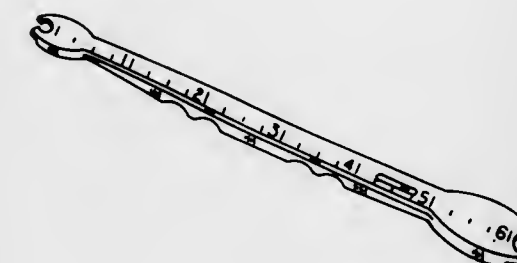
222,135
LABORATORY SAMPLING DEVICE FOR COLLECTING RESIDENT FLORA ON A SKIN SURFACE
 Thomas F. McNamara, North Caldwell, and William A. Campbell, Chester, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
 Filed Apr. 20, 1970, Ser. No. 22,505
 Term of patent 14 years
 Int. Cl. D24—02
 U.S. Cl. D16—1



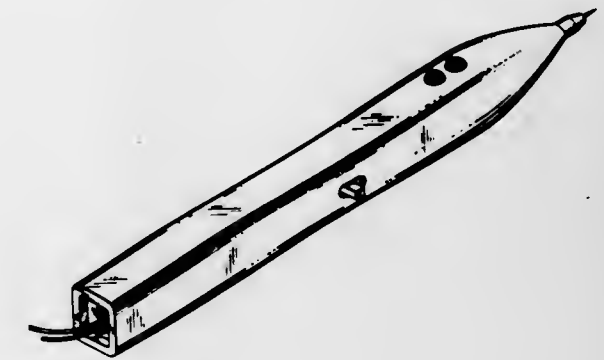
222,136
BLOCK MODULE FOR BUILDING STATUES, ART PIECES OR THE LIKE
 Stanley Tigerman, Chicago, Ill., assignor to Stanley Tigerman, Ltd., Chicago, Ill.
 Filed Nov. 24, 1969, Ser. No. 20,229
 Term of patent 14 years
 Int. Cl. D25—01
 U.S. Cl. D18—2



222,137
FISHERMAN'S TOOL
 Ferdinand F. Salzmann, Box 5332, Madison, Wis. 53702
 Filed Aug. 21, 1970, Ser. No. 24,641
 Term of patent 14 years
 Int. Cl. D22—05
 U.S. Cl. D22—31



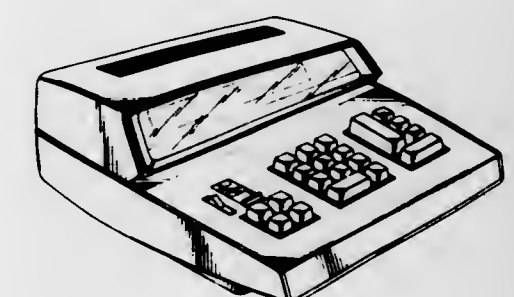
222,138
DIGITAL TEST PROBE
 James A. Palmer, Willingboro, N.J., and Richard L. Longcoy, Lansdale, Pa., assignors to Nu-Concept Computer Company, Norristown, Pa.
 Filed Apr. 13, 1970, Ser. No. 22,414
 Term of patent 14 years
 Int. Cl. D11—08
 U.S. Cl. D26—1



222,139
CABINET FOR HOUSING ELECTRONIC CONTROLS
 Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
 Filed Mar. 12, 1970, Ser. No. 21,872
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



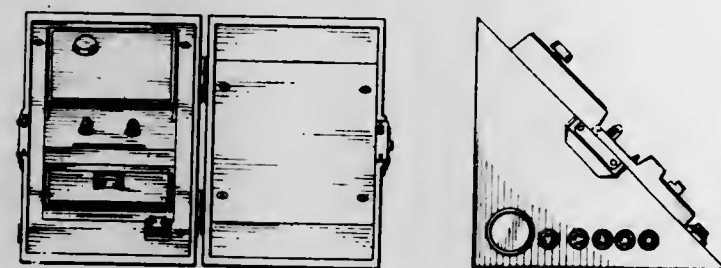
222,140
ELECTRONIC CALCULATOR
 Takehiko Nakanishi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
 Filed Aug. 6, 1970, Ser. No. 24,347
 Claims priority, application Japan Feb. 25, 1970
 Term of patent 7 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



222,141
COMBINED TAPE PLAYER AND SPEAKER
ENCLOSURE THEREFOR

Lawrence Mace, New York, N.Y., assignor to
Meredith Corporation
Filed Feb. 24, 1970, Ser. No. 21,632
Term of patent 14 years
Int. Cl. D14—02

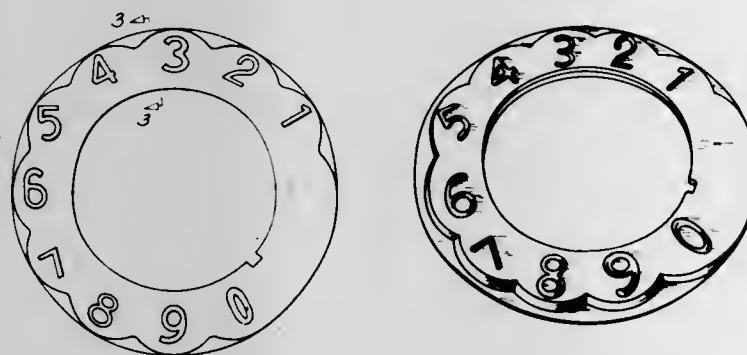
U.S. Cl. D26—14



222,142
DIALING AID FOR VISUALLY HANDICAPPED

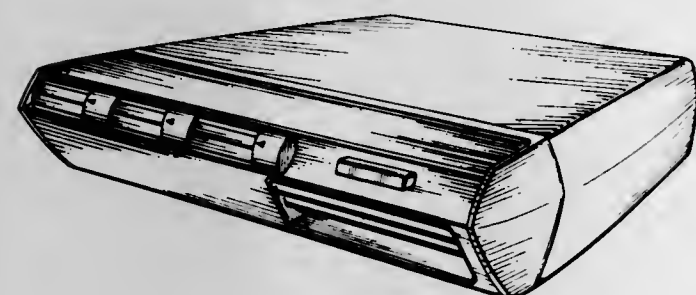
Ruth L. Barr, 53 Webster Acres,
Webster Groves, Mo. 63119
Filed Mar. 16, 1970, Ser. No. 21,926
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14



222,143
STEREO-TAPE PLAYER
Robert P. Maniaci, Downey, Calif., assignor to California
Auto Radio Inc., Downey, Calif.
Filed Mar. 31, 1970, Ser. No. 22,145
Term of patent 14 years
Int. Cl. D14—02

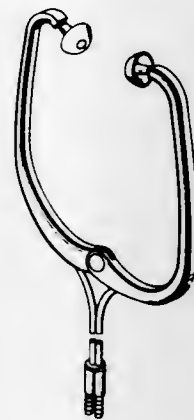
U.S. Cl. D26—14



222,144
SOUND TUBE HEAD SET
Thomas Albert Scanlon, Barrington, R.I., assignor to
Avid Corporation, Providence, R.I.

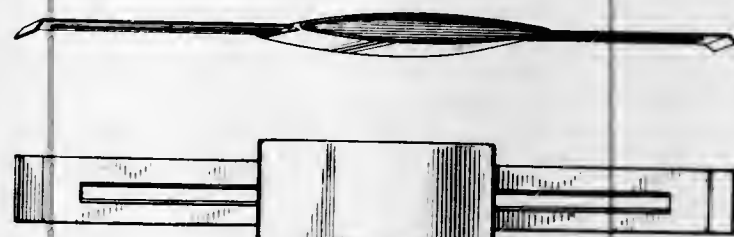
Filed June 8, 1970, Ser. No. 23,348
Term of patent 14 years
Int. Cl. D14—01; D24—02

U.S. Cl. D26—14



222,145
TELEVISION ANTENNA
John R. Winegard, 3000 Kirkwood St.,
Burlington, Iowa 52601
Filed Sept. 21, 1970, Ser. No. 25,124
Term of patent 14 years
Int. Cl. D14—03

U.S. Cl. D26—14

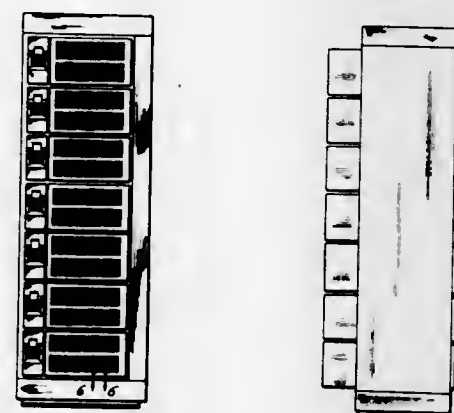


222,146
ALTERNATING TO DIRECT CURRENT
CONVERTER

Thomas N. Urquhart, Troy, Michael A. Koltuniak, War-
ren, and Robert G. Plantholt, Rochester, Mich., as-
signors to Controlled Power Corporation, Farmington,
Mich.

Filed July 18, 1969, Ser. No. 18,274
Term of patent 14 years
Int. Cl. D13—02

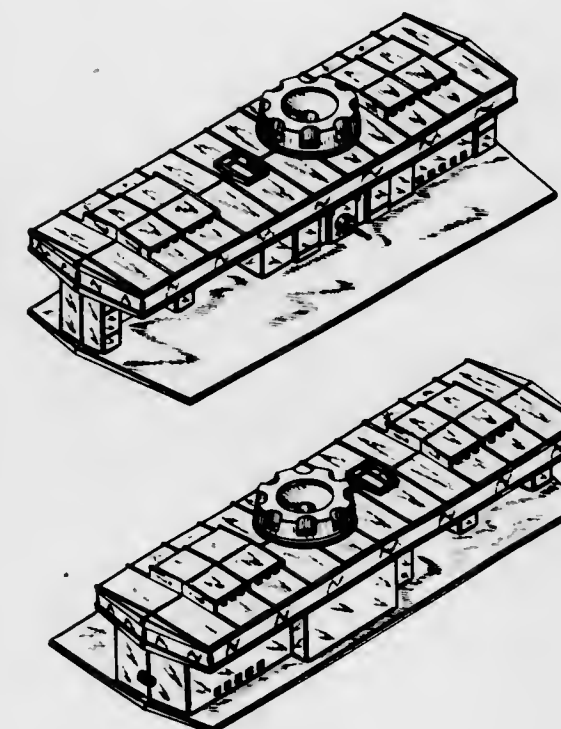
U.S. Cl. D26—15



222,147
CHARGER FOR RECHARGEABLE BATTERY
DRIVEN TOY VEHICLES OR THE LIKE

Paul Tam, Los Angeles, Calif., assignor to
Mattel, Inc., Hawthorne, Calif.
Filed Mar. 12, 1970, Ser. No. 21,871
Term of patent 14 years
Int. Cl. D13—01; D21—02

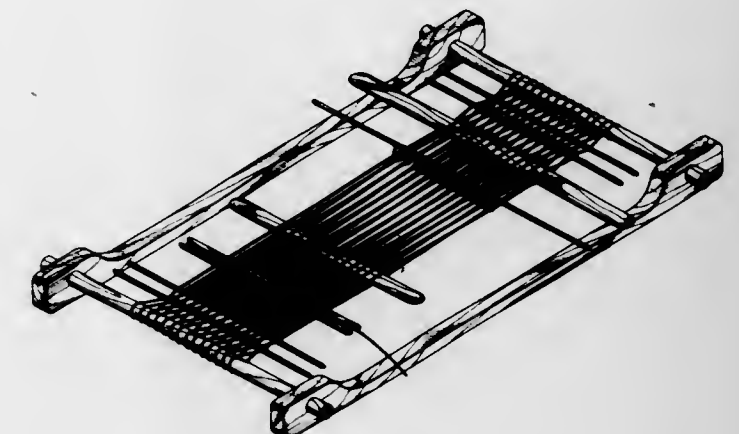
U.S. Cl. D26—15



222,149
WALL HANGING HAND LOOM COMPRISING A
HAND LOOM FRAME AND PARTIALLY
WORKED MATERIAL

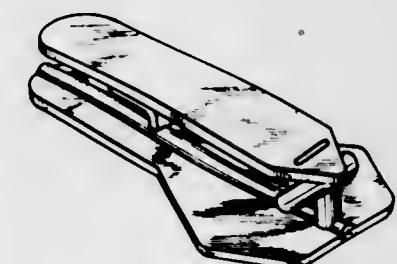
James E. Early, 1245 4th St. SW., Apt. E 511,
Washington, D.C. 20024
Filed Apr. 13, 1970, Ser. No. 22,404
Term of patent 14 years
Int. Cl. D11—99

U.S. Cl. D29—23



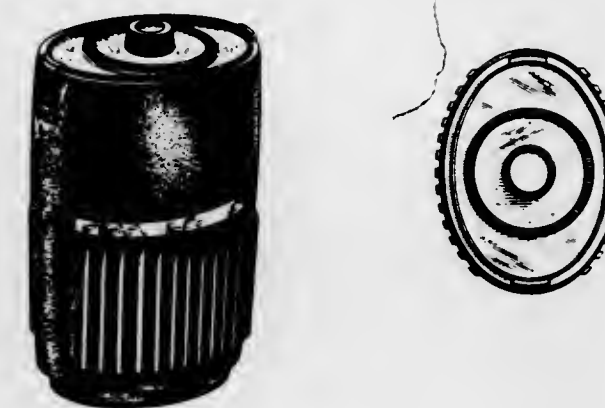
222,150
ANIMAL MARKING TAG
Leo M. McCarty, 2583 S. Dexter, Denver, Colo. 80222
Filed Aug. 26, 1970, Ser. No. 24,713
Term of patent 14 years
Int. Cl. D30—99

U.S. Cl. D30—43



222,148
BATTERY CHARGING UNIT
Peter T. Quinn, Littleton, Colo., assignor to
Honeywell Inc., Minneapolis, Minn.
Original design application June 6, 1969, Ser. No. 17,555,
now Patent No. 219,031, dated Oct. 27, 1970. Divided
and this application Mar. 17, 1970, Ser. No. 21,932
Term of patent 14 years
Int. Cl. D13—02

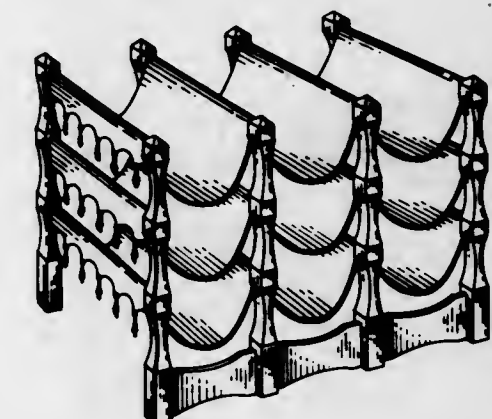
U.S. Cl. D26—15



222,151
SLING TYPE STORAGE RACK FOR
WINE BOTTLES

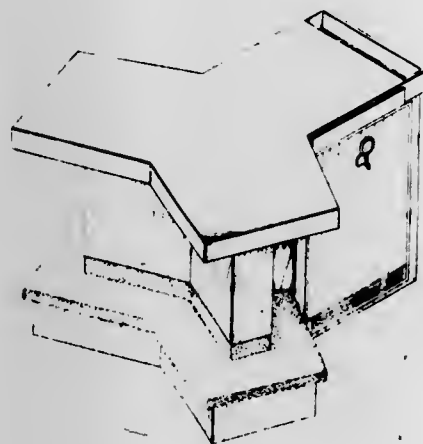
Eugene J. Majewski, 121 Elmore St.,
Park Ridge, Ill. 60068
Filed Mar. 16, 1970, Ser. No. 21,909
Term of patent 14 years
Int. Cl. D6—99

U.S. Cl. D33—3



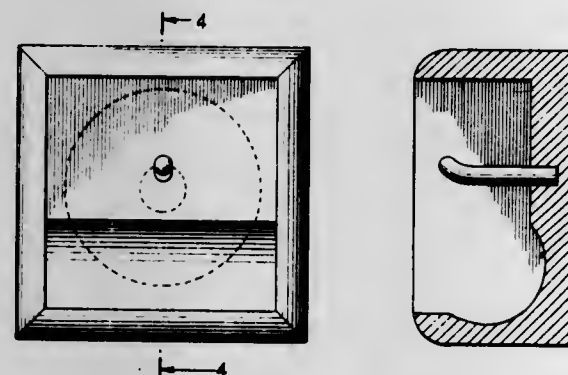
222,152
BEVERAGE DISPENSING BAR
 Robert D. Botterbusch, Jr., 2297 Church Road,
 York, Pa. 17404
 Filed Apr. 9, 1970, Ser. No. 22,350
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D33—19



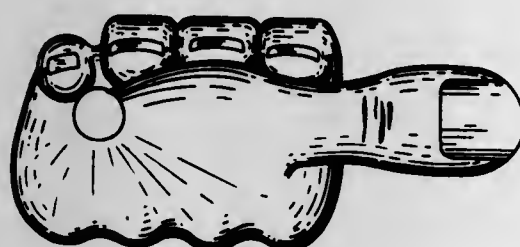
222,153
WALL RECEPTACLE FOR SOAP OR THE LIKE
 Paolo Cilia, 638 Ovington Ave., Brooklyn, N.Y. 11209
 Filed Feb. 18, 1970, Ser. No. 21,501
 Term of patent 14 years
 Int. Cl. D6—01

U.S. Cl. D33—25



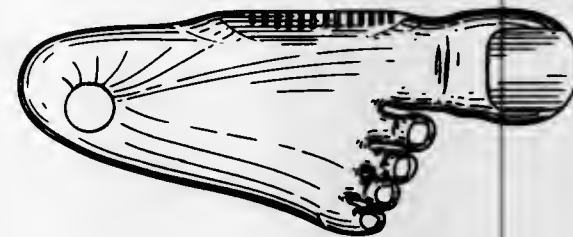
222,154
GOLF PUTTER HEAD
 David L. Phares, 2330 W. Whitton,
 Phoenix, Ariz. 85015
 Filed Oct. 3, 1969, Ser. No. 19,400
 Term of patent 14 years
 Int. Cl. D21—02

U.S. Cl. D34—5



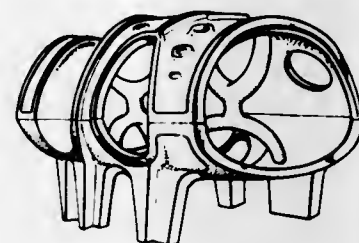
222,155
GOLF PUTTER HEAD
 David L. Phares, 2330 W. Whitton,
 Phoenix, Ariz. 85015
 Filed Oct. 3, 1969, Ser. No. 19,401
 Term of patent 14 years
 Int. Cl. D21—02

U.S. Cl. D34—5



222,156
PLAYGROUND CLIMBER
 James E. Miller, Birmingham, Mich., assignor to
 Form, Incorporated, South Lyon, Mich.
 Filed June 18, 1970, Ser. No. 23,562
 Term of patent 14 years
 Int. Cl. D21—03

U.S. Cl. D34—5



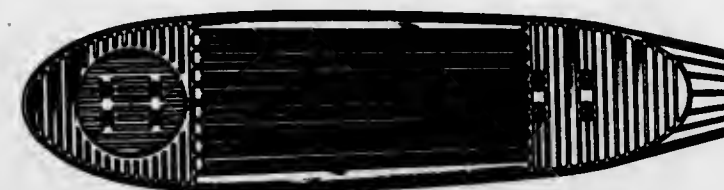
222,157
TETHER TOY
 David G. Hovde, Box 481, and Lowell R. Martinson,
 Rte. 2, both of Twin Valley, Minn. 56584
 Filed Apr. 3, 1970, Ser. No. 22,230
 Term of patent 14 years
 Int. Cl. D21—02

U.S. Cl. D34—15



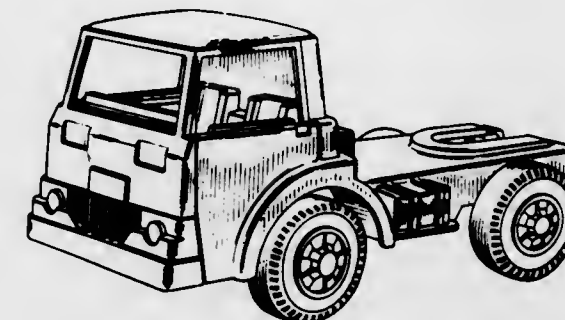
222,158
SKATE BOARD
 Chrespin W. Noches, 336 Mar Vista Ave.,
 Pasadena, Calif. 91106
 Filed June 1, 1970, Ser. No. 23,222
 Term of patent 14 years
 Int. Cl. D21—01

U.S. Cl. D34—15



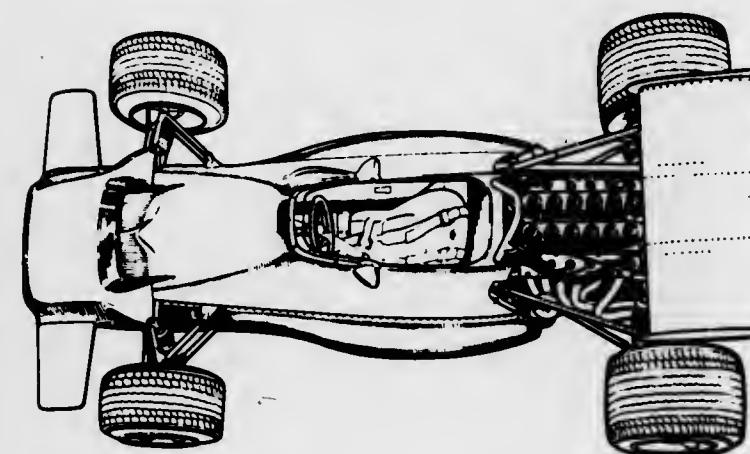
222,159
TOY TRUCK
 Louis G. Muys and Albert G. Keller, Chicago, Ill.,
 assignors to Strombecker Corporation
 Filed June 29, 1970, Ser. No. 23,738
 Term of patent 14 years
 Int. Cl. D21—01

U.S. Cl. D34—15



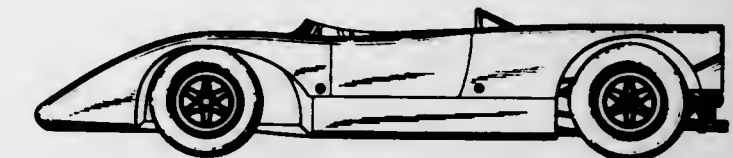
222,160
MODEL RACING CAR
 Anthony Cyril Rudd, Norwich, England, assignor to
 Rubery, Owen & Company Limited, Darlaston,
 Wednesbury, England
 Filed Aug. 7, 1970, Ser. No. 24,363
 Claims priority, application Great Britain Feb. 10, 1970
 Term of patent 7 years
 Int. Cl. D21—02

U.S. Cl. D34—15



222,161
MODEL RACING CAR
 Eric Harrison Broadley, Pangborne, near Reading, Eng-
 land, assignor to Lola Cars Limited, Slough, England
 Filed Sept. 2, 1970, Ser. No. 24,813
 Claims priority, application Great Britain Mar. 9, 1970
 Term of patent 7 years
 Int. Cl. D21—01

U.S. Cl. D34—15



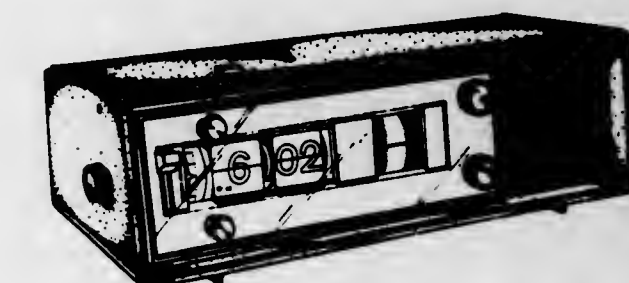
222,162
CLOCK RADIO
 Sadao Tsukamoto, Suita, and Setsuo Miyanaga, Neya-
 gawa, Japan, assignors to Matsushita Electric In-
 dustrial Co., Ltd., Osaka, Japan
 Filed Oct. 29, 1969, Ser. No. 19,829
 Claims priority, application Japan May 15, 1969
 Term of patent 14 years
 Int. Cl. D10—01

U.S. Cl. D42—7

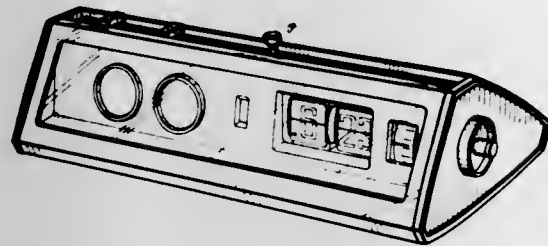


222,163
CLOCK RADIO
 Setsuo Miyanaga and Masaki Miyamoto, Osaka, Japan
 assignors to Matsushita Electric Industrial Co., Ltd.,
 Osaka, Japan
 Filed July 22, 1970, Ser. No. 24,058
 Claims priority, application Japan Mar. 19, 1970
 Term of patent 14 years
 Int. Cl. D10—01

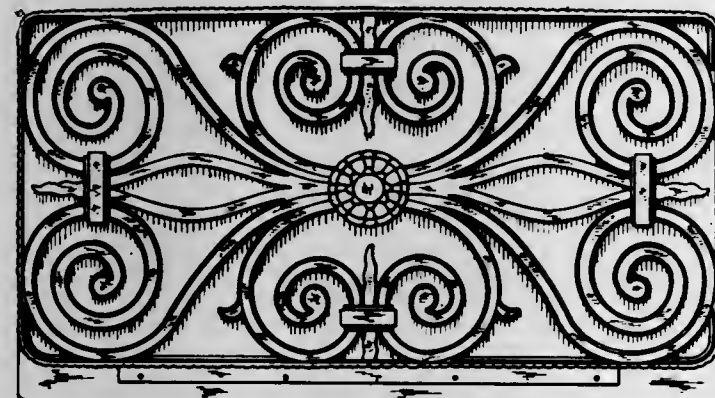
U.S. Cl. D42—7



222,164
CLOCK RADIO
 Kikuo Ohta, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Oct. 29, 1969, Ser. No. 19,826
 Claims priority, application Japan May 15, 1969
 Term of patent 14 years
 Int. Cl. D10—01
 U.S. Cl. D42—7



222,165
BREAD BOX
 Jack Solomon, Island Park, N.Y., assignor to Lincoln Metal Products Corporation, Brooklyn, N.Y.
 Filed Aug. 7, 1970, Ser. No. 24,366
 Term of patent 14 years
 Int. Cl. D7—99
 U.S. Cl. D44—6



222,166
CANISTER
 Jack Solomon, Island Park, N.Y., assignor to Lincoln Metal Products Corporation, Brooklyn, N.Y.
 Filed Aug. 7, 1970, Ser. No. 24,368
 Term of patent 14 years
 Int. Cl. D7—99
 U.S. Cl. D44—6



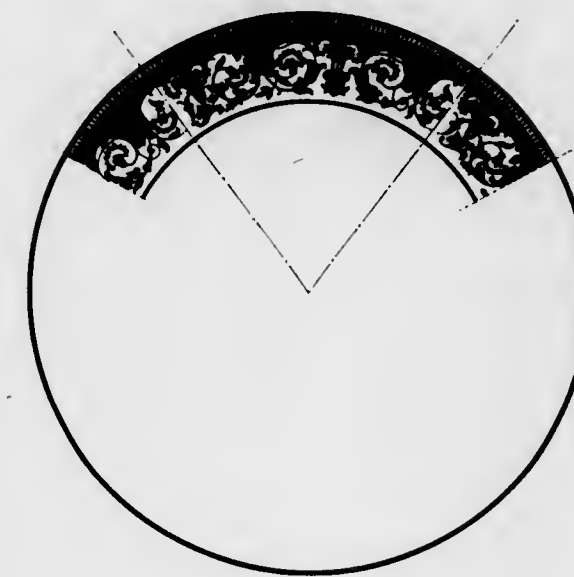
222,167
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,848
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15



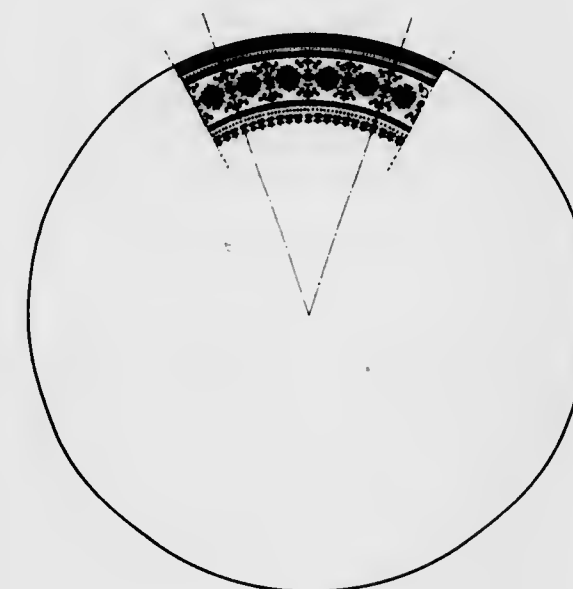
222,168
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,849
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15



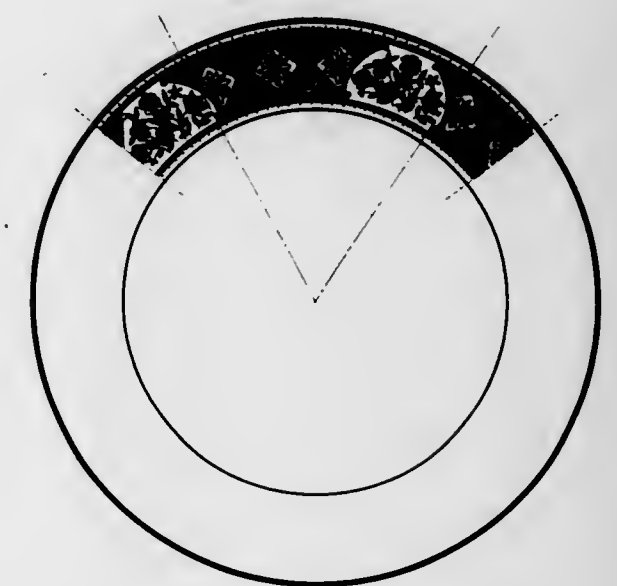
222,169
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,850
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15



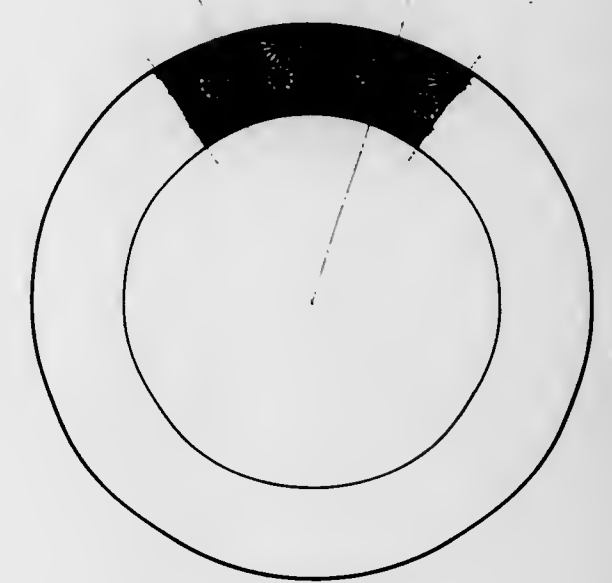
222,170
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,851
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15



222,171
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,852
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15

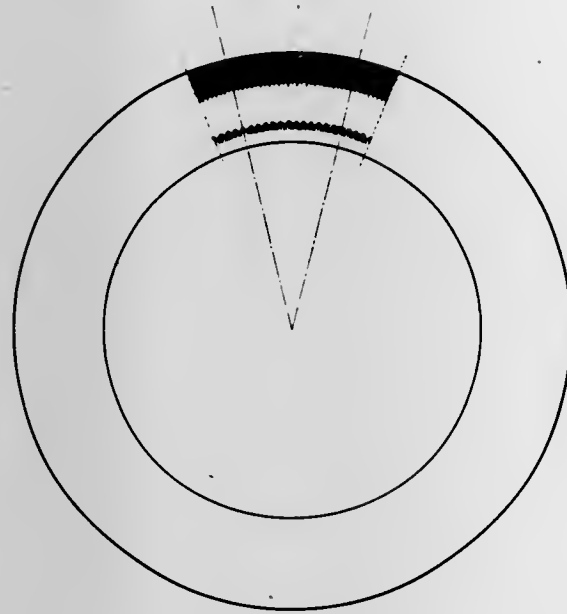


222,172
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,853
 Term of patent 7 years
 Int. Cl. D7—01
 U.S. Cl. D44—15



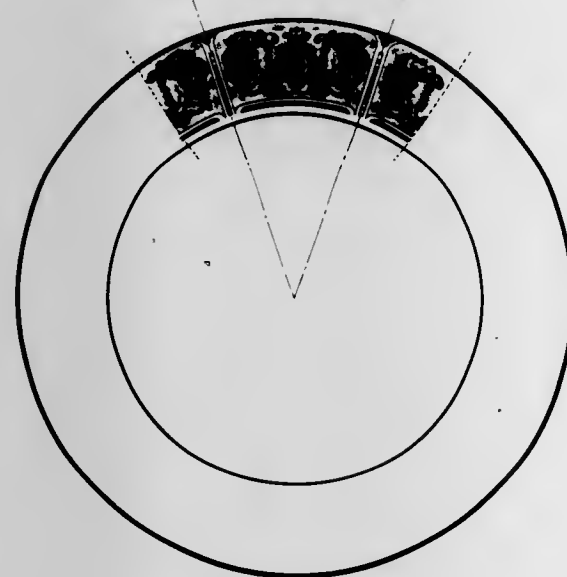
222,173
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to
 Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,854
 Term of patent 7 years
 Int. Cl. D7—01

U.S. Cl. D44—15



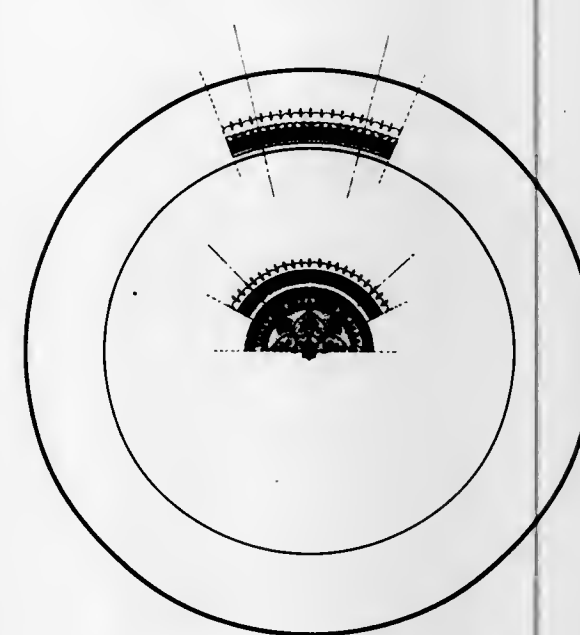
222,174
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to
 Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,855
 Term of patent 7 years
 Int. Cl. D7—01

U.S. Cl. D44—15



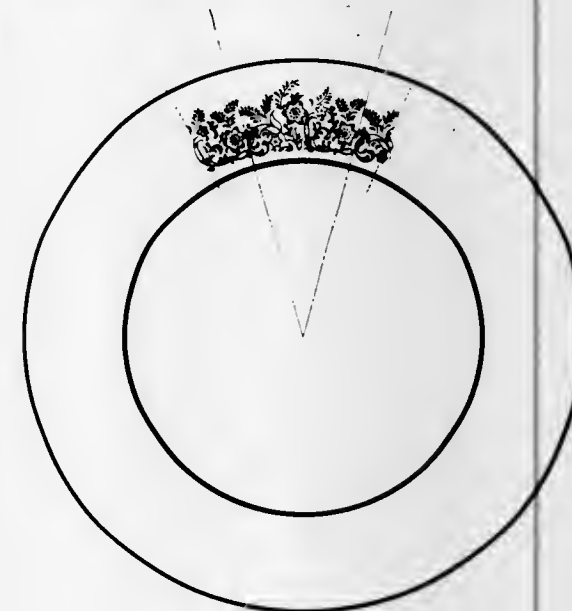
222,175
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to
 Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,856
 Term of patent 7 years
 Int. Cl. D7—01

U.S. Cl. D44—15



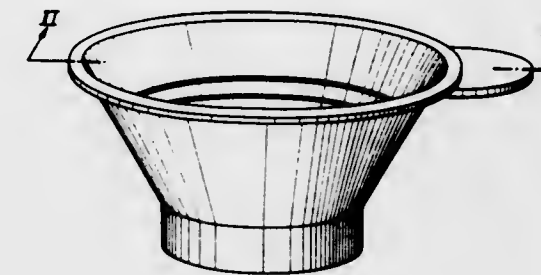
222,176
PLATE OR SIMILAR ARTICLE
 Ryotaro Takeoka, Aichiken, Japan, assignor to
 Noritake Co., Inc., New York, N.Y.
 Filed May 6, 1970, Ser. No. 22,857
 Term of patent 7 years
 Int. Cl. D7—01

U.S. Cl. D44—15



222,177
MIXING BOWL
 Henri Tondou, Karlsruhe, Germany, assignor to
 L'Oreal, Paris, France
 Filed July 13, 1970, Ser. No. 23,925
 Claims priority, application France Mar. 26, 1970
 Term of patent 14 years
 Int. Cl. D7—01

U.S. Cl. D44—15



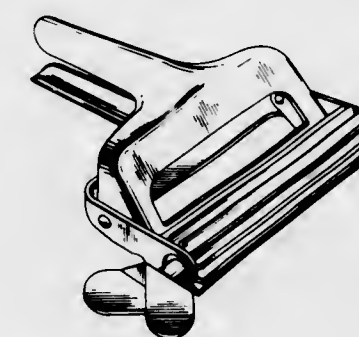
222,178
CATSUP BOTTLE DRAINING RACK
OR THE LIKE
 William G. Indrunas, 251 E. 32nd St.,
 New York, N.Y. 10016
 Filed Feb. 25, 1970, Ser. No. 21,618
 Term of patent 14 years
 Int. Cl. D7—99

U.S. Cl. D44—29



222,179
FISH SKINNER
 Donald L. Beasley, Des Moines, Iowa, assignor to
 Townsend Engineering Company, Des Moines, Iowa
 Filed June 17, 1970, Ser. No. 23,536
 Term of patent 14 years
 Int. Cl. D7—99

U.S. Cl. D44—29



222,180
SPOON OR SIMILAR ARTICLE
 Ellen B. Manderfield, Syracuse, N.Y., assignor to
 Onelda Ltd., Onelda, N.Y.
 Filed Apr. 20, 1970, Ser. No. 22,535
 Term of patent 14 years
 Int. Cl. D7—03

U.S. Cl. D54—12



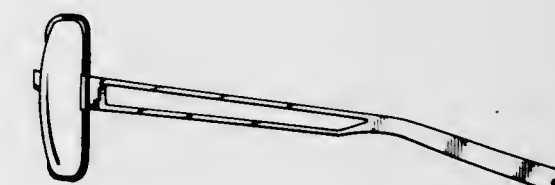
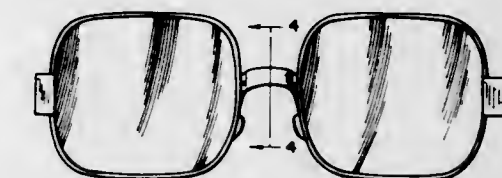
222,181
REFUSE COMPACTOR CABINET
 Michael J. Bottas, St. Joseph, Mich., assignor to
 Whirlpool Corporation
 Filed June 23, 1970, Ser. No. 23,621
 Term of patent 3½ years
 Int. Cl. D15—99

U.S. Cl. D55—1



222,182
PAIR OF SPECTACLES
 Anthony Shindler, Brookline, Mass., assignor to American
 Optical Corporation, Southbridge, Mass.
 Filed July 28, 1970, Ser. No. 24,172
 Term of patent 7 years
 Int. Cl. D16—06

U.S. Cl. D57—1

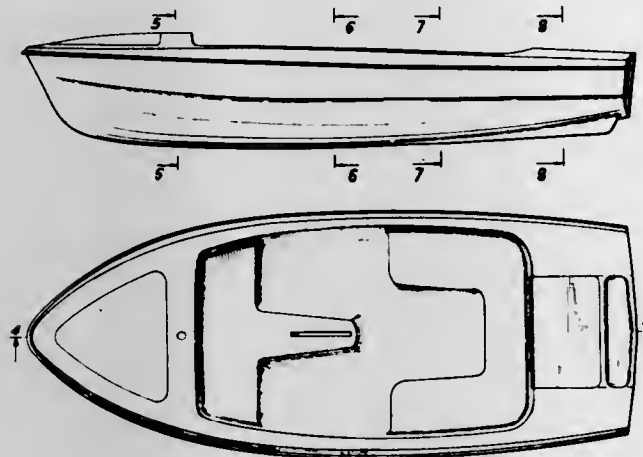


222,183

BOAT HULL

Peter A. Milne, Chichester, England, assignor to Richmond Marine Limited, London, England
 Filed Mar. 30, 1970, Ser. No. 22,095
 Claims priority, application Great Britain Dec. 11, 1969
 Term of patent 14 years
 Int. Cl. D12—06

U.S. Cl. D71—1



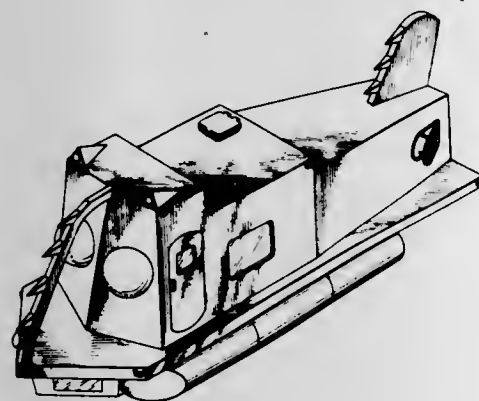
222,184

PONTON MOUNTED HOUSEBOAT

Calvert D. McClendon, Rte. 1, Argyle, Tex. 76201, and Gary R. McClendon, 1220 Anna St., Denton, Tex. 76201

Filed July 9, 1970, Ser. No. 23,880
 Term of patent 14 years
 Int. Cl. D12—06

U.S. Cl. D71—1

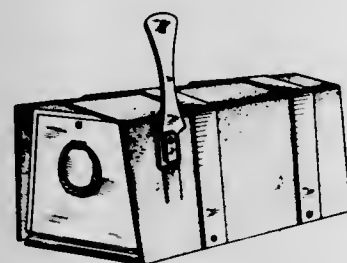


222,185

MAIL BOX

Irving A. Levine, 37 W. 12th St., New York, N.Y. 10011
 Filed June 2, 1970, Ser. No. 23,257
 Term of patent 14 years
 Int. Cl. D31

U.S. Cl. D74—9

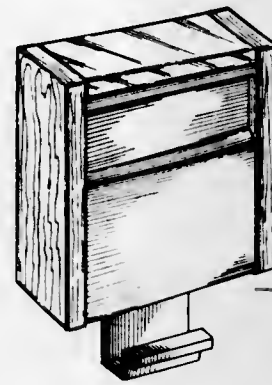


222,186

MAIL CHEST

George A. Stephen, Jr., Mount Prospect, Ill., assignor to Weber-Stephen Products Co., Arlington Heights, Cook County, Ill.
 Filed July 27, 1970, Ser. No. 24,134
 Term of patent 14 years
 Int. Cl. D31

U.S. Cl. D74—9

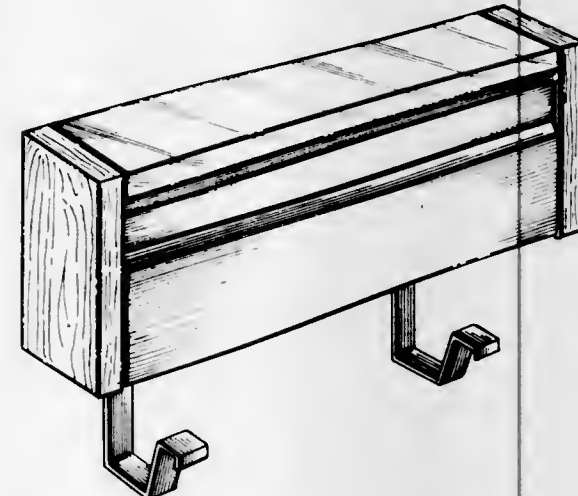


222,187

MAIL CHEST

George A. Stephen, Jr., Mount Prospect, Ill., assignor to Weber-Stephen Products Co., Arlington Heights, Cook County, Ill.
 Filed July 27, 1970, Ser. No. 24,135
 Term of patent 14 years
 Int. Cl. D31

U.S. Cl. D74—9

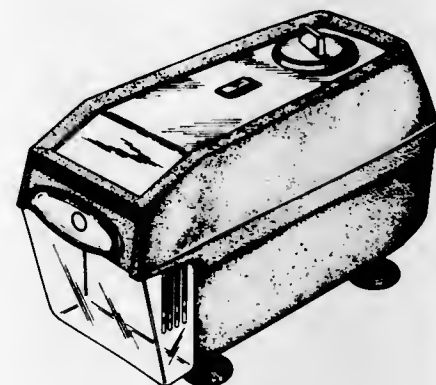


222,188

ELECTRIC PENCIL SHARPENER

Daisuke Kajiwara, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Sept. 14, 1970, Ser. No. 24,963
 Claims priority, application Japan Mar. 20, 1970
 Term of patent 14 years
 Int. Cl. D19—099

U.S. Cl. D74—21

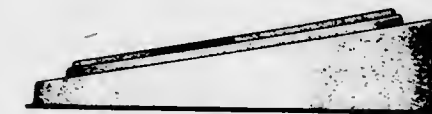
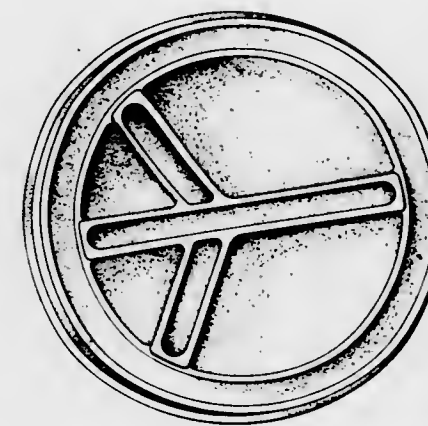


222,189

MERCHANDISING DISPLAY TRAY FOR BOTTLES OR LIKE OBJECTS

Peter D. Assail, 924 Cherry St., Philadelphia, Pa. 19107
 Filed May 11, 1970, Ser. No. 22,921
 Term of patent 14 years
 Int. Cl. D6—01

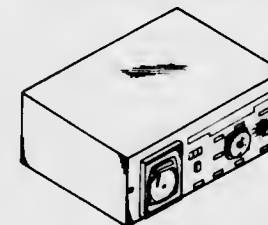
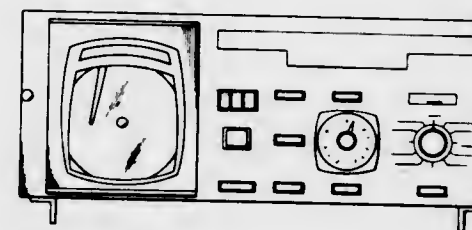
U.S. Cl. D80—9



222,190

CONTROL FOR A GAS VACUUM AUTOCLAVE
 Alfred B. Huston, Wyckoff, N.J., assignor to Vernitron Corporation, Great Neck, N.Y.
 Filed Feb. 6, 1970, Ser. No. 21,301
 Term of patent 14 years
 Int. Cl. D24—02

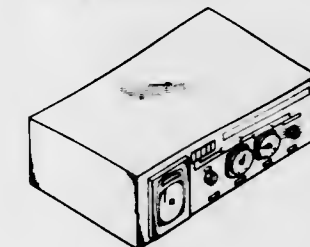
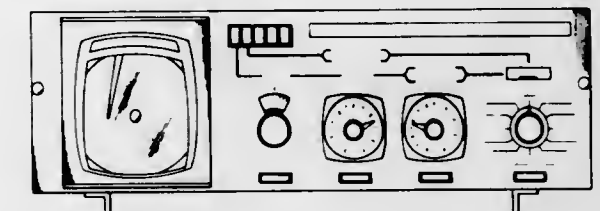
U.S. Cl. D83—1



222,191

CONTROL FOR A STEAM VACUUM AUTOCLAVE
 Alfred B. Huston, Wyckoff, N.J., assignor to Vernitron Corporation, Great Neck, N.Y.
 Filed Feb. 6, 1970, Ser. No. 21,303
 Term of patent 14 years
 Int. Cl. D24—02

U.S. Cl. D83—1

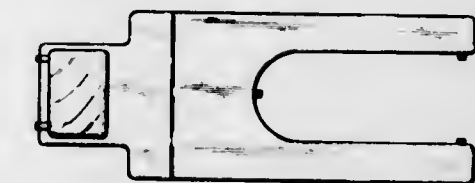
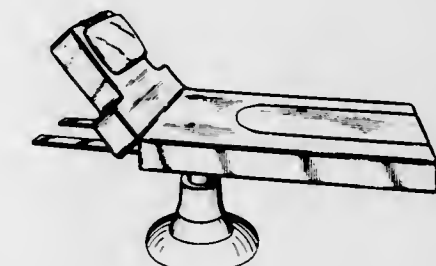


222,192

TREATMENT TABLE

Jean M. Piere, 292 Lagrange St., Newton, Mass. 02167
 Filed Feb. 2, 1970, Ser. No. 21,184
 Term of patent 3½ years
 Int. Cl. D24—02; D6—01

U.S. Cl. D83—1

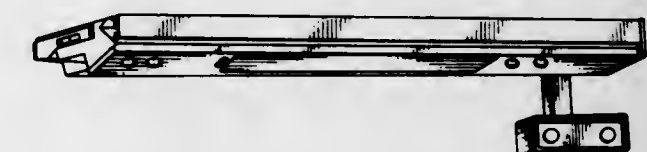


222,193

HOSPITAL WARD UNIT

Gerardus Wilhelmus Maria Arts, Eindhoven, Netherlands, assignor to U.S. Philips Corporation
 Filed Feb. 24, 1970, Ser. No. 21,596
 Claims priority, application Switzerland Aug. 27, 1969
 Term of patent 14 years
 Int. Cl. D24—01; D26—05

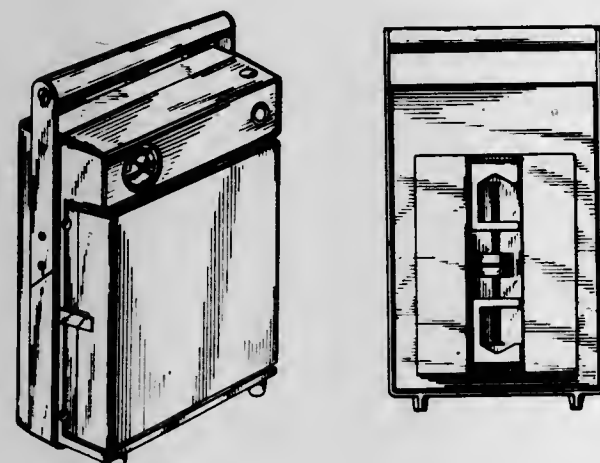
U.S. Cl. D83—1



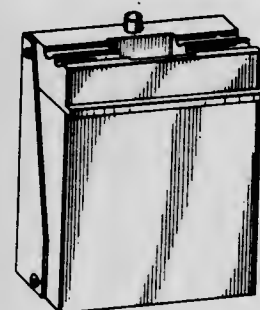
222,194
FACE LIFTING BAND
 Lorraine A. Basché, 17071 Courtney Lane,
 Huntington Beach, Calif. 92647
 Filed July 10, 1970, Ser. No. 23,892
 Term of patent 14 years
 Int. Cl. D24—99; D28—02
 U.S. Cl. D83—1



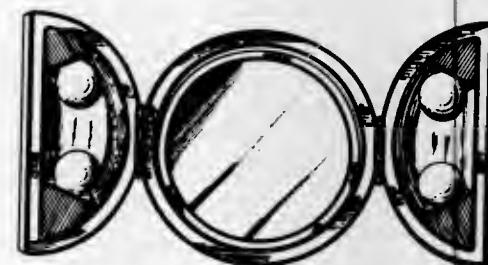
222,195
BLOOD WARMING APPARATUS
 Wayne M. Hultberg, Glenview, Ill., assignor to Baxter
 Laboratories, Inc., Morton Grove, Ill.
 Filed Aug. 12, 1970, Ser. No. 24,440
 Term of patent 14 years
 Int. Cl. D24—02
 U.S. Cl. D83—1



222,196
ASH TRAY
 August Belz, 13 Seestrasse, 9403 Goldach, Switzerland
 Filed June 8, 1970, Ser. No. 23,355
 Term of patent 14 years
 Int. Cl. D27—03
 U.S. Cl. D85—2



222,197
ILLUMINABLE ROTATABLE DOUBLE-FACED MIRROR
 Stanford Pavenick, South Orange, N.J. (% Aljen Manu-
 facturing Corp., 115 Grand St., New York, N.Y.
 10013)
 Filed Feb. 2, 1970, Ser. No. 21,189
 Term of patent 14 years
 Int. Cl. D6—07
 U.S. Cl. D86—10



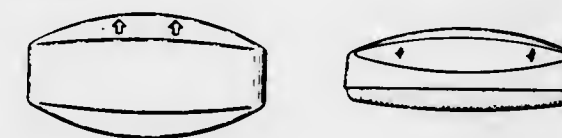
222,198
HAIR DRYER
 Melvin H. Boldt, Glenview, Ill., assignor to National
 Presto Industries, Inc., Eau Claire, Wis.
 Filed June 15, 1970, Ser. No. 23,471
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10



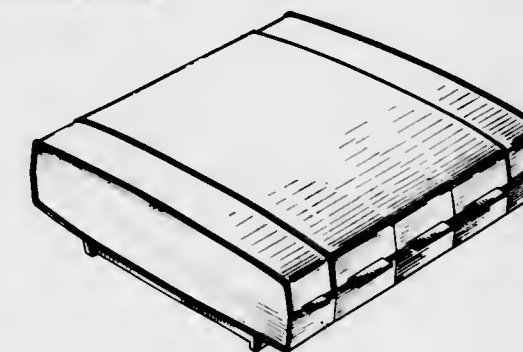
222,199
COMBINED CLOTHES AND CARPET BRUSH
 Samuel J. Popell and Raymond Popell, Chicago, Ill.,
 assignors to Popell Brothers, Inc., Chicago, Ill.
 Filed Dec. 15, 1969, Ser. No. 20,519
 Term of patent 14 years
 Int. Cl. D28—03; D4—01
 U.S. Cl. D86—13



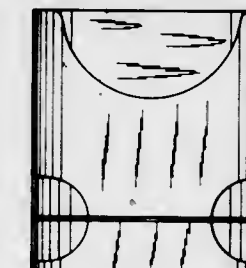
222,200
BRUSH
 Eric Michael Roth, R.R. 1, Unionville, Ontario, Canada
 Filed Aug. 18, 1970, Ser. No. 24,555
 Term of patent 14 years
 Int. Cl. D4—02
 U.S. Cl. D86—13



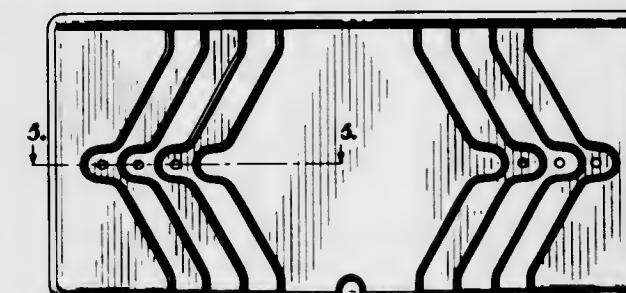
222,201
ELECTRIC HAIR CURLER CASE
 Martin J. Wolff, West Haven, Conn., assignor to Sperry
 Rand Corporation, New York, N.Y.
 Filed Mar. 18, 1970, Ser. No. 21,957
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10



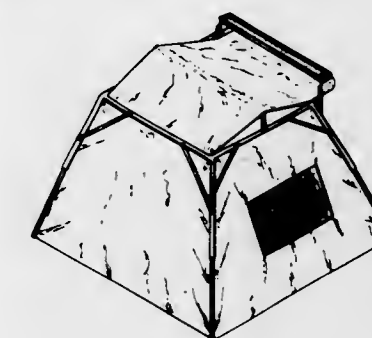
222,202
HOLDER FOR A DRY SHAVER
 Florian Seifert, Glashütten, Taunus, Germany, assignor
 to Braun A.G., Frankfurt am Main, Germany
 Filed June 8, 1970, Ser. No. 23,353
 Claims priority, application Germany Dec. 12, 1969
 Term of patent 14 years
 Int. Cl. D3—99
 U.S. Cl. D87—1



222,203
PASS CASE HOLDER
 Warren William Hudson, Hacienda Heights, Calif., as-
 signor to Ernest Hazel, Jr., Inc., Washington, Mo.
 Filed Aug. 31, 1970, Ser. No. 24,790
 Term of patent 14 years
 Int. Cl. D3—02
 U.S. Cl. D87—3



222,204
COMBINATION TENT AND CANISTER
 Sidney L. Perry, Los Angeles, Calif.
 (5145 Kelvin Ave., Woodland Hills, Calif. 91364)
 Continuation-in-part of design application Ser. No. 12,035,
 May 21, 1968. This application June 17, 1969, Ser.
 No. 19,838
 Term of patent 14 years
 Int. Cl. D21—04
 U.S. Cl. D88—3



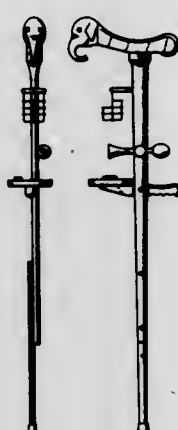
222,205
UMBRELLA
 Heinz Weber, Hilden, Rhineland, Germany, assignor to
 Telesco Brophey Limited, Montreal, Quebec Canada
 Continuation-in-part of design application Ser. No. 11,392,
 Apr. 10, 1968. This application Aug. 29, 1969, Ser.
 No. 18,925
 Claims priority, application Germany Jan. 16, 1968
 Term of patent 14 years
 Int. Cl. D3—03
 U.S. Cl. D88—3



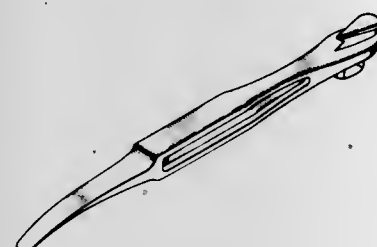
222,206
UMBRELLA
 Gerald R. Lipson, New York, N.Y., and Eve Heas,
 Passaic, N.J., assignors to Horsman Dolls Inc., Colum-
 bia, S.C.
 Filed Nov. 4, 1969, Ser. No. 19,938
 Term of patent 14 years
 Int. Cl. D3—03
 U.S. Cl. D88—3



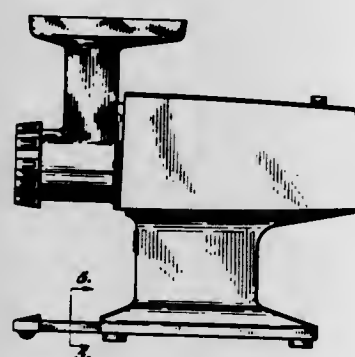
222,207
COMBINED CRUTCH, ASH TRAY, GLASS
HOLDER AND HORN THEREFOR
 Connie E. Blum, 6233 N. 68th St. 68104, and Donald E. Hyde, 2705 Margo St. 68147, both of Omaha, Nebr.
 Filed Feb. 5, 1970, Ser. No. 21,280
 Term of patent 14 years
 Int. Cl. D3—03
 U.S. Cl. D88—4



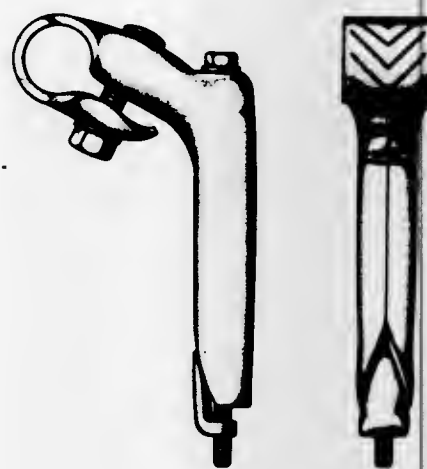
222,208
FRUIT PEELER
 Frederick W. Riddington, Ontario, Calif., assignor to Sunkist Growers, Inc., Los Angeles, Calif.
 Filed Sept. 8, 1970, Ser. No. 24,889
 Term of patent 14 years
 Int. Cl. D7—06
 U.S. Cl. D89—1



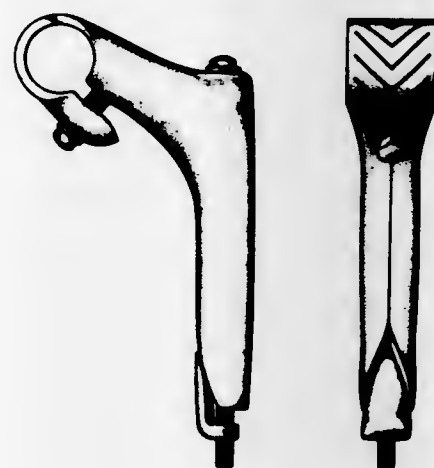
222,209
MEAT GRINDER
 Downer P. Dykes, Lawrence, Kans., assignor to Rival Manufacturing Company
 Filed Sept. 23, 1966, Ser. No. 3,994
 Term of patent 14 years
 Int. Cl. D7—05
 U.S. Cl. D89—1



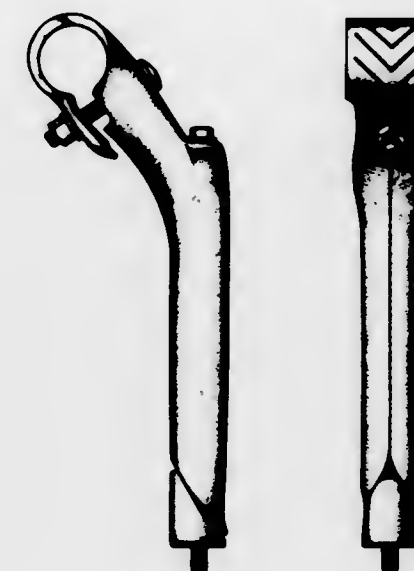
222,210
BICYCLE STEERING POST
 Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
 Filed Apr. 1, 1970, Ser. No. 22,150
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—9



222,211
BICYCLE STEERING POST
 Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
 Filed Apr. 1, 1970, Ser. No. 22,154
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—9



222,212
BICYCLE STEERING POST
 Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
 Filed Apr. 1, 1970, Ser. No. 22,156
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—9



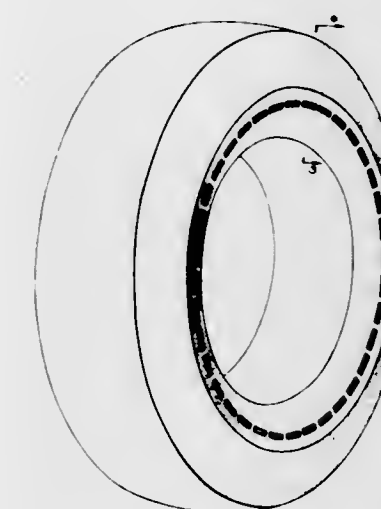
222,213
HAND GRIP OR SIMILAR ARTICLE
 Douglas C. Rumaner, Oakland, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
 Filed Mar. 20, 1969, Ser. No. 16,348
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—11



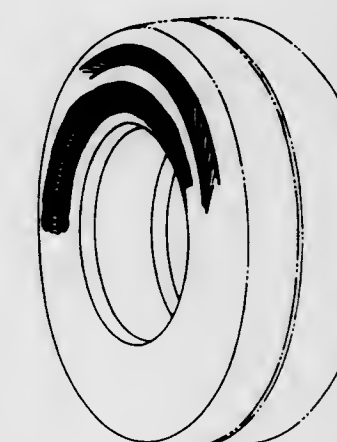
222,214
BRACE FOR A CYCLE SADDLE
 George W. Worley, Bolivar, Tenn., assignor to Troxel Manufacturing Company, Moscow, Tenn.
 Filed Apr. 7, 1970, Ser. No. 22,308
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—15



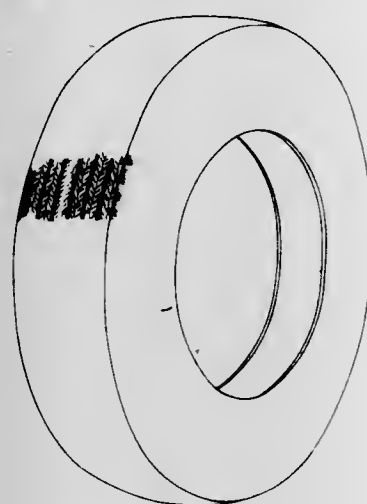
222,215
PNEUMATIC TIRE
 Donald L. Munoz, Sterling Heights, Mich., assignor to Uniroyal, Inc., New York, N.Y.
 Filed Aug. 15, 1969, Ser. No. 18,705
 Term of patent 14 years
 Int. Cl. D12—14
 U.S. Cl. D90—20



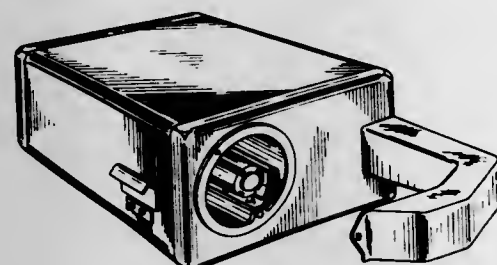
222,216
TIRE
 David M. Overstreet, Akron, and Robert L. Davis, Mogadore, Ohio, assignors to The General Tire & Rubber Company
 Continuation-in-part of design application Ser. No. 15,069, Dec. 20, 1968, which is a continuation-in-part of design application Ser. No. 11,365, Apr. 8, 1968. This application Nov. 24, 1969, Ser. No. 20,267
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



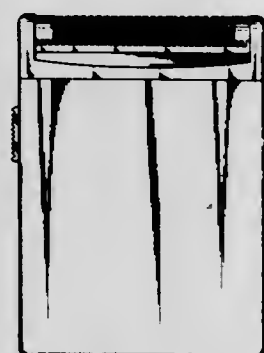
222,217
PNEUMATIC TIRE
Dale J. Beaudoin, Opelika, Ala., and William K. Pope, Mount Clemens, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Apr. 27, 1970, Ser. No. 22,675
Term of patent 14 years
Int. Cl. D12—14
U.S. Cl. D90—20



222,218
WINDING MACHINE FOR PRODUCING ROVING PACKAGES
Harald E. Karlson, 2605 31st St., Santa Monica, Calif. 90405
Continuation-in-part of design application Ser. No. 15,188, Dec. 30, 1968. This application July 30, 1970, Ser. No. 24,237
Term of patent 14 years
Int. Cl. D15—08
U.S. Cl. D92—15



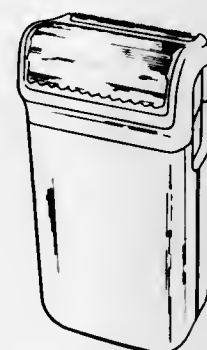
222,219
DRY SHAVER
Bodo Futterer, Sarnen, Switzerland, assignor to The Gillette Company, Boston, Mass.
Filed Mar. 13, 1968, Ser. No. 10,959
Claims priority, application Germany Sept. 13, 1967
Term of patent 14 years
Int. Cl. D28—03
U.S. Cl. D95—3



222,220
KNIFE
Clayton A. Laughlin, Minneapolis, Minn., assignor to Arthur Salm Inc., Chicago, Ill.
Filed Dec. 1, 1969, Ser. No. 20,319
Term of patent 14 years
Int. Cl. D7—03
U.S. Cl. D95—3



222,221
ELECTRIC DRY SHAVER
Maarten Willem Van Lelyveld, Drachten, Netherlands, assignor to Carinthia Elektrogerate G.m.b.H.
Filed May 15, 1970, Ser. No. 23,048
Claims priority, application Austria Nov. 18, 1969
Term of patent 14 years
Int. Cl. D28—03
U.S. Cl. D95—3



222,222
ELECTRIC DRY SHAVER
Maarten Willem Van Lelyveld, Drachten, Netherlands, assignor to Carinthia Elektrogerate G.m.b.H.
Filed May 15, 1970, Ser. No. 23,049
Claims priority, application Austria Nov. 18, 1969
Term of patent 14 years
Int. Cl. D28—03
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O Inc.: See—
Friedrich, Herman G., 3,610,399.
Sager, William P., 3,610,394.
AB Original-Odhner: See—
Norrmann, Stig Gustaf Fredrik, 3,610,059.
Abair, Raymond L., to Rave Industries Incorporated. Electrical connector and assembly. 3,611,256, Cl. 339-60.
Abbott, Paul Douglas. Auxiliary elevator control systems. 3,610,371, Cl. 187-29.
Abex Corporation: See—
Benson, William J., 3,609,970.
Abraham, Carlos Solomon. Electric steam iron. 3,609,890, Cl. 38-77.83.
Abramson, Edward; Caris, John C.; Flournoy, Philip A.; and Sadler, Monroe S., to Du Pont de Nemours, E. I., and Company. Magnetic holograms. 3,610,721, Cl. 350-3.5.
ACF Industries, Incorporated: See—
Randolph, Robert W.; and Rollins, Dallas W., 3,610,435.
Ackley, James R.: See—
Harmon, Samuel T., Jr.; Ackley, James R.; and Monroe, Kenneth E., 3,611,144.
Activeaid, Inc.: See—
Oja, Carl W.; and Scheuerman, Richard L., 3,609,779.
Adamoske Strojirny narodni podnik: See—
Jurny, Josef; and Janecsek, Jaroslav, 3,610,149.
Adamovske strojirny, narodni podnik: See—
Jiruse, Jaroslav, 3,610,579.
Adams, Donald L., to Diamond-U Products, Inc. Pressure gauge and valve for a tire. 3,610,269, Cl. 137-227.
Adams, Herbert; and Heidmann, Franz, to Klockner-Humboldt-Deutz Aktiengesellschaft. Hydraulic power lifting device. 3,610,103, Cl. 91-411.
Adams, James S.; Heidacher, John W.; and Blanken, Ralph G., to Hill-Rom Company, Inc. Safety electrical plug. 3,611,247, Cl. 339-14.
Adamski, Joseph A.; and Weimer, Joseph R., to United States of America, Air Force. Post-mix gas ring burner. 3,610,794, Cl. 431-354.
Advance Transformer Company: See—
Crawford, Joseph A., 3,611,026.
AEG Elotherm GmbH: See—
Schnake, Friedrich, 3,610,600.
Aerial Electronics Corporation: See—
Poliakoff, George, 3,611,397.
Aerojet-General Corporation: See—
Zeiner, Eugene A., 3,609,778.
Aeronautical Radio, Inc.: See—
Connell, Raymond S., 3,610,520.
Aeroquip Corporation: See—
Lago, Ernest T., 3,610,663.
AGA Aktiebolag: See—
Hill, Friedrich-Wilhelm, 3,610,278.
Agatahama, Shunichi: See—
Matsuo, Shunsuke; and Agatahama, Shunichi, 3,611,216.
Ageikin, Dmitry Ivanovich; Kostina, Ekaterina Nikolaevna; Zhuravlev, Vadim Fedorovich; Knopov, Jury Tovievich; Dorofeev, Vladimir Vasilievich; Chernichin, Alexei Nikolaevich; Mityashin, Igor Petrovich; Katsnelson, Arkady Shaeovich; and Golubev, Alexander Alexeevich. Gas analysis method of and a gas analyzer for accomplishing same. 3,610,023, Cl. 73-27.
Agfa-Gevaert Aktiengesellschaft: See—
Bestenreiner, Fritz; Nassenstein, Heinrich; and Langner, Gunther, 3,610,722.
Frick, Hans-Dieter; Huber, Hans-Peter; Dawidowitsch, Peter; Schouteden, Ferdinand Leonhard; Kocourek, Franz; Posch, Gerhard; and Viehrig, Wolfgang, 3,610,131.
Agner, Kjell. Device for automatized insertion of reaction tubes in test tube holders. 3,610,467, Cl. 221-172.
Agnew, Kenneth Malcolm; and Coward, Tomothy, to National Research Development Corporation. Beds. 3,609,777, Cl. 5-62.
Agusta, Benjamin, to International Business Machines Corporation. Inversion prevention system for semiconductor devices. 3,611,071, Cl. 317-235.
Aihara, Hikaru: See—
Ito, Teiji; Nishi, Takeshi; Yamada, Arinobu; Jono, Kunimasa; Aihara, Hikaru; Maeba, Takashi; and Kawae, Nobuji, 3,610,869.
Aijala, Sulo A., to Intricate Machine & Engineering Inc. Fiber optics photo probe. 3,610,726, Cl. 350-96.
Ainsworth, John Desmond, to English Electric Company Limited. The Apparatus for deriving a signal proportional to a change-function of phase angle. 3,611,040, Cl. 317-20.
Air Preheater Company, Inc., The: See—
Stockman, Richard F., 3,610,182.
Air Reduction Company, Incorporated: See—
Lofredo, Antony; and Daly, Francis J., 3,609,983.
Airfloat Corporation: See—
Snoeyenbos, David Roy, 3,610,364.
Airheart, Franklin B.: See—
Gilliland, Warren L.; and Airheart, Franklin B., 3,610,375.
Airheart Products, Inc.: See—
Gilliland, Warren L.; and Airheart, Franklin B., 3,610,375.
Aisenstadt, Karla. Skin massaging device. 3,610,232, Cl. 128-24.1.
Aiwa Co., Ltd.: See—
Ichikawa, Yoshikazu, 3,609,844.
Ajax Magnethermic Corporation: See—
Shearman, Wilbur E., 3,610,045.
Akademiet for de tekniske Videnskaber: See—
Lund, Svend Aage, 3,610,820.
Akiyama, Hideaki: See—
Kakiuchi, Tokusaburo; and Akiyama, Hideaki, 3,610,744.
Kakiuchi, Tokusaburo; and Akiyama, Hideaki, 3,610,746.
Aktiebolaget Abjorn Anderson: See—
Jensen, Alfred, 3,610,543.
Aktiebolaget Bofors: See—
Erhard, Rune Torsten Isidor, 3,609,883.
Aktien-Gesellschaft "Weser": See—
Janssen, Hans-Georg, 3,610,674.
Aktiengesellschaft: See—
Bollmann, Franz; and Kroger, Hermann, 3,610,015.
Albert Trostel Packings Ltd.: See—
Hopper, Duane C., 3,610,021.
Albasser, Anthony M. Double lumen cannula for blood sampling. 3,610,226, Cl. 128-2.
Alden, Milton, to Alden Research Foundation. Recorder having web drying and display means. 3,611,407, Cl. 346-17.
Alden, Milton, to Alden Research Foundation. Halical electrode and drum recorder. 3,611,424, Cl. 346-101.
Alden, Milton, to Alden Research Foundation. Recorder. 3,611,425, Cl. 346-101.
Alden Research Foundation: See—
Alden, Milton, 3,611,407.
Alden, Milton, 3,611,424.
Alden, Milton, 3,611,425.
Aldrich, Richard W.: See—
Aldrich, Richard W.; Berlin, Robert D.; Galidas, Panos; Aldrich, Richard W.; Berlin, Robert D.; and Galidas, Panos, 3,611,300.
Aldrich, Richard W.; Berlin, Robert D.; Galidas, Panos; Aldrich, Richard W.; Berlin, Robert D.; and Galidas, Panos, to Honeywell Information Corporation, mesne Honeywell Information Corporation, mesne Multicomputer system for real-time environment Multicomputer system for real-time environment. 3,611,300, Cl. 340-172.5.
Alduc, S.A.: See—
Huther, Charles, 3,609,960.
Alexander, James C.; and Van Beneschoten, Peter J., to Oak Electro/Netics Corporation. Day-night prism display device. 3,609,899, Cl. 40-331.
Alexandrowicz, Norman J., to Outboard Marine Corporation. Outboard motor shroud. 3,610,198, Cl. 115-17.
Alibert, Vernon F. Multi-wire shielded cable connector. 3,611,273, Cl. 339-186.
Alimanestianu, Mihai. Transport system. 3,610,160, Cl. 104-88.
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- Benoit, Luc P., to Bell & Howell Company. Recording by varying the location of a magnetic spot. 3,611,421, Cl. 346-74.
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- Bernocco, William Jr. Rimmed shell restraint. 3,609,900, Cl. 42-1.
- Bertsch, Hanns F., to Friedrich Mauthe, G.m.b.H. Magnetic device for transforming an oscillatory motion into a rotary motion. 3,609,958, Cl. 58-23.
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- Bestenreiner, Fritz; Nassenstein, Heinrich; and Langner, Gunther, to Agfa-Gevaert Aktiengesellschaft. Arrangement for recording and reproducing holograms of moving subjects. 3,610,722, Cl. 350-3.5.
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- Bishop, Harry L., Jr., to Allegheny Ludlum Steel Corporation. Apparatus for positioning a consumable lance. 3,610,601, Cl. 266-34.
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- Bok, Hendrik F., to Epec Systems Corporation. Method and apparatus for turning over a plate. 3,610,397, Cl. 198-33.
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LIST OF DESIGN PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF OCTOBER, 1971

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(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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3.610.596	3.610.163	3.610.750	3.611.168	3.610.208	3.610.684
3.610.625	3.610.166	3.610.758	3.611.173	3.610.222	3.610.699
3.610.803	3.610.194	3.610.759	3.611.178	3.610.285	3.610.798
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3.610.905	3.610.215	3.610.799	3.611.187	3.610.333	3.610.971
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	3.610.306		3.610.366		3.611.138		3.611.145		3.610.834		3.610.768
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	3.610.374		3.610.397		3.611.177		3.611.170		3.610.879		3.610.846
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	3.610.738		3.610.729		3.611.340		3.611.217		3.610.920		3.610.897
	3.610.769		3.610.741	27	: 3.609.779		3.611.231		3.610.959		3.610.917
	3.610.772		3.610.782		3.609.799		3.611.260		3.610.966		3.610.919
	3.610.777		3.610.794		3.609.875		3.611.270		3.610.975		3.610.942
	3.610.780		3.610.801		3.609.897		3.611.294		3.610.993		3.611.015
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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Oct. 12, 1971

3,288,673	3,550,059	3,573,968	3,579,538
3,405,156	3,557,291	3,574,196	3,579,561
3,421,183	3,557,417	3,574,534	3,580,707
3,459,804	3,560,392	3,575,080	3,580,970
3,474,052	3,561,262	3,576,651	3,581,087
3,483,197	3,562,709	3,576,652	3,581,275
3,509,985	3,563,590	3,576,973	3,581,345
3,511,862	3,563,961	3,577,190	3,581,576
3,520,872	3,564,097	3,577,270	3,581,717
3,525,520	3,565,260	3,577,511	3,581,740
3,531,425	3,567,377	3,578,653	3,582,789
3,534,286	3,570,407	3,578,955	3,582,812
3,538,680	3,572,854	3,579,082	3,585,012
3,540,565	3,572,983	3,579,485	3,588,915
3,542,652	3,573,090		

450

Erratum

All references to Patent Number 3,607,061 to John C. Angus, for Manufacture of Synthetic Diamonds, appearing in the OFFICIAL GAZETTE of September 21, 1971 should be deleted as the application was withdrawn from issue and the patent was not issued.

Notice of Daylight Saving Time

Attention is called to the notice published in 885 O.G. 424, April 20, 1971, as to the operation of the Patent Office on Daylight Saving Time. This operation will terminate on October 31, 1971.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 21, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-08-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oro and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-18-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-03-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-17-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-24-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	1-08-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director..... Ordinance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-31-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-24-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-21-70
PHYSICS, GROUP 260—R. L. EVANS, Director..... Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	7-23-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts; Household, Personal and Fine Arts.	9-29-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-13-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	6-11-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director..... Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power, Transmission; Fluid Handling; Lubrication; Joint Packing.	9-14-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during October 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 3, 1946 (60 Stat. 940) and Public Law 619, 86th Congress, approved August 28, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 283. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....	Numbers 2,690,560 to 2,692,986, inclusive
Plant Patents.....	Numbers 1,312 to 1,327, inclusive

451

REISSUES

OCTOBER 12, 1971

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,183

CYLINDER CONSTRUCTION

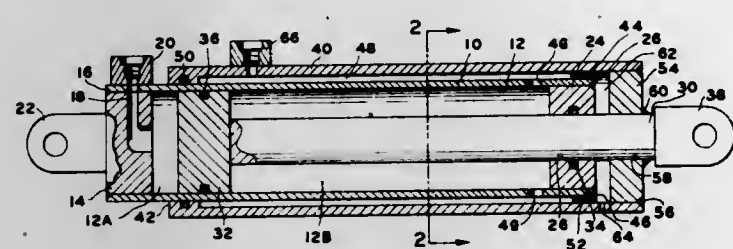
Borje O. Rosaen, 4031 Thornoaks Drive, Ann Arbor, Mich. 48104

Original No. 3,335,642, dated Aug. 15, 1967, Ser. No. 424,281, Jan. 8, 1965. Application for reissue July 15, 1969, Ser. No. 853,557

Int. Cl. F01b 31/00

U.S. Cl. 92-110

14 Claims



A first fluid cylinder comprising inner and outer tubular members, telescopically joined for relative movement between extended and retracted positions, having a first pressure chamber formed within the inner tubular member, and a second pressure chamber formed within the radial spacing between the inner and outer tubular members. A piston having a rod extending from one side thereof is slidably mounted within the first pressure chamber in such a manner as to cause relative extension of the inner and outer tubular members when the piston side opposite the one piston side having the rod extending therefrom is exposed to fluid, and relative retraction when the one piston side having the rod extending therefrom and the second pressure chamber are both exposed to fluid. The second chamber having a fluid actuated member, the pressure responsive area of which is substantially equal to the transverse cross sectional area of the rod, while the sum of the pressure responsive areas of the fluid actuated member and the one piston side having the rod extending therefrom is substantially equal to the pressure responsive area of the opposite piston side.

27,184

APPARATUS FOR AUTOMATIC PRODUCTION OF GRAMOPHONE RECORDS

Walter Leslie Rand, Gerrards, and Leslie Eric Zouch, Hays, England, assignors to Electric & Musical Industries Limited, Middlesex, England

Original No. 3,329,997, dated July 11, 1967, Ser. No. 574,478, Mar. 8, 1966, which is a division of Ser. No. 229,332, Oct. 9, 1962. Application for reissue July 3, 1969, Ser. No. 848,368

Claims priority, application Great Britain, Oct. 11, 1961, 36,423/61

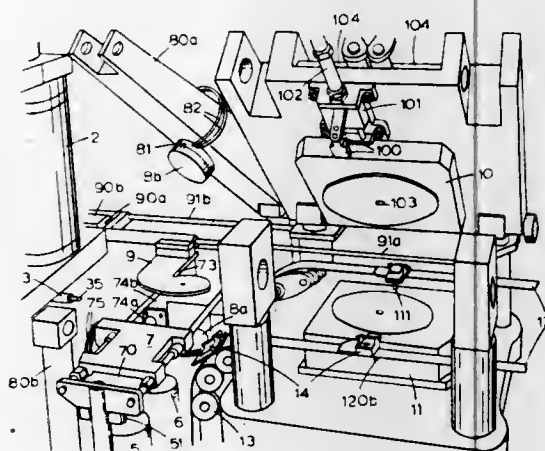
Int. Cl. B29d 17/00

U.S. Cl. 18-5.3 P

7 Claims

The invention relates to a machine for producing gramophone records, the machine comprising a moulding press including two mould supports and means for repetitively moving the mould supports together and then apart to press gramophone records. At one side of the

press there is located means for repetitively producing a shot of mouldable material sufficient to form a gramophone record and having two labels adhering respectively to the upper and lower surfaces of the shot. A reciprocating shot loader transfers each shot and the adhering labels to the press while the mould supports are apart, the shot loader being withdrawn before the mould supports are moved together to press the respective record. The shot



loader supports the shot by means of suction applied to one of the labels. Pairs of grippers are provided on two endless bands located at the front and rear of the press and these bands are moved intermittently so that a pair of grippers is located in a position to seize the flash of a record as it is moulded in the press. When the press is opened, the bands are moved to transfer the record from the press to a record processing tool, located at the other side of the press from the means for producing the shot.

27,185

PHOTOCELL POSITION DETECTOR FOR ELEVATOR CARS INCLUDING A PERFORATED TAPE UNIQUELY ENCODED FOR EACH POSITION WITH RESPONSIVE CONTROL MEANS

William Henry Bruns, deceased, late of Lincolndale, Somers, N.Y., by Eva C. Bruns, executrix, De Bary, Fla., and Lew H. Diamond, Massapequa, and Herbert Jacoby, Jamaica, N.Y., assignors to Otis Elevator Company, New York, N.Y.

Original No. 3,414,088, dated Dec. 3, 1968, Ser. No. 154,132, Nov. 22, 1961. Application for reissue June 6, 1969, Ser. No. 844,219

Int. Cl. B66b 1/16

U.S. Cl. 187-29 R

42 Claims

This application concerns an elevator system which eliminates most of the maintenance problems associated with prior systems. Virtually trouble free logic circuit elements composed of static-type electronic and solid state elements are substituted for primarily all the mechanical and electro-mechanical devices which were used in earlier systems.

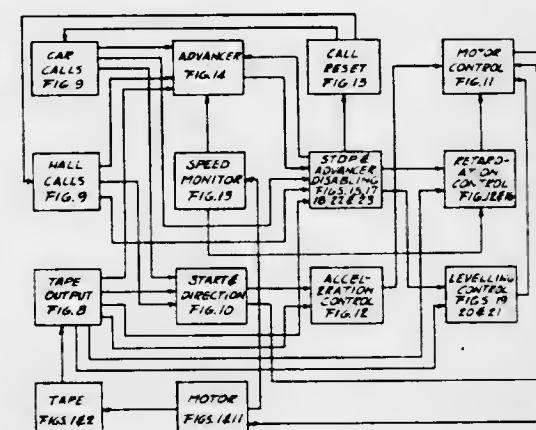
In one of the disclosed embodiments a tape is driven over a sheave by the elevator car to duplicate its movement. This tape is slotted to form rows of slots at various

OCTOBER 12, 1971

U. S. PATENT OFFICE

453

points along its length in accordance with a binary code so that each point corresponds to a predetermined position in the hoistway and the code in each row identifies its corresponding position. As the car moves through the hoistway, the code, associated with each of the various positions it passes, is converted into electrical output signals by



means of a light source and photocell translator. This provides information concerning the location of the car. This information in conjunction with that concerning the speed of the car as provided by signals derived from a tachometer generator is applied to various electronic tube and solid state circuits which perform the essential logic functions necessary to control the operation of the car.

27,186

STEEL SHELVING

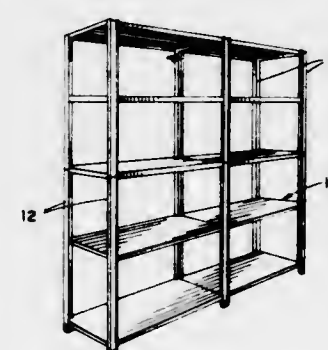
Irwin J. Ferdinand, Glencoe, and Dale Raymond Lopatka, Lake Zurich, Ill., assignors to Hirsch Company

Original No. 3,255,722, dated June 4, 1966, Ser. No. 308,533, Sept. 12, 1963. Application for reissue Jan. 21, 1970, Ser. No. 10,666

Int. Cl. A47b 9/00

U.S. Cl. 108-144

35 Claims



A knock-down metal shelving assembly is disclosed characterized in one embodiment by sheet metal shelves having depending peripheral opposing side flanges and end flanges which terminate in sharply square end edges at the cut-out corners to provide recessed openings to receive support columns with side portions that engage flat against the opening and a securing clip is disclosed with a centrally apertured wall that spans each corner, engages the flanges through tabs at spaced bearing points to hold the shelves to the support columns with the side flanges held endwise against the columns in a stress squaring relationship in cooperation with releasable securing means between the apertured wall and the support column. Other embodiments are disclosed.

27,187

PRINTED CIRCUIT MULTI-LAYER WINDING FOR ELECTRIC ROTARY MACHINES

Jacques Henry-Baudot, Antony, France, assignor to Photocircuits Corporation, Glen Cove, N.Y.

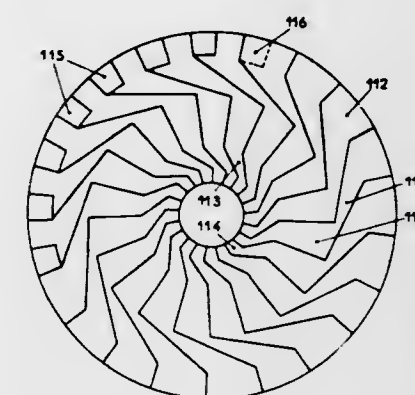
Original No. 3,296,474, dated Jan. 3, 1967, Ser. No. 300,287, Aug. 6, 1963. Application for reissue Feb. 16, 1965, Ser. No. 723,633

Claims priority, application France, Sept. 20, 1962, 909,988

Int. Cl. H02k 1/22

U.S. Cl. 310-268

3 Claims



An electrical rotating machine is disclosed having a printed circuit armature winding made up of two or a multiple of two layers, the conductors in alternate layers being reversely oriented and all conductors being interconnected to form a single uninterrupted series-wave winding.

27,188

SLIPPING CONE SEAL

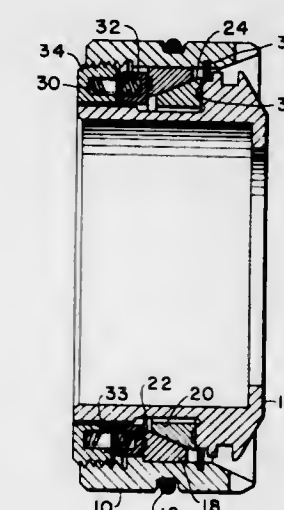
Werner Pustelnik, Laudong, Austria, assignor to Avco Corporation, Stratford, Conn.

Original No. 3,502,343, dated Mar. 24, 1970, Ser. No. 710,305, Mar. 4, 1968. Application for reissue June 25, 1970, Ser. No. 49,676

Int. Cl. F16j 15/16; F16k 41/00

U.S. Cl. 277-25

5 Claims



A seal comprises two concentric piston rings having contacting complementary conical surfaces. The piston rings are axially spring biased. The outer piston ring is split. An axial spring force is translated into axial and radial components, the radial component resulting from the relative movement between the adjacent conical surfaces. The seal is effective at zero speeds and has increased effectiveness due to centrifugal force at operating speeds.

27,189
AUTOMATIC UNLOADING WASHING MACHINE
 Martin Hutterer, Forest Hills, N.Y., assignor to Cummings-Landau Laundry Machinery Co., Inc., Brooklyn, N.Y.
 Original No. 3,417,583, dated Dec. 24, 1968, Ser. No. 634,247, Apr. 27, 1967. Application for reissue Feb. 2, 1970, Ser. No. 15,378

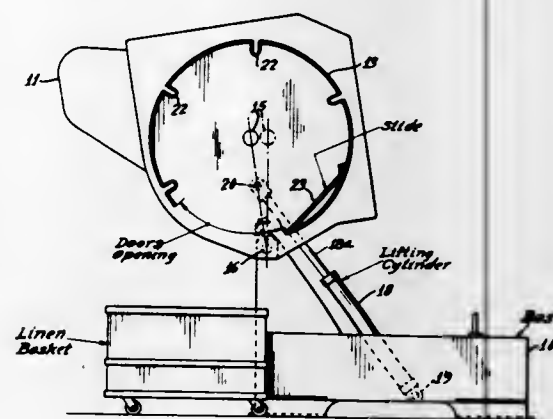
Int. Cl. D06f 37/06

U.S. Cl. 68-210

7 Claims

A self-unloading laundry machine of the commercial type, including a horizontal axis, rotary basket in a water-tight housing with aligned access doors in a portion of the top half of each for loading and unloading. The entire machine including its driving motors is carried by a frame mounted on pivots spaced forwardly from the axis of rotation of the basket and double-acting jacks and controls are provided to rotate the assembly upwardly at predetermined rates around the pivots for an angular distance to aim the aligned doors downward to cause the load to drop out of the basket. The jacks are controlled as the unit moves over top center to bring the assembly to rest at an over-centered position by reversing the forces applied to the piston rods of the jacks. The basket includes

access doors and, internally, a flat surface extending across a chord of the circle from the edge of the access door opening to a point part way around the circle, thereby



forming a slide to prevent the hanging up of the work load in the basket in the portion nearest the pivot when the machine is in unloading attitude.

PATENTS

GRANTED OCTOBER 12, 1971

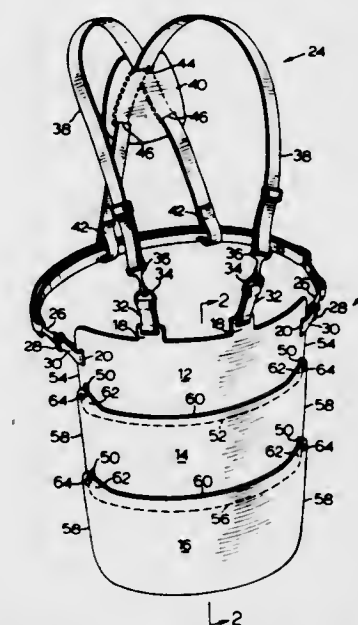
GENERAL AND MECHANICAL

3,611,438
ABDOMINAL PROTECTION APRON
 John Edward Gregg, Scarborough, and John Nelson Brannigan, Willowdale, Ontario, Canada, assignors to Safety Supply Company, Toronto, Ontario, Canada
 Filed Dec. 19, 1969, Ser. No. 886,561

Int. Cl. A41d 13/04

U.S. Cl. 2-51

6 Claims



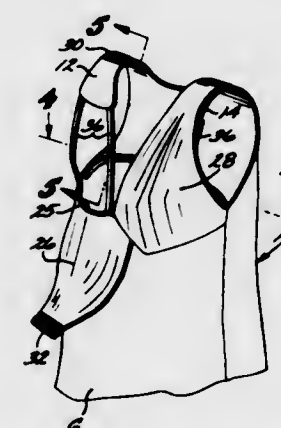
An abdominal protection apron of the type which is worn about the abdomen to protect against knife wounds and the like comprising at least two transversely disposed arcuate shaped segments which are integrally connected to one another. Each of the segments consists of a sheet of substantially rigid puncture-resistant material having a curvature loosely conforming to the curvature of the human abdomen. The two segments are pivotally connected to one another to permit the wearer to bend forward when the apron is in use. A supporting means is secured to the apron for positioning it in a position overlying the abdomen of the wearer.

3,611,439
NURSING GOWN
 Phyllis L. Meyers, 5235 Linwood Drive, Los Angeles, Calif. 90027
 Filed Apr. 22, 1970, Ser. No. 30,844

Int. Cl. A41d 1/20

U.S. Cl. 2-74

4 Claims



A gown for use by nursing mothers. The gown includes a pair of breast-covering panels, either one of which may

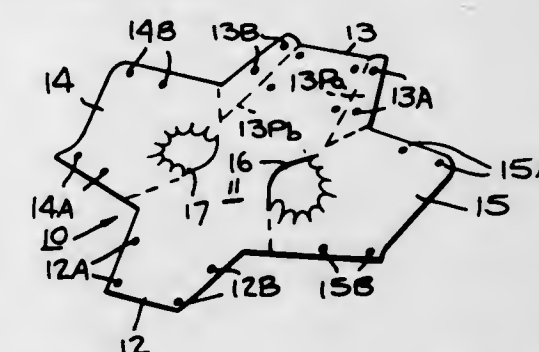
be selectively dropped to permit breast feeding. When the panels are in a dropped position, the gown is supported from the wearer's shoulders by straps which extend downwardly on either side of the wearer's breasts to the portion of the gown below the breast area.

3,611,440
EXPENDABLE NON-WOVEN WEARING APPAREL
 Sophie Zamiat, 3010 Grand Concourse, New York, N.Y. 10458
 Filed Apr. 24, 1970, Ser. No. 31,532

Int. Cl. A41d 11/00

U.S. Cl. 2-80

6 Claims



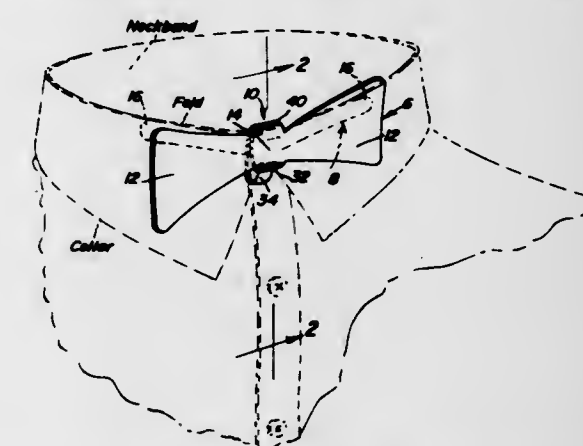
Expendable wearing apparel formed of two-dimensional blanks preferably of non-woven fabric material, the blanks having a cruciform profile to define a crotch portion as well as fly, seat and side flaps extending therefrom. The crotch portion is provided with expandable leg holes, whereas the flaps have complementary apertures therein to receive fasteners, the apertures being so placed that when the flaps are raised about the wearer, the fly and seat flaps may be connected to the side flaps to define short pants, a romper or a similar article of apparel.

3,611,441
PLASTIC BOW TIE
 Earl M. Kitchen, 4911 Granada, Los Angeles, Calif. 90042
 Filed Apr. 8, 1970, Ser. No. 26,712

Int. Cl. A43d 25/08

U.S. Cl. 2-154

6 Claims



A one piece stamped out plastic form delineated so that the pre-shaped normally flat component parts can be bent and fashioned into a bow tie; an adaptation which lends itself to use by waiters, bus boys, restaurant assistants, and also temporarily for festive parading and

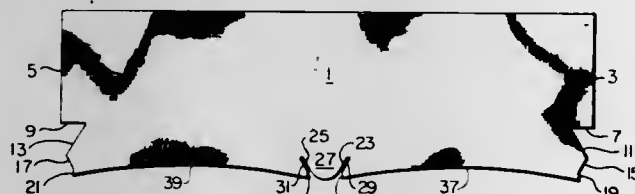
campaign display purposes. It is readily bendable to provide an imitation bow tie, a V-shaped positioning and steadying adapter and neckband hooking and retaining clip.

3,611,442
SHAMPOO HAT
Seiichi Yazaki, Sakai, Japan, assignor to The Fujimoto Company Limited, Osaka, Japan
Filed Dec. 31, 1969, Ser. No. 889,645
Int. Cl. A42b 1/02
U.S. Cl. 2-174 6 Claims



A shampoo hat having a generally annular upstanding wall of a suitable height defining the central hole enabling it to be placed upon the head of an infant or other user. A brim formed integrally with the wall includes alternate ridges and grooves which extend radially from the base portion of the wall, and in one form extend only to mid-way of the brim. The wall and brim are molded of a foamed synthetic resin of cellular type into a unitary structure.

3,611,443
PANTS, UNDERSHORTS AND PATTERNS THEREFOR
Molly Arnold Braun, Lake City, Fla., assignor of fractional part interest to Robert L. Kenney, Lake City, Fla.
Filed Oct. 21, 1969, Ser. No. 870,397
Int. Cl. A41b 9/02
U.S. Cl. 2-224 R 3 Claims

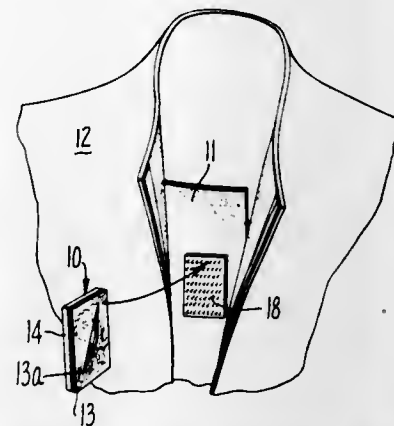


Briefs made of one piece with the seams near the outside of the crotch area. The pattern has a generally V shaped cut in the bottom middle, with the angle of separation diminishing near the separated end of the V. The pattern is cut away and removed between the merging end of the V and about the middle of the width of the V. The outside margins of the pattern are cut in three straight lines of lengths, angles and relative positions generally matching the corresponding cuts at the V. The briefs are made by forming the fly, then sewing the center of the V to the bottom of the fly, then sewing the legs, and then forming the hems at the bottom of the legs and attaching the elastic waist band. The briefs are comfortable and long lasting and are efficiently produced.

3,611,444
DETACHABLE POCKET FOR WEARING APPAREL
Carl T. Rector, Humboldt County, Calif.
(2408 Meadow Lane, Eureka, Calif. 95501)
Filed Dec. 10, 1969, Ser. No. 883,766
Int. Cl. A41d 27/20
U.S. Cl. 2-247 6 Claims

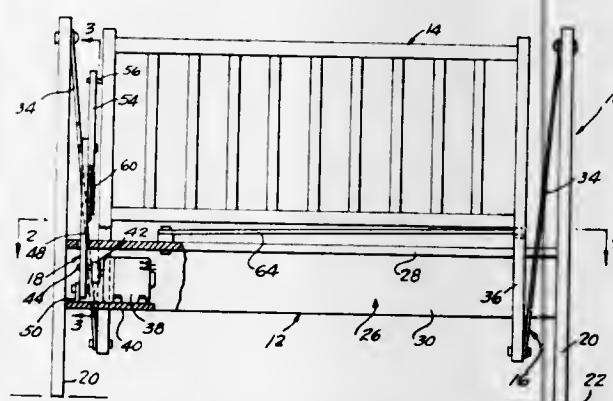
A detachable pocket especially adapted for use with wearing apparel and comprising a pair of substantially parallel side panels peripherally joined with a substantially continuous seam and having a slit formed through one side panel, the slit providing access into the pocket, said one side having an exterior woolly surface; and means for mounting said pocket comprising a hooked fabric secured to the article of wearing apparel; whereby an ob-

ject may be inserted through the slit into said pocket and the pocket attached to the hooked fabric by placing the



ject may be inserted through the slit into said pocket and the pocket attached to the hooked fabric by placing the

3,611,445
CRADLE ASSEMBLY
Wayne L. V. Hillard, 2911 Charles Gate SW., Grand Rapids, Mich. 49509
Filed Oct. 14, 1969, Ser. No. 866,276
Int. Cl. A47d 9/02, 9/04
U.S. Cl. 5-109 6 Claims

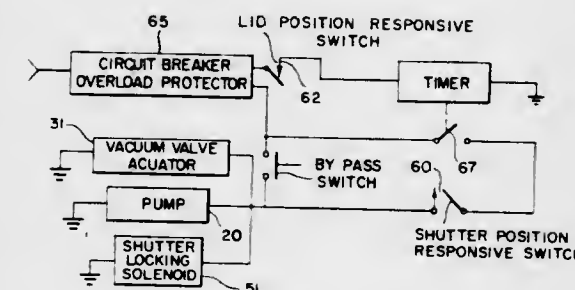
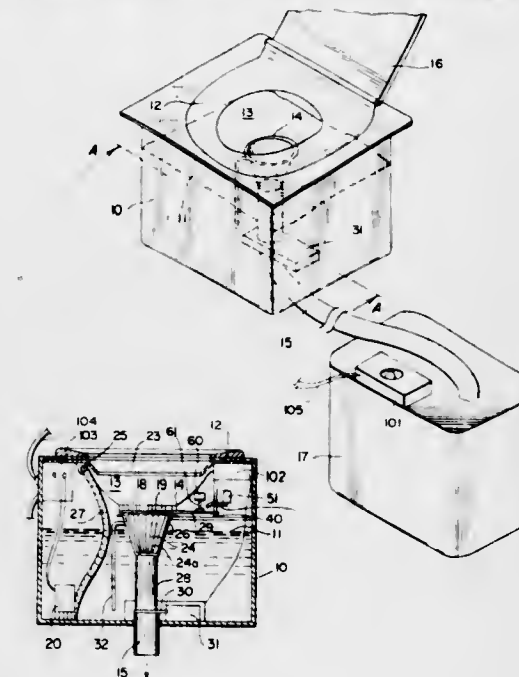


A rocking cradle assembly including a main upright frame suspending a cradle for lateral movement in a plane parallel to a support surface. An electric motor imparts reciprocating motion to the cradle through an eccentric cam and linkage. The linkage is disposed between the cam and cradle, and consists of a pair of overlapped, pivotally connected links normally prevented from moving relative to each other by a tensioned coil spring having an end connected to each link. The motor rotates the cam which oscillates the links in unison, which, in turn, imparts motion to the cradle. If the cradle is manually immobilized, one link oscillates and pivots relative to the other, enabling the motor to continue to operate and the cradle to dwell, without any detrimental effects to the drive system. This motion occurs to a lesser extent at the end of each reciprocal stroke of the cradle, thereby cushioning the reciprocal motion of the cradle at the end of each stroke and providing a smooth, gentle rocking effect.

3,611,446
SANITARY VEHICLE CLOSET
Durrell U. Howard, 306 Krameria Drive, San Antonio, Tex. 78213
Filed May 28, 1970, Ser. No. 41,174
Int. Cl. E03d 1/00, 3/00, 5/00
U.S. Cl. 4-10 10 Claims

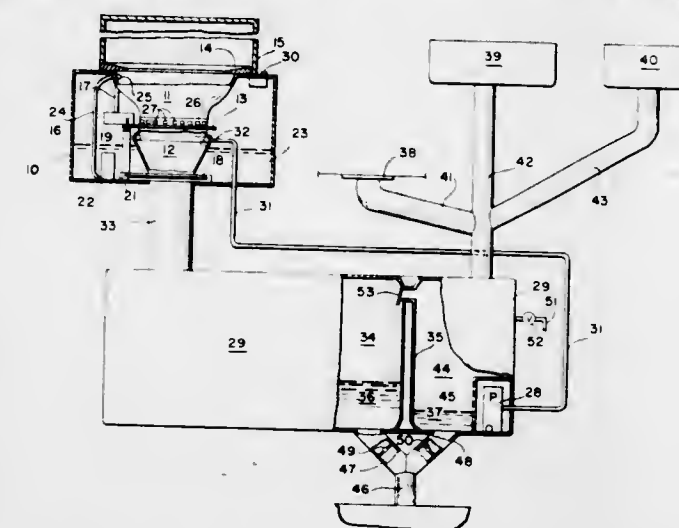
A sanitary closet equipped with a receptacle holding means for positioning a disposable receptacle below the bottom outlet of the closet bowl. The disposable receptacle is removed after each use through a conduit by creating a vacuum in a waste storage reservoir disposed below the bowl. A flushing fluid reservoir provides a

supply of flushing fluid for cleaning the bowl after each use; however, during the flushing cycle, communication between the bowl and the waste storage receptacle is



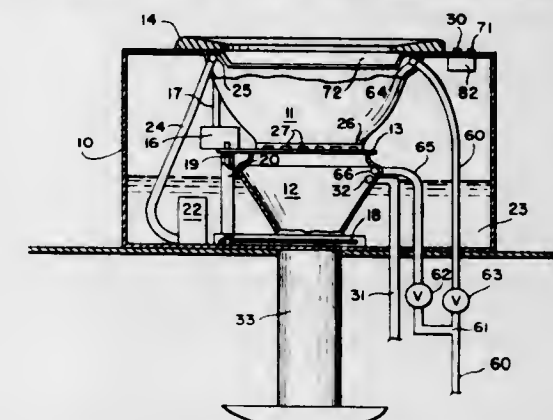
blocked so that the flushing fluid path bypasses the receptacle and cannot become contaminated by its contents.

3,611,447
SANITARY CLOSET
Durrell U. Howard, 306 Krameria Drive, San Antonio, Tex. 78213
Filed May 28, 1970, Ser. No. 41,427
Int. Cl. E03d 1/00, 3/00, 5/00
U.S. Cl. 4-10 8 Claims



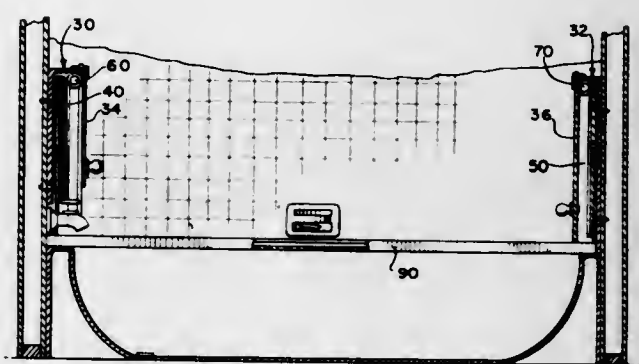
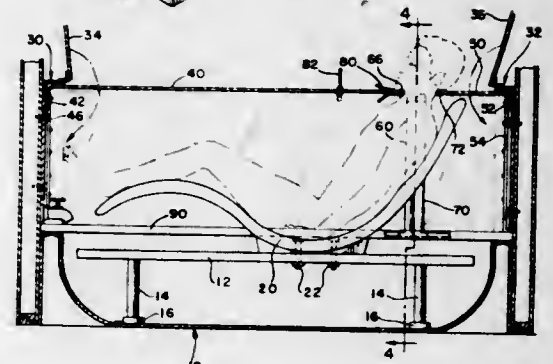
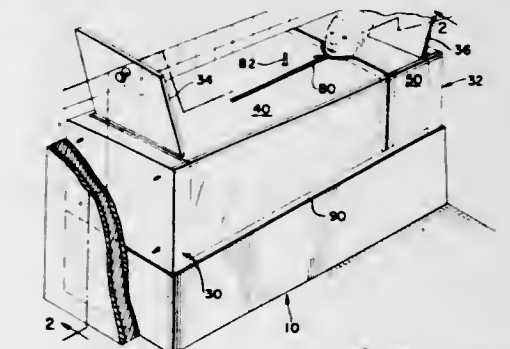
A sanitary system for vehicles or the like includes a sanitary closet having a bowl and a temporary storage receptacle for waste which is positioned below the bowl. Both bowl and receptacle are provided with a respective bottom shutter element which is selectively operable between opened and closed positions. An operating means for the shutters ensures that only one of the two shutters can be open at any one time, with the shutter at the bottom of the bowl being open during use of the closet and

closed during the flushing cycle. The bowl is flushed from a reservoir of flushing fluid, and the flushing fluid follows a path which returns the fluid from the bowl, whose shutter is now closed, to the reservoir, bypassing the lower temporary storage receptacle. The receptacle may be concurrently flushed by flushing water obtained



from a storage container which collects waste water from sinks, showers, etc., and this water flows with the waste from the temporary storage receptacle through the associated, now-open shutter at the bottom of the temporary storage receptacle to a waste storage container where it is held until its removal.

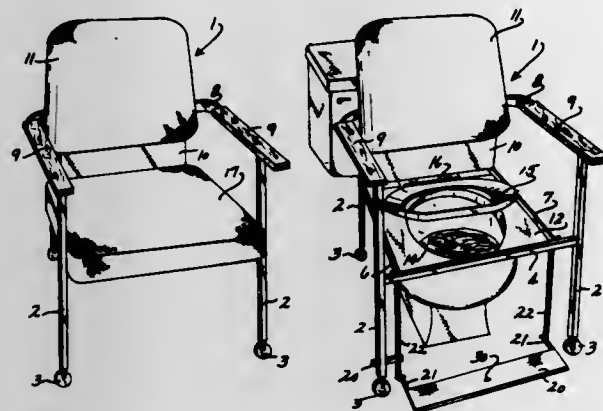
3,611,448
STEAM BATH
Eddie L. Dudley, 934 Laurel, St. Louis, Mo. 63112
Filed May 1, 1970, Ser. No. 33,551
Int. Cl. A61h 33/12
U.S. Cl. 4-162 10 Claims



A bathtub has a support means therein to support a person above the bottom of the tub. A canopy means includes a pair of flexible canopy portions, and a pair of

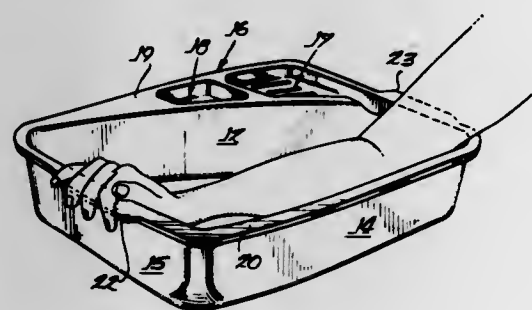
casings are disposed adjacent opposite ends of the bathtub. One end of each of the canopy portions fixed in position within the confines of one of said casings, the other end of each of said canopy portions being secured to one of a pair of movable canopy support portions which are slidably guided in their movement by a pair of elongated guide members extending along opposite sides of the top of the bathtub and having channels receiving the lower ends of the canopy support portions.

3,611,449
TOILET CHAIR
Kenneth E. Berry, S 24 W 22769 Morningside Drive,
Waukesha, Wis. 53186
Filed June 8, 1970, Ser. No. 44,094
Int. Cl. A47k 11/02; A61g 7/02
U.S. Cl. 4-134 10 Claims



A chair construction adapted to serve a dual function as an occasional room chair as well as a toilet chair. The chair includes a frame which is movable on wheels or casters and a toilet seat is mounted on the frame and is normally covered by a removable seat cushion. By removing the cushion, the toilet seat is exposed and the chair can be moved into position above a toilet bowl or water closet. A foot rest is hinged to the frame and when the chair is used as an occasional room chair, the foot rest is supported under the toilet seat and locked in this position by a latch which is connected to the seat cushion and extends through the opening in the toilet seat.

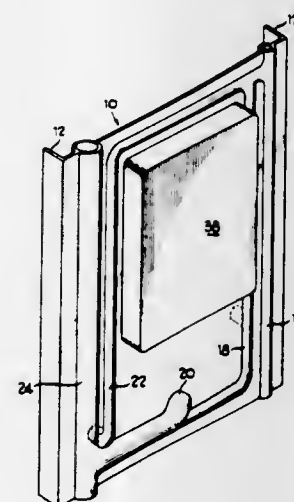
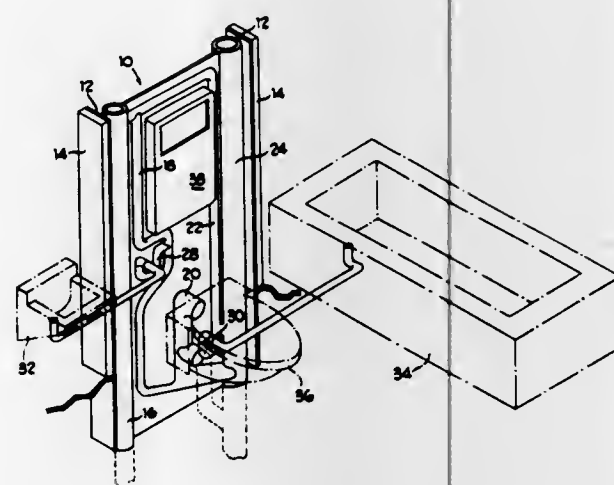
3,611,450
DISPOSABLE WASH BASIN
Lewis F. Bost, Chicago, Ill., assignor to American
Hospital Supply Corporation, Evanston, Ill.
Filed Sept. 5, 1969, Ser. No. 855,562
Int. Cl. A47k 1/04 4 Claims



This disposable wash or soaking basin is particularly suitable for patient use. The basin is durable enough for repeated use yet inexpensive enough to be discarded after

use by a patient, if so desired. The solid, integrally-molded plastic basin includes a generally flat supporting base elongated in one direction sufficient to accommodate a forearm or foot, four side walls extending upwardly and slightly outwardly from the base, and a horizontal ledge or shelf integral with the upper edge of one of the longer side walls for supporting articles. In horizontal cross section, each of the side walls has its midpoint bowed outwardly; and one of the two shorter opposing side walls is about half the length of the other to provide a generally triangular shape in bracing the structure against diagonal deformation when the basin is filled with water and being transported or held by handles formed at the upper edge of the shorter side walls.

3,611,451
PLUMBING MODULE
William H. Armstrong, Bloomfield Hills, Mich., assignor
to Borg-Warner Corporation, Chicago, Ill.
Filed Dec. 8, 1969, Ser. No. 883,085
Int. Cl. E03c 1/00 6 Claims



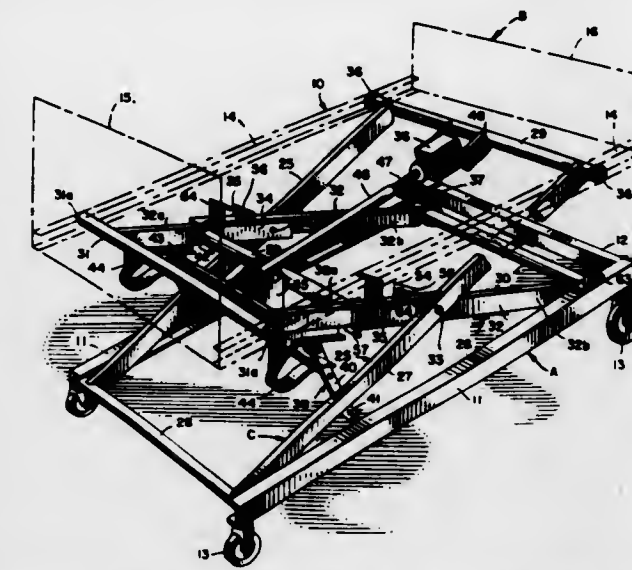
A prefabricated plumbing module or assembly which is an integral molded unit adapted to be installed between studding or other wall constructions of a building or the like and having interconnected piping for connection with the waste and drain fittings of a water closet bowl, a lavatory and a bath tub or shower (or combination thereof) and for connection with a vent and stack and to a waste system or sewer. The water closet tank can be integrally molded in the unit.

ERRATUM

For Class 4-134 see:
Patent No. 3,611,457

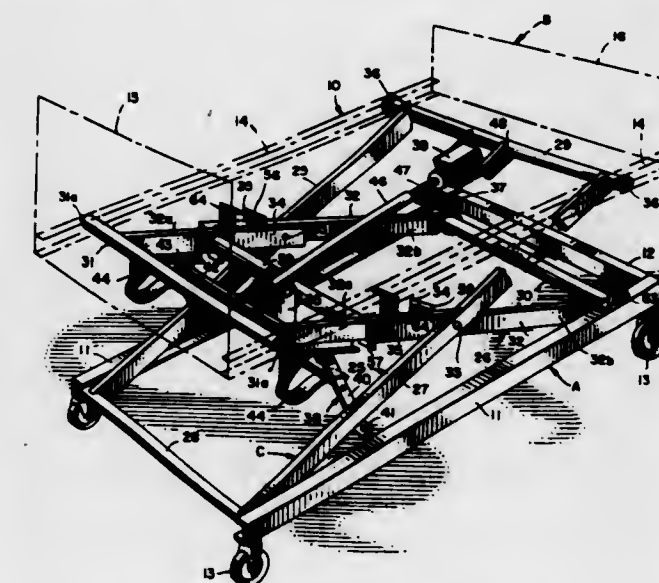
3,611,452
INVALID BED CONSTRUCTION
Michael Turko, Manitowoc, and Floyd F. Mueller, Two
Rivers, Wis., assignors to American Hospital Supply
Corporation, Evanston, Ill.
Filed June 25, 1970, Ser. No. 49,672
Int. Cl. A61g 7/00 36 Claims

U.S. Cl. 5-62
An invalid bed having a scissors mechanism for raising and lowering the patient-supporting frame. Movement of the patient-supporting frame into Trendelenburg and reverse Trendelenburg positions is achieved by buckling one of the scissors frames, thereby permitting



the upper end of that frame to be positioned below or above the corresponding end of the other scissors frame. Power drive, coupled with a lever and cam arrangement, produces substantially constant-speed lifting and lowering action of the patient-supporting frame regardless of the particular elevation of that frame.

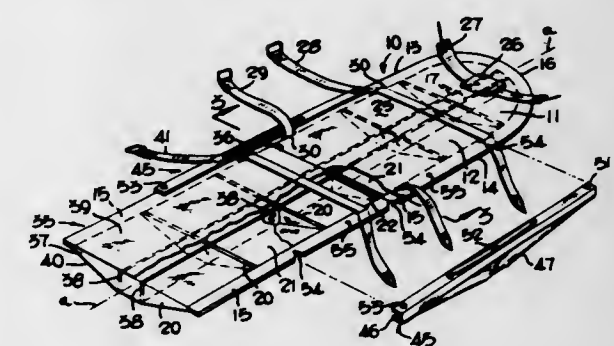
3,611,453
INVALID BED AND TILT ACTUATING MECHANISM
Gene B. Lokken, Mishicot, Wis., assignor to American
Hospital Supply Corporation, Evanston, Ill.
Filed June 25, 1970, Ser. No. 49,673
Int. Cl. A61g 7/00 26 Claims



An invalid bed in which movement of a patient-supporting frame into Trendelenburg and reverse Trendelen-

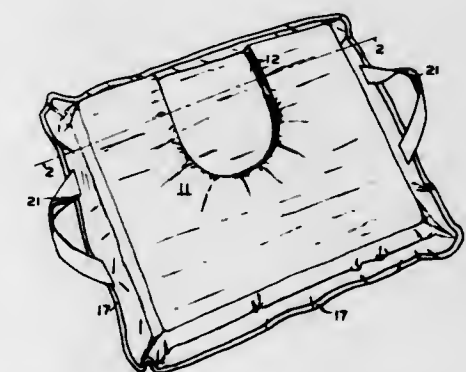
burg positions is achieved by buckling one of the scissors or connecting frames upon which the patient-supporting frame rests. Buckling of such connecting frame is normally prevented by at least one butterfly arm pivotally carried by one of the longitudinal members of such frame, the arm normally engaging the end of the frame's other longitudinal side member to maintain such members in alignment. A release bar extending through one of such frame members is engageable with an extension of the butterfly arm to pivot such arm into a releasing position, thereby permitting relative pivotal movement of the frame members. Automatic shifting of the release bar into its retracted position occurs as the frame members pivot out of alignment so that the butterfly arm, which is biased into a locking position, will again lock such members together when they have returned to aligned condition.

3,611,454
SPINE BOARD APPARATUS
Allen P. Klippel, 7112 Wydown Blvd.,
Clayton, Mo. 63105
Continuation-in-part of application Ser. No. 793,514,
June 23, 1969, This application June 24, 1970,
Ser. No. 49,359
Int. Cl. A61g 7/10 5 Claims



Spine board apparatus, of the type to be carried, dismantled, and assembled in the course of rescuing fracture patients. The board construction is lightweight, being reinforced inwardly from center edges to deeper centerline beams. Edge channels with truss reinforcements serve with the beams to support the board when it is assembled, and permit hoisting. Latching pins are pre-positioned on the channels.

3,611,455
FLOTATION PAD
Max Gottfried, Rossford, Ohio, assignor to The Jobst
Institute, Inc., Toledo, Ohio
Filed Apr. 29, 1969, Ser. No. 820,085
Int. Cl. A47k 27/08; A47g 9/00 6 Claims

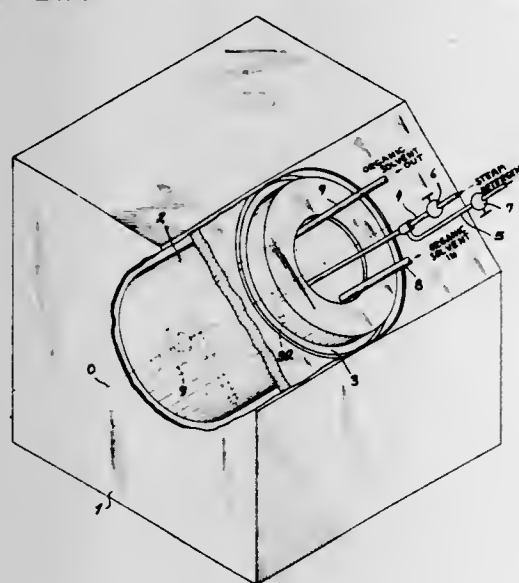


A cushion for the human body of a formed foam elastomer enclosed in a fluid impervious flexible envelope from which the air has been removed and at least in part replaced by a liquid such as water. The foam essentially

is saturated with the liquid and the envelope loosely encloses the elastomer form so that the envelope conforms to a supported body, the liquid tends to equalize the supporting pressure across the surface of the body and the elastomer form tends to confine the body of liquid to the support area and provide a stable support.

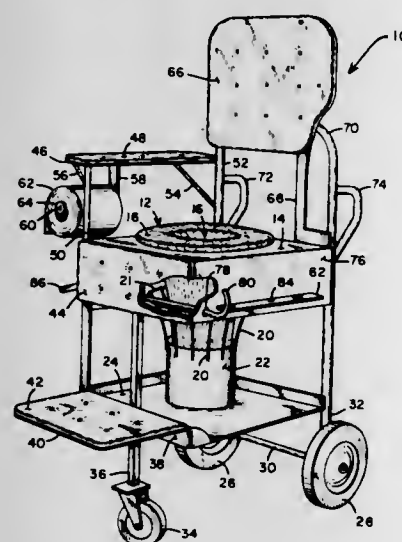
3,611,456
METHOD OF AND APPARATUS FOR SPOTTING TEXTILES BEFORE DRY CLEANING
Horst Hildebrandt, Rheydt, Rhineland, Germany, assignor to BOWE, Bohler & Weber KG, Augsburg, Germany

Filed Feb. 20, 1970, Ser. No. 13,083
Claims priority, application Germany, Feb. 20, 1969, P 19 08 506.4
Int. Cl. D06f 35/00, 43/02
U.S. Cl. 8—149.1 **5 Claims**



A load of garments to be dry-cleaned in a rotating or oscillating drum is subjected in that drum, in the absence of organic cleaning fluid, to a mixture of steam and detergent to moisten and lift major stains of a water-soluble nature; after tumbling for a certain period in this atmosphere, the moist garments are treated with the usual organic solvent.

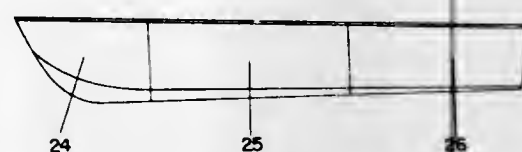
3,611,457
PORTABLE SANITARY TOILET
Louis C. Wippich, Sauk Rapids, Minn. 56379
Filed June 12, 1970, Ser. No. 45,615
Int. Cl. A47k 11/04; A61g 9/00
U.S. Cl. 4—134 **10 Claims**



This invention relates to a portable sanitary toilet cart for use in hospitals, institutions, nursing homes, and the

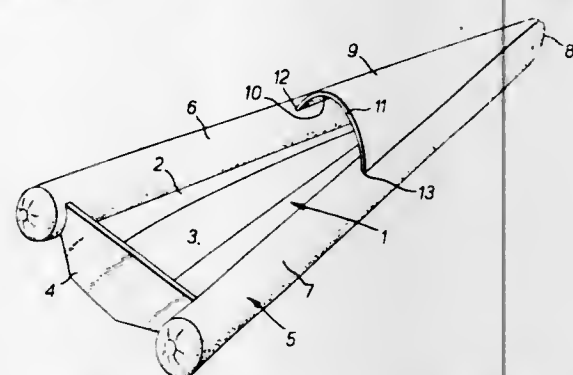
like. A wheeled cart is provided with a footrest portion, a back portion, and a waste receptacle portion. A clamping mechanism is shown for clamping the portable sanitary toilet cart to the side-rail of a bed. A removeable waste receptacle is also shown.

3,611,458
BOAT CONSTRUCTION
Alvaro Rodriguez Gonzalez, Urbanizacion San Martin, Bloque 4, Apto. E-6, Caracas, Venezuela
Filed Sept. 3, 1969, Ser. No. 854,428
Claims priority, application Spain, Sept. 3, 1968, 357,796
Int. Cl. B63b 7/04 **9 Claims**



An easily transportable boat having the strength, seaworthiness and general appearance of conventional craft consists of a plurality of individual, watertight hull portions which when assembled form the boat and when disassembled may be nested one within the other to conserve storage space. Included in the hull modules are seats, some of which fold up to make room for the other hull modules during storage and transportation.

3,611,459
COMPOSITE BOAT
Derek W. Sear, Wilslow, Ronald B. Noad, Urmston, and Peter Frank Panter, Didsbury, England, assignors to Dunlop Holdings Limited
Filed Sept. 15, 1969, Ser. No. 857,855
Claims priority, application Great Britain, Sept. 19, 1968, 43,863/68; Oct. 30, 1968, 51,365/68; Feb. 22, 1969, 9,648/69; June 7, 1969, 28,914/69
Int. Cl. B63b 7/08 **10 Claims**

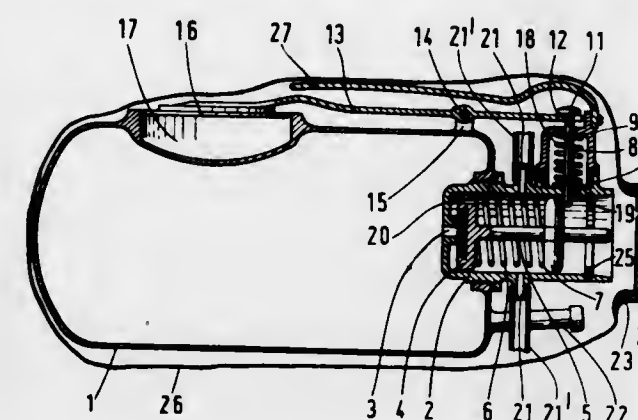


A composite boat comprising a rigid hull having an inflatable gunwale attached to the rim of the hull in such a manner that over a major portion of the length of the gunwale a portion of the gunwale projects outboard of the rim of the hull and at least the greater part of the gunwale volume lies above the rim of the hull. The inflatable gunwale is preferably constructed with flexible air chambers contained within an outer shape inducing protective covering of rubberised fabric.

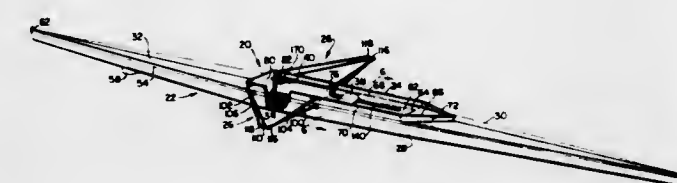
3,611,460
LIFEBELT
Lino Rossetti, Via Cesare Battisti 27, Viareggio, Italy
Filed Sept. 11, 1969, Ser. No. 857,130
Claims priority, application Italy, Sept. 24, 1968, 53,248/68
Int. Cl. B63c 9/16 **4 Claims**

A safety lifebelt adapted to be inflated by hand and automatically by hydrostatic pressure acting upon a pan-

shaped portion of a rocking lever operating a valve to open a gas bottle provided in an air tube to allow the gas

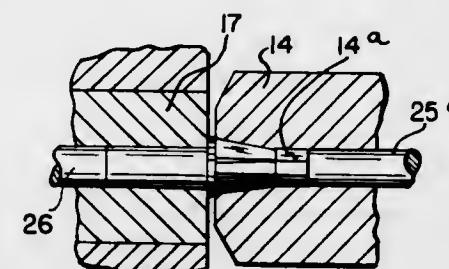


3,611,461
SINGLE PERSON SHELL AND METHOD
William D. Wurzberger, 922 Tyson St., Baltimore, Md. 21201
Filed Mar. 18, 1969, Ser. No. 808,191
Int. Cl. B63b 3/02 **33 Claims**



A slim, single person rowing shell made with sheet plastic hull, decks and rigid molded plastic cockpit, sealed together as a water-tight semi-hollow body. The hull and decks are vacuum formed and the cockpit is expansion cast. Buoyant plastic material enclosed in the body renders the shell substantially sink-proof. A uni-piece cockpit can include integral bracing which provides the requisite outrigger support structure for oars and auxiliary pontoons. Various structures are contemplated as alternate outrigger supports, some being made from integral plastic parts of the cockpit structure or metal tubing secured as truss structure to the cockpit rim.

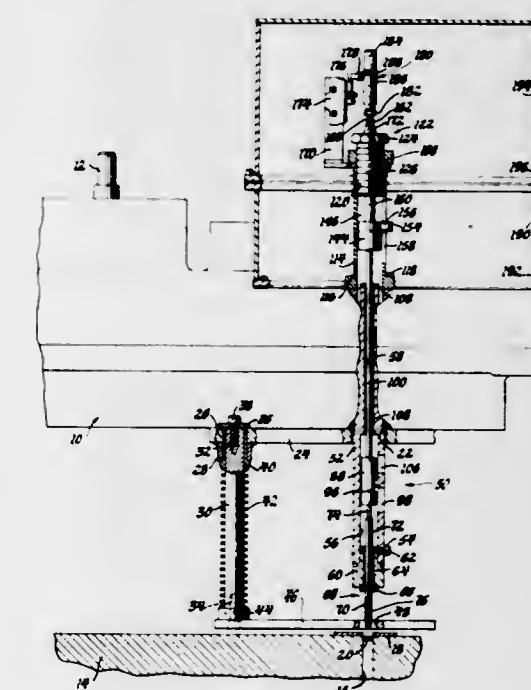
3,611,462
METHOD OF MAKING HEX HEADED BOLTS AND SCREWS
Howard D. Prutton, 46833 Danbridge Road, Plymouth, Mich. 48170
Filed June 11, 1969, Ser. No. 832,178
Int. Cl. B21k 1/44; B23g 9/00
U.S. Cl. 10—27 **1 Claim**



A scrapless method is provided for cold forming a hexagon headed fastener such as a cap-screw or bolt, using two blows only, from a cylindrical metal blank having approximately the diameter of the fastener shank,

wherein the first blow forms a regular prism of six faces at the head end of the blank having a dimension across diametrically opposed corners approximately equal to said blank diameter, and which at the same time forms a generally frusto-pyramidal portion flaring outwardly from the prism to a dimension slightly greater than the diameter of the blank; and wherein the second blow forms the finished head.

3,611,463
TAPPED HOLE CHECKING DEVICE
John R. Schirtzinger and Arthur H. Schorr, Columbus, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed June 12, 1969, Ser. No. 832,791
Int. Cl. B23g 1/00; G01b 3/40, 3/48, 5/16
U.S. Cl. 10—129 **4 Claims**

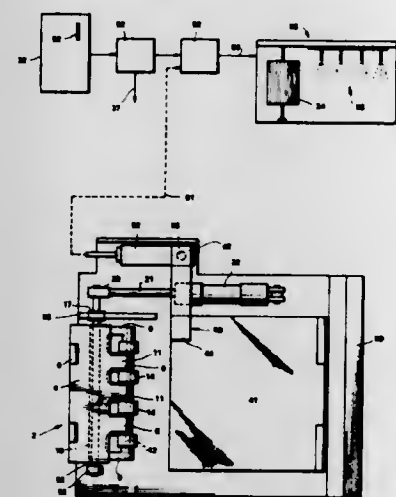


A tapped hole checking device has a rotatably driven spindle mounted on a vertically reciprocating tapping machine. A torque clutch on the lower end of the spindle mounts a probe with a threaded end, permitting the probe to be moved vertically. The probe is connected to a cam which responds to relative motion between the probe and the head to operate a switch mounted on the head. As the head lowers, the threaded end of the rotating probe engages and screws into a tapped hole at a rate faster than the head lowers to produce a relative motion between the head and the probe and close the switch. As the head raises, the rotation of the probe reverses to screw out of the tapped hole, again closing the switch. If during this cycle, the probe encounters a defectively tapped hole of any kind, it fails to close the switch both times and the machine shuts off.

3,611,464
AUTOMOBILE STOPPING DEVICE FOR USE IN A CAR WASH
Milan D. Boyanich, Amherst, N.Y., assignor to Milton Car Wash Equipment, Inc., Buffalo, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,307
Int. Cl. B60s 3/04 **6 Claims**

A power operated stop means to limit the movement of a vehicle to thereby stop it at a definite location relative to the movable washing apparatus of a vehicle washing installation is provided adjacent the wheel pad which actuates the switch means for initiating the wash cycle. The stop means comprises a pair of pivotally jointed

plates, one of which is secured to a base plate and the other of which is secured to a servomotor to be moved thereby for bringing the plates into extended position, to

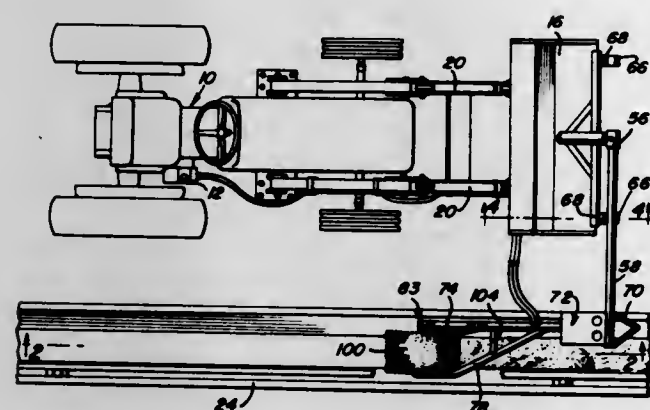


act as a stop for a vehicle wheel, or to a position wherein the plates are folded together to permit passage of the wheel thereover.

3,611,465
FEED BUNK CLEANER
William R. Rasmussen, Jetmore, Kans., assignor to R-J Industries, Inc.
Filed May 6, 1969, Ser. No. 822,140
Int. Cl. A46b 13/02

U.S. Cl. 15-56

8 Claims



An attachment including a base to be mounted upon a vehicle for vertical adjustment relative thereto and for oscillation about a first horizontal transverse axis. A transverse support arm is supported at one end from the base for oscillation about a second axis disposed normal to the first axis. The other end of the support arm has the first front end of a trailing arm supported therefrom for limited universal movement relative thereto and the second rear end of the trailing arm has a powered rotary brush assembly supported therefrom whose rotary brush element is rotatable about a horizontal transverse axis.

3,611,466
CLEANER HEAD FOR APPARATUS UTILIZED FOR CLEANING COKE OVEN DOORS
Charles D. McCullough, Metropolis, Ill., and Leo G. Schroeder, New Hyde Park, N.Y., assignors to Wilputte Corporation

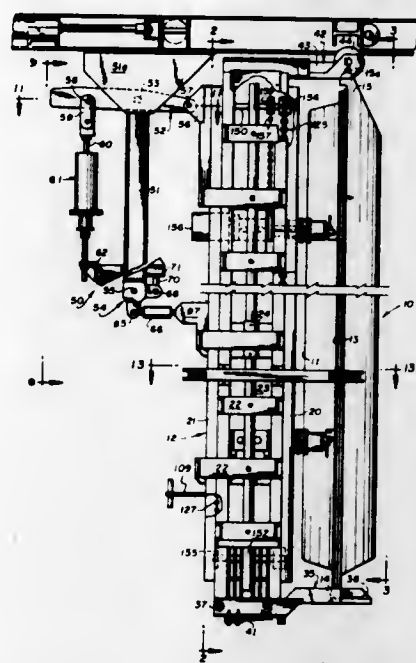
Filed July 18, 1969, Ser. No. 843,009
Int. Cl. C10b 43/04

U.S. Cl. 15-93

6 Claims

In apparatus for scraping undesired substances formed on a coke oven door during a coking operation, a door cleaner head having a frame is provided with endless tracks located in the front and rear portions thereof for permitting a scraper means to travel thereabout in a

continuous endless path to scrape the undesired substances formed on the coke oven door. Means are further pro-

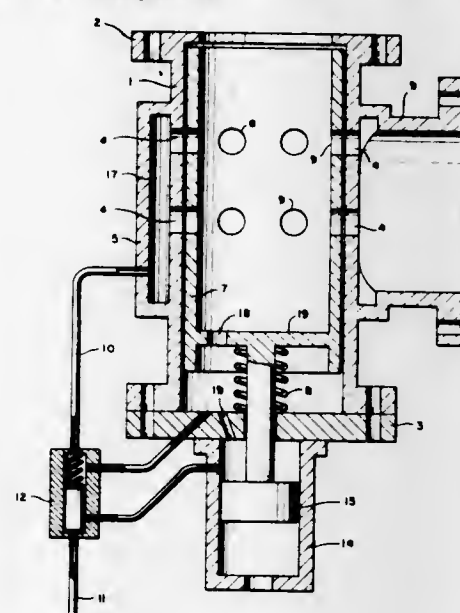


vided for orienting the cleaner head with the door to be cleaned along with means for removing debris from said front and rear tracks.

3,611,467
PIPELINE SCRAPER TRAP
Hans Hinz, Hamburg, Germany, assignor to Shell Oil Company, New York, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,758
Claims priority, application Germany, Sept. 9, 1968, P 17 75 673.9
Int. Cl. B08b 9/04

U.S. Cl. 15-104.06 A

5 Claims



Scraper trap for use with a pipeline and including a housing having a movable sleeve means disposed therein, said sleeve means being adapted to receive said scraper and effective to control material flow between the pipeline and material receiving means such as a storage tank.

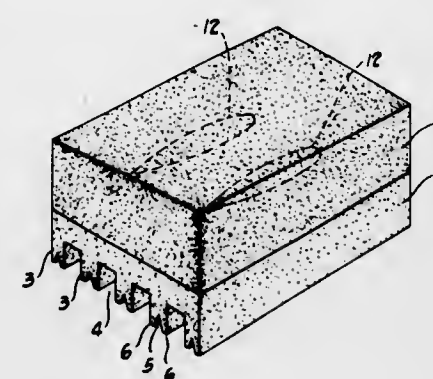
3,611,468
DISPOSABLE SCRUB BRUSH
Robert E. Michael, Berea, Ohio, assignor to Halbrand, Inc., Willoughby, Ohio
Filed Aug. 28, 1969, Ser. No. 853,729
Int. Cl. A471 13/17

U.S. Cl. 15-104.93

5 Claims

The disclosure herein is of a scrub unit which is intended for use in hospitals and under similar circumstances primarily where the unit is of such a construction

and composition that the same may be disposed of if desired, after its scrubbing action has been accomplished. The unit basically comprises sections of different hardnesses and materials of generally cellular nature, such as various types of foam, one of the sections being of relatively soft material and the other section of substantially harder material with ridges provided to partially enfold and encircle body parts being scrubbed, and of



flexible enough nature to partially surround the same, yet sufficiently stiff to carry out the scrubbing of the pores which is desired particularly in use in medical applications. The scrub unit also contemplates the provision of a soap or similar solution in the soft material, the adherence of the respective parts providing a partial barrier for the passage of the cleansing solution such as soap or the like from the soft material to the harder section.

3,611,469
SASH PAINT APPLICATOR
Anselmo J. Belli, 17 Yates St.,
West Haven, Conn. 06516
Filed May 1, 1970, Ser. No. 33,798
Int. Cl. A46b 15/00; B44d 3/16

U.S. Cl. 15-118

6 Claims

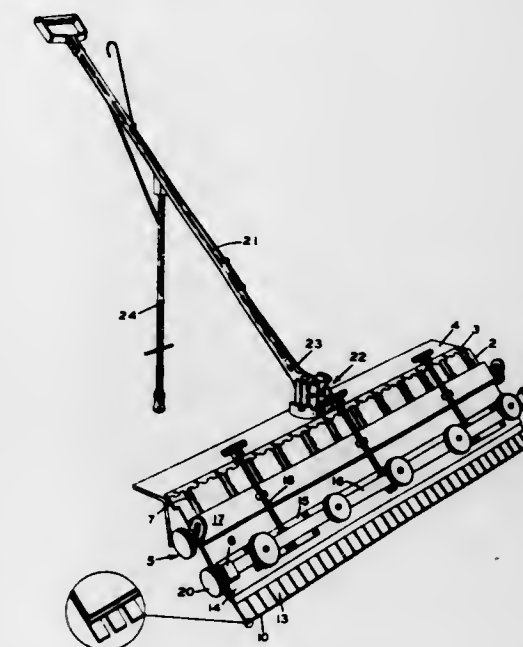


A paint applicator providing a resilient pad of truncated wedge shape carrying on one face a paint absorbing and applying cover sheet, and a handle with opposite end prongs, with the pad being mounted with its other face on the front of one of the prongs with its narrow end extending to the end of this prong, and the other prong being spaced rearwardly from the one prong and extending with its end beyond that of the one prong to serve as a guide in use of the applicator.

3,611,470
ADHESIVE SPREADER
Jack E. Gaston, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed June 8, 1970, Ser. No. 43,999
Int. Cl. B05c 11/04

U.S. Cl. 15-235.6

4 Claims

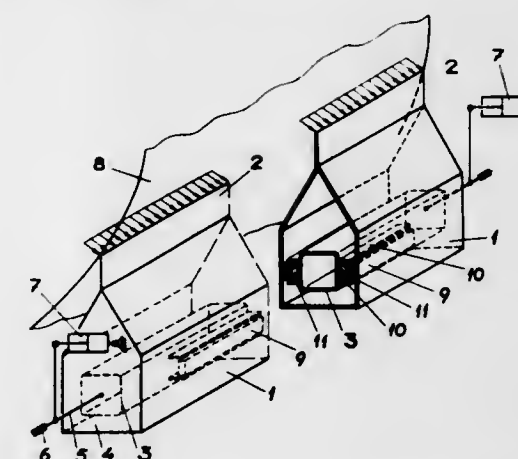


An adhesive spreader of substantial size is disclosed for the spreading of flooring adhesive over a large area without the need for the mechanic to kneel on the floor as he performs this operation. Such an adhesive spreader is formed with a 3' wide blade having a plurality of adjustable teeth-like projections backed up with a flexible strike-off blade and an overlying set of pressure fingers, all resiliently mounted in position to provide automatic compliance to the normal unevenness of concrete floors, and capable of spreading a wide swath of adhesive in a uniform, controlled application. A mounting frame and adjustable handle structure permit the use of the spreader at the proper angle to the floor surface for best control of spreading and at the proper angle with respect to the direction of travel so as to divert the excess adhesive in the desired direction.

3,611,471
SCRAPER DEVICE
Olavi Meskanen, Vekarokatu, and Erkki Lihola, Minna Canthinkatu, Finland, assignors to Valmet Oy, Helsinki, Finland
Filed June 19, 1968, Ser. No. 738,180
Int. Cl. D21g 3/02

U.S. Cl. 15-256.51

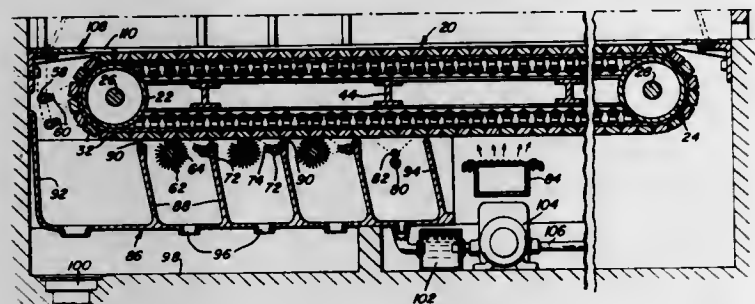
2 Claims



A scraper device intended for use in paper machines and the like has turning cylinders at its ends for producing

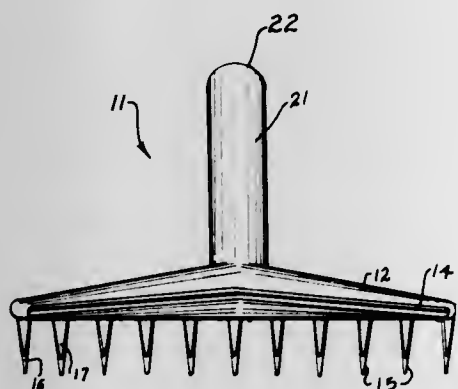
the required blade pressure against the roll. The body of the device includes a box-type beam to which a blade is fixed. Inside this beam there is another separate inner beam. Flexible loading tubes are located in spaces provided between the sides of the two beams. Variable pressures can be supplied to the tubes.

3,611,472
SELF-CLEANING FLOOR
Lee L. Kayser, 912 North St.,
White Plains, N.Y. 10605
Filed Feb. 4, 1969, Ser. No. 796,534
Int. Cl. A47I 5/38
U.S. Cl. 15—302 13 Claims



An endless revolving floor in the nature of a continuous belt or belt-like unit mounted between opposed rollers with the upper run thereof constituting the floor or support surface, whether it be for an animal barn or an area in the home, for example the hallway or kitchen. A series of sprays and brushes underlie the revolving floor for cleaning engagement with the lower run of the floor forming belt-like unit during the travel thereof whereby an automatic cleaning of the floor can be effected. A drying blower is also provided. As an alternative form, particularly adapted for use in the home, a low profile dry cleaning unit, incorporating a vacuum system and revolving brush, can be provided.

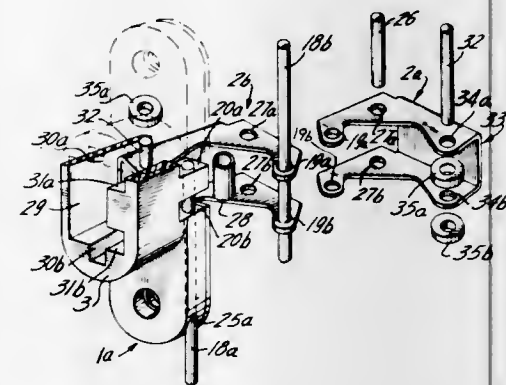
3,611,473
VACUUM CLEANER ATTACHMENT FOR SHAG RUGS AND THE LIKE
Phillip P. Johnson, R.R. 2, Owatonna, Minn. 55060
Filed Aug. 1, 1969, Ser. No. 846,677
Int. Cl. A47I 9/02
U.S. Cl. 15—397 4 Claims



An attachment for vacuum cleaners is disclosed which finds particular use in the combing and cleaning of shag rugs. The attachment consists of an elongated housing from which extend a plurality of spaced finger members that provide a combing function as the attachment is drawn through the rug. Each of the finger members has a longitudinal bore that communicates with a source of

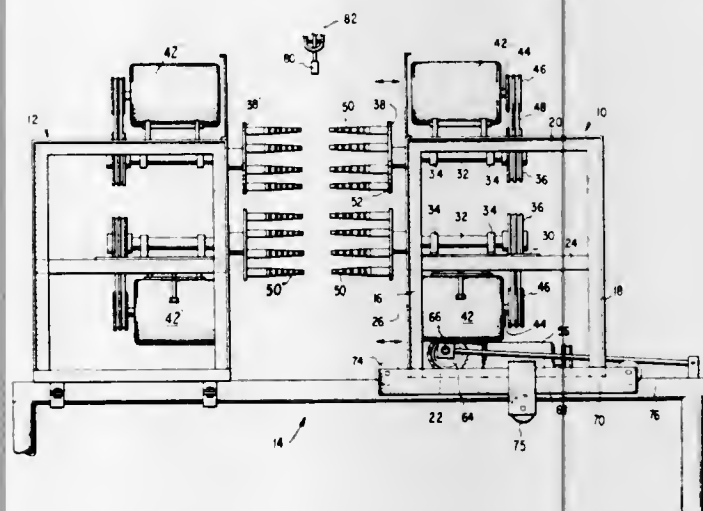
vacuum and opens on the trailing edge of the finger member to pick up dust and dirt particles loosened by passage of the members through the rug.

3,611,474
INVISIBLE HINGE
Walter Meyer, Milan, Italy, assignor to The Stanley Works, New Britain, Conn.
Filed Oct. 21, 1969, Ser. No. 868,003
Claims priority, application Italy, Oct. 31, 1968, 23,193/68
Int. Cl. E05d 3/06
U.S. Cl. 16—164 2 Claims



An invisible hinge for doors and the like includes a pair of mounting blocks formed from a low-friction material such as nylon and joined by a pair of interlocked links. A pivot pin connects the links which are each pivotally connected at one end to the mounting blocks. The other ends of the links are mounted in slide bearings formed in the blocks to enable the links simultaneously to rotate with respect to their pivot pin and the block pivot pins, and to slide in the blocks, so that the axis of rotation of the blocks is not fixed in space. Hence the hinge is invisible upon closure of a door on which it is mounted.

3,611,475
APPARATUS AND METHOD FOR REMOVING FEATHERS FROM POULTRY
Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed Aug. 26, 1969, Ser. No. 853,100
Int. Cl. A22c 21/02
U.S. Cl. 17—11.1 13 Claims

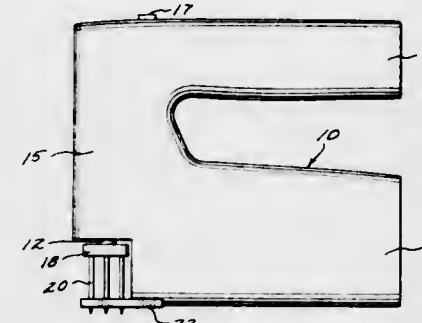


Feather removal from chickens or other fowl is achieved by rotating opposing sets of flexible picking fingers against the body of a chicken or other fowl as it is conveyed along a predetermined path therebetween. The picking fingers are secured to frames positioned on opposite sides

of the path of travel and at least one frame is continuously reciprocated transversely of the path for continuously varying the degree of tightness by which the chicken or other fowl is gripped by the opposing sets of picking fingers.

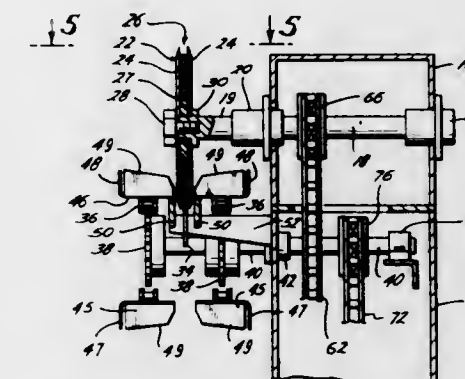
fluid is continuously removed from the trough by a series of drain openings and overflow means, the latter also serving to maintain a constant level of cleaning fluid in the trough.

3,611,476
MEAT TENDERIZER
Virginia L. Clifton, 1701 E. Louisiana Ave.,
Denver, Colo. 80210
Filed Jan. 2, 1969, Ser. No. 788,520
Int. Cl. A22c 9/00
U.S. Cl. 17—25 7 Claims



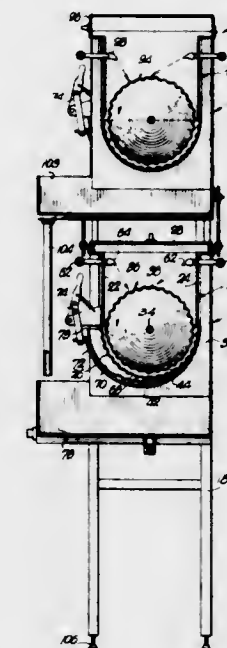
A portable meat tenderizing device comprising a reciprocating shaft with a multiple spiked element attached to the base thereof and a porous plate positioned below the spiked element through which the spikes pass in a reciprocating action. Thus, the reciprocating spikes exert a tenderizing action by repeatedly perforating the meat.

3,611,478
APPARATUS FOR CUTTING CRAB BODIES
W. Lee Lockerby, 13511A Northshore Drive,
Houston, Tex. 77015
Filed Aug. 21, 1969, Ser. No. 852,059
Int. Cl. A22c 29/00
U.S. Cl. 17—71 5 Claims



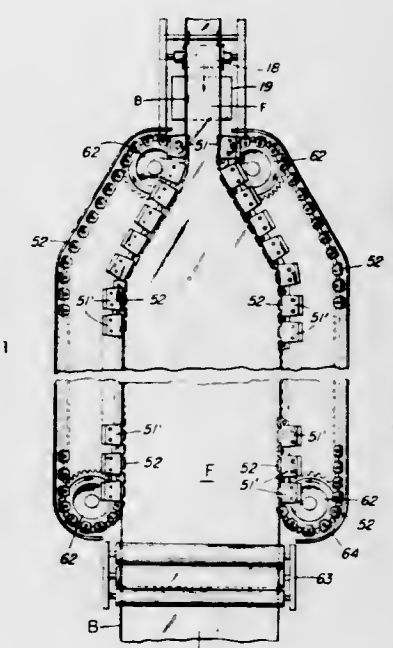
A machine for cutting crab bodies into half sections while employing a double bladed cutter for removing the central longitudinal partition between the sections in order to expose the inner ends of the meat-containing compartments of both body sections for removal of the meat therefrom.

3,611,477
CHITTERLINGS SCRUBBER
Wallace F. Walter, 2743 Fontenelle Blvd., Omaha, Nebr. 68104, and Karl Oberdorfer, 24 Charles St., Council Bluffs, Iowa 51501
Filed Sept. 12, 1969, Ser. No. 857,362
Int. Cl. A22c 17/16
U.S. Cl. 17—43 14 Claims



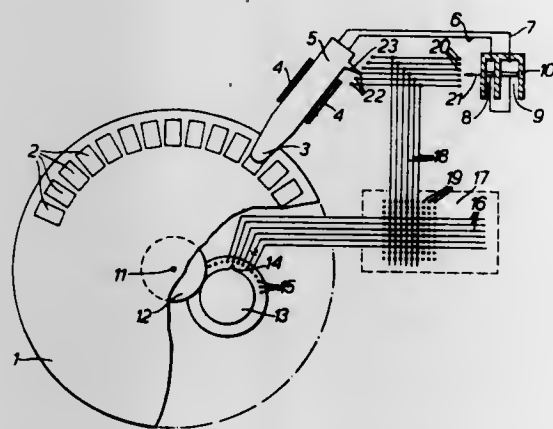
A cleaner for chitterlings comprises an elongated trough having a longitudinally corrugated inner surface and an elongated, rotary cleaning drum received within the trough having a longitudinally corrugated outer surface. The corrugations of the two surfaces produce a scrubbing effect on the chitterlings which are introduced into the trough, and a cleaning fluid spray directed along the drum advances the chitterlings through the trough. Contaminated

3,611,479
ORIENTATION APPARATUS
Guy J. Wicksall, Fayette, N.Y., assignor to Mobil Oil Corporation
Filed Sept. 2, 1969, Ser. No. 854,547
Int. Cl. B29d 7/24
U.S. Cl. 18—1 FB 2 Claims



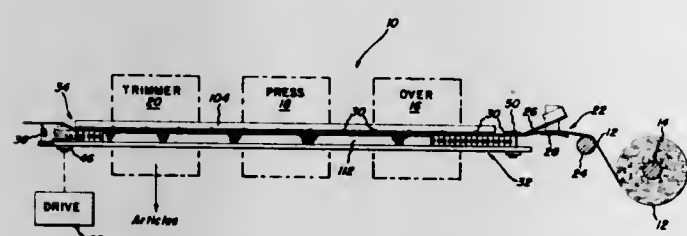
An apparatus for restraining the edges of an advancing web of thermoplastic material being oriented which comprises a plurality of permanently mounted idler rollers in nipping engagement with a series of individually mounted clip plates carried on a continuously advancing chain member, and means biasing the rollers into nipping engagement with the clip plates, for nipping at the interface of the rollers and the clip plates the edges of the advancing web.

3,611,480
MOULD FILLING PLANTS
 Bernd Zippel, Langenhain, and Alfred Schlieckmann,
 Eschwege, Germany, assignors to Richard Zippel & Co.
 KG, Eschwege, Germany
 Filed Feb. 20, 1970, Ser. No. 12,953
 Claims priority, application Germany, Mar. 29, 1969,
 P 19 16 329.2
 Int. Cl. B29c 3/06, 5/00; B29h 3/08
 U.S. Cl. 18—4 P 6 Claims



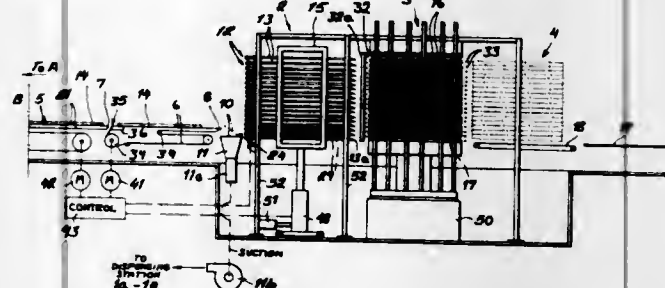
A control arrangement for a plastics material moulding plant is disclosed. The arrangement comprises an endless conveyor for carrying a plurality of moulds distributed on the conveyor and mould filling means for successively discharging mould filling material into the moulds. The conveyor is motivated so as to position the moulds successively at the mould filling means and the conveyor is coupled to a rotary selector of a selector switch. The fixed contacts of the selector switch are connected to a plurality of first conductors of a crossed-bar switch. The crossed-bar switch is provided with a plurality of further conductors which are selectively interconnectable to the first conductors. The further conductors are connected to control means for controlling the quantity of mould filling material discharged into the respective moulds in dependence on the interconnections between the first and further conductors.

3,611,481
MOLDING APPARATUS HAVING SHEET TRANSPORTING MEANS WITH PIERCER MEANS THEREON
 Edward A. Malosh, Eau Claire, Wis., and Melroy L. Kneel, Austin, Minn., assignors to Standard Oil Company, Chicago, Ill.
 Filed Sept. 22, 1969, Ser. No. 859,824
 Int. Cl. B29b 3/00; B29c 3/04
 U.S. Cl. 18—4 P 3 Claims



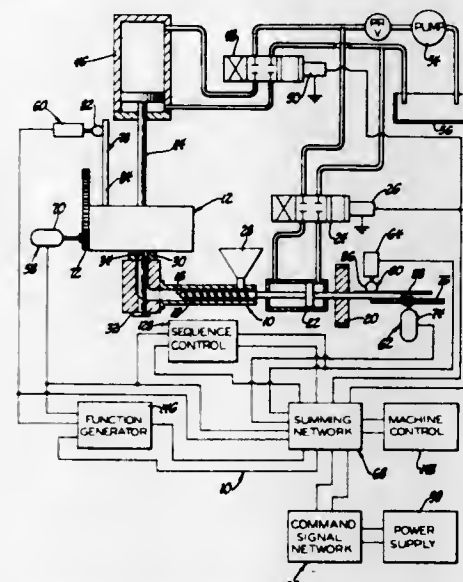
Disclosed is a novel sheet transporting apparatus including driven sprocket means having generally vertical axes of rotation, endless roller chain means carried by the sprocket means, restraining means adjacent to chain paths which engage the chain's rollers and restrain the chain means' lateral movement, and piercer means mounted on the chain means in a position to impale a sheet.

3,611,482
INSTALLATION FOR THE PRODUCTION OF PRESSED BOARD
 Gerhard Hutz, Suchteln, Germany, assignor to Firma G. Siempelkamp & Co., Krefeld, Germany
 Continuation-in-part of application Ser. No. 712,202, Mar. 13, 1968. This application Oct. 1, 1969, Ser. No. 862,881
 Claims priority, application Germany, Nov. 22, 1968, P 18 10 240.4
 Int. Cl. B29j 5/08
 U.S. Cl. 18—4 R 15 Claims



A continuous layer of comminuted material is strewn onto a continuously moving first conveyor and is divided into separate mats and is precompressed under a drum. The first conveyor feeds the mats to a second conveyor over a junction between the conveyors which can be reciprocated longitudinally. The downstream end of the second conveyor can also be longitudinally reciprocated to deposit the individual mats on one of a group of superposed tier conveyors which are individually operable to pick up the mats and jointly operable, e.g. by a rack-and-pinion arrangement to deposit the mats on the platens of a multilevel press. The second or accelerating conveyor is operable at two speeds: a relatively low speed corresponding to that of the first conveyor and a relatively high speed corresponding to that of the tier conveyors. In this manner, with sequenced speed change of the second conveyor and reciprocation of the junction, the mats are separated from one another. A chute below the downstream end of the second conveyor can receive defective mats or mats which continue to be fed while the charging rack empties into the press.

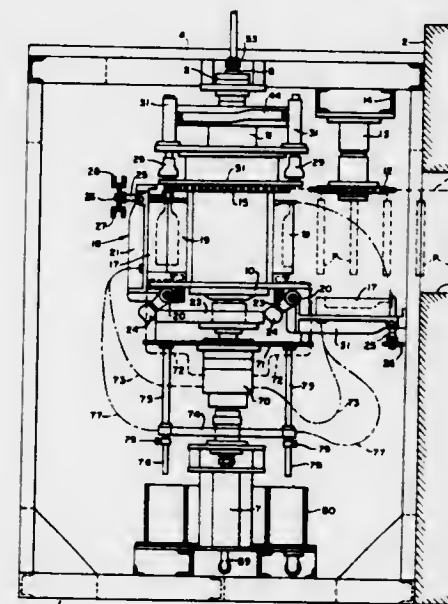
3,611,483
CONTAINER MAKING APPARATUS CONTROL SYSTEM
 Donald L. Amsden and Casimir W. Nowicki, Toledo, Ohio, assignors to Owens-Illinois, Inc.
 Filed Mar. 19, 1970, Ser. No. 21,054
 Int. Cl. B29c 3/06
 U.S. Cl. 18—5 BC 11 Claims



A system for controlling the movements of a neck mold and an extruder ram for container making apparatus.

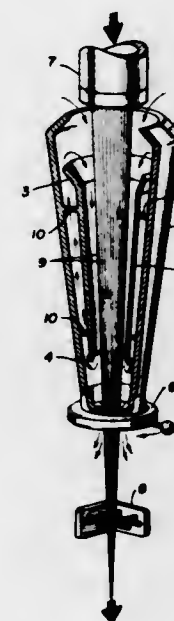
Transducers sense velocity and position and develop feedback signals which are compared with command signals reflecting desired velocity and position. Error signals corresponding to the differences between the feedback and command signals are developed for adjusting the movements, if required. The system also correlates the velocity of the movements so as to maintain a predetermined velocity ratio between the movements of the neck mold and the extruder ram. As movements progress to different positions, a sequence control senses when the positions are reached and then adjusts the velocity of the movement with the next phase of the container making process.

3,611,484
APPARATUS FOR MANUFACTURE OF HOLLOW OBJECTS
 Edouard Lecluyse, Dampierre-en-Crot, Aubigny, and Antoine Beranger, Charenton, France, assignors to Tuboplast-France, S.A., Paris, France
 Filed June 25, 1969, Ser. No. 836,442
 Claims priority, application France, June 28, 1968, 157,110
 Int. Cl. B29d 27/04
 U.S. Cl. 18—5 BB 11 Claims



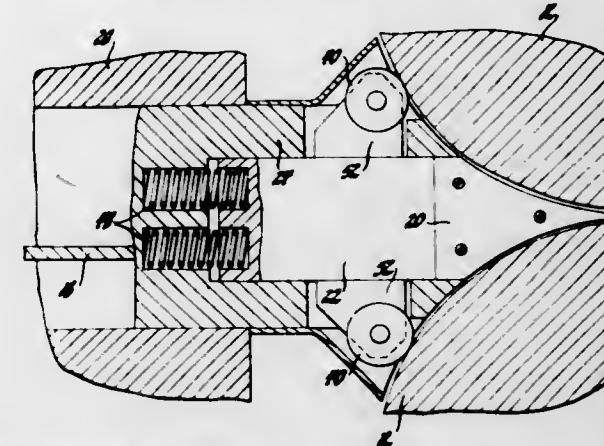
Machine for the continuous blowing of heated tubular preforms of thermoplastic material. A turret rotating continuously about a vertical axis, carries a plurality of molds and blowing heads, one for each mold. Each mold consists of a half fixed with the turret, and a second half pivotable from a first open position to a second position closed upon its fixed half. A chain has tubular link pivots each adapted to hold in depending relation therefrom, a respective heated preform. Rotation of the turret is synchronized with travel of the chain so that each preform moves with the chain into a respective open, fixed mold half. Cams fixed about the axis of rotation of the turret cooperate with cam follower means to (a) close each movable mold half onto its fixed half to enclose the preform, (b) lock the two mold halves together, (c) move the corresponding blowing head into pressure-tight relation with the tubular chain-link pivot, (d) operate a valve to connect the interior of the preform, through the tubular chain-link pivot, to a source of compressed air to expand the preform to the shape of the mold, (e) operate the valve to shut off compressed air and to connect the preform to exhaust, (f) cool the shaped article, (g) release the mold lock, (h) open the mold, and (i) remove the shaped article from its chain-link pivot. The operation is rapid, continuous, regular, uniform and without dwell.

3,611,485
SPINNING CHIMNEY
 Allen E. Leybourne III, Decatur, Ala., and Carl J. Setzer, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.
 Filed Dec. 30, 1968, Ser. No. 787,862
 Int. Cl. D01d; F28f 13/06
 U.S. Cl. 18—8 QD 9 Claims



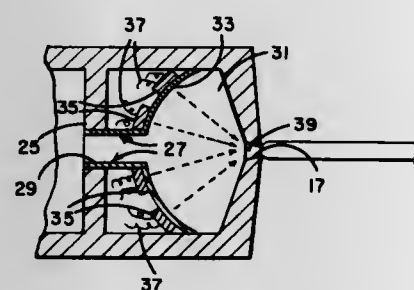
A spinning chimney to be used for the quenching of molten polymeric filaments, said chimney having walls which converge from top to bottom and through which the filaments and a quenching medium pass downwardly, and a wall engulfing shroud extending beyond the tops and bottoms of the walls and positioned to capture at least part of the fluid which exists from the bottom of the walls and redirect same back between the walls and shroud for flow adjacent the top of the walls onto the filaments.

3,611,486
APPARATUS TO CONTROL EDGES OF FLAT-ROLLED METALLIC PRODUCTS
 Joseph J. Fox, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
 Filed Nov. 5, 1969, Ser. No. 874,261
 Int. Cl. B22f 3/18
 U.S. Cl. 18—9 4 Claims



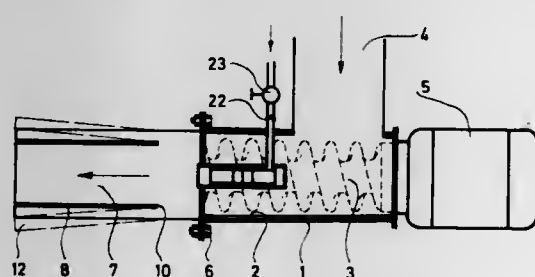
Apparatus as disclosed for supporting and controlling the edges of metallic material, especially particulate metal, as the material enters the bite of a rolling mill. The apparatus contains two wear block members adapted to fit into the bite region of the rolling mill and to guide and support the particulate metal being rolled. The wear members are supported so that they are substantially restrained from movement in all directions other than parallel to the direction of rolling.

3,611,487
APPARATUS FOR SONIC NUCLEATION
FOAMABLE MATERIALS
 Theodore H. Fairbanks, Liverpool, Pa., assignor to
 FMC Corporation, Philadelphia, Pa.
 Original application Feb. 28, 1968, Ser. No. 708,870.
 Divided and this application Jan. 22, 1970, Ser. No.
 5,037
 Int. Cl. B29f 3/04
 U.S. Cl. 18—12 DV 2 Claims



Apparatus for extruding molten foamable materials which includes an extruder having a discharge orifice and an arcuate sonic transducer coupled to the extruder and having a concave surface facing the extruder discharge orifice whereby the energy output from such transducer may be focused into a desired region within the molten foamable material as it approaches the discharge orifice for effecting incipient bubble formation.

3,611,488
MACHINE FOR CONTINUOUSLY CONSOLIDATING CHIPS AND DUST PARTICLES OF LEATHER OR THE LIKE
 Kasimir Hoffmann, Forst, Germany, assignor to Badische Maschinenfabrik G.m.b.H., Karlsruhe-Durlach, Germany
 Filed Sept. 5, 1968, Ser. No. 757,623
 Claims priority, application Germany, Sept. 12, 1967, P 16 60 047.8
 Int. Cl. B29f 3/04, 3/06
 U.S. Cl. 18—12 SE 10 Claims

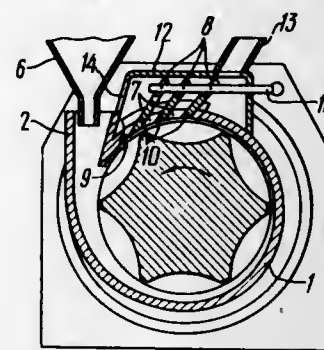


A worm extrusion press for continuously consolidating chips and dust particles of leather or the like into a solid body. This press may be additionally provided with a slotted reaction tube which permits the extruded body to expand to a certain extent so as to eliminate internal tensions or at first to be slightly compressed and then to expand.

3,611,489
DISK EXTRUDER FOR PROCESSING PLASTICS
 Vladimir Ivanovich Morozov, Gorkovskoi oblasti, ulitsa Pirogova 34, kv. 13; Viktor Fedorovich Prygunov, Gorkovskoi oblasti, ulitsa Tereshkovi 4, kv. 47; and Viktor Mikhailovich Khanov, Gorkovskoi, oblasti, ulitsa Pirogova 34, kv. 18, all of Dzerzhinsk, U.S.S.R.
 Filed May 6, 1969, Ser. No. 822,276
 Int. Cl. B29f 3/03
 U.S. Cl. 18—12 R 4 Claims

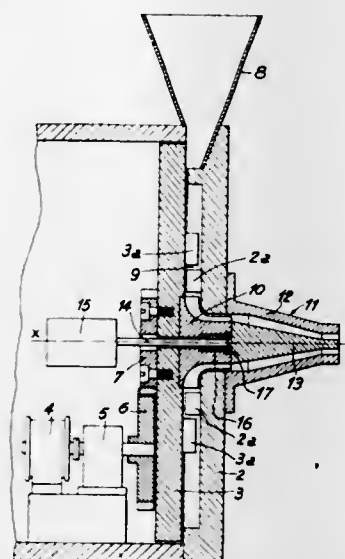
An extruder for processing plastic in which a fixed disk having a feed throat is provided with a centrally disposed outlet for processed materials and a rotating disk located within the fixed disk coacts therewith to define an inner

cavity. The fixed disk is formed with at least one through-hole communicating with the inner cavity and through



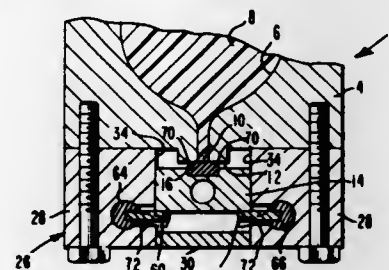
which gaseous substances evolved from the material undergoing processing are discharged.

3,611,490
EXTRUSION DIE FOR FORMING TUBES
 Bernard Neuville, Versailles, and Raoul Hees, Chatillon-sous-Bagneux, France, assignors to Sidel, Société Anonyme, Le Havre, France
 Filed June 23, 1969, Ser. No. 835,329
 Claims priority, application France, June 28, 1968, 157,109
 Int. Cl. B29f 3/04, 3/06; B29d 23/04
 U.S. Cl. 18—12 C 2 Claims



An extrusion die for forming tubular bodies from thermoplastic materials, which is mounted on a rotary plate extruder and comprises an external socket and an inner coaxial punch or core, characterized in that the die punch is held by a rod rigid therewith and extending through the rotary plate of the extruder, the axis of said rod being coincident with the plate axis.

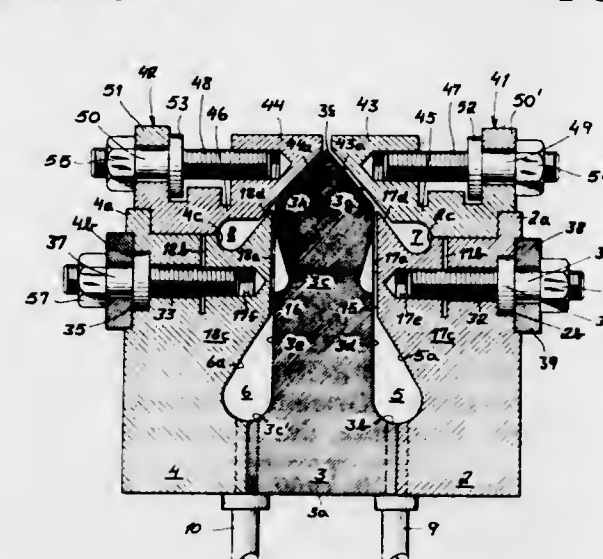
3,611,491
APPARATUS FOR VARYING THE WIDTH OF EXTRUDED THERMOPLASTIC MATERIAL
 James Louis Rector, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed July 1, 1969, Ser. No. 838,292
 Int. Cl. B29f 3/04
 U.S. Cl. 18—12 DS 10 Claims



Means for adjusting the width of sheeting of thermoplastic material extruded from an elongated extrusion

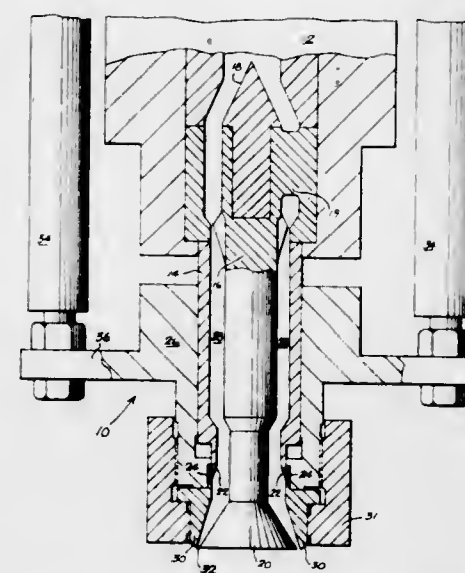
orifice of an extrusion die is provided, comprising a slide positioned over a portion of the orifice extending from at least one of its ends and a pair of cams oppositely rotating to urge the slide against the die to block that portion of the orifice from extruding sheet.

3,611,492
EXTRUSION NOZZLE FOR THE FORMATION OF MULTILAYER BANDS
 Robert Scheibling, Cap d'Ail, France, assignor to Stamp-Cedap, Monaco
 Continuation-in-part of application Ser. No. 798,404, Feb. 11, 1969. This application Oct. 30, 1969, Ser. No. 872,486
 Claims priority, application Germany, Oct. 9, 1969, P 19 50 963.8
 Int. Cl. B29f 3/04
 U.S. Cl. 18—13 P 2 Claims



An extrusion nozzle for the formation of multilayer bands wherein a pair of resiliently deflectable lips flank each of a pair of passages merging together at the outlet of the nozzle and joining respective inner streams of extruded material passing through the inner passages. The lips are adjusted by screws operating against the inherent resiliency of the metal forming the lips.

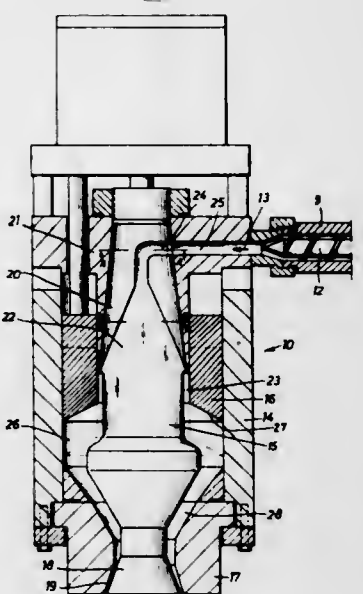
3,611,493
VARIABLE ORIFICE EXTRUDER HEAD
 Clement V. Fogelberg, Boulder, and William D. Hough, Arvada, Colo., assignors to Ball Corporation
 Filed Dec. 24, 1968, Ser. No. 786,709
 Int. Cl. B29d 23/04
 U.S. Cl. 18—142 3 Claims



A programable extruder head having a movable extrusion die assembly slidably mounted upon a fixed extrusion barrel and a fixed mandrel secured within the extrusion

barrel, wherein the interface between the extrusion barrel and die assembly is in the form of a knife edge surface slidably bearing upon an insert planar surface.

3,611,494
EXTRUSION HEAD FOR EXTRUDING ANNULAR ARTICLES OF THERMOPLASTIC MATERIAL
 Harald Feuerherm, Kohlkaul, Siegburg, Germany, assignor to Kautex-Werk Reinold Hagen, Hangelar uber Siegburg, Rhineland, Germany
 Filed Mar. 18, 1969, Ser. No. 808,159
 Claims priority, application Germany, Mar. 18, 1968, P 17 04 791.5
 Int. Cl. B29d 23/04
 U.S. Cl. 18—14 R 8 Claims

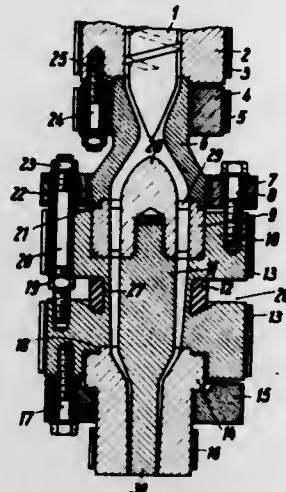


In an extrusion head an annular piston, during its extrusion stroke, penetrates into a storage chamber discharging therefrom thermoplastic material through an extrusion die. To refill the storage chamber in preparation for the successive extrusion stroke, thermoplastic material is introduced thereto through a passage, the width of which is defined by a fixed part in the extrusion head and by a side wall of the annular piston. The material filling the chamber displaces the piston towards its retracted position in such a manner that the newly arriving particles settle immediately adjacent the leading face of the piston and remain substantially stationary within and with respect to the storage chamber. As a result, the material particles are discharged from the storage chamber in the order of their arrival thereto.

3,611,495
CENTERING DEVICE FOR ANNULAR DIES FOR THE MANUFACTURE OF PLASTICS MATERIAL SHAPES
 Erhard Langecker, Hohbuschener Weg 5, Meinerzhagen, Westphalia, Germany
 Filed June 27, 1969, Ser. No. 837,272
 Claims priority, application Germany, Oct. 18, 1968, P 18 04 640.7
 Int. Cl. B29d 23/04
 U.S. Cl. 18—14 V 6 Claims

A centering device for annular dies for the manufacture of plastic-material bodies, wherein a die jacket is transversely adjustable in relation to a die core by clamping means extending parallel to the die axis. The clamping means engages two portions separated by an annular weakening of the exterior of the die jacket lying transversely to the die axis, and wherein the axial spacing of the die mouth from the annular weakening in relation to

the rigidity of the die jacket is such that upon adjustment of the clamping means there is no significant distribution

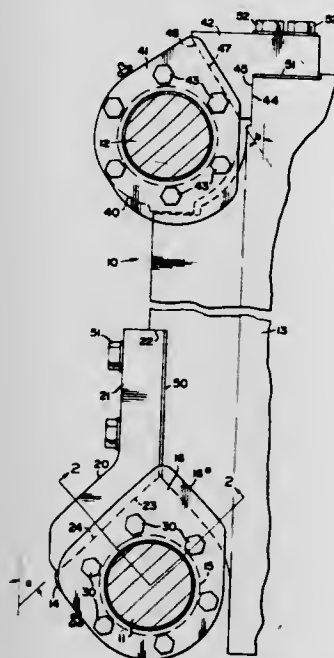


of the outer periphery of the die orifice defined by the die jacket.

3,611,496 GUIDES FOR BOLSTERS IN HORIZONTAL PRESSES

Harry A. Trishman, Hudson, Ohio, assignor to Adamson United Company, Akron, Ohio
Filed Apr. 23, 1969, Ser. No. 818,758
Int. Cl. B29c 3/02

U.S. Cl. 18-16 R



In the guides for bolsters, a support block is in slidable engagement with a strain rod and a pair of keeper plates are secured to adjacent opposite faces of the support block and encompass the strain rod. A support member is received between peripheral portions of the opposed keeper plates and has an extension protruding therefrom secured to and supporting the bolster, while the bolster itself is positioned in floating relationship between the keeper plates, a plurality of support block assemblies being provided.

3,611,497 TIE-RODLESS DOUBLE ACTING PRESS

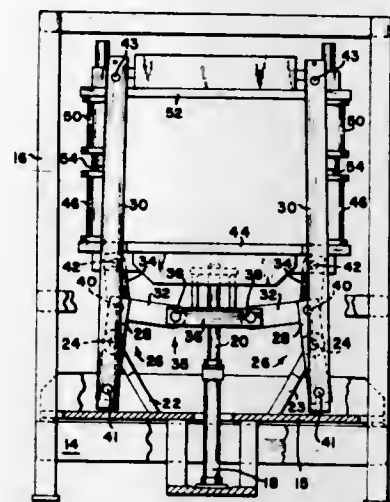
Lester Gidge and Valmor R. Poulin, Jr., Nashua, N.H., assignors to Nashua Industrial Machine Corporation, Nashua, N.H.

Filed May 1, 1969, Ser. No. 820,894
Int. Cl. B30b 1/16

U.S. Cl. 18-16 T

A novel toggle press wherein the gross vertical movements of two movable platens is achieved with a single

actuating ram by use of toggle assemblies and with each platen acting as a counterweight to aid in raising the other platen. This press utilizes auxiliary power means, independent of the single actuating ram, to apply mold-



ing pressure, and one embodiment of the invention this auxiliary power means is mounted on each toggle assembly and acts on a pivot pin attached to the upper platen assembly.

3,611,498 PRESS FOR COMPRESSING PULVERULENT PRODUCTS

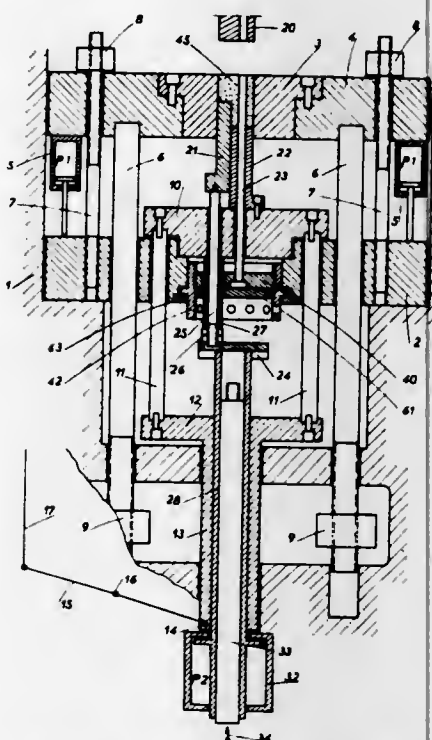
Louis André Hédin, Grenoble, France, assignor to La Metallurgie Française des Poudres-Métafram, Paris, France

Filed June 20, 1969, Ser. No. 835,114
Claims priority, application France, Aug. 2, 1968, 161,739

U.S. Cl. 18-16.7

Int. Cl. B30b 11/00

4 Claims



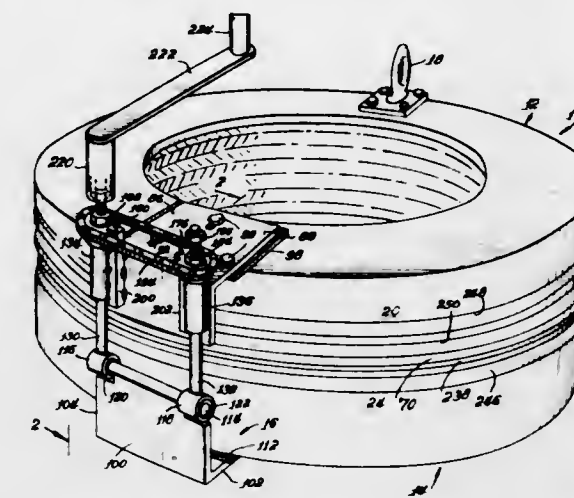
A press for forming pulverulent material to which a floating die-carrying plate is resiliently supported to yield during compression, a punch-support plate is located below the die-carrying plate on a fixed bed, a lifting device is provided for the punch-support plate, a core-support plate below the punch-support plate and movable parallel with the compression axis, a plate below the core-support plate, supported by a lifting device and coupled to a floating punch-support plate by rods passing through the core-support plate and punch-support plate, a stop limiting the minimum distance of the punch-support plate and the core-support plate.

3,611,499 TIRE FORMING APPARATUS

Stewart W. Getty, Ocala, Fla., assignor to National-Standard Company, Niles, Mich.
Filed Sept. 24, 1968, Ser. No. 761,908
Int. Cl. B29h 5/02

U.S. Cl. 18-18 F

9 Claims



In tire forming apparatus of the type comprising two separable tire mold components, the construction of the hinge means permits adjustment of the relative spacing of the tire mold components for use either with or without a spacer of any practicable width and permits pivotal movement of one of the tire mold components with respect to the other, either with or without a spacer therebetween.

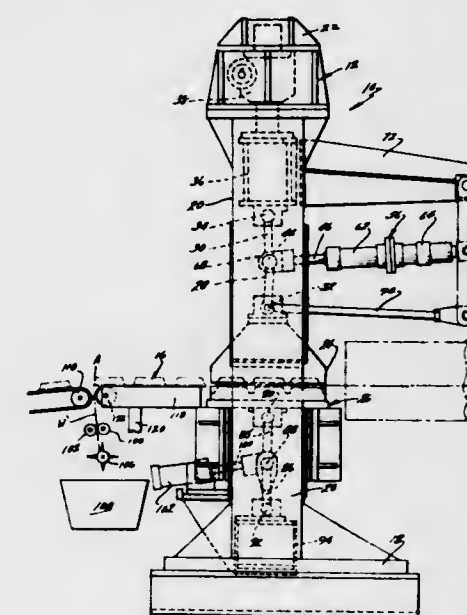
3,611,500 SHEET FORMING APPARATUS

William H. Carrigan, Croton, and James A. Maciam, Comstock Park, Mich., assignors to Gloucester Engineering Co., Inc., Gloucester, Mass.

Original application Oct. 1, 1968, Ser. No. 764,128, now Patent No. 3,518,334, dated June 30, 1970. Divided and this application Jan. 16, 1970, Ser. No. 8,137
Int. Cl. B29c 17/02, 17/14, 3/04

U.S. Cl. 18-19 R

9 Claims



Method and apparatus of forming three dimensional articles such as trays into plastic web stock by heat and pressure, especially in foam type web stock, peripherally cutting the articles while still in the forming equipment for separation from the web but leaving tabs holding the articles to the web matrix, while also forming a special relief pleat, with hinges, in the web and/or causing special relief slits in the web, to prevent subsequent shrinkage and tension stresses in the web matrix from causing the articles to prematurely break loose from the matrix or to be shifted out of proper orientation or registration.

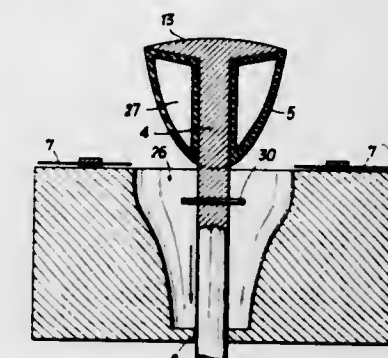
3,611,501 APPARATUS FOR MANUFACTURING FOOTWEAR

Helmut Daum, Eberbach, Germany, and Oskar Schmidt, Wyrgasse 6, Vienna, Austria; said Daum assignor to said Schmidt

Original application May 1, 1967, Ser. No. 636,242, now Patent No. 3,535,418, dated Dec. 17, 1969. Divided and this application June 18, 1970, Ser. No. 47,511
Claims priority, application Austria, May 3, 1966, A 4,181/66

U.S. Cl. 18-19 S

8 Claims



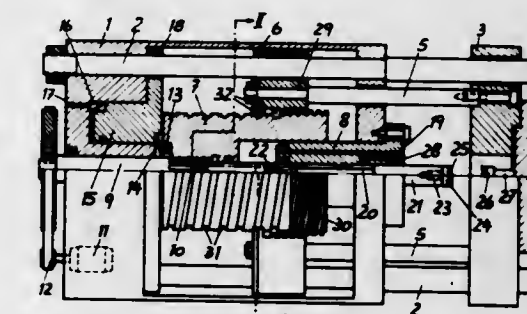
Device for making footwear wherein the mold is equipped with a mold cavity having a shape corresponding to the shape desired for a finished shoe upper. This cavity has an open side and is adapted to accommodate a main body portion of an upper blank of deformable material. The device includes also support means for supporting the blank with a marginal portion extending outwardly through the open side. Finally, the device also includes the forming means arranged within the cavity and adapted to deform the main body portion of the blank into conformity with the shape of the cavity.

3,611,502 HIGH PRESSURE RAPID ACTING CLOSURE APPARATUS FOR INJECTION MOLDING AND THE LIKE

Peter Florjancic, St. Martinstr. 12, Garmisch-Partenkirchen, Germany
Filed Apr. 27, 1970, Ser. No. 32,166
Claims priority, application Austria, Apr. 28, 1969, A 4,081/69

U.S. Cl. 18-30 LV

10 Claims



A high pressure rapid acting closure apparatus for injection molding applications and the like is described. A closure member for high pressure working in a working region such as an injection mold is reciprocatingly mounted to a frame. The closure member is reciprocated with a lead screw and associated nut. The screw thread effective between the lead screw and nut is apportioned into a high speed, low frictional section for predetermined portion of the reciprocating stroke and a high axial strength bearing enhanced frictional section operative for the remainder of the stroke. High pressure operation is effected when the second high axial strength portion of the screw thread is effective between the nut and lead screw. The closure apparatus may be operated at high speeds with little heating.

3,611,503 INJECTION MOLDING APPARATUS FOR PLASTIC MATERIALS

Armin Blumer, Schwanden, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG, Netstal, Switzerland

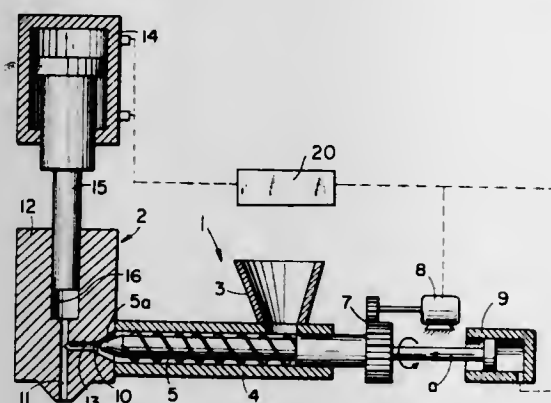
Filed Apr. 15, 1969, Ser. No. 816,212

Claims priority, application Switzerland, Apr. 18, 1968, 5,941/68

Int. Cl. B29f 1/04

U.S. Cl. 18—30 AM

4 Claims



Injection molding apparatus for plastic materials includes a plastifying screw rotatable in a plastifying cylinder communicating with an injection cylinder having an injection piston reciprocable therein, and a channel interconnecting the two cylinders. The channel has a valve seat facing the plastifying cylinder, and the screw has a forward end constructed as a valve member engageable with the valve seat. Piston means are operable, immediately prior to the injection period, to displace the screw axially to engage the valve member sealingly with the valve seat to interrupt communication between the two cylinders during the injection period.

3,611,504 NOZZLE SYSTEM AND INJECTION NOZZLE FOR INJECTION BLOW MOLDING AND INJECTION MOLDING MACHINES

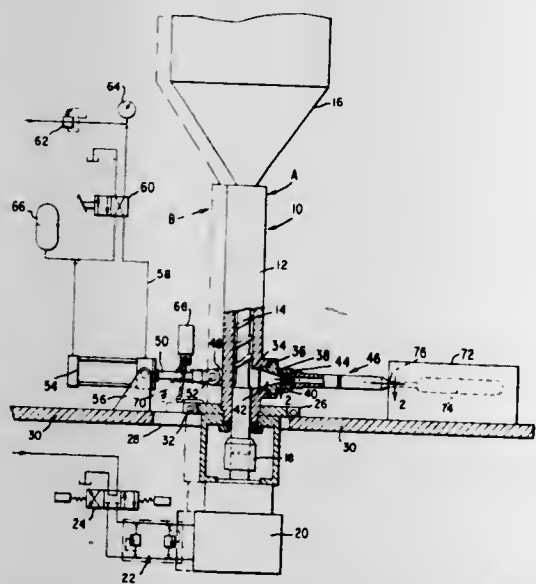
Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., Brigantine, N.J.

Filed Oct. 23, 1969, Ser. No. 868,766

Int. Cl. B29f 1/03

U.S. Cl. 18—30 CR

9 Claims



An extruder screw mechanism for injecting plastic melt into a mold cavity is mounted for bodily movement relative to the mold and has a telescopic injection nozzle unit that is extended by the plastic material pressure in the mold cavity with which the tip of the nozzle unit is in sealing engagement so as to cause the screw mechanism to move back away from the mold against the holding

pressure of a hydraulic cylinder. The movement of the mechanism actuates a limit switch that controls a solenoid valve to stop the screw and reverse its rotation for a timed interval, decompressing the plastic melt in the nozzle unit to prevent plastic melt drool when the cavity opens, and allowing the nozzle unit to return to its original shortened position.

3,611,505 PLASTIC MOULDING MACHINES

Eugen Weber, Hinwil, Zurich, and Victor F. Zahner, Geneva, Switzerland, assignors to Harry Dudley Wright and Robert Ernest Leclerc, both of Geneva, Switzerland

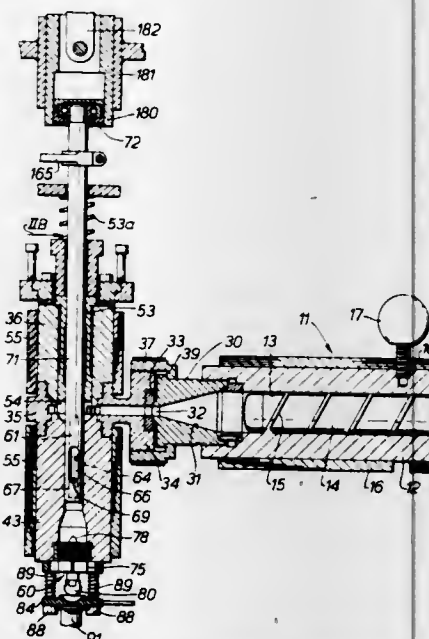
Filed Dec. 23, 1969, Ser. No. 887,590

Claims priority, application Great Britain, Dec. 27, 1968, 61,523/68

Int. Cl. B29f 1/04, 1/06

U.S. Cl. 18—30 AP

14 Claims



A metering device for a plastic moulding machine having a plasticiser for supplying plasticised material and a product mould for forming the plasticised material into a finished product comprises an accumulator chamber open to the plasticiser and having an outlet passage in which a feed plunger is both reciprocable on alternate feed and retraction strokes and rotatable between angular limit positions. The feed plunger has an axial metering cavity in its leading end which communicates with the accumulator chamber by way of a port in the side of the feed plunger which can register, in one limit position of rotation, with a blind channel in the internal wall of the outlet passage. The blind channel is open at one end to the accumulator chamber and terminates at the other end short of the discharge end of the outlet passage but beyond the limit of lengthwise travel of the plunger port. The feed plunger actuating mechanisms are preferably driven from the mould opening and closing mechanism through a toggle linkage.

3,611,506 CENTRIFUGAL CASTING SPIDER AND MOLD MOUNTING THEREON

Harry C. Schroeder, 1625 Graham Road, Stow, Ohio 44224

Filed Apr. 30, 1969, Ser. No. 820,373

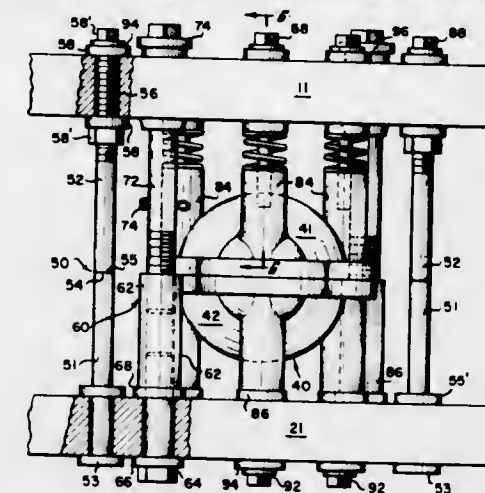
Int. Cl. B29c 5/04

U.S. Cl. 18—43

7 Claims

High temperature steel centrifugal casting spiders have a different rate of expansion than the aluminum molds mounted thereon. The invention deals with means whereby the spiders when closed define a rigid structure between which aluminum mold halves are supported for freedom

of expansion yet so closed that flashing on the molded product at the parting line between mold halves is virtually



eliminated. Spring mounting means for the mold halves reduces mold breakage.

3,611,507 PRODUCTION OF WORSTED TOPS

Tadao Ootsuki, Tadakatsu Fukui, Yoshiaki Nakahara, and Seisaku Asada, Hikone, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

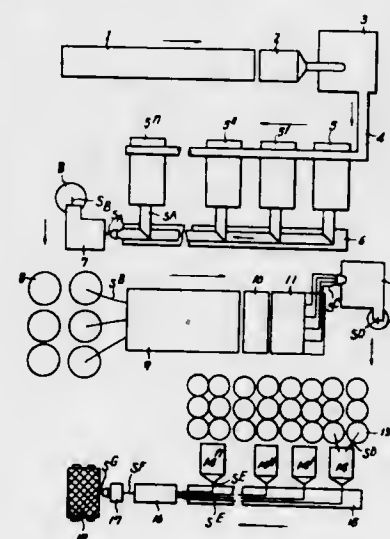
Filed Aug. 18, 1969, Ser. No. 850,940

Claims priority, application Japan, Aug. 22, 1968, 43/60,075

Int. Cl. D01b 3/04

U.S. Cl. 19—66

1 Claim



Worsted tops are produced by washing, drying and storing a wool material in a wool bin, then conveying it from the wool bin to cards, thereby carding it to form slivers. The slivers are then conveyed to first draft means, thereby drafting them, backwashed and then dried, gilled by a back after-gill, drafted by second draft means, and combed by combers. The combed slivers are then conveyed to shuffling means, thereby shuffling them and finally gilled by a high speed gill, thus forming worsted tops.

3,611,508 METHOD AND APPARATUS FOR DRY FORMING WEBS OF PULP FROM VEGETABLE FIBROUS MATERIAL

Rolf Bertil Reinhall, Lidings, and Karl Nicolaus Cederquist, Stockholm, Sweden, assignors to Defibrator Aktiebolag, Stockholm, Sweden

Filed Feb. 27, 1969, Ser. No. 803,024

Claims priority, application Sweden, Mar. 7, 1968, 3,054/68

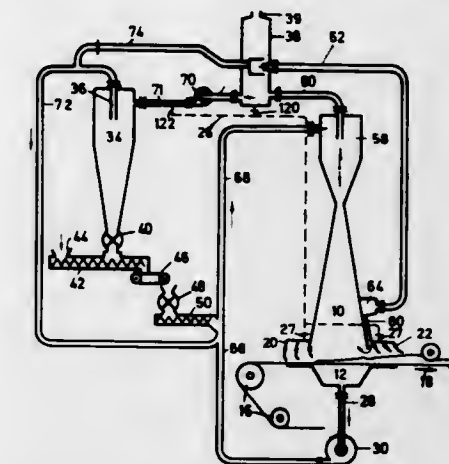
Int. Cl. D01g 15/00

U.S. Cl. 19—156.3

9 Claims

This invention relates to a method and an apparatus for continuous dry-forming a web or bat of pulp from

vegetable fibrous material on an endless wire screen by introducing into a forming chamber opening towards said wire screen a dispersion of fibers in a gas and simultaneously creating on the rear side of said wire screen opposite to said forming chamber so much reduced pressure that more gas is sucked through the wire screen than is applied with the vehicular gas in the dispersion of fibers



in gas, the additional gas being introduced between said wire screen and the lowermost portion of the forming chamber, and by recirculating the withdrawn gas through a conduit system to the feed side of the forming chamber together with new fibrous material. The additional gas is withdrawn from the conduit system to avoid introduction of atmospheric air.

3,611,509 METHOD AND APPARATUS FOR FORMING CLIPS

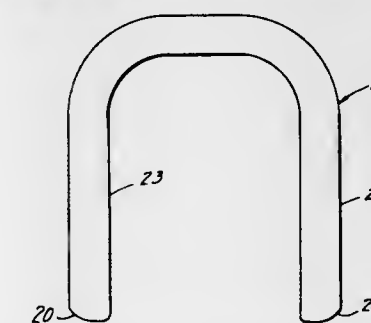
Karl A. Klenz, Oakland, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Continuation-in-part of application Ser. No. 808,511, Mar. 19, 1969. This application Nov. 20, 1969, Ser. No. 878,437

Int. Cl. B21f 45/16; F16b 15/00

U.S. Cl. 24—30.5 W

10 Claims



U-shaped clips of the type employed for sealing sausage casings, plastic bags and the like are formed with arcuate surfaces on the extremities of the opposed legs for the purpose of enhancing the sealing operation when the clip cooperates with the die and is closed around the article to be sealed. A notching and swaging punch is applied to the wire from which the clips are formed to provide arcuate surfaces on the wire prior to cutting the wire into the lengths from which the clips are formed.

3,611,510 TWO-PIECE CORD FASTENER

John L. Bennett, Dayton, and James A. Pardlow, Vandalia, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1969, Ser. No. 864,434

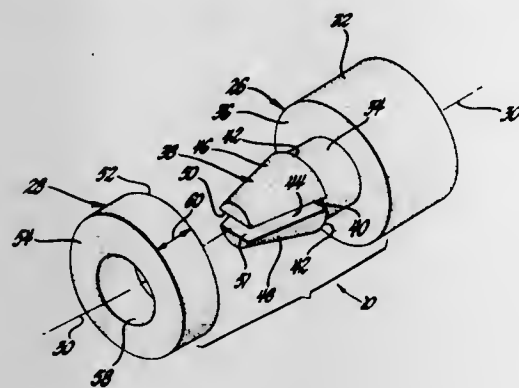
Int. Cl. F16g 11/00

U.S. Cl. 24—126

1 Claim

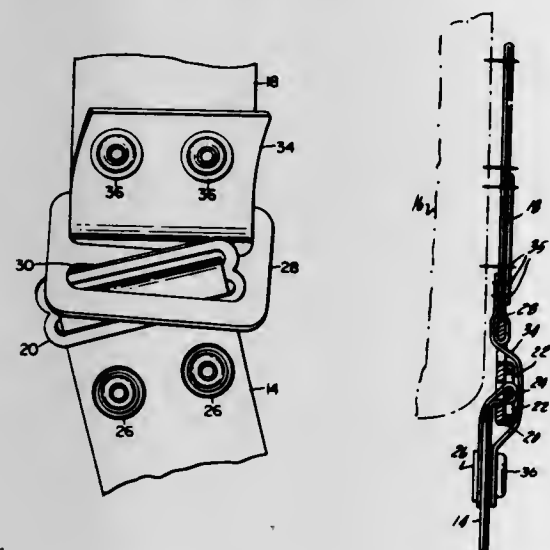
In a preferred form, a two-piece fastener for securing the end strands of a cord used to bind windings in a

dynamoelectric machine includes a fastener body member having an integral and axially extending stem portion and a separate annular washer member. The stem portion includes a forward end which has a transverse slot



formed therein for receiving the strands. The annular washer member is pressed over the forward end and onto the stem portion so as to clamp the strands between the annular washer member and the body member.

3,611,511
QUICK-RELEASE FASTENING DEVICE
Richard W. Grabenkort, Grand Prairie, and James N. Karas, Arlington, Tex., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 25, 1970, Ser. No. 14,154
Int. Cl. A44b 17/00
U.S. Cl. 24—201

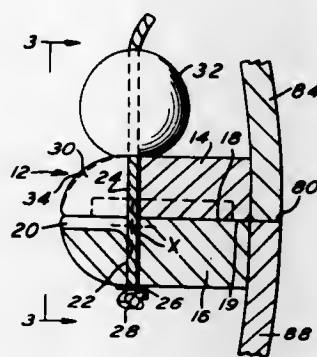


A pair of straps are detachably connected by a buckle, the latter being made up of two slotted plates respectively carried on the strap ends. One plate is of greater width than the slot in the other plate, so that the former can only be inserted in or removed from the latter when the two plates are positioned in angular relationship to one another. A safety flap maintains the desired parallel interlocking condition during periods of strap connection.

3,611,512
LATCH AND DEVICE CONTAINING SAME
Donald H. Skoll, Munn Lane, Cherry Hill, N.J. 08034
Filed June 8, 1970, Ser. No. 44,495
Int. Cl. A44b 17/00
U.S. Cl. 24—201

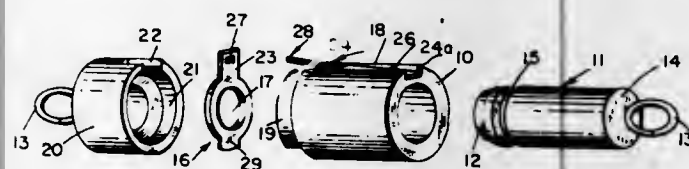
The latch is comprised of first and second latch members juxtaposed to one another. The first latch member has a hole and a notch for receiving a flexible member connected thereto. The second latch member has a slot

aligned with the notch and through which the flexible member may extend so as to be in an operative disposition. A retainer on the flexible member contacts the



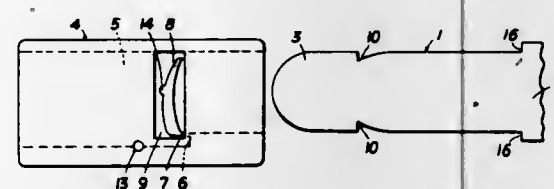
second latch member in the operative disposition of the flexible member. The latch member may be utilized in a variety of devices including toys.

3,611,513
JEWELRY CLASP
Daniel Hooper, R.F.D. 1, Box 254, Sound Beach, N.Y. 11789, and Charles Frankel, 2702 Ford, Brooklyn, N.Y. 11235
Filed Nov. 12, 1969, Ser. No. 875,861
Int. Cl. A44b 17/00
U.S. Cl. 24—211



A jewelry clasp is formed of a female member and a complementary male member adapted to cooperate with a lock located within the body of the female member. The lock is engaged via an externally mounted spring.

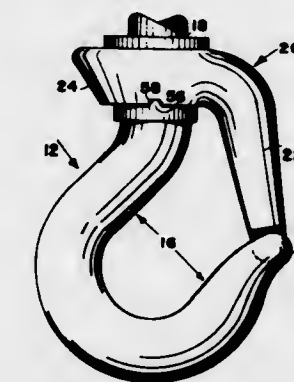
3,611,514
CLOSURE LOCK
Eric de Wit, 211 Larocheasse, 1130 Vienna, Austria
Filed Oct. 8, 1969, Ser. No. 864,828
Claims priority, application Austria, Oct. 9, 1968, 9,870/68
Int. Cl. A44b 19/00
U.S. Cl. 24—230 SL



A safety device or locking device for the closure of a package, barrel, carton and the like, including a female member or channel having an opening for receiving a male member or tongue. The male and female members are advantageously made of an inexpensive plastic material and the channel which is formed in the female member includes a locking body which is formed by cutting away an overlying portion of the channel. The locking body includes a curved member which is connected to the

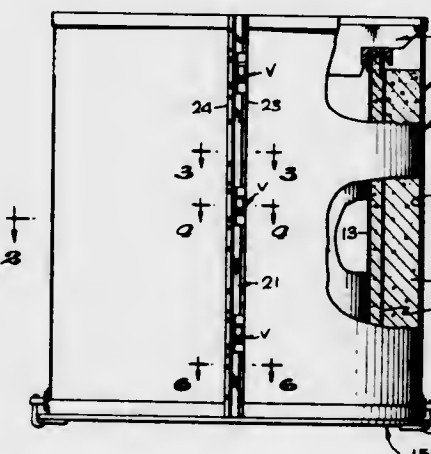
channel by a thin web and which is positioned in the channel passageway so as to intercept the tongue which is inserted into the channel. The locking body and the tongue have complementarily curved end faces which interengage during the passage of the tongue through the channel to cause deflection of the locking body into a recess defined at the side of the channel. The tongue includes a recessed side portion at a spaced location from its forward tip and when the locking body moves beyond this recess the end thereof falls into the recess in locking engagement therewith.

3,611,515
SAFETY GATE LATCHING MECHANISM
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Continuation-in-part of application Ser. No. 793,825, Jan. 24, 1969. This application June 4, 1970, Ser. No. 43,324
Int. Cl. B66c 1/34
U.S. Cl. 24—241 PL



A safety gate for a hoisting hook. A spring loaded mechanism for biasing the gate toward a closed position. Complementary keystone shaped locking members that retain the gate in a closed position. An annular abutment on the shank of the hook that protects the spring against excessive shearing forces.

3,611,516
MOLD CASE AND VIBRATOR ASSEMBLY
James F. O'Connor, Long Beach, and Gordon J. Black, Norco, Calif., assignors to Ameron, Inc., Monterey Park, Calif.
Filed May 27, 1968, Ser. No. 732,335
Int. Cl. B28b 21/02
U.S. Cl. 25—30 R

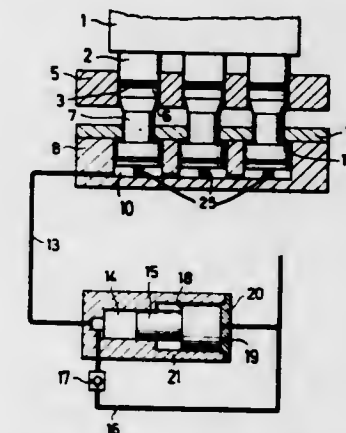


The outer steel shell or case of a mold for casting concrete pipe having a gate and vibrators mounted on the gate with their axes of rotation normal to the axis of the case and outside the case.

3,611,517
MULTIARTICLE PRESS WITH HYDRAULICALLY BIASED LOWER RAMS
Jacob Giersberg, Merzig, and Albert Replinger, Bachem, Germany, assignors to Villeroy & Boch Keramische Werke K.G., Mettlach, Germany
Filed Apr. 25, 1969, Ser. No. 819,316
Claims priority, application Germany, Apr. 30, 1968, P 17 59 429.5
Int. Cl. B28b 3/08

U.S. Cl. 25—91

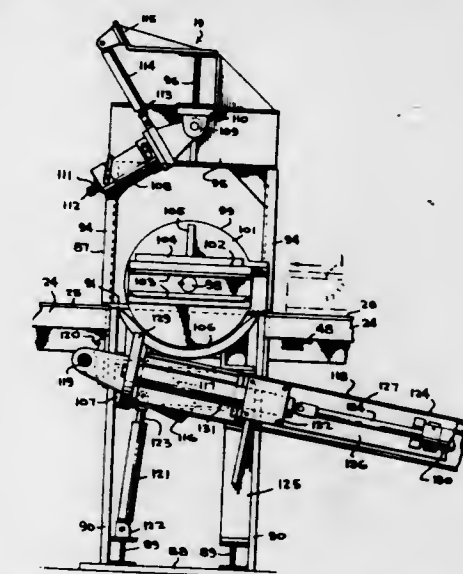
7 Claims



A multiarticle press for ceramic goods has lower, hydraulically biased rams which are connected with a source of hydraulic biasing pressure via a shuttle piston in order to lead downwards movement of the rams.

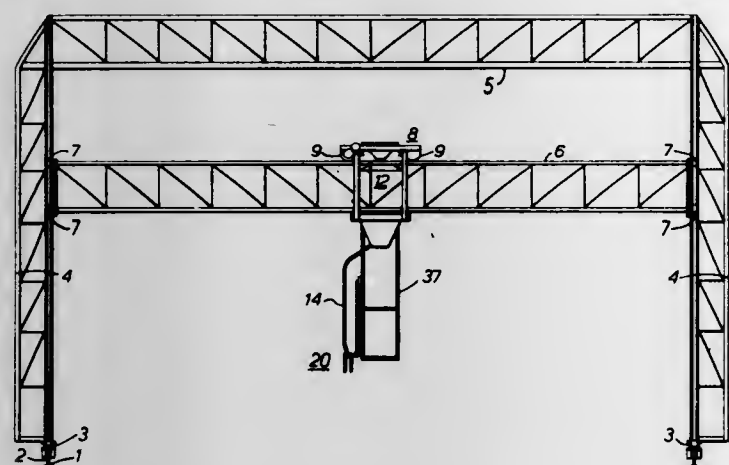
3,611,518
APPARATUS FOR REMOVING CURED CONCRETE ARTICLES FROM PALLETS
Ercell L. Glass, Tampa, Fla., assignor to American Concrete Crostle Corporation, Tampa, Fla.
Original application Aug. 11, 1967, Ser. No. 660,133. Divided and this application Oct. 30, 1969, Ser. No. 872,662
Int. Cl. B28b 13/06
U.S. Cl. 25—120

6 Claims



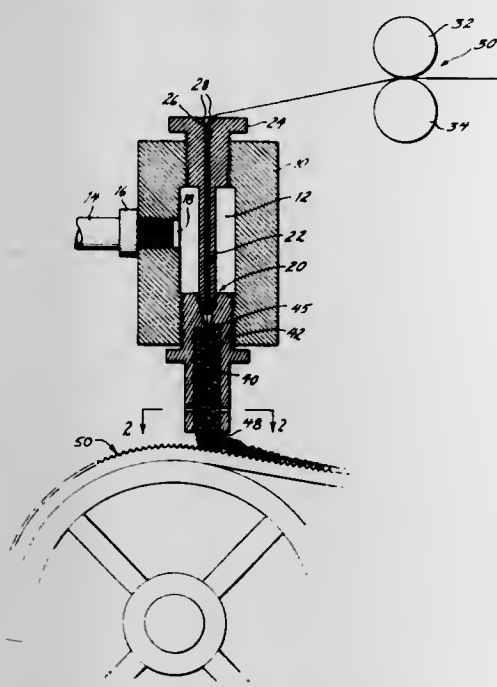
Apparatus for removing cured concrete articles, particularly prestressed concrete articles, from pallets in which they are cast and cured which includes feeding and guiding pallets containing cured articles into predetermined position, cutting by saws the stressing cables to free castings from the pallets, inverting the pallets beneath plungers which enter openings in the pallet bases and press castings from the pallets onto receiving means which lower them to an accumulating area, reverting the pallets to their previous orientation, driving the cut cable ends from the pallet retaining means by swinging hammers, and cleaning, oiling and restraining the empty pallets, the pallets being moved step by step from one operating procedure station to the next from entering into the apparatus to exit therefrom.

3,611,519
MACHINE FOR DIRECT AND CONTINUOUS
CASTING OF CONCRETE WALLS
 Nils Folke Larsson, 27 Saterivagen,
 161 70 Bromma, Sweden
 Filed June 6, 1969, Ser. No. 830,976
 Claims priority, application Sweden, June 17, 1968,
 8,150/68
 Int. Cl. E04g 11/34
 U.S. Cl. 25—131 SC 8 Claims



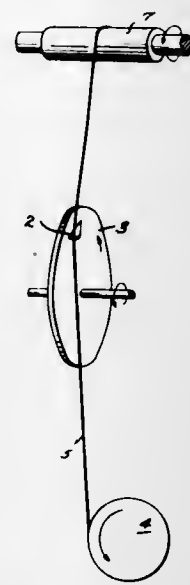
A method and a machine for casting concrete walls by introducing concrete into a mold comprising two parallel discs having comparatively small dimensions and being continuously reciprocated along the wall being cast by means of a traveling crane so as to deposit a thin strip of concrete each time it passes along the wall, with said deposited strip of concrete simultaneously being rammed to compactedness.

3,611,520
APPARATUS FOR TEXTURING YARN
 Alvin E. Faidley, Jr., Roanoke County, Va., assignor to
 Fred Whitaker Company, Bala-Cynwyd, Pa.
 Filed July 30, 1969, Ser. No. 846,161
 Int. Cl. D02g 1/12
 U.S. Cl. 28—1.6 1 Claim



A source of steam under pressure feeds a steam box from which the steam is emitted through a needle valve into a chamber. Yarn is pulled through the needle valve by the steam and crimped under pressure in the chamber. A knurled surface moves at a spaced distance from the end of the chamber and carries the crimped material away. Most of the steam exits from the chamber before the yarn exits from the chamber.

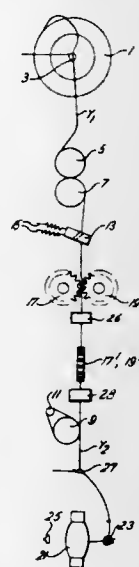
3,611,521
DEVICE FOR PRODUCTION OF NOVELTY YARN
 Claude Corbiere, La Tour-de-Salvagny, France, assignor
 to Societe Rodiceta
 Filed June 24, 1968, Ser. No. 739,519
 Claims priority, application France, June 22, 1967,
 111,538
 Int. Cl. D02j 1/22
 U.S. Cl. 28—71.3 3 Claims



Device for production of variable denier yarn that comprises at least one yarn delivery system which feeds yarn at a constant speed and a drawing system. Between the delivery and drawing systems is disposed at least one rigid yarn guide, which is movable about an axis at right angles to the path of the yarn, and means for driving the said yarn guide in a circular movement about the said axis.

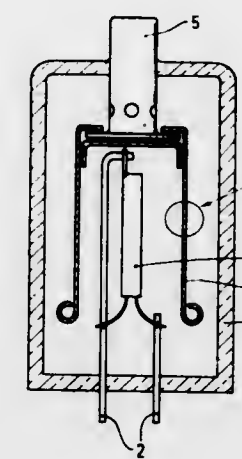
There is also disclosed the product made by a process using this device.

3,611,522
METHOD OF CRIMPING CONTINUOUS
FILAMENT
 Barrie Daniels and William Edward Whale, Pontypool,
 England, assignors to Imperial Chemical Industries
 Limited, London, England
 Continuation of application Ser. No. 622,640, Mar. 13,
 1967. This application Nov. 1, 1968, Ser. No. 786,525
 Claims priority, application Great Britain, Mar. 22, 1966,
 12,574/66
 Int. Cl. D02g 1/20, 1/14
 U.S. Cl. 28—72.11 8 Claims



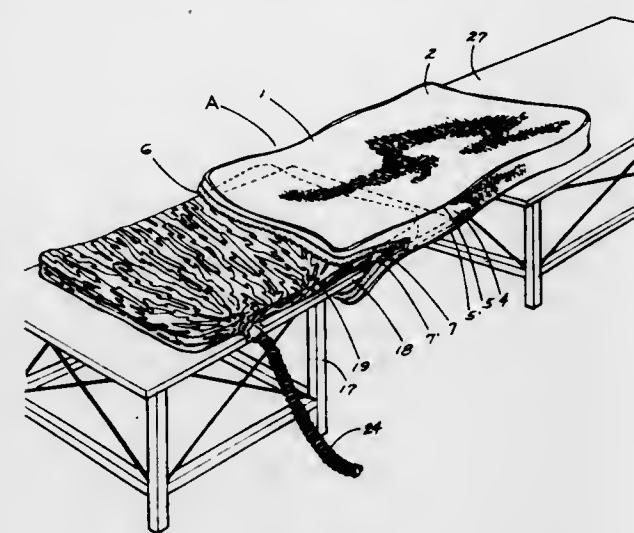
Tandem hot gear-crimping, with the gears of the second assembly having differing crimping characteristics, e.g. teeth-per-inch, from those of the first assembly.

3,611,523
ELECTRIC DISCHARGE TUBE HAVING AT LEAST
ONE NON-EMITTING ELECTRODE WHICH CON-
SISTS AT LEAST SUPERFICIALLY OF NICKEL
 Ernst Sigmund Den Dulk, Emmasingel, Eindhoven,
 Netherlands, assignor to U.S. Philips Corporation,
 New York, N.Y.
 Filed May 21, 1969, Ser. No. 826,599
 Claims priority, application Netherlands, May 31, 1968,
 6807777
 Int. Cl. H01j 9/00
 U.S. Cl. 29—25.14 4 Claims



A method of manufacturing an electric discharge tube by first coating non-emitting electrodes such as an anode with a layer of nickel and then a layer of gold, and then heating the electrode during pumping to a degassing temperature about 780° C. The emission-suppressing characteristics of the non-emitting electrodes are maintained even though the gold dissolves in the nickel.

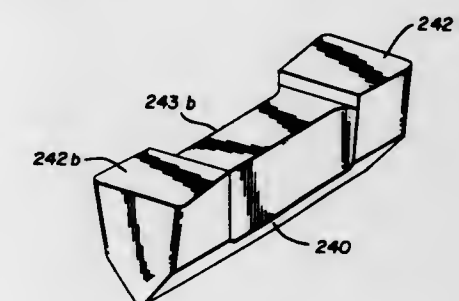
3,611,524
METHOD FOR COVERING MATTRESSES
AND THE LIKE
 Horace N. Broyles, 309 Pineapple St.,
 Sebastian, Fla. 32958
 Filed Sept. 8, 1969, Ser. No. 870,303
 Int. Cl. B68g 7/00
 U.S. Cl. 29—91.1 10 Claims



A method for producing mattresses, box springs, and related body support members, such as cushions, pads, etc., which comprehends encasing a resilient unit, whether the same be a box spring or a mattress core comprising an inner spring or a unitary block of cellular material, within an impervious film, and then through vacuum means withdrawing the air from said core for reducing the same volumetrically to a minor percentage of its normal volume; then inserting the air evacuated, film-covered unit within a cover; closing the cover while simultaneously

permitting air flow to said unit to allow the same to return to normal volume within the cover; the cover having been appropriately closed during such expansion. The present method contemplates a procedure whereby the film may be retained upon the unit when inserted within the cover as well as withdrawn prior to completing the article formation.

3,611,525
CUTOFF OR GROOVING TOOL AND
HOLDER THEREFOR
 Burton L. Cochran, North Canton, Ohio, assignor to The
 Warner & Swasey Company, Cleveland, Ohio
 Continuation of abandoned application Ser. No. 716,843,
 Mar. 28, 1970. This application Apr. 1, 1970, Ser.
 No. 24,808
 Int. Cl. B26d 1/00
 U.S. Cl. 29—95 7 Claims

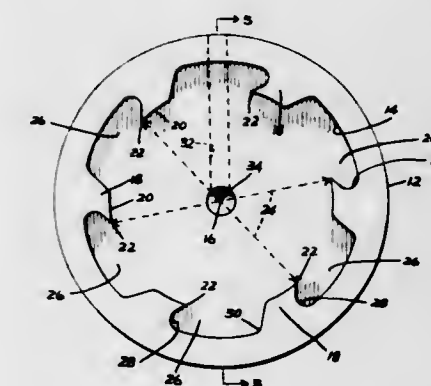


A cutoff or grooving tool that includes a holder and a replaceable cutting insert with the holder including a main body portion, a support blade, and a clamping arm and with the insert being an elongate, relatively pencil-like component adapted to be seated on the blade of the holder and clamped in place thereon by the clamping arm with a backup element serving to determine the extent of longitudinal projection of the cutting insert on the support blade. The insert and holder are characterized by complementarily engaged V-shaped surfaces of the type set forth in Novkov U.S. Pat. 2,964,833.

The shank portion of the insert generally has a lesser height than the shank portion of the insert shown in Novkov Pat. 2,964,833 while the cutting tip portion thereof has a proportionately greater height than that of the insert shown in Novkov U.S. Pat. 2,964,833.

Use of the backup component rearwardly of the insert permits use of a series of such members so as to insure correct positioning of inserts having shank portions of different length.

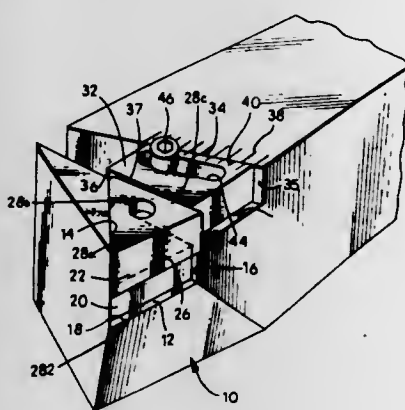
3,611,526
EXTERNAL REAMER
 William M. Scribner, 112 E. 7th St.,
 Alexandria, Ind. 46001
 Filed Sept. 17, 1969, Ser. No. 858,820
 Int. Cl. B26d 1/00, 1/12
 U.S. Cl. 29—95 6 Claims



This invention is an external reamer which includes an elongated body having an elongated cavity opening

through one end thereof. A plurality of cutting bits integral with said body are located within said cavity. The bits project radially inwardly from the peripheral surface of the cavity and carry on the radially inner extremities thereof part-cylindrical bearing surfaces which lie on an imaginary cylinder coaxial with the longitudinal axis of the cavity. Each bearing surface is provided with an elongated cutting edge, there being at least two cutting edges disposed substantially diametrically opposite each other. The bits are circumferentially spaced apart to provide chip clearances therebetween, the cutting edges in cross-section being defined by apices of V-shaped portions on the bits, respectively. The cutting edges are disposed in radially overlying relationship with adjacent portions of the clearances, respectively. The cross-sectional portions of the cavity peripheral surface which merge with the bits are curved such that chips may feed smoothly and without interference from the cutting edges into the clearances. This tool can be used for high speed production of parts which are turned to close tolerances.

3,611,527
MOUNTING FOR TOOL BITS
Arthur F. Hudson, P.O. Box 1025,
Huntington, Ind. 46750
Original application June 8, 1966, Ser. No. 575,200, now
Patent No. 3,497,934, dated Mar. 3, 1970. Divided
and this application Oct. 27, 1969, Ser. No. 869,542
Int. Cl. B26d 1/00, 1/12
U.S. Cl. 29—98 2 Claims

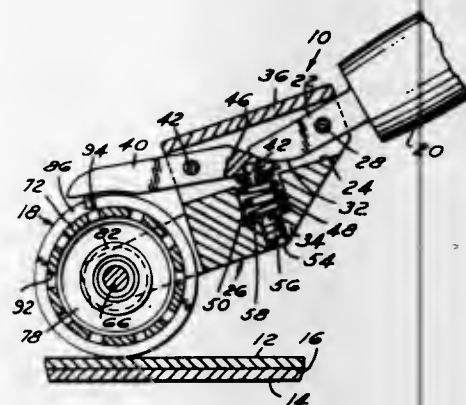


I propose an adjustable mounting for tool bits which includes a pocket of a size which can be adjusted in order to position the tool bit, this being by means of a movable element within the pocket in the form of a wedge which provides one locating surface for the tool bit, and additional locating surfaces for the tool bit which will provide a back-up for the tool bit regardless of its adjusted position whereby the tool bit is held against movement in its adjusted position, and a hold down device which retains the tool bit within the pocket at its desired position.

3,611,528
CONTROLLED PRESSURE ROLLER
Christopher James Lance, Royal Oak, Mich., assignor of
fractional part interest to Ivan F. Belknap, Detroit,
Mich.
Filed May 4, 1970, Ser. No. 34,424
Int. Cl. B05c 1/08
U.S. Cl. 29—110.5 8 Claims

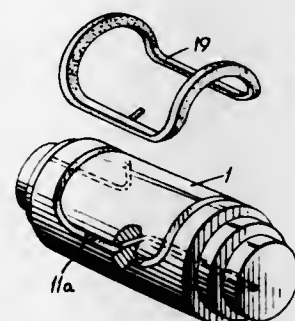
A controlled pressure roller is provided for applying rolling pressure of a predetermined minimum value onto a surface. The roller structure includes a manually engageable handle and a roller element. Resiliently biased latching means are provided to engage the roller and prevent rotation thereof until sufficient pressure is applied by means of the handle with the roller element in engagement

with a surface to cause disengagement of the latching means and permit rolling of the roller element over the



surface with the predetermined minimum pressure being applied.

3,611,529
EXPANDABLE SEAL FOR A CONTROLLED DEFLECTION ROLL
Peter Hold, Milford, and Dominic A. D'Amato, Cheshire, Conn., assignors to Farrel Corporation, Ansonia, Conn.
Filed Aug. 28, 1967, Ser. No. 663,595
Int. Cl. B21b 13/00; F16c 13/00
U.S. Cl. 29—116 1 Claim



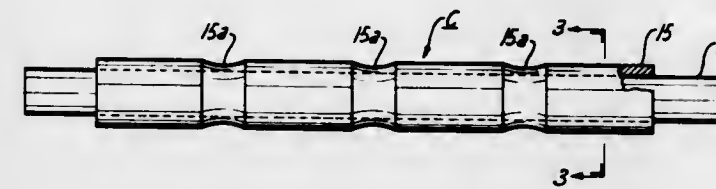
A controlled deflection roll has a non-rotative shaft and a superimposed roll shell with space between the two, end and longitudinally extending seals dividing this space into two compartments into one of which liquid is introduced under pressure so that when the roll shell is working against a counter roll under pressure the deflection of the roll shell is controlled by the pressure on the liquid with consequent opposite beam flexure of the shaft. At least the longitudinally extending seals are hollow and inflatable and are expandable by fluid pressure controlled to provide the sealing pressure desired independently of the pressure of the liquid controlling the deflection of the roll shell.

3,611,530
ANTIPICKUP ROLL CONSTRUCTION AND UTILIZATION FOR PLATING LINES
John T. Mayhew, Box 156, Sunset Drive,
Toronto, Ohio 43964
Filed Mar. 19, 1970, Ser. No. 20,945
Int. Cl. B21b 27/02
U.S. Cl. 29—129.5 8 Claims

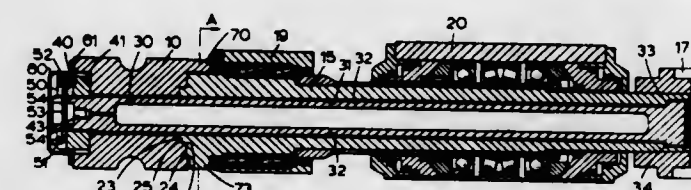
An after-positioned guide roll for a continuous galvanizing line has a specially constructed composite structure comprising a substantially solid main body and a surface-treated protective sleeve thereon which is resistant to pick-up of hot coating material, such as zinc or an alloy of zinc and aluminum that is carried on the surface of a work-piece. The sleeve is given a special heat treatment and

thereafter provided with a highly adherent, relatively finely textured red rust (ferric oxide) on its outer peripheral surface, is securely-mounted in position on the main

ume between them, one of said members having therein a plurality of angularly-spaced fluid feed slots each of which opens at one of its ends into the bearing volume. A method of making such slots comprises the steps of providing in said one bearing member two elements each having an exposed face which, when the elements are assembled in said one bearing member, is butted against the



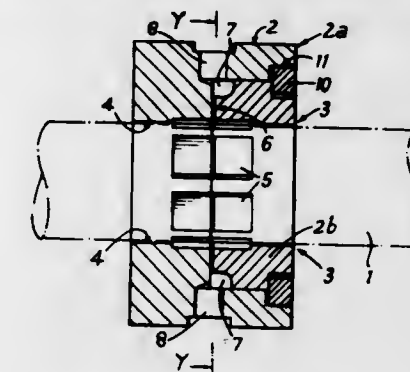
3,611,531
MILL ROLL MOUNTINGS
Nicholas A. Townsend, Bexley Heath, Kent, and Roy R. Oxlade, London, England, assignors to The British Iron and Steel Research Association, Buckingham Gate, London, England
Filed Nov. 14, 1968, Ser. No. 775,840
Claims priority, application Great Britain, Nov. 15, 1967, 52,086/67
Int. Cl. B30b 3/00
U.S. Cl. 29—129 8 Claims



A rolling mill work roll assembly comprising a work roll releasably secured to the free end of a drive shaft. The roll is axially located by means of a forcibly abutted seat and seating surface, each perpendicular to the roll axis, on the roll and shaft. The roll is radially located by means of a co-operating cylindrical spigot and cylindrical recess provided one each on the roll and the shaft. Backlash between the roll and shaft is prevented by engaging key and key-way members provided one each on the roll and the shaft. The forcible abutting of roll and shaft is provided by readily releasable means acting axially only to compress the roll against the shaft, and extending through an axial bore on the work roll.

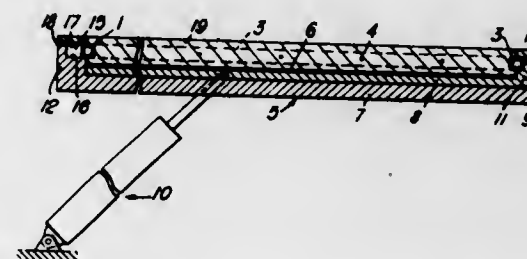
3,611,532
FLUID FEED SLOTS METHOD
Collin William Dee, 2 Frederica Road,
Bournemouth, Hampshire, England
Original application Mar. 4, 1968, Ser. No. 710,258, now
Patent No. 3,510,176, dated May 5, 1970. Divided
and this application Oct. 23, 1969, Ser. No. 871,138
Claims priority, application Great Britain, Mar. 6, 1967, 10,538/67
Int. Cl. B23p 11/00; B21d 53/10; F16c 17/16
U.S. Cl. 29—149.5 4 Claims

A fluid bearing has first and second relatively rotatable bearing members defining a body-of-rotation bearing vol-



exposed face of the other element, removing material by milling or grinding from at least one of said elements at its exposed face so as to form in said face a plurality of recesses separated by lands and corresponding in position to said slots, lapping said lands so as to obtain a desired depth of recess, and thereafter assembling said elements in said one bearing member with their respective exposed faces abutting so as to define said slots.

3,611,533
METHOD OF MAKING PREFABRICATED BUILDING UNIT
Thomas V. Thomason, Hythe, Kent, England, assignor to The Hythe (Kent) Engineering Company Limited, Hythe, Kent, England
Filed Apr. 3, 1969, Ser. No. 813,215
Int. Cl. B23p 17/00
U.S. Cl. 29—155 16 Claims



A process for making prefabricated units for use in erecting prefabricated buildings comprises forming a structural steel frame, preferably made from tubular steel rectangular frame sections, and placing the frame horizontally in an open topped mould having a flat bottom and vertical sides which are arranged so that the frame can be placed with its outer edges projecting beyond the planes of the sides of the mould and so that the lower face of the frame is clear of and parallel to the flat bottom of the mould. A light weight concrete mix is then poured into the mould so that the mix fills the space between the bottom of the mould and the lower face of the frame and also fills at least part of the space bounded by the frame so that the steel members forming the frame are at least partly embedded in the mix. The mix is then allowed to set and the unit is removed from the mould. The mix is of such a constituency that, on setting, a smooth surface is formed in contact with the bottom of the mould. A unit is thus formed with the outer edges of the frame projecting beyond the concrete in-filling to facilitate the welding together of adjacent units at right angles to each other, and with an inner face which is sufficiently smooth to serve as a ceiling or wall of a room without need of a further finish such as a plaster coating to be applied to the surface.

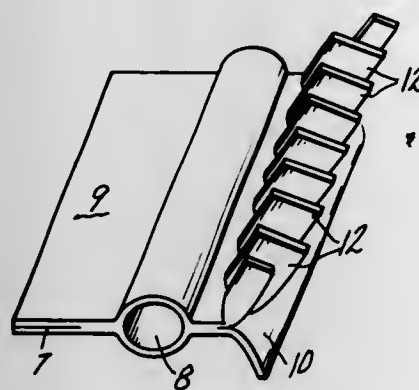
3,611,534 METHOD OF MAKING EXPANDED INTEGRAL FIN SHEET METAL TUBING FOR USE IN HEAT EXCHANGERS

Norval A. Keith, East Alton, Ill., assignor to Olin Corporation

Continuation-in-part of applications Ser. No. 708,463, Dec. 7, 1967, and Ser. No. 774,577, Nov. 1, 1968, now Patent No. 3,495,657, said application Ser. No. 774,577 being a continuation of application Ser. No. 630,376, Apr. 12, 1967. This application Sept. 25, 1969, Ser. No. 860,980

Int. Cl. B21d 53/02; B23p 15/26
U.S. Cl. 29—157.3 V

5 Claims



A sheet metal tubing having integrally formed web sections which are slit to form fins. The fin surface area is increased by corrugating the web sections prior to slitting them into fins. After slitting, the fins are flattened or shaped as desired, and then twisted or bent to form the desired array. The sheet metal tubing may be formed into a variety of shapes such as coils for use in heat exchangers in applications such as refrigerators.

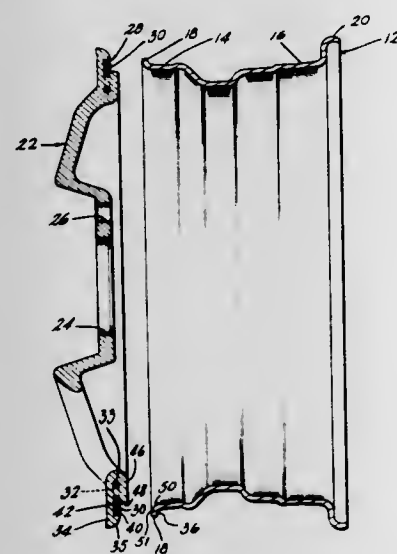
3,611,535 METHOD OF MAKING VEHICLE WHEEL

Edward J. Nobach, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Original application June 6, 1968, Ser. No. 735,039, now Patent No. 3,506,311, dated Apr. 14, 1970. Divided and this application Jan. 14, 1970, Ser. No. 2,781

Int. Cl. B21h 1/10; B21k 1/38
U.S. Cl. 29—159.01

6 Claims



An automotive passenger vehicle wheel comprising a cast aluminum wheel body and a rolled or stamped sheet steel rim rigidly interconnected by a steel ring insert cast into the aluminum body and a continuous

welded joint between the steel insert and the rim, the welded joint preferably being formed by a friction or inertial welding process wherein one edge of the rim is rotated against the ring insert.

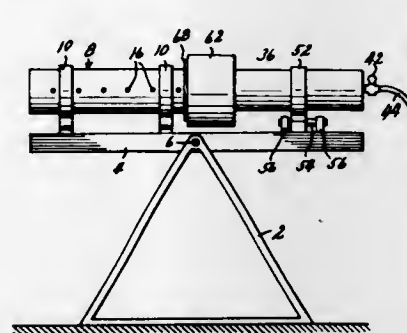
3,611,536 APPARATUS FOR APPLYING EXPANSIBLE SHEATHS TO CORES

Manfred H. Guenther, 6103 E. 151st Terrace, Grandview, Mo. 64030, and Eugene Hayes, Kansas City, Kans.; said Hayes assignor to said Guenther

Filed June 11, 1969, Ser. No. 832,277
Int. Cl. B23p 11/02, 19/00, 19/02

U.S. Cl. 29—200 B

5 Claims



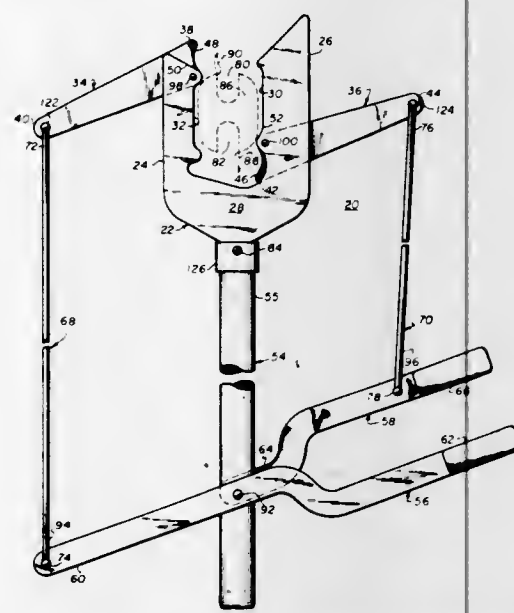
An apparatus for applying a rubber or other resiliently expansible sheath to a core member, said sheath having a normal interior diameter less than the diameter of said core, said apparatus consisting of seals for closing the ends of said sheath, whereby air under pressure introduced therein will expand said sheath to an internal diameter greater than the core diameter, and mechanism for introducing said core into said sheath while the latter is so expanded whereby when said pressure is relieved said sheath will contract resiliently into snug engagement with said core.

3,611,537 TOOL

Francis S. Hassett, Jr., Westfield, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Jan. 30, 1970, Ser. No. 7,063
Int. Cl. H01r 43/04; H05k 13/00
U.S. Cl. 29—203 D

18 Claims



A tool, comprised of a handle member and a contoured head member coupled thereto, remotely operated compression means coupled to the head member, and operating means coupled between said compression means and said handle member for compressively deforming appropriate tabs of a connecting device positioned within the head member.

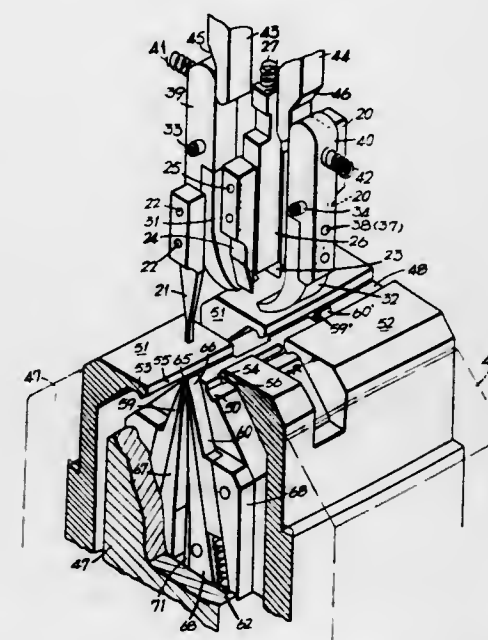
3,611,538 APPARATUS FOR CONTINUOUSLY PRODUCING A SLIDE FASTENER CHAIN

Ikuo Takamatsu, New York, N.Y., assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Original application July 23, 1968, Ser. No. 746,952, now Patent No. 3,540,090, dated Nov. 17, 1970. Divided and this application June 25, 1970, Ser. No. 49,889

Claims priority, application Japan, Feb. 24, 1968, 43/11,657
Int. Cl. B23p 19/04
U.S. Cl. 29—207.5 D

1 Claim



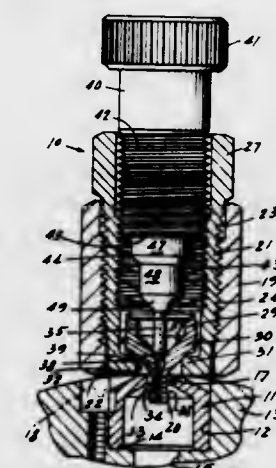
An apparatus for producing slide fastener chains comprises a base unit and an overhead unit overlying the base unit. The base unit is provided with a longitudinally extending recess for guiding the fastener chains and a pair of grippers for gripping the chains. The overhead unit is provided with a cutting device for cutting off predetermined fastener elements and a set of scrapers to effect removal of the cut off elements. The base and overhead units co-operate together to form longitudinally spaced-apart blank portions on the fastener chain devoid of fastener elements to thereby facilitate the mounting of sliders on the fastener chain.

3,611,539 DIE EXTRACTOR

John A. Meaden, Jr., 635 S. Park, Hinsdale, Ill. 60521

Filed June 16, 1969, Ser. No. 833,358
Int. Cl. B23p 19/04
U.S. Cl. 29—253

10 Claims



A tool for extracting a die from a mounting recess in a holder, having a thrust member engageable with the

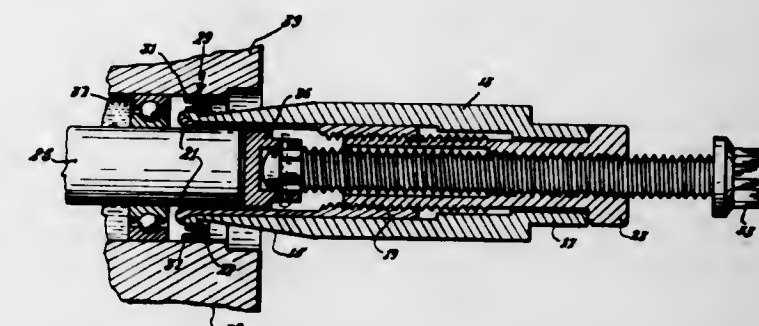
holder adjacent to the recess, an extraction device engageable with the die, and reaction power structure operable on and between the member and the device to effect die-extracting movement of the device relative to the thrust member to withdraw the die from the recess as the member thrusts against the die holder.

3,611,540 SEAL PULLER

Tadaashi Gibu, Tachikawa, Japan, assignor to the United States of America as represented by the Secretary of the Air Force

Filed July 28, 1969, Ser. No. 845,364
Int. Cl. B23p 19/04
U.S. Cl. 29—263

2 Claims



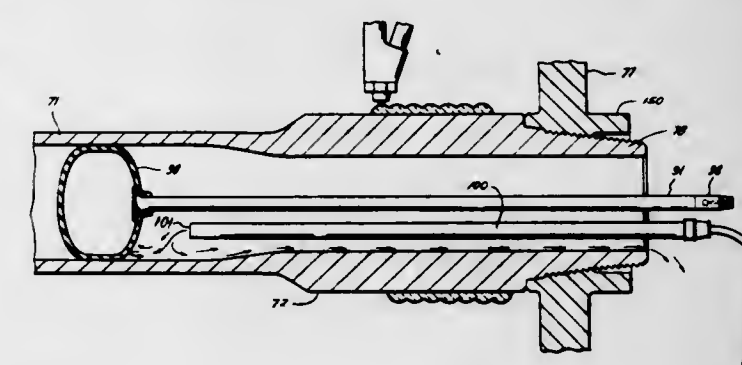
A puller for extracting a sealing element from the housing of an aircraft accessories case having a drive shaft extending outwardly therefrom. The puller includes a hollow draw collet member with flexible finger elements which are positioned behind the seal and which move radially outward in response to the relative axial movement of a collet spreader to engage the inside circumference of the steel case of the seal. The tightening of a drive bolt against the end of the drive shaft then pulls the seal from the housing.

3,611,541 TOOL JOINT REBUILDING

William R. Garrett, Midland, Tex., assignor to Smith International, Inc., Drilco Division, Midland, Tex.

Filed Jan. 30, 1970, Ser. No. 7,016
Int. Cl. B22d 19/10; B23p 7/00
U.S. Cl. 29—401

5 Claims

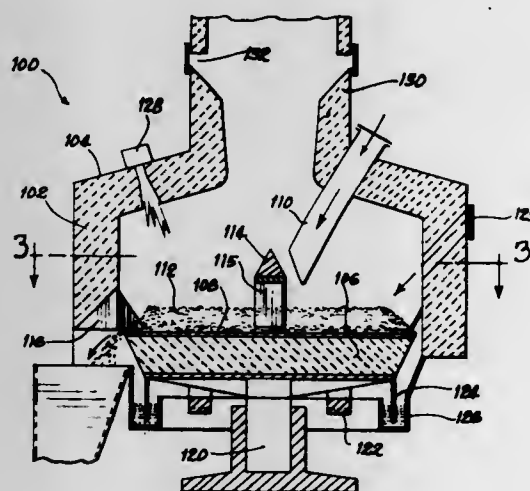


The outer periphery of a worn down tool joint on the end of a drill pipe is restored to desired diameter by applying a weld bead to the outer periphery of the tool joint, the joint being rotated and the weld rod periodically, i.e. once each revolution, translated, the width of one weld bead, parallel to the joint axis, during application of the weld metal. Cooling of the joint during welding is effected by plugging the pipe interior adjacent the tool joint and admitting water to the pipe adjacent the plug, the water

flowing back through the tool joint and out the end of the pipe. An open air tank receives the hot water from the pipe. The water cools in the tank and is recirculated by a pump back into the pipe adjacent the plug. The plug is an expandable bladder carried on the end of a compressed air pipe by means of which the bladder is inserted through the internal upset of the pipe and expanded.

3,611,542 SYSTEM FOR HOT DE-OILING AND HOT BRIQUETTING

James E. Moore, Glenview, Ill., assignor to Komarek-Greaves and Company, a division of Berwind Corporation, Rosemont, Ill.
Original application Apr. 15, 1968, Ser. No. 721,474, now Patent No. 3,497,190, dated Feb. 24, 1970. Divided and this application Dec. 18, 1969, Ser. No. 886,158
Int. Cl. B23q 17/00; C21b 11/00
U.S. Cl. 29—403 5 Claims



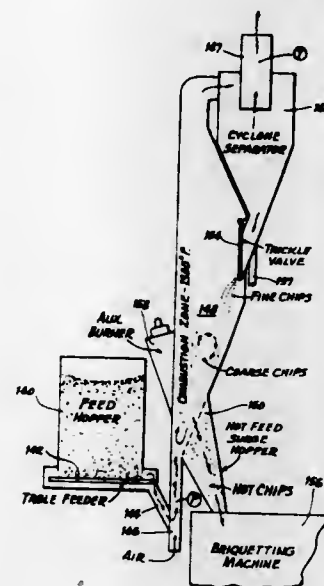
A system for hot de-oiling and hot briquetting material wherein the material is heated to burn off or vaporize foreign substances and is then transported to a briquetting machine for forming of the material into briquets. The improvements of the invention relate to a furnace construction and method of operation for heating the material. The furnace construction includes a single rotating hearth providing a combustion zone whereby the material can be fed to the combustion zone from an inlet designed to deliver the material to the center of the hearth. An outlet is defined in the side of the furnace construction, and stationary rake means are provided for moving the materials over the hearth surface to the outlet for thereby delivering the materials to briquetting equipment.

3,611,543 SYSTEM FOR HOT DE-OILING AND HOT BRIQUETTING

James E. Moore, Glenview, Ill., assignor to Komarek-Greaves and Company, a division of Berwind Corporation, Rosemont, Ill.
Original application Apr. 15, 1968, Ser. No. 721,474, now Patent No. 3,497,190, dated Feb. 24, 1970. Divided and this application Dec. 18, 1969, Ser. No. 886,161
Int. Cl. B23q 17/00; C21b 11/00
U.S. Cl. 29—403 7 Claims

A system for hot de-oiling and hot briquetting material wherein the material is heated to burn off or vaporize foreign substances and is then transported to a briquetting machine for forming of the material into briquets. The improvements of the invention relate to a furnace construction and method of operation for heating the material. The furnace construction includes a combustion area with material being fed to the combustion area from

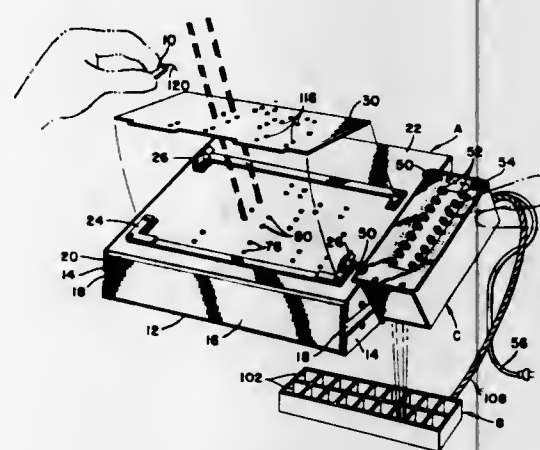
a bottom inlet. The material is carried through the inlet by means of an air stream and an outlet is defined in



the combustion zone whereby after burning, the materials within the zone are delivered to briquetting equipment.

3,611,544 APPARATUS AND METHOD OF ASSEMBLING COMPONENTS ON A PRINTED CIRCUIT BOARD

Dale E. Frejs, Barstow, and Richard A. De Lille and Robert W. Samuelson, Moline, Ill., and James R. Lindsay, Bettendorf, Iowa, assignors to Gulf + Western Industries, Inc., New York, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,533
Int. Cl. B23q 17/00; H05k 13/04, 3/30
U.S. Cl. 29—407 11 Claims

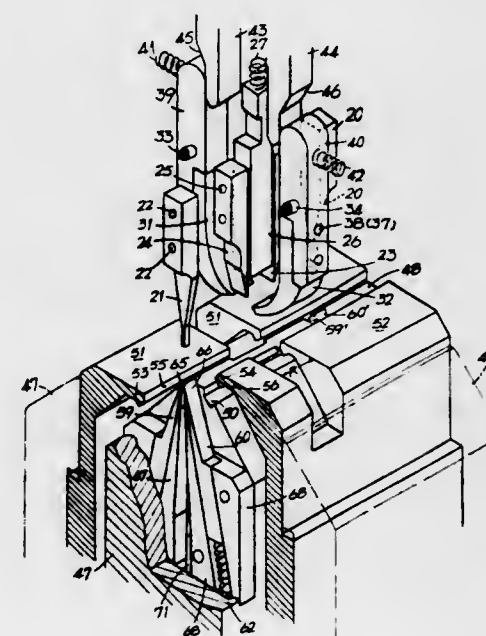


This invention relates to an apparatus and method of assembling electrical components having leads in selected openings on a printed circuit board. The apparatus comprises a housing including a read-out panel, a plurality of light sources disposed within the housing, means for selectively energizing each of the light sources and means for transmitting the light emitted by the light sources to preselected positions on the read-out panel. The method comprises the steps of providing a read-out panel having a plurality of selectively illuminable light emitting sources releasably secured thereto at preselected locations, each of the locations defining the relative position of a corresponding electrical component; positioning the printed circuit board on the read-out panel with some of the openings in alignment with some of the light emitting sources;

selectively illuminating the light emitting sources; and inserting the leads of the corresponding electrical component in the respective openings of the printed circuit board as indicated by said light emitting sources.

3,611,545 METHOD FOR CONTINUOUSLY PRODUCING A SLIDE FASTENER CHAIN

Ikuo Takamatsu, New York, N.Y., assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Original application July 23, 1968, Ser. No. 746,952, now Patent No. 3,540,090, dated Nov. 17, 1970. Divided and this application June 25, 1970, Ser. No. 49,890
Claims priority, application Japan, Feb. 24, 1968, 43/11,657
Int. Cl. B23p 15/00, 19/04
U.S. Cl. 29—408 1 Claim



A method for producing slide fastener chains comprises providing a pair of opposed carrier tapes each having therealong a row of fastener elements secured to the carrier tapes by sewing threads and then removing longitudinally spaced-apart groups of the fastener elements so that sliders may be easily mounted on the carrier tapes to thereby form slide fastener chains. The groups of fastener elements are removed by punching out the coupling portions of adjacent intermeshed fastener elements and cutting the sewing threads securing these fastener elements to the carrier tapes thereby forming a blank tape portion devoid of fastener elements.

3,611,546 METHOD OF HIGHLY-DENSIFYING POWDERED METAL

John Haller, Northville, Mich., assignor to Federal Mogul Corporation, Southfield, Mich.
Filed Nov. 26, 1968, Ser. No. 779,151
Int. Cl. B22f 14 Claims

An air-tight can is prepared from heat-resistant material, such as ordinary steel or stainless steel having on at least one end a tubular stem through which the can is filled with the powdered metal to be compacted. The interior of the can is then exhausted to a high vacuum by connecting the stem to a vacuum pump, whereupon the stem is sealed off as by welding while maintaining the high vacuum. The thus powder-filled evacuated can is then

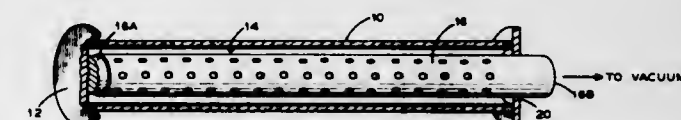
heated to a high temperature which in one example was 2150° F. for about one hour. While at that heat it is placed in the die cavity of a press with the stem projecting into a sufficiently deep recess in either the lower punch or in the upper punch. The upper punch (and in a modification also the lower punch) is made of smaller diameter than the die cavity so as to leave an annular clearance space between the side wall of the die cavity and the punch. The upper punch is then lowered into the die cavity in a pressing stroke which flattens the can while compressing the metal powder therein without rupturing the can or lowering the vacuum therein.



As the compression of the can and its contents continues, and the density of the powdered metal mass approaches 100 percent, the side walls of the can do not collapse, buckle or crinkle, as has hitherto occurred in prior attempts at compressing powdered metals within cans. Instead, the peripheral portion of the can and its contents deform axially into the clearance space between the punch and the die cavity side wall. If the pressing is continued until the density exceeds 100 percent, the surplus metal powder and the peripheral portion of the can continue to move axially into the above-mentioned clearance space, thereby producing an axially-projecting lip extending around the periphery of the can and containing metal powder at a somewhat lower density than the metal in the remaining portion of the can. The walls of the can are then removed by machining or by pickling, together with the less dense peripheral portion of the now substantially solidified metal disc or "pancake."

3,611,547 METHOD AND DEVICE FOR REMOVING MEMBRANES FROM TUBULAR SUPPORTS

Raymond M. Chappel, Whippany, N.J., assignor to Abcor Water Management Company, Inc., Cambridge, Mass.
Filed Nov. 20, 1968, Ser. No. 777,307
Int. Cl. B23p 19/02 11 Claims



A device for removing a membrane from a tubular support therefor which comprises a porous tube having one end sealed and the opposite end in communication with a vacuum source, the porous tube being adapted for insertion within the tubular support such that the membrane circumscribes the porous tube. Associated with the device is a method for removing the membrane liners from the tubular support which involves inserting a porous tubular member within the membrane liner housed in the tubular support, pulling a vacuum on the porous tubular member thereby causing collapse of the membrane against the porous tube.

the porous tube tubular member, and removing the porous tubular member and the membrane from the tubular support.

3,611,548
PANEL CONSTRUCTION AND METHOD
Peter P. Parris, Costa Mesa, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Original application Apr. 12, 1967, Ser. No. 632,714.
Divided and this application June 18, 1969, Ser. No. 844,711

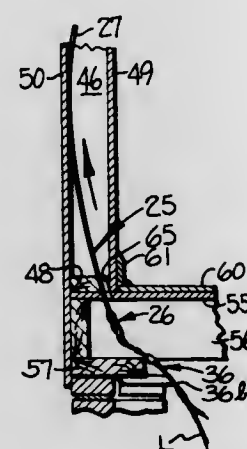
Int. Cl. B23p 19/00
U.S. Cl. 29—428 16 Claims



The method as disclosed herein includes applying a compressive force to the faces of a sandwich panel in excess of the crushing proportional limit of the sandwich panel and below the force at which the panel structurally fails and substantially weakens to permanently reduce the thickness and increase the density of the core of the sandwich panel. The compressive force is applied along a pre-selected zone such as a marginal portion of the sandwich panel to reduce the thickness thereof while allowing the thickness of the main portion of the panel to remain substantially unchanged. The portion of reduced thickness is integrally joined to the remainder of the panel by a tapered transition portion. A suitable accessory member such as an edge member or a joining member is then secured to the marginal portion to increase the strength of and protect the marginal portion. The panels may be used for various purposes such as pallets.

3,611,549
METHOD FOR FORMING HOLES IN AND INSTALLING LINES IN STRUCTURAL MEMBERS
George F. Pope, Burlington, N.C., assignor to Diversified Manufacturing & Marketing Co., Inc., Burlington, N.C.
Filed July 1, 1969, Ser. No. 838,270

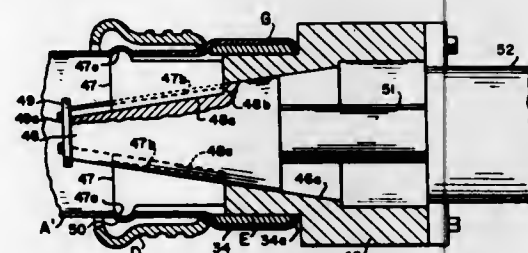
Int. Cl. B23p 19/04
U.S. Cl. 29—433 10 Claims



Holes for electrical conductor lines and the like are formed through oftentimes inaccessible wooden obstructions, such as structural frame members of a hollow wall, by utilizing a novel drill having an elongate spring-like

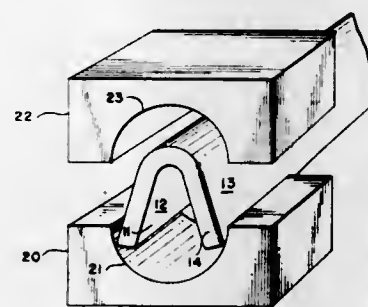
shaft with a drill bit on its leading end, and wherein the shaft may be bowed to insert the same into the wall to direct the drill bit in the desired direction. The method further comprises connecting a pliable line (a pull line or conductor line) to one end of the drill after it has passed through the wall, and then removing the drill while pulling the line therewith to position a length of the pliable line extending through the wall.

3,611,550
PROCEDURE FOR MAKING QUICK ASSEMBLY COUPLING
Clyde E. Rickard, Du Bois, Pa., assignor to McDowell Manufacturing Company, Millvale, Pa.
Original application Feb. 28, 1969, Ser. No. 803,382, now Patent No. 3,564,897, dated Feb. 23, 1971. Divided and this application Apr. 16, 1970, Ser. No. 29,038
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—511 4 Claims



An expanding-out tool and method employs a mandrel for forming wall dimples in a tubular coupling member for retaining a collar nut in an operating position thereon. Also a mandrel using method is employed for expansion-shaping tubular coupling members and for securing them by expansion force application with respect to other hollow coupling parts or members.

3,611,551
METHOD FOR ATTACHING SUTURE AND NEEDLE
William H. Shave, Roosevelt, and Leonard D. Kurtz, Woodmere, N.Y., assignors to Deknatel, Incorporated, Queens Village, N.Y.
Filed Aug. 25, 1969, Ser. No. 852,785
Int. Cl. B21d 39/00; B23p 11/00
U.S. Cl. 29—515 6 Claims



A method of attaching a suture to a suture needle of the type initially having a V-shaped cross-section channel while substantially eliminating annealing. The channel is forcefully partially closed before hardening the needle, after which the needle is hardened, after which suture is placed into the channel. The walls of the channel are then further and finally closed against each other normally without annealing, to hold the suture.

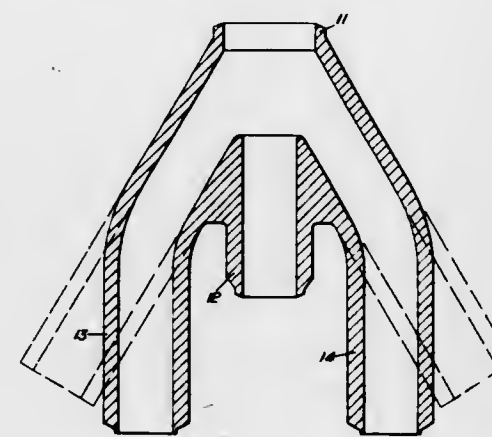
3,611,552
COLD DRAWING A DISK INTO A CAP FOR PAPER CORE
Philip S. Cushing and Harris E. Stone, both of 293 Lenox St., Norwood, Mass. 02068
Continuation-in-part of abandoned application Ser. No. 746,154, July 19, 1968. This application Mar. 9, 1970, Ser. No. 17,638
Int. Cl. B21d 39/04
U.S. Cl. 29—523 1 Claim



A metal cap for a paper core is made by three operations:

- (1) Depressing the central area of a steel disk to form a shallow cup;
- (2) Deepening the cup and simultaneously forming a socket in the wall of the cup;
- (3) Cutting out the central portion of the bottom of the cup to leave an inward bottom flange and straightening the flange to add to the length of the cylindrical wall of the object. A slight radius is maintained around the end to permit insertion in a core where it is subsequently expanded.

3,611,553
METHOD OF FORMING TUBE JUNCTIONS
Alexander Lightbody, Kilbarchan, Scotland, assignor to Babcock & Wilcox Limited, London, England
Filed May 26, 1969, Ser. No. 827,721
Claims priority, application Great Britain, May 24, 1968, 24,997/68
Int. Cl. B23p 13/04
U.S. Cl. 29—558 7 Claims

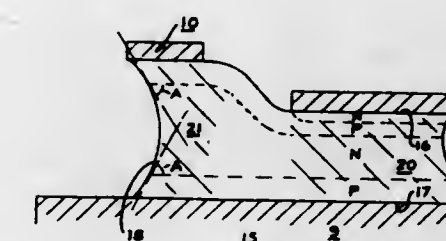


A tube junction having a root limb from which extend a plurality of branched limbs, one of which called a first branch limb is in coaxial relation with the root limb while the others are spaced around the axis of this first branch limb. All the branch limbs extend in the same direction and the terminating end portions thereof are in parallel

closely pitched relationship with the axis of the first branch limb.

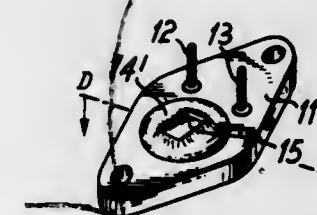
A method of making the aforesaid junction having the sequential steps of forging, boring, and bending into the desired shape.

3,611,554
METHODS OF MANUFACTURE OF SEMICONDUCTOR ELEMENTS AND ELEMENTS MANUFACTURED THEREBY
John Mansell Garrett, London, England, assignor to Westinghouse Brake English Electric Semi-Conductors Limited, London, England
Filed June 27, 1969, Ser. No. 837,183
Claims priority, application Great Britain, Aug. 6, 1968, 37,377/68
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—580 19 Claims



A method of forming a semiconductor wafer from a slice of semiconductor material. Regions of one type of conductivity are formed on a semiconductor slice of the opposite type of conductivity extending inwardly from each of the opposed major faces of the slice thereby to form in the slice a pair of P-N junctions extending parallel to the major faces. Rigid metal members are then secured to the opposed major faces of the slice. Material is then mechanically removed from the peripheral portion of the slice to form a peripheral edge on which the P-N junctions emit and meet at an acute angle on that side of the P-N junction on which lies the original material of the slice. The peripheral edge meets the major faces adjacent the rigid metal members thus providing a protection for the circumferential edges of the wafer in its final form.

3,611,555
METHOD OF ASSEMBLING A SEMICONDUCTOR DEVICE
Johannes Nier, Stuttgart-Weilimdorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 16, 1970, Ser. No. 3,388
Claims priority, application Germany, Jan. 23, 1969, P 19 03 274.7
Int. Cl. B01j 17/00; H01l 1/14
U.S. Cl. 29—591 10 Claims

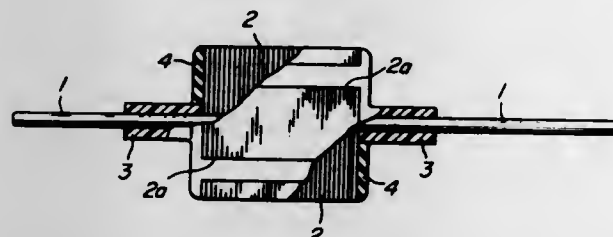


A layer of solder is provided on a surface portion of a carrier. The solder layer is then formed with a depression whose size and outline correspond to the semiconductor element which is to be mounted on the carrier, whereupon the semiconductor element is positioned in the recess and bonded to the carrier by subjecting the solder to requisite thermal energy.

3,611,556
METHOD OF MANUFACTURING A ROTOR FOR SMALL ROTARY ELECTRIC MACHINES
 Tamotsu Matsubara, Yoshio Oka, and Kunihiro Nonome, Kariya-shi, Japan, assignors to Nippon Denso Company Limited, Kariya-shi, Japan
 Continuation of application Ser. No. 770,046, Oct. 23, 1968. This application Jan. 26, 1970, Ser. No. 3,660
 Claims priority, application Japan, Jan. 20, 1968, 43/3,693

U.S. Cl. 29—598 Int. Cl. H02k 15/02

2 Claims

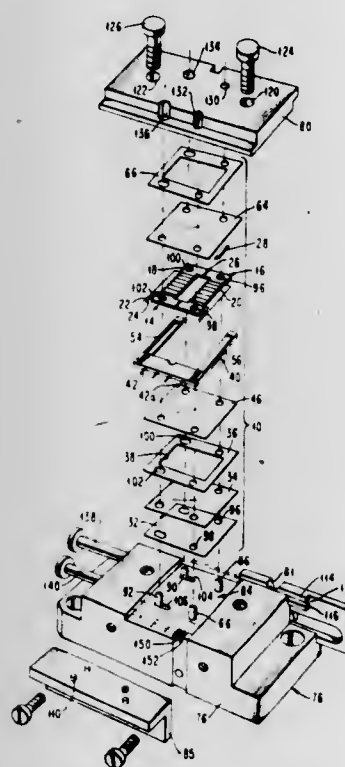


A rotor in small rotary electric machines of the type comprising a rotary shaft and a rotor core mounted on said rotary shaft and having an insulating film formed on the outer surface thereof by coating with an insulating powder, wherein an insulating sleeve having large mechanical strength is fitted on a rotary shaft at least on one side of the rotor core with one end thereof contacting the confronting end face of said core before the insulating powder is coated on the opposite end faces of and the surfaces of grooves formed in said core, and which therefore provides for easy production of the sleeve and enables the bonding of the sleeve with the core to be attained in a highly economical manner.

3,611,557
METHOD OF PRODUCING A MAGNETIC TRANSDUCING HEAD
 Alfred T. Hardardt, Wappingers Falls, Henry C. Schick, Hopewell Junction, and John H. Westermann, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed Apr. 2, 1969, Ser. No. 812,723
 Int. Cl. H01f 7/06

U.S. Cl. 29—603

5 Claims



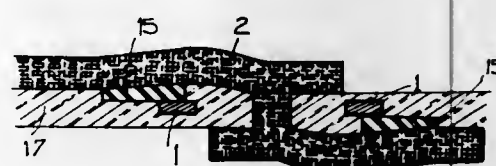
A laminar-like module for use in producing a multiple magnetic transducing head is disclosed, together with a method of fabricating the module. A plurality of sepa-

rate components are placed in stacked relationship in a fixture, with intervening heat-activatable adhesive sheets. The working gap between the magnetic cores is set, transverse relative movement between the cores is prevented, the coil leads are attached to exposed pads on connector pins, and various tests performed on the module prior to final assembly. If the tests are successful, the components are fastened together by activating the adhesive.

3,611,558
METHOD OF MAKING AN INTEGRATED MAGNETIC MEMORY
 Michel Carbonel, Paris, France, assignor to Thomson-CSF
 Filed July 16, 1969, Ser. No. 842,111
 Claims priority, application France, July 25, 1968, 160,540
 Int. Cl. H01f 7/06

U.S. Cl. 29—604

4 Claims

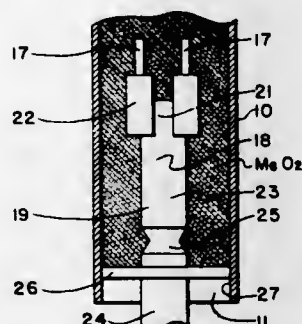


A method of manufacturing integrated magnetic circuits comprising: the deposition by electrolysis of a ferromagnetic material forming a memory core, on a filler metal, which is easily affected by chemical attack; a further deposition on said material of a further layer of the filler metal and the deposition of conductors on this latter layer; and the dissolving of the filler metal with substitution thereto of an insulating material.

3,611,559
METHOD OF MAKING AN ELECTRICAL HEATING UNIT
 David D. McKay and Albert S. Gould, Winnipeg, Manitoba, Canada, assignors to James B. Carter, Limited, Winnipeg, Manitoba, Canada
 Filed Oct. 10, 1969, Ser. No. 865,312
 Int. Cl. H06b 3/00

U.S. Cl. 29—611

1 Claim

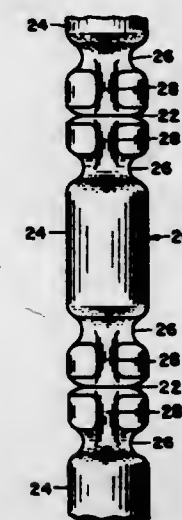


A pair of parallel resistance elements are connected at one end thereof to a common junction member which electrically connects the elements in series, the junction member having an outer portion adapted to be broken off. The elements and the junction member are inserted in a tubular sheath and a washer is placed on the break-off portion of the junction member to hold it centralized in the sheath which is then filled with insulating material and is swaged to compact the insulation. The outer portion of the junction member is then broken off and is removed with the washer from the sheath. The end of the sheath is then sealed by a closure.

3,611,560
METHOD FOR FORMING AN ELECTRO-CONDUCTIVE COATING RESISTOR
 Guenter H. Loose, Webster, N.Y., assignor to Corning Glass Works, Corning, N.Y.
 Original application Dec. 27, 1968, Ser. No. 787,530, now Patent No. 3,544,948, dated Dec. 1, 1970. Divided and this application Dec. 1, 1969, Ser. No. 881,186
 Int. Cl. H01c 7/00, 17/00

U.S. Cl. 29—620

6 Claims

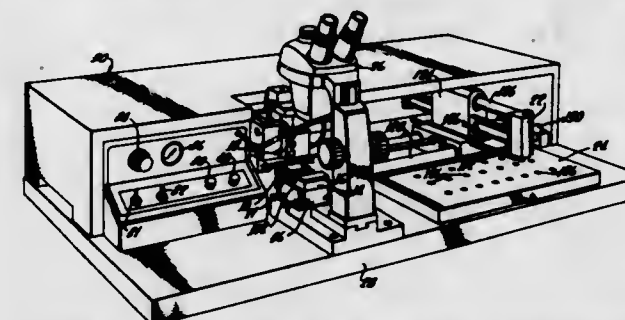


A capless electroconductive coating resistor forming method. The resistor dielectric substrate is formed on a continuous basis, passed between forming rolls to impart therein grooves and notches, coated with resistive material, and thereafter separated into individual resistor blanks. Wire leads are attached directly to the blanks by wrapping them about the blanks within the preformed grooves and in electrical contact with the resistive material coating.

3,611,561
TRANSFER MECHANISM WITH LOADING NEST
 Paul A. Dodder, Costa Mesa, Calif.
 (2302 Fairhill Drive, Newport Beach, Calif. 92660)
 Filed Apr. 21, 1969, Ser. No. 817,998
 Int. Cl. H05k 3/30, 13/04

U.S. Cl. 29—626

26 Claims



A transfer apparatus for accurately positioning a plurality of electronic elements on a substrate, having a base for mounting both the substrate and a loading tray from which the electronic elements are to be moved. The substrate and loading tray are moved in tandem to a predetermined location wherein a transfer mechanism may transfer an electronic element from the loading tray to the substrate by moving between two predetermined positions.

3,611,562
METHOD OF ATTACHING MICROCIRCUIT PACKS TO A PANEL BOARD
 Philip J. Herb, Somerville, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Dec. 5, 1969, Ser. No. 882,576
 Int. Cl. H05k 3/30; H01r 43/00

U.S. Cl. 29—626

6 Claims

A method of mass connecting a plurality of microcircuit packs to the printed circuit panel comprises loosely

fastening a row of integrated circuit packs to a plurality of crimpable electrical connectors carried by a carrier strip. The carrier strip is then placed over the upstanding pins in the circuit panel such that the upstanding pins also



extend through the respective electrical connectors. Using a mass crimping technique, the electrical connectors are crimped thereby forming a mechanical and electrical connection between the integrated circuit packs and the upstanding pins.

3,611,563
METHOD FOR CONNECTING A CONDUCTOR TO A POST
 Francis A. O'Loughlin, Scotch Plains, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Dec. 3, 1969, Ser. No. 881,783
 Int. Cl. H02g 15/08

U.S. Cl. 29—628

1 Claim

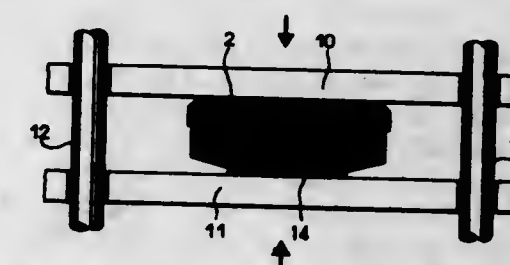


The connector is constructed of a substantially rectangular cross-sectional shape with a bore and a recess passing therethrough so as to initially receive the post and conductor respectively therein with slight clearances. Additionally, the connector is provided with a pair of protrusions on opposite sides so that upon crimping of the protrusions against the connector, the material of the connector flows in transverse perpendicular planes to close upon the conductor and post while obtaining a gas tight fit between the conductor, connector and post.

3,611,564
ENCASING PROCESS FOR PRESS ELECTRODE SEMICONDUCTOR COMPONENTS
 Francis H. Boulet, Bures-sur-Yvette, and Roger H. Baiteaux, Athis-Mons, France, assignors to Compagnie Generale d'Electricite, Paris, France
 Filed Apr. 15, 1969, Ser. No. 816,255
 Claims priority, application France, Apr. 17, 1968, 148,424
 Int. Cl. H01r 9/00

U.S. Cl. 29—630 A

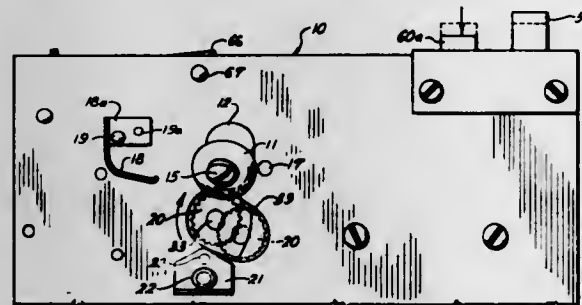
4 Claims



An encasing process for press electrode semiconductor components consisting of making the electrodes undergo

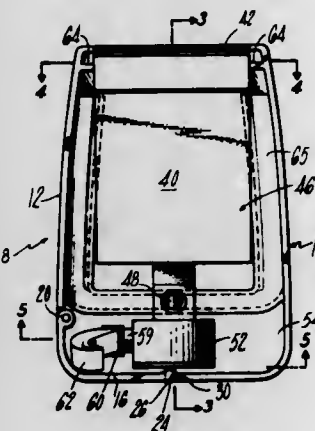
prestress at a pressure higher than that which they would have to undergo during normal operation before placing them on the component and polishing the surfaces of the electrodes which are to be applied to the semiconductor component.

3,611,565
PUSHBUTTON OPERATED CAN OPENER
Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company
Filed Feb. 6, 1969, Ser. No. 797,217
Int. Cl. B67b 7/38
U.S. Cl. 30—4 18 Claims



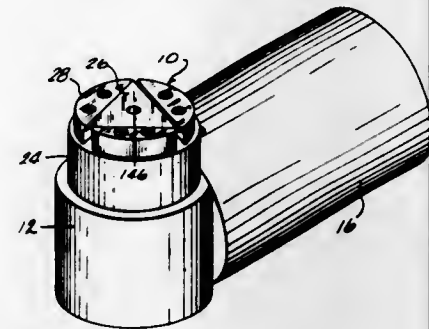
An electrically powered can opener is automatically operated by selectively depressing appropriate finger operated pushbuttons. The first embodiment utilizes the toggling effect of a pivotal pawl and orbiting feed wheel drive shaft pins to open or close the distance between the can feed wheel and the cutter element. The second embodiment includes a spring loaded pawl leg that cushions the advance of the can feed wheel through the can piercing zone with a minimum of torque required by the electric motor driving same.

3,611,566
ELECTRIC SHAVER WITH VACUUM COLLECTOR
William J. Brennan, Sr., 652 Flatbush Ave., West Hartford, Conn. 06110
Filed July 1, 1969, Ser. No. 838,288
Int. Cl. B26b 19/44
U.S. Cl. 30—41.5 6 Claims



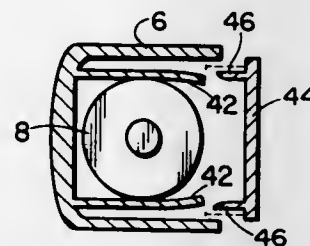
An electric shaver comprising a molded plastic casing and a shaver mechanism subassembly mounted within the casing having shearing heads received within a forward opening in the casing, a rearward motor shaft extension and an impeller fixed onto the shaft extension. The impeller provides for drawing hair particles from the shearing heads through conduits integrally formed with the casing and into a receptacle within the rear end of the casing. In one embodiment a bag is employed as a receptacle for collecting the hair particles and in a second embodiment a pair of rear compartments integrally formed with the casing provide for collecting the hair particles.

3,611,567
CENTRIFUGAL DRIVE FOR ELECTRIC RAZOR
Bertram F. Crane, 2417 N. 59th St., Milwaukee, Wis. 53210
Filed Apr. 14, 1969, Ser. No. 815,962
Int. Cl. B26b 17/04, 19/08
U.S. Cl. 30—41.9 9 Claims



Disclosed herein is an electric shaver having a shaving head comprising an outer or female member having a polygonal bore defining an internal bearing surface, a number of segments defining cutting elements adjustably mounted on the outer member symmetrically with respect to the bore, an inner or male member supported on the outer member and having a peripheral polygonal bearing surface positioned within said bore and a cutting edge positioned to operatively engage the cutting elements of the segments, an electric motor and a variable radius eccentric drive assembly operatively connected to the motor and to the inner member to provide a polygonal tracing movement of the inner member relative to the outer member. A sharpening device is also included and is adapted to be mounted on the inner member to sharpen the segments or on the segments to sharpen the inner member.

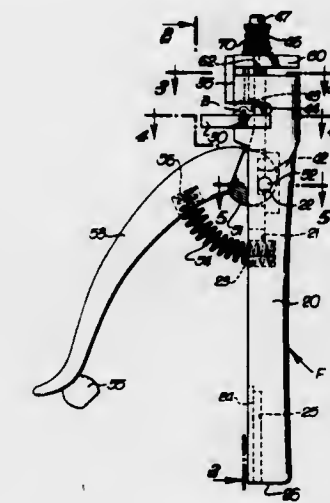
3,611,568
VIBRATORY SAFETY RAZOR
Ben H. Alexander, Brookline, Joseph E. Koehler, Norwell, and Roger L. Perry, Lynnfield, Mass., assignors to The Gillette Company, Boston, Mass.
Filed Aug. 20, 1969, Ser. No. 851,665
Int. Cl. H01m 1/04; B26b 21/38
U.S. Cl. 30—45 3 Claims



A safety razor including a head portion in which there is mounted cutting means and a handle portion in which there is mounted an electric motor, a shaft rotatable by the motor, and a weight eccentrically mounted on the free end of the shaft, rotation of the weight operating to cause vibration of the head portion of the razor.

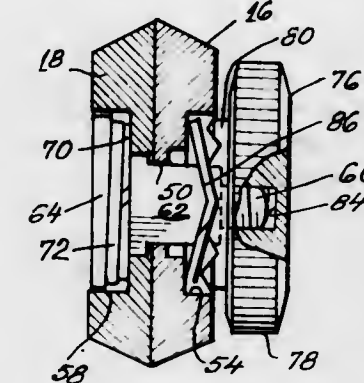
3,611,569
KEY DUPLICATING MACHINE
Horst W. Wich, 816 Brent, South Pasadena, Calif. 91030
Filed July 16, 1969, Ser. No. 842,186
Int. Cl. B26b 13/22
U.S. Cl. 30—131 14 Claims
An original key is placed in a recess having associated scale markings on its side edges which indicate the longitudinal positions of notch locations on the key. A key

blank is supported in a selected longitudinal position on a holding jaw, and a cutter bar is moved perpendicularly past the holding jaw to form a notch in the key blank. Scale markings on the holding jaw are used to visually determine the correct position of the key blank as each notch is being formed. After the correct position of the key blank is visually determined by concurrent reference to a corresponding notch location on the original key,



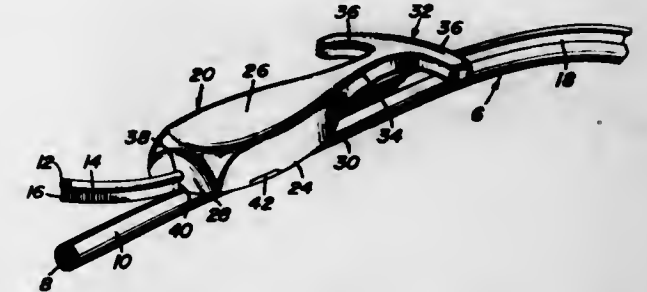
hand operation of an actuating means causes initial movement of the cutter bar to first grasp the key blank firmly in position through an associated holding finger, and then further movement of the cutter bar results in the notching operation. The cutter bar is disposed in an elongated guideway within the frame, and positively retained to prevent misalignment of the cutting edge during a notch forming operation. An eccentric cam with associated operating handle drives the cutter bar relative to the frame.

3,611,570
ADJUSTABLE SCISSORS AND SHEARS WITH HAND DIAL REGULATOR
I. Marco Levi Laurenti, 432 Park Ave. S., New York, N.Y. 10016
Filed Apr. 24, 1969, Ser. No. 818,931
Int. Cl. B26b 13/28
U.S. Cl. 30—268 2 Claims



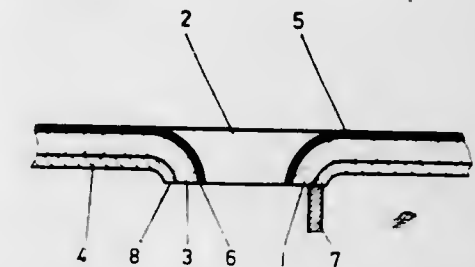
A pair of scissors having a pair of blades enlarged at one end, the enlargements continuing into handle portions. The enlarged ends of the blades are pivotally and adjustably connected to each other. The pivotal and adjustable connection includes a pivot pin extending through aligned holes in the enlarged head portions of the blades, with its threaded end protruding outwardly of the enlarged head portion of the adjacent blade. A knob having a threaded socket is threadably mounted on the threaded end of the pivot pin whereby turning of the knob adjusts the squeezing tension of the blades on the material being cut.

3,611,571
SUPPORT WIRE STRIPPING TOOL
William F. Bolling, 3214 S. 28th St., La Crosse, Wis. 54601
Filed Oct. 30, 1969, Ser. No. 872,616
Int. Cl. H02g 1/12
U.S. Cl. 30—280 6 Claims



A readily applicable and expeditiously manipulable hand tool which lends itself to practical use in the telephone industry. It enables the user to cleave and strip off the usual web attached, but severable, support wire of a plastic jacketed telephone cable. An elongated head has a surface provided at a rearward end with an offset T-shaped handle. Appropriate slot means accommodately pockets the covered support wire and its cable attaching web. The cleaving blade has a cutting edge bridging the slot means and comes into play as the tool is pulled along the cable and the attached support wire.

3,611,572
PERFORATED CUTTING FOIL OR PLATE FOR SHAVERS AND METHOD FOR MAKING
Bodo Futterer, Schönbühling, Switzerland, assignor to The Gillette Company, Boston, Mass.
Filed Sept. 16, 1968, Ser. No. 760,011
Claims priority, application Switzerland, Sept. 15, 1967, 13,053/67
Int. Cl. B26b 19/04
U.S. Cl. 30—346.51 2 Claims

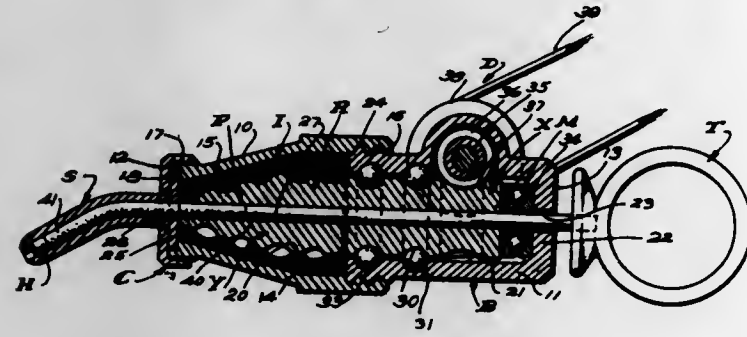


A cutting foil for dry shavers in which a bearing metal is provided on the underside thereof to minimize wear and friction between the foil and a cutter blade, and the method of making such a foil.

3,611,573
AMALGAMATOR
Don L. Crawford, San Gabriel, and Georges A. Maxwell, Los Alamitos, Calif. (both % Georges A. Maxwell, Esq., 1208 Pershing Square Bldg., Los Angeles, Calif. 90013)
Filed July 28, 1969, Ser. No. 845,249
Int. Cl. A61c 5/04
U.S. Cl. 32—60 10 Claims

A manually engageable and manipulatable device for triturating dental amalgams which includes a pugmill with a helical rotor in a chamber with a central discharge opening at one end and a manually operable, axially shiftable valving and plunger member carried by the rotor to normally project into and close the opening to cause

continuous mixing of the ingredients, shiftable from said about a vertical plane therethrough (i.e. if the frame is opening to permit flow of ingredients into the opening misaligned). If not, indicators on the datum members



and shiftable back into and through the opening to dispense the ingredients.

3,611,574 VORTAC PLOTTER AND METHOD OF NAVIGATION

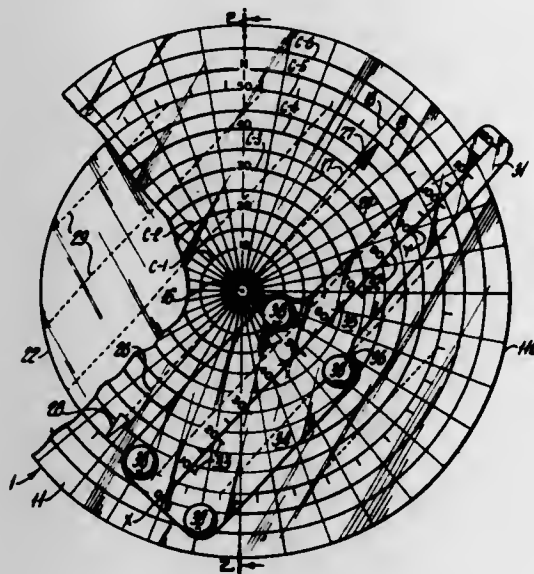
Richard E. Young, deceased, late of Rocky Hill, N.J., by Florence E. Young, Rocky Hill, N.J. 08553, Grace H. Stokes, 53 Harrop Place, Trenton, N.J. 08618, and First Trenton National Bank, 1 W. State, Trenton, N.J. 08608, executors

Filed Dec. 30, 1969, Ser. No. 870,664

Int. Cl. B431 13/20

U.S. Cl. 33-1 SD

1 Claim



A portable device for mechanically correlating distance and directional information and a method of navigation employing the device. The device and method are especially useful for aircraft navigation based on radio range and direction signals. Two superimposed discs rotatable about a common central axis bear polar coordinate and other indicia, and a track scale is universally fixable on the upper disc for direct reading of the range and direction results calculated.

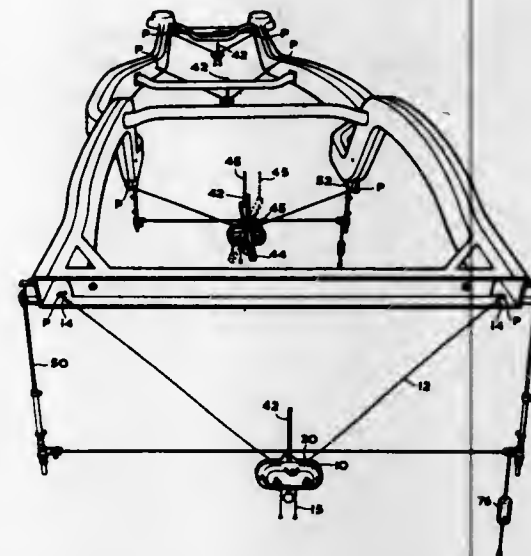
**3,611,575
AUTO FRAME ALIGNMENT APPARATUS**
Guy N. Chartier, Hill, Ontario, Canada, assignor to Guy Chart Tools Limited, Scarborough, Ontario, Canada
Filed Apr. 17, 1969, Ser. No. 817,888

Int. Cl. G01c 15/12

U.S. Cl. 33-46 AT

2 Claims

A plurality of datum members are sling suspended from respective pairs of locations on a frame which would be equally spaced from the center line and from the front or back of the frame if the frame is symmetrical



demonstrate and locate the misalignment through their relationship to corresponding datum members.

3,611,576 ATTACHMENT DEVICE FOR FITTING TO THE END OF A MEASURING TAPE OR THE LIKE

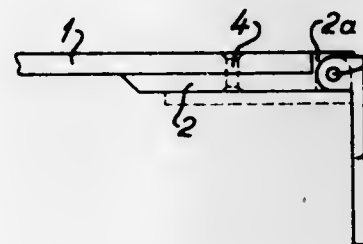
Andre Quenot, Besancon, France, assignor to Quenot & Cie S.a.r.l., Besancon, France
Filed Sept. 22, 1969, Ser. No. 859,803

Claims priority, application France, Nov. 7, 1968, 172,852

Int. Cl. G01b 3/10

U.S. Cl. 33-137

6 Claims



An attachment device for fitting to the end of a measuring tape or the like comprises a plate fixable to the end of the tape and having a free end adjacent the end of the tape. A hook is pivotally attached to the free end of the plate and arranged to pivot between an open position inclined to the plane of the tape and a closed position parallel to the plane of the tape and in contact with said plate. The hook has at least one tongue-like portion extending with the long axis thereof perpendicular to the pivot of the hook and having its free end adjacent the plate. A portion of the end of the plate opposite said free end of the tongue constitutes an abutment having surfaces perpendicular to and in contact with the end of said tongue portion of the hook in its respective open and closed positions.

**3,611,577
ELECTROMICROMETER**
Abbott M. Smith, Webster, N.Y., assignor to Tropel, Inc., Fairport, N.Y.
Filed Jan. 29, 1970, Ser. No. 6,894

Int. Cl. G01b 5/00

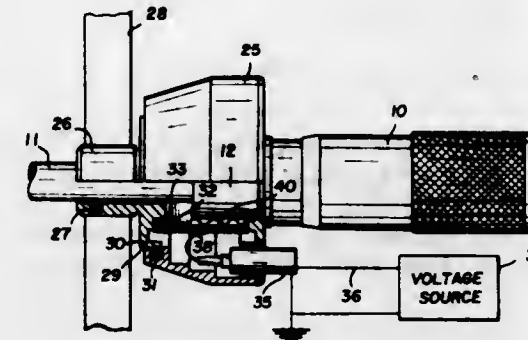
U.S. Cl. 33-166

18 Claims

A piezoelectric crystal is arranged between the mounting sleeve of a standard micrometer and an auxiliary

mounting sleeve fixed to a mounting structure, and the dimension of the piezoelectric member is variable in the direction of relative motion of the micrometer spindle so

**3,611,579
FLOOR TILE MARKING GAUGE**
Richard E. Reid, 1002 E. 1st Ave., Albany, Oreg. 97321
Filed Mar. 9, 1970, Ser. No. 17,763
Int. Cl. G01b 5/14
U.S. Cl. 33-174 G 2 Claims



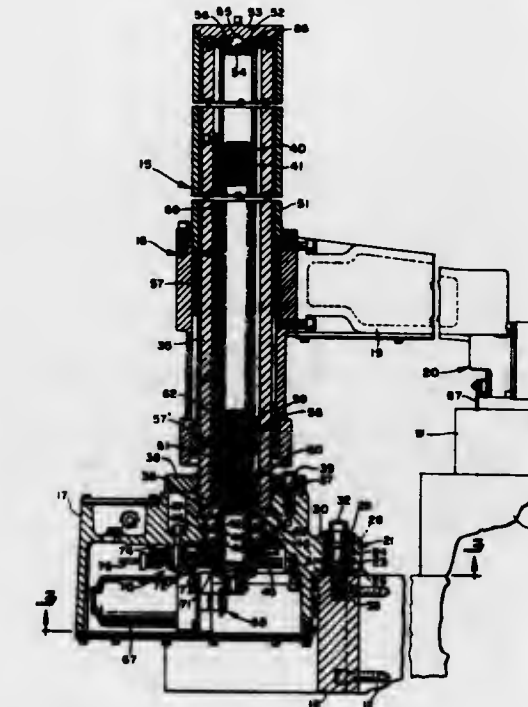
that a voltage applied to the piezoelectric member changes the distance between the mounting structure and the micrometer sleeve for fine adjustment of the micrometer.

**3,611,578
GAUGE MECHANISM**
John R. Montgomery, Trumbull, and Albert Dunkin, South Norwalk, Conn., assignors to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Apr. 30, 1969, Ser. No. 820,509

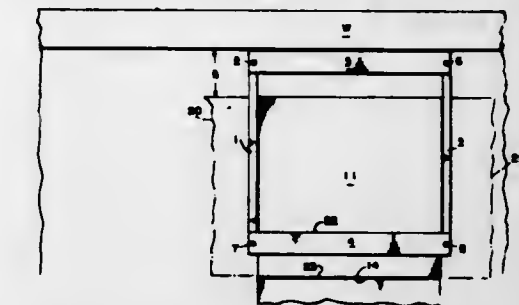
Int. Cl. G01b 5/00

U.S. Cl. 33-170

20 Claims

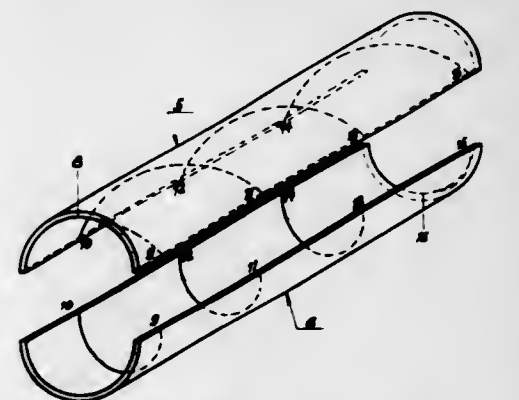


A gauge mechanism including a gauge column having a gauge arm mounted thereon for vertical adjustment by rotation of a lead screw which drives a split or double nut separated by a spring urging the lower nut into engagement with the upper sides of the lead screw threads for supporting the weight of the movable column parts and urging the upper nut into engagement with the lower sides of the lead screw threads for providing a relatively wear-free reference surface for gauging the height of the gauge arm. A gauge head assembly mounted on the outboard end of the gauge arm has a feeler arm attached to a shaft supported in a resilient elastomeric torsion mount permitting a torsion load to be applied to the feeler arm for urging the feeler arm toward a work surface with sufficient force to dampen outward movements of the feeler arm as it rides up over the edge of the work surface and thus prevent over-shoot.



An adjustable template and guide frame for marking and cutting a tile to be laid parallel or perpendicular to a marginal straight edge, such as a wall, bounding a zone in which a tile, cut along the guide line provided by the template, is to be laid with respect to an unfilled rectangular space frequently left between the last laid old tile and the marginal edge of a wall or the like, which space is of a similar area to that of the tile being laid. This necessitates that a tile be severed to provide a part which fits into such space between the last laid old tile and the marginal straight edge or wall. To accomplish this, the common practice has been to butt a tile against the wall, overlapping in relation to the last laid tile, scoring a line across the last laid tile at the overlapping edge of the tile butted against the wall, removing the last laid tile and severing it along the line to provide a part equal in area to the space to be filled.

**3,611,580
DEVICE FOR CHECKING THE CONFORMITY OF OBJECTS WITH RESPECT TO A MODEL**
Jean Godet, Le Mans, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
Filed July 15, 1969, Ser. No. 841,722
Claims priority, application France, July 26, 1968, 160,685
Int. Cl. B07c 5/08, 5/10; G01b 7/00
U.S. Cl. 33-174 L 2 Claims



Device for checking the conformity of an object with respect to a model at least at one point of the surface of said object, comprising two movable jaws each adapted to carry at least one electrically conductive element forming part of a same electric circuit, the said jaws being so arranged as to come into contact with each other at one or more checking points and the said electrically conductive elements being mounted on the said jaws so that they are connected to each other and close the said electric circuit when the jaws are in the so-called closed position of contact at the said checking point.

3,611,581

BORE SURVEY INSTRUMENT

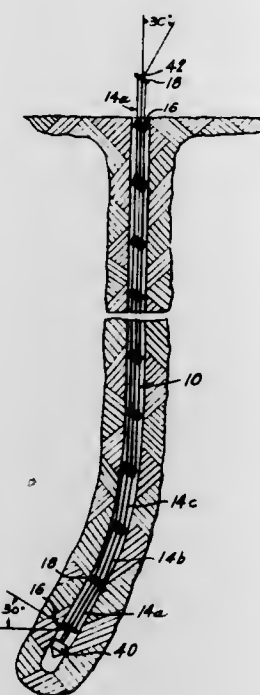
Richard Butler, 5679 Edgemore Ave., Cote St. Luc, Quebec, Canada; Vincent Saull, 1 6th St., Roxboro, Quebec, Canada; and Kevin Dwyer, Gardenvale Road, St. Bruno, Quebec, Canada

Filed Apr. 21, 1969, Ser. No. 817,937

Int. Cl. E21b 47/02; G01c 9/00

U.S. Cl. 33-205 R

9 Claims



A parallelogram device for maintaining or surveying the dip or azimuth of a bore hole, drill hole, pipes and the like including a plurality of detachable units wherein each unit has a pair of platforms in parallel relationship, a plurality of rods pivoted to each platform maintaining parallelogram structure of each unit.

3,611,582

MICROWAVE PACKAGE FOR CONTROL OF MOISTURE CONTENT AND INSECT INFESTATIONS OF GRAIN

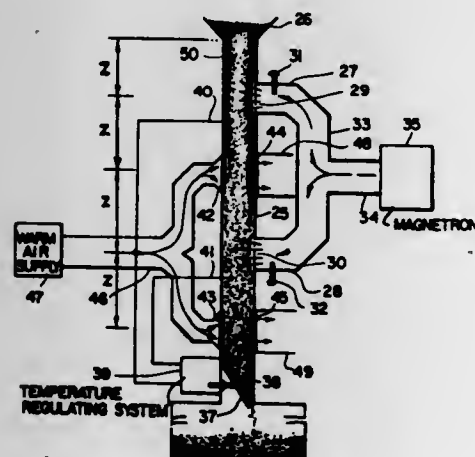
Michael A. Hamid and Roger J. Boulanger, Winnipeg, Manitoba, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Nov. 7, 1969, Ser. No. 874,784

Int. Cl. B01k 5/00

U.S. Cl. 34-1

6 Claims



A vegetal substance, for example, wheat, is deinfested by passing the wheat as a filling along a main section waveguide, whilst microwave energy is generated along a

branch section waveguide into the wheat. The microwave energy from a magnetron passes along a screw tuner and slotted line, both of which form the branch section and are used to adjust the voltage standing wave ratio to a minimum. Warm air may be passed along a main section waveguide to dry the wheat.

3,611,583

METHOD FOR EXPANDING AND DRYING EXPANDABLE MICROSPHERES

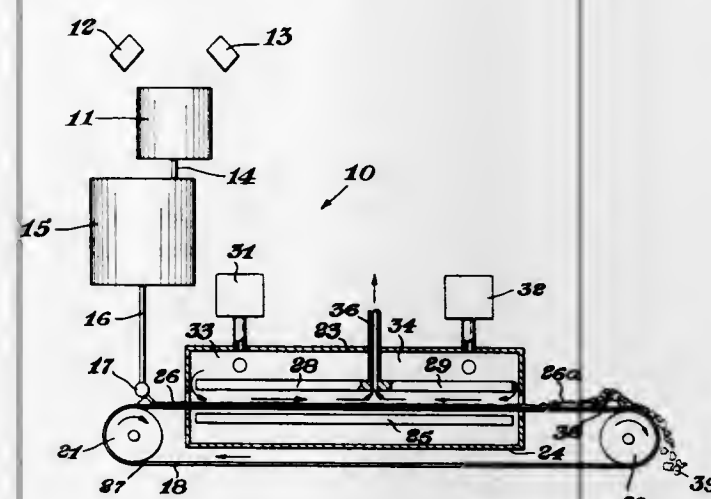
Thomas F. Anderson, Midland, Glen L. Gundersman, Clare, and Harold A. Walters, Beaverton, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 28, 1970, Ser. No. 41,226

Int. Cl. F26b 3/00

U.S. Cl. 34-9

9 Claims



Expandable microspheres are expanded and dried by formulating with a water dispersible flocculant, spreading the slurry in a thin layer on a heated belt and drying the layer with the aid of hot air.

3,611,584

METHOD AND MEANS FOR TREATING GARBAGE

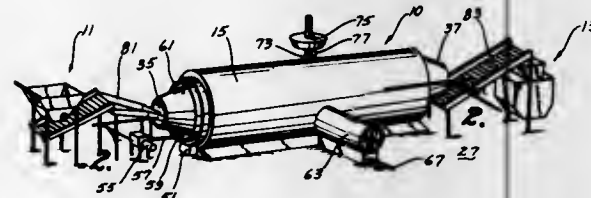
George V. Henson, Zearing, Iowa 50278

Filed Sept. 29, 1969, Ser. No. 861,679

Int. Cl. F26b 7/00

U.S. Cl. 34-12

2 Claims



A means for treating garbage, comprising a cylindrical perforated tumbler rotatably mounted in an insulated housing. Shredded garbage is fed into one end of the tumbler and is tumbled along the length thereof to its discharge end. Heated air is forced through the tumbled garbage as it passes from one end of the tumbler to the other to dehydrate the same prior to its being discharged from the discharge end of the tumbler into a shredder mill. The air is heated by a flame fired heater means which is positioned outwardly of the housing to prevent the flames thereof from igniting gases which may be produced by the garbage. The tumbler is provided with tumbling or stirring rods mounted therein which enhance the tumbling action

3,611,587

RESPONSE MECHANISM FOR AUDIOVISUAL EDUCATIONAL APPARATUS

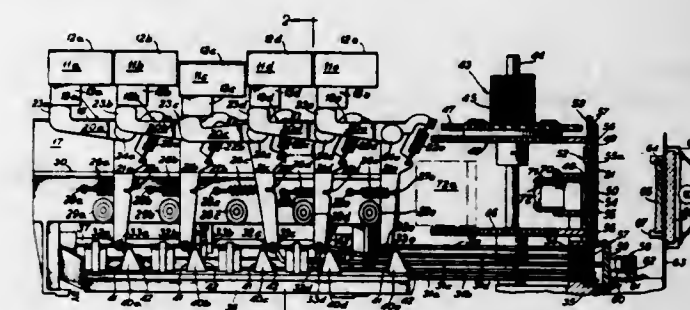
Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 7, 1970, Ser. No. 26,381

Int. Cl. G09b 3/00

U.S. Cl. 35-8 A

1 Claim



A manually actuable response mechanism for an audiovisual educational apparatus which permits an operator to respond selectively to audio and visual information presented by depressing one of a number of response keys, thereby initiating a further presentation of audio and visual information. The mechanism includes blocking means temporarily actuated by the operator's response to hold the apparatus in the condition established by the response for a period sufficient for the apparatus to react and to prevent additional responses from being effected during that period. Means are also provided for permitting the operator to respond to a presentation before that presentation has been completed whereby, upon completion of the presentation, the apparatus will proceed into a further presentation of audio and visual information without interruption.

3,611,588

VISUAL-TACTUAL INTEGRATING DEVICE FOR TESTING AND TRAINING

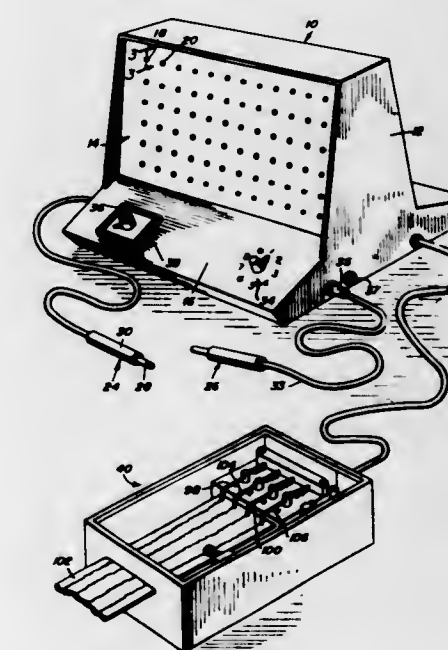
Daniel N. Torretta, Tampa, Fla., assignor to Vikintactin Research Consultants, Inc.

Continuation-in-part of application Ser. No. 884,791, Dec. 15, 1969. This application June 24, 1970, Ser. No. 49,489

Int. Cl. G09b 5/00

U.S. Cl. 35-9

8 Claims



Panel-mounted lamps are sequentially illuminated in accordance with a preselected pattern to be followed by

3,611,585

APPARATUS FOR DRYING PULVERANT MATERIALS

Jiyuichi Nara, 2-7-8 Higashi-Ooi, Shinagawa-ku, Tokyo, Japan

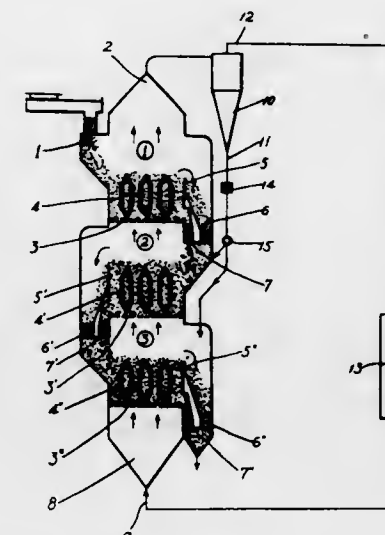
Filed June 11, 1969, Ser. No. 832,167

Claims priority, application Japan, June 19, 1968, 43/42,362

Int. Cl. F26b 17/00

U.S. Cl. 34-57 A

2 Claims



Apparatus for drying pulverant materials comprising a plurality of drying chambers arranged vertically in multiple stages, means for fluidizing and drying a moisture containing pulverant material with heat, while said pulverant material is continuously fed from the uppermost drying chamber as it passes through a fluidizing gas and heat exchanger means, means for advancing said materials through each successive drying chamber, while counter-flowing hot gas against said materials, said material coming into contact with gas having progressively lower degrees of humidity in the lower chambers.

3,611,586

INSTRUCTIONAL TYPEWRITER

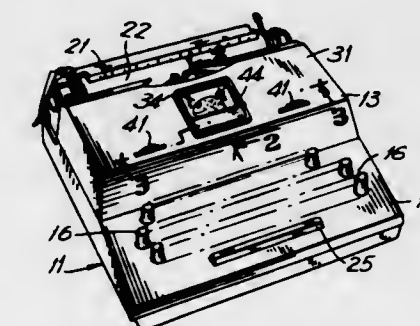
Shigeaki Kuramochi, Tokyo, Japan, assignor to Louis Marx & Co., Inc., New York, N.Y.

Filed Mar. 20, 1969, Ser. No. 808,918

Int. Cl. G09b 13/00

U.S. Cl. 35-6

6 Claims



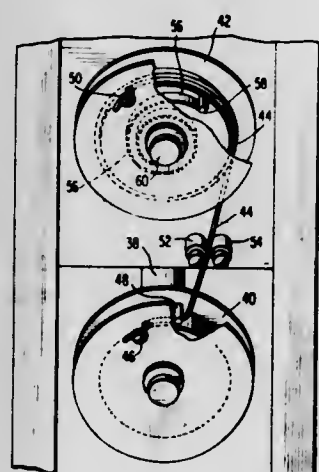
A typewriter capable of being used as an instructional device for correlating visual images with printed words by means of which a student can type the word identifying the visual image and thereafter compare the printed word associated with the visual image with the word the student has typed to verify the accuracy of the typed word.

manipulation of photo-sensing pointers. An event registering device provides a record of light detection by the pointers and illumination of the lamps to enable analysis and scoring of a subject being trained or tested for motor response to visual stimuli.

3,611,589
STEERING SIMULATION DEVICE FOR DRIVER TRAINING APPARATUS
James V. Wiltse, Michigan City, Ind., assignor to Visual Electronics Corporation, New York, N.Y.
Filed Jan. 30, 1970, Ser. No. 7,003
Int. Cl. G09b 9/04

U.S. Cl. 35—11

9 Claims

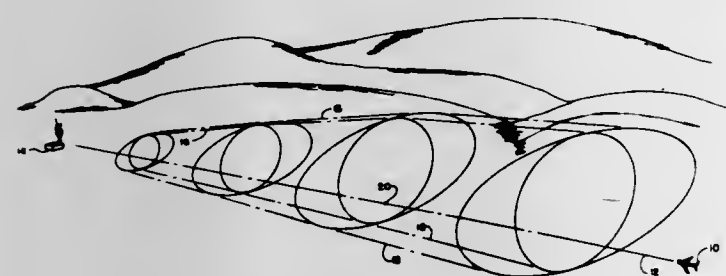


A steering simulation device for a driver-training apparatus, which includes steering assembly means, means connected thereto to provide a desired resistance to rotation of said steering assembly and to effect the return thereof to a fiducial position, and means to regulate such return.

3,611,590
VISUAL SYSTEM COMPUTER
Kenneth Levy, Binghamton, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,733
Int. Cl. G09b 9/08

U.S. Cl. 35—12 N

8 Claims

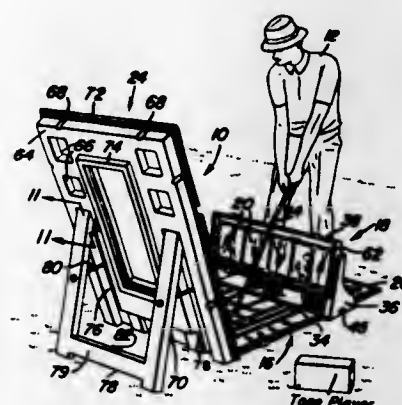


The disclosed exemplification of the present invention is a method of and apparatus for increasing the limits of a simulated excursion which is permissible with the optical information of an object being viewed by the operator of a vehicle simulator. The method includes the steps of generating computed quantities which define the simulated position of the simulator, multiplying one of those quantities by a factor which varies in accordance with a quantity corresponding to range from a particular point, and distorting the viewed image of the object in accordance with the resultant quantity.

3,611,591
GOLF TRAINING DEVICE
Victor T. Light, Sarasota, Fla., assignor to Professional Images Corporation
Filed Feb. 24, 1969, Ser. No. 801,735
Int. Cl. G09b 15/06

U.S. Cl. 35—29 R

8 Claims

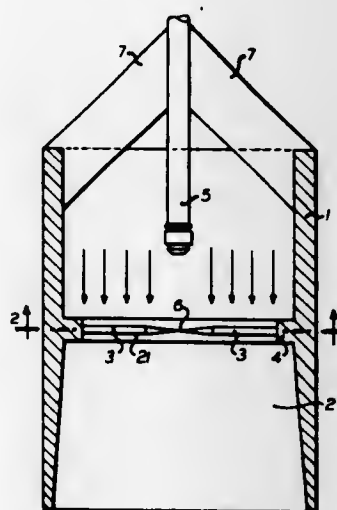


A frame-like housing encloses a mirror which is normally inclined upwardly. A display holder is positioned to reflect a photograph on the reflecting surface of the mirror. A mat connects the lower edge of the housing and includes indicia thereon for aiding a golfer in positioning himself and a club so that his image is similar to that reflected by the photograph.

3,611,592
APPARATUS FOR SCRUBBING GASES
Virgilio Stocchi, Mestre, Antonio Cavarro, Porto Marghera, Carlo Morsiani, Saronno, and Dario Vio, Porto Marghera, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Nov. 4, 1969, Ser. No. 873,812
Claims priority, application Italy, Nov. 7, 1968, 23,393/68; Sept. 29, 1969, 22,639/69
Int. Cl. B01d 47/00

U.S. Cl. 55—240

11 Claims

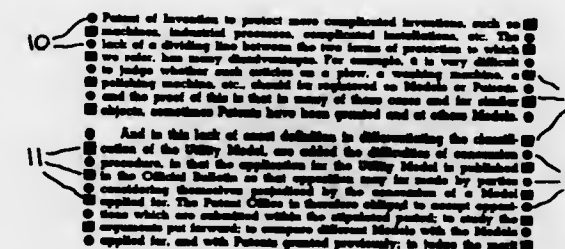


Scrubbing apparatus for separating vapors, liquid and solid particles from gas by a scrubbing liquid. A spout directs a full stream of the scrubbing liquid at a grid which comprises a multiplicity of spaced apart rods for forming films of the scrubbing liquid. The plane of the grid is transversely disposed with respect to the gas stream to be purified. The gas stream is passed through the films of scrubbing liquid for cleaning.

3,611,593
LINE-GROUP SEQUENTIAL READING AID
Harry S. Shapiro, 120 Ruth-Allen Drive, Richmond Heights, Ohio 44143
Filed Nov. 14, 1969, Ser. No. 876,709
Int. Cl. G09b 17/02

U.S. Cl. 35—35 B

2 Claims



A system for aiding the eye of the reader in properly following the sequence of lines to be read by providing marginal indicia at the start of each line or line-group to guide the reader's eye to the start of the next succeeding line-group to be read and, preferably, to tie in this starting indicia with like indicia at the end of the preceding line-group.

3,611,594
SCRAPER AND LOADER
Oddes O. Blackman, Rte. 1, Box 97, Zwolle, La. 71486
Filed Sept. 24, 1969, Ser. No. 860,567
Int. Cl. E02f 3/62

U.S. Cl. 37—1

8 Claims



A machine drawn by a draft vehicle having a scraping blade disposed obliquely to its direction of travel, and a closed frame side functioning with a rear end of the scraping blade to confine the scrapings. A screw type conveyor has an inlet end operating in the confined space for conveying the scraping upwardly and forwardly for discharge into the body or hopper of the draft vehicle. Gauge means on the frame sides enables the scraping depth of the blade to be varied. Adjustability of the draft tongue enables the machine to be supported solely by its engagement with the ground while in operation, and partially by the draft vehicle, when not in operation, for backing or for transporting the machine.

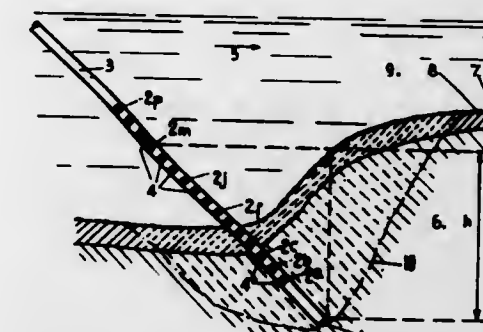
3,611,595
SUCTION DREDGER AND METHOD OF SUCTION DREDGING
Jan de Koning, Amsterdam, Netherlands, assignor to N.V. Ingenieursbureau voor Systemen en Octroolen Spanstaal, Rotterdam, Netherlands
Continuation-in-part of application Ser. No. 524,934, Feb. 3, 1966, This application Aug. 8, 1969, Ser. No. 866,050
Claims priority, application Netherlands, Feb. 4, 1965, 6501404
Int. Cl. E02f 3/92

U.S. Cl. 37—58

11 Claims

Method and apparatus for suction dredging particulate material such as sand. A suction pipe is inserted into a

body of sand below the bottom of a body of water to withdraw a water-sand suspension having a desired concentration of sand in such suspension. At the lower end of the pipe, the sand is drawn in at very high concentration and at some level above this point water is separately in-

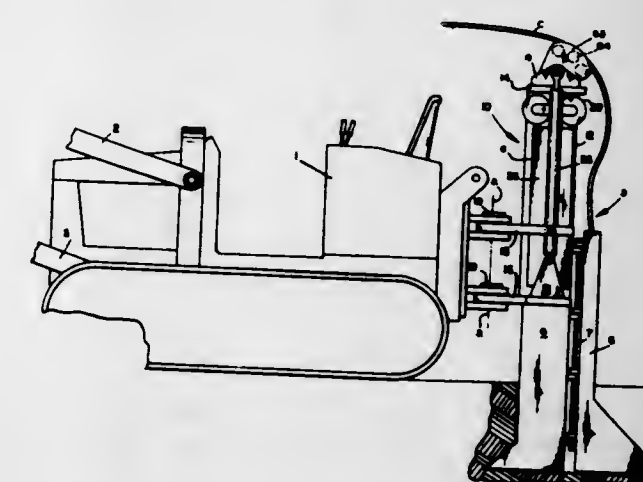


roduced and the desired concentration is obtained by adjusting the level at which the water is introduced. The concentration of the resulting suspension is measured to enable the level of water introduction to be adjusted properly.

3,611,596
REAR MOUNTED CABLE PLOW ASSEMBLY
Kenneth G. Bright, Camas Valley, and Miles O. Standley, Pilot Rock, Oreg.; said Bright assignor to Henkels and McCoy, Inc., Blue Bell, Pa.
Filed Oct. 31, 1969, Ser. No. 872,853
Int. Cl. E02f 5/18

U.S. Cl. 37—193

3 Claims



A cable plow assembly is disclosed carried by a tractor in a closely coupled manner for advantageous purposes. The earth penetrating blade of the plow is positionable up and down within a guide box assembly. Roller assemblies carried by both the blade and the guide box assembly facilitate vertical adjustment of the blade in said assembly. Hydraulic cylinders position the blade. Blade retention means which includes the roller assemblies supports the blade against horizontal loads incident to cable laying.

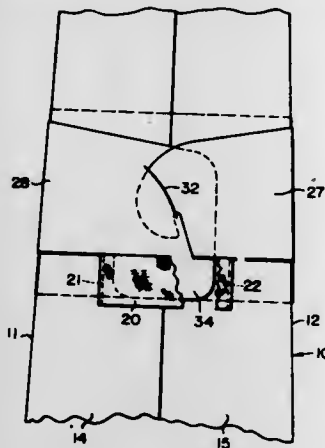
3,611,597
FOLD-OVER OR HOOK-ON BAND FOR NECKTIES
Donald E. Boyd, Chm, N.Y., assignor to Superba Cravats, Inc., Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,981
Int. Cl. G09f 3/14

U.S. Cl. 40—21 R

2 Claims

A paper or cardboard band, that is intended to be hooked around one end of a necktie while the necktie is hung on a display rack and that is adapted to bear the

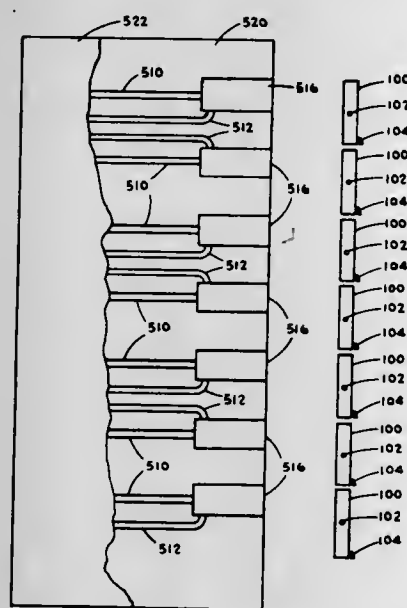
trademark applied to the tie, and/or the maker's name, has a tab portion formed with a tongue that fits into the



conventional cloth label sewn on the back of the necktie, to prevent movement of the band on the tie.

3,611,598
FLUIDIC SWITCHING APPARATUS
Robert F. O'Keefe, Trumbull, Conn., assignor to
Pitney-Bowes, Inc., Stamford, Conn.
Filed Oct. 13, 1969, Ser. No. 865,941
Int. Cl. G09f 11/00

U.S. Cl. 40—28 C



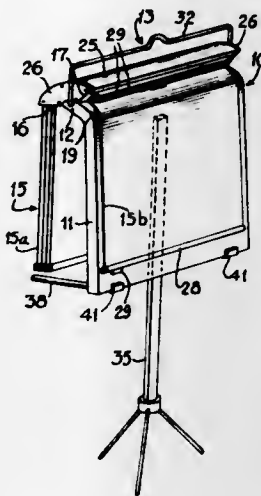
An information display of the type in which alphanumeric characters move continuously across a viewing field. Each character is formed by the "switching" of an appropriate group of elements in a rectangular character matrix. The elements are rotatable discs, which are switched by flipping them over. The element selection logic, and the switching energy as well, is achieved through fluidic means. Each disc element is confronted with a power jet, and a control jet capable of changing the character of the power jet from laminar to turbulent. The discs experience a switching torque when impulsed by a laminar power jet, but the turbulent condition of the power jet distributes its impact in such a manner that there is no longer sufficient net torque to flip the disc. Thus, by proper selection of the control jets, an appropriate pattern of elements can be switched on.

3,611,599
VISUAL AID DEVICE
Dieter Baars, 13 Raven St., Nashua, N.H. 03060
Filed Aug. 15, 1969, Ser. No. 850,464
Int. Cl. G09f 9/46

U.S. Cl. 40—65

An improved visual aid device of the "flip chart" type employing a plurality of concentrically disposed flat chan-

neled guides supporting display sheets in a manner to be slid from a rearward stored position to a forward use position in engagement with an inclined backing surface. The edges of the channeled guides provide means for stocking and aligning the same, and are secured together by clamp means at the ends thereof. Forward and rear



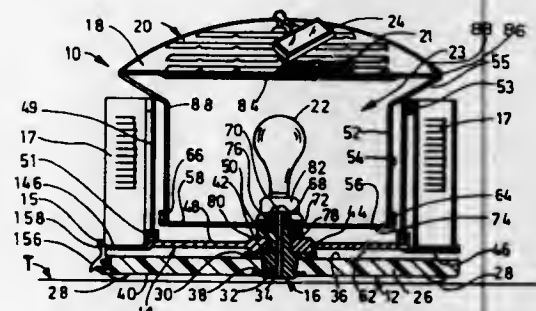
22 Claims

edges of the display sheets are provided with stiffening stop members, with the forward stop members suitably including indexing tabs, and the rear stop members being sufficiently weighted to pull the sheets through the channeled guides when the front edges are lifted from the inclined backing surface.

3,611,600
TRANSPARENCY VIEWING DEVICE
Francis W. Seebald, 18801 E. Shoreland Drive,
Rocky River, Ohio 44116
Filed May 28, 1969, Ser. No. 828,490
Int. Cl. G09f 13/10

U.S. Cl. 40—106.1

15 Claims

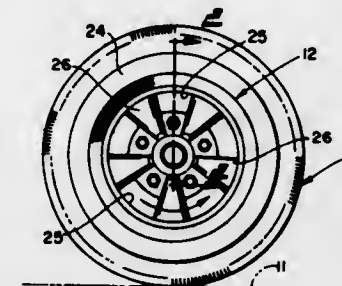


A device for viewing transparent photographic slides including a base adapted to be mounted on a table or the like. A transparent slide support rack is mounted on the base for supporting a plurality of slide members thereon, and is disposed in overlying relation with respect to a light source to illuminate the respective slides. A turret-like slide storage tray is mounted for rotation on the base enabling storage of a large number of slides on the device itself. A plurality of slide storage cartridges are supported adjacent the periphery of the tray to enable the same to be moved to a readily accessible position for selection of a respective slide or group of slides. The slide support rack includes a plurality of slide receiving receptacles arranged to enable the placement of a large number of slides on the support rack at one time and for facile stacking of the slides for storage in the slide storage cartridges after use.

3,611,601
ROTATING WHEEL TIRE DISPLAY
George P. Stropkay, Mentor, and Edward J. Stropkay,
Chesterland, Ohio, assignors to Product Design and
Manufacturing Corp., Willoughby, Ohio
Filed Feb. 17, 1970, Ser. No. 12,064
Int. Cl. G09f 19/02

U.S. Cl. 40—106.51

7 Claims

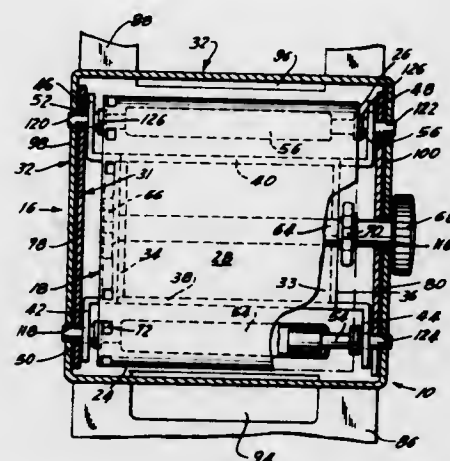


A display assembly for mounting within a tire, the assembly including a simulated wheel part and an electric motor for rotating the same independently of the tire. A lamp can be added behind the wheel part and openings provided in the latter for interior illumination of the display.

3,611,602
CALENDAR MECHANISM ATTACHMENT FOR A WATCH BRACELET OR THE LIKE
Morris D. Gandelman, Fort Lee, and Salvatore Bello,
Cliffside Park, N.J., assignors to Jacoby-Bender, Inc.,
Woodside, N.Y.
Filed May 20, 1969, Ser. No. 826,156
Int. Cl. G09d 3/06

U.S. Cl. 40—117

6 Claims



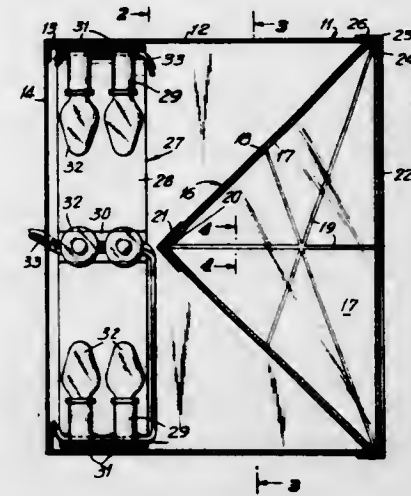
An elongated resilient member having a plurality of indicia-carrying regions sequentially provided on one surface thereof is incrementally movable past a viewing station. That resilient member has the characteristic that at any position thereof the net force acting on that member in the direction of its movement is effectively zero so that the member will stay at any position to which it is moved. The indicia provided on that surface of the resilient member may be the twelve monthly calendars of a year, one monthly calendar being viewable at the viewing station at a given time.

3,611,603
ILLUMINATED DISPLAY DEVICE
Herbert Gesner III, 789 W. End Ave.,
New York, N.Y. 10025
Filed June 2, 1969, Ser. No. 829,432
Int. Cl. G09f 13/14

U.S. Cl. 40—130 B

An illuminated display device includes a housing of square transverse cross-section and is closed by a light transmitting panel at its front end. Triangular reflector

plates have forwardly reflecting faces and extend rearwardly from the housing leading edges and delineate a hollow forwardly open pyramid with an apex proximate the housing rear wall. The reflector plates have a plural-

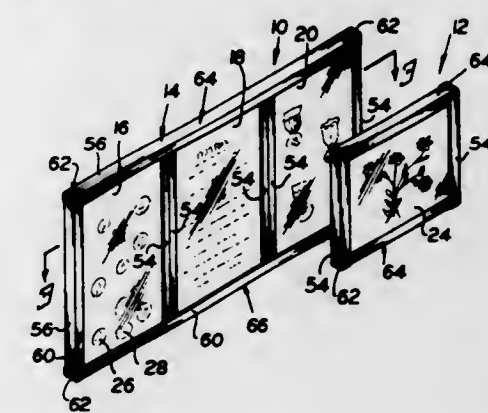


ity of elongated transparent areas, and intermittently or continuously energized lamps of different colors direct light through the transparent areas onto the plates which reflect the light onto the front panel, as well as directly onto the front panel.

3,611,604
FRAMED DISPLAY
Harriett Saltzman, % Aracon Electronics, Inc.,
1437 2nd Ave., New York, N.Y. 10021
Filed Oct. 21, 1969, Ser. No. 868,048
Int. Cl. G09f 1/12

U.S. Cl. 40—152

8 Claims



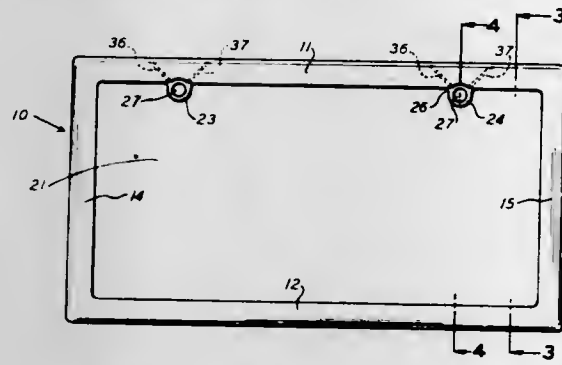
A framed product display in which the product being displayed is mounted on a yielding or resilient body which is confined between a transparent front panel and a rigid rear panel within a frame formed of channel-type bordering frame members, the urgency of the yielding or resilient body being effective to both press the product against the transparent front panel and also hold the individual parts of the assembly in place within the bordering frame members.

3,611,605
LICENSE PLATE FRAME
Jeffrey N. Baker, 26 Laguna Place,
Long Beach, Calif. 90803
Filed Apr. 23, 1970, Ser. No. 31,217
Int. Cl. G09f 7/00

U.S. Cl. 40—209

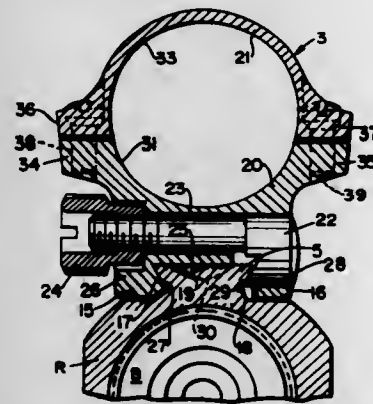
A rectangular frame with transversely concave sides has two spaced tabs extending from a long side toward the frame center. Both tabs diverge from the plane of the frame from 5 to 30 degrees, depending on the frame

material. Each tab has a fastener hole extending through the tab at an angle commensurate with tab divergence. When the frame is fastened to a license plate by fasteners passing through the frame tabs, the plate and a conven-



tional plate support bracket, tightening the fastener distorts the tabs toward the plane of the frame, loading the frame against the side of the plate opposite the tabs to dampen plate-frame vibration contact.

3,611,606
TELESCOPIC SIGHT MOUNT FOR RIFLES
Harry H. Sefried, New Haven, Conn., and Leroy J. Sullivan, Huntington Beach, Calif., assignors to Sturm Ruger & Co., Inc., Southport, Conn.
Filed May 7, 1969, Ser. No. 822,630
Int. Cl. F41g 1/38
U.S. Cl. 42-1 S 4 Claims

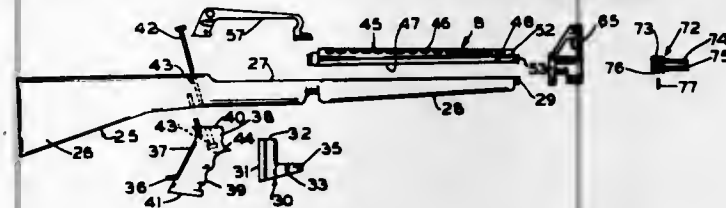


Sight mounts for a telescopic sight are secured to the ring and to the bridge of the receiver of a rifle in a manner which positions the line of sight of the telescope relatively close to the longitudinal axis or center line of the bore of the rifle barrel without weakening the receiver ring. The receiver ring and the receiver bridge are provided with integrally formed longitudinal ribs, each rib being formed with a pair of arcuate recesses disposed on opposite sides of each rib. Each arcuate recess has an inwardly inclined bearing surface adapted to engage a matching arcuate beveled locking element of the sight mount. Because of the arcuate configuration of the mount-receiving recess, it is possible to locate the recesses closer to the longitudinal center line of the rifle barrel without reducing the strength of the barrel in the critical area of the cartridge chamber. Longitudinal movement of the sight mount relative to the receiver is prevented by a depending lug which enters a transverse slot formed in the upper surface of the receiver rib.

3,611,607
FIREARM CONVERSION SYSTEM
Thomas Donnell, 17 Godier Drive, East St. Louis, Ill. 62203
Filed Aug. 6, 1969, Ser. No. 847,890
Int. Cl. F41c 21/00, 23/00
U.S. Cl. 42-1 19 Claims

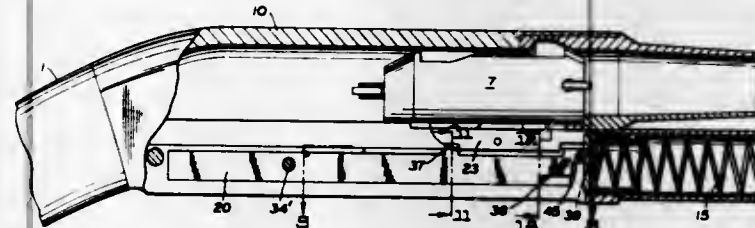
A firearm conversion system for modifying the military type M-1 30 cal. carbine in such manner that it has an overall aesthetic appearance similar to the military M-16

rifle or the civilian version of such rifle, namely the AR-15 rifle. The system which may include components packaged in the form of a kit for the firearm enthusiast to make the conversion on his own, generally uses the barrel and receiver assembly of the M-1 carbine in combination with the components provided by the present in-



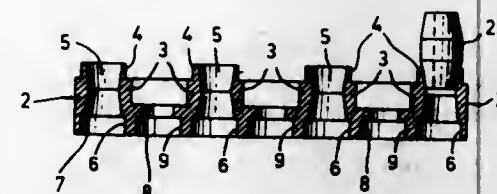
vention. A stock is provided which is adapted to receive the barrel and receiver assembly of the M-1 carbine and an upper hand guard will fit over a portion of the barrel and mate with a portion of the stock. An upper hand grip, front sight and similar accessories are provided so that in the assembled condition the carbine will have an overall appearance which resembles the M-16 rifle.

3,611,608
GUN HAVING TWO SHELL LATCHES WITH A PLURALITY OF CAM FOLLOWERS
Theophilus K. Seiberling, 39 Maplewood Ave., Akron, Ohio 44313
Continuation-in-part of abandoned application Ser. No. 736,101, June 11, 1968. This application Dec. 24, 1968, Ser. No. 788,991
Int. Cl. F41c 11/00, 15/00
U.S. Cl. 42-17 R 27 Claims



The gun has two shell latches in the receiver cavity, one of which prevents more than one shell from feeding into the cavity during one action cycle. The other is held by an action bar during a part of the cycle to prevent a shell from feeding from the magazine into the cavity. The gun includes a carrier dog follower spring that is weaker than conventional springs used for this purpose. Both improvements contribute to easier, smoother action.

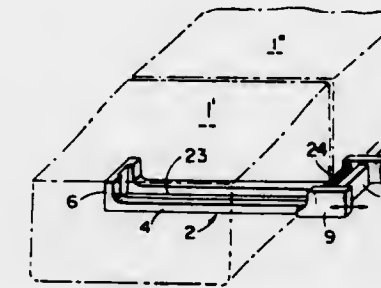
3,611,609
TOY CONSTRUCTION ELEMENTS CONNECTIBLE BY PROJECTIONS IN RECESSES
Johannes Martinus Reijnders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 2, 1969, Ser. No. 788,465
Claims priority, application Netherlands, Jan. 3, 1968, 6800994
Int. Cl. A63h 33/08, 33/10
U.S. Cl. 46-25 8 Claims



A toy construction element having a row of projections on the top side and corresponding recesses on the bottom side, and a bore through each projection and coaxial

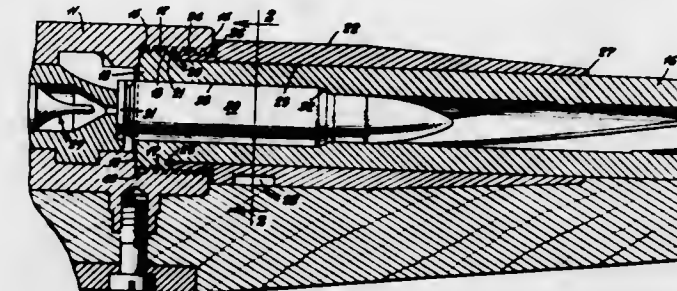
recess; each bore defines a pair of truncated cones joined at their mutual and smaller diameter. Between each pair of adjacent projections is an auxiliary aperture having its opening on the bottom side formed as one of said recesses. Two of said elements are joinable either by insertion of a projection of one into a recess of another, or by placing a connection element having two conical ends in bores of two adjacent structural elements.

3,611,610
WATERTIGHT FLOATING BOXES USING WATERTIGHT DOORS
Toshiya Yamamoto, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 10, 1969, Ser. No. 856,558
Claims priority, application Japan, Sept. 25, 1968, 43/69,280
Int. Cl. B63b 3/04, 9/00
U.S. Cl. 114-77 8 Claims



A watertight floating box, for use in working on submerged surfaces of floating bodies, such as ship hulls, comprises a caisson assembly arranged to enclose, in watertight fashion, the submerged surfaces upon which work is to be performed and to be pumped free of water to provide a dry working space along the work surfaces. The caisson assembly includes a bottom structure extending horizontally and transversely beneath the floating body and having a length in excess of the beam of the floating body, side wall structures adjacent respective opposite ends of the bottom structure and extending upwardly along the adjacent sides of the floating body, and door members slidable transversely of the floating body to seal off any gaps between the side wall structures and the floating body.

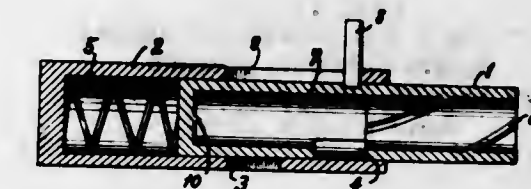
3,611,611
BARREL TO RECEIVER CONNECTION FOR FIREARMS HAVING INTERCHANGEABLE BARRELS
James L. Quimby, Jackson, Wyo., assignor to Idaho Bank of Commerce, Rexburg, Idaho
Filed Dec. 15, 1969, Ser. No. 885,382
Int. Cl. F41c 21/00
U.S. Cl. 42-75 B 5 Claims



A firearm having interchangeable barrels wherein each barrel is attached to the receiver portion of the firearm and is prevented from relative rotation with respect thereto by a locking sleeve which fits over the barrel. The barrel

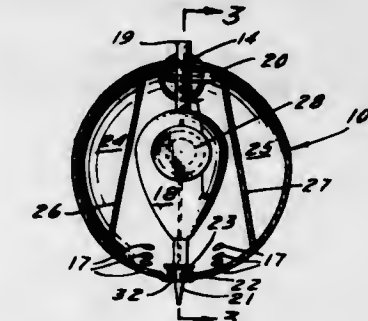
is screwed into a threaded bore in the receiver of the firearm until its end face abuts a seating surface therein. The sleeve is then fitted over the barrel and screwed into the same bore in the receiver as the barrel until its end abuts the threaded portion of the barrel. Any tendency of the barrel to rotate out of the receiver is effectively prevented by the locking action of the sleeve.

3,611,612
FIREARM FOR FIRING CASELESS AMMUNITION
Michael W. York, 1200 S. Arlington Ridge Road 507, Arlington, Va. 22202
Filed July 15, 1968, Ser. No. 744,765
Int. Cl. F41c 21/00; F41f 17/02
U.S. Cl. 42-76 10 Claims



A firearm for firing caseless ammunition is presented in which the caseless or combustible cased cartridge is not introduced into the barrel at its breech end, but is introduced into either the muzzle of the barrel or at some point along the barrel where the pressures exerted upon the barrel when the cartridge is fired will be lower than those exerted upon the breech portion of the barrel.

3,611,613
CASTING FLOAT FOR LIVE BAIT
Robert Perches, 2147 W. 162nd St., Gardena, Calif. 90247
Filed Feb. 26, 1970, Ser. No. 13,037
Int. Cl. A01k 97/04
U.S. Cl. 43-41.2 10 Claims

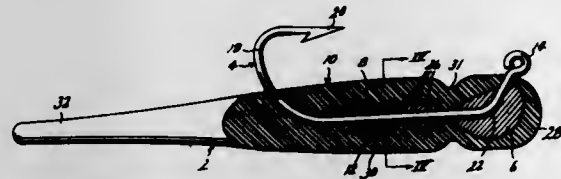


A casting float which releasably encloses and protects live bait during casting. The casting float comprises a pair of float halves having air compartments arranged to cause the float to move automatically to an upright position as soon as it enters the water. A movable float disposed within the casting float is automatically moved upwardly by water buoyancy to automatically open the casting float and permit the live bait, hook and sinker to fall into the water.

3,611,614
FISHING LURE
Virgil V. Ward, Box 118, Amsterdam, Mo. 64723
Filed Sept. 24, 1969, Ser. No. 860,618
Int. Cl. A01k 85/00
U.S. Cl. 43-42.24 3 Claims

A fishing lure consisting of an insect-like body member of very soft plastic having the shank portion of a fish-hook molded longitudinally therein, the point and eye portions of said hook being laterally offset in the same

direction from said shank to project outwardly from said plastic body, and one or more enlargements affixed to said shank and molded in said plastic body, said enlargements

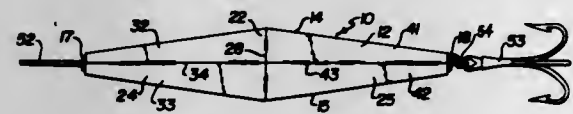


serving both as weights to hold the hook in a desired position in use, and to hold the plastic body in secure engagement with the hook.

3,611,615
FISH LURE
Rex S. Field, P.O. Box 892, Courtenay,
British Columbia, Canada
Filed Aug. 26, 1968, Ser. No. 755,129
Int. Cl. A01k 85/00

U.S. Cl. 43—42.36

12 Claims

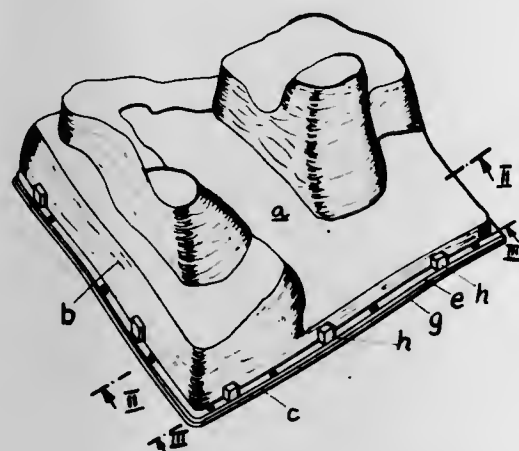


A fish lure having a slender elongated body which will sink in water and which is larger in thickness and width at its longitudinal center than at its ends. The body tapers symmetrically from the longitudinal center toward the ends and is substantially diamond-shaped in cross section at any transverse plane thereof.

3,611,616
TOY PLAYING BOARD
Alfred Einfalt, Nuremberg, Germany, assignor to
Gebrüder Einfalt, Blechspielwarenfabrik, Nurem-
berg, Germany
Continuation-in-part of abandoned application Ser. No.
614,190, Feb. 6, 1967. This application Jan. 27, 1970,
Ser. No. 6,121

U.S. Cl. 46—1 R

5 Claims



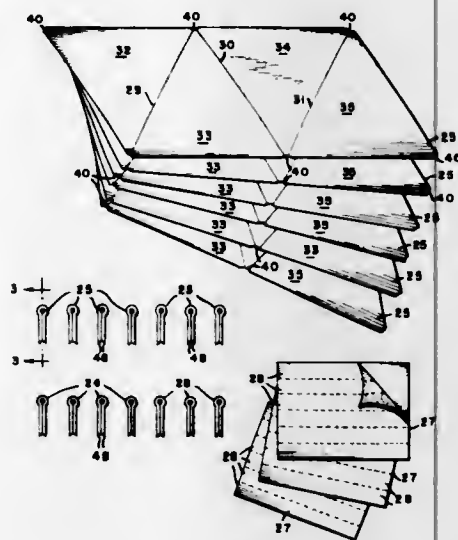
A toy playing board simulating a mountainous landscape has at its edge a peripheral flange. This flange includes along its length an upwardly protruding rib reinforcing the flange and a downwardly extending protrusion constituting a first supporting surface for placing the board on a flat base such as a table. The rib is outwardly continued by a lateral flat flange portion constituting a second supporting surface coplanar with the

first supporting surface. The flange further includes lengthwise spaced apart upwardly extending protrusions which constitute support surfaces for a second playing board to be nested with the first playing board.

3,611,617
NOVELTY TOY
William A. Foster and Edward W. James both % Foster
Industries, Inc., P.O. Box 3545, Baltimore, Md.
21214

U.S. Cl. 46—1 L

4 Claims

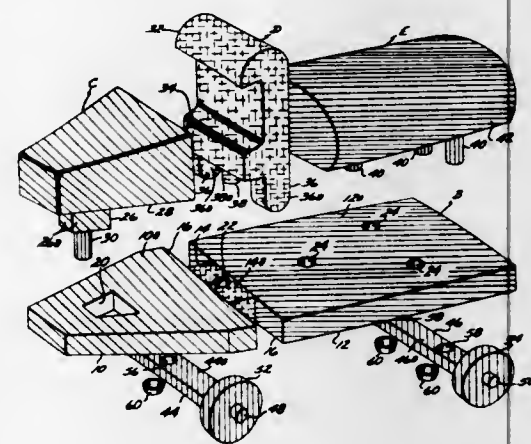


An improved novelty toy is provided by hinging together in a circle a group of pyramidal blocks. The blocks are formed first as separate elements and various means may be employed for connecting them together in series at mutually adjacent edges such as elongated U-shaped pins, adhesive tape, etc., thereby permitting the device as a whole to be twisted about a circular axis to expose different groups of faces of the blocks to the view of a person manipulating the device.

3,611,618
CHILD'S EDUCATIONAL DEVICE
Arthur F. Steiner, 4117 Greenbrier Road,
Long Beach, Calif. 90808
Filed Aug. 22, 1969, Ser. No. 852,274
Int. Cl. A63h 33/06

U.S. Cl. 46—17

5 Claims



A child's educational device which increases perceptiveness as to color and form and includes a member having an external surface that is subdivided into a number of different color and a number of objects, with the surface of each of said objects being complementary in shape and color to one of said areas. The objects and member include means for removably holding them together when

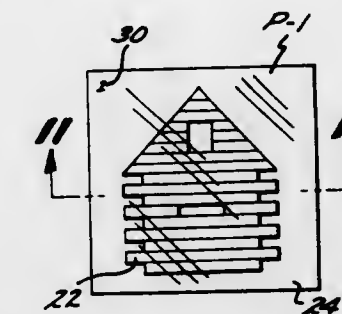
the surfaces of the objects are in abutting contact or adjacently disposed, and when the objects are so positioned relative to the member, they are in a predetermined pattern and cooperate with the member to define a replica of a piece of equipment with which a child is familiar.

together in face to face relation; in this situation the blocks are made with two groups of three faces each integrally formed and joined at their common vertex to the stems of the latches which extend through the three faces of the other group.

3,611,619
TOY INCLUDING PLURAL PACKAGES WITH IMPRINTED PATTERNS AIDING CONSTRUCTION
William B. Testa, 16742 Baruna Lane,
Huntington Beach, Calif. 92647
Filed July 6, 1970, Ser. No. 52,565
Int. Cl. A63h 33/08

U.S. Cl. 46—20

4 Claims

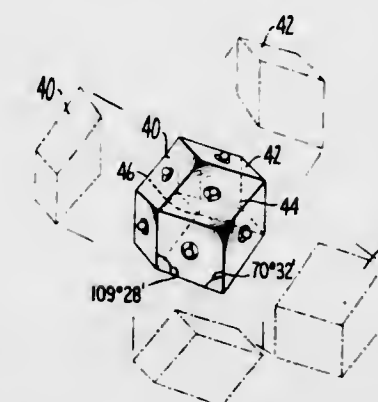


A building construction toy includes several packages of cut-to-size simulated logs. The logs are arranged loosely in the packages. The bottom of each package is defined by a cardboard sheet upon which is imprinted a pattern which the logs in the package should collectively assume to define a wall or roof portion of a completed miniature building. When the package is opened the logs are glued together over the pattern in the proper configuration. The walls and roof members are then interconnected so as to construct a completed building. The building may be knocked-down after construction for subsequent reassembly.

3,611,620
RHOMBIC HEXAHEDRA BLOCKS FOR MAKING RHOMBIC DODECAHEDRA AND RHOMBIC TRIACONTAHEDRA
Charles O. Perry, 14 Via Ippolito Pindemonte,
00152 Rome, Italy
Filed June 2, 1969, Ser. No. 829,691
Int. Cl. A63h 33/08

U.S. Cl. 46—25

12 Claims

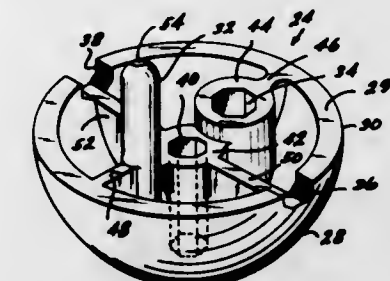


This application discloses geometric toy blocks in the shape of rhombic hexahedra. Four obtuse hexahedra with face vertices of 109°28'17" fit together to make many geometric shapes including the rhombic dodecahedron. Ten acute hexahedra and ten obtuse hexahedra with face vertices of 116°33'54" fit together to make many geometric shapes including the rhombic triacontahedron. The hexahedron blocks have attaching means, preferably as shown in Pat. No. 3,413,752, for attaching the blocks

3,611,621
BUILDING UNIT TOY
Henry J. Folsom, Redondo Beach, Calif., assignor to
Mattel, Inc., Hawthorne, Calif.
Filed May 15, 1969, Ser. No. 824,795
Int. Cl. A63h 33/08

U.S. Cl. 46—25

2 Claims

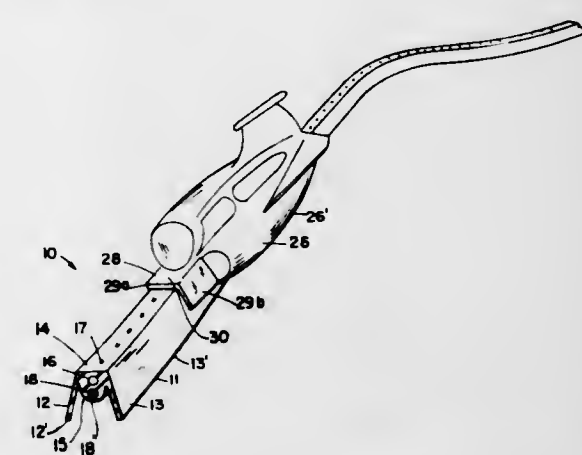


A toy building unit of spherical shape with four holes spaced around its outer surface for receiving pins to join it to other building units. Each spherical building unit is formed of two identical molded elements, each element forming a hemisphere with a stud extending toward the other element and a hole for receiving the stud of the other element.

3,611,622
TRACK TOY
Jerome H. Lemelson, 85 Rector St.,
Metuchen, N.J. 08840
Filed Feb. 16, 1970, Ser. No. 11,562
Int. Cl. A63h 29/16

U.S. Cl. 46—44

10 Claims



A toy vehicle and trackway therefore are provided in which compressed air is utilized as a medium for propulsion of the toy along the trackway. In one form, the trackway is an elongated extrusion, such as a rectangular, hollow tube, containing holes drilled through a wall thereof substantially along the length of the tube and directed so as to permit air pumped into the tube to be ejected as a plurality of jet streams upwardly and in the direction of movement of the vehicle. The vehicle is a lightweight shell having one or more portions conforming to the configuration of the track or trackway and adapted to normally rest with one or more undersurfaces of the vehicle abutting or disposed immediately off the surface of the track. Air pumped into the track is directed through the holes in the wall thereof upwardly against the conforming surface of the vehicle and is operative to both lift the vehicle and cause it to travel along the track. The track may be made of flexible or rigid material. If flexible, it may contain a

bendable metal wire so that it may be bent and retained in a particular curved configuration.

In another form, the track is in the shape of a hollow monorail supported at spaced intervals above a surface by means of poles and the vehicle is suspended from a carriage which is driven along the monorail by air ejected upwardly through holes in the upper wall of the monorail.

3,611,623

TOY BALLOON AMUSEMENT DEVICE

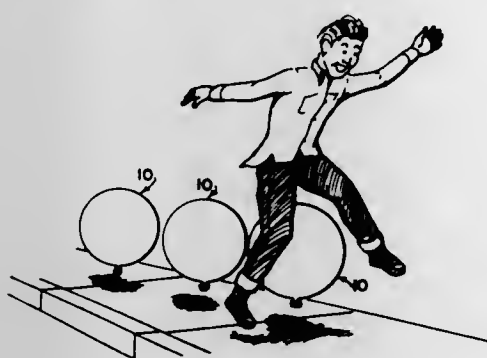
Terrance R. Copstead, Charlotte, N.C., assignor to Electronic Data Controls Corporation, Forsyth County, N.C.

Filed Feb. 26, 1970, Ser. No. 14,413

Int. Cl. A63h 3/06

U.S. Cl. 46—90

8 Claims



An amusement device which includes an inflatable toy balloon, and an aerosol-type container charged with a supply of helium under pressure. The container includes a discharge valve fitted with an adapter for receiving the neck portion of the balloon to permit inflation of the balloon, and the container is charged with a supply of helium that is measured to substantially counterbalance the weight of the balloon so that when the entire contents of the container is discharged into the balloon, the balloon will be in a state of gravitational equilibrium. The balloon may be formed with a resilient nipple for selectively receiving washer-like ballast elements with a friction fit to thereby permit adjustment of the balloon weight through a predetermined range, and the interior walls of the balloon may be coated with a liquid sealant to prevent leakage of helium therethrough.

3,611,624

TRUNDLE TOY

Allan Cecil Nieman, 268 Supple St.,
Pembroke, Ontario, Canada

Filed May 21, 1969, Ser. No. 826,380

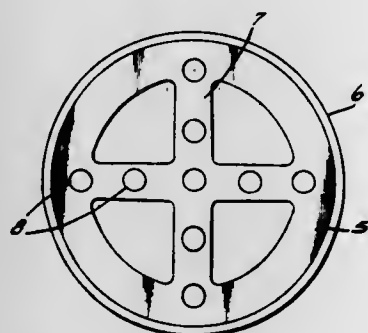
Claims priority, application Canada, Mar. 27, 1969,

47,047

Int. Cl. A63h 5/00, 33/02

U.S. Cl. 46—114

1 Claim



A toy play device in the form of a spoked wheel having apertures formed in the spokes and bells pressed into the apertures to provide a musical sound as the wheel

is propelled along the ground by a stick having a flattened portion to start the wheel rolling down the stick and a cross-member at its lower end to guide the wheel.

3,611,625

DOLL WITH ROTATABLE BODY AND APPENDAGE ROTATABLE IN DELAYED RELATION THERETO

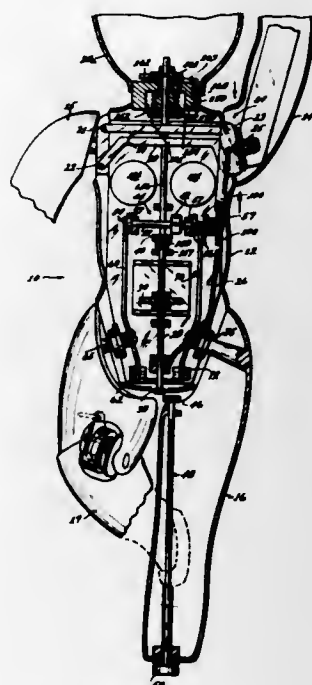
Conrad B. Sloop, Huntington Beach, Denis V. Bosley, Palos Verdes Peninsula, Elliot Handler, Los Angeles, Joseph Kossoff, Hawthorne, James F. Munday, South Gate, and John W. Ryan, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 11, 1968, Ser. No. 758,934

Int. Cl. A63h 11/00

U.S. Cl. 46—120

11 Claims



An animated doll energizable by a reversible DC motor selectively animating a stepping motion or a rotational motion with head-spotting. The doll includes a rotatable shaft which is movable along its axis of rotation from a neutral position to an upward position in which the shaft engages a crankshaft assembly to cause the doll's legs to move with respect to the doll's torso to produce a stepping motion. The rotatable shaft is also movable to a downward position in which the shaft drivingly engages a floor-contacting member which is inhibited from rotating thereby causing the drive train and the motor's housing, which is connected to the doll's torso, to rotate and to rotate the torso therewith. The doll's head is coupled to the torso with a torsion spring, which forms part of a head-spotting assembly. The latter is used to inhibit the rotation of the head during a fixed preselected portion of each revolution of the doll's torso.

3,611,626

ANIMATED DOLL

Ralph Bornn, South Farmingdale, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,346

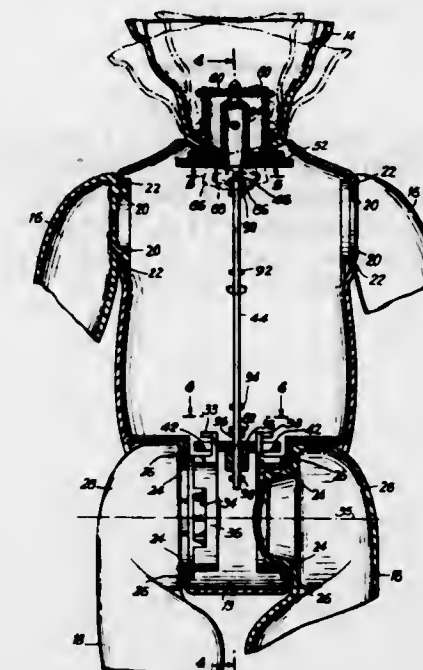
Int. Cl. A63h 11/00

U.S. Cl. 46—120

4 Claims

An animated doll is described as including a doll's body, a head movably mounted on the body for side-to-side nodding motion and legs mounted on the body for hand-assisted walking motion. The legs are operatively connected to a neck mechanism including a collar element, which provides the nodding motion for the head. The walking motion is translated, by means of a main shaft and a horizontally-disposed plate, both rotating in an

oscillatory manner about a vertical axis, to rotary rocking motion of the collar element in the vertical plane



about a horizontal axis to thereby provide the nodding motion for the head.

3,611,627

ACTIVITY TOY WITH ARTICULATED MOVABLE HUMAN FIGURES

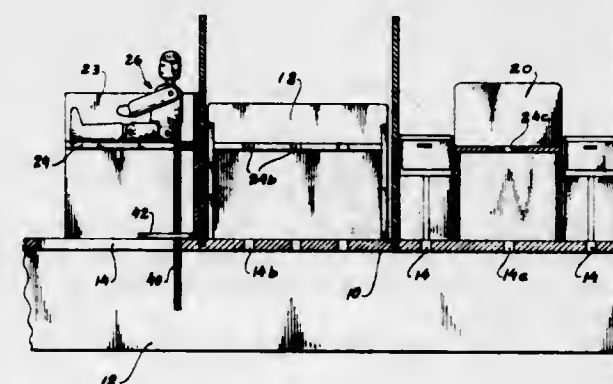
Donald Forman, Freehold Township, Monmouth County, N.J. (32 Double Creek Parkway, Freehold, N.J. 07728)

Filed July 9, 1970, Ser. No. 53,448

Int. Cl. A63h 7/00

U.S. Cl. 46—126

5 Claims



An activity toy comprising a slotted elevated horizontal platform having slotted articles of furniture and appliances mounted thereon and a plurality of articulated human figures mounted on vertical stems which extend through the slots in the horizontal platform, said stems being manually supported from below the platform and manually moved along the slots to transport the articulated figures from station to station on said platform and into and out of engagement with the slotted articles of furniture and appliances. The slots in the elevated platform are labyrinthine, interconnected and intercommunicating for movement of the figure-supporting stems from slot to slot and from position to position along each slot. The figure-supporting stems are also vertically movable through the slots, and they are provided with horizontal plates which serve as stands for mechanically supporting the figures in upright position on the platform.

3,611,628

TOY PUPPET-LIKE FIGURINE

Sid Noble, West Orange, N.J., and George Gilder, Forest Hills, N.Y., assignors to Remco Industries, Inc., Harrison, N.J.

Filed Sept. 19, 1969, Ser. No. 859,269

Int. Cl. A63h 3/14

U.S. Cl. 46—154

1 Claim



A toy puppet-like figurine is provided to permit a child's fingers to act as legs and at the same time support the figurine. It has a rigid upper body connected to an elastic fabric lower body forming hollow legs. The elastic lower body has a recess formed in the rear to receive two fingers within the legs to simulate a walking motion. An elastic loop secured to the upper body presses the fingers against the back of the upper body so they can support the upper body.

3,611,629

ATTACHABLE WHEELS FOR PLASTIC BLOCKS

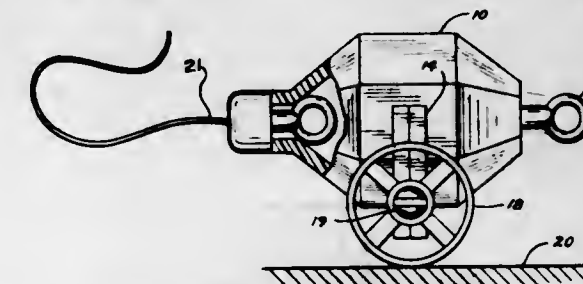
Charles F. Foley, 3908 Merriam Road, Minnetonka, Minn. 55343, and Charles D. McCarthy, Rte. 3, Box 217BA, Deephaven, Minn. 55391

Filed Jan. 28, 1970, Ser. No. 6,437

Int. Cl. A63h 11/10

U.S. Cl. 46—201

8 Claims



A wheel assembly which can be snapped onto plastic blocks, commonly known as "pop beads" or "pop blocks" to make trains or vehicles out of a string of the blocks.

3,611,630

WHEELED TOY VEHICLE

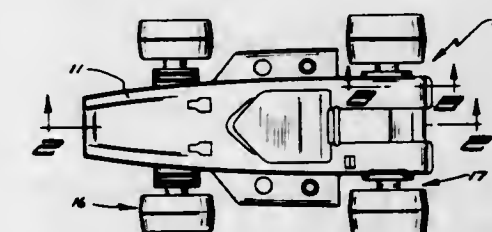
Cecil F. Adickes, Playa Del Rey, Calif., and Gary D. Bies, Plymouth, Minn., assignors to Tonka Corporation, Mound, Minn.

Filed May 4, 1970, Ser. No. 34,413

Int. Cl. A63h 17/26

U.S. Cl. 46—201

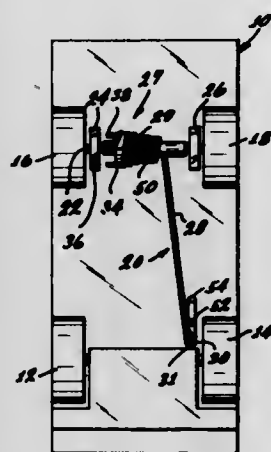
9 Claims



A wheeled toy vehicle in which each wheel and axle assembly is integrally mounted with the axle of tempered resilient spring steel wire having its ends embedded in

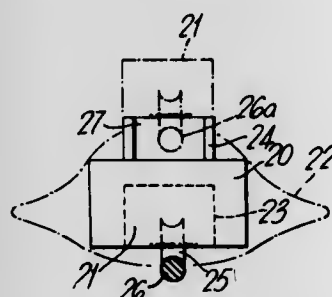
inwardly extending hub members. The axle rides in a low friction central upper bearing for fast wheel rolling while the said wheel hub members are loosely trapped by body portions of the vehicle to prohibit strain on the axle when diametrical or axial pressures are applied to said members. The hub members carry tires having an outer diameter at least twenty times greater than that of the axle.

3,611,631
RUBBER BAND POWERED TOY VEHICLE
Henry J. Folsom, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 5, 1969, Ser. No. 882,553
Int. Cl. A63h 17/00
U.S. Cl. 46—206 2 Claims



A rubber band motor for a toy truck or other toy vehicle, which efficiently utilizes an ordinary rubber band. The motor includes a tapered receiving portion fixed to one vehicle axle, and the rubber band is positioned to wind onto the axle around the tapered portion so that the band is wound more slowly as it becomes highly stretched. Band-engaging posts on the axle and frame enable an ordinary rubber band to be mounted by merely slipping it over two posts. Several posts are provided on the frame to enable rubber bands of various lengths to be efficiently utilized.

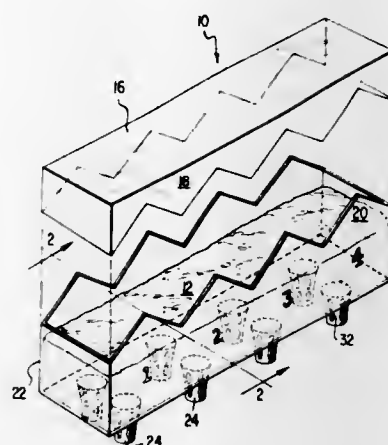
3,611,632
SELF PROPELLED TOY
Sidney David Smith, 88 Romsey Road, Winchester, Hampshire, England
Filed Oct. 8, 1969, Ser. No. 864,706
Claims priority, application Great Britain, Oct. 9, 1968, 47,884/68; Nov. 20, 1968, 55,105/68
Int. Cl. A63h 33/26
U.S. Cl. 46—243 13 Claims



A self propelled toy and track in which the track comprises a length of flexible line which can be laid on a surface in any desired configuration and/or suspended above said surface and the toy comprises a basic body unit and a motor containing unit having a guide wheel which engages with the track, the motor containing unit

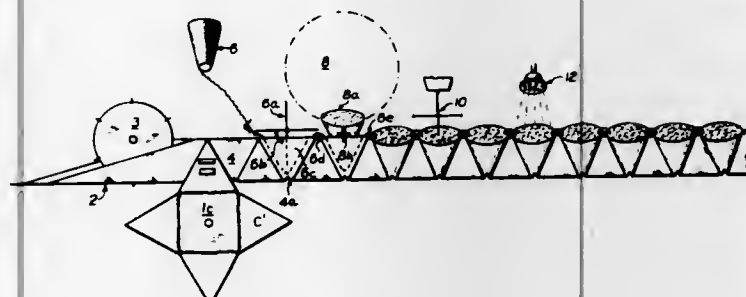
being able to be attached to the body unit in two alternative positions so that in one position the guide wheel is located on the lower part of the body unit and in the other position is located on the upper part of the body unit to suspend the toy from the line.

3,611,633
METHOD AND APPARATUS FOR OUTDOOR FLOWER ARRANGEMENTS
Clarice W. Shackelford, 3628 13th St. NW., Washington, D.C. 20010
Filed Mar. 9, 1970, Ser. No. 17,477
Int. Cl. A01g 9/02
U.S. Cl. 47—34 9 Claims



A plant receptacle which, individually, combines the functions of a miniature hothouse, a planter and a transplanting container; and, in conjunction with other like receptacles, may be used to define desired plant growth patterns such as in the case of flower arrangements for parks, yards and the like. A transparent receptacle and closure define, in effect, a miniature hothouse which is provided with a plurality of perforated tubular members depending therefrom for the combined purposes of anchoring the receptacle in a desired location, permitting plant root growth exteriorly thereof and permitting ingress of ground moisture thereinto and drainage therefrom.

3,611,634
APPARATUS AND METHOD FOR PLANTING SEEDLINGS
John E. Dalton, 1140 5th Ave., New York, N.Y. 10028
Continuation-in-part of application Ser. No. 668,761, Sept. 19, 1967. This application Jan. 27, 1970, Ser. No. 6,222
Int. Cl. A01g 9/10
U.S. Cl. 47—58 7 Claims



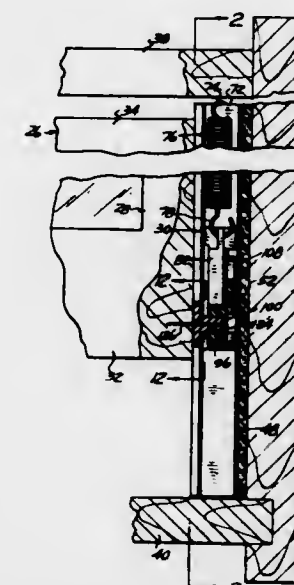
The strip of material is folded lengthwise and formed into a series of pockets which are connected together by intervening web portions. These pockets are of V-shaped contour and are adapted to receive charges of fertilized earth and seeds. In addition, a cord is looped into each of the pockets so as to permit intermeshing with the root

system into the earth ball formed with the roots of the seedlings. Pulling up on the root embedded cord allows the earth ball to be moved up out of the pocket for subsequent transplanting purposes, completely mechanically with nonmanual feed-in.

3,611,635
METHOD OF OBTAINING LEAF TOBACCO WITH LOW CONTENT OF NICOTINE
Masao Tanaka, Hatano, and Tomoyoshi Omo, Akashi, Japan, assignors to The Japan Monopoly Corporation, Nikken Chemicals Co., Ltd. and Taiko Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 654,082, July 18, 1967. This application June 3, 1970, Ser. No. 41,756
Claims priority, application Japan, July 20, 1966, 41/47,052
Int. Cl. A24b 15/02
U.S. Cl. 47—58 1 Claim

An aqueous solution or aqueous suspension of a film-forming agent is spray-spread on the surfaces of tobacco leaves after the stopping of field-grown tobacco, to form an insoluble thin film thereon. As a film-forming agent there may be used higher alcohols having 16 to 22 carbon atoms in the molecule and their derivatives; animal, vegetable and mineral waxes; high polymers or substances which are generally as a vehicle.

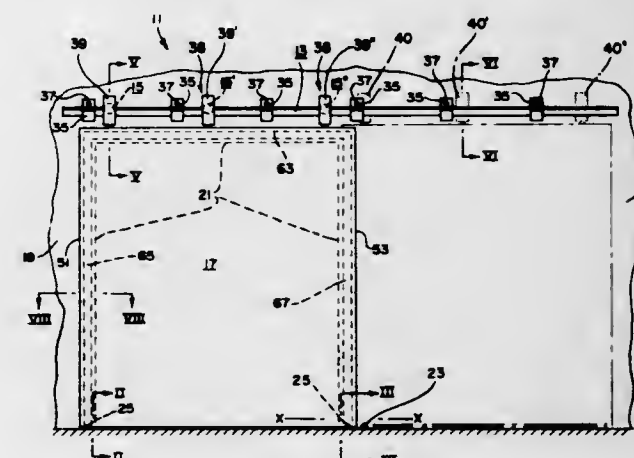
3,611,636
HEAVY-DUTY SELF-LOCKING SASH BALANCE
Donald M. Trout, 15750 Meyers Road, Detroit, Mich. 48227
Filed Sept. 24, 1969, Ser. No. 860,707
Int. Cl. E05d 15/22
U.S. Cl. 49—181 5 Claims



An elongated sash guide adapted to be mounted on at least one side of a window frame has a longitudinally-slotted spring casing to one end of which is secured one end of a sash balancing spring. Connected to the other end of the spring is a slide block provided with a transverse bore and a pair of pivot bosses adjacent thereto. Pivotally mounted on one of the pivot bosses is a sharp-edged locking lever having a cam follower arm on the opposite end thereof. Rotatably mounted in the slide block bore is a rotary lock-operating cam operatively engageable with the cam follower portion for tilting the lever relatively to the cam and thereby moving its sharp edge into positive locking engagement with the casing. The lock-operating cam contains a notch of non-circular cross-section operatively engageable with a trunnion key of similar cross-section secured to the window sash and rotating the

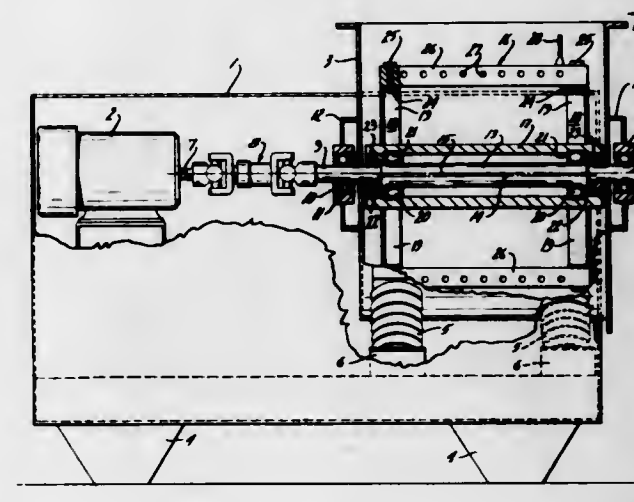
cam in response to the swinging of the window sash relatively to the window frame opening around the trunnion key as a fulcrum. The slide block and the locking lever are adapted to be interchangeably mounted on opposite sides of the window frame by reversing the position of the locking lever from one pivot boss to the other, but using cams with oppositely-facing recesses in the slide block bore.

3,611,637
SLIDING DOOR ASSEMBLY
Joseph N. Saino, 3554 Oakley Ave., Memphis, Tenn. 38111
Filed Mar. 4, 1970, Ser. No. 16,467
Int. Cl. E05d 13/06
U.S. Cl. 49—235 6 Claims



A track suspended sliding door assembly comprising an overhead track having a plurality of recesses along one member thereof for slidably receiving a like number of beveled wheels as the door moves inwardly and downwardly so as to seal the marginally adhered door gasket against the wall and floor surfaces adjacent the door opening. The door includes an elongated inverted V co-extending with the bottom edge thereof to slidably engage a plurality of subjacent guides which aid in moving the lower portion of the door downwardly and inwardly, obviating the closed door from swinging away from the wall.

3,611,638
FINISHING MACHINE
John K. Deede, Milwaukee, Wis., assignor to Electro-Deburring Co., Inc., Milwaukee, Wis.
Filed Apr. 1, 1970, Ser. No. 24,737
Int. Cl. B24b 31/06
U.S. Cl. 51—7 5 Claims



This invention relates to a finishing machine having a generally cylindrical container supported at the bottom by substantially radially extending resilient members. The

container confines media for polishing or finishing workpieces. The invention involves employing a fixture mechanism adapted to hold the workpieces to be finished which is positively reciprocated within the media throughout a 360° cycle by means of an eccentric construction of the drive shaft as the media is tumbled throughout the container by oscillation and vibration of the fixture and the container with the fixture being free to rotate on the eccentric portion of the drive shaft.

3,611,639

ABRADING MACHINES

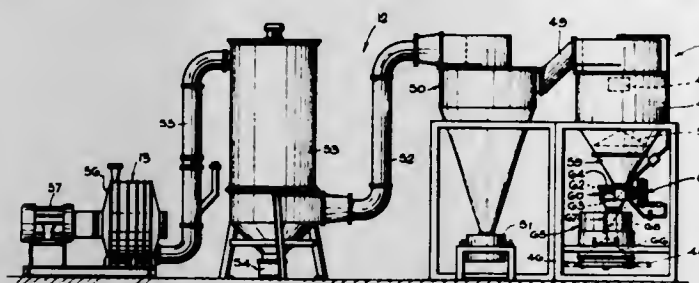
Stewart Ives Ashworth, Malvern Link, and Anthony Gerard Field, deceased, late of Redditch, England, by Denis Cyril Field and Madeleine Helen Field, administrators, Crimond, Outhill, near Studley, England, assignors to Abrasive Developments Limited, Solihull, Warwickshire, England

Filed Aug. 19, 1969, Ser. No. 851,307

Int. Cl. B24c 3/04

U.S. Cl. 51—8

15 Claims



The specification discloses an abrading machine and method in which air and abrasive are directed at a workpiece in a blasting chamber which is sealed during operation by the workpiece. The abrasive is entrained in primary air, secondary air enters the chamber around the workpiece and tertiary air is allowed to mix with primary air carrying the abrasive before the latter enters the chamber. The chamber may be tubular and for treating wire or bar may be in two channel-shaped parts hinged together so that the chamber may be opened to lead the wire or bar through. Where strip is being treated the strip may pass through the tubular chamber transverse to the axis thereof.

3,611,640

ABRADING MACHINES

Stewart Ives Ashworth, Crimond, England, assignor to Abrasive Developments Limited, Solihull, Warwickshire, England

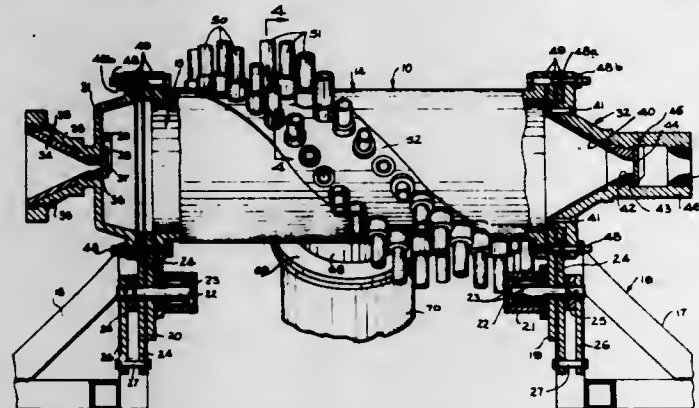
Filed Aug. 19, 1969, Ser. No. 851,354

Claims priority, application Great Britain, Dec. 17, 1968, 59,973/68

Int. Cl. B24c 3/04

U.S. Cl. 51—8

10 Claims



The specification discloses an abrading machine in which air and abrasive are directed at a workpiece in a hinged, two-part tubular blasting chamber, the air and

abrasive being directed at the workpiece by nozzle assemblies which are arranged so that their outlets into the chamber lie on two or more helices having coincident axes parallel to the longitudinal axis of the chamber by a distance which is small compared with the total length of the chamber. The nozzle assemblies may have their inner ends in a projection. Funnel-shaped collectors may be provided at the ends of chamber to lead wire or the like through the chamber. Closure flaps may be provided at the chamber ends to maintain the vacuum as the wire enters or leaves the chamber.

3,611,641

HEAVY DUTY TAILSTOCK

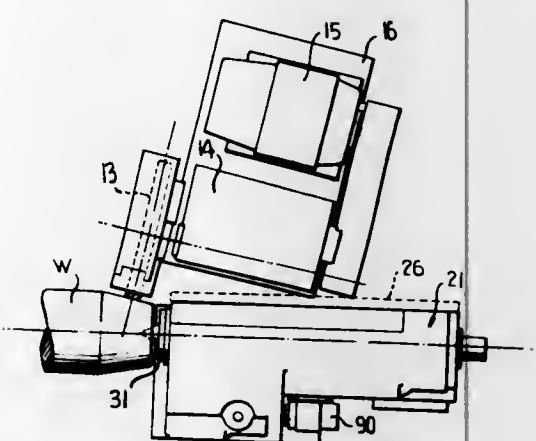
Ernest M. Woodford, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.

Filed Oct. 31, 1968, Ser. No. 772,141

Int. Cl. B24b 5/14, 41/06

U.S. Cl. 51—49

10 Claims



This disclosure relates to a heavy duty tailstock for machine tools, the tailstock being particularly adapted for supporting one end of a heavy workpiece. The tailstock is comprised of base members which are longitudinally positioned and secured to ways of a machine tool bed. An upper tailstock base member supports a support member or chock which is slidably mounted on slanted ways of the upper tailstock base member for longitudinal movement. The slanted ways are declined away from the general position of a tool support of the machine tool whereby the weight of the chock and that of the supported workpiece locks the chock against the slanted ways and prevents any cross movement or shifting of the chock. The chock houses a live work center, large spindle and bearings, or can be arranged to accept a dead work center. The chock is shifted longitudinally by mechanical means to engage the work center against the workpiece. The tailstock construction has eliminated that portion of the upper base member which would normally oppose the tool support, permitting increased bearing sizes and greater weight carrying capacity of the tailstock without increasing the width of the upper base member.

3,611,642

RECIPROCATING FINISHING APPARATUS

Franz Stoy, Grafenberg, Germany, assignor to Metabo-werke KG Closs, Rauch & Schnitzler, Nürtingen, Germany

Filed Mar. 3, 1970, Ser. No. 15,984

Claims priority, application Germany, Mar. 4, 1969, P 19 10 833.9

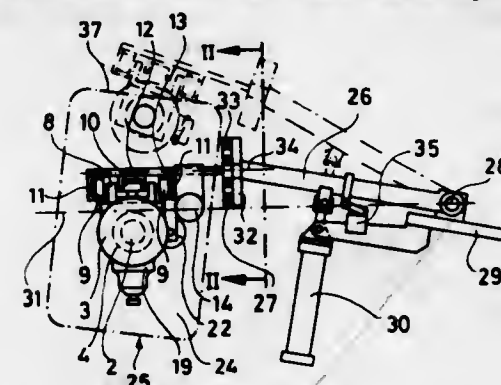
Int. Cl. B24b 7/00

U.S. Cl. 51—55

20 Claims

A finishing tool polishes successive angular sections of the bottom of a rotating container by reciprocating between a central position and outer positions engaging the

side wall of the container. When the outwardly moving tool touches the side wall, it is resiliently displaced and



actuates a control switch causing reversal of the movement so that the tool moves away from the side wall.

3,611,643

PLANING MACHINE USING ROTATABLE ABRASIVE DRUMS

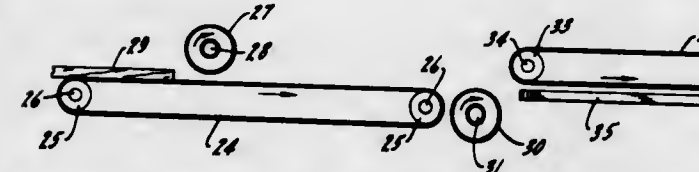
William T. Crane, Geneva, and Kenneth L. Landmark, St. Charles, Ill., assignors to Burgess-Norton Mfg. Co., Geneva, Ill.

Filed Oct. 4, 1968, Ser. No. 765,103

Int. Cl. B24b 7/12; B24d 5/00

U.S. Cl. 51—76

5 Claims



A planing means for planing wood, fibre or comparable material including a rotary drum and a metal sleeve carrying tungsten carbide grit. The sleeve is shrunk on the drum which acts as an arbor to support and rotate the grit carrying sleeve. One or more drums and grit carrying sleeve assemblies are mounted in a machine and are rotated in contact with wood or equivalent material which is to be planed and is given a smooth surface comparable to that which is given by a conventional assembly with planar blades. Such drums may be mounted solely above the workpiece or above and below the workpiece.

3,611,644

MICROMETER FINISHING MACHINE

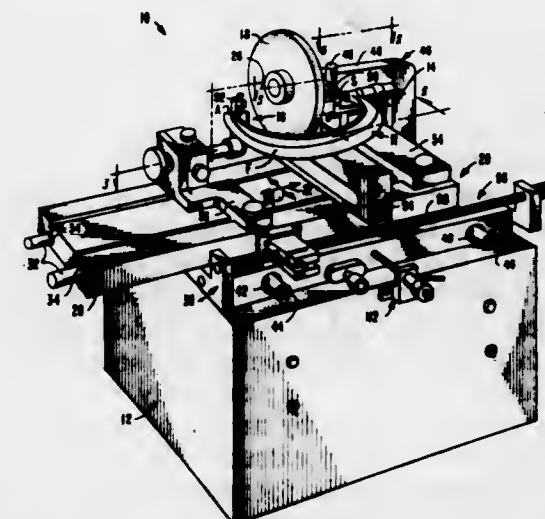
Raymond E. Dillberg, Temple City, Calif., assignor to Dill-Rich Company, San Gabriel, Calif.

Filed Mar. 11, 1970, Ser. No. 18,671

Int. Cl. B24b 7/02, 41/06

U.S. Cl. 51—122

9 Claims



A machine for finishing the end work engaging faces of a micrometer spindle and anvil by supporting the

micrometer in finishing position wherein the anvil and spindle seat in micrometer supports in straddling relation to an abrasive finishing wheel, and moving the supports and wheel relative to one another along direction lines parallel to and normal to the wheel axis to first engage each micrometer face with the adjacent face of the wheel and then oscillate the engaged faces back and forth across the wheel face.

3,611,645

FEED MECHANISM

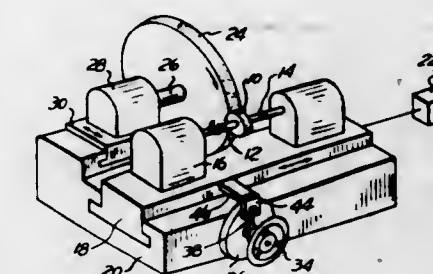
Edward M. Newsome, Anchorville, Mich. (25700 D'Hondt Court, Chesterfield Township, Mich. 48043)

Filed Oct. 23, 1969, Ser. No. 868,713

Int. Cl. B24b 51/00

U.S. Cl. 51—165.86

2 Claims



The advance or feed of a grinding wheel into a laterally traversing workpiece is actuated by and proportional to such traversing motion. Lateral movement of the workpiece-supporting traversing table causes a ratchet arm to pivot about the drive shaft which controls the feed of the grinding wheel, and a pawl on the ratchet arm engages a ratchet wheel keyed to the drive shaft to rotate the drive shaft. An adjustable shield between the pawl and the drive shaft controls when, during the stroke of the traversing table, the pawl drops into the ratchet wheel, to thereby control the depth of advance during a given cycle of the traversing table.

3,611,646

APPARATUS FOR SUPPORTING THE PULLEY OF THE BELT GRINDER

William M. Cameron, Tadao Tanol, Kyocch Hirokawa, and Yoshio Aoki, Tokyo, Japan, assignors to Nitto Kohki Company Limited, Tokyo, Japan

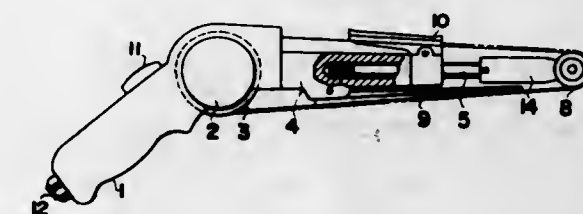
Filed Oct. 23, 1969, Ser. No. 868,685

Claims priority, application Japan, Nov. 2, 1968, 43/95,285; Nov. 4, 1968, 43/88,559; Feb. 4, 1969, 44/9,358; Feb. 5, 1969, 44/9,797; Feb. 18, 1969, 44/13,509; Feb. 19, 1969, 44/14,020

Int. Cl. B24b 23/00, 21/00, 23/06

U.S. Cl. 51—170

10 Claims



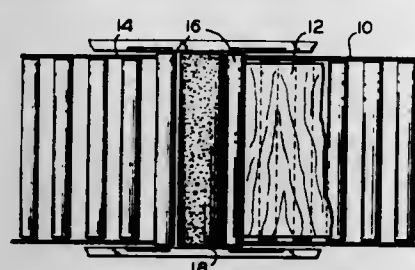
The present invention relates to a support for a pulley and more particularly to a support for a pulley of the belt grinder, the attachment angle of which is freely controlled and the tension of the grinding belt can be kept uniform.

3,611,647 PROCESS FOR TREATING SURFACE OF PLYWOOD

David C. Davis, Aberdeen, Wash., assignor to Evans Products Company, Portland, Oreg.
Filed Aug. 25, 1969, Ser. No. 852,618
Int. Cl. B24b 1/00

U.S. Cl. 51—328

1 Claim



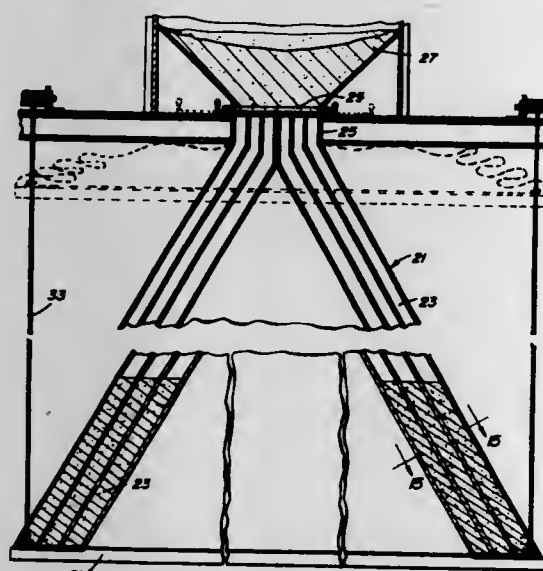
Architectural finish is imparted to surface of plywood by abrading surface with rapidly moving abrasive grit-carrying flexible belt.

3,611,648 FALLOUT SHELTER

Frederick W. Barnett, Corpus Christi, Tex., assignor to Robert J. Sechrist and Joe J. Hall, Corpus Christi, Tex.
Filed Nov. 22, 1967, Ser. No. 685,002
Int. Cl. E04b 1/345

U.S. Cl. 52—2

15 Claims



Radiation protection construction involving the utilization of liquid inflated or solid particle filled flexible bags or envelopes which are formed so as to define an enclosed area, either stationary or movable, for the reception of persons, animals, materials, food, etc. The fluid or particle containing envelopes will be collapsible and of a quickly erecting nature. Frame-like supporting structures will normally be utilized in connection with the support of the envelopes, however support may also be achieved by exerting internal pressure on the envelope.

3,611,649 ROOF COVERING SUITABLE FOR SUSPENSION ROOFS

Dieter Müller, Darmstadt, and Friedrich Hanstein, Gross-Zimmern, Germany, assignors to Rohm Gesellschaft mit beschränkter Haftung, Darmstadt, Germany
Filed Aug. 8, 1969, Ser. No. 848,497
Claims priority, application Germany, Aug. 16, 1968, P 17 84 534.0

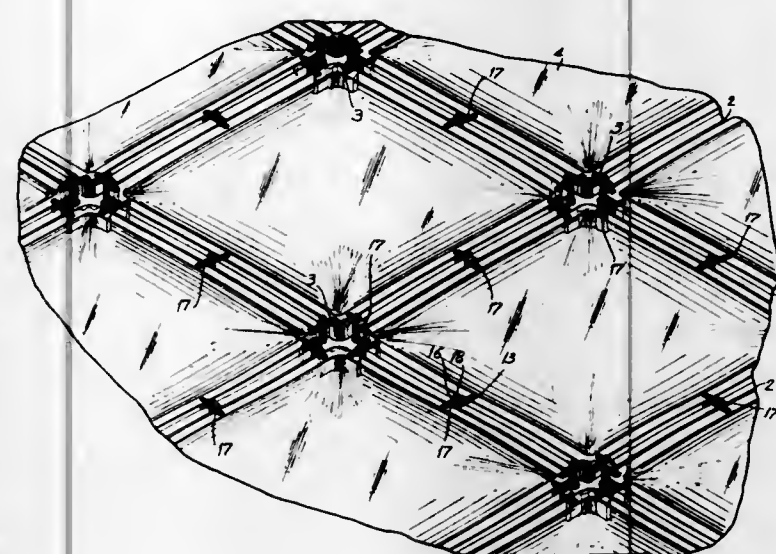
Int. Cl. E04b 7/14; E04d 13/04

U.S. Cl. 52—83

10 Claims

An improved suspension roof comprising a polygonal network of bar members, the length of which is substantially equivalent to the length of a side defining a

mesh length in a network of mesh members of said suspension roof, at least three of said bar members pivotably joining in an intersection member, means for securing said bar members to said intersection member, means for attaching said intersection members to said mesh members, and a covering member in a shape of said polygonal



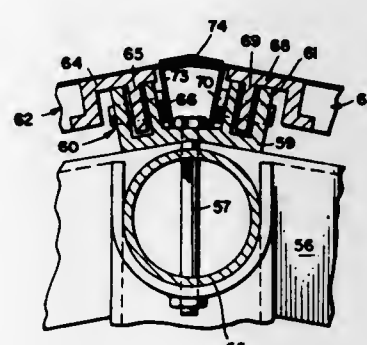
fittingly engaging with said bar and intersection members and supported by said bar members. The described roof structure allows the employment of plastic covering members which may readily be deformed by the stresses imposed on the roof and at the same time provide an easily constructed structure.

3,611,650 PREFABRICATED STRUCTURE FOR SHELTER OR STORAGE

Louis W. Horvath, 4304 Choctaw Circle
Huntsville, Ala. 35801
Filed May 12, 1969, Ser. No. 823,621
Int. Cl. E04c 1/30

U.S. Cl. 52—90

8 Claims

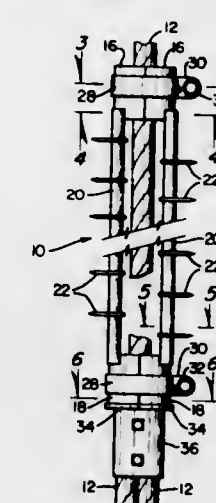


Shelter or storage space is provided by a prefabricated structure which is easily erected without the need for field fabrication and simply dismantled; yet the structure is strong and highly resistant to wind forces, etc. The roof and side walls are formed from individual panels of aluminum sheet material which are provided about their periphery with extruded male connecting strips having a connection flange extending longitudinally of each strip. The superstructure is formed by means of interconnected tubular members which carry extruded female strips with elongated U-shaped channels for receiving the connection flange of the male extruded strips substantially along their respective lengths. The U-shaped receptacles are provided with apertures which align with corresponding apertures in the connection flanges of the male connecting

3,611,651
GUY WIRE ANIMAL GUARD
Gaynor Carlson, R.F.D. 1, Herndon, Kans. 67739
Filed Nov. 3, 1969, Ser. No. 873,166
Int. Cl. A01k 3/00

U.S. Cl. 52—101

12 Claims

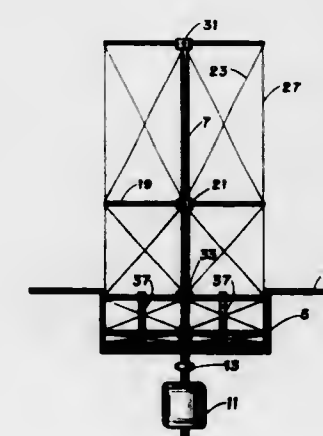


An animal guard adapted to be applied to the lower end of a guy wire disposed in an animal enclosure, without disturbing the anchors at the ends of the guy wire characterized by a two-part construction each having semi-circular ends, which may be clamped together after application to the guy wire, the ends being joined by longitudinal rods having bars on same, the unit being freely rotatable on the guy wire after being applied thereto.

3,611,652
THERMALLY TRANSPARENT ERECTABLE BOOM
David W. Rabenhorst, Silver Spring, and Kenneth E. Darnell, College Park, Md., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 9, 1969, Ser. No. 814,560
Int. Cl. E04h 12/34

U.S. Cl. 52—110

4 Claims

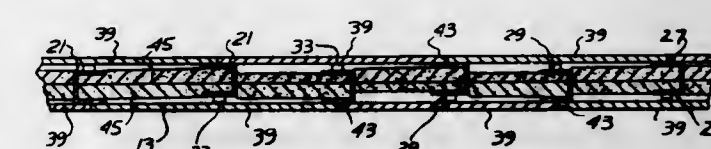


The present invention relates generally to erectable booms for space application. More specifically, the present invention provides an erectable boom characterized by increased strength, lighter weight, and relative immunity to thermal influences when compared to conventional

3,611,653
SOUND ATTENUATION WALL PARTITION
Daniel L. Zimm, 2545 Beaufort, Detroit, Mich. 48207
Filed Apr. 13, 1970, Ser. No. 27,671
Int. Cl. E04b 2/78

U.S. Cl. 52—241

10 Claims



A sound attenuation wall partition for use between a building floor and ceiling which includes between opposed floor and ceiling channels, a series of spaced studs interposed between the channels, the studs each being U-shaped in cross-section with a plane flange and a stop flange, the latter including a series of longitudinally spaced yieldable tabs, the studs being so arranged that the plane flanges, the stop flanges of adjacent studs are alternately arranged, with the plane flanges bearing against and secured to the adjacent wall of a channel and the respective stop flanges laterally staggered and spaced from the adjacent wall of said channels, and opposed wallboards applied to opposite sides of said studs, the outer upright edges of each wallboard spanning and secured to the plane flanges of a pair of studs, and the intermediate upright portion of said wallboard yieldably bearing against the tabs of the intermediate stud, opposing wallboards being staggered.

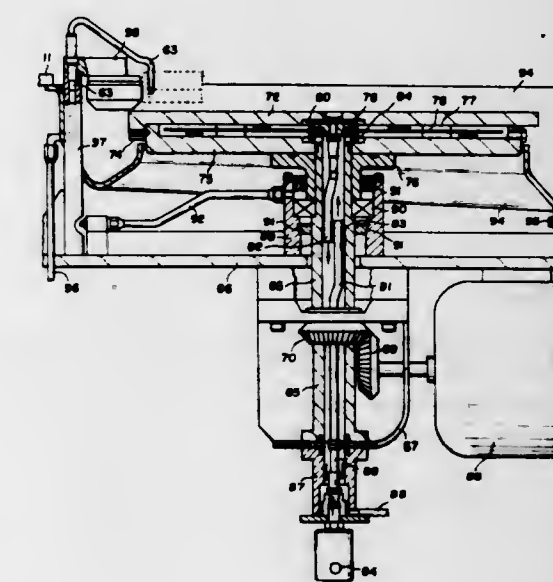
3,611,654
POLISHING MACHINE OR SIMILAR ABRADING
APPARATUS

John L. Weber, Spencerport, and Carl J. Vella, Rochester, N.Y., assignors to Alliance Tool & Die Corp., Rochester, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,219
Int. Cl. B24b 55/02

U.S. Cl. 51—266

15 Claims



A polishing machine or similar abrading apparatus having a horizontal platen rotatable about a vertical axis with

workpieces held against the platen by at least one vertically moveable support head. Cooling means are provided to maintain the operating temperature of the workpieces at desired levels by circulating coolant through the platen and the support head.

3,611,655
PORTABLE FLOOR
William Loebner, 220 W. 98th St.,
New York, N.Y. 10025
Filed Nov. 10, 1969, Ser. No. 875,023
Int. Cl. E04f 15/02, 15/16
U.S. Cl. 52—588

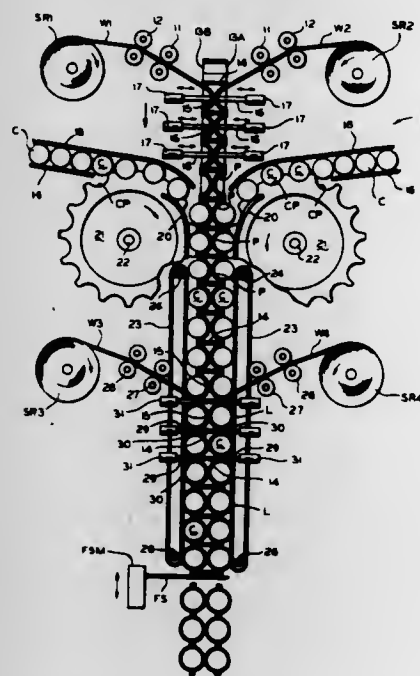
3 Claims



A portable floor usable as a dance floor made of a plurality of plastic, elongated slats assembled in lengthwise juxtapositioned relationship by a tongue-and-groove joint or a ball-and-groove joint between slats.

3,611,656
METHOD AND APPARATUS FOR FORMING CARRIERS FOR CONTAINER GROUPS
Francis A. Chidsey, Jr., Devon, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Apr. 24, 1970, Ser. No. 31,520
Int. Cl. B65b 17/02; B65d 71/02
U.S. Cl. 53—3

12 Claims

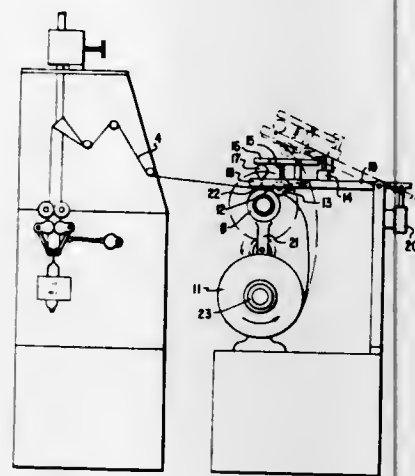


Method and apparatus for forming a carrier for an article group. The carrier is formed from webs extending around the individual articles of the group. Apparatus is provided for feeding a pair of inner webs between two rows of the group, and structure is provided for forming the webs so that each web half encircles the articles of each row. These webs are joined at the points of conjugacy of the articles. Apparatus is also provided for feeding a pair of webs along the outer sides of each row, and for joining such outer webs to the inner webs. The webs are preferably formed from thermoplastic resins having memory characteristics, and each web is stretched prior to its

application to the articles, so that the article engaging loops may subsequently contract to hold the articles tightly in the loop. Alternately, the webs may be formed of paper coated with an adhesive material and capable of being adhered.

3,611,657
CONTINUOUSLY OPERATING AUTOMATIC FILLING MACHINE
Kiyoshi Inoue, Shinji Tsuchiya, and Tetsuo Ishikawa, Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 26, 1969, Ser. No. 861,317
Claims priority, application Japan, Sept. 27, 1968, 43/69,523; Sept. 30, 1968, 43/70,153
Int. Cl. B65b 57/02
U.S. Cl. 53—64

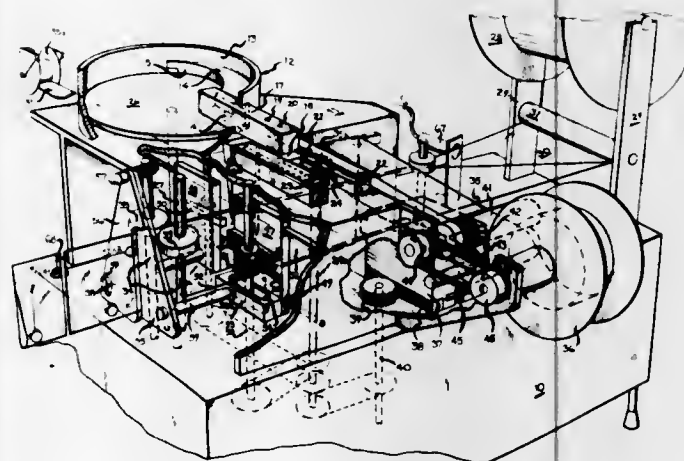
2 Claims



The leading edge of a new roll of packaging film is automatically bonded to the trailing edge of the old film roll during continuous running of an automated package filling machine and the leading end of the new roll of binding wire is automatically welded to the trailing end of the old roll of binding wire.

3,611,658
MACHINE FOR PACKAGING ARTICLES, SUCH AS TABLETS AND CAPSULES
Raymond J. Dwyer, 4737 Secor Road,
Toledo, Ohio 43623
Filed July 22, 1969, Ser. No. 843,696
Int. Cl. B65b 9/06, 61/02
U.S. Cl. 53—131

10 Claims

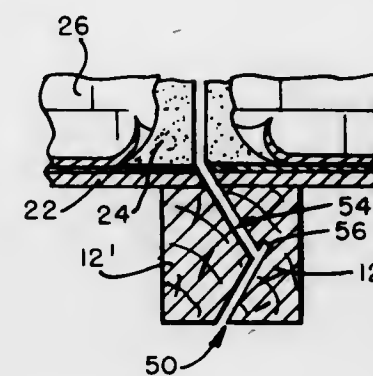


A machine for packaging articles, such as tablets and capsules containing medicines, drugs, etc., in envelopes or receptacles of flexible sheet material, as for example

cohesive pressure sensitive sheet material. The tablets or capsules are delivered to a hopper, the bottom of which consists of a rapidly rotating disc which centrifugally forces the pills into a row leading to a feeder, which operates recurrently to deliver a predetermined number of pills to an envelope or enclosure as it is being formed. The sheet material is advanced step by step and during the intervals it is printed to indicate the contents, is sealed to provide a self sustaining package and optionally may be severed to provide individual units.

3,611,659
PREFABRICATED ROOF STRUCTURE
William Greenhalgh, P.O. Box 521,
Oshawa, Ontario, Canada
Filed July 21, 1970, Ser. No. 56,878
Int. Cl. E04b 7/02
U.S. Cl. 52—92

5 Claims



A prefabricated roof structure comprising a plurality of sections derived from an integral roof structure by the incorporation therein of means for forming accurately realignable joints between adjacent sections. The roof structure preferably includes essentially finished floor, wall and ceiling surfaces for the area defined by the roof and an essentially finished ceiling for the area beneath the prefabricated roof structure.

3,611,660
MODERN ART SIDING
Steve Costello, 236 Barrow St., Jersey City, N.J. 07302
Continuation-in-part of application Ser. No. 682,909,
Nov. 14, 1967. This application May 8, 1969,
Ser. No. 839,754
Int. Cl. E04d 3/30, 3/361
U.S. Cl. 52—314

6 Claims

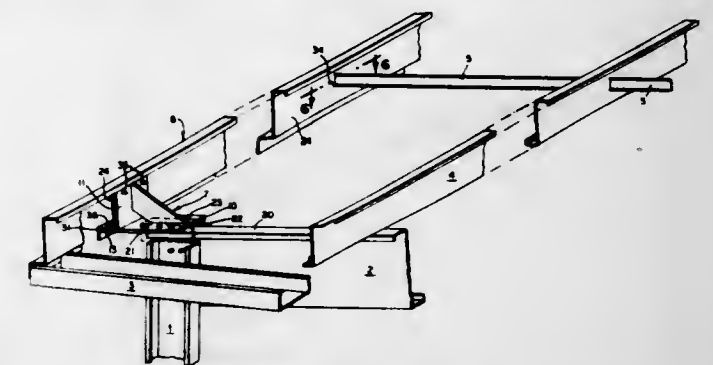


A siding apparatus for placement on a wall surface, fabricated from a plurality of similarly connected convex crescent-shaped elements whose ends form arc-shaped elements connected to an oblique angle portion which at the end integrally forms a slotted joint for detachable slidable engagement with a corresponding slotted joint of an adjacent siding. Each siding member may be fastened to the wall surface by nails received in apertures in spaced-apart relation within the interlocking portions.

The siding apparatus permits entrapment of a desirable insulating air space between the wall surface and the siding.

3,611,661
EAVE STRUT AND BRACKET ASSEMBLY
Bruce Chambers, Belpre, and Donald Day, Gayville, Ohio, and Philip F. Uhrhane, Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.
Filed Dec. 9, 1969, Ser. No. 883,396
Int. Cl. E04b 7/04
U.S. Cl. 52—94

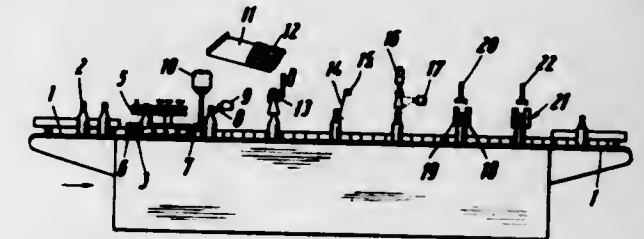
3 Claims



An eave strut and an eave strut bracket to support the strut on the frame of a pre-engineered metal building.

3,611,662
METHOD AND APPARATUS FOR SEALING BOTTLES
Johann Heinrich Friedrich Schmitt, Nierstein (Rhine), Germany, assignor to Vereinigte Kapselabriken Nackenheim GmbH, Nackenheim am Rhein, Germany
Filed Apr. 1, 1969, Ser. No. 812,066
Claims priority, application Germany, Mar. 12, 1969, P 19 12 458.4
Int. Cl. B67b 3/16, 5/00
U.S. Cl. 53—14

13 Claims



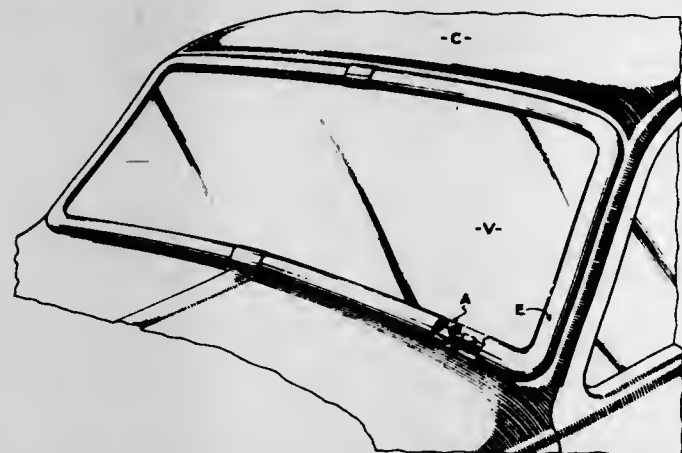
Method and apparatus for the application and fastening of prefabricated seals or crowns on champagne bottles in which the filled, corked and wired bottle is fed on a conveyor belt and glue is applied to a narrow area below the mouth of the bottle, the bottle is rotated axially in relation to the conveyor belt to position the bottle in a preferred location with respect to the seal, means are provided to grip the bottle firmly and non-rotatably and to convey the bottle to an apparatus where a seal is placed loosely on the bottle, means are then provided to scan the bottle to check whether or not the seal has been applied and the seal is then lifted and aligned relative to the subsequent tools for folding, pre-folding and finally finish-folding the seal by pressing against the bottle neck.

3,611,663
DEVICE FOR MOUNTING AN EMBELLISHING ELEMENT AROUND A FIXED WINDOW OF A VEHICLE
Michel Andrey, Montbellard, France, assignor to Automobiles Peugeot, Paris, and Regie-Nationale des Usines Renault, Billancourt, France
Filed May 12, 1970, Ser. No. 36,626
Claims priority, application France, Dec. 19, 1969, 6918476
Int. Cl. E04b 1/62
U.S. Cl. 52—397

11 Claims

Device for mounting an embellishing strip around a glass windowpane fixed in a filister of the body of a vehicle. The device comprises at least one mount engaged

on the edge of the glass and locked between this edge and the adjacent edge of the fillister. The or each mount

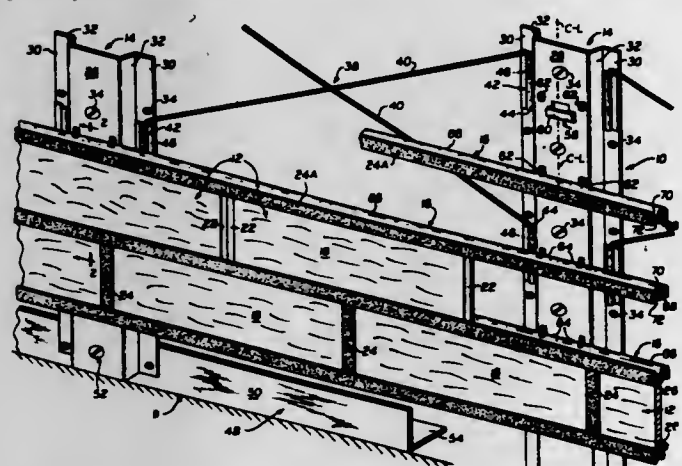


has on the face thereof facing outwardly of the fillister means for mounting the embellishing element.

3,611,664
BUILDING WALL CONSTRUCTION
Edmund C. Barbera, 55 Hillandale Road,
Port Chester, N.Y. 10573
Filed Aug. 11, 1969, Ser. No. 848,923
Int. Cl. E04c 1/10

U.S. Cl. 52-479

14 Claims

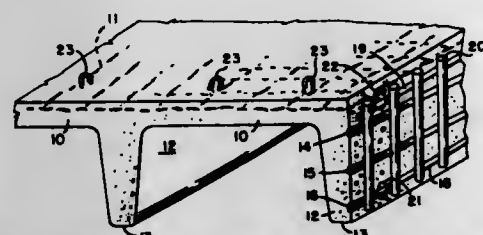


A building wall construction that includes a plurality of panel elements which are mounted on a supporting structure by means of a clamping arrangement to form a wall portion thereof, or which are supported in spaced apart relation to form a spaced wall construction.

3,611,665
SHEAR-STEEL-REINFORCED PRESTRESSED CONCRETE BEAMS
John B. O'Brien, 1426 Laurel Ave.,
St. Paul, Minn. 55104
Filed Dec. 30, 1968, Ser. No. 787,826
Int. Cl. E04b 5/10

U.S. Cl. 52-723

10 Claims



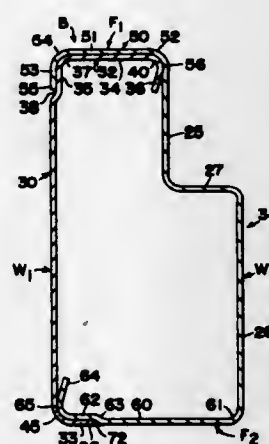
Prestressed concrete T beams are taught wherein the shear steel reinforcing is a composite structural member prefabricated and immediately suitable for placement in the leg portion of a T beam with minimum tying of it to other members. This composite shear steel reinforcing member consists essentially of a plurality of shear steel

reinforcing rod elements of relatively large cross-section spaced and fixed in position along two longitudinal rods of relatively small cross-section. The rods in both directions extend beyond the points of intersection to provide an "interlocking" possibility with other elements embedded in T beam structures as well as to provide guide means for proper placement of the composite members. Bundles of these prefabricated composite members provide the T beam manufacturing industry with new flexibility and speed for the manufacture of shear steel reinforced T beams of high and reliable quality at a significant reduction in cost.

3,611,666
SHEET METAL BOX BEAM
Edward J. Poyser, Canton, and Calvin R. Clauer, Youngstown, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Continuation of application Ser. No. 742,846, July 2, 1968. This application Mar. 10, 1970, Ser. No. 17,044
Int. Cl. E04c 3/07

U.S. Cl. 52-731

17 Claims

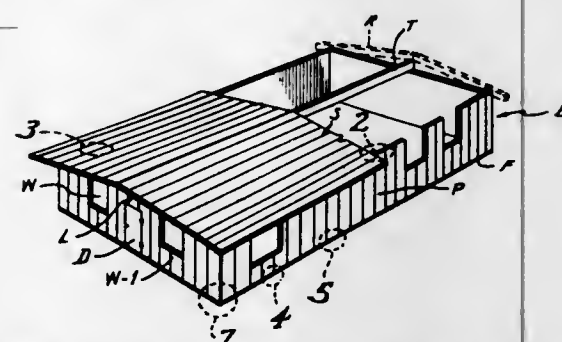


A beam construction comprised of a pair of sheet metal components each having a load supporting flange. Flanges of the lipped channel components are nested together and mechanically interlocked so that portions of the beam assembly subjected to compressive stresses are reinforced, yet sectional thicknesses are minimized in other portions of the beam. The two members forming the beam mechanically interlock in a manner which permits simple assembly. Welding of the components is not necessary to develop the strength of the beam.

3,611,667
METHOD OF ERECTING A BUILDING
William K. Maxwell, Sr., Harris County, Tex.
(P.O. Box 36191, Houston, Tex. 77036)
Filed June 2, 1970, Ser. No. 42,822
Int. Cl. E04b 1/00

U.S. Cl. 52-747

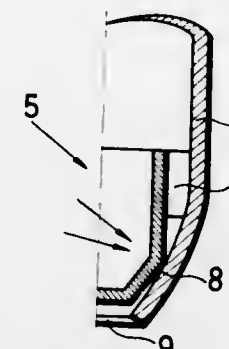
7 Claims



A method of erecting a building by assembling a plurality of panels using adhesive mastic and splines between the panels and the foundation. Rigid bracing is used to support the panels, and each panel may include part of an electrical power system for the building. The panels are standardized and pre-cast and contain channels in the edges.

3,611,668
PROCESS FOR THE PRODUCTION OF CARBON DIOXIDE CARTRIDGES
Lajos Baldauf, Bazakerettye, Imre Radnai, Repcelak, János Vasvári, Budapest, and József Wolf, Repcelak, Hungary, assignors to Országos Koolaj Es Gazipari Troszt, Budapest, Hungary
Original application Apr. 1, 1968, Ser. No. 717,591.
Divided and this application Apr. 29, 1970, Ser. No. 32,961
Int. Cl. B65b 31/00, 43/00
U.S. Cl. 53-29

3 Claims



A process for the production of a carbon dioxide cartridge for household purposes. A cylindrical body with a neck part and a diaphragm cross wall therein is produced by cold extrusion. Into the lower end of this cylindrical body, a sealing bottom with an upper ribbed part and a lower unribbed part is inserted. The lower open end of said cylindrical body is bent inwardly, while carbon dioxide under pressure is introduced through the open end of the cylindrical body and between the ribs of the sealing bottom. Then the bending operation is finished and, if using the pressure of carbon dioxide inside the cylindrical body, the unribbed lower part of the sealing bottom is pressed onto the inner wall of the inwardly bent lower end portion of the cylindrical body so as to close it by this sealing bottom.

3,611,669
METHOD OF SHRINK PACKAGING USING CHLORINATED POLYBUTENE-1 FILM
Thomas Hugh Shepherd, Hopewell, N.J., assignor to Princeton Chemical Research, Inc., Princeton, N.J.
No Drawing. Original application Feb. 26, 1965, Ser. No. 435,688. Divided and this application July 11, 1968, Ser. No. 743,969
Int. Cl. B29c 13/00; B65b 43/00

U.S. Cl. 53-30

7 Claims

Chlorinated polybutene-1 film having 26-40% chlorine which has an elastic memory such that upon elongation to below the elastic limit and cooling while retaining such elongation, followed by heating to such elevated temperatures under conditions such that the film is not under restraint, the film shrinks to its original size. The chlorinated polybutene-1 film may be in foam form.

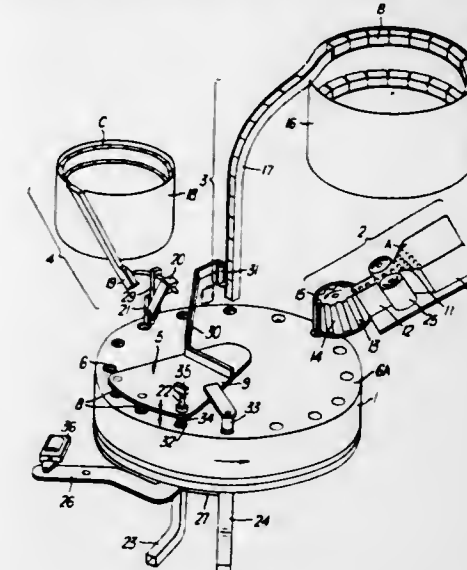
3,611,670
MACHINE FOR POSITIONING ARTICLES OF CIRCULAR CROSS-SECTION IN A PROTECTOR
Georges Baroin and Andre Guy, Thiais, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Apr. 1, 1970, Ser. No. 24,736
Claims priority, application France, Apr. 11, 1969, 6911305
Int. Cl. B65b 5/04, 57/10

U.S. Cl. 53-53

5 Claims

Machine for positioning ampoules in a protective packaging container, in which a rotary plate rotates about a vertical axis and has a plurality of circumferentially spaced compartments therein. Ampoules are fed one at a time from a dispenser into each compartment and a protective packaging container is dropped, at a

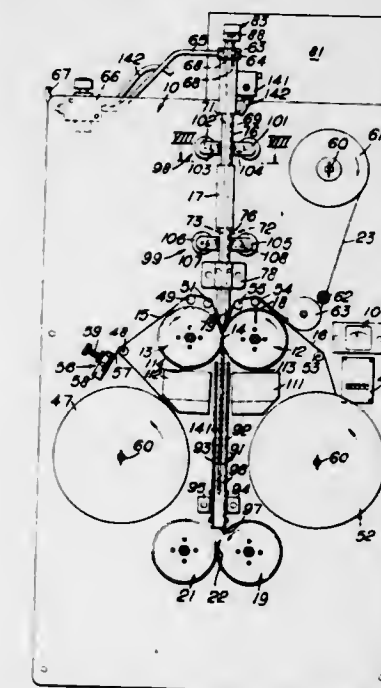
station downstream of said dispenser, into the compartment to overlie the ampoule. A pusher then forces the



container fully over the ampoule which subsequently falls from the bottom of the compartment.

3,611,671
PACKAGING APPARATUS
Edward A. Skinner and Thomas C. Rathbone, Welwyn Garden City, England, assignors to Aerpat A.G.
Filed July 7, 1969, Ser. No. 839,396
Claims priority, application Great Britain, July 9, 1968, 32,712/68
Int. Cl. B65b 9/12, 57/12
U.S. Cl. 53-59

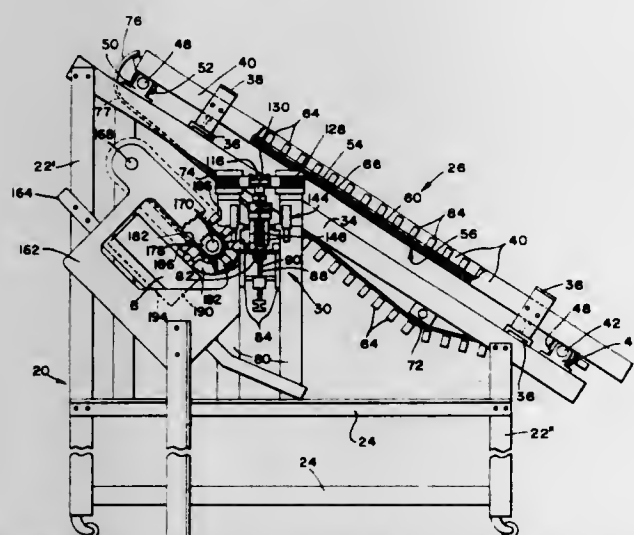
17 Claims



In a machine for continuously packaging tubular rivets in end-to-end configuration, a succession of rivets is fed down a tube, with the assistance of a stream of compressed air, to a packaging station provided by the nip of two packaging rollers each having a resilient rubber surface. Two packaging tapes are fed between the packaging rollers, one tape on each side of the succession of rivets, to enclose the rivets. At least one of the tapes has an adhesive surface which is pressed into contact with the other tape by the packaging rollers. A narrow masking tape may be included to protect the column of rivets from contamination by the adhesive, if required. One of the packaging rollers is provided with a perforator blade to perforate the package into lengths each equal to the circumference of the roller. The perforated package emerging from the packaging rollers passes through the nip of a pair of stripper

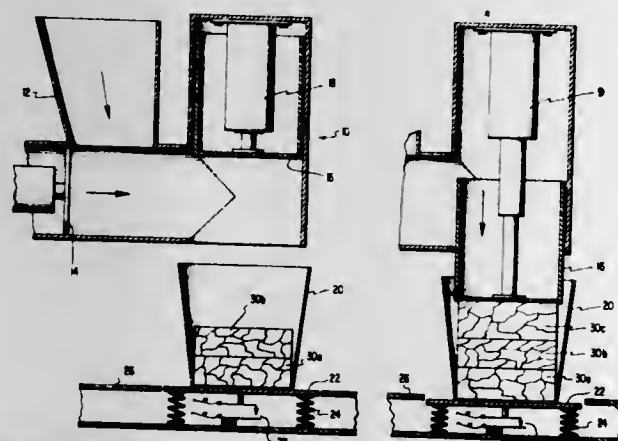
rollers, which rotate at a higher peripheral speed than the packaging rollers and are spaced from the packaging rollers by a distance greater than one length of perforated package but less than two lengths of perforated package. The stripper rollers separate each length of package away from the following one at the perforations between them. The rivet feed tube is provided with rivet sensing devices which are connected to control the drive to the packaging rollers, so that the packaging rollers operate only when there is a column of rivets in the feed tube sufficient to fill at least one length of package.

3,611,672
CARTON FILLING MECHANISM
Peter Pilat, 28 Shawnee Ave., Rockaway, N.J. 07866
Filed Sept. 4, 1969, Ser. No. 855,325
Int. Cl. B65b 57/20
U.S. Cl. 53—59 16 Claims



A machine for sealing coin rolls wrapped in film and loading the rolls into a box having a first conveyor assembly with heaters disposed on each side to engage the film twisted at the wrapped ends so as to seal the rolls closed, and a transverse conveyor assembly which conveys the sealed rolls from the first conveyor assembly to the box loading station where selected numbers of rolls are fed into a box and a gate responds to a particular count to divert the coin rolls to the next box to be filled.

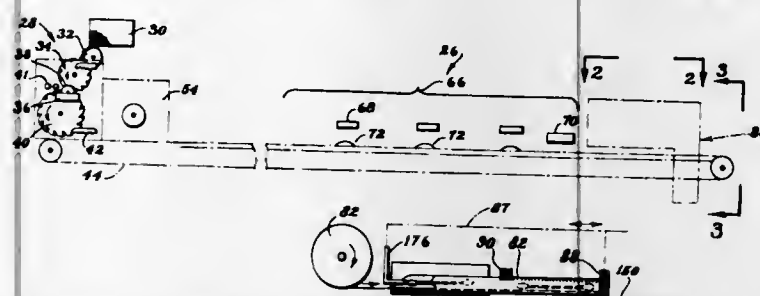
3,611,673
MATERIAL VOLUME SENSING DEVICE
George A. Carkhuff, Somerville, N.J., assignor to Research-Cottrell, Inc., Bridgewater Township, Somerset County, N.J.
Filed May 19, 1969, Ser. No. 825,802
Int. Cl. B65b 1/24, 3/26, 57/10
U.S. Cl. 53—74 1 Claim



A discharge volume sensing device for a material processing apparatus having a reciprocal feeding ram. A movable material receiving support is biased to a normal

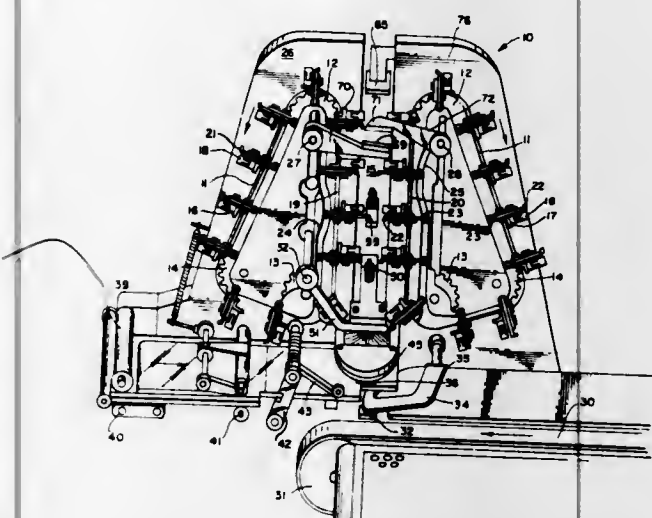
position against the load of material discharged thereon and is deflected by the ram when the volume of material thereon reaches a predetermined level. Deflection of the support is sensed by a switch associated therewith.

3,611,674
APPARATUS AND METHOD FOR FORMING AND PACKAGING COTTON SWABS
Samuel W. Glickston, 111 S. Marion Place, Rockville Centre, N.Y. 11570
Filed Jan. 21, 1969, Ser. No. 792,460
Int. Cl. B65b 9/06, 51/30, 61/24
U.S. Cl. 53—182 1 Claim



A metered quantity of dry cotton is applied to sticks and, using a binder material, is subsequently shaped into swabs by rollers. A conveyor transports the shaped swabs through a binder curing zone to apparatus for individually packaging the swabs.

3,611,675
APPARATUS FOR WRAPPING ARTICLES
Erhardt Walther, 10 Konradstr., 855 Forchheim, Germany
Filed Apr. 25, 1969, Ser. No. 819,254
Claims priority, application Germany, Apr. 25, 1968, P 17 61 261.2
Int. Cl. B65b 11/08, 11/54, 49/08
U.S. Cl. 53—224 7 Claims



The wrapping apparatus comprises a pair of spaced endless belts each having resilient gripping members so that opposed gripping members grip an article therebetween and move a series of articles upwardly between the belts along a vertical folding path. A wrapper blank is positioned over the top face and at least two side faces of each article and the article is then moved between a pair of gripping members. As the article is moved along the folding path various folding elements engage portions of the wrapper blank extending over faces of the article to move these portions against faces of the article to completely wrap the blank around the article. The elements for folding portions of the wrapper blank are mounted on the apparatus for movement laterally into the folding path and in the direction of travel of the articles. The folding elements may also be movably mounted on the gripping members and cammed into folding relationship with

the wrapper blank portions at predetermined times. As the wrapped articles emerge from the upper end of the folding path each article is pushed laterally therefrom onto a conveyor belt.

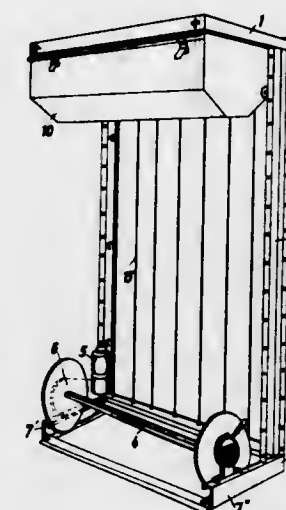
ERRATUM

For Class 55—240 see:
Patent No. 3,611,592

3,611,676
PROCESS FOR THE SEPARATION OF GAS MIXTURES
Gilbert Christen, Lyon, and Marcel Lefort, Caluire, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Feb. 11, 1969, Ser. No. 798,468
Claims priority, application France, Feb. 12, 1968, 139,541
Int. Cl. B01d 59/12 3 Claims

Membranes made of vinyltrialkylsilane polymers are useful for the separation of gaseous mixtures by selective diffusion of the mixture therethrough.

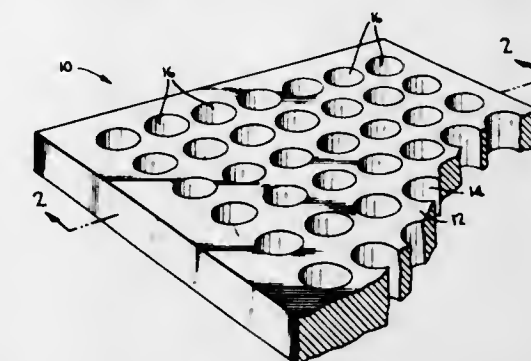
3,611,677
AUTOMATIC ROLLER BAND AIR FILTER ASSEMBLY
Gerhard Max Neumann, Berlin, Dahlem, Germany, assignor to Deibag-Luftfilter GmbH, Berlin, Germany
Filed Nov. 13, 1968, Ser. No. 775,281
Claims priority, application Germany, Nov. 27, 1967, D 37,034
Int. Cl. B01d 46/18
U.S. Cl. 55—354 5 Claims



In automatic roller band filter assemblies for filtering air, the filter band passes from one bobbin in an upper portion of the assembly through an intermediate sealed filter portion to a driven bobbin in a lower portion of the assembly with separate adjustable deflecting units in the upper and lower portions.

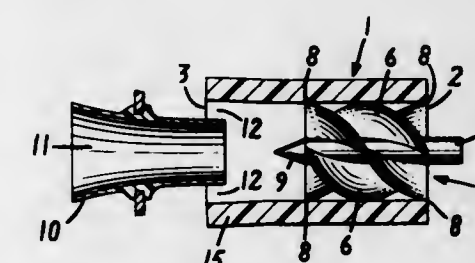
3,611,678
ACTIVATED CARBON FILTER
Herbert K. Holden, Bon Air, Va., assignor to American Filtrona Corporation, Richmond, Va.
Filed Oct. 3, 1968, Ser. No. 764,788
Int. Cl. B01d 53/04 9 Claims

A bonded charcoal filter and a method for making the same are disclosed. The filter contains fine powdered activated charcoal and a thermosetting or thermoplastic resin binder, and is a self-contained disposable filter having voids in sufficient amount to provide a pressure drop of about 0 to about 0.5 inch of water at a face velocity



charging to a mold, applying sufficient pressure, and curing the resulting filter.

3,611,679
AIR CLEANER
David B. Fall, Roslyn Estates, N.Y., assignor to Fall Corporation, Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 646,903, June 19, 1967, and a continuation of application Ser. No. 738,371, May 31, 1968. This application Jan. 29, 1970, Ser. No. 7,390
Int. Cl. B01d 45/12
U.S. Cl. 55—457 16 Claims



Air cleaners are provided particularly suited for use as one of an array of closely spaced air cleaners for efficiently removing contaminant particles from relatively high velocity air with a low pressure drop. The air cleaner has a tubular body, with an inlet at one end, an outlet at the opposite end, and a central passage therebetween, and a deflector coaxially mounted in the passage adjacent the inlet creating a vortex stream of influent air in the passage, with a generally coaxial tubular outlet member positioned within the outlet end of the tubular body, separating the contaminant particles at the periphery from relatively clean air at the core of the turbulent flow of air through the passage.

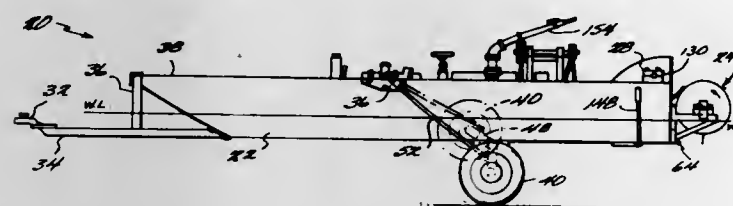
In one embodiment, the passage has an inside diameter of less than about one inch, and the vanes of the deflector extend along the central passage for a length within the range from about 50% to about 60% of the total length of the passage.

In another embodiment, the pitch length in inches of the vanes of the deflector and the inside diameter in inches of the central passage of the tubular body have a relationship that is expressed according to the equation $Pl = Kd^{0.8}$, in which K is within the range from about 2.2 to about 3.2.

3,611,680
MACHINE FOR REMOVING VEGETATION FROM WATERWAYS
Ray V. Hendrickson, 235 1/2 33rd St., West Palm Beach, Fla. 33407
Filed May 2, 1969, Ser. No. 821,448
Int. Cl. A01d 45/08 10 Claims

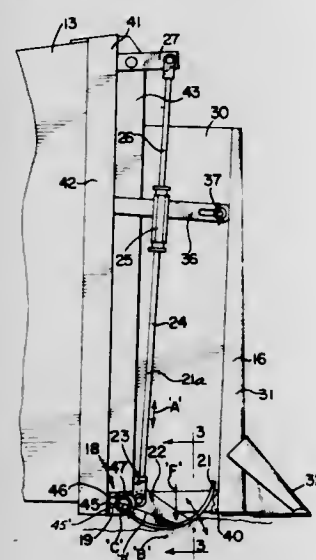
An apparatus for removing vegetable matter from waterways comprises a hull having an eccentric rotary rake which gathers vegetation from the waterway, a

shredder which receives the vegetation from the rake and shreds the vegetation so that it can be easily disposed of, a hopper into which the shredded vegetation is deposited and a pump connected to the hopper which picks up the shredded vegetation and ejects it through a nozzle



onto the shore, barge or other suitable means. The hull is self-propelled by water jets and is provided with retractable wheels so that the hull can be towed to and from the waterway after which the wheels are retracted so that they will not interfere with the operation of the apparatus even in extremely shallow water.

3,611,681
AUTOMATIC UNIT HEIGHT CONTROL FOR COTTON HARVESTER
Albert G. Blanton, Wyatt T. Gable, Jr., Paul J. Hulseberg, and Forrest L. Simpson, Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,052
Int. Cl. A01d 45/18
U.S. Cl. 56-10.4

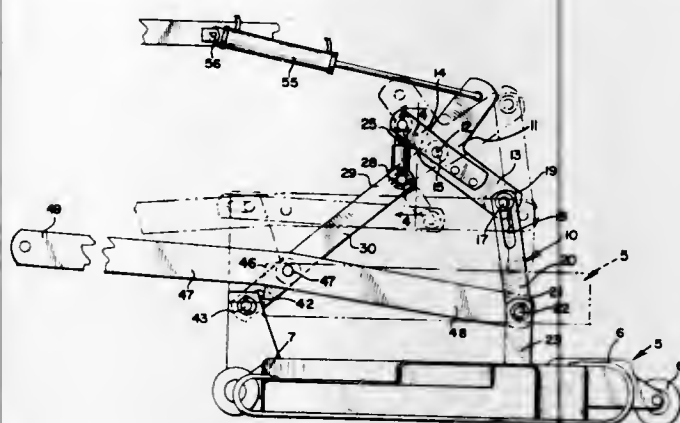


A ground contour sensing shoe for use with a system to automatically control the height of a harvesting unit movably mounted on a field-going carrier, the shoe having a pivotal connection to the harvesting unit and including a drag producing area of engagement with the ground which is located forwardly and below that connection to provide during operation a moment of rotation about the connection effecting a bias of the shoe toward the ground at the area of engagement to make the shoe less responsive to minor variations in soil texture and surface irregularities without substantially effecting its responsiveness to ground contour.

3,611,682
MOWER MOUNTING LINKAGE
Jerrold A. Isaacson, Lombard, Robert B. Swallow, Oaklawn, and Ross M. Lathrop, Downers Grove, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 6, 1970, Ser. No. 999
Int. Cl. A01d 35/26
U.S. Cl. 56-14.9

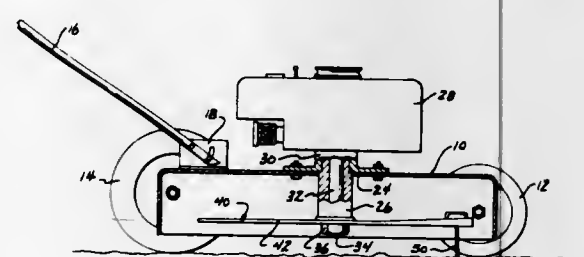
Self-leveling linkage which is effective to position a mower from the underside of a tractor by means of a

single rockshaft generally parallel with the ground. The linkage comprises front and rear lift links connected at their upper ends to opposite ends of a libratory lever which is connected intermediate its ends to the rockshaft. The lower ends of the lift links are connected to the front and rear ends of the mower and the rear links are pivoted intermediate their ends to a pair of draft links intermedi-



ate their ends. The draft links are pivoted at their forward ends to the forward end of the mower coaxial with the lower ends of the front lift links and extend over the mower and have rear end portions pivoted to the tractor behind the mower. The amount of lift of the front of the mower by the front links is concurrently equalized by the linkage in lifting the rear end of the mower.

3,611,683
ROTARY LAWNMOWER ATTACHMENT
Eskil W. Swenson, Rockford, Ill., assignor to Swenson Spreader & Mfg. Co., Lindenwood, Ill.
Filed Mar. 30, 1970, Ser. No. 23,678
Int. Cl. A01d 51/00
U.S. Cl. 56-16.1

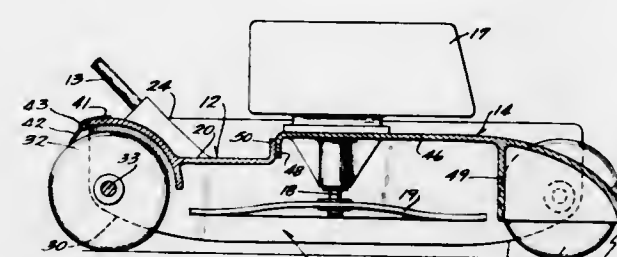


The attachment includes a horizontal carrier bar mounted at its center to the vertical power output shaft of the rotary lawnmower, in place of the usual cutter blade. A single rake finger is resiliently mounted at one end of the carrier bar for tilting movement both radially and circumferentially of the direction of rotation of the carrier bar. The carrier bar is formed with two edges bent upwardly to retain the resilient mounting means and with a relatively large opening to balance the attachment and prevent buildup between the upwardly bent edges.

3,611,684
SAFETY SIDEWALL LAWN MOWER
Finn T. Irgens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation of application Ser. No. 609,076, Jan. 13, 1967. This application Feb. 20, 1970, Ser. No. 14,713
Int. Cl. A01d 35/26
U.S. Cl. 56-17.1

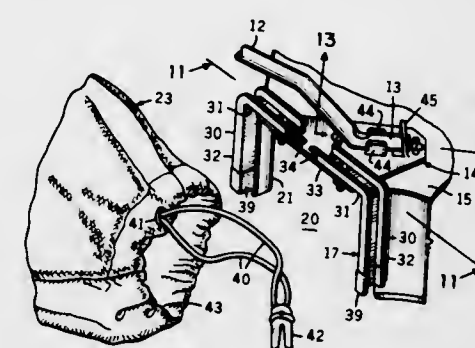
Disclosed herein is a rotary mower with safety sidewalls which depend from a blade housing section, which are at a constant clearance from the ground and which afford protection from ejection of missiles from beneath

the mower. The sidewalls have wheel means for transporting the mower along the ground. The engine and blade are supported on a housing section which is located



between the sidewalls and is vertically adjustable relative to the sidewalls to vary the height of grass cut. A roller between the rear wheels prevents rearward ejection of missiles.

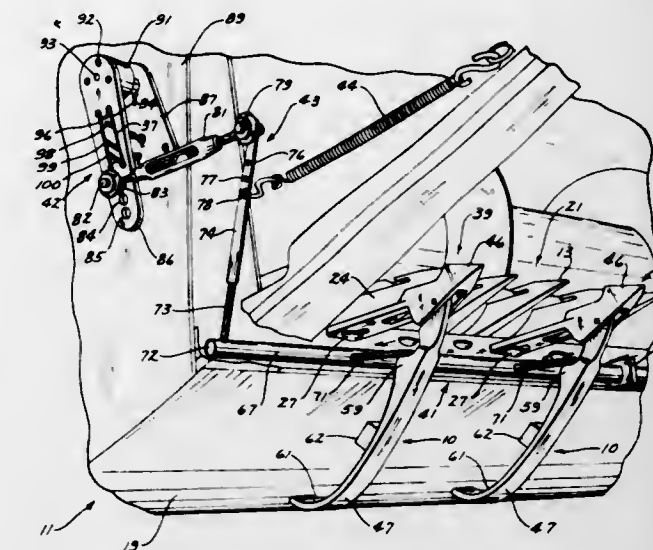
3,611,685
GRASS CATCHER ASSEMBLY
Stanley F. Allina, Ladue, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.
Filed Dec. 4, 1967, Ser. No. 687,700
Int. Cl. A01d 53/06
U.S. Cl. 56-202



The grass catcher bag assembly includes an adaptor plate attached to the lawn mower housing above the discharge orifice, and a single cantilever support arm constructed in two parts and attached to the adaptor plate. The adaptor plate includes an overhanging support member to which angle-shaped frames are adjustably attached. The angle-shaped frames and the adaptor plate cooperate to form a substantially U-shaped frame in register with the discharge orifice and adapted to receive the open end of the bag. The other end of the bag attaches to the outer end of the cantilever support arm. The adaptor plate includes a pair of tabs engaging the inner end of the support arm and a socketed lug spaced from the tabs and engaging the inner end of the support arm to provide a couple attachment means securing the support arm to the adaptor plate.

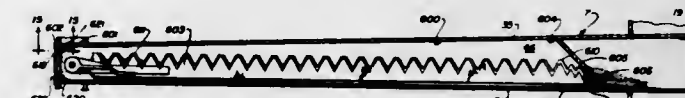
3,611,686
AUTOMATIC HEADER CONTROL APPARATUS
Ferne R. Van Antwerp, Plano, Iowa 52581
Filed June 13, 1967, Ser. No. 645,740
Int. Cl. A01d 67/00

This invention relates to harvesters in general, and more particularly to the ground engaging feelers or sensors associated with automatic header controls. The sensors of the present invention are independent of each other, are mounted on the cutter blade finger guards, and are also independently movable relative to a rock shaft or sensor follower. An ancillary phase of the invention relates to an improved mechanically operable electric switch



simultaneous contact with either of a pair of spaced bars electrically connected to a main header control switch.

3,611,687
KNIFE STORAGE DEVICE
John A. Walker, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 8,794
Int. Cl. A01d 55/02
U.S. Cl. 56-271

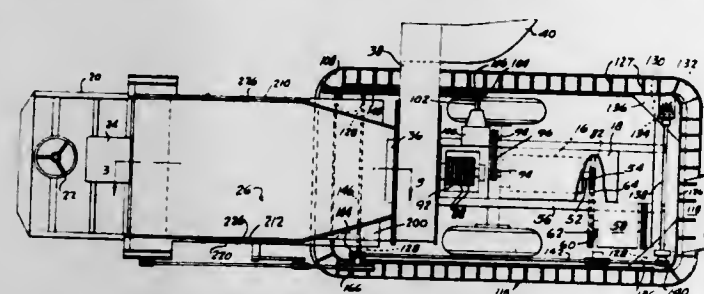


A mower conditioner having a frame with an elongated transverse tapered beam member of box-section forming a storage compartment for a spare long sickle as a replacement for the sickle of the cutting device at the front end of the harvester, an opening is provided at the narrow end of the beam for inserting and withdrawing the sickle and a guide wall is provided at the inner end of the compartment to hold the sickle from excessive bouncing. A closure cover is secured to the open end of the beam and has a pair of embossed lugs thereon fitting into the opening for abutment with opposite walls of the beam to prevent the spring pressed pivoted cover from turning to open position.

3,611,688
NUT HARVESTING MACHINE
Morton F. Phelps, Little Rock, Ark., and William D. Phelps, Jr., 9417 New Benton Highway, Little Rock, Ark. 72204; Morton E. Phelps and William D. Phelps executors of said Morton F. Phelps, deceased
Filed Sept. 13, 1968, Ser. No. 759,717
Int. Cl. A01g 19/00

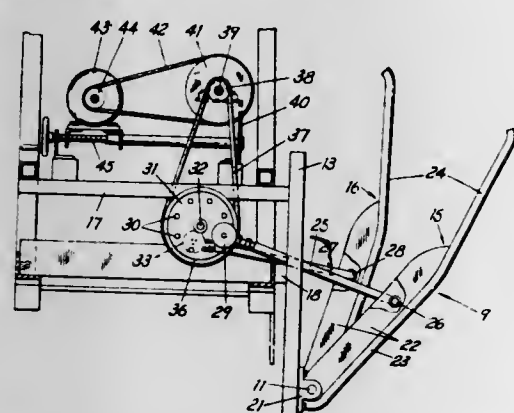
A self-propelled nut harvesting machine, for picking up nuts along with unwanted trash from the ground and separating the nuts from the trash, including a wheeled chassis with a power source, a nut receiving nozzle, a trash separating chamber communicating at one end with the nozzle and at the other end with suction means, a trash discharge outlet on the suction means, and an air lock connected to the separating chamber for receiving

and discharging clean nuts. The separating chamber includes means for moving the entering stream of air containing nuts and trash vertically from the nozzle, means for turning said stream to move horizontally toward the suction means, a baffle for reversing a portion of the



stream at increased velocity to flow oppositely and upwardly and thereby separate and carry the trash away from the nuts, and duct means for again reversing said portion of the stream carrying trash to flow toward said suction means.

3,611,689
BEATER ASSEMBLY FOR RASPBERRY HARVESTER
Albert W. Patzlaff, Holland, Mich., assignor to Blueberry Equipment, Inc., South Haven, Mich.
Filed May 25, 1970, Ser. No. 41,124
Int. Cl. A01g 19/00
U.S. Cl. 56—330 11 Claims

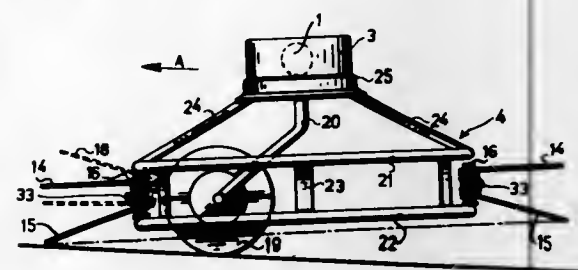


A mobile row crop straddling harvester has beaters pivoted to swing inwardly against opposite sides of the crop. The beaters on one side are staggered longitudinally behind the beaters on the other side. All of the beaters are formed of longitudinally extending and vertically spaced beater rods. The beaters on each side consist of vertically spaced upper and lower beater sections. Both sections are oscillated by a common drive, and the lower section has a single amplitude drive pin. The upper section is driven at a greater amplitude, and its drive pin is angularly adjustable to drive the upper beater in selectively different leading or trailing relation with respect to its associated lower beater section. The beaters on opposite sides engage the crop successively; and the action produces undulating, vertically irregular, bending or whipping movement of the crop canes engaged by the beater bars.

3,611,690
AGRICULTURAL IMPLEMENT SUCH AS A HAYMAKER
Petrus Wilhelmus Zweegers, Nieuwendijk 46, Geldrop, Netherlands
Filed June 2, 1970, Ser. No. 42,774
Claims priority, application Netherlands, June 5, 1969, 6908537; July 11, 1969, 6910757
Int. Cl. A01d 81/00
U.S. Cl. 56—366 15 Claims

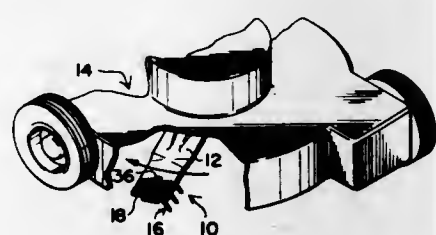
The invention relates to an agricultural implement such as a haymaker, with one or more tine carrying wheels which rotate in a forwardly inclined plane. The tines are

pivotally connected to the wheels and are held outwards by centrifugal force when the wheel rotates. But when the wheel is stopped, the tines pivot upwardly under the action of a spring.



The tines may be adjustable and their operative position may be limited by stops.
In an implement with two adjacent tine carrying wheels, a crop separation board or rack may be mounted between and forwardly of the wheels.

3,611,691
RAKE ATTACHMENT FOR ROTARY POWER MOWER
Orvel Howard, P.O. Box 222, Rock Falls, Ill. 61071
Filed May 28, 1970, Ser. No. 41,382
Int. Cl. A01d 81/00
U.S. Cl. 56—367 10 Claims

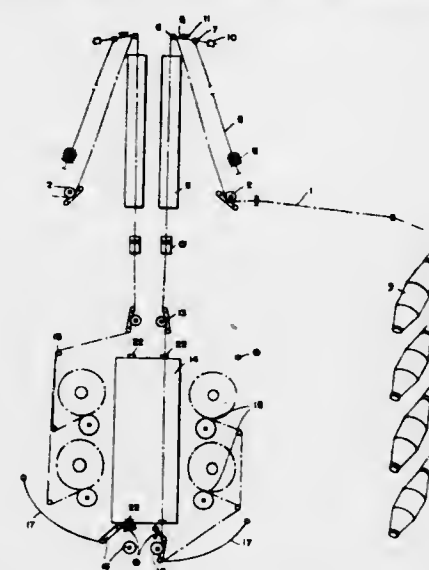


A plurality of spaced parallel tines project beneath the trailing edge of a rotary motor blade. Each tine includes a substantially straight generally horizontal portion which is secured to the undersurface of the mower blade by a clamping mechanism. The tine projects from the horizontal portion downwardly and at an angle to the horizontal mower blade. Each tine also includes a tip portion adjacent the end of the horizontal portion which is bent to lie in a plane perpendicular to the longitudinal axis of the horizontal portion. This end tip is secured by a clamping mechanism to prevent rotation of the tine within the clamping mechanism. Various clamping mechanisms include at least one plate having spaced parallel channels which accommodately receive the horizontal portions of the tines. The tines may be either received between two such plates or clamped between the undersurface of the mower blade and a single plate. A notch in one of the channeled plates accommodates the bent tip at the end of the horizontal portion and thus prevents rotation of the tine. In an alternate embodiment, two tines are joined by a single reach at the distal end of the horizontal portions which acts as a stabilizer in lieu of the bent tip portions.

3,611,692
FALSE TWIST CRIMPING APPARATUS
Hermann Kubler, Remscheid-Lennep, and Heinz Treptow, Ennepetal-Milspe, Germany, assignors to Barmag Barmmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Filed July 18, 1969, Ser. No. 843,142
Claims priority, application Germany, Sept. 27, 1968, P 17 85 466.9; Dec. 31, 1968, P 18 17 617.5
Int. Cl. D02g 1/02; D02j 13/00; D01h 7/92
U.S. Cl. 57—34 14 Claims

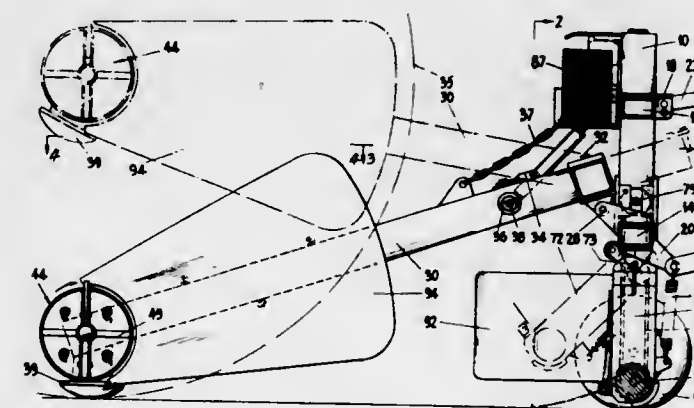
False twist crimping device for yarns, including filamentary materials such as those made of artificial fibers, com-

prising false twist units, first and second yarn-heating devices preceding and following each unit, winding devices disposed after the false twist units and adjacent the second



heating device with optional second heating device by-pass, and yarn delivery means arranged laterally adjacent to or on the machine.

3,611,693
ROLL FORMING FODDER HARVESTERS
William Richard Clifford Geary, Flat 4, 18 Kensington Road, South Yarra, Victoria, Australia
Filed Dec. 29, 1969, Ser. No. 888,354
Int. Cl. A01d 39/00
U.S. Cl. 56—343 14 Claims

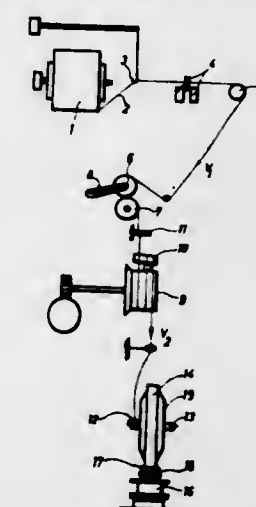


The invention relates to improvements in a roll forming fodder harvester of the kind adapted to lay a plurality of flexible members longitudinally beneath a windrow of mown fodder and then to wind the fodder together with the flexible members about at least one transversely arranged rotatable core member to form a roll. The core member is supported so that it may be raised and lowered and also moved approximately axially, i.e. laterally towards and from the windrow.

3,611,694
METHOD OF AND APPARATUS FOR THREADING IN THREADS ON DRAWTWISTING OR DRAW-WINDING MACHINES, AND IMPROVED KNOT USED IN THE PERFORMANCE OF SAID METHOD
Rudolf Jaeggli, Bern, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland
Filed Aug. 1, 1969, Ser. No. 846,727
Claims priority, application Switzerland, Aug. 8, 1968, 12,118/68
Int. Cl. D01h 1/22, 1/30, 15/00
U.S. Cl. 57—34 25 Claims

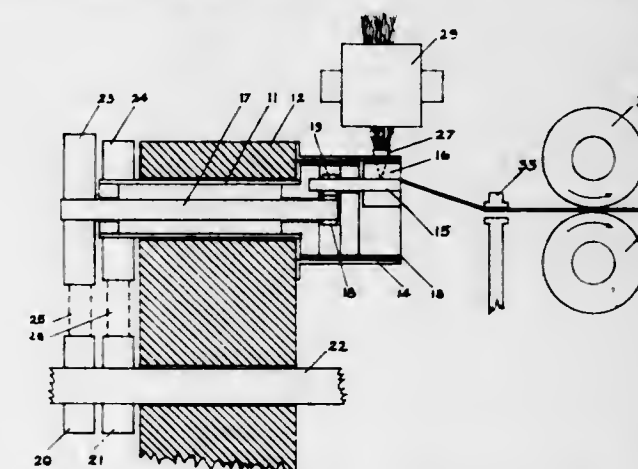
There is disclosed an improved method of and apparatus for threading in threads on drawtwisting or drawwinding machines or similar machines. According to the

invention the thread is severed between an undrawn creel package which is becoming exhausted and a thread feed mechanism and the thread end running or extending towards the feed mechanism is held in a ready or preparatory position. The creel package which is being exhausted is replaced by a full creel package and a connection is established between the thread end of the full creel pack-



age and the aforementioned thread and extending towards the feed mechanism. According to an important aspect of the invention, the drawing ratio imparted to the thread is reduced during such time as the previously established thread connection passes through a drawing zone. There is also disclosed an improved knot for the connection of the thread ends which provides one technique of reducing this drawing ratio without the aid of mechanical means.

3,611,695
OPEN END SPINNING
Hugh M. Brown, P.O. Box 1223, Clemson, S.C. 29631
Filed Jan. 22, 1970, Ser. No. 4,811
Int. Cl. D01h 1/12
U.S. Cl. 57—58.89 16 Claims



Textile apparatus capable of spinning, that is, drafting and twisting, yarn directly from staple fiber in conventional untwisted sliver form. Such apparatus includes a staple fiber assembly device having a relatively slowly moving endless fiber carrying surface such as a roll to be orbitally rotated about an axis at high speed for intermittently acquiring to its surface a relatively few fibers positively extracted from the end of a sliver at a fixed fiber transfer point on a more or less smooth surface for a permanent nipping contact with fiber carrying surface to intermittently remove a predetermined amount of fibers from the end of the sliver and transfer them directly and positively onto the fiber carrying surface in overlapping configuration to draft them. The transferred fibers are slowly advanced by the fiber carrying surface to a yarn transfer point on the carrying surface, maintaining a firm control grip between the fiber carrying surface and the smooth surface, while moving the acquired fiber assembly

in a circular path on the smooth surface, creating a rapidly rotating continuous fiber holding point toward which drafted fibers in overlapping configuration are continuously advanced on the slowly moving fiber-carrying surface. The twisting phase in which the fibers are twisted into yarn takes place in a spinning zone extending from the yarn transfer point on the fiber carrying surface and a stationary yarn delivery means, such as a pair of cooperating delivery rolls, providing a yarn holding point spaced from the yarn transfer point. The fiber carrying roll thus serves simultaneously as fiber detaching means to remove fibers at the fiber transfer point from the end of the input sliver and as a positive nip at the yarn transfer point to provide a suitable tension in the twisting zone. The completed yarn passing from the yarn delivery rolls may be wound into a package of any desired size and configuration.

3,611,696 TRANSMISSION MEANS FOR ROTATING SPINDLES

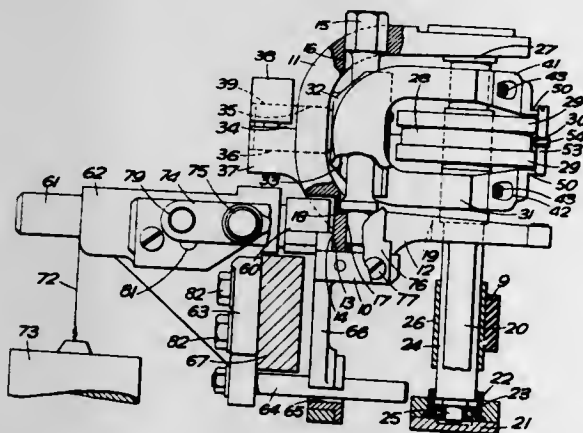
Denis Albert Edward Mattingly, Enfield, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Apr. 3, 1970, Ser. No. 25,532

Int. Cl. D01h 7/46, 7/92

U.S. Cl. 57—77.45

8 Claims



A transmission for rotating a spindle includes a wheel the periphery of which engages the spindle and force applying means for holding the spindle in engagement with the wheel periphery. The force applying means is adjustably mounted about an axis extending transverse to the spindle so that the axis about which the spindle rotates can be adjusted.

3,611,697 AIR BEARING BRAKE FOR ROTATING SPINNING RING

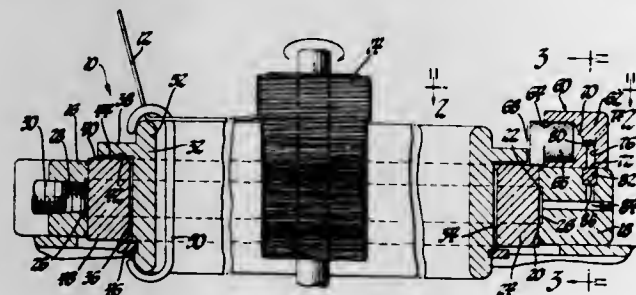
William H. Greb, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1969, Ser. No. 869,233

Int. Cl. D01h 7/56

U.S. Cl. 57—124

4 Claims



A textile spinning ring having a gas bearing supported traveller ring is provided with a gas-operated brake. The brake is powered from the gas bearing supply plenum and is maintained in the disengaged position through a venturi effect.

3,611,698 HEAVY DENIER CRIMPED AND ENTANGLED YARN

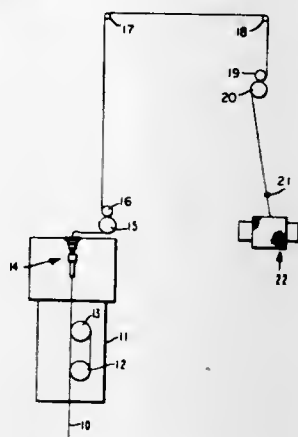
Murray Herman Horn, Wilmington, and Thomas Larson Nelson, Georgetown, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1970, Ser. No. 16,517

Int. Cl. D02g 1/16, 3/22, 3/24

U.S. Cl. 57—140 R

10 Claims



Heavier denier crimped yarns of continuous filaments are disclosed wherein filament crimp and entanglement provide a combination of elastic and stabilized bulk which is particularly desirable for tufted, cut-pile fabrics. The yarn bulk and cohesiveness is such that there is little blooming or expanding of the cut ends and the tufts remain upright, so that good tuft definition is maintained when carpets are subjected to heavy traffic. An economical fluid jet process for producing the novel yarn is disclosed.

3,611,699 FIBROUS YARN PRODUCT

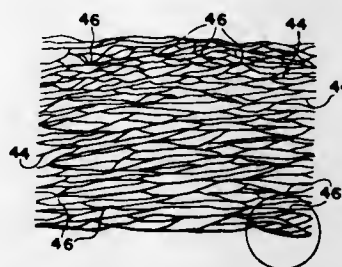
John M. Wininger, Jr., and August K. Meyer, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 624,564, Mar. 20, 1967. This application Mar. 8, 1968, Ser. No. 711,775

Int. Cl. D02g 3/02, 3/06

U.S. Cl. 57—140 R

4 Claims



A textile product manufactured from a cellular thermoplastic film which is slit into ribbons that are subsequently oriented to give them strength. Such ribbons when processed into woven fabrics or the like fracture into interconnected filaments having the appearance and hand of yarn but having sufficient coherency that twisting is not required.

3,611,700 PROCESS FOR OBTAINING A FIBER YARN FROM METAL COATED FILM

Antoine Vivien, Paris, France, assignor to La Cellophane, Societe Anonyme, Paris, France

No Drawing. Filed Sept. 19, 1969, Ser. No. 859,556

Claims priority, application France, Sept. 25, 1968, 167,498

Int. Cl. D02g 3/02

U.S. Cl. 57—157 R

3 Claims

A process for the preparation of a fiber yarn which contains metal coated fibers, which process comprises cutting a metal coated film into extremely fine strips, which metal coated film consists of a metal coating on a

base selected from the group consisting of artificial and synthetic materials, gathering the resulting fine strips into bundles, combining yarns selected from the group consisting of natural and synthetic yarns with said bundles of fine strips of metal coated fiber, cutting the resultant bundles of metal coated fiber and yarn into fibers, and gathering said fibers into a rove of fiber suitable for transformation into a yarn.

3,611,701 PROCESS FOR THE PRODUCTION OF DYED CRIMPED YARNS

Herbert Scherzberg, Dormagen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 20, 1969, Ser. No. 378,563

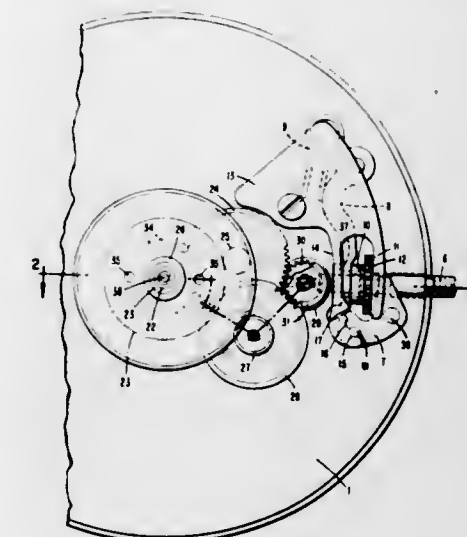
Claims priority, application Germany, Nov. 29, 1968, P 18 11 718.5

Int. Cl. D02g 1/02

U.S. Cl. 57—157 TS

3 Claims

The invention relates to a texturing process for the production of dyed, crimp yarns from endless filaments by the false-twist method. The endless filaments consist of synthetic polymers, such as high-molecular weight linear polyamides or high-molecular weight linear polyesters. The process is carried out by making up the endless synthetic filaments issuing from a spinning station by knitting into a tubular structure, being dyed in that form, the filaments then being stretched and false-twist-crimped. The knitting machine required to produce the tube is arranged immediately beneath the spinning station. The false-twisting is effected at temperatures of above 100° C.



3,611,704 UNIVERSAL CLOCK WITH CALENDAR AND ANNUNCIATOR MEANS

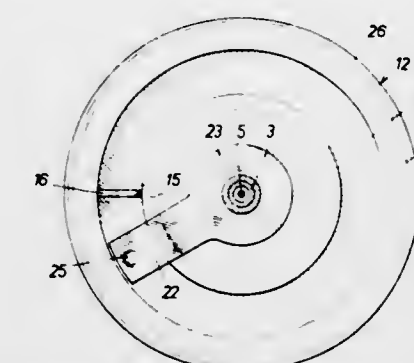
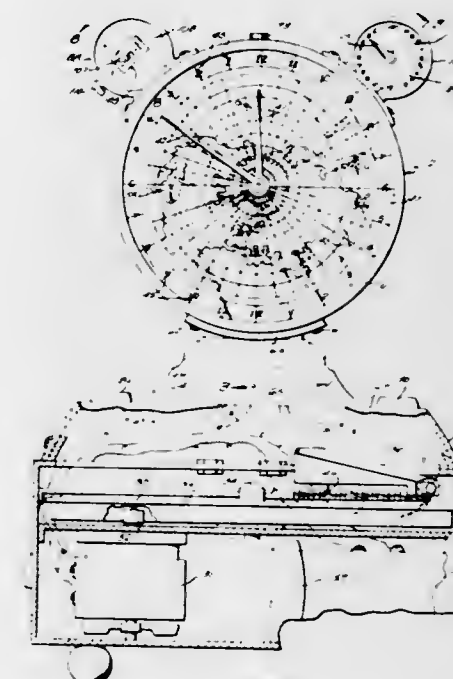
Gorgonio T. Guintos, Hinobaan, Negros Occidental, Philippines

Filed Dec. 5, 1969, Ser. No. 882,531

Int. Cl. G04b 19/24

U.S. Cl. 58—44

6 Claims



3,611,702 ELECTRIC ALARM TIMEPIECE

Paolo Spadini, 88 Avenue Leopold-Robert, La Chaux-de-Fonds, Neuchatel, Switzerland

Filed May 8, 1969, Ser. No. 822,881

Int. Cl. G04c 21/16

U.S. Cl. 58—19

6 Claims

The alarm-hand pipe carries a switch contact embedded in a synthetic plastic contact wheel to expose one surface, the other contact of the switch being carried by the hour wheel to slide over the contact wheel and to make contact with the first contact when at the position of the latter. The dial supports the contact wheel against axial movement, and the only friction between the hour and contact wheels is that of the one contact sliding over the contact wheel.

3,611,703 WATCH FOR INDICATING TIME OF TWO GEOGRAPHIC ZONES

Jean-Louis E. Borel, Neuchatel, Switzerland, assignor to Synchron S.A. Neuchatel, Neuchatel, Switzerland

Filed Feb. 17, 1970, Ser. No. 12,046

Claims priority, application Switzerland, Feb. 20, 1969, 2,580/69

Int. Cl. G04b 19/22

U.S. Cl. 58—42.5

8 Claims

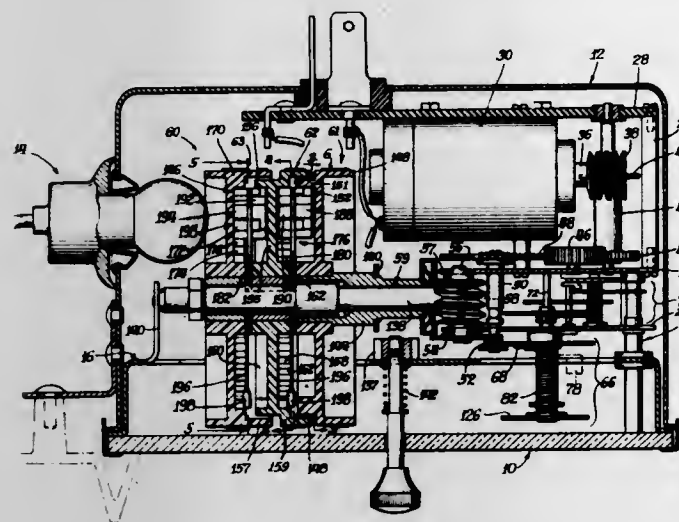
Besides the conventional hour hand, the watch comprises an extra hour hand driven together with the con-

A clock consists of a pair of rotary dials and cooperating clock hands. One dial represents the northern hemisphere of the earth and the other dial the southern hemisphere. A drive motor and gearing power the dials and clock hands in such a manner that accurate time is indicated at various degrees of longitude in both hemispheres. A calendar indicator is coordinated with the clock gearing. The base of the clock contains an annunciator which may sound the time at various points on the earth.

3,611,705
DIGITAL CLOCK WITH NOVEL INDEXING DRUMS
 Emil J. Niznik, Lake Geneva, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
 Filed Feb. 2, 1970, Ser. No. 7,469
 Int. Cl. G04b 19/30

U.S. Cl. 58—50

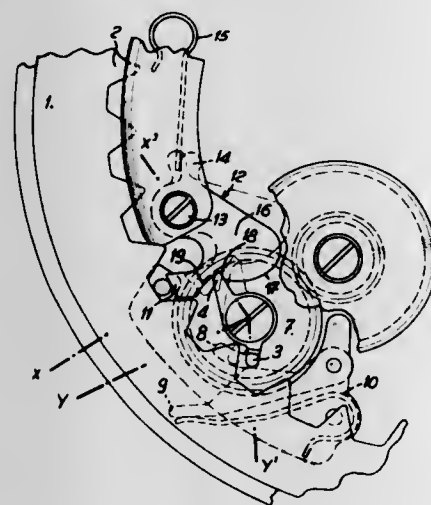
7 Claims



A digital clock having a plurality of drums showing the hours and minutes, and a Geneva movement having gear elements at the periphery of the drums, for greater accuracy and positioning of the drums.

3,611,706
CALENDAR WATCH
 Raymond Polo, La Chaux-de-Fonds, Switzerland, assignor to Fabrique Movado and Fabrique des Montres Zenith S.A., La Chaux-de-Fonds and Le Locle, Switzerland
 Filed Sept. 29, 1969, Ser. No. 861,842
 Claims priority, application Switzerland, Oct. 17, 1968, 15,521/68
 Int. Cl. G04b 19/24
 U.S. Cl. 58—58

8 Claims



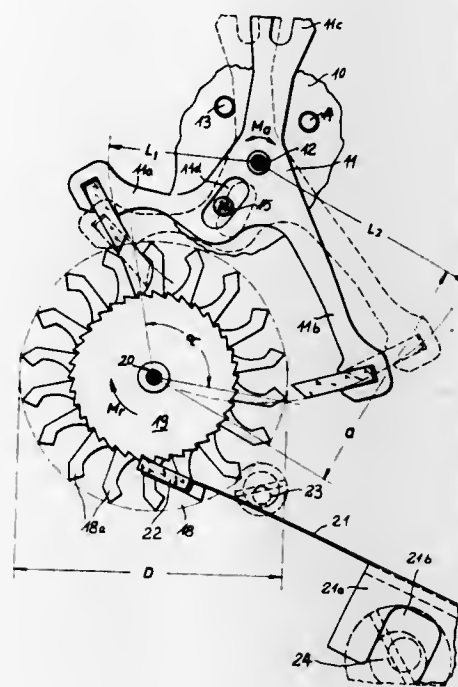
A calendar watch having a momentary action date-indicating mechanism which is controlled jointly by kinematically interconnected driving and locking means which include a spring-loaded pivoting locking lever and a rotatable beak co-operating with the latter and with an internally toothed date-indicator ring. A driving wheel revolving about the same axis as the beak drives the latter

by a pin-slot type of coupling, the beak having a projection in the form of a pin which co-operates with an arcuately-shaped slot extending through the driving wheel.

3,611,707
CONTINUOUS-SWITCHING DEVICE FOR ADVANCING THE WHEEL MECHANISM OF AN ELECTRIC CLOCK
 Gunther Scholz, Schramberg, Germany, assignor to Messrs. Gebrüder Jungshans G.m.b.H., Schramberg, Germany
 Filed Nov. 12, 1969, Ser. No. 875,646
 Claims priority, application Germany, Nov. 21, 1968, G 68 07 990
 Int. Cl. G04b 15/00

U.S. Cl. 58—116

3 Claims



Continuous-switching device advancing the wheel mechanism of an electric clock, which device comprises a movement-controlling oscillator preferably driven by electromagnetic means, a two-armed switching armature driven by this movement-controlling oscillator, and a ratchet wheel driven by the said switching armature, characterized in that the switching armature (11) is unequally armed and the ratio between the arm lengths is about 2:3, furthermore in that the armature aperture angle equals or exceeds 90°; and that the distance (a) between the switching armature pin (12) and the ratchet wheel pin (20) equals or exceeds a value of 0.8 times the diameter (D) of the ratchet wheel (18).

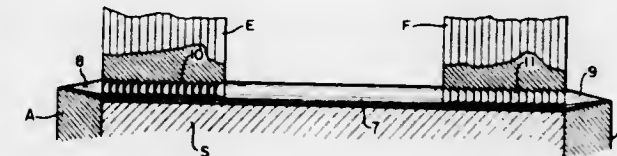
3,611,708
TWO-LEGGED WIRE STAPLE AND METHOD OF MANUFACTURE INVOLVING ROLL-FORMING
 Haden M. Moore and Robert H. Reed, Sterling, Ill., assignors to Redmore Products Company, Sterling, Ill.
 Filed Jan. 13, 1969, Ser. No. 790,801
 Int. Cl. B21g 7/02

U.S. Cl. 59—77

2 Claims

The opposite ends of a straight elongated round wire blank are roll-swaged between dies to provide conical points while the adjacent end portions are simultaneously ring-formed against other dies to produce annular ridges and grooves for greater holding power of the staple in wood, these latter dies serving incidentally to grip the blank to prevent endwise displacement relative to the first dies. A two-legged staple is then produced in a U-bending operation. This method involves lowest possible manufacturing cost and there is a big saving by virtue of the

virtual elimination of wasted material, while the resulting staple is of superior quality, easier to drive and with less

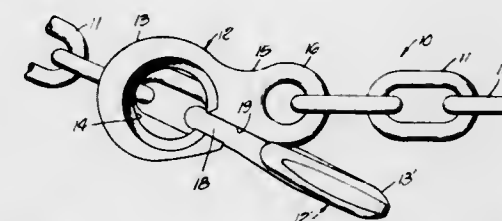


likelihood of splitting the wood, and possessing stronger holding power than other two-legged staples.

3,611,709
MULTIPLE PURPOSE LOG CHAIN
 Alvin S. Bilbey, 939 E St., Taft, Calif. 93268
 Filed Feb. 9, 1970, Ser. No. 9,530
 Int. Cl. F16g 15/00

U.S. Cl. 59—93

5 Claims

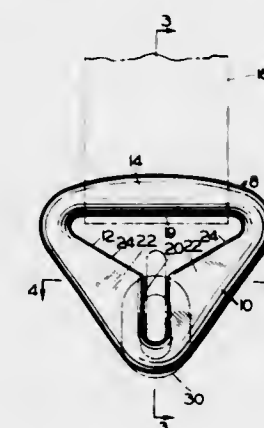


A log chain having similarly shaped hooks at either end contoured for interlocking assembly when shifted bodily while held in predetermined relative positions. The circular opening through each hook is sized to pass freely over the transverse width of the elongated chain links which are so proportioned that the three end links can be used to embrace another portion of the chain to lock it immovably in a fixed choke. Alternatively, the chain passes freely through the hook opening when used to provide a free running choke.

3,611,710
GRAB LINK
 Ralph A. Holmes, 11505 NE. Glisan, Portland, Ore. 97220, and Harold F. Holmes, Box 248, South Coos River, Coos Bay, Ore. 97420
 Filed Oct. 9, 1968, Ser. No. 766,140
 Int. Cl. F16g 15/00

U.S. Cl. 59—93

1 Claim

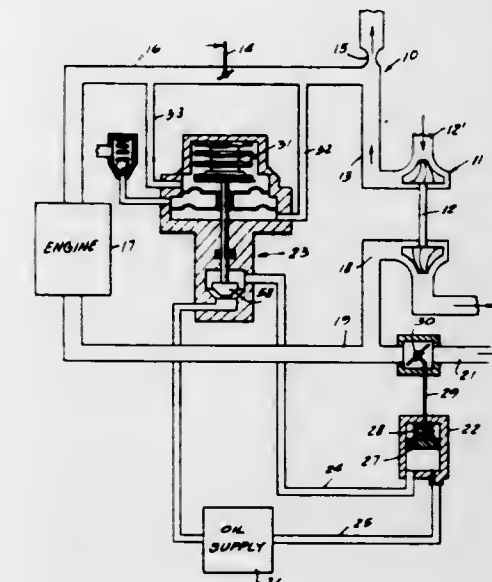


A grab link having a body portion with an opening therein shaped such that one defining wall of the opening forms a widened pulling edge for a strap adapted to be connected to the link. The body portion of the link has a slot leading from the opening arranged to detachably receive a chain link or the like in a grab connection. The grab link is intended to provide a quick connection between a strap-type sling or a load binding strap and a chain.

3,611,711
TURBOCHARGER CONTROL
 Milton W. Mueller, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio
 Filed Nov. 6, 1969, Ser. No. 874,496
 Int. Cl. F02b 37/00

U.S. Cl. 60—13

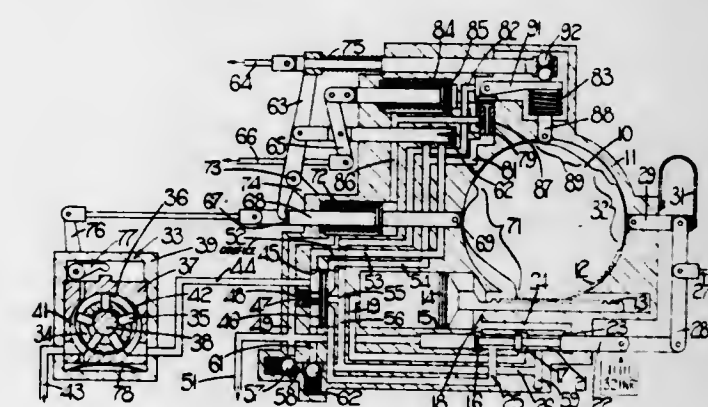
11 Claims



A control unit which is particularly useful in controlling the output pressure of a turbocharger in response to the manifold pressure with compensation for pressure drop at the throttle characterized by a reference unit disposed in the housing for the manifold pressure to act on and at least one diaphragm extending across said housing to apply the pressure differential between the manifold pressure and the output pressure of the turbocharger. In one embodiment, the reference unit includes a bellows of a predetermined volume of gas which schedules the displacement of the reference unit in response to the temperatures of the gases of the manifold. Another embodiment includes an additional diaphragm and valve means for applying additional pressures to the reference means to compensate for the altitude for the system to prevent overspeeding of the turbocharger.

3,611,712
CONTROL SYSTEMS FOR HYDRAULIC TRANSMISSION SYSTEMS
 Richard Joseph Ifield, Beecroft, South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
 Filed Oct. 29, 1969, Ser. No. 872,257
 Int. Cl. F16d 31/02
 U.S. Cl. 60—19

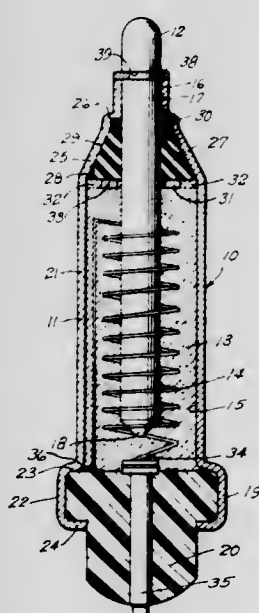
17 Claims



A control system for a hydraulic transmission system comprising a pump and motor having a common ported

member on which are formed cam surfaces the ported member being angularly movable by means of a servo piston and cylinder device, the cam surfaces controlling devices whereby the control of fluid reaching the piston and cylinder type servo device is achieved in accordance with the angular position of the ported member and thus the speed ratio between the hydraulic pump and motor of the transmission system.

3,611,713
INTERNAL HEAT MOTOR
Donald F. Janous, Chicago, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio
Filed Oct. 17, 1969, Ser. No. 867,283
Int. Cl. F03g 7/06
U.S. Cl. 60—23
11 Claims

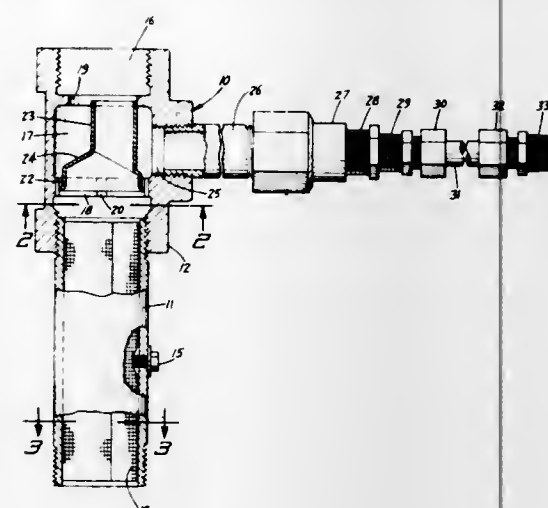


A thermal unit characterized by a piston disposed in a chamber in a housing which contains a temperature sensitive expansive material which expands at a prescribed temperature to cause movement of the piston in the housing. To prevent loss of the thermal material from the housing, a seal ring having a frusto-conical outer surface is disposed in a portion of the housing having a complementary frusto-conical surface so that pressures developed by the expanding material causes the seal ring to wedge into a tighter sealing engagement with a portion of the piston. The sealing arrangement is particularly adapted for use in a thermal motor which includes a heating coil having terminals for receiving an electrical current from a source outside of the unit to cause movement of the piston in response to an application of an electrical current.

3,611,714
POLLUTION REDUCING MUFFLER
Gust H. Bjork, 2601 Parkview Blvd., Robbinsdale, Minn. 55422
Filed Sept. 29, 1969, Ser. No. 861,676
Int. Cl. F01n 3/10
U.S. Cl. 60—30
7 Claims

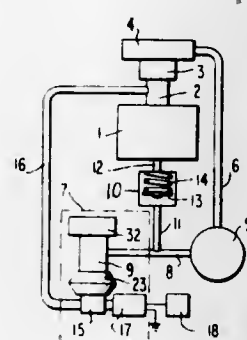
A pollution reducing muffler for internal combustion engines having a hollow tubular body having an exhaust gas inlet into one end and discharge from the other. The inlet end of the tubular body is desirably lined with foraminous material, such as metal screening. A noise reducing muffler may be attached to the discharge end. An aspirator connected to the breather tube of the crankcase

of the engine is disposed in series between the gas inlet and discharge. The muffler reduces pollution by promot-



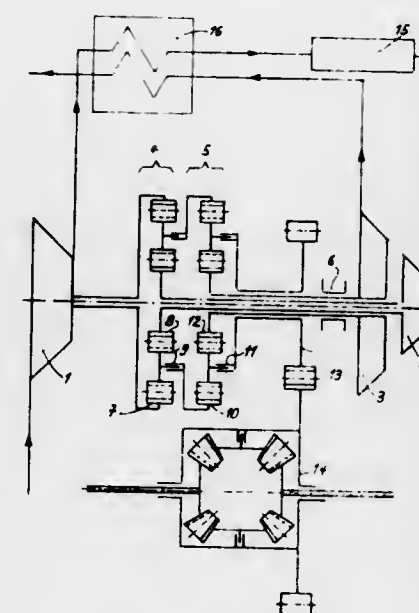
ing further combustion of combustible constituents of the exhaust gases.

3,611,715
DEVICE FOR CONTROLLING A SECONDARY AIR SUPPLY IN AN EXHAUST GAS PURIFYING DEVICE
Yasuo Tatsutomi, Hiroshima, and Tomoo Tadokoro, Kure, Japan, assignors to Toyo Kogyo Company Limited, Hiroshima, Japan
Filed Apr. 20, 1970, Ser. No. 29,970
Claims priority, application Japan, Apr. 18, 1969, 44/36,222
Int. Cl. F01n 3/10; F04b 49/08
U.S. Cl. 60—30
5 Claims



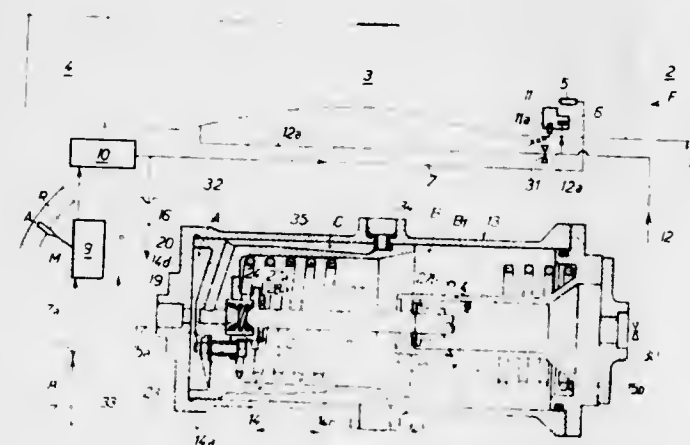
A device for controlling the air supply to an exhaust gas purifying device in which an air pump driven by an internal combustion engine is connected to the exhaust gas purifying device by a first conduit having a check valve means. A second conduit is connected at one end to said first conduit between the check valve means and the air pump and at the other end to the atmosphere and this second conduit has a valve between the second conduit and the atmosphere which acts in response to the engine speed or vehicle speed and thereby controls the secondary air supply to the exhaust gas system in cooperation with the check valve means by providing a by-pass to the check valve. An auxiliary passage is provided in this valve for communicating between the second conduit and the atmosphere, and an auxiliary valve having a larger resilient closing force than that of said check valve closes this auxiliary passage. If the engine speed is such that the valve in the second conduit is closed and the air pressure from the air pump exceeds a predetermined amount, the auxiliary valve is opened against the resilient closing force to hold the pressure in the conduits at the predetermined value.

3,611,716
GAS TURBINE WITH PLANETARY GEARS FOR HIGH OUTPUT IN MOTOR VEHICLES
Riccardo Ferrari, Al Fossato, Giubiasco, Switzerland
Filed June 27, 1969, Ser. No. 837,114
Claims priority, application Switzerland, July 4, 1968, 10,233/68
Int. Cl. F02c 7/02, 7/10, 9/02
U.S. Cl. 60—39.16 C
3 Claims



A gas turbine arrangement for motor vehicles in which a compressor is connected to expansion stages through two planetary gears. The planetary gearing is arranged so that the expansion stages rotate in opposite directions relative to the rotational motion of the compressor.

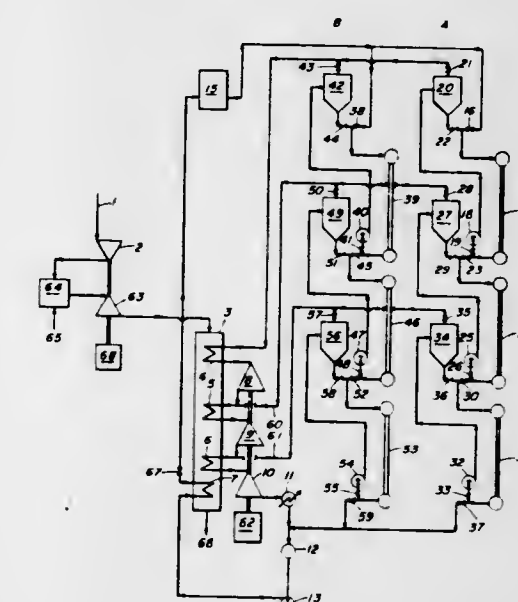
3,611,717
DEVICE FOR PROGRAMMING THE THROUGHPUT OF FUEL SUPPLIED TO A COMBUSTION CHAMBER DURING AN IGNITION OR RE-IGNITION PHASE
Roger Henri Tissier, Paris, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France
Filed Apr. 23, 1970, Ser. No. 31,190
Claims priority, application France, Apr. 24, 1969, 6913035
Int. Cl. F02c 9/10
U.S. Cl. 60—39.28
10 Claims



A device for programming the throughput of fuel supplied to a combustion chamber during an ignition or re-ignition phase, the said chamber being of the type in which at least two different fuel-injection systems open

into the chamber, namely, a main injection system supplied through a main pipe by a continuously operating main pump, and at least one auxiliary injection system supplied at the time of ignition or re-ignition of the chamber by an auxiliary pump of the piston and cylinder type operating discontinuously and put into operation by the pressure of the fuel being fed to the main injection system, the said device comprising means to provide automatic adjustment of the throughput of fuel injected into the combustion chamber by the main injection system as a function of the relative positions of in, thus providing continuous operation.

3,611,718
WASTE HEAT STEAM GENERATING CYCLE
William H. Nebgen, Woodside, N.Y., assignor to Treadwell Corporation, New York, N.Y.
Filed May 5, 1970, Ser. No. 34,718
Int. Cl. F01k 23/10, 27/00
U.S. Cl. 60—39.18 B
3 Claims



A waste heat power recovery cycle is described which converts to shaft work a larger portion of the heat available from a given source of waste heat than does an ordinary Rankine cycle.

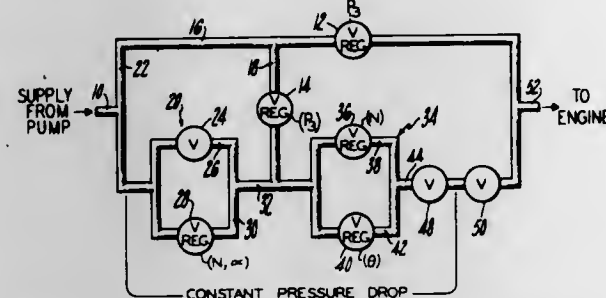
The recovery cycle is particularly illustrated as applied to the waste heat contained in the exhaust gases of a Brayton cycle combustion gas turbine.

The exhaust gases, available usually at about 850° F., heat 1500 p.s.i.a. pressurized water to about 596° F. The hot pressurized water is then introduced into one of a plurality of water receivers in which it is permitted to flash at gradually decreasing pressures. The resulting flash steam is superheated to about 800° F. by the 850° F. exhaust gases, and introduced into the steam chest of a multiple nozzle steam turbine. The number of nozzles passing steam is gradually increased as the steam pressure drops so as to keep power production substantially constant. When the steam pressure has dropped a predetermined amount, the unflashed water is transferred to another receiver and is permitted to flash down to a lower pressure. This flash steam is similarly superheated and is introduced into the steam chest of a similar multiple nozzle intermediate pressure turbine. The water is finally introduced into a low pressure water receiver where it is flashed to about condensing pressure, the flash steam is again superheated, and expanded through a multiple nozzle low pressure turbine to the condenser.

The residual water and condensate are then joined, and pumped at high pressure to be heated again by the exhaust

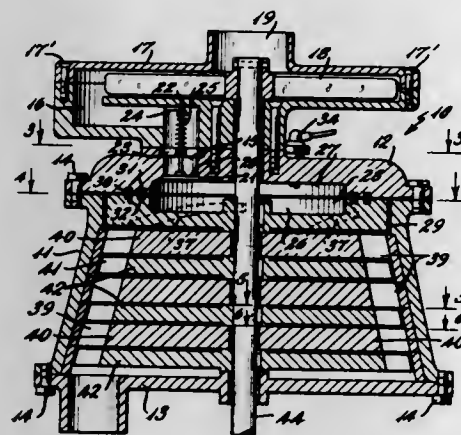
gases as described above. When the pressures of the receivers in the first line drop to the preselected lower pressures, a fresh line of receivers at the higher pressures is cut in, thus providing continuous operation.

3,611,719
FUEL CONTROL
Charles F. Stearns, East Longmeadow, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 12, 1968, Ser. No. 744,395
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 13 Claims



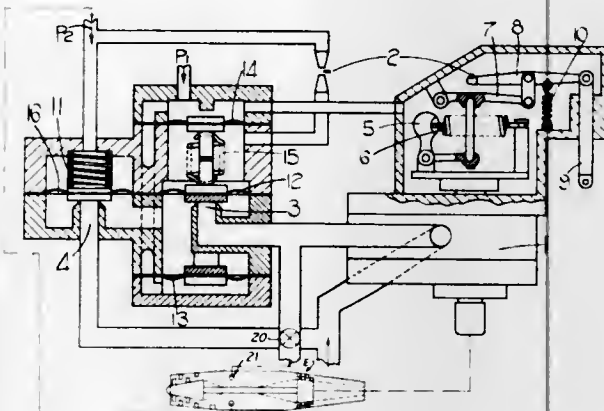
Fuel flow to a turbine type of powerplant is scheduled by varying the pressure drop across the metering valve of a fuel control. The total hydraulic computing circuit pressure drop is varied by maintaining the pressure drop across a portion of the circuit at a constant value and varying the pressure drop across the other portion of the circuit between a minimum and maximum value. The hydraulic circuit senses certain engine operating parameters and computes these variables into a scheduled ratio of fuel flow to engine pressure.

3,611,720
INTERNAL COMBUSTION TURBINE ENGINE
Yngurd M. Fehlau, 154 S. Brunswick St., Old Town, Maine 04468
Filed Sept. 26, 1969, Ser. No. 861,273
Int. Cl. F02c 3/16
U.S. Cl. 60—39.34 5 Claims



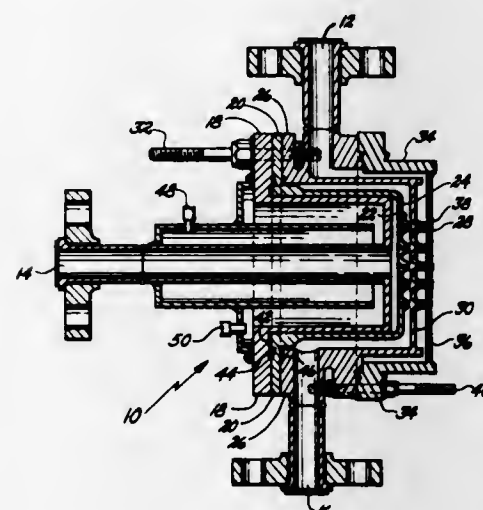
An internal combustion turbine engine or reaction engine having a fixed and a rotary member, each with a relatively large shallow cavity facing the other transversely of a short axis combustion chamber substantially centrally divided transversely of its axis into which a pump supplies air under pressure through a one-way valve and into which fuel is injected and the expanded pressurized fluid is ignited by heat supplied through a plug and the explosive mixture channeled through curved passageways for jet action and against the vanes of alternate turbine and counter wheels to cause the rotary member of the combustion chamber to rotate by the action or driving force of the flow of the products of combustion and to impart rotation to a shaft to which such rotary member is secured.

3,611,721
FUEL CONTROL SYSTEM FOR GAS TURBINE ENGINES
Richard J. Ifield, Beecroft, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 17, 1969, Ser. No. 833,918
Claims priority, application Great Britain, June 24, 1968, 29,923/68
Int. Cl. F02c 9/10
U.S. Cl. 60—39.28 11 Claims



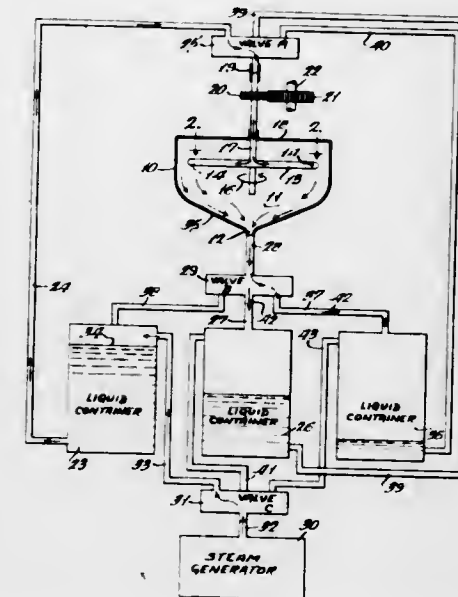
A system for controlling the fuel supply to a gas turbine engine in which a pair of valves is connected in series between the inlet and outlet of the associated fuel pump defining a pressure control device actuable by compressed air so as to spill fuel delivered by the pump to regulate the pressure at which fuel is supplied to the burners in accordance with the pressure of air derived from the compressor.

3,611,722
LIQUID FLUORINE INJECTOR DESIGN
William G. Shick, Lake Park, Fla., assignor to the United States of America as represented by the Secretary of the Air Force
Filed May 10, 1967, Ser. No. 638,700
Int. Cl. F02g 1/00
U.S. Cl. 60—39.74 A 3 Claims



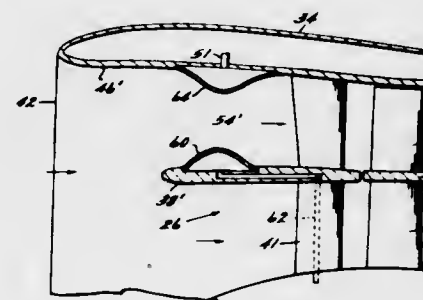
A liquid fluorine injector design which can be readily assembled and disassembled into its four separate elements which include a fuel injector plate, an oxidizer secondary injector spudplate, an oxidizer primary injector spudplate, and an injector backplate. The four separate elements are concentrically positioned so that fuel and oxidizer are injected in a highly efficient manner while still providing for easy disassembly to allow visual inspection of all surfaces exposed to the oxidizer material.

3,611,723
HYDRAULIC TURBINE AND METHOD
James V. Thels, Jr., Park Forest, Ill., assignor to Hollymatic Corporation
Filed Nov. 13, 1969, Ser. No. 876,525
Int. Cl. F03b 1/04
U.S. Cl. 60—51 6 Claims



A steam powered hydraulic turbine having closed circuits for the steam system and for the hydraulic liquid system in which the turbine includes a liquid receiving chamber having a drain, a reaction rotor in the chamber rotatable about an axis when propelled by a liquid emitting nozzle on the rotor, a first liquid container having a liquid outlet conduit to the rotor for providing liquid under pressure thereto, a second liquid container having a liquid entrance conduit from the chamber drain for receiving liquid emitted by the rotor nozzle, a source of steam and a steam conduit from the source to the first liquid container above the liquid level therein to apply steam pressure to the first container liquid to force it to and through the nozzle thereby to develop a torque in the rotor. A method of generating power with a steam operated hydraulic turbine.

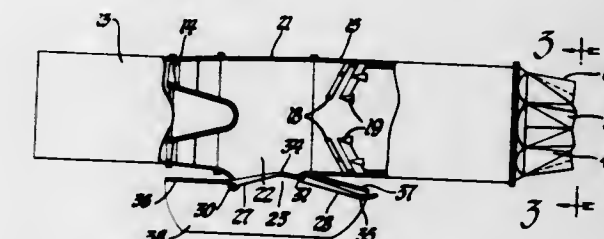
3,611,724
CHOKED INLET NOISE SUPPRESSION DEVICE FOR A TURBOFAN ENGINE
John T. Kutney, Cincinnati, Ohio, assignor to General Electric Company
Filed Jan. 7, 1970, Ser. No. 1,223
Int. Cl. F02k 3/04; F02c 7/04
U.S. Cl. 60—226 R 11 Claims



Sound suppression means for a gas turbine power plant which includes a fan positioned within a bypass duct surrounding a core engine for driving said fan. An inflatable diaphragm is positioned within an inlet opening of the casing which surrounds the fan such that choked flow can be obtained near the inlet end of said casing upon

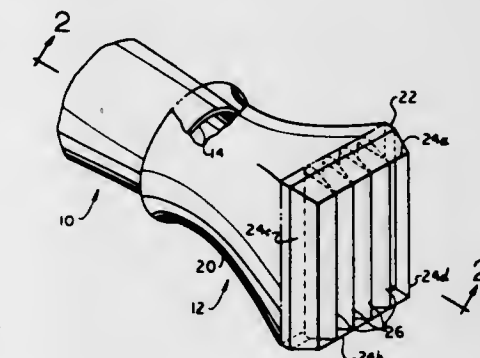
inflation of the inflatable diaphragm. The inflatable diaphragm cooperates with axially extending platform members of a plurality of stator vanes located in front of the fan rotor to form a converging-diverging passageway upon inflation of the expansible diaphragm. Choked flow in the inlet substantially eliminates propagation of noise emanating from the fan rotor.

3,611,725
LIFT-CRUISE JET ENGINE
Frederick R. Short, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 17, 1969, Ser. No. 817,625
Int. Cl. F02k 1/00
U.S. Cl. 60—229 1 Claim



A jet engine for both direct lift and forward propulsion of an aircraft has a gas generator discharging into an exhaust duct which has a rearwardly directed variable area nozzle and a downwardly directed variable lift nozzle. The propulsion nozzle is of a type which can be substantially entirely closed. The lift nozzle includes movable vanes at its forward and rear edges which may be swung to vary the direction of thrust from partly forward to rearward and in which the forward vane may be swung rearwardly to throttle the outlet, and finally into contact with the rear vane to close the lift nozzle entirely. In transition between lift and cruise conditions, the areas of the two nozzles are varied inversely so as to maintain substantially constant turbine speed and back pressure and substantially constant total thrust.

3,611,726
THRUST AUGMENTING AND SOUND SUPPRESSING APPARATUS FOR A JET ENGINE
George E. Medawar, San Diego, Calif., assignor to Rohr Corporation, San Diego, Calif.
Filed Sept. 29, 1969, Ser. No. 861,850
Int. Cl. F02k 1/02, 3/02
U.S. Cl. 60—264 3 Claims



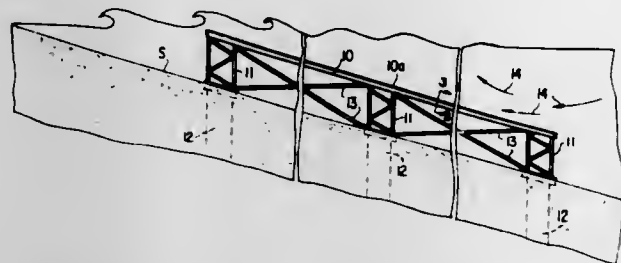
Thrust gas of jet engine is discharged from frustoconical nozzle. Cylindrical forward end of tubular ejector is concentrically spaced around end of nozzle so that slipstream air flowing past the latter enters ejector in annular stream surrounding thrust gas issuing from nozzle. The aft end of the ejector is rectangular and has vanes mounted therein, the long sides of said aft end extending vertically.

3,611,727

WAVE-FORMING STRUCTURE
Robert R. Blandford, 1809 Paul Spring Road,
Alexandria, Va. 22307
Filed Feb. 26, 1970, Ser. No. 14,291
Int. Cl. E02b 3/02

U.S. Cl. 61-1

10 Claims

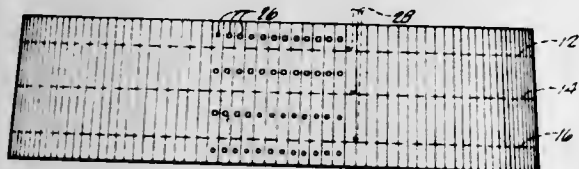


An artificial structure is provided offshore to provide an artificial sea-bottom surface of suitable shape to form waves thereon of a desired type from arriving deep-ocean waves for surfers and swimmers disposed on or above the artificial sea-bottom surface.

3,611,728
**STRUCTURE FOR CONFINING AND STORING
FLOATING LIQUID PRODUCTS**
Gustaaf Van't Hof, 10021 Lesterford Ave.,
Downey, Calif. 90240
Filed June 2, 1969, Ser. No. 829,303
Int. Cl. E02b 15/04

U.S. Cl. 61-1 F

7 Claims

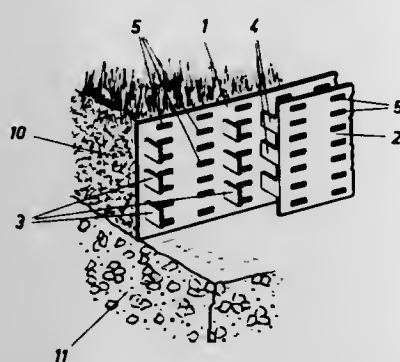


A flexible enclosure formed from a plurality of buoyant vertical members joined side-by-side in a substantially liquid-tight relationship for containing and storing a liquid which floats upon the surface of another liquid.

3,611,729
DRAINED ATHLETIC FIELD
Erwin Stark, Fischerfeldstrasse 28, Linz, Austria
Filed June 4, 1969, Ser. No. 830,409
Int. Cl. E02b 11/00; E01c 11/22

U.S. Cl. 61-10

4 Claims



A substantially horizontal, compacted top soil layer overlies a substantially horizontal drainage layer and is sufficiently firm to be walked upon and formed with slots which extend through said top soil layer. A drainage device is placed in each slot, each device having two opposite side walls, an open top end and an open bottom end communicating with said drainage layer. Spacing means between the side walls maintain said side walls spaced apart while defining a drainage passage from said top end to said bottom end of said device.

3,611,730
**SOIL DRAINAGE TRENCHING AND
AERATING APPARATUS**

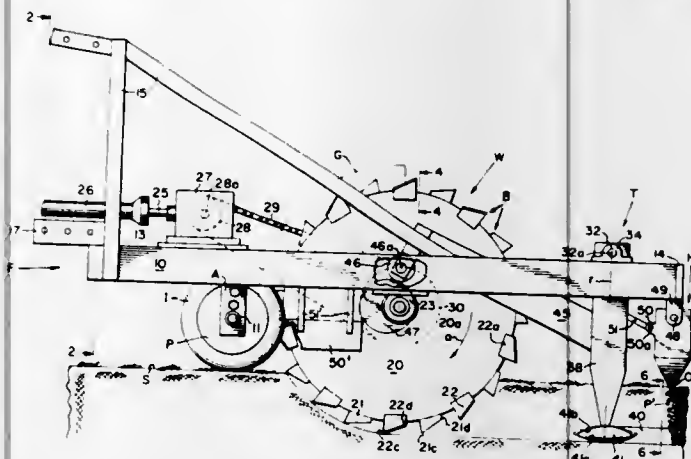
Henry Joseph Brettrager, 5410 East St.,
Saginaw, Mich. 48601

Filed Dec. 11, 1969, Ser. No. 884,069

Int. Cl. E02b 11/02; E02f 5/12

U.S. Cl. 61-11

18 Claims

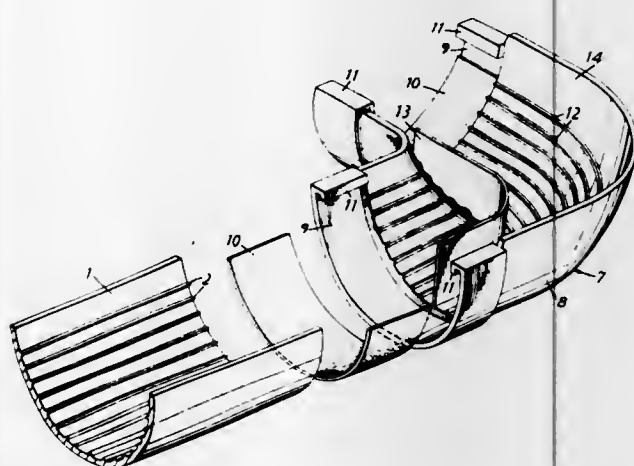


Soil drainage, trenching and aerating apparatus for forming aerating and drainage trenches in turfed fields. The apparatus is adapted to be drawn behind a tractor and includes a rotatable trenching wheel mounting a plurality of oppositely pitched and circumferentially spaced soil removing blades for removing subsoil to form a trench of a predetermined width. A torpedo-shaped trench widening device follows in the path of the trenching wheel for widening a portion of the trench adjacent the bottom thereof by compacting the soil therearound. A pivotally mounted hopper, carrying trench-filling pelletized material, is also provided for filling the trench with randomly arranged pelletized material which permits the surface water to flow between the interstices of the pelletized material to the widened portion of the trench. Cam apparatus, operatively connected with the trenching wheel, is provided to agitate the trench widening device and simultaneously agitate the hopper to shake the pelletized material from the hopper into the trench.

3,611,731
GUTTERS AND GUTTER FITTINGS
Ronald Edmondson, Chislehurst, Kent, England, assignor to Plastiers Limited, London, England
Continuation of application Ser. No. 771,813, Oct. 30, 1968. This application Dec. 27, 1968, Ser. No. 787,432
Int. Cl. E02b 9/04

U.S. Cl. 61-14

2 Claims



This invention relates to gutters for rainwater and like uses and to fittings for such gutters. According to the invention a gutter of the open-trough type is made of a synthetic plastics material so that it has a number of

spaced integral, inwardly projecting ribs which extend in the direction of flow. Preferably the sides and bottom of the gutter form a continuous curve with each other. In the case of a fitting to which such a gutter is to be fitted, for example to connect one gutter to another or to a downpipe, the fitting itself is formed with internal ribs which are intended to form continuations of the gutter ribs when the parts are fitted together. One outer wall of a curved gutter or the fitting may be higher than the inner wall, whilst one of the ribs may be higher than the others to direct the flow of water.

sequentially as a transport means to the offshore site, and after being ballasted and submerged supplements the weighted pilot section. Said ballast section further may hold a quantity of fluids used in an oil drilling or producing operation such as drilling mud, crude oil and the like whereby to minimize the need for additional platform space to store such materials.

3,611,732
METHOD FOR STABILIZING SILT

Michael M. Epstein, 2885 Scottwood Road,
Columbus, Ohio 43209

No Drawing. Filed July 30, 1969, Ser. No. 846,243

Int. Cl. C09k 3/08; E02d 3/12

U.S. Cl. 61-36

9 Claims

This invention is a method for stabilizing silt in the bottom of a body of water, particularly the oceans, which consists of depositing a gel of a water-soluble polymer, preferably as a coating or blanket, onto the surface of the silt while simultaneously rendering the gel water insoluble as with an insolubilizing and gelling agent.

3,611,733
METHOD OF SEALING OPENINGS

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 563,679, July 8, 1966. This application Oct. 6, 1969, Ser. No. 864,228

Int. Cl. C09j 3/04, 3/06; E02d 3/12

U.S. Cl. 61-36 R

8 Claims

An improved method of sealing off an opening, either temporarily or more-or-less permanently, to inhibit the passage of aqueous fluids which comprises emplacing in the opening a fluid aqueous salt-natural polymer composition which indigenously sets to a fluid-tight resilient solid having predetermined longevity dependent upon the pH value of the fluid composition.

3,611,734
**FOUNDATION ANCHOR FOR FLOATING
MARINE PLATFORM**

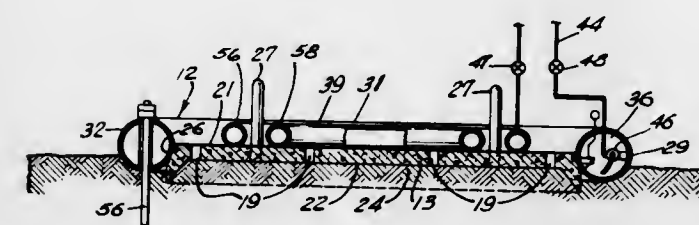
George E. Mott, Metairie, La., assignor to
Texaco Inc., New York, N.Y.

Filed Feb. 17, 1970, Ser. No. 11,998

Int. Cl. B63b 35/44

U.S. Cl. 61-46.5

12 Claims



The invention relates to a separable component foundation anchor adapted for positioning an offshore floating platform or other floatable vessel at a desired deep water well drilling site. The anchor includes a relatively heavy pilot member and a submergible casing or ballast section. The anchor further includes means to engage the lower end of the offshore platform to minimize movement of the latter at the water's surface. The ballast section cooperates with the pilot member, functioning

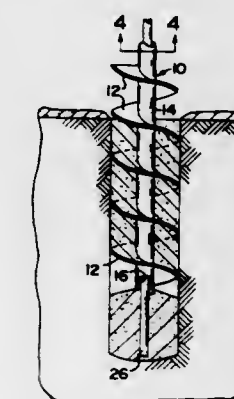
3,611,735
METHOD OF MAKING CONCRETE BODIES
Donald S. Daczko, Bedford, Ohio (Construction Techniques, Inc., 1700 Superior Bldg., Cleveland, Ohio 44114)

Filed Oct. 24, 1968, Ser. No. 770,167

Int. Cl. E02d 5/38; E04b 1/16

U.S. Cl. 61-53.64

16 Claims



A concrete body is formed with a perforate tube or tubes encased in a filter sleeve immersed in the concrete. The tube may be installed by inserting it into the hollow shaft of an auger and injecting grout through the shaft while the auger is withdrawn thereby leaving the tube embedded in the grout. Alternatively, the tube may be inserted directly into freshly placed concrete or may be set in an open hole or casing or form prior to placement of the concrete or grout. With either method, the tube forms a hollow core by which excess water may be removed to improve the quality of the concrete. Also, the core may be used for inserting a vibratory source, testing equipment, installing reinforcing members, or other useful purposes.

3,611,736
**METHOD OF PROTECTING AND RESETT
POLES IMBEDDED IN SOIL**

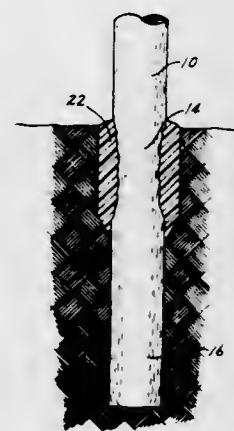
Jack P. Goodman, 2500 S. Tejon,
Englewood, Colo. 80110

Filed Jan. 26, 1970, Ser. No. 5,529

Int. Cl. E02d 5/60

U.S. Cl. 61-54

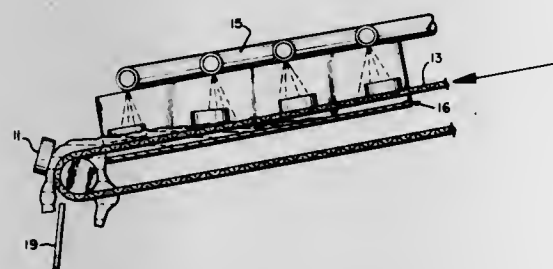
2 Claims



A method of protecting poles imbedded in soil includes excavating the ground around an existing set pole a short

distance from the pole and to a depth to uncover the pole from ground-line to a point below the deterioration area, cleaning the excavated portion of the pole, partially filling the excavated pole with a mixture of a synthetic resin and a blowing agent, permitting the ingredients to react to form a foamed resin and then permitting the resin to set, thereby sealing the excavated area of the pole and completely filling the excavation.

3,611,737
FREEZING OF FRAGILE FOODSTUFFS WITH AN EBULLIENT LIQUID FREEZANT
Raymond D. Alaburda and Vincent H. Waldin, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 12, 1969, Ser. No. 806,599
Int. Cl. F25d 3/10
U.S. Cl. 62-63 12 Claims

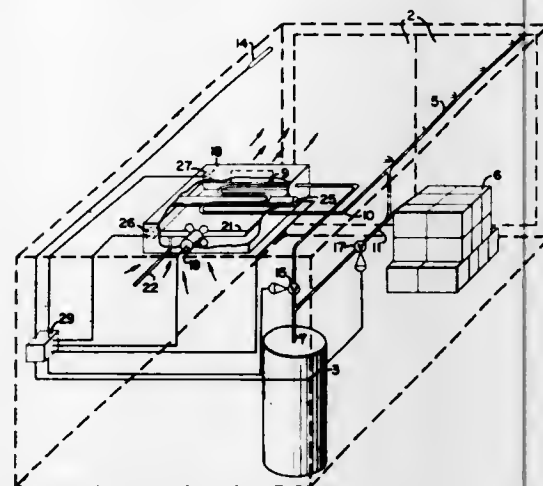


A process and apparatus for freezing fragile, generally flat, naturally occurring or prepared, food products by direct contact with an ebullient, liquid, polyfluorinated halohydrocarbon freezant having a normal atmospheric boiling point of about -5°C . to -50°C . and a vapor density at its boiling point at least about twice that of air at the same temperature, said freezing process including the steps of, and said freezing apparatus including means for, flooding or spraying the upper surfaces of individual pieces of the fragile food products with liquid freezant at low velocity as they are being transported by a foraminous conveyor to form a stable frozen crust on the upper surfaces, collecting the flooding or spraying freezant in a collecting means of suitable dimensions and positioned immediately below a portion of the conveyor which is in contact with the pieces, lifting the pieces from the conveyor and contacting the lower surfaces thereof with freezant by maintaining the level of freezant in the collecting means above the top surface of the conveyor, continuing the contacting of the lower surfaces of the pieces with freezant to form a stable frozen crust on the lower surfaces, and completing the freezing of the pieces by further direct contact with ebullient liquid freezant.

3,611,738
FROZEN PRODUCT REFRIGERATION AND DEHUMIDIFICATION SYSTEM
David P. Maurer, Williamsville, and Gerard F. Hagenbach, Tonawanda, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,662
Int. Cl. F25d 25/00
U.S. Cl. 62-64 10 Claims

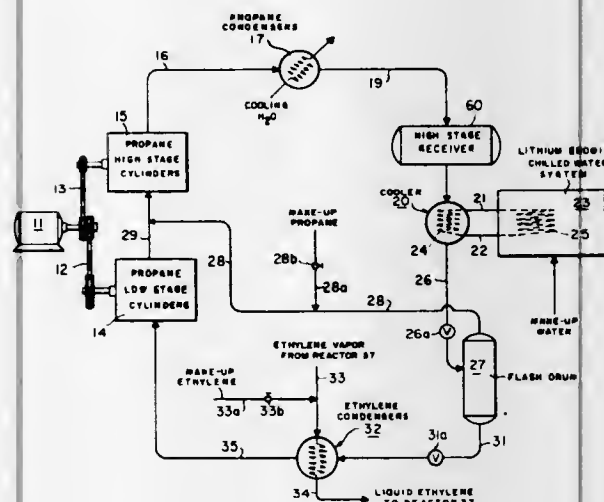
A mobile storage chamber refrigeration and dehumidification system and method for removing moisture from the chamber atmosphere and chamber and storage product surfaces employing a pressurized liquefied refrigerant gas which is vaporized within a heat exchanger located within the mobile chamber and dispensed thereafter through overhead spray conduit means. A fan passes the

chamber moisture-laden atmosphere over said heat exchanger causing frost to build up on same while dehumidifying such circulated chamber atmosphere. Such frost is periodically melted and removed from said mobile cham-



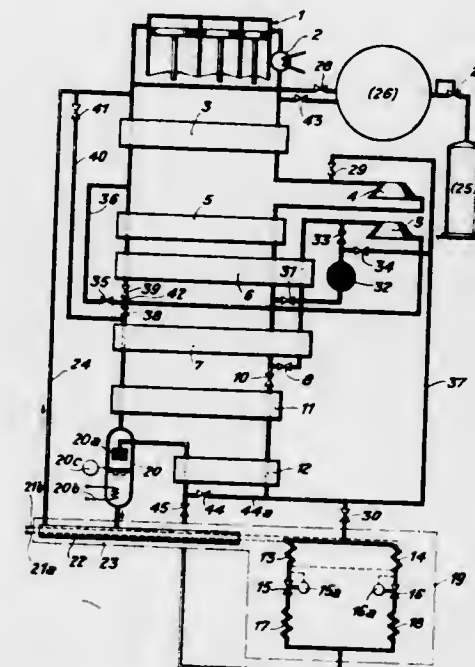
ber, while refrigeration is maintained within such chamber by means of a bypass conduit which provides for refrigerant flow from its storage container to said overhead spray conduit without passing through said heat exchanger.

3,611,739
REFRIGERATION METHOD
Joseph M. Bonem, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed June 3, 1969, Ser. No. 830,018
Int. Cl. F25b 7/00
U.S. Cl. 62-79 4 Claims



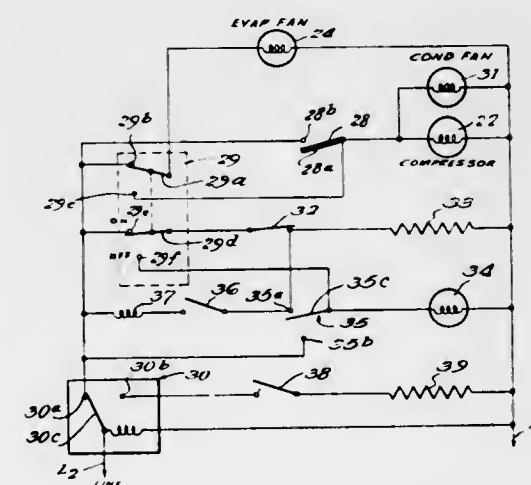
An operation is maintained at a selected low temperature in a system employing a plurality of refrigerants by indirectly contacting reactants with a first liquefied refrigerant to remove heat from said operation by vaporization of the first refrigerant, the resulting vapors being removed and condensed for reuse by indirect contact with a chilled second refrigerant having a boiling point higher than the first refrigerant; the second refrigerant is compressed, cooled and chilled, the chilling being accomplished by indirect contact with a chilled liquid having a boiling point greater than that of the second refrigerant. The compressed and chilled second refrigerant is flashed to reduce its temperature further and is then employed to indirectly contact the first refrigerant to condense it for reuse in said operation.

3,611,740
PROCESS FOR COOLING A CONSUMER CONSISTING OF A PARTLY STABILIZED SUPERCONDUCTIVE MAGNET
Urs Giger, Abtwil, Saint Gall, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Dec. 11, 1969, Ser. No. 884,175
Claims priority, application Switzerland, Dec. 19, 1968, 18,955/68
Int. Cl. F25b 7/00
U.S. Cl. 62-79 5 Claims



The partly stabilized superconductive magnet is cooled by separating the helium stream into two part-flows. One part flow is throttled, heated, expanded while doing work, and then directed back into the circuit downstream of the consumer. The other part-flow is throttled to a pressure above critical, cooled, directed through a hollow conductor forming the magnet while throttling the flow and then further throttled in a valve to form a gas and liquid mixture, heated and then returned to the compressor.

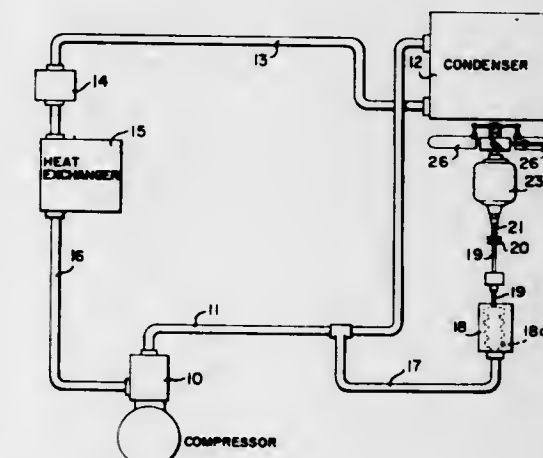
3,611,741
ICE MAKER REFRIGERATION CONTROL
William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation
Filed Oct. 31, 1969, Ser. No. 872,857
Int. Cl. F25c 1/00
U.S. Cl. 62-137 6 Claims



A control for providing improved operation of a refrigeration apparatus whereby effective maximum efficiency in the operation of an ice maker associated with

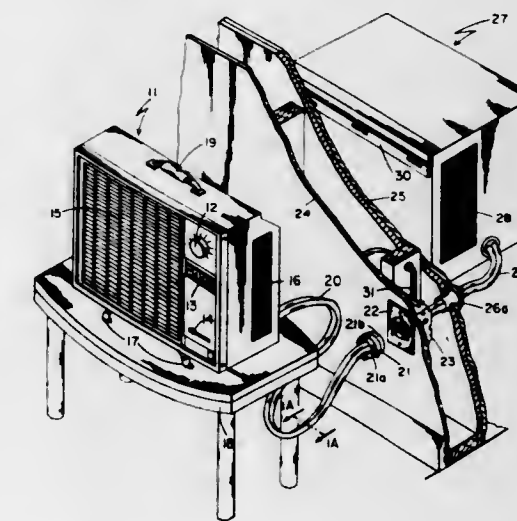
the refrigeration apparatus is obtained. The control effects a continuous directing of refrigerated air against the ice maker apparatus whenever the ice body collecting means is less than full thereby permitting the ice maker to rapidly produce ice bodies for bringing the collecting means to a full condition.

3,611,742
AUTOMATICALLY ADJUSTABLE CONDENSER COOLING APPARATUS
Howard E. Douglas, 1396 Barbara Drive, Santa Clara, Calif. 95050
Filed July 20, 1970, Ser. No. 56,452
Int. Cl. F25b 39/04
U.S. Cl. 62-183 4 Claims



A low ambient temperature control for air cooled condensers utilizing a motor driven fan and a control which rapidly responds to the condenser pressure to adjust the pitch of the fan blades thereby providing a very reliable control of the condenser cooling.

3,611,743
ROOM AIR CONDITIONER
Anthony J. Manganaro, 6 Bassett Ave., Burlington, Mass. 01803
Filed Nov. 19, 1969, Ser. No. 877,965
Int. Cl. F25d 23/12
U.S. Cl. 62-263 7 Claims



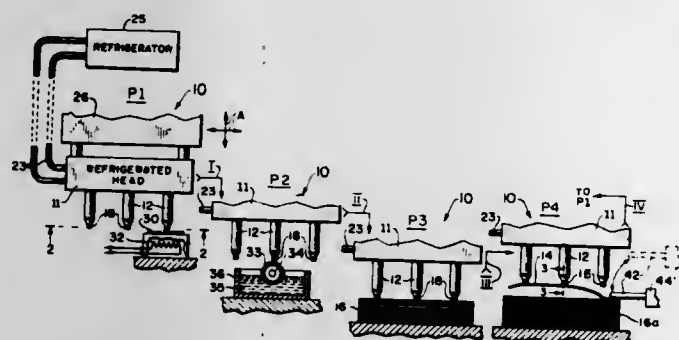
A room air conditioner is described which can be positioned anywhere in a room, does not require a window and is much quieter than conventional units. It comprises separate interior and exterior assemblies, with the interior assembly containing the evaporator and the exterior assembly the condenser and compressor. Flexible conduits, preferably detachable, are used to interconnect the refrigerant lines between the interior and exterior assemblies.

3,611,744
CRYOGENIC PICKUP
 Richard K. Sutz, Riverdale, N.Y. (% International Sym-
 biotics, Inc., 733 Yonkers Ave., Yonkers, N.Y.
 10704)

Filed May 11, 1970, Ser. No. 36,212
 Int. Cl. B65h 3/00

U.S. Cl. 62—303

10 Claims

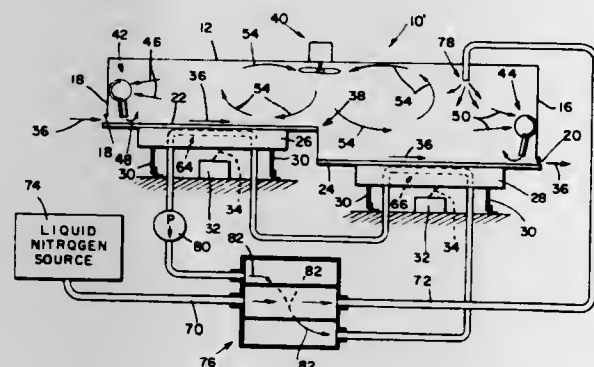


Cryogenic apparatus for cyclically picking up and transferring one article at a time from a pile thereof, includes a plurality of probes continuously maintained at freezing temperature. The probes are movable as a unit by a carrier in a path from a starting position. One article at a time is picked up and transferred to a deposition point where a stripper device detaches the article bonded by ice matrices to the probes. A cleaning device in the path of the probes wipes them clean before they contact the article to be picked up. A moistener may apply a film of moisture to each probe tip before it contacts the article. Each probe tip may be covered with a self lubricating layer to facilitate detachment of the article. A vaporizer for humidifying the articles may be provided.

3,611,745
FREEZING SYSTEM
 Alfred H. Schlemmer, Indianapolis, Ind., assignor to
 Ralph Hamill, Indianapolis, Ind.
 Filed Nov. 24, 1969, Ser. No. 879,176
 Int. Cl. F25d 17/00

U.S. Cl. 62—333

12 Claims



A freezing system comprising means providing a chamber, a plate for supporting articles to be frozen disposed in the chamber, means for lowering the temperature of the plate, first conduit means for connecting the chamber to a source of refrigerant, such as liquid nitrogen, and means for circulating such a refrigerant in said chamber and about the articles supported on the plate. In the preferred embodiment, the means for lowering the temperature of the plate includes a closed-circuit refrigeration system having passageways disposed in heat-conducting relationship to the plate and additional passageways, and a heat exchanger disposed in heat-conducting relationship to the said additional passageways. The heat exchanger is provided with an input port and an exit port, and the said first conduit means includes means for connecting the input port to such a refrigerant source and the exit port to the chamber, whereby the refrigerant to be exhausted

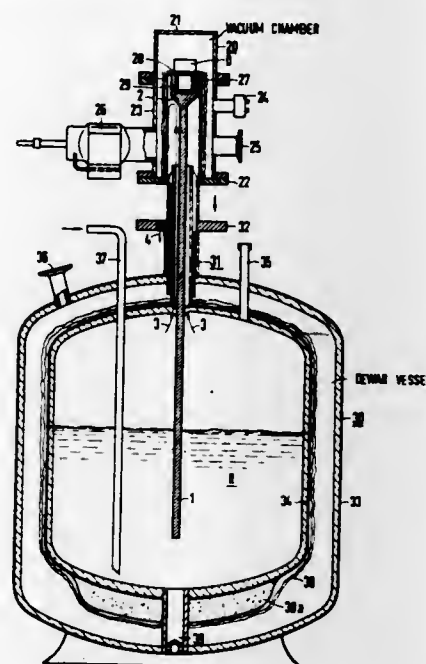
into the chamber is first circulated through the heat exchanger in heat-conducting relationship to the said additional passageways of the closed circuit refrigeration system.

3,611,746
CRYOSTAT FOR COOLING VACUUM-HOUSED RADIATION DETECTOR
 Helmut Marsing and Gerhard Weidmann, Neunkirchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Mar. 25, 1969, Ser. No. 810,198
 Claims priority, application Germany, Mar. 26, 1968,
 P 17 51 051.9
 Int. Cl. F25b 19/00

U.S. Cl. 62—514

13 Claims

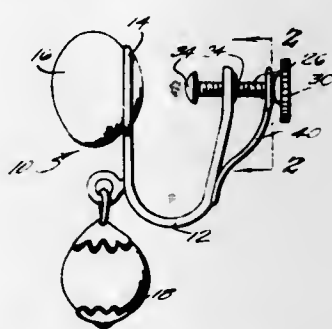


A loosely assembled cryostat of modular construction comprises a Dewar vessel having a reservoir of liquid gas refrigerant. A vacuum chamber is coupled to the Dewar vessel via a refrigerant transfer device and cooled by refrigerant from the reservoir. The vacuum chamber has a refrigerated surface for mounting a radiation detector to be cooled and electrical and evacuating couplings for independent evacuation of the vacuum chamber. The Dewar vessel has a nozzle opening into the area of the reservoir and the refrigerant transfer device includes the nozzle, which is in operative proximity with the refrigerated surface of the vacuum chamber.

3,611,747
SCREW EARRING CLAMP WITH SPRING TO PREVENT LOOSENING
 Salvatore A. Esposito and Joseph F. Batten, Jr., both of
 2033 S. Opal St., Philadelphia, Pa. 19145
 Filed Feb. 27, 1969, Ser. No. 802,913
 Int. Cl. A44c 7/00

U.S. Cl. 63—14 E

1 Claim



A screw type earring clamp providing improved grip wherein a thumb screw is tightened to move toward the ear lobe flange to push against the ear lobe and, in turn,

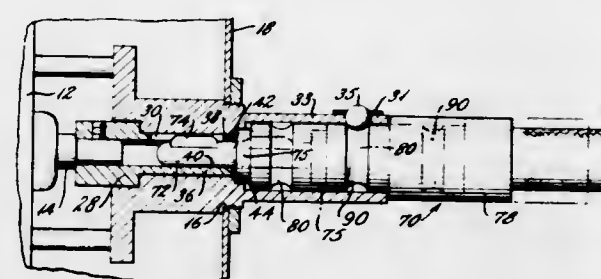
the ear lobe contacts the post of the earring clamp which, in turn, holds the earring to the ear lobe. The device is of simple construction and provides ease of adjustment for applying differential pressure with respect to the threaded support member of the earring clamp.

on the bisectors of the angles. The coupling enables some longitudinal movement as well as some rocking movement of the shafts.

3,611,748
QUICK CONNECT FLEXIBLE DRIVE
 Linus E. Wallgren, Rockville, Md., assignor to Pace,
 Incorporated, Silver Spring, Md.
 Filed May 28, 1970, Ser. No. 41,187
 Int. Cl. F16d 3/06

U.S. Cl. 64—4

3 Claims

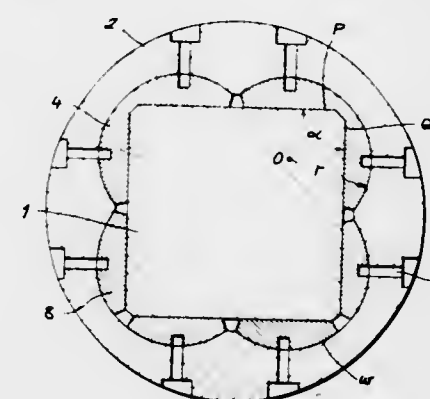


The invention relates to a male ended quick convert flexible drive shaft structure particularly adapted for use with an electronic equipment repair and maintenance unit. The male connection member is of special construction which permits the flexible drive to be connected and disconnected while the driving motor is in operation without completely removing the flexible drive shaft structure from the motor.

3,611,749
COUPLING
 Józef Kasperczyk and Henryk Sidlo, Chorzow, Poland, assignors to Huta Zygumt Przedsiębiorstwo Państwowe, Lagiewniki, Poland
 Filed Sept. 4, 1969, Ser. No. 855,313
 Claims priority, application Poland, Sept. 14, 1968,
 P 129,056
 Int. Cl. F16d 3/16

U.S. Cl. 64—8

2 Claims

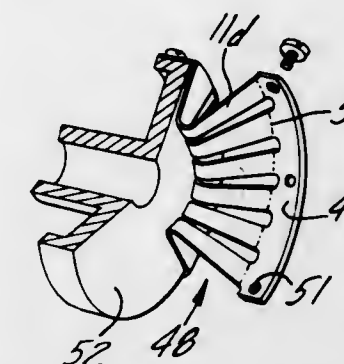


The disclosure relates to a coupling device for transmitting torque of very great magnitude such as is required for driving rolls in heavy rolling mills. The coupling belongs to the type having an inner member (plug), formed by the end of one shaft and an outer member (socket), formed by the end of the second shaft. At the longitudinal edges of the inner member are placed inserts, made by cutting out a part of a sphere along two planes intersecting each other inside the sphere at an angle equal to the angle formed by the lateral faces of the inner member. The inserts with their spherical surfaces are located in concave internal recesses made in the outer member. The geometrical centers of the spherical surfaces lie

3,611,750
FLEXIBLE TORSIONALLY-RESILIENT COUPLING
 Joseph Gasior, Bloomfield, N.J., assignor to
 Midland-Ross Corporation
 Filed Oct. 23, 1969, Ser. No. 868,798
 Int. Cl. F16d 3/66

U.S. Cl. 64—15

3 Claims

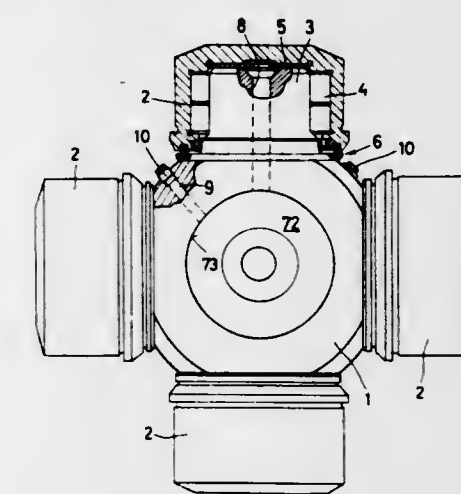


A coupling comprising angularly-spaced U-shaped strap-like spring elements in rigid connection with supporting hub or flange members of a coupling and capable of accommodating parallel and angular misalignment, adjusting to axial relative movement of opposed shafts, and cushioning sudden changes of torque.

3,611,751
UNIVERSAL JOINT SPIDER
 Hans-Joachim Kleinschmidt, Essen, Germany, assignor to Gelenkwellenbau G.m.b.H., Essen, Germany
 Filed Sept. 30, 1969, Ser. No. 862,268
 Claims priority, application Germany, Sept. 30, 1969,
 G 67 51 246
 Int. Cl. F16d 3/26

U.S. Cl. 64—17

3 Claims

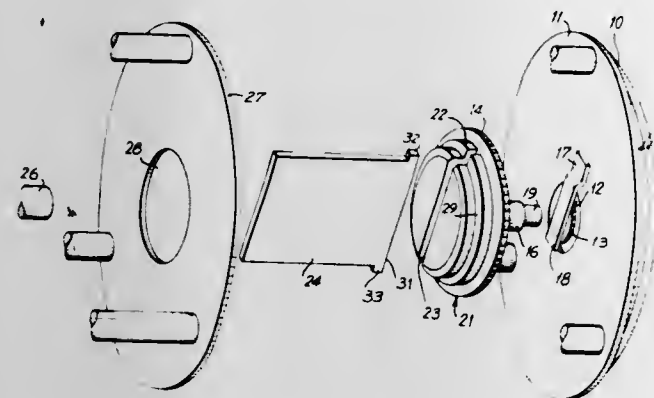


Universal joint spider includes a core member, a plurality of journal pins extending from the core member in directions transverse to the rotary axis of the spider and received in respective bearing bushes insertable into the forks of a universal joint, the core member being formed with a recess serving as a lubricant chamber and communicating through respective lubricating ducts with a bearing chamber located between and defined by each of the journal pins and the respective bearing bush, and at least one closure member sealing the recess and comprising a cover portion covering the open end of the recess and a nose portion extending coaxially with the rotary axis of the spider from the cover portion to the inner closed end of the recess.

3,611,752
SHAFT COUPLING
 Frank W. Perazzella, Wolcott, Conn., assignor to North American Philips Corporation, New York, N.Y.
 Filed Feb. 27, 1970, Ser. No. 15,038
 Int. Cl. F16d 3/04

U.S. Cl. 64-7

3 Claims



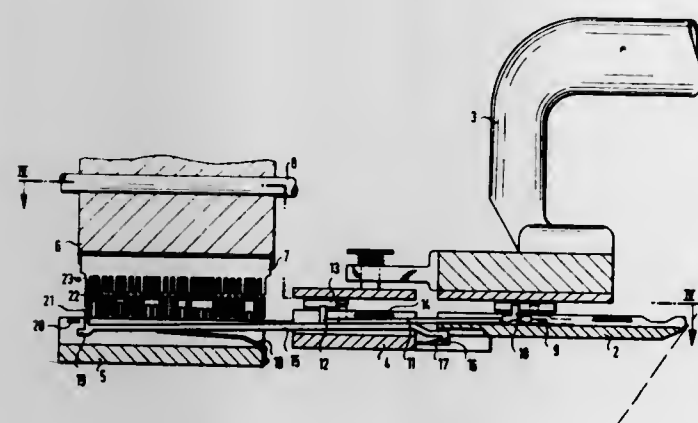
A shaft coupling to transmit rotation from one shaft to another not necessarily co-linear therewith. The coupling comprises a blade mounted on one of the shafts and extending axially from the one shaft toward the other, one end of the blade having limited freedom of movement back and forth in one direction transverse to the other shaft. The blade is captured in the one shaft by a groove which is wider than the blade, thereby allowing the free end of the blade limited freedom of movement. The captured end of the blade is substantially T-shaped to aid in its entrapment by other components of the assembled device.

3,611,753
PATTERN CONTROL MECHANISM FOR A FLAT-BED KNITTING MACHINE
 Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany

Filed Apr. 24, 1970, Ser. No. 31,671
 Claims priority, application Germany, Apr. 30, 1969, P 19 22 289.0
 Int. Cl. D04b 15/70

U.S. Cl. 66-75

6 Claims



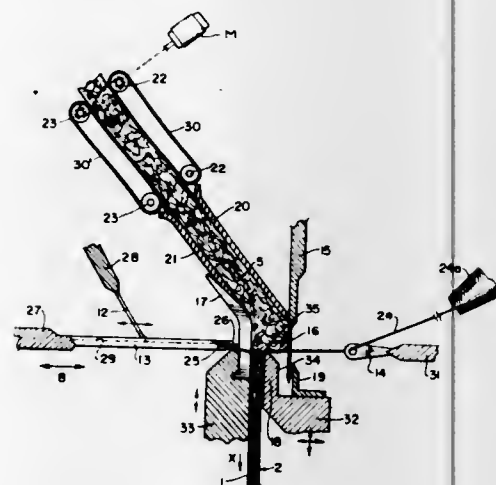
Butts on pattern jacks under knitting needles in a flat-bed knitting machine are engaged by cams on the machine carriage for lifting the knitting needles to two levels depending on the extent to which the jack butts project from the needle bed and for thereby presenting the needles to needle cams on the carriage. The jacks are moved transversely by tilting fingers operated by control arms on the carriage which engage butts on the fingers and are backed by projections on pattern plates circumferentially

distributed on a pattern drum on the carriage. The drum may be indexed during each reversal of carriage movement for changing the positions of the control arms.

3,611,754
TEXTILE MATERIAL AND MANUFACTURE
 Engelbert Ehrlich, Floha, Saxonia, and Martin Schonfuss, Hohenstein-Erlangen, Germany, assignors to VEB Nahwirmaschinenbau Malimo Karl-Marx-Stadt, Karl-Marx-Stadt, Germany
 Filed June 2, 1969, Ser. No. 829,363
 Int. Cl. D04b 23/10

U.S. Cl. 66-84

8 Claims



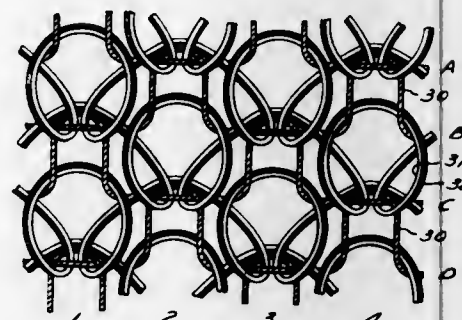
A run-resistant textile material includes a knitted structure of warp threads on a backing layer of loose fibrous material.

Individual fibers are pulled out of the layer by notched knitting needles of a warp knitting machine and formed into loops together with, and underlying the chain switched warp threads. The fiber loops whose ends are anchored in the backing layer protect the fabric from laddering when a single stitch is broken.

3,611,755
RUN RESISTANT STOCKING TAB
 John J. Millar, Laconia, N.H., assignor to Scott & Williams, Inc., Laconia, N.H.
 Continuation-in-part of application Ser. No. 765,821, Oct. 8, 1968. This application Feb. 24, 1970, Ser. No. 13,700
 Int. Cl. D04b 9/54

U.S. Cl. 66-173

9 Claims

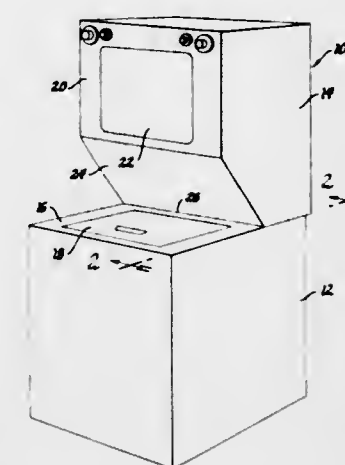


Fine-gauge, circularly knit seamless stocking has a tab portion of fabric formed after a transfer operation and which represents a terminal portion of knitting. Raveling or runs in the tab portion are prevented by having courses in the tab including a polyamide yarn having a much lower melting point than the yarn used in the remainder of the stocking and which fuses or becomes tacky at boarding temperature so that the fusing takes place during this stage of processing.

3,611,756
ARRANGEMENT FOR ATTACHING A CLOTHES DRYER TO THE TOP OF A CLOTHES WASHER
 Byron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
 Filed July 8, 1970, Ser. No. 53,088
 Int. Cl. D06f 29/00

U.S. Cl. 68-3 R

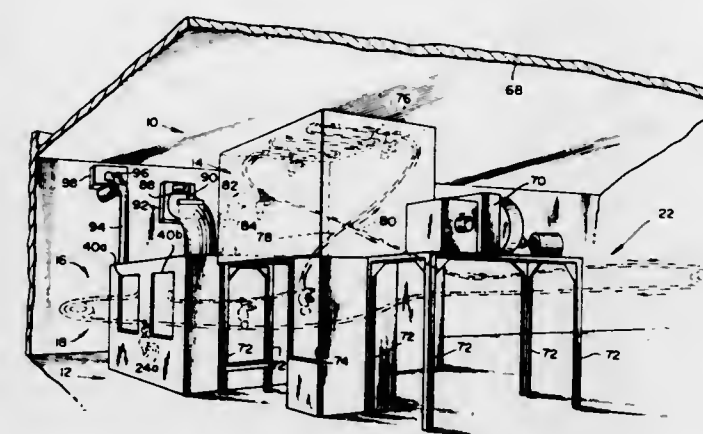
5 Claims



A vertically stacked combination clothes washer and clothes dryer wherein the top of the washer cabinet has a top opening in juxtaposition with a bottom opening on the dryer cabinet. A control support panel provides a partition between the cabinets of the washer and dryer closing the openings, rigidifying the cabinets and providing a mounting panel for components associated with the washer and the dryer. The dryer cabinet overhangs the rear of the washer cabinet to provide a protected utility connection area. A pair of heavy plates sandwich juxtaposed flanges on the washer and dryer cabinets to provide a solid connection of the clothes dryer to the clothes washer.

3,611,757
PLUSH PILE FABRIC RE-ERECTION APPARATUS
 Isaac Hills, Roslyn, N.Y. (% My-Toy Co., Inc., 944 3rd Ave., Brooklyn, N.Y. 11232)
 Filed Jan. 29, 1970, Ser. No. 6,848
 Int. Cl. D06c 29/00; B08b 3/10, 5/00
 U.S. Cl. 68-5 B

11 Claims

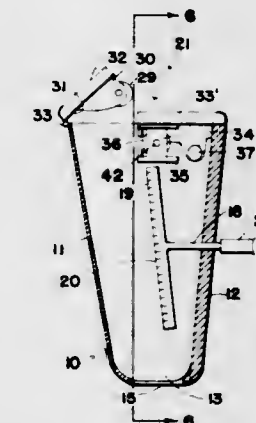


The apparatus includes a conveyor upon which articles having an outer covering of plush pile fabric are placed so that the pile fabric may be cleaned and the pile fibers thereof re-erected to produce a fluffy appearance. The conveyor carries the articles through a jacketed first chamber wherein they are subjected to blasts of steam while being rotated to assure thorough and uniform treatment of the pile fabric. The conveyor track subsequently carries the articles to a second chamber which is elevated with respect

to the first chamber, and wherein the articles are dried. A portion of the heated air in the second chamber is directed into the jacket surrounding the first chamber to control the temperature in the first chamber. Subsequently, the conveyor carries the articles to an unloading station wherein they are prepared for packaging.

3,611,758
DIAPER CLEANER
 Robert Glen Miller, 1229 18th St. NW., Calgary 42, Alberta, Canada; and Clarence Wayne Houde, 7 Perth Drive; and Ryan Alexander Campbell, 11c Catherine St., both of Dartmouth, Nova Scotia, Canada
 Filed Mar. 2, 1970, Ser. No. 15,343
 Int. Cl. D06f 11/00, 41/00
 U.S. Cl. 68-22 A

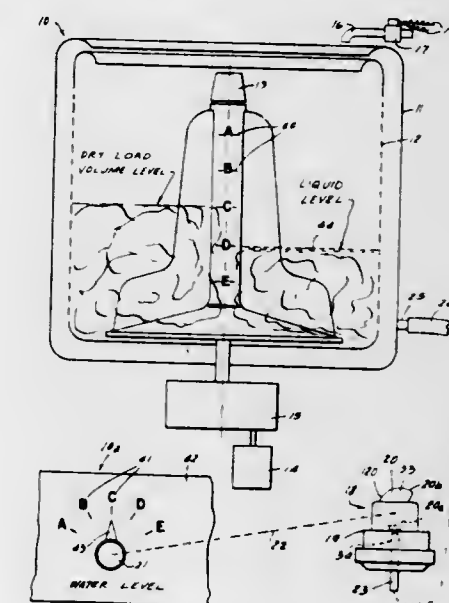
10 Claims



An open based container engages over a toilet bowl and the soiled diaper is placed therein. The lid is closed engaging a fixed roller with the diaper and applying squeezing pressure against a spring loaded roller. A high pressure water spray is directed against the soiled side of the diaper which, after a short rinsing time, is pulled slowly out from between the rollers which wring dry the diaper as it is being pulled through the rollers.

3,611,759
WATER LEVEL CONTROL FOR AUTOMATIC WASHING MACHINE
 Donald E. Janke, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
 Filed Mar. 18, 1970, Ser. No. 20,552
 Int. Cl. D06f 39/08
 U.S. Cl. 68-207

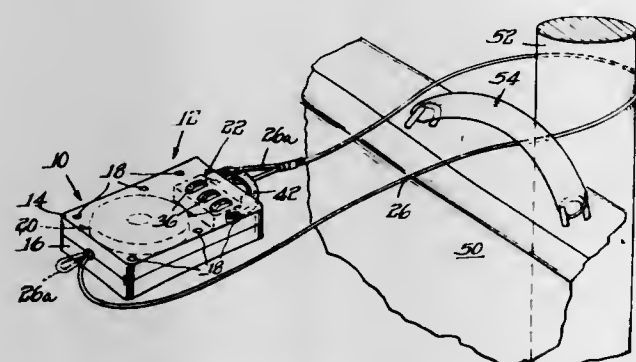
6 Claims



A method of predetermining an optimum water level in an automatic washing machine as a function of the dry volume of a load of material to be laundered. To

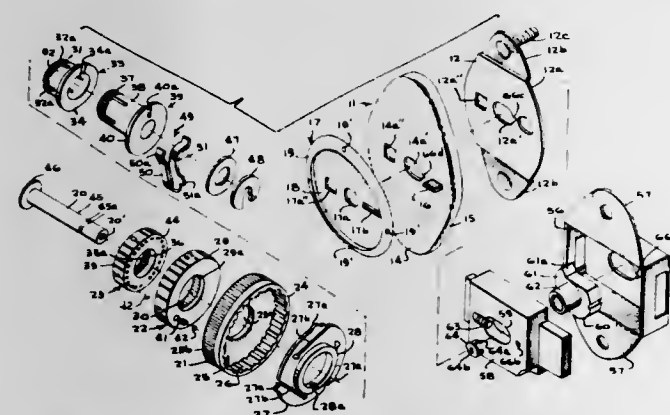
facilitate performing the method, an upright vertical portion of the treatment zone, for example, the agitator of the washing machine, is calibrated to identify known volumetric capacities of the treatment zone. Corresponding indicia at different vertical levels are provided to measure the dry load volume of a batch of material to be laundered. A water level selector switch having indicia correspondingly correlated to the indicated dry load level is then preset to admit into the treatment zone a predetermined quantum of laundry liquid matched to the dry volume of material to be laundered.

3,611,760
LOCKING DEVICE
Richard M. Muther, Winnetka, Ill., assignor to Muther Enterprises Inc., Northfield, Ill.
Filed Jan. 12, 1970, Ser. No. 2,030
Int. Cl. E05b 73/00, 37/02
U.S. Cl. 70—58 9 Claims



This invention relates generally to locking devices and more particularly to locking devices employing a retractable cable means and a housing therefor of a size which enables it to be held in the hand of the user. The embodiment of the invention disclosed herein comprises a relatively small housing or casing supporting a rotary reel and cable, one end of the cable being connected to the reel and the other free extremity thereof projecting from the housing in position to be gripped by the user. A spiral spring in the housing is biased to effect automatic return of the cable upon the reel. A lock control latch means associated with the housing is adapted for detachable coupling with the free cable extremity.

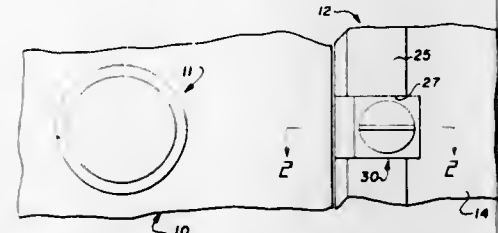
3,611,761
COMBINATION LOCK CONSTRUCTION, PARTICULARLY FOR LOCKERS
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.
Filed Apr. 27, 1970, Ser. No. 31,999
Int. Cl. E05b 37/02
U.S. Cl. 70—129 21 Claims



A combination lock assembly for locker doors and the like, wherein a plurality of dial assemblies are located in progressively outwardly spaced relation forwardly of a

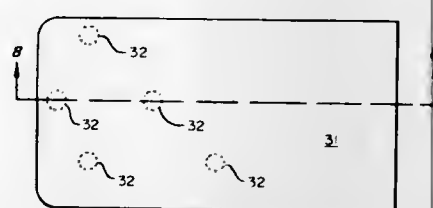
base plate on the door and control plural tumbler wheel members each having a peripheral gate. The base plate has a fixed fence bar located in horizontal alignment with the axis of rotation of the dial assemblies, with which the peripheral gates are aligned, whereupon the dial assemblies and tumbler wheels can be shifted laterally as a unit to a position retracting a bolt from locking position.

3,611,762
DOOR LOCKING DEVICE
Stuart G. McBurnie, Burnaby, William G. Fortt, Port Coquitlam, and Michel L. E. Rocher, Vancouver, British Columbia, Canada, assignors to Vello Industries Ltd., Vancouver, British Columbia, Canada
Filed Oct. 31, 1969, Ser. No. 872,806
Int. Cl. E05c 3/22
U.S. Cl. 70—150 8 Claims



A device mountable in a door jamb and including a shaft which is rotatable from the interior of the room, and also from the room exterior by means of a key, the shaft having a locking cam on the periphery thereof. A latch bolt is mounted in an edge of the door jamb to engage an adjacent door edge and hold the door closed, the latch bolt normally being released by actuation of a door mounted set. The locking cam engages a part carried by the latch bolt to lock the bolt in engaged position until the shaft is rotated by appropriate turning movement applied to either end of the shaft.

3,611,763
MAGNETICALLY OPERATED MECHANISM AND MAGNETIC CARD
Bruce S. Sedley, Larkspur, Calif., assignor to H. O. Boehme, Inc., Westbury, N.Y., and Burbank, Calif.
Original application Nov. 4, 1966, Ser. No. 592,006, now Patent No. 3,444,711, dated May 20, 1969, Divided and this application July 25, 1968, Ser. No. 763,452
Int. Cl. E05b 19/26, 47/00
U.S. Cl. 70—413 2 Claims

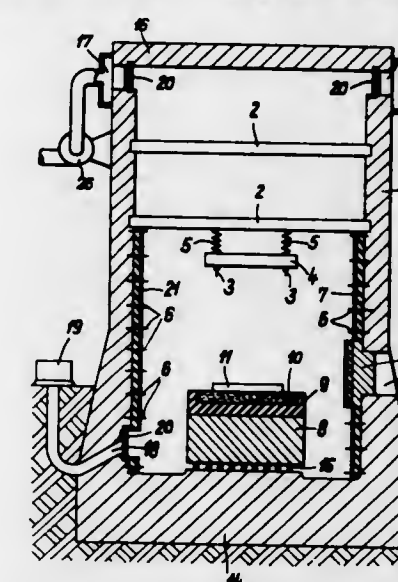
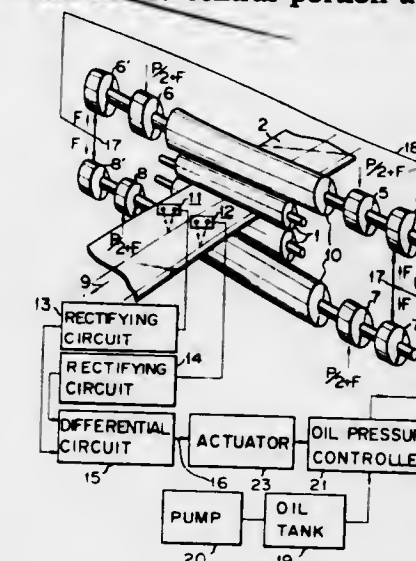


Magnetic card for operating a magnetic lock comprises a relatively thin sheet of plasticized binder material having ferromagnetic particles suspended therein and substantially evenly distributed throughout, whereby selected areas on the card may be magnetized in a direction transversely across the thickness of the card.

3,611,764
METHOD AND APPARATUS FOR CONTROLLING ROLLING MILLS
Kunji Asano, Kawasaki-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed July 15, 1969, Ser. No. 841,755
Int. Cl. B21b 37/00
U.S. Cl. 72—8 10 Claims

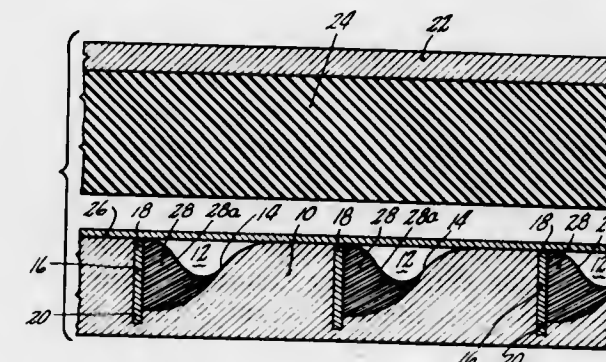
In a method and apparatus for controlling a rolling mill wherein a crown controller is used to control the

crown of the mill rolls and the controller is operated in accordance with the surface contour of the strip, the surface contours at the central portion and edge portion with its longitudinal axis extending substantially vertically, the foundation means supporting said hollow body, and cushioning means arranged in the lower portion of said hollow body for receiving and supporting the means to be explosive worked.



of the strip are measured by photoelectric means to obtain differentiated signals corresponding to respective surface contours and the difference between differentiated signal is utilized to operate the crown controller.

3,611,765
METHOD OF FORMING LOUVERS
John William Harvey, Milford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 8, 1969, Ser. No. 855,876
Int. Cl. B21d 28/18
U.S. Cl. 72—55 4 Claims

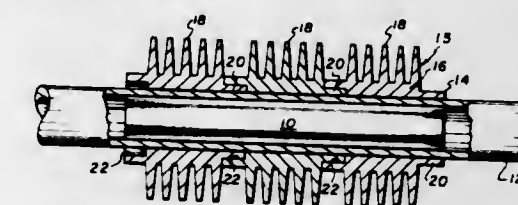


A two-step method is provided for producing louvers by the Guerin process in which a form block having a closed-end recess with an erect shear rule therein and a resilient forming block are moved relative to each other with a sheet metal blank therebetween, including a first preforming step in which a plastic insert is placed in the recess alongside the shear rule which prevents shearing of the blank while effecting controlled stretching of the metal overlying the recess as the blank is forced into the recess by the forming block, and a second shearing and forming step performed in the same manner in the same apparatus with the plastic insert removed.

3,611,766
DETONATION CHAMBER FOR EXPLOSIVE WORKING OF METALS
Winfried Klein, Essen, and Hans-Friedrich Wilms, Oberhausen, Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany
Filed Jan. 21, 1969, Ser. No. 792,315
Claims priority, application Germany, Jan. 20, 1968, P 16 52 627.5; Sept. 14, 1968, P 17 77 168.5
Int. Cl. B21d 26/08
U.S. Cl. 72—56 25 Claims

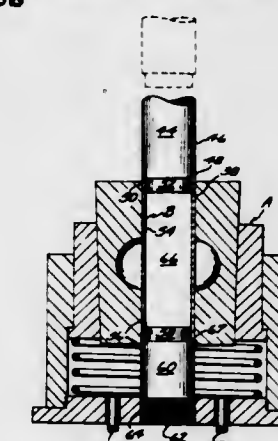
A detonation chamber for explosive working of metals, which includes: a substantially cylindrical hollow body

3,611,767
EXPLOSIVE FORMING OF INNER CYLINDERS INTO OUTER CYLINDERS
Irwin Berman, Bronx, N.Y., and Herman P. Smith, Warren, and Joseph W. Schroeder, Clark, N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Aug. 21, 1969, Ser. No. 851,998
Int. Cl. B21d 26/08
U.S. Cl. 72—56 2 Claims



Apparatus for expanding a hollow inner tube into a hollow outer tube in which an explosive forming insert is mounted in the inner tube. The insert includes a two-piece coaxially polyethylene cylinder surrounding the explosive charge.

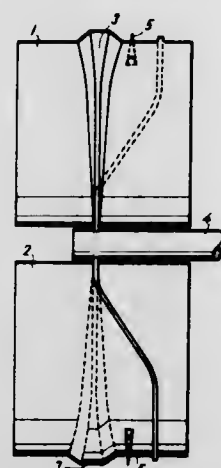
3,611,768
BULGING APPARATUS OF METALLIC PIPES
Eijiro Odagaki, Sakaishi, Osaka, Japan, assignor to Otsuya Tekko Kabushiki Kaisha, Sakaishi, Osaka, Japan
Filed June 30, 1969, Ser. No. 837,384
Int. Cl. B21d 15/10
U.S. Cl. 72—58 8 Claims



An apparatus and method of using same for transforming a tubular blank into a shortened tubular member having a circumferentially extending section of a desired

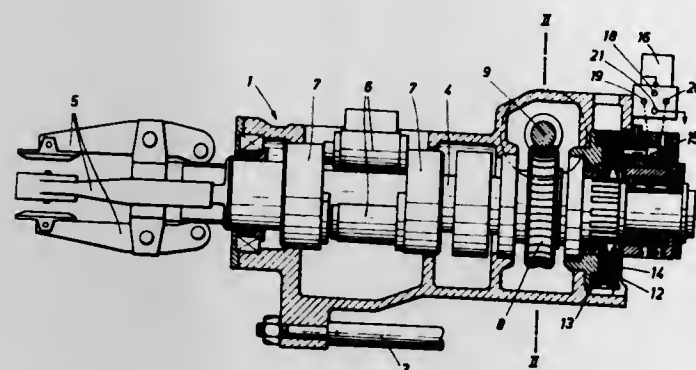
configuration and expanded diameter. The section of expanded diameter has substantially the same wall thickness as the balance of the tubular member after the forming operation is completed.

3,611,769
METHOD AND APPARATUS FOR SHAPING BAR STOCK BY ROLLING
Vladimír Hencel, Bilovice, Czechoslovakia, assignor to Vyzkumny ustav tvarecich stroju a technologie tvareni, Brno, Czechoslovakia
Filed May 6, 1969, Ser. No. 822,148
Int. Cl. B21h 9/00
U.S. Cl. 72-71 7 Claims



A pair of synchronously rotating rolls imparting rotation to stock positioned therebetween, the rolls being provided on their peripheries with circumferentially extending wedge tools having sections for grooving, guiding, forming and ultimately severing the stock. The guide sections of the tools are axially oblique, so that the stock is fed axially from the grooving to the forming operation as a function of tool rotation and the use of a separate stock feeding mechanism is not necessary.

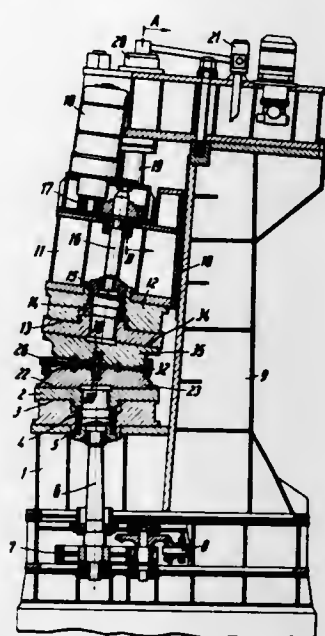
3,611,770
SWAGING MACHINE AND GRIPPING HEAD
Bruno Kralowetz, Weinleiten 142, St. Ulrich, Steyr, Austria
Filed July 9, 1969, Ser. No. 840,420
Claims priority, application Austria, Aug. 1, 1968, A 7,490/68
Int. Cl. B29b 39/24
U.S. Cl. 72-76 8 Claims



A swaging machine comprises means defining a path for a workpiece to be swaged and a gripping head which comprises a gripping head frame, a spindle which is rotatably mounted in said frame and axially aligned with said path, gripping jaws carried by said spindle and adapted to grip a workpiece to be swaged, drive means coupled

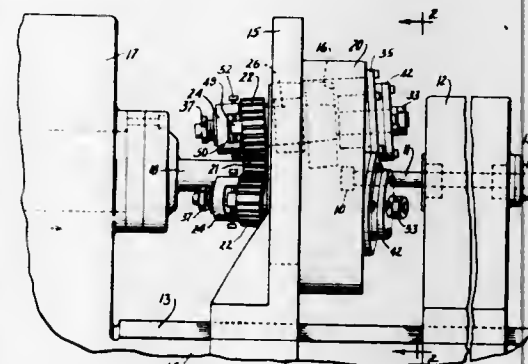
to said spindle and operable to rotate said spindle on its axis. Said drive means comprise a spring system which is arranged to permit of a torsional vibration of said spindle. A hydraulic brake is applicable to brake said spindle. A hydraulic system is operable to apply said brake.

3,611,771
METHOD FOR ROLLING DISKS AND A DISK ROLLING MILL FOR THE PRACTICE OF THE METHOD
Otto Ulrych, Dortmund-Horde, Germany, assignor to Rheinstahl Wagner Werkzeugmaschinenfabrik m.b.H., Dortmund, Germany
Filed June 28, 1968, Ser. No. 740,873
Claims priority, application Germany, July 1, 1967, R 46,380
Int. Cl. B21h 1/02
U.S. Cl. 72-84 19 Claims



Apparatus for rolling stock into contoured disks including upper and lower rolls having desired contours negatively on the working surfaces thereof which surfaces are obtuse angle conical surfaces wherein the upper roll is tilted from the vertical an amount sufficient to provide engagement between the two working faces on one side of the cone only. Pressure exerting means is shown adapted to urge the working surfaces together. Method of using this apparatus is described.

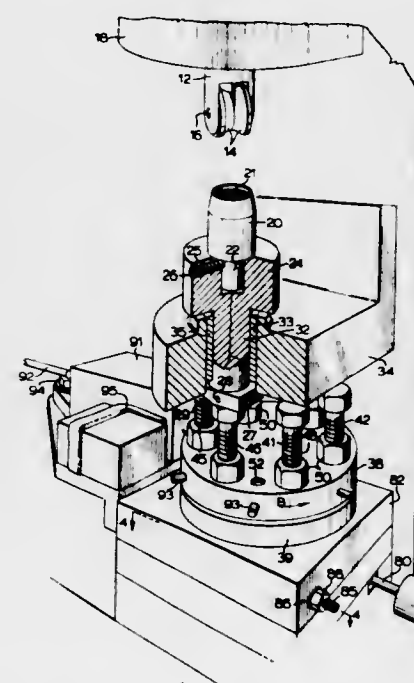
3,611,772
APPARATUS FOR ROLLING TOOTHED PARTS
Edward W. Haug, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Sept. 29, 1969, Ser. No. 861,795
Int. Cl. B21d 15/04
U.S. Cl. 72-105 32 Claims



A method and machine for rolling gears from a cylindrical workpiece in which the workpiece is rolled between dies which displace metal on the peripheral portion of the

workpiece to flow the metal of the workpiece so as to form gear teeth and the interdental spaces on the workpiece. In the ideal practice of the invention, the dies are designed so that essentially all of the work performed in forming the gear teeth is accomplished by having the die teeth apply a rolling force to work without applying a sliding force. In this ideal form, this is achieved by using conical dies with the pitch circles of the die teeth at the surface of the tip of the teeth from one end of the die to the other and with the base circles of the teeth the same throughout the length of the die. In most cases, the ideal tool is not practical because the die teeth would be structurally unsatisfactory but essentially the same results may be achieved by moving the pitch circle slightly inwardly from the tips of the teeth.

3,611,773
TURRET ANVIL RIVETING MACHINE
William Valentine Gerth, Waterloo, Ontario, Canada, assignor to Waterloo Spring Company Limited, Waterloo, Ontario, Canada
Filed Feb. 16, 1970, Ser. No. 11,672
Int. Cl. B21j 13/06, 15/32
U.S. Cl. 72-115 12 Claims

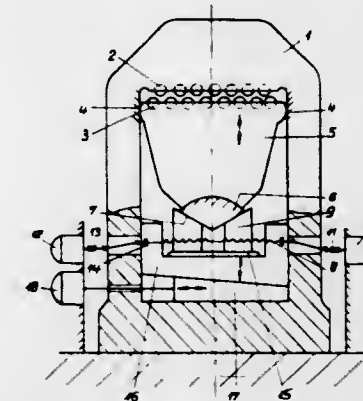


A riveting machine having a reciprocable, spinning head for terminally deforming the shank of a rivet supported on an anvil is provided with a rotating turret mechanism for adjusting the axial separation between the anvil and the spinning head. The turret is formed as a rotatable turret plate having a number of upstanding abutment members, such as bolts, which selectively engage a cam shoe formed on the lower end of an axially reciprocable anvil. The heights of the abutment members may be preset to required different values or such abutment members may be adjustably mounted on the turret plate so that their heights can be adjusted as required.

3,611,774
SHEET- AND STRIP-FLATTENING MACHINE ADJUSTABLE AT HIGH SPEED
Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim, Germany
Filed Jan. 17, 1969, Ser. No. 791,981
Claims priority, application Germany, Mar. 28, 1968, P 17 52 060.4
Int. Cl. B21d 1/02
U.S. Cl. 72-165 2 Claims

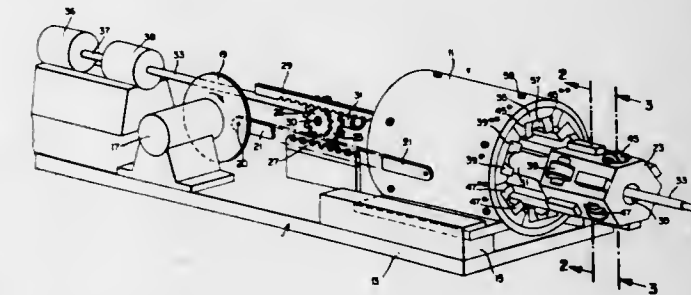
A frame has vertical guideways spaced apart in a predetermined horizontal direction. Two cylindrically curved guide members are formed with surfaces each of which is

at least a part of a surface of revolution centered on a generally horizontal axis that is transverse to said predetermined direction. A yoke is disposed between and in engagement with said guideways and formed on opposite sides of said frame with surfaces conforming to and resting on said surfaces of said guide members to support said yoke. A set of lower rolls extending generally horizontally and transversely to said predetermined direction



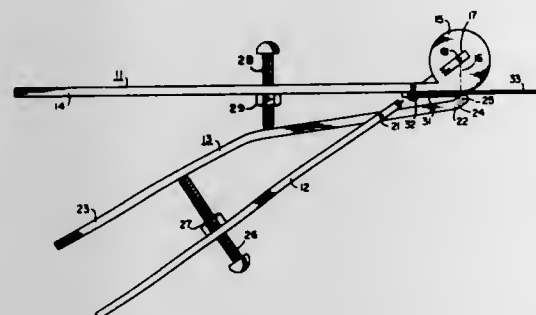
is carried by said yoke. A saddle is mounted in said frame for vertical adjustment. Adjustable wedge members carry the two guide members on opposite sides of said frame and are mounted on said saddle for adjustment relative thereto in a vertical direction and generally in the direction of said axis. A wedge is interposed between said saddle and said frame and horizontally movable to adjust said saddle at high speed in a vertical direction.

3,611,775
TUBE ROLLING MILL WITH A TAPERED MANDREL
Richard H. Gabel and Frank L. C. Williams, Norristown, Pa., assignors to Superior Tube Company, Norristown, Pa.
Filed July 29, 1969, Ser. No. 845,833
Int. Cl. B21b 17/10
U.S. Cl. 72-193 8 Claims



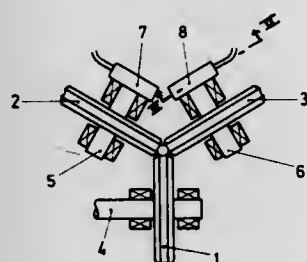
A tube rolling mill having two sets of three rolls each which are reciprocatingly driven along a length of a tube supported by a tapered mandrel. Each roll is forced against the tube by its individual cams each having a surface with one or more tapers which are related to multiple mandrel taper in a manner to provide reduction in both wall thickness and inside diameter of the tube. Each roll is provided with a tube contacting groove having in cross-section a central arc with a radius of curvature substantially equal to the smallest radius of that portion of the tube contacted by the roll, with either side of the central arc joined by lines tangent thereto with large radii of curvature chosen so that each roll contacts a tube in two zones around its circumference. The rolls are pressed against the tube upon the urging of the tapered cam surface against a roll trunnion. The radius of the trunnion is carefully chosen to control longitudinal forces transferred to the tube by the roll.

3,611,776
CRYSTAL BENDING TOOL
 Richard L. Saunders, Fort Washington Forest, Md., assignor to the United States of America as represented by the Secretary of the Navy
 Filed Oct. 22, 1969, Ser. No. 868,536
 Int. Cl. B21d 7/02
 U.S. Cl. 72-219 4 Claims



This disclosure is directed to a mechanical device or tool for bending crystals on a known radius without any deleterious effects on the crystal. One adjustable roller is moved on an arc relative to a fixed cylinder so that the roller maintains a desired radius with respect to the fixed cylinder to form a curved crystal having a specific thickness and curvature.

3,611,777
DRIVE FOR ROLLING MILL
 Erich Bretschneider, Buderich, Germany, assignor to Siemens-Siemag Maschinenbau GmbH, Dahlbruch, Germany
 Filed Dec. 5, 1969, Ser. No. 882,461
 Claims priority, application Germany, Dec. 13, 1968, P 18 14 460.0
 Int. Cl. B21b 35/00
 U.S. Cl. 72-249 4 Claims

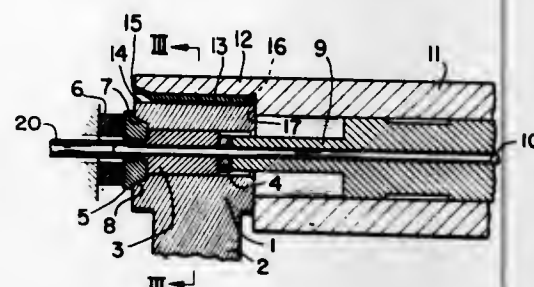


This invention has to do with a rolling mill consisting of three cooperating rolls, one of which is positively driven and the other two are driven by a turbine-like motor.

3,611,778
ALIGNING DEVICE FOR METAL EXTRUDING PRESSES
 René Hubert, 4 Bis Avenue Jean-Baptiste Clement, 92 Boulogne-sur-Seine, France
 Filed Dec. 11, 1968, Ser. No. 782,799
 Claims priority, application France, Dec. 15, 1967, 132,414
 Int. Cl. B21c 27/00
 U.S. Cl. 72-272 7 Claims

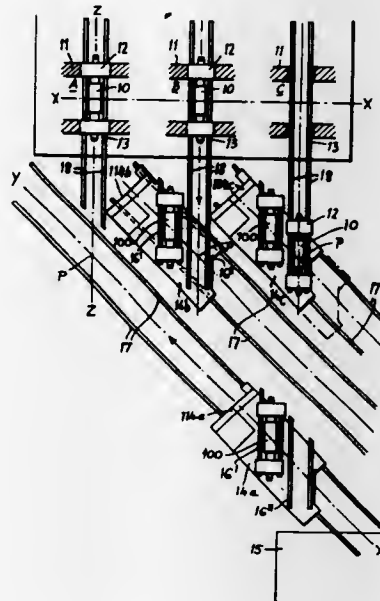
A press for hot extruding a billet into products comprising a container for holding and positioning the billet along an extrusion axis, a die positionable at one end of said container, and a ram approaching said container from the opposite end of the die for forcing the billet through the container and a hole in the die. The ram, billet and container are aligned with the extrusion axis by an aligning

means comprising a sleeve positioned concentrically and slideably about the ram and engageable with the con-



tainer means in a manner to provide for thermal expansion of the container.

3,611,779
ROLL-CHANGING DEVICES FOR HORIZONTAL ROLLING MILLS
 Edwin Simmonds, Ringwood, England, assignor to Loewy Robertson Engineering Company Limited, Hampshire, England
 Filed Jan. 12, 1968, Ser. No. 697,351
 Claims priority, application Great Britain, Jan. 25, 1967, 3,789/67
 Int. Cl. B21b 31/10
 U.S. Cl. 72-239 3 Claims

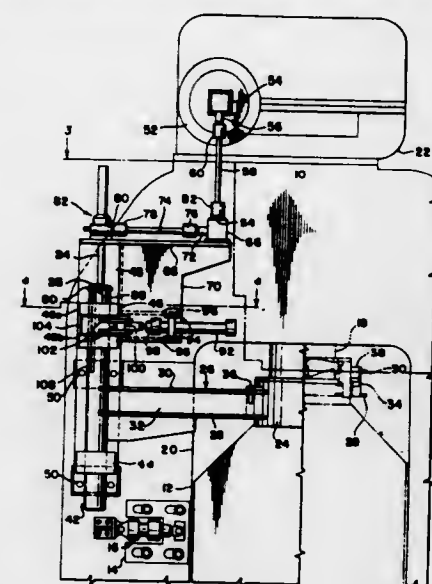


A roll-changing device for a horizontal rolling mill comprising a carrier having two parallel tracks at right angles to the roll-pass-line of the rolling mill, the said carrier being moveable along a track forming an oblique angle with the roll-pass-line and extending from a roll disposal area to the vicinity of the rolling mill.

3,611,780
THRUST BEARING MOUNTING ARRANGEMENT
 John Rosario Buta, Salem, Ohio, assignor to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
 Filed June 10, 1969, Ser. No. 831,977
 Int. Cl. B21b 31/24
 U.S. Cl. 72-248 9 Claims

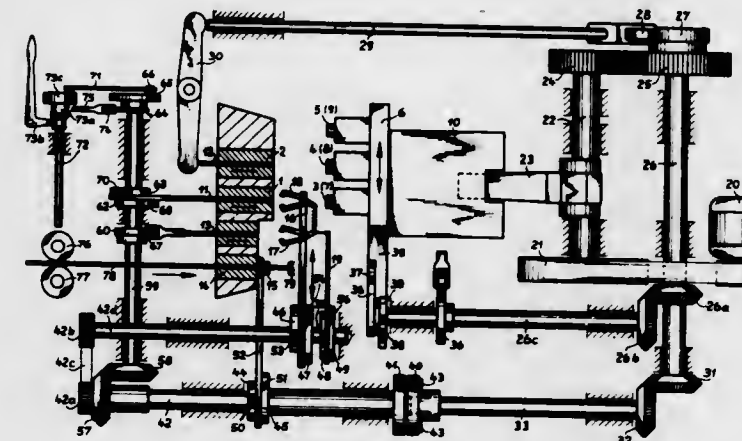
An apparatus particularly suited for facilitating removal of thrust bearings from between the screw-down screws and bearing chocks of a rolling mill. The apparatus described comprises horizontally swingable frames which carry the thrust bearings. The frames are also arranged for vertical movement and are connected through

mechanical drive trains with the drive for the screws. The drive trains function to move the frames vertically with



the screws to maintain the frames at the proper location for bearing removal.

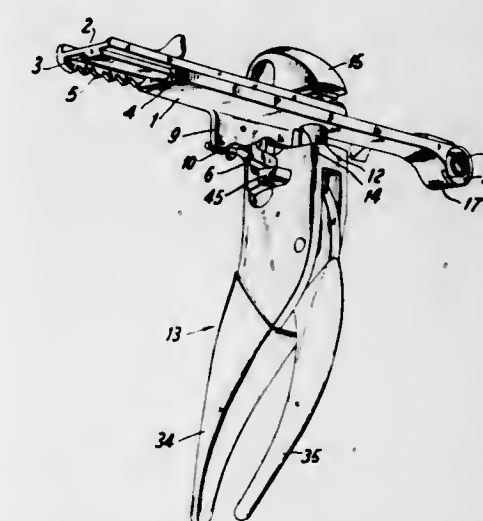
3,611,781
MULTI-STAGE PRESS WITH A PLURALITY OF MATRICES AND DIES
 Willi Pieper, Wuppertal, Germany, assignor to Gebr. Hilgeland, Ronsdorf, Germany
 Filed June 20, 1969, Ser. No. 835,158
 Claims priority, application Germany, June 21, 1968, P 17 52 610.2
 Int. Cl. B21d 28/02
 U.S. Cl. 72-339 5 Claims



A multi-stage press with two matrices and three dies arranged on a die holder adapted to oscillate back and forth on a press carriage, in which two adjacent dies machine each workpiece in one in two succeeding pressing strokes while when looking in the direction of the driving train of the press the drive motor drives the crankshaft for the press carriage and through a step-down transmission with a step-down ratio of 1:2 drives the oscillating device for the die holder as well as those control means of the press which are located on the machine frame at the side of the matrix for pulling in the wire, shearing the wire, ejecting the blank from the transport of the blank or the premachined workpiece to the first and second matrix and also bring about the ejection of the workpiece from the first matrix. In the driving train of the press behind the crankshaft and behind the output for the oscillating device in the driving train for the above mentioned control means there is provided a disengageable clutch through the intervention of which the position of the control means is variable with regard to the position of the carriage by an angle of 360° of the crankshaft for the carriage and with regard to the

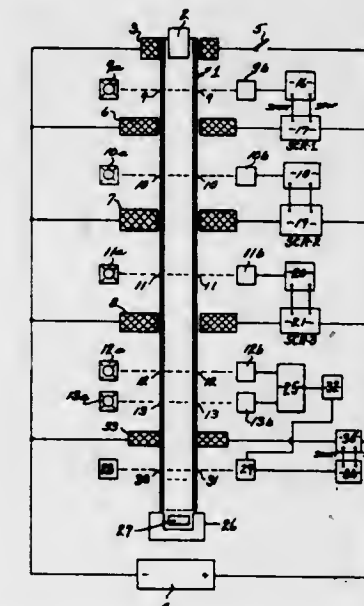
die holder is variable by 180° of the driving shaft therefor by rotating the driving elements located in the driving train behind the clutch with regard to the driving elements located in the driving train ahead of the clutch.

3,611,782
COMPRESSION TOOL FOR ELECTRICAL CONNECTORS
 Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Apr. 8, 1969, Ser. No. 814,348
 Int. Cl. B21d 9/08
 U.S. Cl. 72-410 3 Claims



The invention relates to a compression tool for crimping connector lugs about electrical conductors, the tool having a sliding tray to accept connector blocks with a plurality of lugs pre-installed therein and, by using the connector block as one-half of the crimping die means, to selectively and sequentially crimp the lugs about a like number of electrical conductors.

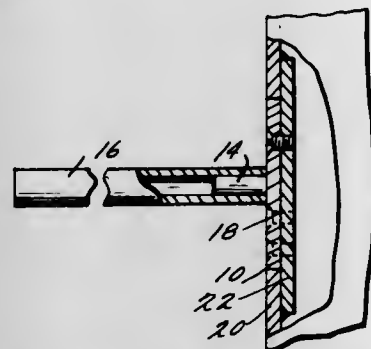
3,611,783
ELECTROMAGNETICALLY ENERGIZED IMPACT FORMING DEVICE
 Eugene Mittelmann, Chicago, Ill., assignor to The Hill Acme Company, Cleveland, Ohio
 Filed June 20, 1968, Ser. No. 738,656
 Int. Cl. B21j 7/30
 U.S. Cl. 72-430 5 Claims



An electromagnetically energized impact forming device wherein a solid projectile is driven at a high velocity against a workpiece sufficient to cold work or forge the workpiece into a preselected configuration. The projectile is movable within a confining barrel or tube, one end of which is located at the station where the workpiece

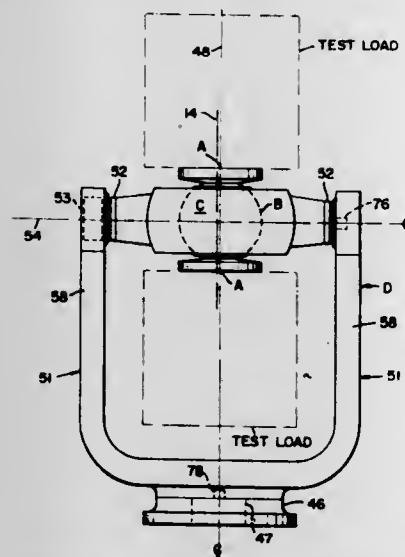
is placed. The workpiece may be disposed on and/or within any suitable work surface such as a forming die in such position to intercept the projectile moving through the barrel or tube. A plurality of coils surround the barrel and are electrically energized or pulsed in such manner as to generate magnetic fields longitudinally spaced along the length of the barrel and which are effective to propel the projectile toward and into engagement with the workpiece. The coils may be reversibly energized at the completion of the work stroke of the projectile to move and retain the projectile in a raised position to await the next succeeding cycle.

3,611,784
TOOL FOR STRAIGHTENING HINGE STRAPS ON METAL DOORS AND DOOR JAMBS
Reuben M. Prichard, 7252 Landover Road, Landover, Md. 20785
Filed Apr. 18, 1969, Ser. No. 817,311
Int. Cl. B21d 11/20
U.S. Cl. 72-458 2 Claims



A tool for straightening hinge straps on metal door jambs or on the heels of metal doors, said tool having an apertured planar member and a member extending at right angles therefrom whereby the apertures in the planar member are matched with the apertures of the straps in the jamb or on the heel of the door and wherein a hollow pipe may be placed over the extending member so that the tool can be manipulated so as to move the hinge strap in the jamb or heel in a desired direction to place the strap into a desired configuration or position.

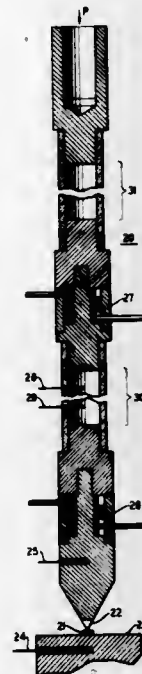
3,611,785
SPHERICAL AIR BEARING TEST CARRIAGE HAVING UNLIMITED ANGULAR MOTION
David G. Hanson, Los Altos, Calif., assignor to Carco Electronics, Menlo Park, Calif.
Filed Apr. 14, 1969, Ser. No. 815,564
Int. Cl. G01c 25/00; F16m 11/14
U.S. Cl. 73-1 14 Claims



A guidance system test carriage is mounted on a bearing ball supported by air within a socket to provide unlimited carriage roll and limited table movement in pitch

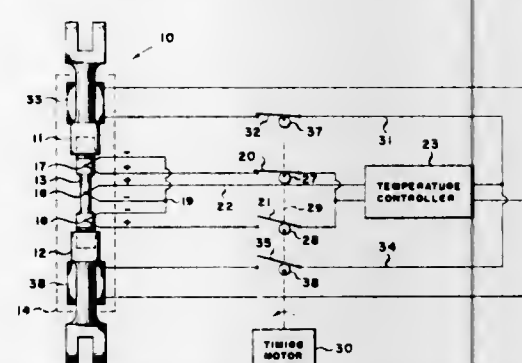
and yaw relative to the socket. The socket is in turn supported on a motored gimbal mounting. Sensors between the ball and socket detect small movements of the carriage in pitch and yaw and move the motored gimbal mounting and its attached socket to follow carriage in pitch and yaw providing unlimited angular carriage motion.

3,611,786
MEASUREMENT OF THERMAL CONDUCTIVITY OF HARD CRYSTALLINE BODIES
Anthony J. Schorr, Birdsboro, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed May 23, 1969, Ser. No. 827,197
Int. Cl. G01p 25/18
U.S. Cl. 73-15 R 1 Claim



Determination of the thermal conductivity of an irregularly-shaped body of diamond or other hard crystalline material is made by applying heat to the body at a known input rate from a thermal probe through a low resistance thermal contact of known, relatively small area on the body. The thermal conductivity is a function of the temperature drop as observed through a finite portion of the body, the heat input rate and the radius of the heat input area.

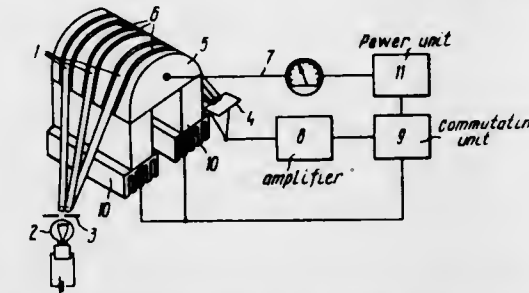
3,611,787
APPARATUS FOR MINIMIZING THERMAL GRADIENT IN TEST SPECIMENS
Anthony T. D'Annessa and Harvard H. Kranzlein, Sr., Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 11, 1969, Ser. No. 832,383
Int. Cl. G01n 3/18
U.S. Cl. 73-15.6 3 Claims



Apparatus for eliminating or minimizing the thermal gradient which occurs across a test specimen undergoing a tensile test, especially at non-ambient temperatures. A test specimen being evaluated at an elevated temperature

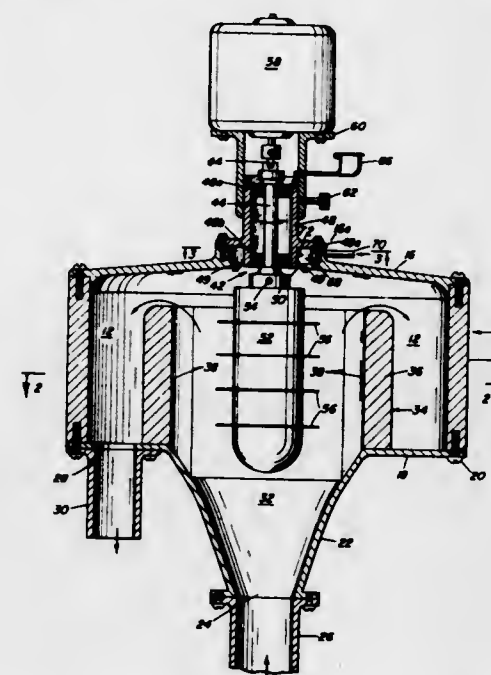
may undergo a significant and undesired thermal gradient throughout a dimension of the specimen, and this thermal gradient can introduce substantial inaccuracies in the test data obtained. A thermal gradient measured along the test specimen is used to control the addition or subtraction of heat from the specimen as necessary to minimize the unwanted thermal gradient.

3,611,788
DEW-POINT HYGROMETER
Anatoly Kuzmich Amelkin, Leningradsky prospekt 2, kv. 13; Nikolai Sergeevich Nikolaev, Ploshchad, Vostania 1, kv. 44; and Mikhail Mikhailovich Sergeev, Koptevskaya ulitsa 18b, kv. 47, all of Moscow, U.S.S.R.
Filed Oct. 8, 1969, Ser. No. 864,578
Int. Cl. G01n 25/02
U.S. Cl. 73-17 A 3 Claims



A dew-point hygrometer employs a light guide placed in a gaseous medium and having a refractive index greater than the gaseous medium being monitored but less than the refractive index of the condensate formed by cooling the medium. The light guide is illuminated at one end and the transmitted light flux is applied onto a photocell which controls the temperature of a support on which an intermediate portion of the light guide is bent and supported through the intermediary of a backing strip. The support has a refractive index greater than the condensate and the backing has a refractive index less than the light guide. The temperature of the support is monitored to determine the temperature of condensate formation.

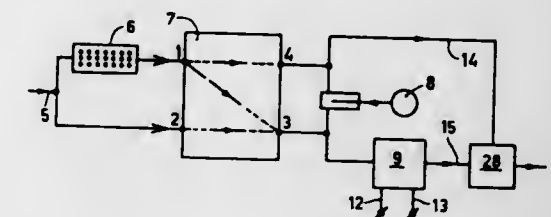
3,611,789
ROTARY MOTION CONSISTENCY METER
Kasimir Lopus, 118 Skyview Drive, Stamford, Conn. 06902
Filed Nov. 10, 1969, Ser. No. 875,468
Int. Cl. G01n 11/16
U.S. Cl. 73-59 15 Claims



Two rotary motion consistency meter embodiments are disclosed, one with continuous and one with oscil-

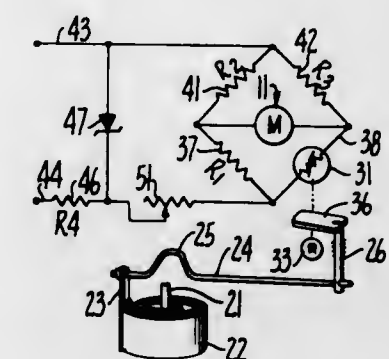
latory rotary motion. In both embodiments a fiber containing stock solution is circulated through the meter and the fibers are allowed to staple over the edges of thin, planar blades which are rotated in the stock solution by a motor having a constant output. The stapling produces hydraulic drag against the motor which causes an output variable of the motor to vary in a measurable manner as an indicator of stock consistency. The meters are provided with expansion chambers to slow down stock velocity through the meter, and with means for keeping the meters free from fiber clogging.

3,611,790
METHOD AND APPARATUS FOR QUANTITATIVE ANALYSIS
Harm Jan Brouwer and Scott Michael de Voeer, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,233
Claims priority, application Netherlands, Nov. 19, 1968, 6816450
Int. Cl. G01n 27/50
U.S. Cl. 73-61.1 R 5 Claims



By using filters and calibrating sources which can be inserted, either singly or in combination in the supply pipe of a fluid flow upstream of a measuring cell, constituents of the fluid flow can be measured continuously and quantitatively so as to be related to the zero and calibrating points obtained. The arrangement for carrying out the method is provided with an interconnection device for zero point determination, calibration and measurement and can be used in unattended measuring stations using remote control and remote measurement.

3,611,791
REMOTE AIR TEMPERATURE INDICATOR
Robert L. Wilbur, North Windham, Maine, assignor to The Eastern Company, Portland, Maine
Filed Dec. 22, 1969, Ser. No. 887,105
Int. Cl. G01k 5/72
U.S. Cl. 73-363.7 4 Claims



A linear output meter with a range reading from -40° F. to +120° F. is provided across the arms of a Wheatstone bridge. One branch of an arm of the Wheatstone bridge includes a photoelectric cell, the resistance of which is dependent on how much light falls on the cell. The cell is provided at a location remote from the meter. A constantly burning electric light is provided in association with

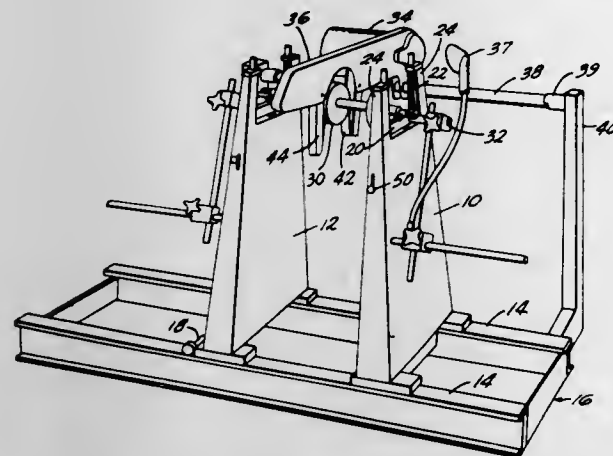
the photoelectric cell and the amount of light passing to the cell is controlled by a shutter moved by a bimetallic coil strip which is located in the region where it is desired to ascertain the temperature. The movement of the coil strip in turn moves the shutter which varies the amount of light falling on the photoelectric cell from the light and so varies the resistance of the cell, upsetting the bridge circuit.

3,611,792
CABLE SUSPENSION SYSTEM FOR
BALANCING MACHINES

Gordon E. Hines, Ann Arbor, Mich., assignor to
Balance Technology, Inc., Ann Arbor, Mich.
Filed July 28, 1969, Ser. No. 845,248
Int. Cl. G01m 1/16

U.S. Cl. 73-478

15 Claims



A soft suspension system for a balancing machine wherein the bearing carriers are suspended by cables. The cables are mounted on the carrier by a rigid connection and to stanchions of the machine by vertically adjusting means that adjust the height of the carrier without changing the length of the cables. Locking jaws having a particular toggle linkage actuator are provided to lock the carriers against vertical and lateral motion while permitting the carriers to pivot.

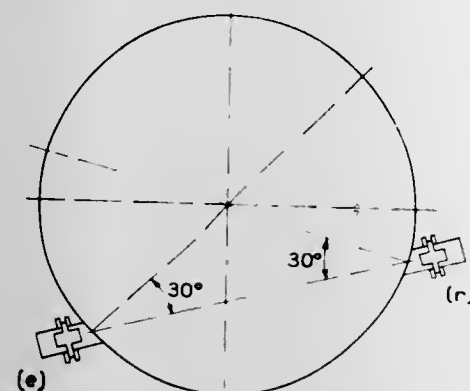
3,611,793
METHOD AND APPARATUS FOR CONTROLLING
CONTINUOUS LYE-WASHING IN PREPARING
PULP FOR PAPERMAKING

Roger Cerf, Strasbourg, Bas-Rhin, France, assignor to
Aktiebolaget Kamyr, Karlstad, Sweden
Filed July 25, 1968, Ser. No. 747,746
Claims priority, application France, July 28, 1967,
8,950

U.S. Cl. 73-67.5

Int. Cl. G01n 24/00

6 Claims



A method for inspection of continuous lye-washing or digestion in the preparation of paper pulp, and an apparatus for carrying out the method, wherein this inspection is defined by the obtaining of information as to the

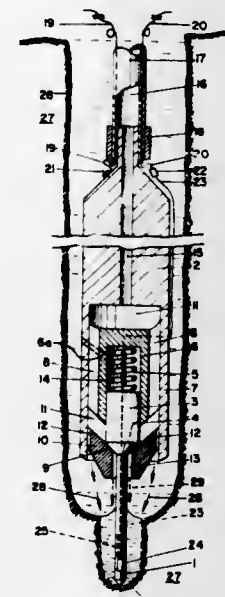
attenuation of an acoustic wave passing through the reaction medium of the digester, created by an ultrasonic beam emitted by a transducer and picked up by a second transducer forming a receiver, both of which are mounted at a fixed distance, their common axis being at 30° to a diameter of the digester, both resonating on the same frequency, which is high enough and low enough to avoid stray waves and to permit despite several factors of receiving a signal which is large in comparison with stray signals.

3,611,794
APPARATUS AND METHOD FOR DETERMINING
THE SOIL RESISTANCE OF A SUBTERRANEAN
EARTH FORMATION

Pieter J. de Geeter, Rijswijk, Netherlands, assignor to
Shell Oil Company, New York, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,262
Int. Cl. G01n 3/42; E21b 49/00

U.S. Cl. 73-84

6 Claims

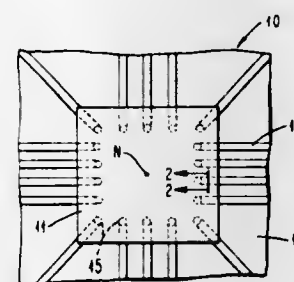


Apparatus and method for determining the soil resistance of a subterranean earth layer by driving a sounding pin carried by a body into the layer utilizing the weight of the body to drive the pin through the layer. The forces exerted on the pin are measured and recorded and soil within the layer is washed away while driving the pin therethrough.

3,611,795
CHIP TORQUE TESTING
Lewis S. Goldmann, Ossining, and Leonard E. Llander,
Fishkill, N.Y., assignors to International Business
Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1969, Ser. No. 819,856
Int. Cl. G01n 3/22

U.S. Cl. 73-88

1 Claim



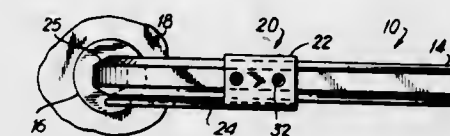
Method and apparatus are disclosed for torque testing a semiconductor device. The device is of the type in which a semiconductor wafer or chip is mounted on a substrate by a plurality of solder columns spaced around

the chip. In use, such devices are subject to thermal cycling and hence are subjected to thermal stresses due to the different thermal expansion characteristics between the chip and substrate. The interaction of the thermal stresses exerted by the various columns produces a neutral point in the chip. The resultant thermal strains induced in the several joints are proportional to the distance from this neutral point. The testing method comprises rotating the chip relative to the substrate until it ruptures therefrom and, during such rotation, measuring the amount of torque as a function of the angle of twist or rotation. Apparatus carries out the method by holding the semiconductor device, rotating the chip relative to the base, measuring the torque and degree of twist, and plotting such characteristics to provide a record thereof.

3,611,796
TORQUE INDICATING HEX KEY
Walter H. Hayward, Glenside, Pa., assignor to Standard
Pressed Steel Co., Jenkintown, Pa.
Filed Nov. 28, 1969, Ser. No. 880,613
Int. Cl. B25b 23/14; G01 5/24

U.S. Cl. 73-139

4 Claims

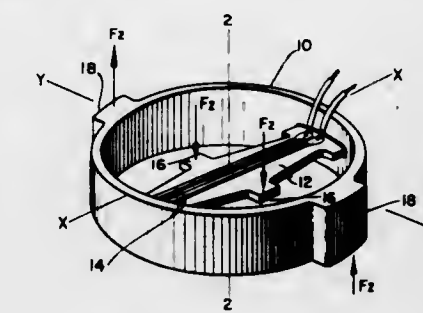


A hex key wrench with a torque indicating device which is adjustably attached to the torque applying leg of the wrench. The torque indicating device has an indicating arm extending along the torque applying leg of the wrench in spaced relation thereto to a point adjacent the bolt engaging leg of the wrench. The torque applying leg of the wrench deflects slightly when the wrench is used to tighten a bolt and, since the indicating device is fixed to the torque applying leg at one end, the end fixed to the torque applying leg also deflects thus causing the other end of the indicating arm to contact the relatively stationary bolt-engaging leg of the wrench. The length and position of the indicating arm is selected to be representative of a particular torque and when the arm contacts the bolt engaging leg, a visual indication may be made that the desired torque has been applied.

3,611,797
STRAIN GAGE TRANSDUCER SENSING
ELEMENT
Jean Pierre A. Pugnare, Arlington, Mass., assignor to
Bytrex, Inc., Waltham, Mass.
Continuation-in-part of application Ser. No. 827,529,
May 26, 1969. This application Feb. 2, 1970, Ser.
No. 7,728
Int. Cl. G01 5/12, 9/00, 1/22

U.S. Cl. 73-141 A

10 Claims



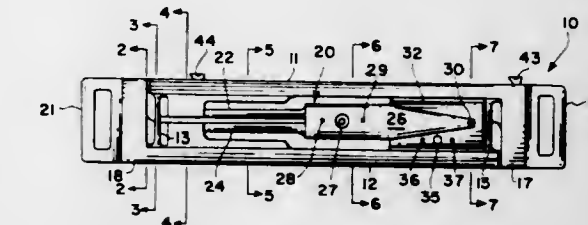
A thin-walled, radially compliant, cylindrical ring carries a diametric beam to which strain gages are attached.

A downward load is applied to the middle of the beam. A pair of tabs projecting laterally from opposite sides of the ring on an axis perpendicular to the beam axis support the transducer and the upward reaction force is applied to the ends of the beam solely through these tabs and the intervening portions of the ring.

3,611,798
MAGNIFYING SCRATCH GAGE FORCE
TRANSDUCER
Charles E. Scott, Yorktown, Va., assignor to the United
States of America as represented by the Administrator
of the National Aeronautics and Space Administration
Filed Feb. 19, 1970, Ser. No. 12,661
Int. Cl. G01 1/04

U.S. Cl. 73-141 A

13 Claims

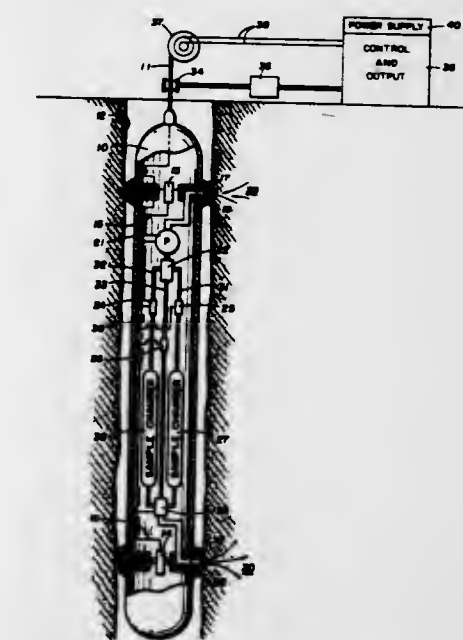


A passive type force transducer wherein forces exerted along the longitudinal axis of the transducer are magnified and displayed as a scratch transversely to the direction of force.

3,611,799
MULTIPLE CHAMBER EARTH FORMATION
FLUID SAMPLER
Mike Davis, Houston, Tex., assignor to Dresser
Industries, Inc., Dallas, Tex.
Filed Oct. 1, 1969, Ser. No. 862,821
Int. Cl. E21b 43/00

U.S. Cl. 73-155

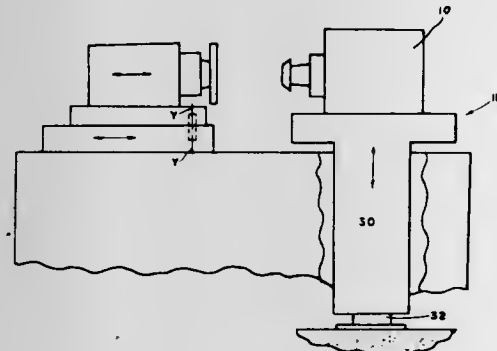
10 Claims



A multiple chamber sampling system for obtaining fluid samples from earth formations wherein a borehole exploring unit supported for movement through the borehole is provided with spaced means for isolating borehole wall formation portions from borehole fluids. A flow channel selectively interconnects the isolation means and has a pump therein for producing fluid flow from the

formation through the flow channel back into the formation. Engaging units contact the formations and fluid therein is pumped from one formation to another or from one portion of a formation to another portion of the same formation. A set of valves controllable from the surface provides means for filling the multiple sampling chambers and transducers provide indications of various physical characteristics of the fluid. Means are provided for determining the exploring units' depth in the borehole.

3,611,800
MACHINE FOR PROCESSING OR TESTING GEARS
Mason M. Howlett and Philip F. White, Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.
Filed Apr. 27, 1970, Ser. No. 32,007
Int. Cl. G01m 13/02
U.S. Cl. 73-162 23 Claims

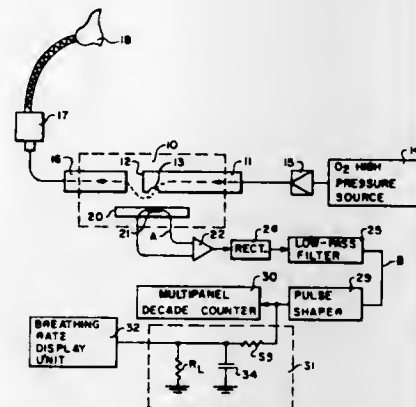


A universal gear-testing machine for testing a pair of gears mounted on two spindles carried by the machine. The weight of one spindle assembly being carried by a vertically displaceable support column, and the weight of the other spindle assembly being carried by the machine frame. The support column includes an adjustment means for effecting vertical adjustments, and the weight supported by the column is relieved from the adjustment means by a fluid pressure counterbalance system so that adjustment can be precisely and easily effected. One of the spindles of the machine is driven by a driving means which permits a full range of movements of machine elements without requiring an adjustment of the driving means itself. The other spindle of the machine is provided with an automatic braking means which can apply and maintain a preset braking force on the spindle while the spindle is being rotated. One spindle is also provided with a backlash measuring device which measures angular displacement between a pair of meshed gears when one of the gears is prevented from rotating in its axis. The machine includes hydraulically controlled clamping devices for its slideways and other moving elements, and a hydraulic system is provided for simultaneously controlling clamping and providing lubrication to the slideways and other surfaces.

3,611,801
RESPIRATION MONITOR
T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration, with respect to an invention of Robert J. Fagot and Robert T. McDonald, both of Littlerock, Calif., and James A. Roman, Vancouver, Wash.
Filed Oct. 28, 1968, Ser. No. 771,216
Int. Cl. G01f 1/04
U.S. Cl. 73-194 A 5 Claims

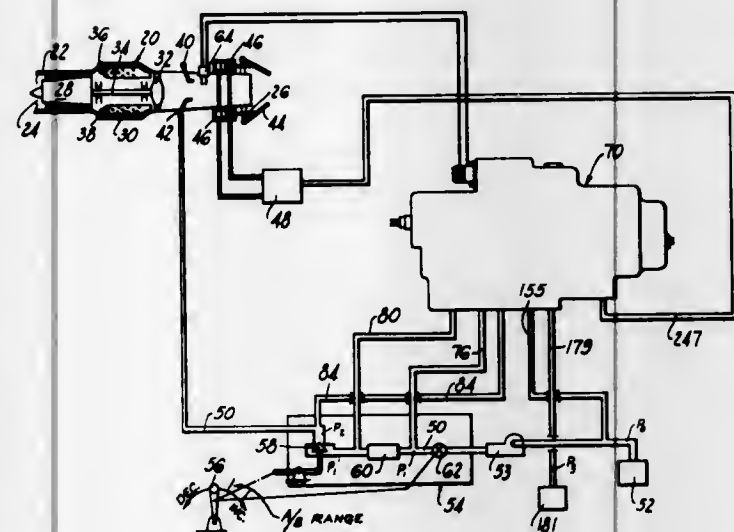
A respiration monitor which may be inserted directly into a high-pressure oxygen line is provided by a capped tube adapted to be connected to a source of oxygen under pressure. A hole on the side of the tube allows oxygen to escape into a sealed chamber having an outlet

port adapted to be connected to a face mask through a regulator. A microphone placed opposite the hole detects turbulence created by oxygen turning 90° to escape. A



signal from the microphone is conditioned to derive desired information, such as respiration rate and total breaths.

3,611,802
AFTERBURNER FUEL MANIFOLD FLOW SENSOR
Howard L. McCombs, Jr., South Bend, Ind., assignor to The Bendix Corporation
Filed Dec. 3, 1968, Ser. No. 782,012
Int. Cl. G01f 5/00
U.S. Cl. 73-203 8 Claims

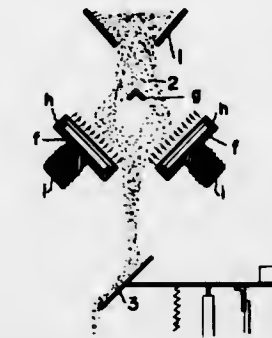


Apparatus for sensing the rate of fuel flow into an afterburner fuel manifold and energizing ignition apparatus for a predetermined time interval to ignite the afterburner fuel flow when the manifold is filled to a predetermined extent as well as providing a simultaneous output signal to release the gates of a variable area exhaust nozzle downstream from the afterburner.

3,611,803
IMPACT FLOW METER FOR POWDERY AND GRANULAR MATERIALS
Hiroshi Kajlura, 1-5, 2-chome, Higashinakano, Nakano-ku, and Kinnosuke Watanabe, 22-8, 3-chome, Nishi-chial, Shinjuku-ku, both of Tokyo, Japan
Filed Aug. 28, 1968, Ser. No. 755,983
Int. Cl. G01f 1/12
U.S. Cl. 73-228 3 Claims

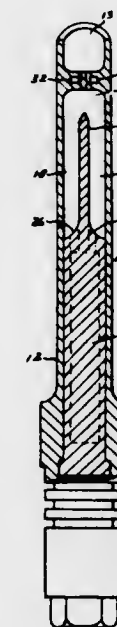
An impact flow meter for powdery and granular materials characterized in that a stream of powdery or gran-

ular material dropping from a certain height is once divided into a plurality of sub-streams and then the sub-



streams are merged before dropping with an impact on an impact-receptive detecting plate.

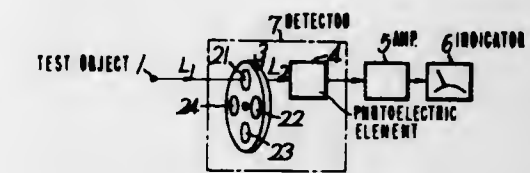
3,611,804
FLUIDIC TEMPERATURE SENSOR WITH U-SHAPED RESONANT CAVITY
Charles E. Bentz, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force
Filed Apr. 30, 1970, Ser. No. 33,445
Int. Cl. G01k 11/26
U.S. Cl. 73-349 9 Claims



A fluidic temperature sensor having a target vane positioned opposite an inlet orifice in a tubular housing wherein the target vane divides the cavity to form a substantially U-shaped resonant cavity wherein the frequency is a function of the temperature of the test gas entering the sensor cavity. The pressure signal is converted to an electrical signal by a piezoelectric transducer. In operation the small sensor is located directly in the gas flow of a turbine inlet.

3,611,805
RADIATION THERMOMETER
Isao Hishikari, Tokyo, Japan, assignor to Kabushikikaisha Chino Selsakusho (Chino Works, Ltd.), Tokyo, Japan
Filed July 28, 1969, Ser. No. 845,301
Int. Cl. G01j 5/08, 5/60
U.S. Cl. 73-355 R 3 Claims

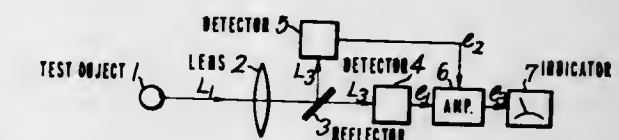
A radiation thermometer having a detector including a photoelectric conversion element converting energy radiated from an object to be measured into a corresponding electric signal and an optical filter means passing some components of the energy having a predetermined wave-



length range, a detector having the spectral sensitivity corresponding to the effective wavelength of the energy, and

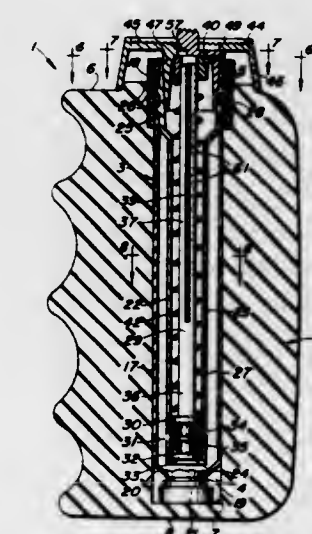
temperature indicating means for indicating the temperature of the object.

3,611,806
RADIATION THERMOMETER
Isao Hishikari, Tokyo, Japan, assignor to Kabushikikaisha Chino Selsakusho (Chino Works, Ltd.), Tokyo, Japan
Filed July 28, 1969, Ser. No. 845,421
Int. Cl. G01j 5/30, 5/52
U.S. Cl. 73-355 R 6 Claims



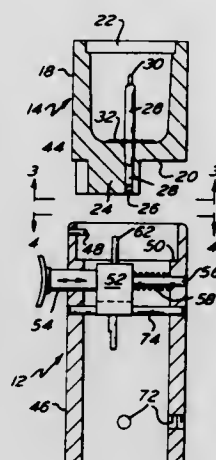
A radiation thermometer having means for detecting energy emitted from an object to be measured and generating electric signal corresponding to the energy, means for amplifying the electric signal, means for generating electric signal in accordance with the energy from the object, means for controlling gain of the amplifying means by the second mentioned electric signal, and means for indicating the temperature of the object by means of the output signal from the amplifying means.

3,611,807
EXERCISING GRIPS
John R. Brandell, 1527 Sequoia Trail, Glenview, Ill. 60025
Filed Apr. 27, 1970, Ser. No. 32,229
Int. Cl. G01i 5/02; A63b 21/30
U.S. Cl. 73-379 10 Claims



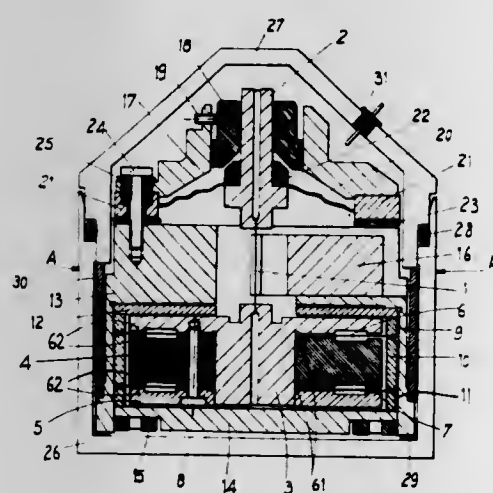
An exercising grip having a resilient compressible body member having working fluid therein, and with an indicating piston slidably mounted in the body member for movement outwardly thereof by the working fluid upon manual gripping of the body member and movement thereinto upon release of such gripping thereof, the grip also including a latch for selectively holding the piston against movement out of the body member.

3,611,808
DISPOSABLE SAND CUP AND SUPPORT
 Joseph J. Boron, Doylestown, and Thomas A. Lupperger, Philadelphia, Pa., assignors to Electro-Nite Co., Philadelphia, Pa.
 Filed Feb. 9, 1970, Ser. No. 9,806
 Int. Cl. G01k 11/06; G01n 25/06; H01r 19/02
 U.S. Cl. 73—359 10 Claims



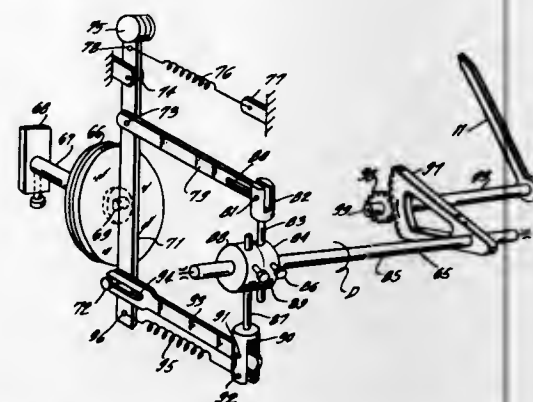
A disposable sand cup and support for use in connection with measuring carbon content of iron or steel is disclosed. The cup contains horizontally disposed thermocouple wires which are partially exposed for contact with movable contact pins on the cup support.

3,611,809
VIBRATING STRING GRAVIMETERS
 Michel Cantat and Raymond Mathey, Paris, France, assignors to CSF-Compagnie Generale de Telegraphie Sans Fil, Paris, France
 Filed July 2, 1968, Ser. No. 741,967
 Claims priority, application France, July 6, 1967, 113,417
 Int. Cl. G01v 7/04
 U.S. Cl. 73—382 3 Claims



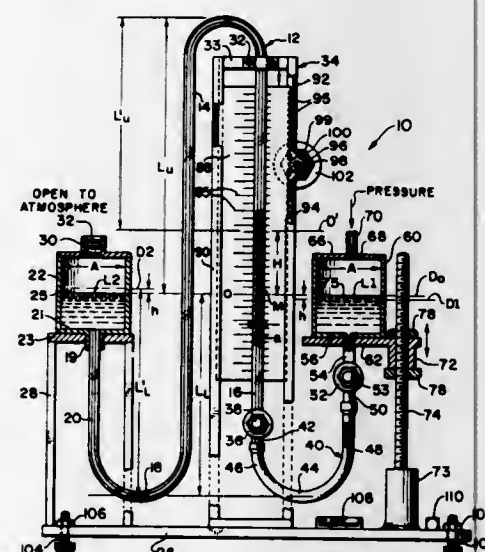
A vibrating string gravimeter comprising, inside a housing, a mass suspended on a vibrating string, which is attached to the housing and vibrates in the field of a permanent magnet. At least two elastic parallel diaphragms attach the mass to the housing. The mass and the housing have plane and polished horizontal surfaces facing each other and at a distance from each other adjusted for damping the displacements of the mass by lamination of air between these surfaces.

3,611,810
DRIVE MEANS FOR POINTER OF AIRCRAFT INSTRUMENT
 John H. Andresen, Jr., Rocky Point, N.J., assignor to Intercontinental Dynamics Corporation, Englewood, N.J.
 Filed Dec. 10, 1969, Ser. No. 883,978
 Int. Cl. G011 7/00
 U.S. Cl. 73—397 4 Claims



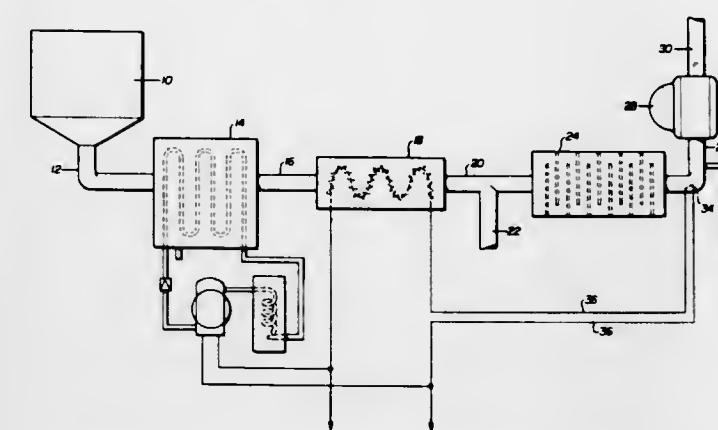
An aircraft instrument is constructed so that the pointer thereof is driven successively by one or the other of two different link-lever systems in which the link and lever are joined by a slot pin connection to produce a pointer drive range and/or direction which is programmed to change in relation to a signal, changing steady rate, which mechanically drives the pointer.

3,611,811
DIFFERENTIAL DENSITY MANOMETER
 Frederic Lissau, Forest Hills, N.Y., assignor to Liquidonics, Inc., Westbury, N.Y.
 Filed Mar. 27, 1970, Ser. No. 23,367
 Int. Cl. G011 7/18
 U.S. Cl. 73—401 10 Claims



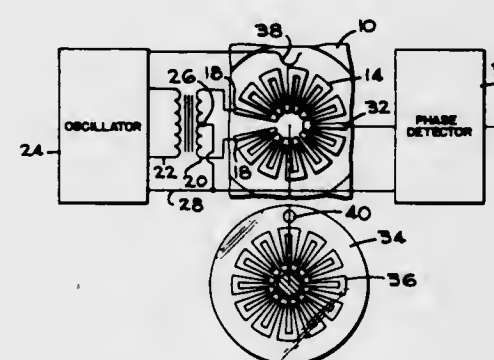
A manometer for accurately measuring extremely small changes in fluid pressures employs an inverted vertical U-shaped tube assembly having a narrow uniform bore throughout its length. Two upwardly turned leg portions are connected to two containers of equal size containing two fluids of different colors and densities. The fluids fill the tube and meet at a meniscus whose position in the tube is read on a graduated scale adjacent to the transparent tube. The scale is adjustably movable along the tube. The height of one container is also adjustable. Either one of the containers may be open to the atmosphere while the other container is open to a source of variable pressure. Any change in the variable pressure produces a change in scale reading. The distance the meniscus moves upon a change in pressure depends on the ratio of densities and ratio of cross sectional area of one container to the cross sectional area of the bore of the tube.

3,611,812
SAMPLING PROCESS FOR COMBUSTION GASES
 Allen Cleveland, Ann Arbor, Mich., assignor to Olson Laboratories, Inc., Dearborn, Mich.
 Filed May 13, 1970, Ser. No. 36,876
 Int. Cl. G01n 1/22
 U.S. Cl. 73—421.5 R 5 Claims



A sampling process for combustion gases which includes the steps of introducing a continuous stream of ambient air into a conduit system, reducing the temperature of the ambient air to not more than about 40° F., subsequently heating the air to about 130° F., introducing exhaust gases into the system downstream from the heated air and mixing it with the heated air, passing the mixture of gases through a heat sink to obtain a uniform temperature, exhausting the gases from the heat sink at a constant volume, and drawing off a quantity of gas into a sample tube.

3,611,813
TACHOMETER
 Dale Brocker, 19525 Forest Ave., Castro Valley, Calif.
 Continuation-in-part of application Ser. No. 727,911, May 9, 1968. This application Feb. 20, 1970, Ser. No. 13,185
 Int. Cl. G01p 3/44
 U.S. Cl. 73—518 2 Claims



A tachometer including a fixed pattern having an input signal applied thereto, and a cooperating rotary pattern arranged to modulate the input signal at a rate proportional to the rate of rotation.

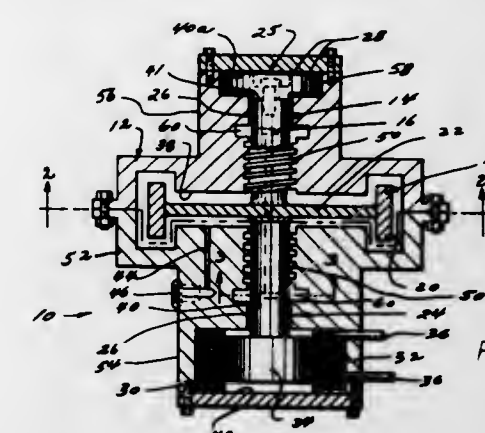
ERRATUM

For Class 74—5 see:
 Patent No. 3,612,160

3,611,814
SPIN ROTOR ASSEMBLY
 August F. Haack, and Semon P. Vincent, both of Torrance, Calif., assignors to TRW Inc., Redondo Beach, Calif.
 Filed July 24, 1969, Ser. No. 844,583
 Int. Cl. G01c 19/02
 U.S. Cl. 74—5 14 Claims

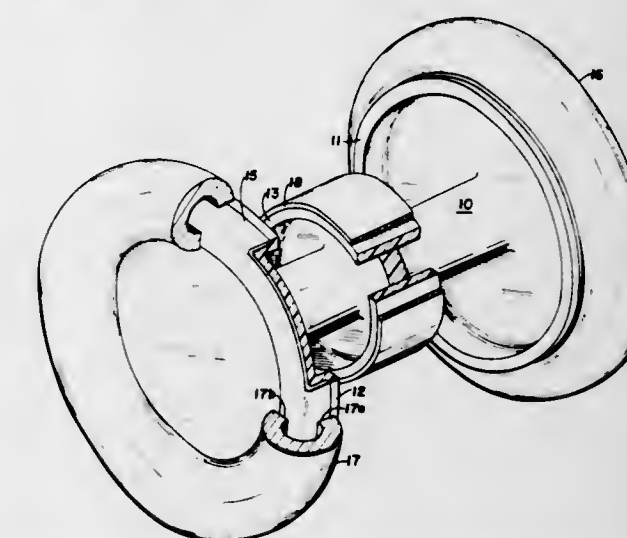
A high-speed spin rotor assembly having a hermetic casing filled with gas, preferably under subatmospheric pressure,

and containing a motor-driven spin rotor including an inertial wheel with a central shaft rotatably supported by gas bearing means. Pumping means, such as helical pumping grooves surrounding the shaft, are provided for continuously pumping



gas from the interior region of the casing surrounding the inertial wheel to the gas bearing means to reduce the viscous drag of the gas on the wheel and concurrently pressurize the gas bearing means. The disclosed method of operating the spin rotor assembly.

3,611,815
FRictionless GYROSCOPE
 Robert E. Fischell, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy
 Filed Dec. 24, 1969, Ser. No. 887,954
 Int. Cl. G01c 19/24
 U.S. Cl. 74—5.7 7 Claims

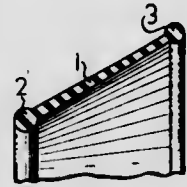


A substantially friction free gyroscope structure comprises a cylindrical rotor member whose ends are encompassed by a pair of annular permanent magnets. Each end of the rotor member carries a diamagnetic insert which coacts with the associated permanent magnet to establish repulsive magnetic forces which keep the rotor out of physical contact with the permanent magnet; i.e., the rotor is made to float with substantially zero friction. The possibility of eddy current losses is minimized both internal and external of the gyroscope by constructing the rotor of an electrically nonconductive material such as Fiberglas, for example, and by reason of the magnetic symmetry of the permanent magnets.

3,611,816
SLEEVE FOR SEALING COAXIALLY ARRANGED PARTS
 Gerhard Wedekind, Hannover-Linden, and Karl Schulz, Hannover, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
 Filed June 2, 1969, Ser. No. 829,170
 Int. Cl. F16j 15/52
 U.S. Cl. 74—18.2 6 Claims

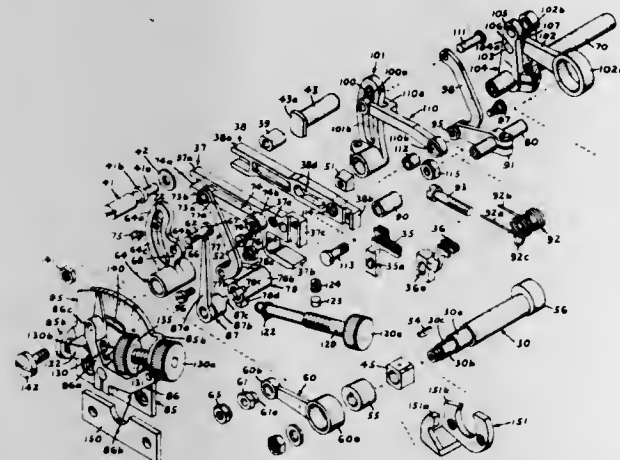
A sleeve of rubber material for covering up coaxially arranged members, especially shafts and housings, movable relative to each other in at least one of the following

directions: axial direction, eccentric direction; and angular direction; said sleeve including a hollow conical body having marginal sections with bead means and an intermediate sec-



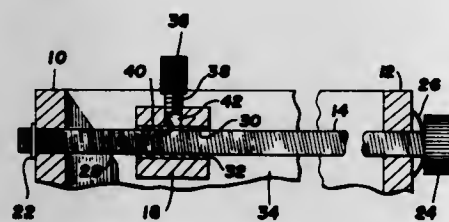
tion interconnecting said marginal sections and gradually decreasing in diameter from the marginal section of smaller diameter to the marginal section of larger diameter of said conical body.

3,611,817
DIFFERENTIAL FEED MECHANISM FOR A SEWING MACHINE
Clarence C. Smith, Chicago, and Henry Szostak, Oak Park, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.
Filed May 26, 1969, Ser. No. 827,685
Int. Cl. D05b 27/08; F16h 21/32
U.S. Cl. 74-40 15 Claims



A differential feed mechanism is provided for a high-speed industrial sewing machine. The differential mechanism includes separate driving mechanisms for each of two feed dogs mounted on feed bars, both mechanisms connected to the main drive shaft of the sewing machine. Separate adjusting means are provided in each of the feed dog driving mechanisms to adjust individually, rapidly and at will, the length of the horizontal feed stroke of each feed dog.

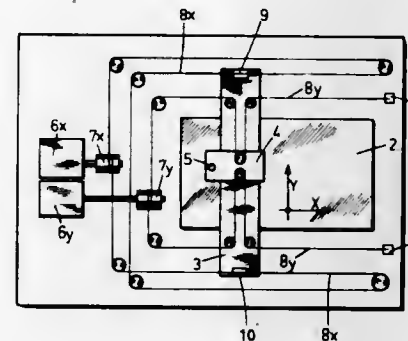
3,611,818
TRANSLATION CONTROL MECHANISM
Richard H. Burns, Webster, and Helmut Welker, Jamestown, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 6, 1969, Ser. No. 863,883
Int. Cl. F16h 27/02, 1/18, 55/04
U.S. Cl. 74-89.15 13 Claims



A control for transmitting motion comprises a shaft having a surface finish with a predominantly helical lay, the control

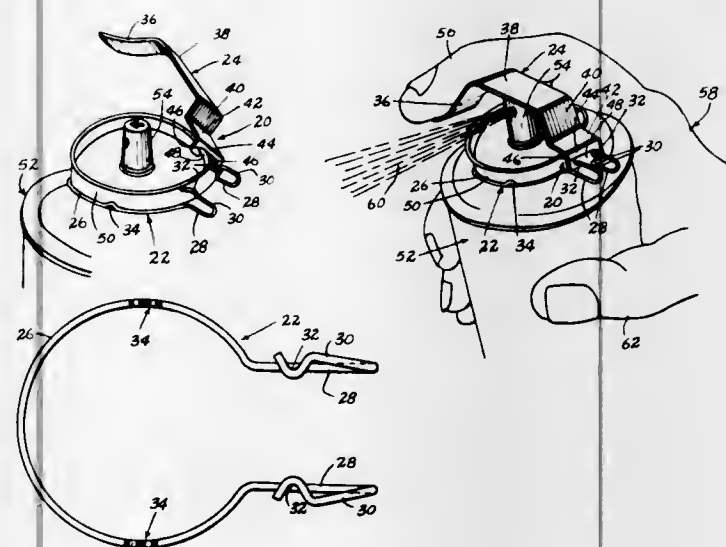
being slidably and rotatably engaged with a following block at a uniform deformable surface formed thereon. A control device is provided for controlling the engagement by controlling the amount of pressure exerted by the uniform deformable surface upon the spirally grooved shaft.

3,611,819
MOTION-TRANSMITTING ARRANGEMENT
Jurgen Muller, Bad Hersfeld; Manfred Hoppe, Friedlos, and Walter Jager, Helmboldshausen, all of Germany, assignors to Zuse KG, Bad Hersfeld, Germany
Filed July 9, 1969, Ser. No. 840,258
Claims priority, application Germany, Oct. 9, 1968, P 18 01 973.3
Int. Cl. F16h 55/52
U.S. Cl. 74-89.22 19 Claims



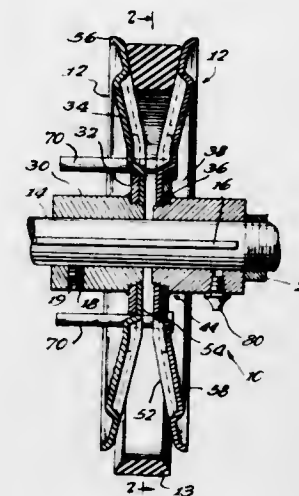
A drafting head of a drafting apparatus is mounted for to-and-fro movement in a predetermined direction. A flexible elongated rope is connected to the drafting head for exerting pull thereon to thereby move it in this predetermined direction. A rotatable drum is mounted for rotation about its axis and has the rope convoluted about its circumference. The drum includes a radially expandable annular member and end disks cooperating therewith for expanding and contracting it so as to vary the diameter of the drum; a drive serves to rotate the drum about its axis.

3,611,820
SPRAY-VALVE-ACTUATING DEVICE
Herbert W. Hempel, Belleville, Ill., assignor to Marsh Stencil Machine Company, Belleville, Ill.
Filed May 19, 1969, Ser. No. 825,774
Int. Cl. F16h 21/44
U.S. Cl. 74-102 2 Claims



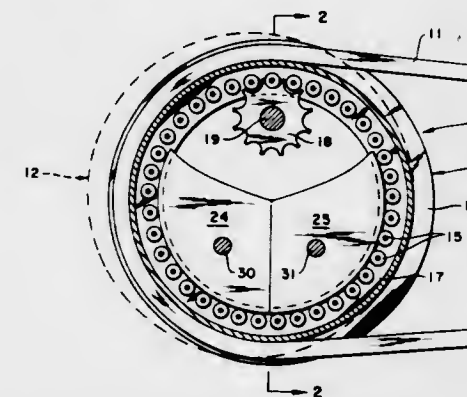
The present device is a novel spray-valve-actuating device for aerosol spray product containers which includes a split annular wirelike base element or clamp for mounting on the neck of a container and a compact valve actuating lever pivotally operatively connected to the base element and removably securing it in mounted position when the device is on a container.

3,611,821
VARIABLE SPEED DRIVE PULLEY
William F. Legler, Bettendorf, Iowa, assignor to J. I. Case Company
Filed Sept. 8, 1969, Ser. No. 855,969
Int. Cl. F16h 55/52
U.S. Cl. 74-230.17 10 Claims



A variable speed pulley in which the two sheave halves are identical in construction and each includes a hub, a flat substantially circular plate fixed to the hub, and a sheet metal disc defining the bearing surface for a belt received between the sheave halves. The plate has circumferentially spaced radially extending slots extending from the peripheral surface towards the center thereof and the sheet metal disc has deformed portions circumferentially spaced and extending radially to define elongated ribs, the inner ends of which are received in the slots on the plate. The plate and disc are interconnected and the ribs and slots cooperate to prevent relative rotation between the plate and disc. The variable speed pulley may also include pins fixedly secured in one set of openings defined on one sheave half and having opposite ends received in identical openings in the second sheave half with the pins cooperating to define the minimum diameter of the pulley.

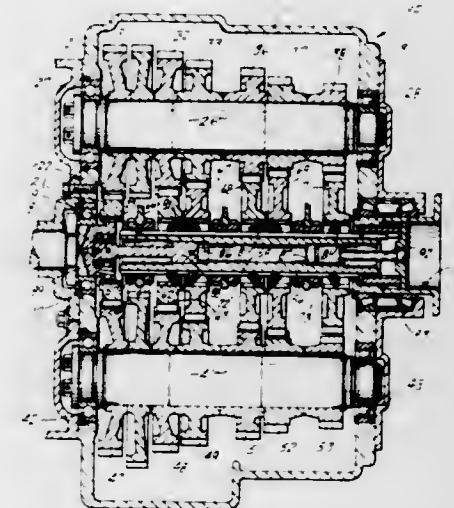
3,611,822
BELT-TIGHTENING MECHANISM
Martin I. Sanderson, 132 Grove St., Salinas, Calif.
Filed Sept. 29, 1969, Ser. No. 863,420
Int. Cl. F16h 7/08, 1/06
U.S. Cl. 74-242.9 10 Claims



Mechanism for automatically adjusting the tension in a drivebelt in accordance with changes in the magnitude of the required power transmission therealong. The mechanism includes a pulley wheel adapted to have an endless belt entrained thereabout, and the wheel is annular so as to provide an open interior about which are located a plurality of angularly spaced rollers defining the teeth of an internal ring gear meshingly engaged by a spur gear mounted upon a power shaft. The pulley wheel is rotatably supported by a plurality of support segments located within the interior of the wheel in rolling engagement with the rollers. The segments are connected with hanger structure located along the exterior of the

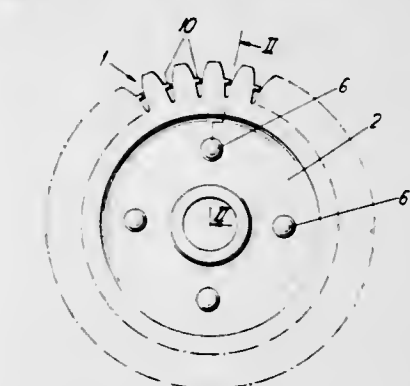
pulley wheel and carried by the drive shaft for angular displacements relative thereto. Whenever the requirement for increased power transmission along the belt occurs, the hanger structure, support segments, and drive pulley swing angularly about the axis of rotation of the shaft in a direction to increase the tension in the belt, and vice versa.

3,611,823
FLOATING MAIN DRIVE GEAR ASSEMBLY
Elmer A. Richards, Oshtemo Township, Kalamazoo County, and Edward L. Zahn, Galesburg, both of Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed July 22, 1969, Ser. No. 843,386
Int. Cl. F16h 3/08, 57/00; F16d 1/100
U.S. Cl. 74-331 11 Claims



A transmission, particularly of the multiple countershaft type, having the input or main drive gear floatably mounted for free axial rocking movement relative to both the input shaft and to the transmission main shaft to compensate for axial misalignment therebetween as said drive gear is connected alternately directly to said main shaft or to ratio gears.

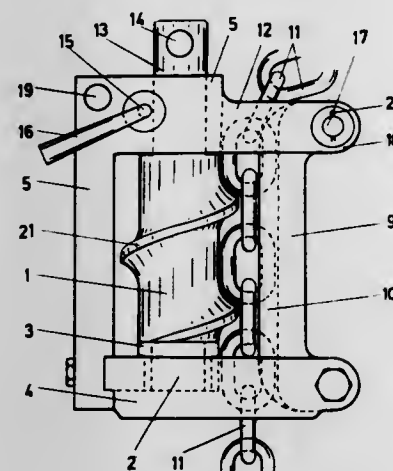
3,611,824
WORM GEARING
Derek Norman Stevens, Dunstable, England, assignor to General Motors Corporation, Detroit, Mich.
Filed June 11, 1970, Ser. No. 45,306
Claims priority, application Great Britain, June 12, 1969, 29,727/69
Int. Cl. F16h 57/00, 55/04, 55/14
U.S. Cl. 74-411 5 Claims



In order to overcome the disadvantage of insufficient ductility in glass filled nylon as a material for gear wheels, the teeth of a gear wheel are recessed below the dedendum circle so that each tooth is in effect supported on a long beam so that the additional resilience thereby obtained provides sufficient ductility to resist breakage of the teeth under high torque loads, the gear preferably being formed as two mouldings which are secured together, and the mouldings incorporating abutments to limit the relative movement of the teeth.

3,611,825
DRIVING DEVICE FOR CHAINS
 Elns Kallnes, Orsa, Sweden, assignor to Seasafe Transport AB, Stockholm, Sweden
 Filed Nov. 3, 1969, Ser. No. 873,420
 Claims priority, application Sweden, Nov. 5, 1968, 15598/68
 Int. Cl. F16h 1/18, 19/06; B66d 3/08
 U.S. Cl. 74-424.7

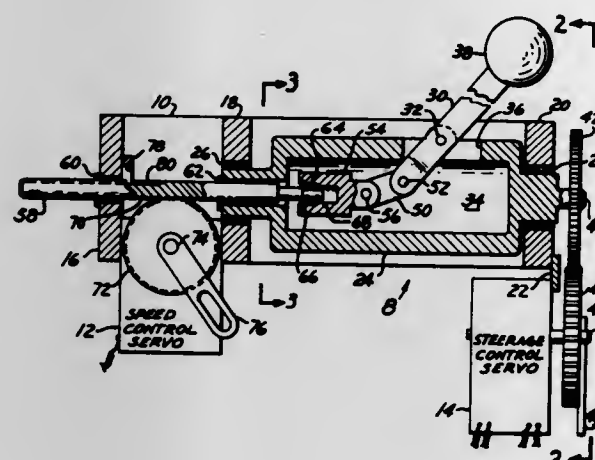
5 Claims



Hoisting or stretching device for chains provided with a guiding groove for the chain and a turnable worm screw in close connection to said groove and in engagement with one or more links of the chain so as to move the chain axially.

3,611,826
MANEUVER CONTROL SYSTEMS FOR CYCLOIDAL PROPELLERS
 William E. Fisher, and John A. H. Morrison, both of Glendora, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
 Division of Ser. No. 721,307, Apr. 15, 1968, Pat. No. 3,545,398.
 Filed Feb. 6, 1970, Ser. No. 9,863
 Int. Cl. G05g 9/04
 U.S. Cl. 74-471 XY

4 Claims



This disclosure relates to maneuver control systems for use with cycloidal propellers on marine vessels.

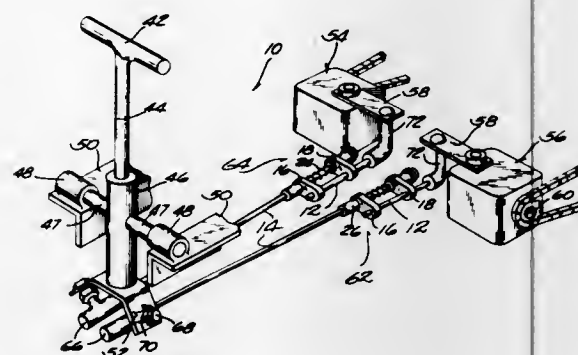
A control system according to the present disclosure includes control means located at each of a plurality of control stations. Control apparatus is associated with each control means to effectuate steering and speed control of the propeller.

Optional and desirable features of the present disclosure include selector means for selecting one of the plurality of control stations to control the maneuvering of the vessel. Drive means may be associated with at least some of the control stations so that the control means at the noncontrolling stations follow the position of the control means at the controlling station. Preferably, the control means are lever arms which are capable of pivoting about each of two mutually

perpendicular axes. Pivotal movement of the lever arm about one axis causes operation of speed control apparatus, while pivotal movement about the other axis causes operation of steering control apparatus.

3,611,827
FORCE LIMITED COUPLING
 Robert O. Bottum, and Kirk W. Reimers, both of Lincoln, Nebr., assignors to Outboard Marine Corporation, Waukegan, Ill.
 Continuation-in-part of application Ser. No. 821,214, May 2, 1969, now abandoned. This application Sept. 19, 1969, Ser. No. 859,254
 Int. Cl. G05g 9/00
 U.S. Cl. 74-471

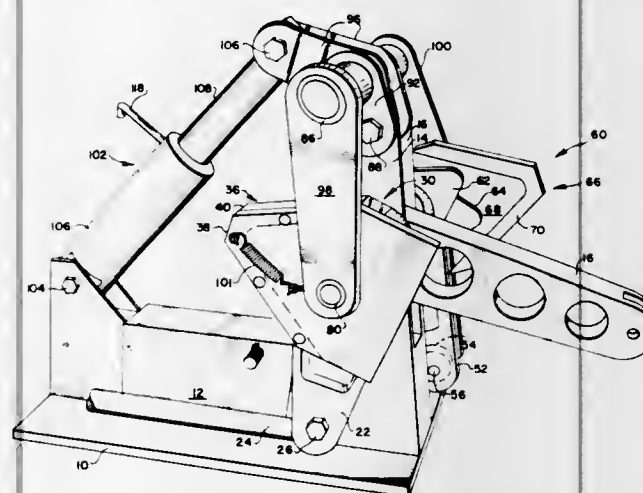
4 Claims



Disclosed herein is a hydrostatic drive unit controlled by a spring-loaded device which serves, in effect, as a mechanical safety valve preventing or limiting the buildup of undesirable or excessive pressure in the hydrostatic unit. Also disclosed herein is such a control device comprising a force-limiting coupling which connects the ends of a pair of parallel links or rods. When an axial force exerted in either direction on one of the links attains a predetermined force value, a spring yieldably affords overtravel or relative movement of one of the control links with respect to the other to prevent transmission of excessive forces.

3,611,828
CHANNEL-SWITCHING DEVICE
 Max Maroshick, Glen Mills, Pa., assignor to The Boeing Company, Seattle, Wash.
 Filed Sept. 30, 1969, Ser. No. 862,345
 Int. Cl. G05g 11/00; B64c 13/00, 13/32
 U.S. Cl. 74-479

11 Claims

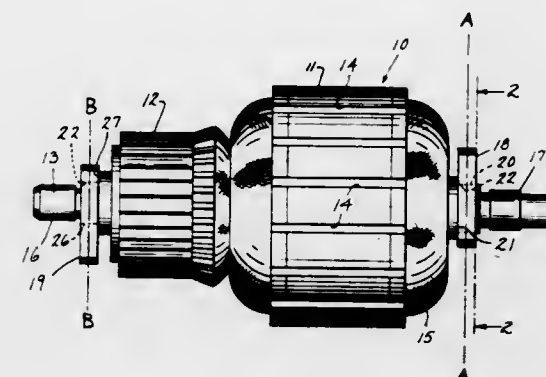


A channel-switching device is provided that receives two mechanical input signals and transmits one of these signals as an output signal. The device includes a primary input assembly that normally transmits a primary signal to an output member and a secondary input assembly that normally receives a secondary signal but does not transmit the secondary signal to the output member. The primary input assembly includes a normally engaged, cam-type positive drive clutch and the secondary input assembly includes a similar,

but normally disengaged clutch. Shift means are provided for simultaneously disengaging the clutch in the primary input assembly and engaging the clutch in the secondary input assembly after a failure in the primary input signal is sensed.

3,611,829
BALANCING ARRANGEMENT FOR ARMATURE ASSEMBLIES
 Stephen E. Smith, Madison, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
 Filed Feb. 9, 1970, Ser. No. 9,668
 Int. Cl. F16f 15/22
 U.S. Cl. 74-573

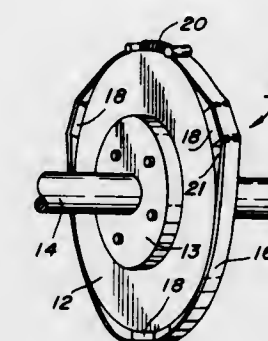
5 Claims



A counterweight preformed from sheet stock is secured to the shaft of an armature at a selected angle of unbalance and correction plane by a press fit between the shaft and a hole in the counterweight.

3,611,830
SILENCER BAND
 Harry C. Shank, Lake Villa, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.
 Filed Nov. 3, 1969, Ser. No. 873,176
 Int. Cl. F16f 15/12
 U.S. Cl. 74-574

3 Claims



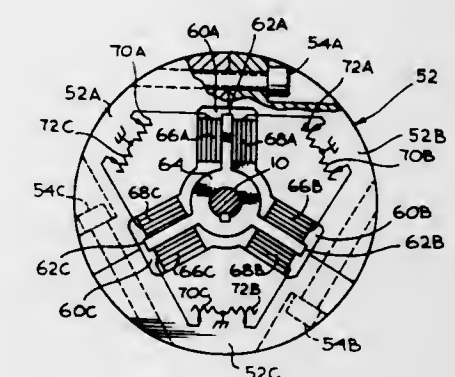
Device for dampening vibrations in a workpiece during a grinding operation performed thereon includes a plurality of lead blocks positionable directly against the workpiece and a spring-loaded flexible band for holding the blocks against the workpiece.

3,611,831
TORSIONAL VIBRATION DAMPER
 Cormac Garrett O'Neill, Castro Valley, Calif., assignor to Physics International Company, San Leandro, Calif.
 Filed Dec. 3, 1969, Ser. No. 881,714
 Int. Cl. F16f 15/12
 U.S. Cl. 74-574

7 Claims

Apparatus for damping the torsional oscillations of a rotating shaft, is provided which includes an electromechanical

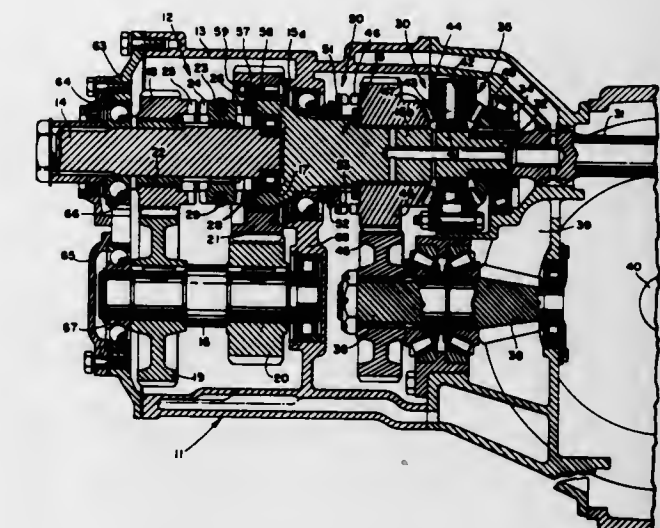
transducer coupled to said shaft for converting a substantial portion of the mechanical energy generated by the torsional



oscillations of the shaft to electrical energy which can then be readily dissipated by applying it to load resistors.

3,611,832
GEARED DRIVE MECHANISM
 George W. Vollmer, Chardon, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
 Filed June 8, 1970, Ser. No. 44,126
 Int. Cl. F16h 37/08, 3/02
 U.S. Cl. 74-700

13 Claims



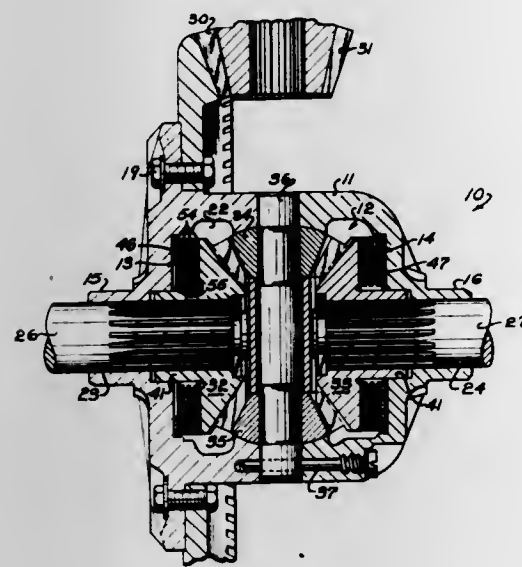
An axle-mounted auxiliary transmission in which the output gear, clutch output member, and output shaft are in the form of a fabricated subassembly which can be easily disassembled without removing it from the transmission housing.

3,611,833
DIFFERENTIAL
 Jerry F. Baremor, Detroit, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
 Continuation of application Ser. No. 705,476, Feb. 14, 1968, now abandoned. This application Feb. 26, 1970, Ser. No. 14,763
 Int. Cl. F16h 1/44, 57/08
 U.S. Cl. 74-711

1 Claim

A limited slip differential includes at least a pair of pinion

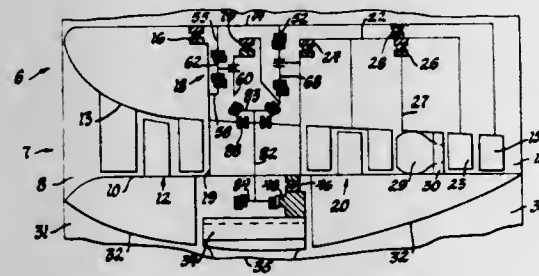
gears having a meshing relationship with a pair of side gears. The meshing relationship of one of the pinion gears with one



side gear is out of phase with the meshing relationship of another pinion gear with the one side gear.

3,611,834 FAN DRIVE

James R. Dison, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 13, 1969, Ser. No. 865,573
Int. Cl. F16h 37/06; F02k 3/02
U.S. Cl. 74-720.5 12 Claims



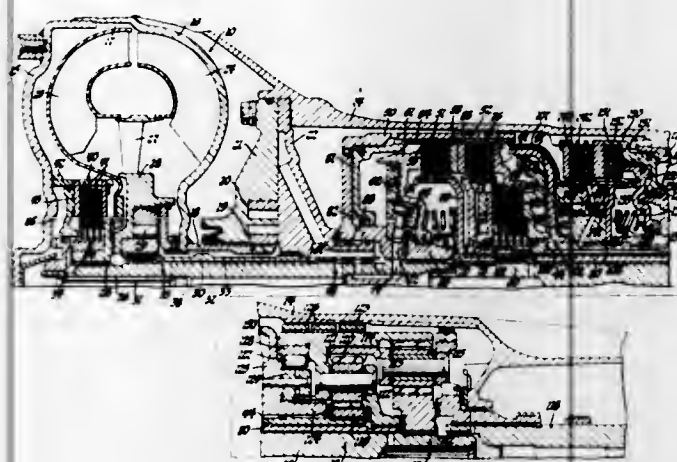
A gas turbine engine of the lift type exerts lift principally by a ducted fan mounted around the midportion of the gas turbine engine and coaxial with it. The engine shaft drives two coaxial gear sets, one having a rotating spider and the other a rotating ring gear, these rotating in opposite directions at the same speed. Each gear set drives a bevel gear coaxial with the turbine axis, these gears being coupled together by a thrust bearing. A substantial number of radial drive shafts extend across the motive fluid duct of the gas turbine, each bearing a bevel pinion meshing with both of the bevel gears. The outer ends of these shafts bear spur pinions which mesh with a circular rack-type gear external to the motive fluid duct and fixed to the hub of the fan. The fan is mounted on a large ball bearing on the exterior of the turbine casing.

3,611,835 TRANSMISSION

August H. Borman, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 28, 1969, Ser. No. 880,647
Int. Cl. F16h 57/10, 47/08
U.S. Cl. 74-759 4 Claims

A vehicle transmission having a hydrodynamic torque con-

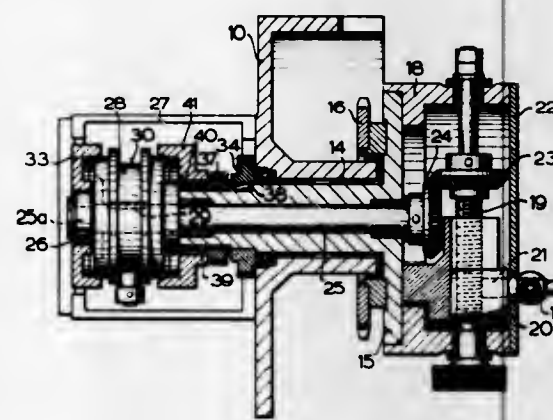
verter and two planetary gear sets combined with three clutches, a one-way clutch, three brakes and two one-way



brakes to provide four forward drives including an overdrive and also to provide a reverse drive.

3,611,836 APPARATUS FOR AN ENDLESS ADJUSTMENT OF THE WORKING STROKE OF A DRIVING MACHINE

Werner Weck, Schwelm, Germany, assignor to Firma Hamba-Maschinenfabrik Hans A. Muller, Wuppertal-Vohwinkel, Germany
Filed Oct. 6, 1969, Ser. No. 863,901
Claims priority, application Germany, Oct. 7, 1968, P 18 01 599.1
Int. Cl. F16h 35/08; G05g 1/00
U.S. Cl. 74-837 5 Claims

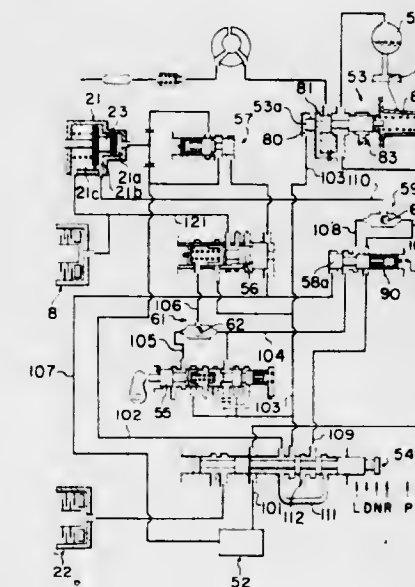


An apparatus for continuous adjustment of the working stroke of a driving machine, wherein the adjustment of the working stroke is simplified and rendered easier. A stroke adjustment spindle, mounted in a crank ring which is rigidly connected with a driven crank hub, in addition to manual operation, is further adjustable by an adjustment drive, preferably by a bevel gear drive, movable selectively in one or in the other opposite rotary adjustment direction. This adjustment is brought about by sitting the driving or control wheel of this double gear drive at one end of a control shaft, projecting axially through the driven crank hub and likewise driven with the latter, which control shaft is coupled for a joint drive at its counter end and is as well axially slidable on the latter. The control shaft receives an engaging element operable from the outside by means of an engaging lever arrested in the rest position and manually operable, which engaging element, depending upon the amount of the stroke adjustment, cooperates either with a coupling ring disc immovable in space, preferably on the side of the coupling housing, and disposed with an axial distance, for instance, on the left side from the engaging element, in the sense of a rotary locking of the double gear drive control shaft, or is provided with a second coupling ring disc disposed with an axial

distance, for instance, on the right side from the engaging element, by means of an additional transmission drive driven from the crank hub with a peripheral speed higher than that of the crank hub in the sense of a bevel gear drive control shaft drive with its own driving speed surpassing the peripheral speed of the crank hub.

3,611,837 OIL PRESSURE CONTROL DEVICE FOR FLUID-TYPE AUTOMATIC TRANSMISSION SYSTEM

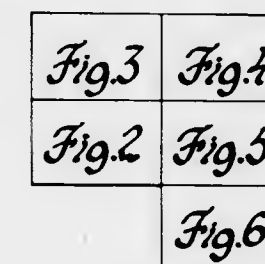
Sumio Uozumi, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed July 25, 1969, Ser. No. 844,930
Claims priority, application Japan, July 31, 1968, 53587/43
Int. Cl. B60k 17/00
U.S. Cl. 74-867 2 Claims



This invention relates to an oil pressure control device for fluid-type automatic transmission system having a torque converter and a speed-changing device controlled by servosystems. The servosystems are actuated by the pressure of two separate hydraulic circuits, the pressure of one circuit is set by a pressure control valve and the pressure of the other circuit varies with the position of the engine throttle valve.

3,611,838 HYDRAULIC CONTROL FOR NONSYNCHRONOUS SHIFTING HYDROMECHANICAL TRANSMISSION

Robert C. Utter, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1970, Ser. No. 13,319
Int. Cl. B60k 21/00; F16h 47/04, 37/06
U.S. Cl. 74-868 8 Claims

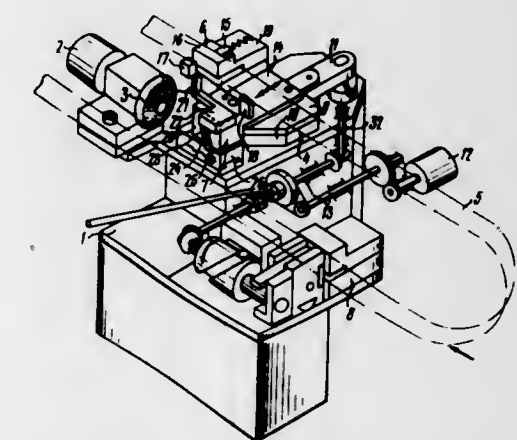


A transmission control for use with a hydraulic transmission for controlling pump displacement and mechanical gear ratio change in the transmission. The control has a ratio governor which directs displacement change signals to the hydrostatic pump and supplies a signal to a ratio shift signal valve which provides hysteresis. A shift signal valve, operatively connected with the pump, directs shift signals from the main pressure system to the ratio shift signal valve at predetermined pump displacements. The ratio shift signal valve directs the shift signals to shift valves to effect an up or

downshift in the mechanical gear ratios. The control system also has a pressure regulator disposed between the main pressure supply and the ratio governor to control the stability of the pump control during operation of the transmission in the low drive range which regulator is effectively removed from the control system during operation in drive ranges other than low.

3,611,839 BANDSAW-SHARPENING MACHINE

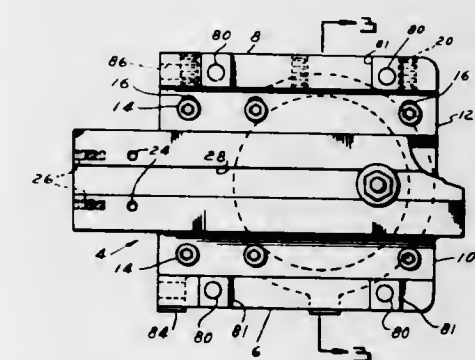
Vladimir Viktorovich Idel, ulitsa Graftio, 15, kv. 6, and Jury Vasilievich Tishin, ulitsa Michurina, 26, kv. 12, both of Zavolzhie Gorkovskoi Oblasti, U.S.S.R.
Filed Mar. 24, 1970, Ser. No. 22,326
Claims priority, application U.S.S.R., Dec. 8, 1969, Jan. 12, 1970, 1378202; 1387555
Int. Cl. B23d 63/12 3 Claims



The invention relates to a bandsaw-sharpening machine comprising a rotating abrasive wheel, a mechanism for pitch feed of the saw with relation to the abrasive wheel, and a mechanism for working feed of the saw towards the abrasive wheel, said mechanisms being installed rotatably in the plane of the saw for ensuring the resetting of the machine to suit the value of the front tooth-sharpening angle, and a clamping device mounted with a provision for being transferred along the saw on the working feed mechanism for resetting the machine to suit the shape of the teeth of the saws being sharpened.

3,611,840 MOTION TRANSFER DEVICE CONSTRUCTION

John P. Mentink, Longmeadow, Mass.; John J. Mate, Fairfield, Conn., assignors to Hydromotion Systems Inc., Westfield, Mass.
Filed June 16, 1970, Ser. No. 46,769
Int. Cl. F16h 25/08 6 Claims



Motion transfer device construction for precisely controlled high-speed linear output movement from a rotary drive input, having a housing on which an elongated tool

slide bar block is slidably carried in exposed relation to provide a plurality of tool mounting positions, the bar being formed with longitudinal tool locating grooves and supported between V-shaped bearing guide blocks extending the full length of one face of said housing. A housing through-bore provides stepped shouldered portions in which a stepped drive shaft unit is seated by spaced roller bearings. A closed track face groove cam at the inner end of the shaft being thereby positionally located for driving engagement with a follower roll of the slide bar.

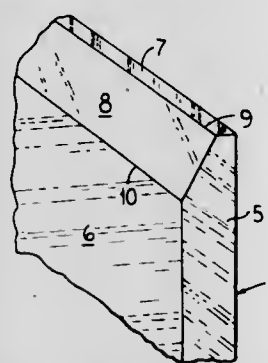
3,611,841

METHOD OF PRODUCING A COATING DOCTOR
Karl Erik Holger Froden, and Hakan Arne Eriksson, both of Munkfors, Sweden, assignors to Uddeholms Aktiebolag, Uddeholm, Sweden

Filed Nov. 1, 1968, Ser. No. 772,624
Claims priority, application Sweden, Nov. 7, 1967, 15216/67
Int. Cl. B21k 21/00

U.S. Cl. 76-101 R

2 Claims



A coating doctor blade having a chamfered face is produced by the steps of forming into a roll a hardened and tempered metal band blank, edge-grinding the blank in the roll, winding off the blank, planing a chamfer surface on one side surface of the blank by moving the blank, in a single pass in the longitudinal direction of the blank, over a single hard metal bit thereby providing a chamfered surface free from scratches and grooves detrimental to the evenness of a coating spread by the resulting doctor blade, and dividing the so-chamfered blank into doctor blades of suitable lengths.

3,611,842

ORNAMENT HEAD AND SHANK ALIGNMENT AND HOLDING HANDTOOL

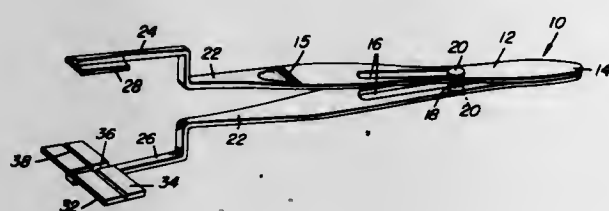
Clifton S. Skipper, P.O. Box 258, Chadburn, N.C.

Filed Oct. 20, 1969, Ser. No. 867,479

Int. Cl. B25b 9/02

U.S. Cl. 81-43

6 Claims



This is a handtool for use by a jeweler for holding the ornament head and the ring shank in proper position while they are being unsoldered or soldered together in disassembling or reassembling a ring. It consists of a pair of resilient pincer levers secured together at one end, a locking double-headed pin slidably extending through parallel longitudinal slots in the pincer levers for holding the pincers in holding position, a stepped arm on the end of each pincer lever with fingers extending substantially parallel when held in locked position by sliding the double-headed pin toward the stepped arm ends, and confronting plates on the inside arm ends, at least one of the confronting faces of the plates having a longitudinally extending groove in which the ring shank is held with the ringhead held thereagainst by the face of the other plate.

In addition, an all purpose soldering block of hard asbestos or hard "transite" is provided as an attachment for the tool,

the block having a groove for the shank, and also an ear receiving recess and aligned groove for receiving an ear bob and its post while being soldered together into a pierced ear-ring.

3,611,843

ADJUSTABLE SOCKET WRENCH

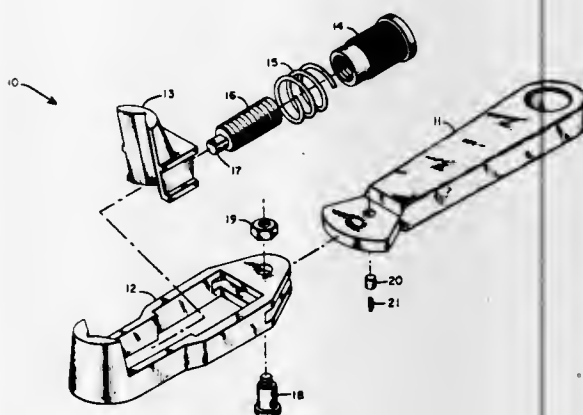
Joachim E. Engel, 10348 York Lane, Bloomington, Minn.

Filed Sept. 17, 1969, Ser. No. 858,582

Int. Cl. B25b 13/18

U.S. Cl. 81-128

5 Claims



A cam action wrench having a gripping handle and a pair of relatively movable jaws, one of which is secured to the gripping handle, the other of which is cammed into engagement with its neighbor. The gripping handle has a hand-engaging end and a jaw-engaging end, the jaw-engaging end being adapted to receive a jaw member capable of cammed motion relative to and toward the other jaw. The handle is provided with a coarse adjusting member which is coupled to an axially movable jaw, a coupling being utilized to establish the coarse adjustment between the axially movable jaw and the coarse adjusting member. The stationary jaw is preferably provided with a through-bore for receiving the free end of a threaded member upon which a nut is being turned.

3,611,844

OPEN END RATCHETING WRENCH

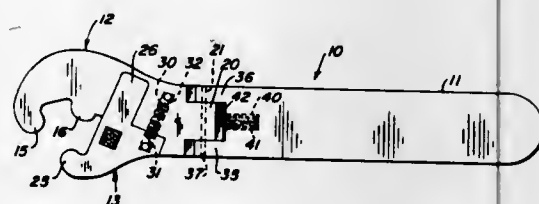
Herman A. Myers, Lake Lynn, Pa., assignor to Insta-Snap, Inc., Monongahela, Pa.

Filed Mar. 17, 1970, Ser. No. 20,354

Int. Cl. B25b 13/12

U.S. Cl. 81-129

5 Claims



An open end ratcheting wrench having a breakaway handle and a rigid jaw secured thereto, the rigid jaw having two outwardly extended curved lugs and a recess to slidably receive a movable jaw. The movable jaw, which is slidably positioned in the recess of the rigid jaw, has an outwardly extending curved lug. A spring means positioned between the movable jaw and the rigid jaw urges the jaws together. The three lugs grip a fastening means to permit turning thereof and a reverse turning movement causes ratcheting.

3,611,845

METHOD OF MAKING BALL JOINTS

Hubert Weidner, 4991 Dielingen Haus near 78, Germany

Filed Aug. 29, 1969, Ser. No. 854,159

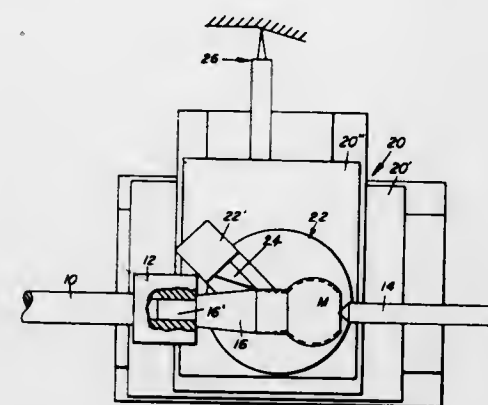
Claims priority, application Germany, Sept. 3, 1968, P 17 77

084.2

Int. Cl. B23b 1/00

U.S. Cl. 82-1 C

2 Claims



A method of finishing machining the shaft neck portion and the ball pin blanks on a lathe having a ball turner, wherein the ball turner, which carries the turning tool and is disposed on a slide rest, is first locked in the starting position for the finish machining of the ball and the slide rest is brought into the starting position for the finish machining of the neck portion, after the clamping in of the blank, the neck portion is finish machined with the advance of the slide rest under the control of a first control device, and the slide rest is locked in this end position of the tool, which is at the same time the starting position for the finish machining of the ball, and thereupon the ball turner is unlocked, the ball is finish machined by means of the same tool but with the advance of the ball turner controlled by a second control device, and finally the ball turner and slide rest are returned to their starting position so that the workpiece can be unclamped.

3,611,846

TOOL-CARRYING TURRET FOR AUTOMATIC CYCLE LATHE

Jules Louis Jeanneret, 13 a 21, rue Henri Gelin, 79 Niort, (Deux-Sevres), France

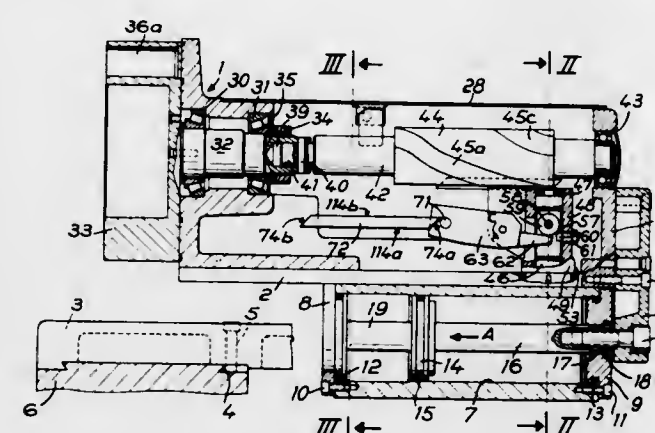
Filed Sept. 23, 1969, Ser. No. 860,328

Claims priority, application France, Sept. 27, 1968, 168,070

Int. Cl. B23b 21/00

U.S. Cl. 82-21 A

7 Claims



A tool-carrying turret for an automatic lathe is hydraulically actuated by the program of the lathe to index between successive working positions a tool-carrying plate. A locking bar serves in cooperation with one of a plurality of recesses in the plate to lock the plate at each working position. The indexing movement is both rotary and longitudinal relatively the axis of the tool-carrying plate, the longitudinal movement serving to withdraw each tool from the region of the workpiece at the completion of a machining operation and to bring the next tool to the working position relative to the workpiece.

3,611,847

METHOD OF MAKING A SEAL FOR RELATIVELY ROTATABLE PARTS

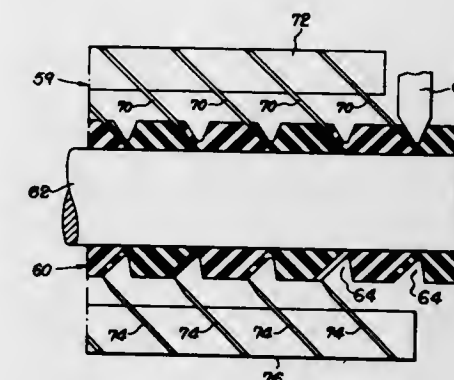
Karl Gustav Elner Derman, Savedalen, and Sven-Erik Malmstrom, Reftele, both of Sweden, assignors to Forsheda Gum-mifabrik Aktiebolag, Forsheda, Sweden

Division of Ser. No. 543,155, Apr. 18, 1966, abandoned, Continuation of Ser. No. 195,137 May 16, 1962, abandoned, Continuation-in-part of Ser. No. 72,741, Nov. 30, 1960, abandoned. Filed Feb. 6, 1968, Ser. No. 703,335

Int. Cl. B23b 1/00; B29d 7/16

U.S. Cl. 82-47

5 Claims



A method of making an annular seal from a generally cylindrical tubular member of an elastomeric material consisting of the steps of forming a recess defined by an inwardly directed surface of revolution at one axial end of the tubular member and providing a deep annular separation in the tubular member adjacent said one axial end which extends from the outer peripheral surface of the tubular member inwardly to and terminating at a point adjacent to but short of the inner peripheral surface to provide a thin flexible sealing lip at one axial end between the annular separation and the surface of revolution whereby the mass of the body portion is at least twice the mass of the flexible sealing lip.

3,611,848

TUBE-CUTTING MACHINE

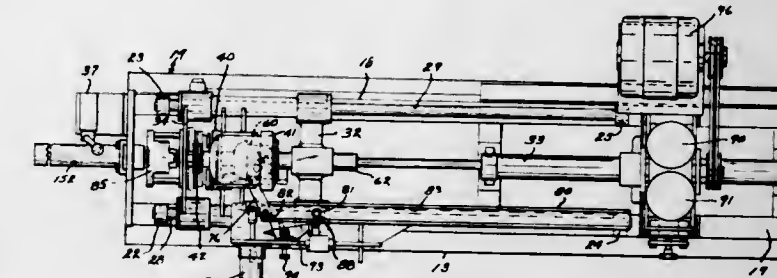
Homer W. Sullivan, Gates Mills, and Collin V. Gegg, Lakewood, both of Ohio, assignors to The Hill Acme Company, Cleveland, Ohio

Filed June 26, 1969, Ser. No. 836,821

Int. Cl. B23b 37/00

U.S. Cl. 82-53.1

10 Claims

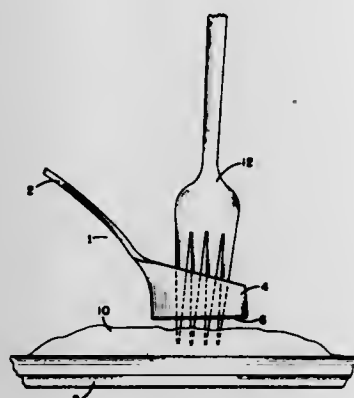


A rotary cutter flying tube cutoff apparatus for continuously and automatically severing elongated stock into preselected lengths. The apparatus includes a rotary-type cutter encompassing the stock and mounted for reciprocation along a path of travel extending longitudinally of the stock. The stock is fed into the apparatus and into the rotary cutter along such path of travel at a predetermined rate. Means are provided for moving the rotary cutter along with the stock at said predetermined rate and for actuating the rotary cutter while the stock and cutter are moving. Adjusting devices are provided to cut the stock to any suitable preselected length and to cut stock of a wide range of diameters. The rotary cutter effects an exceptionally clean cut free of burrs and jagged edges.

3,611,849
EATING UTENSIL FOR STRINGLIKE FOODS
 Joseph Domonkos, 1509 Grove Ave., Windber, Pa.
 Filed July 10, 1969, Ser. No. 840,786
 Int. Cl. B26b 27/00

U.S. Cl. 83-23

3 Claims

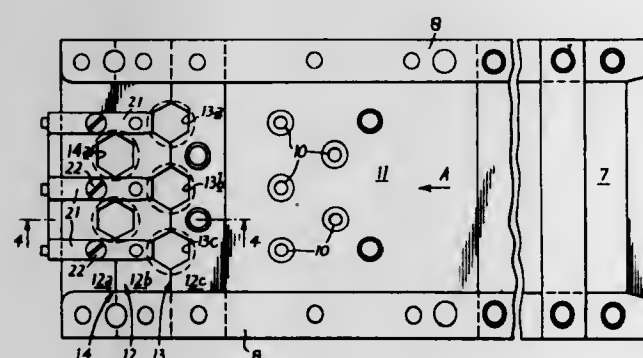


A spaghetti knife comprised of a handle, a hollow oval cutting element attached to said handle, and a cutting edge positioned on the portion of the cutting element. The spaghetti knife is used in conjunction with a conventional fork for the eating of spaghetti or other stringlike foods. The knife is held over a plate of spaghetti, the fork placed through the hollow cutting element into the spaghetti and twisted in the usual manner. The spaghetti rolled onto the twisted fork is limited in diameter by the diameter of the cutting element and formed into a neat circular roll, which may be easily inserted into the mouth. When this roll of spaghetti is the appropriate size, the spaghetti knife is pressed downward against the plate upon which the spaghetti is resting, thus cutting the extraneous strings of spaghetti and forming a cylindrical roll of spaghetti. The fork is then withdrawn from the cutting element together with the roll of spaghetti and inserted in the mouth.

3,611,850
MANUFACTURE OF HEXAGONAL SLUGS
 James Reed Elliott, Bedford, and Eric Thomas Edward Turner, St. Albans, both of England, assignors to John Dale (Foundries) Limited, St. Albans, England
 Filed July 23, 1969, Ser. No. 843,958
 Claims priority, application Great Britain, July 26, 1968, 35925/68
 Int. Cl. B26f 1/02

U.S. Cl. 83-43

10 Claims

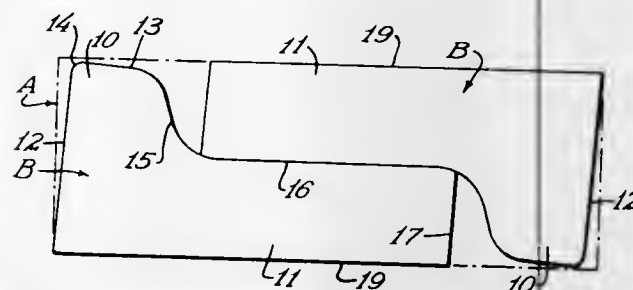


Hexagonal slugs are cut from a strip or sheet of metal by feeding the strip or sheet step by step between punches and dies which are arranged in two lines across the strip or sheet. The punches and dies in the second line are staggered midway between those in the first line, and the whole of the strip or sheet between the sidemost punches is cut without waste into slugs. Yielding support for the strip is preferably provided within the dies of the second line, preferably by making these dies retain one or more slugs within them.

3,611,851
METHOD OF MAKING CURB SEPARATORS
 Roger L. Lingofelt, St. Paul, Minn., assignor to North Central Supply Company, Ramsey County, Minn.
 Filed Aug. 7, 1969, Ser. No. 848,217
 Int. Cl. B26f 1/44

U.S. Cl. 83-55

5 Claims

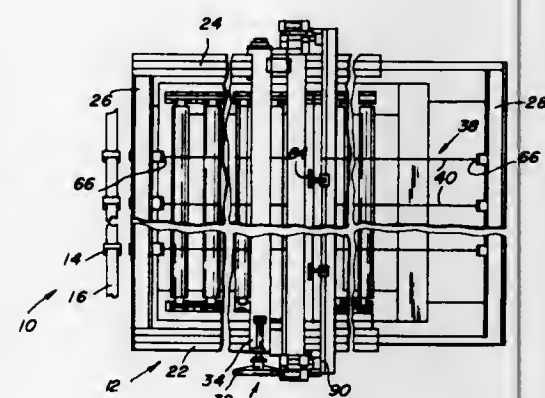


A cutting die is used to simultaneously form two curb spacers of L-shaped form including a vertical curb flange and a horizontal apron flange. The cutting rule is confirmed within a rectangular area. The cutting rule defining the upper surfaces of one horizontal flange forms the upper surface of a similar spacer in inverted relation to the first, and the ends of the cutting rule define the vertical flanges of both separators. The opposite sides of the die are unconfined so that when a rectangular blank is cut on the die, the two separators may move apart, the opposite longitudinal edges of the die forming the bottom surfaces of the spacers.

3,611,852
SLITTER AND STACKER FOR SHEET METAL BLANKS
 David A. Strilich, Hobart, Ind., assignor to Gary Steel Products Corp., Gary, Ind.
 Filed Mar. 19, 1970, Ser. No. 20,908
 Int. Cl. B65h 29/52

U.S. Cl. 83-89

5 Claims



A stacker at the output of a rotary knife slitter for sheet metal blanks receives the output blanks in corresponding slots formed by thin sheet metal partitions maintained under tension at the ends. Long blanks are stacked in accurate register at high speed without twisting or jamming in the stacking slots.

3,611,853
APPARATUS FOR CUTTING WORKPIECES TO LENGTH
 Kurt Finsterwalder, Goppingen, Germany, assignor to Messrs. L. Schuler GmbH, Goppingen, Germany
 Filed July 22, 1969, Ser. No. 843,567
 Claims priority, application Germany, July 25, 1968, P 17 79 268.6
 Int. Cl. B23d 21/04

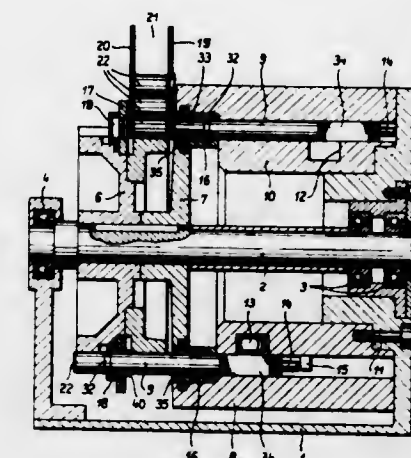
U.S. Cl. 83-126

5 Claims

Apparatus for trimming to length deep drawn or extruded workpieces has a rotating transport member in the form of a hollow cylinder having a series of workpiece holders formed around its periphery at one end, the cylinder supporting for axial movement a ring of parallel punches associated one with each workpiece holder, the punches each being first projected forward in succession to engage a workpiece

loaded into the associated workpiece holder at a loading station and to cooperate with a die so as to trim the workpiece, and then being retracted, by means of cam followers attached to the punches and engaging a camming slot formed in a stationary drum mounted within the hollow cylinder, the

member, and the internal punching ring are provided with means for separation of the circular member and its central portion from the surfaces of the punches, female die and the lifters as well as for keeping the central portion in place for a time during the opening of the die.



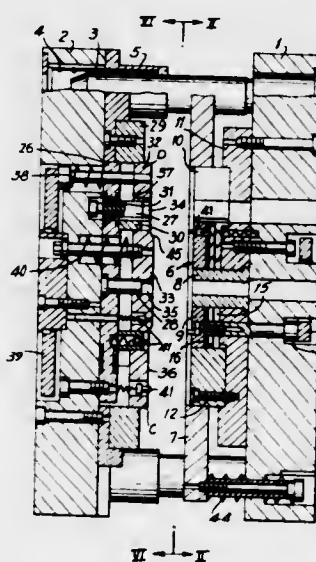
workpiece being stripped from the punch during its retractive movement. An ejector bolt is provided in a bore within each punch to commence the stripping operation at the commencement of the retractive movement.

3,611,854
COMPOUND DIE FOR PUNCHING TWO CONCENTRICALLY SHAPED SHEET CIRCULAR MEMBERS FROM STRAP MATERIAL IN PUNCH PRESSES WITH VERTICAL DISPOSITION OF BLANKING PLANES

Vitaly Konstantinovich Gilev, 811 proezd, 65, kv. 16; Volk Nakhimovich Evzljn, ulitsa Chapaeva, 102, kv. 53; Genady Nikolaevich Kamalov, prospekt Kirova, 30, kv. 57; Nadzhaf Ashdar Ogly Kuliev, ulitsa Aga-Neimatully, 20, kv. 1; Rafael Tevosovich Sarkisov, ulitsa Aga-Neimatully, 20a, blok 3, kv. 28, and Ernst Arakelovich Stepanian, ulitsa Durzhby Molodezhi, 2, kv. 36, all of Baku, U.S.S.R.
 Filed Oct. 30, 1969, Ser. No. 872,528
 Int. Cl. B26f 1/44, 1/14

U.S. Cl. 83-132

2 Claims

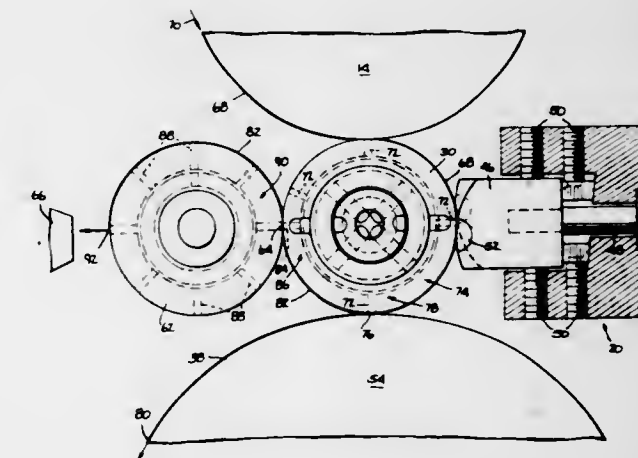


A compound die is disclosed for punching concentrically shaped circular sheet members from a strap material in punch presses with a vertical disposition of the blanking planes. The die is provided with a lifter for removing the circular members whose surface, directly contacting the latter, is inclined, while the lifter of the strap is provided with guide chutes having spring-loaded clamps for pressing the strap against the face of the female die as well as for pressing the same against one of the chutes. In addition, the female die, the lifter for removing the circular member, the lifter for removing the central portion, which is a blank of a second

3,611,855
CUTTING APPARATUS
 John William Thousand, Jr., Crestwood, Mo., assignor to St. Regis Paper Company, New York, N.Y.
 Filed Jan. 22, 1970, Ser. No. 4,875
 Int. Cl. B23d 25/08

U.S. Cl. 83-100

14 Claims

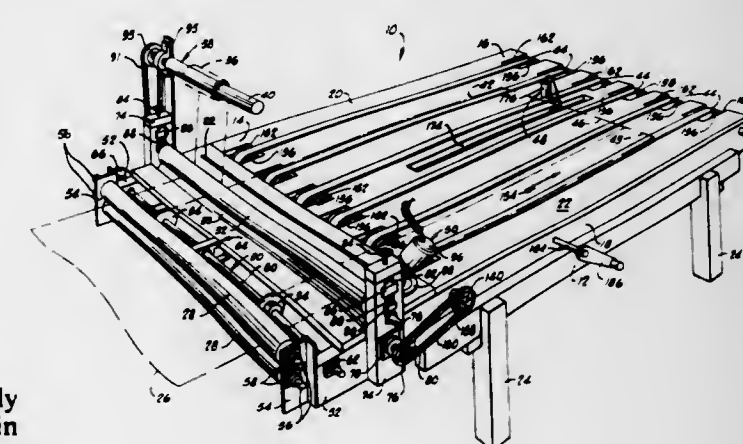


Cutting apparatus for cutting a blank from a web of sheet material characterized by a knife roll having a knife engraved on the surface thereof and a mating fixed knife cutting bar having a concave portion where the knife engages same and having a longitudinal configuration so that the web is cut in a shearlike action.

3,611,856
WEB CUTTER
 Larry L. Adair, 611 W. 3rd, Edmond, Okla.
 Filed Oct. 10, 1969, Ser. No. 865,262
 Int. Cl. B26d 5/20

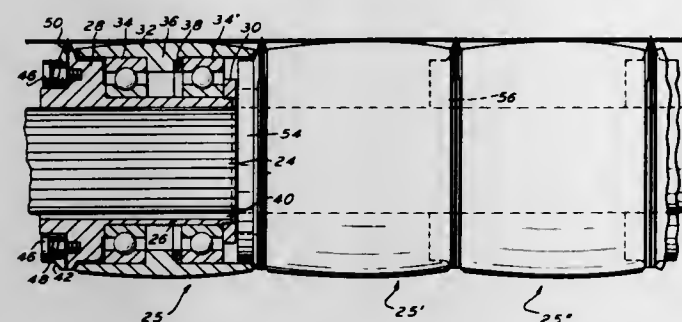
U.S. Cl. 83-107

10 Claims



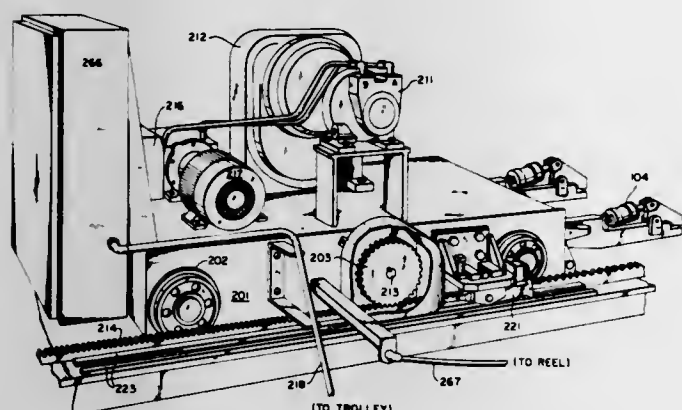
A web cutter adapted to automatically cut a web of material into web portions, each web portion having a predetermined length and width, and simultaneously adapted to cut strip portions, each strip portion having a predetermined width.

3,611,857
GANG SLITTING APPARATUS
 Edward Zychal, Cornwells Heights, Pa., assignor to Zyco Manufacturing, Inc., Cornwells Heights, Pa.
 Continuation-in-part of application Ser. No. 774,720, Nov. 12, 1968, now Patent No. 3,545,322. This application Aug. 13, 1970, Ser. No. 63,377
 Int. Cl. B26d 1/46
 U.S. Cl. 83-145 11 Claims



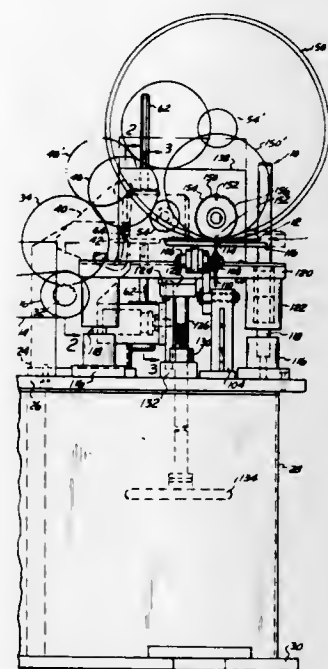
A gang slitting apparatus for slitting tape into narrow strips by means of a plurality of strip blades in a manner which relieves pressure against the sides of the blades. The blades are positioned between rollers having a crown support surface so that the middle portion of the strips is further from the axis of the rollers than the side edges of the strip.

3,611,858
GAUGE STOP SYSTEM FOR MOVING WORK THROUGH PUNCH PRESS
 William C. Beatty, Munster, and Milton G. Mock, Hobart, both of Ind., assignors to Beatty Machine & Manufacturing Co., Hammond, Ind.
 Filed Jan. 27, 1970, Ser. No. 6,109
 Int. Cl. B26d 5/20; B65h 9/10, 9/14
 U.S. Cl. 83-220 11 Claims



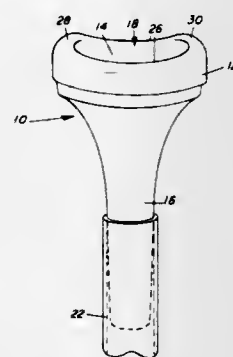
A tow carriage used for drawing structural steel members, such as I-beams or angles, through a punch press automatically positions its pieces accurately at the successive positions for punching. The positions are determined by gauge bars positioned along the path of the two carriage, and successively engaged by a gauge arm on the carriage. The machine is automatically cycled to pull its steel members at full speed until a sensor on the carriage detects the approach to a gauge position, then at slow speed until the gauge bar has been passed, then at slow speed reverse until a gauge face on the gauge arm, which drops to gauging level upon passing the gauge bar, firmly engages the gauge face of the bar without wear. The reverse driving force is reduced to a holding value, and the punch operates. Then the full speed forward drive of the carriage starts a new cycle. This is repeated until the punching has been completed at the last gauge bar. The successive steps of cycling are mostly triggered by limit switches.

3,611,859
ADJUSTABLE ZIGZAG FIN STRIP MEASURING AND CUTOFF MACHINE
 Hrant J. Avakian, San Francisco, Calif., assignor to Liberty Radiator Core Mfg. Co., San Francisco, Calif.
 Filed Jan. 6, 1970, Ser. No. 878
 Int. Cl. B26d 5/20
 U.S. Cl. 83-240 10 Claims



Mounted on a baseplate is a rotary cam which rocks a lever pivoted on the baseplate and carrying a compressed air motor and cutter disc on its opposite end. Movable vertically on three guide posts rising from the baseplate is a platform supporting a power-dividing gear box, the input shaft of which carries a removable input change gear, whereas one of its two outputs operates a parallel index cam drive unit, the output shaft of which carries a toothed counting and indexing wheel adapted to engage the convolutions of a zigzag louvered metal fin strip moving along a shaft containing a slot through which the cutter disc can move upward to sever the fin strip. The second output shaft of the power-dividing gear box 60 rotates a vertical spline shaft continuously and the spline shaft in turn drives the cutter operating cam. A train of gears, the uppermost of which is mounted on a swinging arm, conveys power from a sprocket driven by a sprocket chain from the fin strip forming machine in timed relationship therewith to the replaceable gear on the input shaft of the power-dividing gear box.

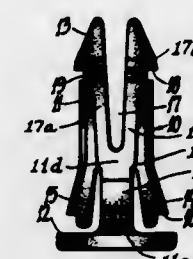
3,611,860
MOUTHPIECE FOR MUSICAL INSTRUMENTS
 Lawrence B. Tichenor, 3505 Robert E. Lee Place, Apt. 204, Alexandria, Va.
 Filed Aug. 8, 1969, Ser. No. 848,525
 Int. Cl. G01d 9/02
 U.S. Cl. 84-398 1 Claim



A mouthpiece for brass musical instruments is disclosed wherein the open end of the mouthpiece is curved to conform with the shape of the user's mouth. The open end of the mouthpiece is disclosed wherein the open end of the mouthpiece is curved to conform with the shape of the user's mouth. The open end of the mouthpiece is disclosed wherein the open end of the mouthpiece is curved to conform with the shape of the user's mouth.

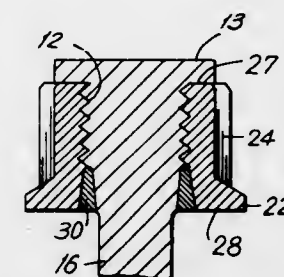
mouthpiece is generally concave as viewed from the side, and is elliptical as viewed from the end. The shape of the mouthpiece cavity is generally ellipsoid.

3,611,861
MOUNTING CLIPS OR FASTENERS
 Karl Peter Schulze, Carrum, Victoria, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.
 Filed July 29, 1969, Ser. No. 847,003
 Claims priority, application Australia, July 31, 1968, 41478/68
 Int. Cl. F16b 19/00
 U.S. Cl. 85-5 5 Claims



The invention is in an improved mounting clip or fastener for conveniently and quickly securing apertured members together. The clip or fastener has a headed shank or body adapted to be inserted into apertured members, said shank having shouldered resilient arms adapted to engage inner and outer apertured members into which the clip has been inserted to prevent retraction of the clip from the apertured members.

3,611,862
BOLT AND METHOD OF MAKING SAME
 Richard A. Walker, Warrington, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.
 Continuation-in-part of application Ser. No. 692,141, Dec. 20, 1967, now abandoned. This application Oct. 6, 1969, Ser. No. 871,450
 Int. Cl. B21k 1/44; F16b 23/00, 35/00
 U.S. Cl. 85-9 R 13 Claims

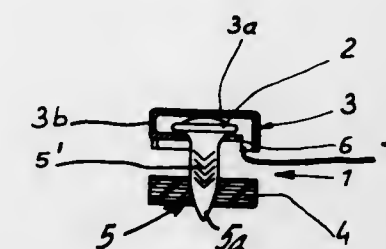


A bolt formed by turning a nut onto an externally threaded section of a stud which is spaced from an end of the stud by an abutment shoulder. The nut is turned onto the stud so that one end face of the nut bears against the abutment shoulder.

3,611,863
FASTENING ELEMENT CONSTRUCTION
 Wolfgang Bayer, Pons, Eschen; Konrad Kostlin, Vaduz, and Wilfried Imelmann, Vaduz, all of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
 Filed June 9, 1969, Ser. No. 831,350
 Claims priority, application Germany, June 24, 1968, P 17 50 989.6
 Int. Cl. F16b 15/02
 U.S. Cl. 85-10 E 2 Claims

A fastening element such as a bolt, nail or similar device which is adapted to be driven into a hard receiving material such as steel or concrete includes a member having a shank portion with a pointed end and a head portion which is enclosed by a cap made of a stainless metal or rust-resistant metal. In addition, a washer or disk of ductile plastic material

is arranged to surround a portion of the shank of the fastening element. The cap includes tabs which grip under the head



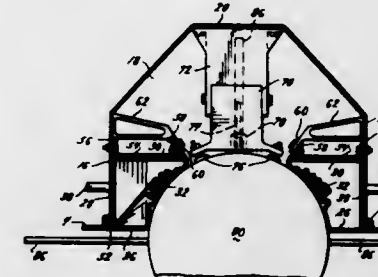
portion and side portions which are adapted to bear into the ductile plastic when the fastening element is driven into the hard receiving material.

3,611,864
SNAP-IN NUT PLATE
 David L. Buckley, Arcadia, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.
 Filed Aug. 7, 1969, Ser. No. 848,233
 Int. Cl. A44b 17/00; F16b 13/04, 37/04
 U.S. Cl. 85-80 7 Claims



A replaceable multiple nut plate, for fastening corrugated or waffle-patterned sheets together, having a plurality of threaded openings for alignment with holes of the sheets and adapted for receiving threaded bolts from one side of the sheets. The nut plate has annular walls, protruding above the openings thereof, for snapping into the holes of the sheets and for allowing the bolts to be screwed into the nut plate without the need for restraining tools.

3,611,865
AIRCRAFT MOUNT FOR WEAPONS AND OTHER STORES
 Joseph M. Schallert, Bridgeton, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.
 Filed Feb. 5, 1969, Ser. No. 796,733
 Int. Cl. F41f 5/02
 U.S. Cl. 89-1.5 R 12 Claims



A mount for securing weapons and other stores to an aircraft and including a housing projecting into the aircraft, an ejector rack on the housing for securing a load partially within the housing, and an inflatable seal which engages the load and conforms to its contours. When the load is detached from the rack the seal extends across the cavity formed by the housing and is generally flush with the exterior surface of the aircraft so that an uninterrupted moldline exists.

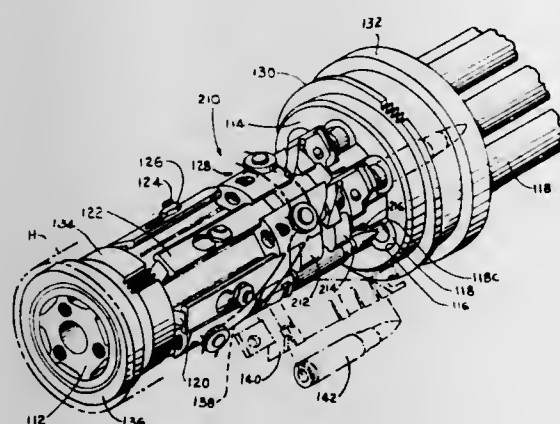
3,611,866
BOLT ASSEMBLY
 Charles C. Jacolucci, Richmond, and Gordon H. Woodford,
 Essex Center, both of Vt., assignors to General Electric
 Company

Filed Oct. 22, 1969, Ser. No. 868,379

Int. Cl. F41d 7/04

U.S. Cl. 89-12

5 Claims



A bolt assembly for a Gatling gun, which gun has a stationary housing with the conventional elliptical cam track; a rotor assembly a plurality of barrels, adapted to receive a like plurality of said bolt assemblies; includes means for cocking, searing and resetting the firing pin responsive to the longitudinal disposition of the bolt.

3,611,867
EMERGENCY WEAPON FOR FIRING HIGH-VELOCITY GRENADE ROUNDS

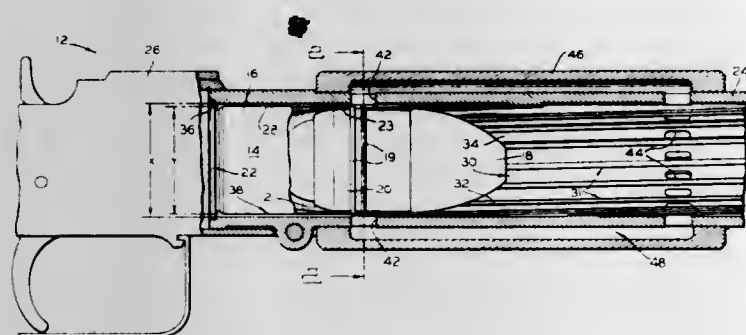
Stanley D. Silsby, Granby, Mass., assignor to The United States of America as represented by the Secretary of the Army

Continuation-in-part of application Ser. No. 776,953, Nov. 19, 1968, now abandoned. This application Nov. 3, 1969, Ser. No. 873,426

Int. Cl. F41c 21/12; F41f 17/00

U.S. Cl. 89-14 R

5 Claims



A shoulder-supported weapon for firing high-velocity grenade rounds includes means for reducing the high-velocity and recoil forces to acceptable limits comprising an oversize barrel chamber which permits expansion of the case upon discharge of the round and immediate escape of the discharge gas between the case and projectile during initial acceleration of the projectile into flight. The escaping gas is vented from the chamber into a canister around the barrel and then back through a second set of ports into the barrel bore forwardly of the projectile. The gas escape system is closed when the projectile passes the second set of ports and the remaining trapped gas is used to propel the projectile from the barrel.

3,611,868
AUTOMATIC FIREARM WITH TWO SELECTIVELY EMPLOYABLE CARTRIDGE FEED DEVICES
 Gerhard Hupp, Oberndorf, Neckar, Germany, assignor to Mauser-Werke A. G., Oberndorf/Neckar, Germany

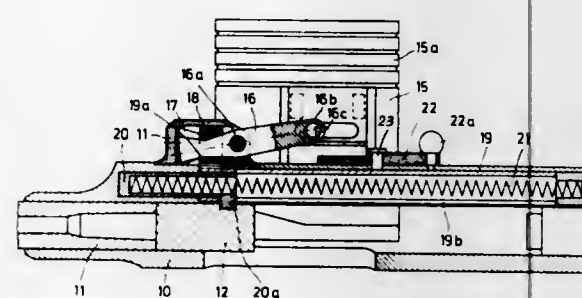
Filed May 7, 1969, Ser. No. 822,514

Claims priority, application Germany, May 10, 1968, P 17 03 379.3

Int. Cl. F41d 9/02

U.S. Cl. 89-33 SF

4 Claims



An automatic firearm, such as a rifle, is provided with a forwardly and rearwardly movable breech block and an upper and a lower employable cartridge feed device for selectively firing different types of cartridges, such as blasting cartridges and armor-piercing cartridges. The cartridges in both feed devices are fed in the directional sense and the drive and changeover elements of the two cartridge feed devices are arranged between the two feed housings.

3,611,869
AUTOMATIC FIREARM WITH A CHANGE OVER CARTRIDGE FEED DEVICE
 Gerhard Hupp, Oberndorf, Neckar, Germany, assignor to Mauser-Werke A. G., Oberndorf, Germany

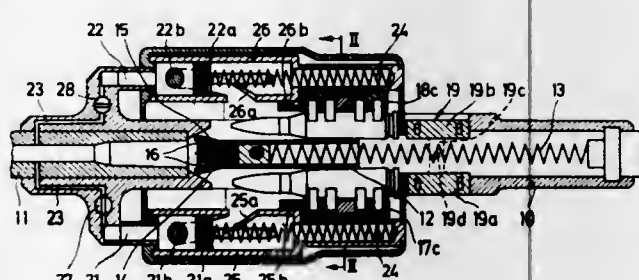
Filed May 7, 1969, Ser. No. 822,513

Claims priority, application Germany, May 10, 1968, P 17 03 378.2

Int. Cl. F41d 9/02

U.S. Cl. 89-335 F

2 Claims



An automatic firearm, such as a rifle, is provided with a changeover cartridge feed device for firing selectively different types of cartridges, such as blasting cartridges and armor-piercing cartridges. The breech block is provided with cartridge feed channels, one for each type of cartridge used, and with respective cartridge strippers. The strippers are controlled by a control device the operating member of which consists of a longitudinally reciprocable slidable munition selector slide which when in a forwardly adjusted end position renders the feed device for one type of cartridge operative, while when the munition selector slide has been adjusted to a rear end position it renders the feed device for another type of cartridge operative.

3,611,870
CARTRIDGE MAGAZINE CONSTRUCTION
 Karl-Ernst Udert, Triesen, and Hans Umbach, Stadeln, both of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

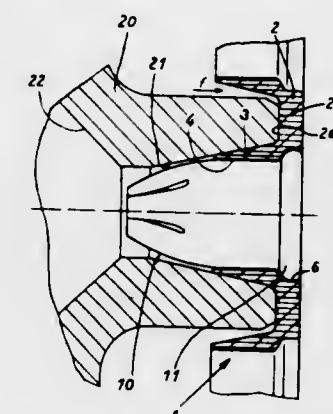
Filed Dec. 26, 1968, Ser. No. 787,055

Claims priority, application Germany, Mar. 11, 1968, P 16 78 396.3

Int. Cl. F42d 39/08

U.S. Cl. 89-35

9 Claims



A cartridge magazine for holding cartridges for feeding to the barrel of an explosion-driven bolt-setting device comprises an elongated flat flexible band preferably made of an inexpensive material such as plastic. The band includes a plurality of generally cylindrical projections defining cartridge holding recesses arranged at equally spaced locations along the band and notches at each side of the band to facilitate its feeding. The recesses open on the top of the band and at the bottom and they are constructed with a widened base portion to hold the base portion of a cartridge therein flush to the exterior side. The upper portion of the recesses embraces the cartridge with a press fit in an area extending from one-third to two-thirds to the height of the cartridge. Each cartridge-holding recess is defined by a conical projection extending upwardly from the band which tapers on its exterior inwardly in a direction toward the tip of the cartridge. The angular taper of this portion of the cartridge magazine is slightly greater than the cone angle of the cartridge chamber of a gun barrel with which it is to be employed, so that the cartridge magazine with the cartridge will be moved out of the gun barrel when the gun barrel is moved forward after the explosion of the cartridge.

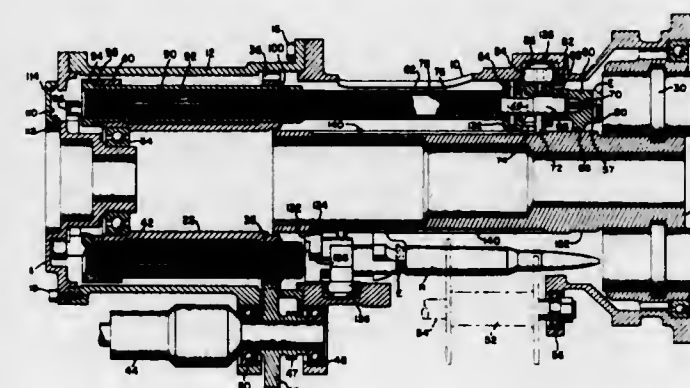
3,611,871
FIRING MECHANISM FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN
 Robert G. Kirpatrick, Shelburne, and Lincoln L. Sibley, Jr., South Burlington, both of Vt., assignors to General Electric Company

Filed Mar. 31, 1970, Ser. No. 24,199

Int. Cl. F41d 11/16

U.S. Cl. 89-127

6 Claims



Firing mechanism for high rate of fire revolving battery gun providing a cam track in the aft end of the housing to

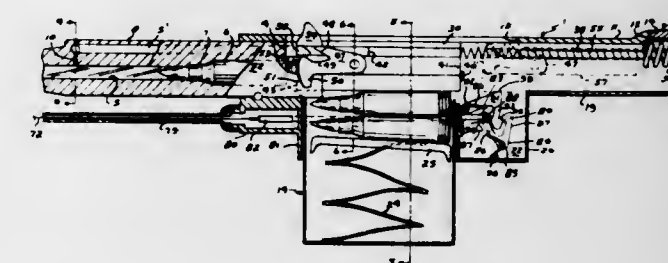
provide locking and unlocking rotation to the bolt via a cam follower and telescoping linkage. Additionally, a positive lock is provided on the firing pin which is only released by rotation of the bolt into lock. Yet additionally, the cam track is adjustable to a safe disposition wherein rotation of the bolt into lock is precluded.

3,611,872
LIGHTWEIGHT COMPACT RIFLE
 Dale M. Davis, Rte. # 1 Box 238, Freeport, Fla.
 Filed June 2, 1969, Ser. No. 829,413

Int. Cl. F41d 5/04, 11/02

U.S. Cl. 89-136

2 Claims



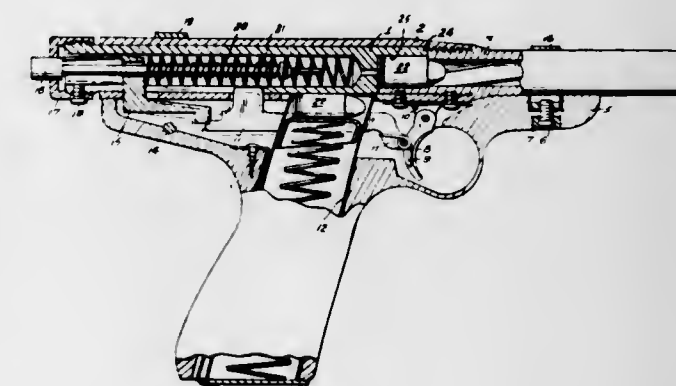
An automatic rifle of lightweight and extreme compactness is disclosed which is characterized by having no stock. The recoil is transmitted through the shooter's arm to the shoulder. The trigger and the handgrip are mounted at the muzzle end of the gun and are carried on a sleeve which surrounds the barrel. Thus, the trigger and the handgrip can be rotated, right or left, to accommodate the gun to the arms of the shooter. The front sight is also movable about the barrel to allow proper aiming when the trigger mechanism and handgrip are rotated. The reciprocating bolt action is obtained by the use of propellant gases from a fired projectile, these gases being bled into a manifold which is connected to a dual-acting set of pistons for moving a slide member which carries the bolt action. A driving spring returns the bolt to press a new cartridge into firing position within the bore. The forward trigger is connected to the hammer and sear assembly through a pair of cables which pass about opposite sides of the cartridge magazine so as not to interfere with the automatic feeding of a live cartridge into the barrel when the bolt has moved to the rear.

3,611,873
BLOWBACK FIREARM WITH RETARDED EXTRACTION
 Thormon O. Ellison, Box 163, Rte. 3, Aberdeen, Md.
 Filed Mar. 21, 1969, Ser. No. 809,348

Int. Cl. F41c 5/00

U.S. Cl. 89-180

2 Claims



In an automatic weapon, blowback pressure extracts the spent, empty shell. In this invention the rate of extraction due to blowback is automatically retarded in proportion to the force of the explosion. This is advantageous for several reasons. For example, if the explosion, and resultant pressure, is abnormally high, the shell is held in place by a semilocked or retarded bolt. The bolt is automatically

released as the pressure drops. This action also assures that the maximum amount of energy will be imparted to the projectile, and that the shell will not be prematurely partially ejected with a blowout of the side of the shell.

3,611,874 COMBINED NUMERICAL AND TRACER CONTROL SYSTEM FOR MACHINE TOOLS

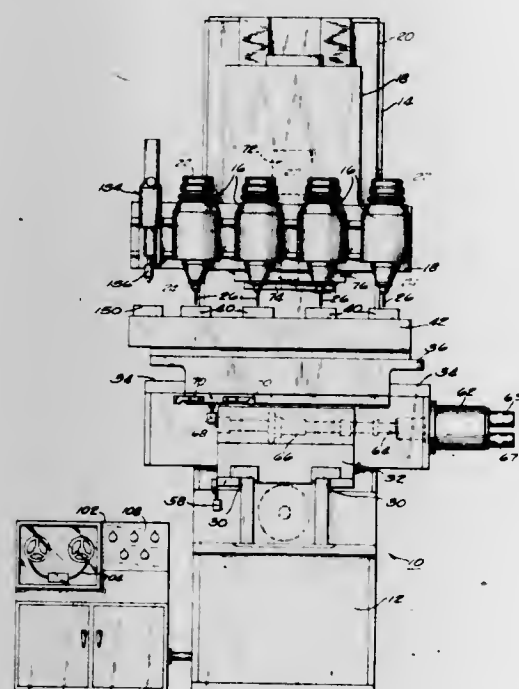
Charles A. Larsen, Union Grove; Harvey W. Zimmerman, Racine, and J. L. Dye, Racine, all of Wis., assignors to Gorton Machine Corporation, Racine, Wis.

Filed Feb. 5, 1970, Ser. No. 8,782

Int. Cl. B23c 1/16; G05b 19/36

U.S. Cl. 90-13 C

6 Claims



A control system for a machine tool having three mutually perpendicular axes along which elements of the machine tool are movable. The control system includes a numerical control for controlling movement of the machine tool elements along two of the axes. The control system further includes a tracer control operable by the numerical control for controlling the machine tool elements along the third axis of the tool.

3,611,875 APPARATUS FOR TRIMMING A SPECIMEN WHICH IS TO BE CUT IN A MICROTOME

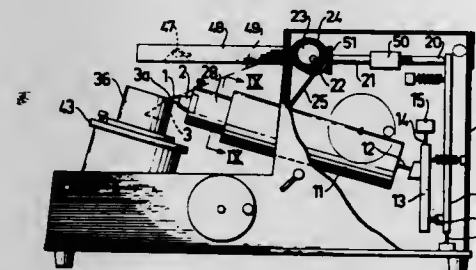
Karl-Erik Wistedt, Jakobsberg; Bo Gosta Forsstrom, Skälby, and Karl Goran Algy Persson, Stockholm, all of Sweden, assignors to IKB-Producenter AB, Bromma, Sweden

Filed Aug. 5, 1969, Ser. No. 847,543

Int. Cl. B23d 3/04

U.S. Cl. 90-24 R

4 Claims



There is provided an apparatus in which a specimen containing an object embedded therein can be trimmed to a shape and size suitable for cutting in a microtome. The apparatus includes a specimen holder, a cutting means and means for causing relative movement between the cutter and

the specimen. Means are found which enable the specimen holder to be turned so that any side of the specimen can be presented at will to the cutter, and means by which adjustment can be made to the relative position of cutter and specimen thereby to enable the specimen to be cut to a predetermined cross-sectional shape.

3,611,876 ULTRA HIGH-PRESSURE COMPRESSIBLE FLUID MOTOR

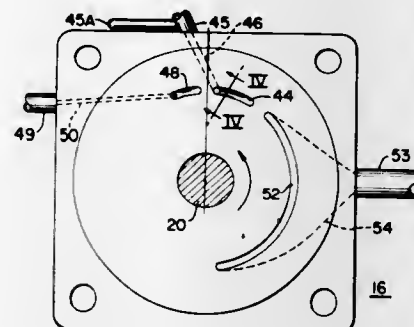
Luther F. Day, Hawthorne, Calif., assignor to Ferris Q. Day and Harvey E. Day

Filed Aug. 14, 1969, Ser. No. 850,084

Int. Cl. F01b 3/02, 13/04

U.S. Cl. 91-6.5

24 Claims



A motor utilizing a plurality of pistons reciprocating longitudinally in a rotating piston barrel is disclosed. Rotation is developed by the force of the pistons against an angled ramp plate. An apertured seal pad completes the bottoms of the cylinders and bears against a port ring having circumferentially disposed slots and ports specifically located therein to permit the transfer of the compressible fluid and an incompressible fluid to and from the individual cylinders at appropriate points in the operational cycle. A lubricating seal between each piston and its cylinder wall to contain the extremely high pressures at which the motor is adapted to operate is provided by a plurality of oil rings which are established automatically during the rotation of the piston barrel.

3,611,877 MOTORS

Michael David Baxter, Rochester, England, assignor to Hobourn-Eaton Manufacturing Company, Ltd., Kent, England

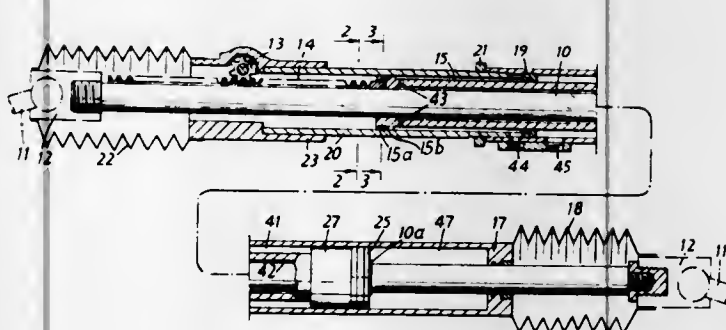
Filed Jan. 6, 1970, Ser. No. 954

Claims priority, application Great Britain, Jan. 6, 1969, 822/69

Int. Cl. F15b 9/10, 15/17

U.S. Cl. 91-376

11 Claims



A servomotor primarily for rack and pinion power steering comprises a piston rod extending through the end members

of a cylinder and carrying a piston assembly within the cylinder. An operating shaft encircling the piston rod extends through one end member and has at its end adjacent the piston assembly a valve member which cooperates with the piston assembly to control the motor. A spring urges the piston assembly and the valve member axially into a central portion of the valve but permits relative displacement of the piston assembly and valve member axially relative to each other. The valve member is arranged to control a supply of pressure fluid, in response to movement of the operating shaft to move the valve member in one direction or the other from said central position relative to the piston, to move the piston in the same direction as the initiating movement of the valve member relative to the piston.

3,611,878

ELECTRICALLY OPERATED VALVE MEANS

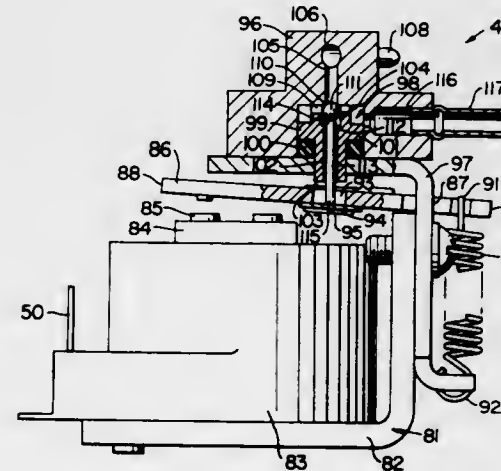
Louis M. Puster, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 9, 1969, Ser. No. 865,041

Int. Cl. F15b 13/044; F16k 31/06

U.S. Cl. 91-459

18 Claims



A plurality of separate pneumatically operated actuators disposed in aligned and abutting relation to provide a linear positioning unit having opposed ends with each actuator being individually operable to linearly extend itself when actuated and thereafter to linearly collapse itself when deactuated whereby one end of the unit will be correspondingly linearly extended relative to the other end thereof and thereafter be linearly collapsed relative to the other end thereof. A control device being operatively interconnected to the one end of the positioning unit to be controlled in relation to the position of the one end relative to the other end thereof and electrically operated ball valve means including opposed valve seats and shock-absorbing spring means for directing a source of pneumatic fluid to at least one of the actuators to extend the one end of the unit by the degree of actuation of the one actuator and for thereafter disconnecting the source from that one actuator to collapse the one end of the unit by the degree of deactuation of the one actuator.

3,611,879

AXIAL PISTON DEVICE

Loren L. Alderson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed May 18, 1970, Ser. No. 38,181

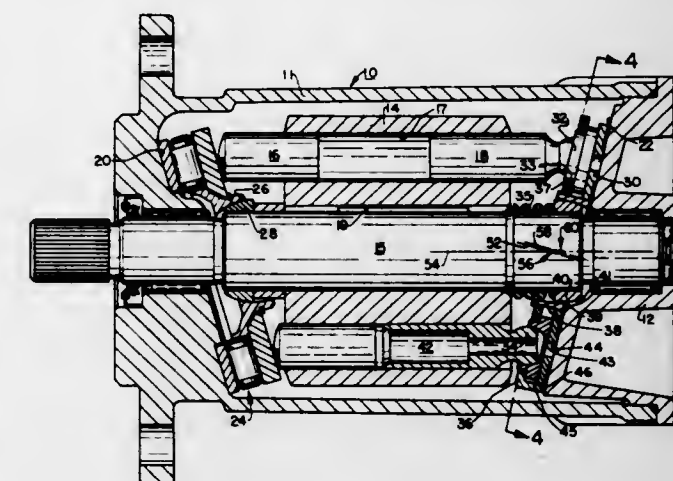
Int. Cl. F04b 1/10, 1/20

U.S. Cl. 91-490

14 Claims

An axial piston barrel device having slipper shoe contacting an inclined or inclinable cam wherein a shoe-engaging cage or spider plate is positioned nonconcentrically to the slipper shoes, so that a shoe drivingly engages the spider plate only when moving while on the retraction portion of

the cycle. One form of the invention offsets the center axis of the spider plate from the shoe axis toward the outermost



piston position so that each shoe engages the spider only on inward stroke even if rotation or cam angle is reversed.

3,611,880

OPERATOR AND METHOD OF LUBRICATION THEREOF

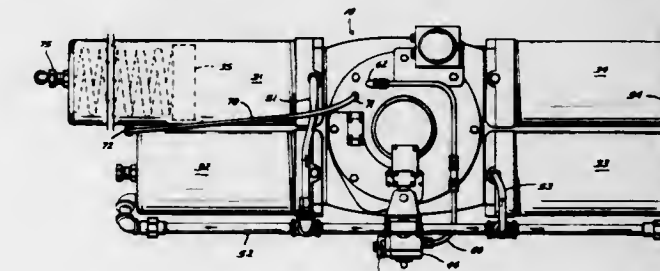
Ronald A. Gulick, Sugarland, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed May 19, 1969, Ser. No. 825,628

Int. Cl. F16n 7/30

U.S. Cl. 92-154

6 Claims



An operator using pneumatic means, such as air, for causing movement of a further member, such as rotation of a valve stem to open or close the valve, wherein the operating fluid, such as air, is prelubricated, as by mixing with oil, to continually lubricate the operator parts and/or their connections with such further member, and to combat corrosion.

3,611,881

FLUID CYLINDER AND PISTON ASSEMBLY

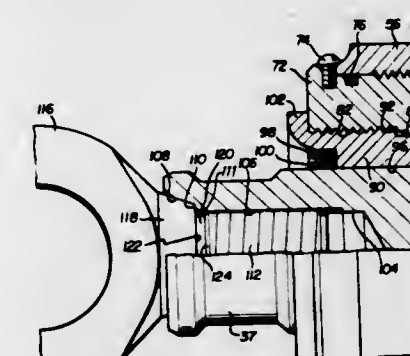
William E. Little, West Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 13, 1970, Ser. No. 027,792

Int. Cl. F16j 1/10

U.S. Cl. 92-255

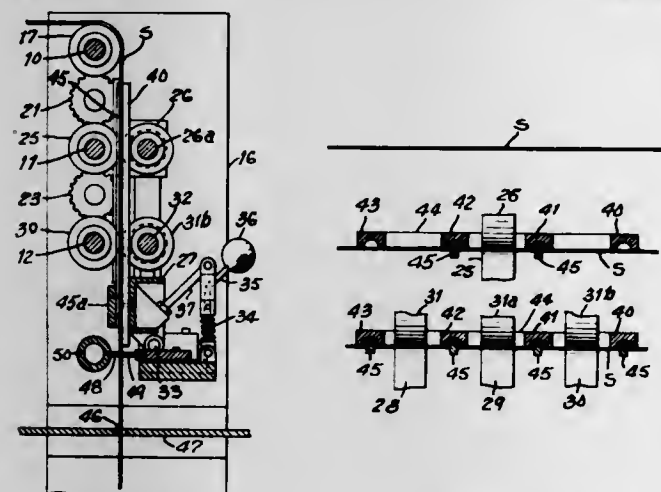
4 Claims



A fluid cylinder and piston assembly which comprises an elongated housing defining a fluid chamber to one end of

which is secured an attaching member having an eye for securement to a force absorbing member and a piston and piston rod contained in the fluid chamber for reciprocation therein. The piston is welded to one end of the piston rod and the other end of the piston rod extends outwardly of the elongated fluid chamber and is provided with a screw-in attachment eye for securement to force transmitting member. At the rod end of the elongated housing a removable cartridge is provided carrying a rod seal for sealing the cylinder chamber and a retainer member or gland is screwed into the cartridge from the outside of the cylinder for protection and retainment of the rod seal carried by the removable cartridge and which is provided with a wiper seal to continuously wipe the surface of the piston rod. The screwed-in eye connection at the end of the piston rod is provided with a tapered surface engaging a tapered surface within the piston rod end to lock the eye attachment member to the piston rod in such fashion as to remove load stresses from the threaded connection.

3,611,882
WEB-FEEDING MEANS AND METHOD
Andrew W. Anderson, West Caldwell, N.J., assignor to Scandia Packaging Machinery Company, North Arlington, N.J.
Filed May 14, 1969, Ser. No. 824,561
Int. Cl. B31b 1/10, 1/16; B31f 7/00
U.S. Cl. 93-1 G 14 Claims

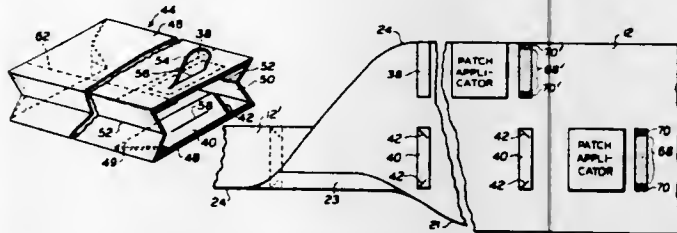


A method and an apparatus are provided for feeding a web of thin, flimsy material to a wrapping station located in a wrapping machine. A sheet of the thin, flimsy material is cut from the web after it has been fed to the wrapping station. During the feeding process, a continuous web of thin, flimsy material is moved along a path from a supply. While in the feeding process, continuous, longitudinal pleats are formed in the continuous web while it moves along said path. The pleats are effective to stiffen the material without causing a transverse stress therein, thereby enhancing its capacity to be fed to the wrapping station. The feeding assembly may be used in combination with a wrapping machine for wrapping packages with a thin, flimsy sheet of material. A more specific embodiment includes an assembly providing means for placing continuous, longitudinal pleats in a thin, flimsy web of material. In this specific embodiment, the web of material is fed vertically downwardly into the wrapping machine at which point sheets are cut from the end of the web for placement around a package.

3,611,883
APPARATUS AND METHOD FOR MAKING BAGLIKE CONTAINERS WITH BOXLIKE TOP
William H. F. Grob, Babylon, N.Y., assignor to Equitable Bag Co. Inc., Long Island City, N.Y.
Filed Aug. 5, 1969, Ser. No. 847,563
Int. Cl. B31b 1/72, 1/86, 1/90
U.S. Cl. 93-8 WA 11 Claims

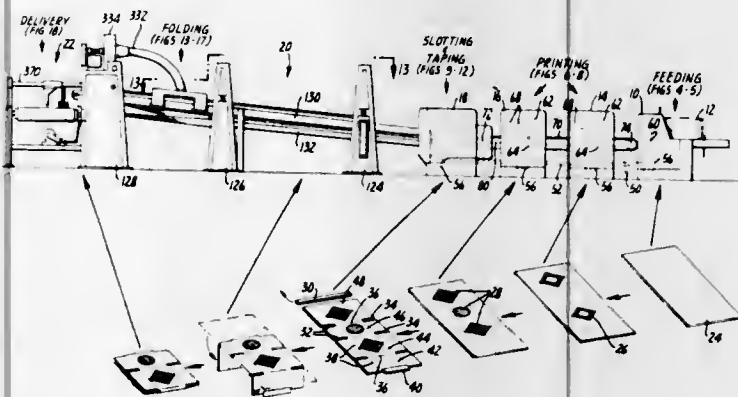
This apparatus for making containers applies patches to a web and then folds the web into a tube which is severed and formed into containers on a conventional bagmaking machine. The patches are located at the top of each "bag" and extend across the full width of the front and back of the bag and downwardly for a distance equal to the width of the sides of the bag so that the upper end of the container folds

like a box to provide that style of container which has a bag bottom and a box top. The combining of the patch-applying



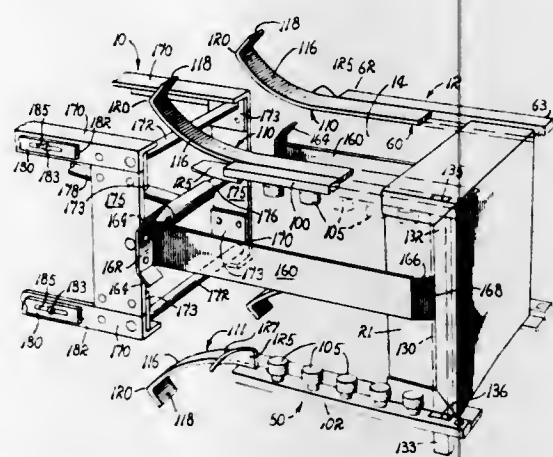
apparatus and the bagmaking machine produces superior containers at lower cost.

3,611,884
BOX MAKING MACHINE
William J. Hottendorf, Box 566, Sunnyvale, Calif.
Division of Ser. No. 627,041, Mar. 30, 1967.
Filed Jan. 26, 1970, Ser. No. 5,635
Int. Cl. B31b 1/22, 1/60, 1/88
U.S. Cl. 93-36.9 6 Claims



Apparatus for moving paperboard boxes continuously along a path while performing the following operations on the box blanks: feeding, printing, creasing, slotting, trimming, taping, folding, and delivering. The apparatus may be adjusted for handling box blanks of different lengths and widths. Vacuum support means for the box blanks are provided in the feeding, printing and folding sections. The feeder may be operated to deliver box blanks to the path either continuously or periodically.

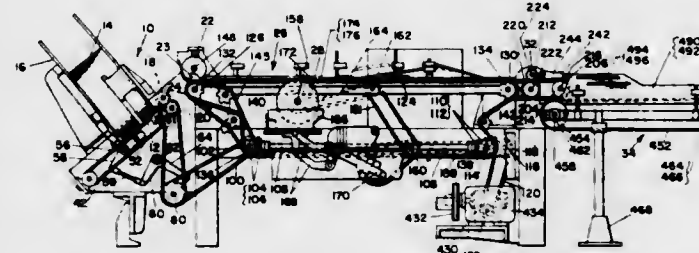
3,611,885
COMPRESSING APPARATUS FOR CONTAINER FORMING MACHINE
Gerald C. Paxton, Sanger, Calif., assignor to General Nailing Machine Corporation
Filed Jan. 20, 1970, Ser. No. 4,189
Int. Cl. B31b 1/44, 17/26, 17/60
U.S. Cl. 93-36.3 5 Claims



An improved compressing apparatus for a container-forming machine providing a frame adapted to position a planar

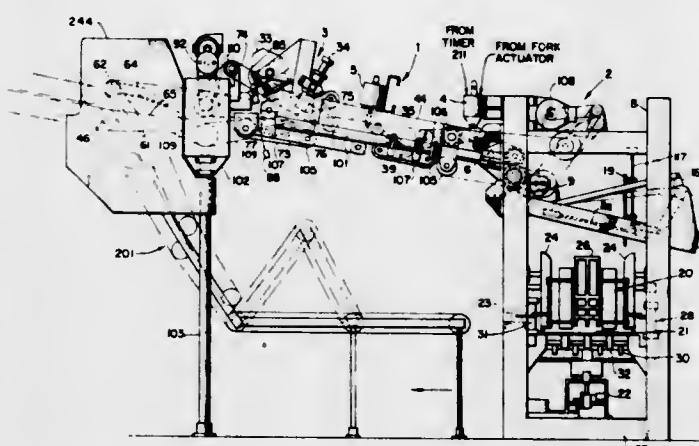
foldable container blank in a substantially planar assembly position with a pair of separate end panels disposed in substantially right-angular relation thereto and including coacting mandrel and die means on the frame operably concurrently to thrust the blank and the end panels through a substantially rectilinear path in a direction normal to the plane of the blank so as to fold the blank about the end panels in a container-forming position with the overlapping portions thereof providing at least one glued surface therebetween. The improvement of the present invention provides blank-compressing means mounted in fixed position on said die means in tightly pressing relation to said folded, overlapping portions of the blank and said end panels during said thrusting operation of the mandrel and die means.

3,611,886
APPARATUS FOR PRODUCING AND ACCUMULATING CARTONS
John W. Scully, Raynham, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed Apr. 21, 1969, Ser. No. 818,034
Int. Cl. B31b 1/64, 1/96, 1/106
U.S. Cl. 93-36.3 3 Claims



Apparatus for producing flat side-seamed cartons from prescored carton blanks and for accumulating successive cartons in a manner such as to make it convenient for an operator in handling groups of cartons for distribution to other machines or for packing for future use.

3,611,887
APPARATUS FOR FEEDING AND STACKING FOLDED PRINTED ARTICLES IN BUNDLES
Hajime Shibamura, Ashiya, Hyogo, and Taneji Kishioka, Toyonaka, Osaka, both of Japan, assignors to Hamada Printing Press Mfg. Co., Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 585,649, Oct. 10, 1966, now abandoned. This application Aug. 21, 1969, Ser. No. 852,065
Int. Cl. B65h 33/03
U.S. Cl. 93-93 C 14 Claims



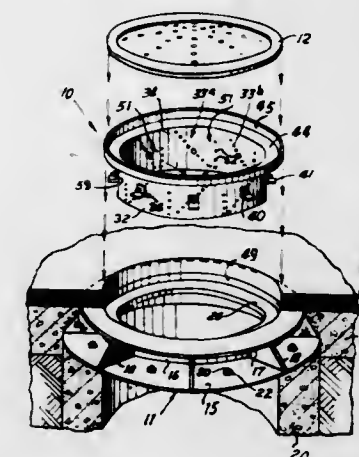
An apparatus for feeding and stacking printed articles such as folded newspapers in bundles. A printed article transfer conveyor has a detecting mechanism positioned above it comprised of a light projector and a light receiver. A bending device is provided in association with the conveyor for successively bending printed articles being conveyed. The detecting mechanism detects the shadow formed on an overlap

portion between the folded bent portions of preceding and succeeding printed articles. A downwardly inclined opening and closing fork at the discharge end of the said transfer conveyor has comblike fork halves having adjacent ends opposed to each other with a small clearance therebetween and which are movable toward and away from each other a small distance along the plane of the downwardly inclined opening and closing fork. A rotatable basket is positioned beneath the fork halves for receiving a batch of articles therefrom, and a pusher is also provided for pushing out a bundle of printed articles from the basket wherein printed articles are stacked to form said bundle. A bottom sheet feeder and an identification card feeder are provided adjacent a roller conveyor onto which the bundles are pushed. An article-counting device is connected to the light receiver for counting articles detected and a control system is connected between the counting device and the rest of the apparatus for controlling the operation of the various parts when the desired number of articles has been counted.

3,611,888
METHOD OF SEALING EXPANSION JOINTS AND EXPANSION JOINT ASSEMBLY
John J. Kavalir, Two Mountains, Quebec, and Aron Nathan Rot, Laval, Quebec, both of Canada, assignors to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 730,663, May 20, 1968.
Filed Dec. 19, 1969, Ser. No. 871,266
Int. Cl. E01c 11/10 2 Claims

A composition of matter comprising (1) a block copolymer of the A-B-A type wherein the A's typically are polymeric blocks of styrene and B is a polymeric block of a conjugated diene or such a block copolymer in hydrogenated form, (2) asphalt, (3) a compatible resin and (4) plasticizer is disclosed. This composition is advantageously used in molten form to fill and seal a concrete expansion joint. In use the walls of the joint are primed with a "cement" which effects tenacious bonding of the sealant composition when the latter solidifies.

3,611,889
MANHOLE EXTENSION
Louis E. Levinson, Dallas, Tex., assignor to International Manufacturing Company, Garland, Tex.
Filed June 19, 1970, Ser. No. 47,654
Int. Cl. E02d 29/14 5 Claims

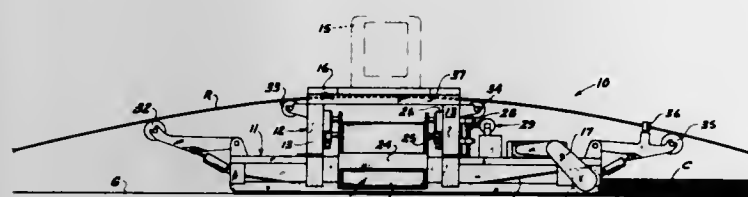


A manhole cover holder extension mountable in any one of several vertically adjustable positions in a manhole cover holder for holding a manhole cover in a raised position upon the raising of the top surface of a road by the adding of a top layer of asphalt or the like over the top surface of the original road.

3,611,890
METHOD OF AND APPARATUS FOR PLACING
CONTINUOUS REINFORCING IN CONCRETE PAVING
 Michael I. Hudis, Brookfield, Wis., assignor to Rex Chainbelt
 Inc., Milwaukee, Wis.
 Filed Feb. 26, 1970, Ser. No. 14,547
 Int. Cl. E01c 19/00

U.S. Cl. 94-39

22 Claims

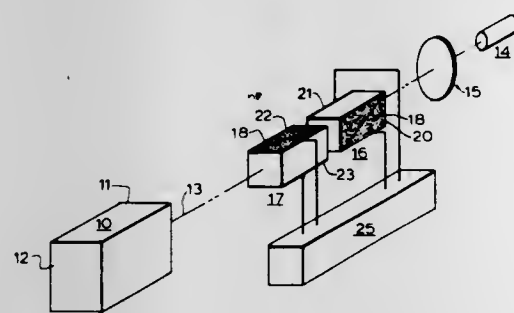


Continuous reinforcing rods are positioned on the grade to be paved and are lifted over a first machine which receives the concrete delivered alongside the grade and spreads the concrete under the rods and over the grade. Tie bars or crossbars are then placed on top of the concrete in such a manner as to be beneath the continuous reinforcing rods. The rods are then guided and depressed below the surface of the concrete by a second concrete-finishing machine and in turn depress the tie bars or crossbars to their proper position immediately therebeneath.

3,611,891
MESSAGE CHARACTER FORMING APPARATUS
 Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.
 Filed Dec. 29, 1969, Ser. No. 888,402
 Int. Cl. B41b 21/26

U.S. Cl. 95-4.5

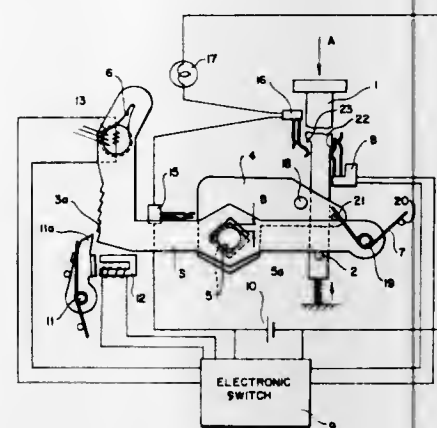
3 Claims



An apparatus for making records of message characters using a character forming device between a source of light and a record medium, and wherein the forming device lends itself to effecting recordings either while in direct contact with the record medium for making "hard copy" prints, or, through a lens system onto microfilm. The device makes use of a bundle of optical fibers extending from a light admitting surface to a light emitting surface of the device and wherein the fibers are divided into a number of smaller bundles, representing segments with which characters are formed. To form a particular character predetermined ones of the larger bundles are illuminated on the light admitting side of the device, and their corresponding segments will emit light in the form of the desired character on the opposite side, and from which a record is made.

3,611,892
DEVICE FOR INDICATING UNDEREXPOSURE IN
PHOTOGRAPHIC CAMERAS WITH AUTOMATIC
EXPOSURE CONTROL
 Wolfgang Ort, Stuttgart-Bad, and Michael Reich, Altbach
 Kreis Eblingen, both of Germany, assignors to Eastman
 Kodak Company, Rochester, N.Y.
 Filed Oct. 29, 1968, Ser. No. 771,448
 Claims priority, application Germany, June 26, 1968, P 17 72
 729.6
 Int. Cl. G03b 7/08, 7/14, 9/06
 U.S. Cl. 95-10 C

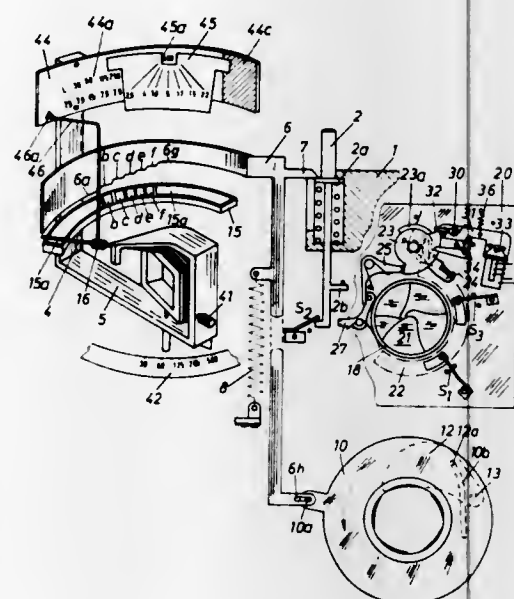
5 Claims



In a camera of the type having a movable exposure control member for varying an exposure parameter from a maximum to a minimum, and a photoelectric circuit that controls a transducer for selectively stopping the movement of the exposure control member to establish the exposure parameter in accordance with the level of scene illumination, a low-light indicator is provided including means associated with a movable shutter-release member for moving the exposure control member from its maximum exposure parameter position to its minimum exposure parameter position, and an electric signal means coupled with the photoelectric circuit for actuation immediately upon movement of the release member, when the scene illumination is below a predetermined level.

3,611,893
PHOTOGRAPHIC CAMERA WITH A SCANNING
MECHANISM AND AN ELECTRONIC TIMING DEVICE
 Franz W. R. Stapp, Calmbach/Black Forest, Germany, as-
 signor to Prontor-Werk, Alfred Gauthier G.m.b.H., Black
 Forest, Germany
 Filed Mar. 4, 1969, Ser. No. 804,209
 Claims priority, application Austria, Mar. 5, 1968, A 2139/68
 Int. Cl. G03b 7/12, 9/62
 U.S. Cl. 95-10 C

10 Claims



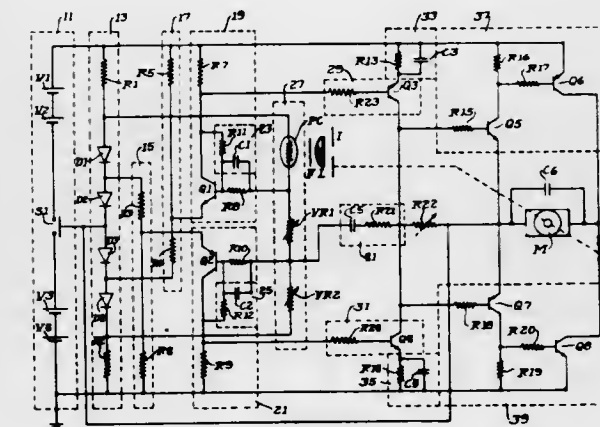
A photographic camera is provided with a scanning mechanism and an electronic timing device which cooperate

with an exposure meter to permit automatic setting of exposure times and diaphragm aperture values.

which is connectable in parallel with the receiver or by changing the amount of scene light which reaches the

3,611,894
AUTOMATIC EXPOSURE CONTROL SYSTEM
 Viktor Minneste, Jr., Chicago, Ill., assignor to Bell & Howell
 Company, Chicago, Ill.
 Filed Apr. 22, 1969, Ser. No. 818,313
 Int. Cl. G03b 7/10
 U.S. Cl. 95-10 C

9 Claims

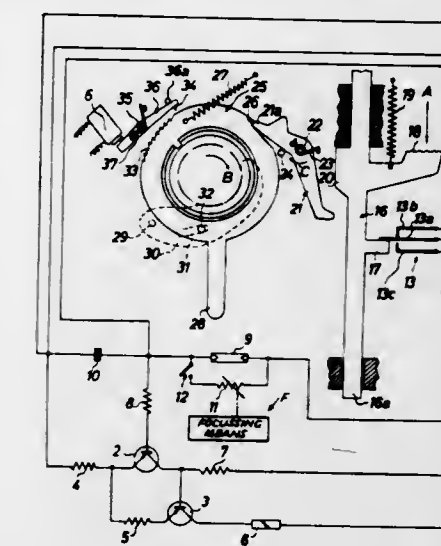


This disclosure describes an automatic exposure control system for controlling the iris of a camera. Power is applied through a stabilizing voltage string and voltage dividers, as well as from unregulated batteries through collector resistors, to preamplifiers. A photocell circuit that senses the amount of light passing through the iris is connected to the inputs of the preamplifiers. Signal shapers are connected to the preamplifiers to provide fast exposure correction without overshoot. The outputs from the preamplifiers are connected through stabilizer amplifiers and power amplifiers to a motor which controls the opening and closing of the iris. The stabilizer amplifiers may also be connected through a feedback circuit to the photocell circuit so that sustained oscillations are created and either a balanced or an unbalanced duty cycle waveform is imposed upon the reversible DC motor. When the duty cycle waveform is balanced, the motor has moved the iris to its correct balance position. When the waveform is unbalanced, the motor shaft rotates and moves the connected iris in the appropriate direction.

3,611,895
PHOTOGRAPHIC CAMERA FOR USE IN DAYLIGHT
AND ARTIFICIAL LIGHT
 Joachim von Albedyll, Augsburg; Karl Wagner, Ottobrunn,
 and Hans-Peter Huber, Munich, all of Germany, assignors
 to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
 Filed Oct. 28, 1969, Ser. No. 870,020
 Claims priority, application Germany, Oct. 31, 1968, P 18 06
 487.4
 Int. Cl. G03b 7/08, 7/16
 U.S. Cl. 95-10 C

7 Claims

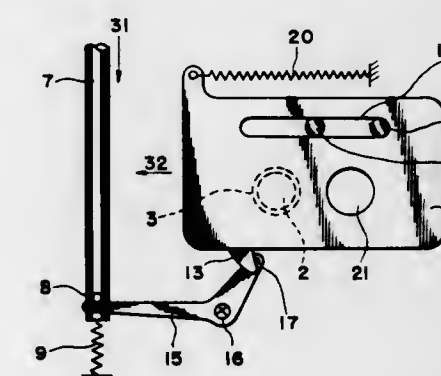
A photographic camera wherein the aperture size is a function of scene brightness and of the position of focusing means when the exposure is made in artificial light. Changes in the position of the focusing means effect changes in sensitivity of the circuit which includes a photosensitive receiver and directly controls the diaphragm. The sensitivity of the circuit is changed by changing the resistance of a variable resistor



receiver in response to changes in the position of the focusing means.

3,611,896
LENS PROTECTIVE DEVICE BUILT INTO THE
CAMERA BODY
 Koichi Aoki, Toyokawa, Japan, assignor to Minolta Camera
 Kabushiki Kaisha, Osaka, Japan
 Filed Sept. 30, 1968, Ser. No. 781,291
 Int. Cl. G03b 17/00
 U.S. Cl. 95-11 R

3 Claims



A lens protective device built into the camera body operated by and automatically operated by the shutter release mechanism so that the protective part is caused to recede out of the lens light path just before the exposure begins and to come back in front of the lens, covering it, when the release mechanism returns to its original position.

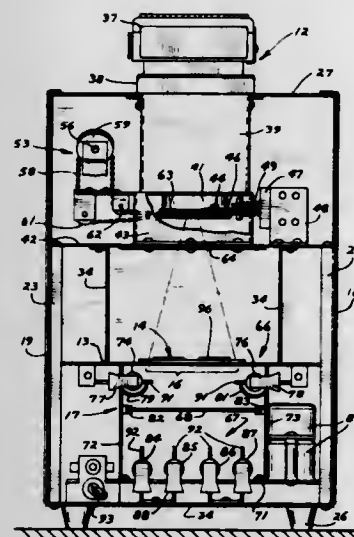
3,611,897
PHOTOGRAPHIC INSTRUMENT
 William T. Owens, Jr., Long Lake, Minn., assignor to
 Washington Scientific Industries, Inc., Minnetonka, Minn.
 Filed Mar. 21, 1969, Ser. No. 809,239
 Int. Cl. G03b 19/00

U.S. Cl. 95-11 R

12 Claims

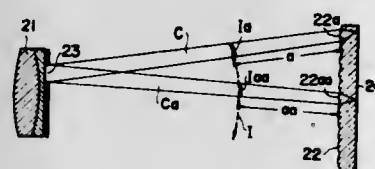
A portable photographic instrument for photographing analytical objects suspended in a transparent media placed on or in a transparent carrier to provide a film record of the objects. The instrument has a housing enclosing a platform for supporting the carrier containing the objects. A photographic system including interchangeable film backs and a lens in the housing is located above and in axial alignment to the object. Two separate light sources are located below the platform for illuminating the object. The first light source has two lights located to either side laterally of an opening in the platform to provide side illumination and a dark field. The second light source located in general axial alignment with the opening, has a series of four lamps and illuminates a

frosted glass plate from the bottom to provide a light background or field. A switch selectively activates the first



light source or the second light source so that the object can be illuminated with either a dark background or a light background.

3,611,898
MULTIPHOTOGRAPHING DEVICE
Nobunao Mikami, Kawasaki-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 5, 1968, Ser. No. 767,544
Claims priority, application Japan, Sept. 11, 1967, 42/58,219
Int. Cl. G03b 41/00
U.S. Cl. 95—18 R 1 Claim



A first lens directed toward multiple objects a relatively simple cemented lens group and a second lens comprising a group of microlenses which are arrayed so as to either have a curvature corresponding to that of an image focused through said first lens or to each have a focal length different from each other, for example those microlenses at the periphery of the second lens having focal lengths different from those of the microlenses at the center portion of the second lens, so as to correspond with the curvature of the image focused through the first lens.

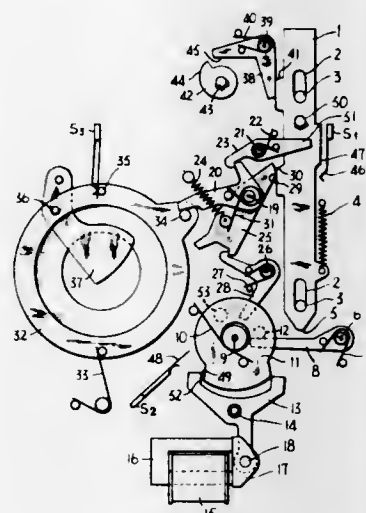
3,611,899
MULTIPHOTOGRAPHIC DEVICE
Hisanori Ataka, and Nobunao Mikami, both of Kawasaki-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Nov. 4, 1968, Ser. No. 773,155
Claims priority, application Japan, Nov. 8, 1967, 42/71,757
Int. Cl. E01c 11/10
U.S. Cl. 95—18 R 1 Claim



A multiphotographic device comprising a photographic lens consisting of a group of a multitude of microlenses ar-

rayed integrally in one plane in columns and rows; and an opaque moving plate disposed between the photographic lens and a photosensitive material which is disposed backwardly of the moving plate, and having a plurality of equidistantly spaced apart apertures.

3,611,900
SWITCH MEANS FOR ELECTRIC SHUTTER
Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokiten, Tokyo, Japan
Filed Dec. 30, 1968, Ser. No. 787,727
Claims priority, application Japan, Apr. 3, 1968, 43/21,475
Int. Cl. G03b 9/04, 7/08
U.S. Cl. 95—31 EL 4 Claims

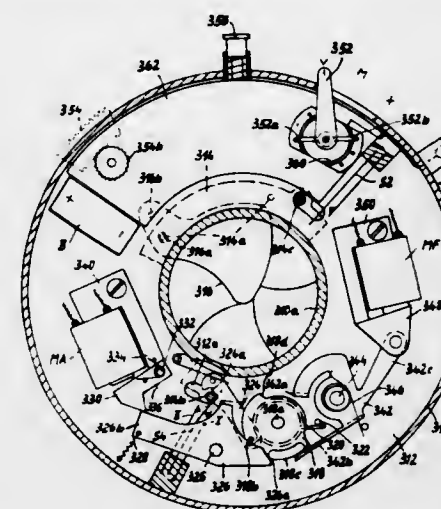


A timing circuit disconnect apparatus in a camera utilizing a timing circuit for operating the camera shutter and an electrical energy source for supplying electrical energy for the timing circuit, the disconnect apparatus including a switch connected in series between the timing circuit and the electrical energy source, which switch is opened at the termination of the shutter operation, and held open until a film winding mechanism is actuated. The disconnect apparatus includes a locking lever selectively engageable with a movable release arm that is connected to the film winding mechanism, the locking lever being arranged to lock the trigger lever in its actuated mode until the winding means is actuated to move the release arm, which in turn moves the locking lever to unlock the trigger lever and release the trigger lever from its actuated mode.

3,611,901
CONTROL ARRANGEMENT FOR PHOTOGRAPHIC APPARATUS
Paul Fahlenberg, Baierbrunn near Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschränkter Haftung & Co., Munich, Germany
Filed Mar. 8, 1966, Ser. No. 532,793
Claims priority, application Germany, Mar. 17, 1965, Mar. 17, 1965, Nov. 19, 1965, C35,341; C12 835; C37,437
Int. Cl. G03b 9/58
U.S. Cl. 95—53 11 Claims

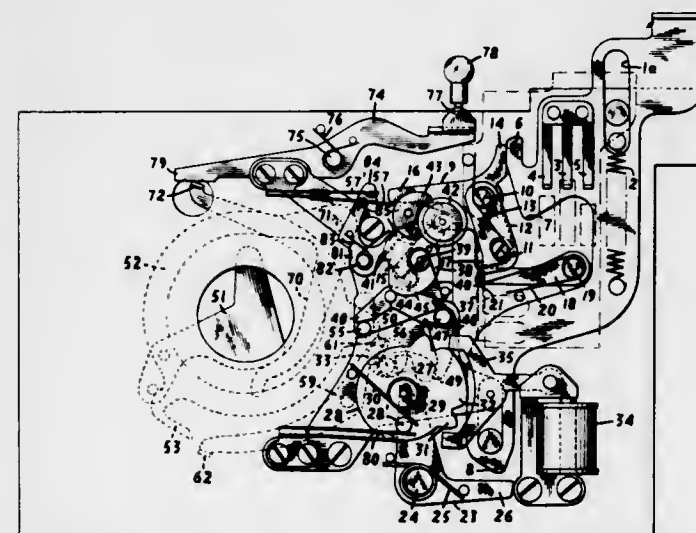
Electronic apparatus for controlling an adjustable part of a photographic camera. The control arrangement is set into operation by an electric impulse, produced by movement of a manually movable member to initiate the control operation. In one embodiment (FIGS. 1-14), the initiating electric impulse serves to activate a resistance bridge which comes into balance and stops further movement when a movable adjustable part on the camera reaches a position corresponding to that of a manually movable member on a control box, which may be located at a point remote from the adjustable part on the camera. In this embodiment, the adjustable part on the camera may serve to adjust a diaphragm aperture, or a shutter speed control member, or a focusing member. In a second embodiment (FIGS. 15-17), the initiating electric impulse serves to activate transistorized electronic circuitry

which controls the extent of a first exposure delay period (prior to opening the shutter blades) and also the extent of a



second exposure delay period while the blades are open, thus determining the duration or speed of the exposure.

3,611,902
AUTOMATIC FLASH PHOTOGRAPHY SWITCHOVER DEVICE
Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokiten, Tokyo, Japan
Filed June 18, 1969, Ser. No. 834,456
Claims priority, application Japan, June 19, 1968, 43/42,167
Int. Cl. G03b 9/02
U.S. Cl. 95—64 A 4 Claims

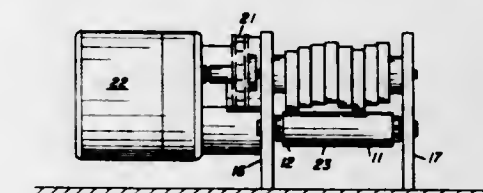


Automatic flash photography switchover device in which a camera aperture control member is controlled to take a flash exposure when the object being photographed requires flash photography. Detection of the need for a flash exposure is provided by detection circuitry and detection of readiness of the flash circuitry and detection of readiness of the flash circuitry for a flash exposure is also carried out. The aperture control for flash photography is effected only when both conditions of need for flash exposure and readiness therefor is detected, otherwise the device switches over to control the aperture for other than flash photography.

3,611,903
METHOD AND APPARATUS FOR USE IN PROCESSING RADIATION SENSITIVE ELEMENTS
Andrew Green, Harrow, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 25, 1970, Ser. No. 40,065
Claims priority, application Great Britain, June 24, 1969, 31875/69
Int. Cl. G03d 5/02
U.S. Cl. 95—89 R 6 Claims

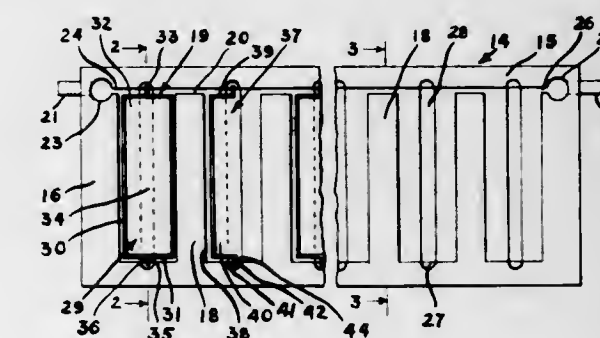
An apparatus and method for use in in-packet processing of photographic film. A liquid impermeable packet contain-

ing an exposed film has processing fluid injected into the packet about the film and the film is processed by placing the packet on a moveable support and subjecting the fluid to ran-



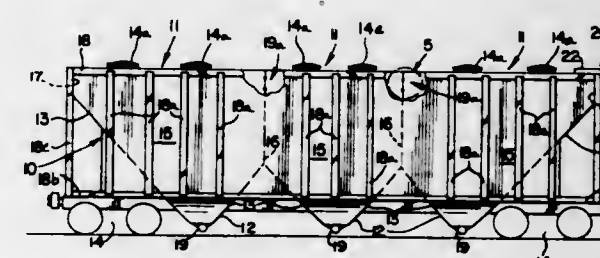
dom agitation as the packet is moved along a predetermined path by asynchronously reciprocating a plurality of beams to squeeze different portions of the packet.

3,611,904
DEVICE FOR THE WET TREATMENT OF PHOTOGRAPHIC MATERIALS
Werner W. Buechner, 4407 Gladding Court, Midland, Mich.
Continuation-in-part of application Ser. No. 677,241, Oct. 23, 1967, which is a continuation-in-part of application Ser. No. 342,459, which is a continuation-in-part of application Ser. No. 350,612, which is a continuation-in-part of application Ser. No. 632,842, This application June 9, 1969, Ser. No. 843,885
Int. Cl. G03d 13/04
U.S. Cl. 95—96 26 Claims



A photographic wet treatment tank is contained in an outer container for temperature control, with a vertically extending inlet and outlet for temperature controlled water in the walls of the outer container, a barrier between the bottoms of the container and of the tank, forcing the water to flow in a truly horizontal path in a narrow passage and in the form of a narrow layer around the tank.

3,611,905
VENT STRUCTURE FOR COVERED HOPPER CARS
Floyd J. Brinks, Hobart; Lucian P. Day, Jr., Highland, Ind.; Maurico F. Rosellini, Butler, and Robert A. Schneider, Butler, Pa., assignors to Pullman Incorporated, Chicago, Ill.
Filed May 15, 1970, Ser. No. 37,549
Int. Cl. B60I
U.S. Cl. 98—6 9 Claims



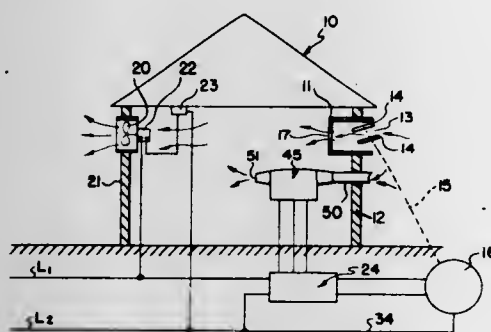
A venting device attached about an opening in the roof of a hopper car to permit air to enter the interior of the car during pneumatic unloading thereby equalizing pressure within the hoppers with atmospheric pressure to prevent collapsing of the car walls, and having a horizontal portion overlying the roof and a vertical depending portion disposed over the end wall in spaced relation thereto. Replaceable screening and

filtering members are included with the vent arrangement to prevent contamination of the inside of the car by foreign objects which could enter with the air.

3,611,906
VENTILATING SYSTEM AND CONTROL THEREFOR
Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed July 24, 1969, Ser. No. 844,584
Int. Cl. F24f 13/00

U.S. Cl. 98—33 R

8 Claims

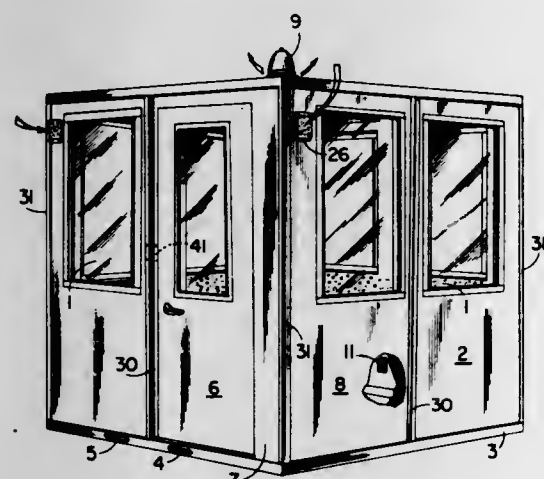


Dampers in the air inlet of a ventilation system for a relatively closed room or building are adjustably positioned by a reversible electric motor controlled so that although the velocity at which air is exhausted from the building may vary, the dampers regulate the inflow of air to provide a substantially constant pressure differential between the interior and exterior of the building.

3,611,907
VENTILATED PORTABLE STRUCTURE
Seymour Wasserman, and Arthur Oppenheim, both of Plainview, Long Island, N.Y., assignors to Industrial Acoustics Company, Inc., Bronx, N.Y.
Filed Oct. 16, 1969, Ser. No. 866,942
Int. Cl. F24f 13/00

U.S. Cl. 98—33

7 Claims



A portable room enclosure which incorporates within its walls acoustically lined ventilation pathways. By utilizing wall panels having self-contained ventilation pathways exposed to sound-absorbent material sandwiched within the panels ventilation of the room enclosure is achieved while avoiding the transmission of outside noise to the enclosed environment.

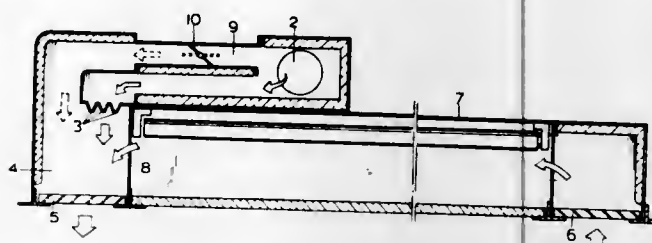
3,611,908
AIR-CONDITIONING TERMINAL UNITS
Hendrik J. Spoormaker, 56 Dorado Street, Waterkloof Ridge, Pretoria, Republic of South Africa
Continuation-in-part of application Ser. No. 753,564, Aug. 19, 1968, now abandoned. This application Mar. 17, 1970, Ser. No. 20,191
Int. Cl. F24f 13/06

U.S. Cl. 98—38

4 Claims

The invention provides an air-conditioning terminal unit for use in a room topped by a false ceiling so as to provide a

substantially constant air flow into the room and to take advantage, when necessary, of heat that passes from the room into the ceiling space. In the unit, conditioned air is caused to flow through induction nozzles into a discharge chamber which induces air from the ceiling space to flow into the

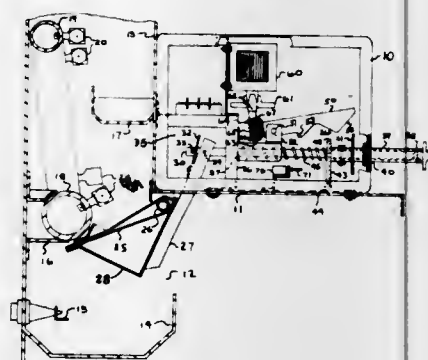


room. A stream of conditioned air, usually from the same source, is passed along a passage containing a damper in opposition to the induced air, so that when the damper is fully open, no air is induced from the ceiling space and when the damper is closed, full induction is possible.

3,611,909
FAIL-SAFE DAMPER CONTROL FOR KITCHEN VENTILATOR
Asa K. Gaylord, Portland, Oreg., assignor to Gaylord Industries, Lake Oswego, Oreg.
Filed Nov. 17, 1969, Ser. No. 877,132
Int. Cl. F23j 11/00

U.S. Cl. 98—115 K

4 Claims

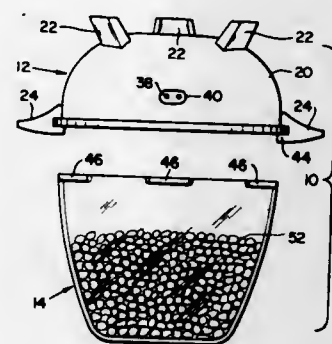


This damper control is a part of a kitchen ventilator associated with a grill and other cooking devices and arranged to exhaust grease smoke and other cooking fumes from the kitchen. A spring-closed damper in the ventilating duct is normally held open by a latch actuated by a solenoid. Upon deenergization of the solenoid by thermostatic switches and other safety devices, or in the event of an electrical fault or power failure, the latch is released causing the damper to close. Thus, a fire in one of the cooking devices will not be drawn into the ventilating duct and any fire in the ventilating duct will be quenched by having its oxygen supply cut off.

3,611,910
CORN POPPER
John S. Hughes, East Rochester, N.Y., assignor to Robeson Cutlery Co., Inc., Perry, N.Y.
Filed Jan. 17, 1966, Ser. No. 521,043
Int. Cl. A23l 1/18

U.S. Cl. 99—238.1

9 Claims



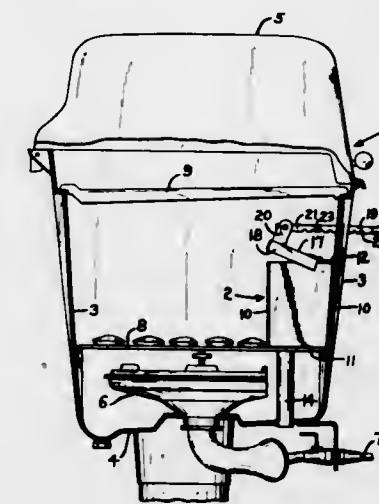
Corn is popped in a shallow base covered by a substantially larger dome so that the popped corn rises into the dome, and

the dome is constructed so that the dome and the base can be inverted to rest the popper on the dome for separating the base from the dome and serving the popped corn in the dome. The dome is preferably transparent and removably interlocked with the base which preferably contains an electric heater.

3,611,911
SMOKE-PRODUCING DEVICE
Norman L. Martin, Lake Quivira, Kans., assignor to Locke Stove Company, Kansas City, Mo.
Filed Apr. 9, 1970, Ser. No. 26,820
Int. Cl. A23b 1/04

U.S. Cl. 99—259

9 Claims

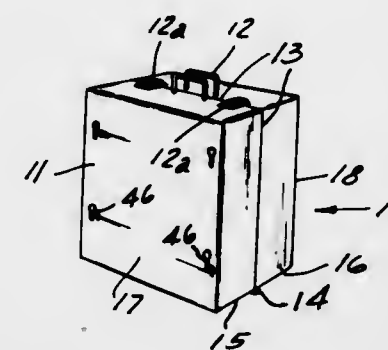


A smoke-producing device for smoke flavoring food is placed within a cooking device having heat-generating means therein and positioned above a bottom wall thereof. The smoke-producing device has walls defining a chamber therein and means communicating combustion air into the smoke-producing device from outside the cooking device. A foraminous member is mounted in the smoke-producing device and spaced from the air-communicating means for supporting smoke-producing material and the smoke-producing device has a lid which is adjustable to regulate the flow of smoke therefrom.

3,611,912
PORTABLE GRILL
Anton Choc, 636 S. Fairfield Ave., Lombard, Ill.
Filed July 10, 1969, Ser. No. 840,760
Int. Cl. A47j 37/04

U.S. Cl. 99—339

7 Claims

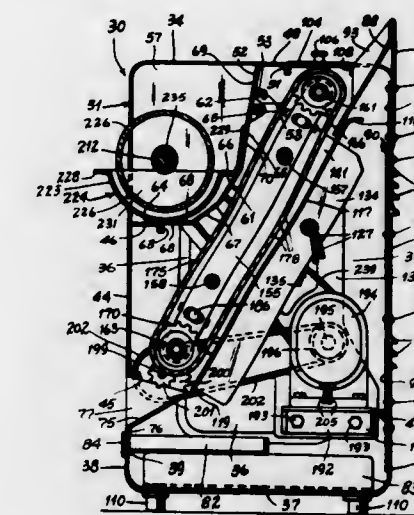


A portable grill comprising a hinged carrying case openable to form an elongated planar grill base or counter top, legs swingable out of the case to support the base at an elevated horizontal position, sidewall forming members fitting in the case and attachable to the top of the base to form supports for hot coal holding racks also fitting in the case and selectively mountable on the sidewalls either parallel to the base or perpendicular thereto for grilling or rotisserie operation.

3,611,913
AUTOMATIC BUN GRILL
William L. McGinley, Dallas, Tex., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 18, 1969, Ser. No. 850,870
Int. Cl. A47j 37/08

U.S. Cl. 99—349

7 Claims

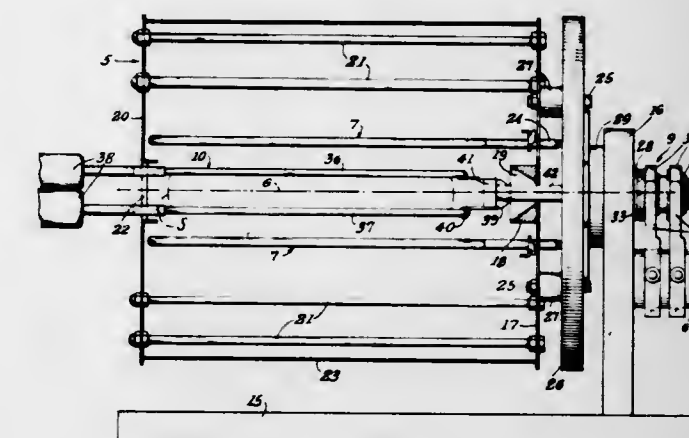


A bun grill having chain conveyor means for conveying buns across the surface of a heated grill plate. The grill plate and the conveyor means are inclined from vertical so that the weight of the conveyor chains applied to the buns will hold the buns against the grill plate. On the other hand, the grill plate and conveyor means are inclined toward vertical to permit the bun grill housing to occupy a minimum of counter space. The space between the grill plate and the conveyor assembly is adjustable. The entire conveyor assembly is mounted on rods in tracks for removal of the assembly for cleaning. The grill plate is heated gradually from its upper end to its lower end to avoid sticking of the buns. A butter roll is driven by the same motor that operates the conveyor assembly. Heat from the grill plate keeps butter liquid in the butter pan so that a uniform film will always be present on the surface of the butter roll, and no additional butter heaters are required.

3,611,914
STEAK BROILER
Ross C. Wood, 433 California St., El Segundo, Calif.
Filed Sept. 15, 1969, Ser. No. 858,077
Int. Cl. A47j 37/07

U.S. Cl. 99—391

8 Claims



An electric broiler for steaks and similar flat cuts of meat in which the broiling elements and the steaks rotate together about an axis so the flat sides of the steaks are continuously exposed to the heat of said elements during all positions thereof during broiling.

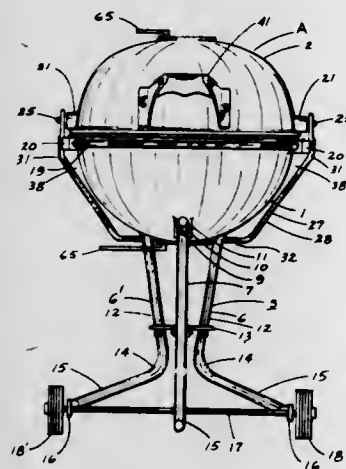
3,611,915

BARBECUE COOKER

Harold Glaser, St. Louis County, Mo.; Richard L. Keats, Port Washington, N.Y.; Charley Leach, St. Louis County, Mo., and Jerry D. Wood, Plainfield, N.J., assignors to Glaser Products Corporation, St. Louis, Mo.
Filed Oct. 24, 1969, Ser. No. 869,093
Int. Cl. A47J 37/07

U.S. Cl. 99-445

9 Claims



A barbecue cooker of the kettle type which comprises a hemispherical hood or dome-shaped closure and a rounded fire bowl, with hinge means connecting said hood and bowl so as to allow the former to be swung between closed and open condition with respect to said bowl without necessitating disengagement between the same. There is provided within the bowl a cooking grill having a multiplicity of rib members directed inwardly and downwardly toward an inner opening whereby the juices from the meats being cooked will flow toward the said inner opening for flow downwardly therethrough into a receptacle presented therebelow, thus obviating drippings falling on the charcoal with resultant flaring and the like.

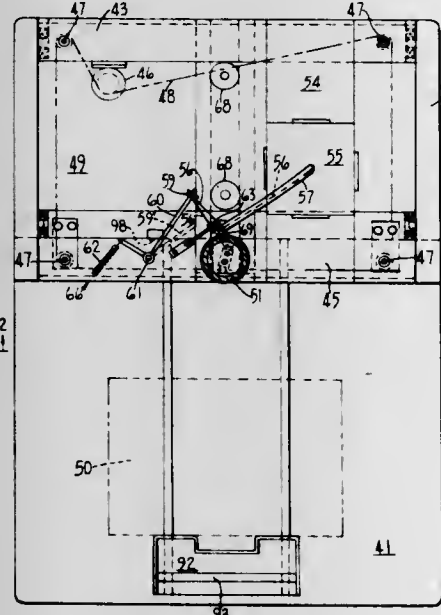
3,611,916

BUNDLE-BINDING MACHINE AND PROCESS

Stephen Valan, 1018 Apgar Terrace, Rahway, N.J.
Filed Apr. 2, 1969, Ser. No. 812,784
Int. Cl. B65b 13/34

U.S. Cl. 100-4

12 Claims



Bundles are bound by twine in a machine having a frame carrying a horizontal platform having space above it for pushing in bundles to be bound. Centrally mounted on the top of the frame is a ram motor which projects forwardly and above the platform space. It carries a vertically reciprocative ram, on the bottom of which is mounted a twine-aligning as-

sembly designed to pass twine through it and to project the twine away from it and into the gripping means when the ram reaches the bottom of its stroke. A feeding means on the top of the frame feeds a supply of slack-free twine to and through the assembly. One switch is provided for actuating the ram motor for the downward stroke of the ram after the bundle has been pushed onto the platform. Another switch is actuable by the ram at the end of its downward stroke and it serves to initiate the twine gripping, crimping and cutting mechanisms. The twine-gripping mechanism is mounted below the platform and it serves to grip the twine after it has been inserted therein by the assembly, and it holds the twine during and after the binding operation. Thereafter, the twine is fastened by a clip, a crimped strip piece of metal in a mechanism mounted below the platform. A pushing means pushes the bundle into the length of stretched twine until the bundle is on the platform encompassed on three sides by the twine. By actuating the first switch, the ram, on its downward stroke, effects complete encirclement of the bundle, after which the gripping, crimping and cutting mechanisms complete the binding operation. An alternative cutting means, when using a thermoplastic twine, consists in cutting the twine with a heated knife with enough contact time to fuse together the two cut ends below the clip and thus strengthen further the binding.

3,611,917

CALENDER STACK WITH SWIMMING ROLL

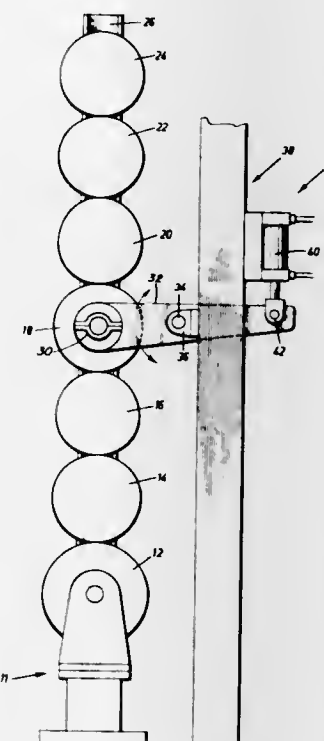
Rodney Harold Bryce, Lachine, Quebec, and Robert Maximilian Vadas, Montreal, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Quebec, Canada
Filed June 3, 1968, Ser. No. 734,146

Claims priority, application Canada, June 9, 1967, 992,576

Int. Cl. B30b 3/04

U.S. Cl. 100-162

4 Claims



The use of a stacked paper calendar with a single stack of rolls in place of the usual tandem arrangement is promoted by providing an intermediate variable deflection roll and controlling the internal fluid pressure within the roll to control roll deflection under load in relieving or increasing the nip loads in the lower portion of the stack. The intermediate roll is supported by end bearings which are provided with control means for applying upward relief force.

3,611,918

PRESS

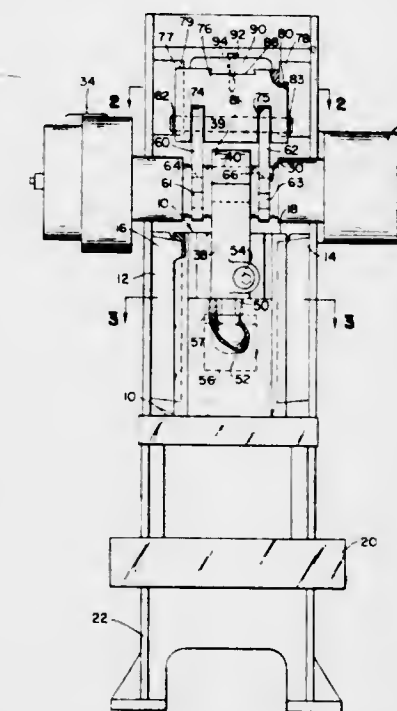
Daniel W. Marsh, and Bertram W. Perkins, Jr., both of Warren, Mass., assignors to Perkins Machine Company, Warren, Mass.

Filed Sept. 29, 1969, Ser. No. 861,863

Int. Cl. B30b 1/06

U.S. Cl. 100-214

8 Claims



Press with counterbalanced ram mounted for longitudinal reciprocation in a frame, a pitman being coupled to the ram and connected to a crankshaft for pivotal movement with respect to a first axis spaced from the axis of rotation of the crankshaft, a counterweight for the ram being mounted for longitudinal reciprocation and being aligned with the ram, and a pitman assembly coupled to the counterweight and connected to the crankshaft for pivotal movement with respect to a second axis spaced from the axis of rotation of the crankshaft and in a direction opposite the direction of spacing of the first axis.

3,611,919

METHOD AND APPARATUS FOR MULTIPLE EMBOSsing OF CONTINUOUS WEBS

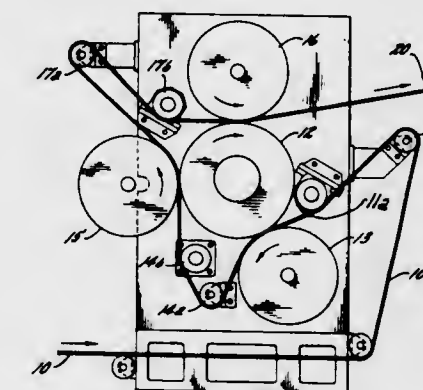
Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 20, 1968, Ser. No. 785,508

Int. Cl. B44b 5/00

U.S. Cl. 101-23

7 Claims



A method and apparatus of forming two or more embossments repeated continuously along the length of a flexible web and out of register with each other. The embossments are formed by passing the web through two or more embossing stations on the surface of a single embossing roll, and drawing the web away from the surface of the embossing roll between successive embossing stations. The flexible web may

be made of cellulosic tissue or other substantially nonresilient material, and reinforced with resilient threads or other elements extending continuously in the longitudinal direction of the web so as to maintain a constant web length between pairs of successive embossing stations. The resulting product is also disclosed.

3,611,920

RANDOM JAR CODER

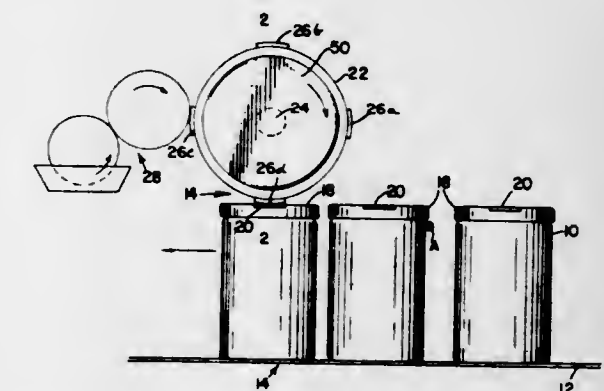
Charles A. Timko, Westmont, and Lanny A. Oberhofer, Chicago, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,386

Int. Cl. B41f 17/16, 17/24

U.S. Cl. 101-35

1 Claim



An apparatus for imprinting a code or other marking on articles, such as capped jars, which comprises a printing or coding wheel having a series of circumferentially spaced printing die elements and rotatably mounted at a printing station above a straight line conveyor on which capped jars or other articles, are advanced, the wheel being disposed at an elevation to bring the die elements into engagement with the tops of jars advanced to the station and a drive for the wheel which includes a differential gear system for accelerating or decelerating the printing wheel and a stepping motor which is responsive to sensors spaced along the path of advance of the jars as they approach the printing station and operating to sense the location of the jar tops relative to the printing station. The sensors are connected through electric circuitry with a control device including a timer whereby the rotation of the printing wheel is adjusted so that the die elements match the spacing of the advancing jar tops and a die element is engaged with each successive jar top to print a code thereon.

3,611,921

SHEET-FED OFFSET PRINTING MACHINE HAVING A NUMBERING DEVICE

Hans-Georg Jahn, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Mar. 27, 1970, Ser. No. 23,376

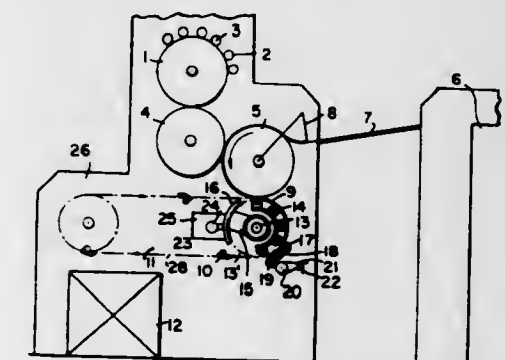
Claims priority, application Germany, Mar. 28, 1969, P 19

15 921.8

Int. Cl. B41f 47/46

U.S. Cl. 101-77

7 Claims



A sheet-fed offset printing machine having an impression cylinder from which a sheet is being imprinted includes a

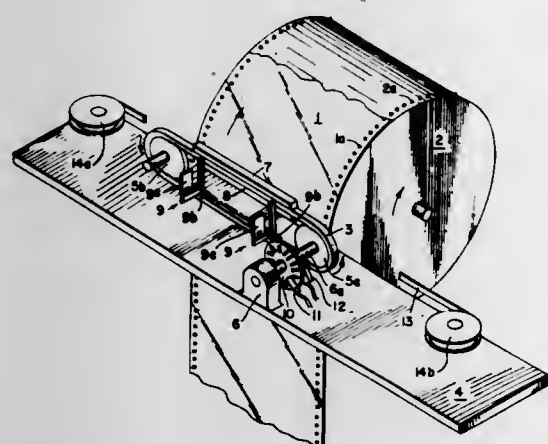
revolvable endless chain delivery having a pair of opposing sprocket wheels mounted on respective shafts, a gripper bridge on the chain delivery for gripping and removing the sheet from the impression cylinder, a numbering device including numbering mechanisms mounted on one of the sprocket wheel shafts so as to cover part of the periphery of the respective sprocket wheel and a counterpressure roller adjacent and cooperating with the numbering mechanisms, the part of the sprocket wheel periphery being coverable by the sheet being removed from the impression cylinder, an ink carrier segment rotatable about the one sprocket wheel shaft and located between the runs of the endless chain delivery, the segment having an ink-carrying cover surface, an ink fountain mounted outside the endless chain delivery and including a lifter roller engageable with the cover surface through revolving zones of the endless chain delivery, that are free of superposed sheets and are located directly upstream of the gripper bridge, for supplying ink to the cover surface, and mutually cooperating inking roller and friction roller located between the runs of the endless chain delivery, the inking roller having an ink-carrying covering alternately engageable periodically with the cover surface of the ink carrier segment and with printing surfaces of the numbering mechanisms.

3,611,922
FRONT PRINTER
Frederick E. Carroll, Lynnfield; James H. Edwards, Winchester, and Lynn W. Marsh, Jr., Melrose, all of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,752
Int. Cl. B41j

U.S. Cl. 101—93

11 Claims



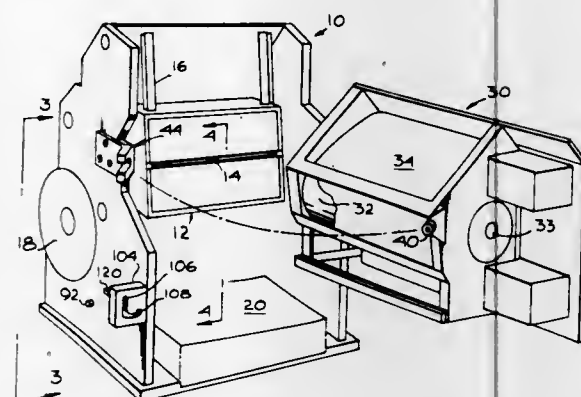
A printer in which selectively activated hammers drive selected print slugs against a document by striking interposers which are maintained in contact and associated with the selected slugs and which transmit the force of the hammers to the slugs. Each slug is associated with a particular interposer and both are mounted in a continuous chain which moves across the document at the print line and is located on the same side of the document as are the hammers. The interposers are resiliently mounted in the chain and the slugs are biased away from the document and maintained in contact with the interposers. Preferably, each slug is partially located in an open-ended bore within its associated interposer and has a flanged end on which a type character is located projecting out of the bore. The slug's flange is maintained in contact with the open end of the interposer and the centroids of the slug and interposer are aligned perpendicular to the document and along the center of the bore. Thus, an impact force on the interposer is transmitted to the flange of the slug to drive the slug toward, and perpendicular to the document.

3,611,923
PRINTER DRUM GATE LATCH ASSEMBLY
George M. Haramia, Santa Ana, and Harry Katt, Tarzana, both of Calif., assignors to Data Products, Woodland Hills, Calif.

Filed Aug. 14, 1969, Ser. No. 850,052
Int. Cl. B41j 29/02

U.S. Cl. 101—93 R

8 Claims



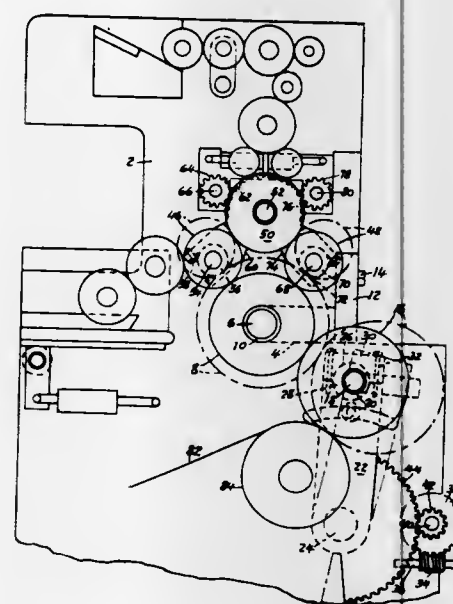
A latch assembly useful in a high-speed printer for latching a hinged drum gate into alignment opposite to a hammer bank. The latch assembly is comprised of a roller mounted on the drum gate and rotatable about an axis extending through the hinge axis of the gate. The hammer bank frame carries a fixedly mounted bracket defining a slightly inclined entrance ramp leading to a receptacle having a precisely defined flat surface. A wedge plate, mounted for pivotal movement adjacent the bracket, is held in an unlatched position by a pivotable pawl when the roller is not present on the flat surface. As the roller rolls up the ramp on to the flat surface, it engages the pawl to release the wedge plate which, by spring action, is pivoted to a position with its wedge surface engaging said roller and locking it into said receptacle.

3,611,924
ROTARY OFFSET PRINTING PRESS WITH CYLINDER INTERRUPTER
Dewey L. Harrison, Fort Worth, Tex., assignor to National Productive Machines Incorporated, Elkridge, Md.

Filed Oct. 23, 1969, Ser. No. 870,446
Int. Cl. B41f 13/20, 7/04

U.S. Cl. 101—218

1 Claim



An offset printing press wherein the printing and blanket rolls are readily changeable to permit the use of rolls of different diameters for printing sheets of different length and wherein the blanket roll is mounted on a pivoted arm adapted to be moved toward and away from the printing roll and impression roll and to be locked in an adjusted position to which it is moved.

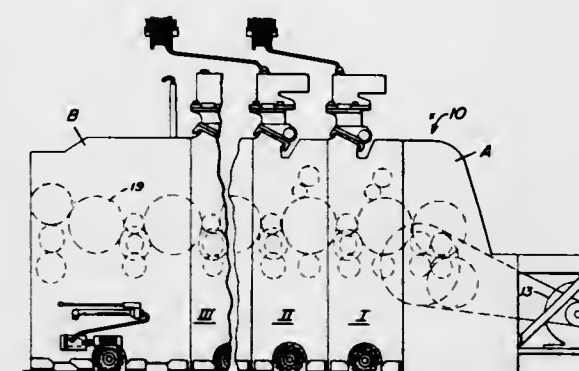
3,611,925
PRINTER-SLOTTER MODULE GEAR TRAIN BRAKE
Henry E. Kulwicki, Willingboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Feb. 24, 1969, Ser. No. 801,352

Int. Cl. B41f 13/00

U.S. Cl. 101—183

9 Claims



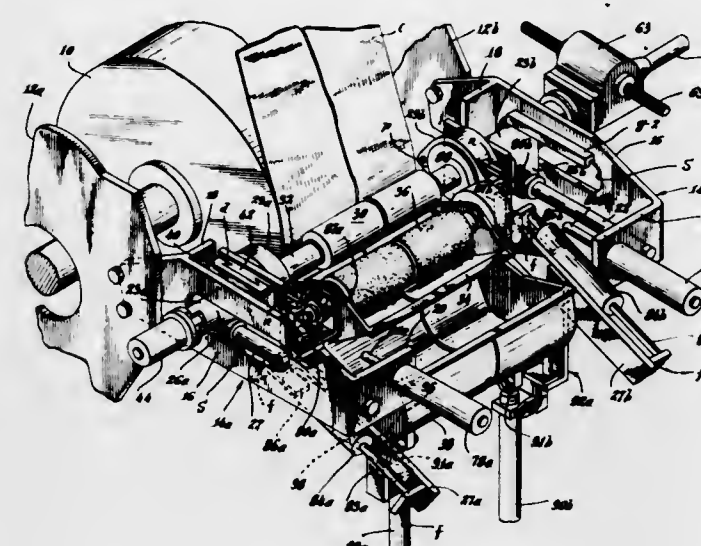
A printer-slotter used for printing and slotting carton blanks of double-faced corrugated board is provided with a gear train brake. The gear train brake is used for preventing undesired rotation of the gears during certain operations.

3,611,926
ROTARY PRESS WITH INTERRUPTABLE AND REMOVABLE PRINT ROLL
James Reid Johnson, Stonington, Conn., assignor to The Johnson Fast Print Machine Corporation, Brooklandville, Md.

Filed May 29, 1969, Ser. No. 829,056
Int. Cl. B41f 13/14, 13/40

U.S. Cl. 101—247

9 Claims



In a machine for printing a length of fabric between a backing cylinder and one or more print rolls disposed around the backing cylinder means are provided for connecting a print roll to rotary drive means after the print roll has been placed in the machine and for disconnecting it without removing it from the machine. This is accomplished by providing support means movable toward and away from the backing cylinder and defining sleeves, through one of which extends a reciprocal driven shaft which is adapted to engage an end of the print roll mandrel or journal, and through the other of which extends an axially reciprocal shaft by which the print roll assembly and driven shaft may be adjusted in position axially.

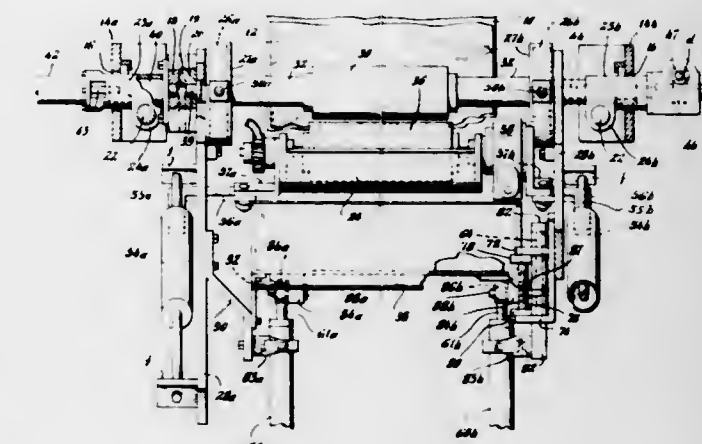
891 O.G.—22

3,611,927
FABRIC PRINTING MACHINE EMPLOYING A WASHER-RECEPTACLE
James Reid Johnson, Stonington, Conn., assignor to The Johnson Fast Print Machine Corporation, Brooklandville, Md.

Filed May 29, 1969, Ser. No. 829,049
Int. Cl. B41f 35/04; B41f 41/04

U.S. Cl. 101—425

1 Claim



In a machine for printing lengths of fabric employing a washer-receptacle in association with a color box the washer-receptacle is mounted in such a way that it is movable toward and away from a backing cylinder as part of a print roll assembly which includes the color box, and is capable of swinging movement around one end toward and away from the color box and the body of the machine, and is movable up and down, toward and away from the color box.

3,611,928
INK SUPPLY REGULATION DEVICE FOR OFFSET PRINTING PRESS
Tamaki Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

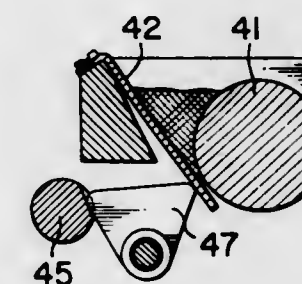
Filed Aug. 19, 1969, Ser. No. 855,450

Claims priority, application Japan, Aug. 24, 1968, 43/60801

Int. Cl. B41f 31/04

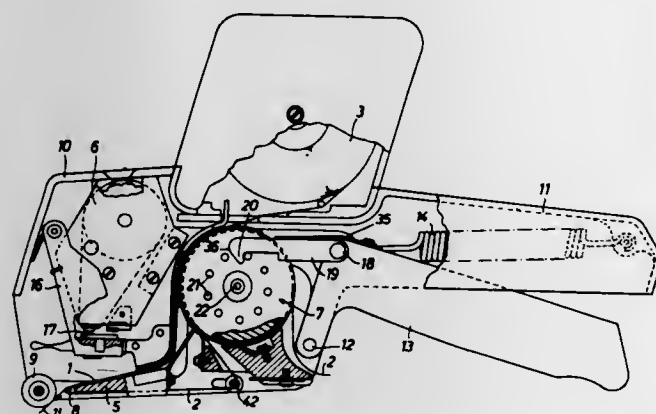
U.S. Cl. 101—365

5 Claims



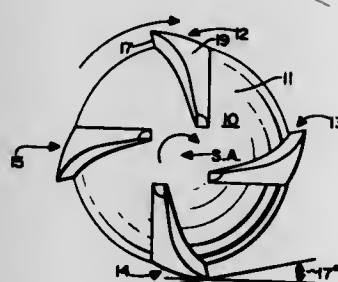
An ink supply regulating device for an offset press wherein a cam rod is connected through a rotative means with a regulating plate determining the quantity of ink supplied. A plurality of recesses are formed in the cam rod in varied arrangement. The rotative means is either a plurality of rollers or a rockable member and the setting of the regulating plate is determined by the member of recesses into which the rollers or rockable member are received as the cam rod is rotated.

3,611,929
LABEL DISPENSING APPARATUS
 Kurt Schrotz, Brentanstrasse 29B, Hirschorn/Neckar and
 Werner Becker, 6932 Hirschorn, Itaipustrasse 25,
 Hirschorn, both of Germany
 Filed Aug. 11, 1969, Ser. No. 849,030
 Claims priority, application Germany, Aug. 14, 1968, P 17 86
 068.3
 Int. Cl. B41f 1/08
 U.S. Cl. 101—292 20 Claims



An apparatus for printing and dispensing labels temporarily adhered to a support tape by means of a pressure-sensitive adhesive, the support tape being provided with openings, such as apertures or marginal indentations, at intervals corresponding to the spacing of the leading edges of the labels, the apparatus including a transport system which intermittently advances the support tape through successive increments corresponding to the advancement of a label to bring the labels sequentially into accurate registration with a printing position and a dispensing position, the transport system having a transport roll including a peripheral feed surface, means for intermittently driving the transport roll through successive angular increments which advances the peripheral feed surface through successive increments corresponding to the advancement of a label, projections extending from the feed surface for entering the openings in the support tape with sufficient clearance to permit the support tape to engage the feed surface only when the openings are registered with the projections, and means for maintaining the support tape against a portion of the feed surface extending around the transport roll through an angle of greater than 90° to establish a frictional force between the support tape and the feed surface sufficient to assure that the support tape will be frictionally gripped and advanced by the transport roll.

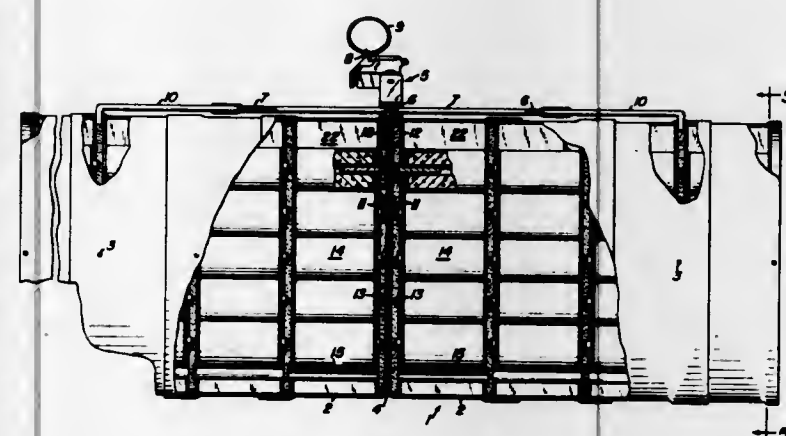
3,611,930
SPHERICAL SHAPED BODY WITH AERODYNAMIC TORQUE RIBS
 Robert S. Kensinger, Minneapolis, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
 Filed June 27, 1966, Ser. No. 560,707
 Int. Cl. F42b 25/20, 25/24
 U.S. Cl. 102—4 6 Claims



1. A generally spherically shaped member having a plane of symmetry and an axis passing substantially through the geometric center of said member normal to said plane of symmetry, said member further having external aerodynamic

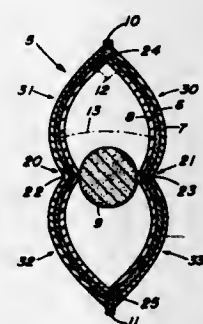
features which will cause it, when placed into an airstream, to spin about said axis regardless of the orientation of said member relative to the airstream, said aerodynamic features including a plurality of torque ribs, each of said ribs having: an aerodynamic fence centered on said plane of symmetry and extending a short distance to either side of it; a front face having a first part extending from one side of said aerodynamic fence for a short distance substantially parallel to said plane of symmetry, then curving in a circular radius away from said plane of symmetry into a segment at an angle to said plane of symmetry, said face further having a second part extending from the other side of said aerodynamic fence, said second part being substantially symmetrical to said first part with reference to said plane of symmetry; and a rear face providing a smooth streamlined surface extending towards the rear and downward from the upper edge of said front face and merging with the spherical surface of the member.

3,611,931
SEQUENTIAL BURST AIR DROP CLUSTER
 Murrell J. Bessey, Forest Hill; Howard I. Carroll, Forest Hill, and William J. Franklin, North East, all of Md.
 Filed May 5, 1969, Ser. No. 821,485
 Int. Cl. F42b 25/16
 U.S. Cl. 102—7.2 4 Claims



A means and method for low-altitude dispersing of submunitions from a sequential burst air drop munition.

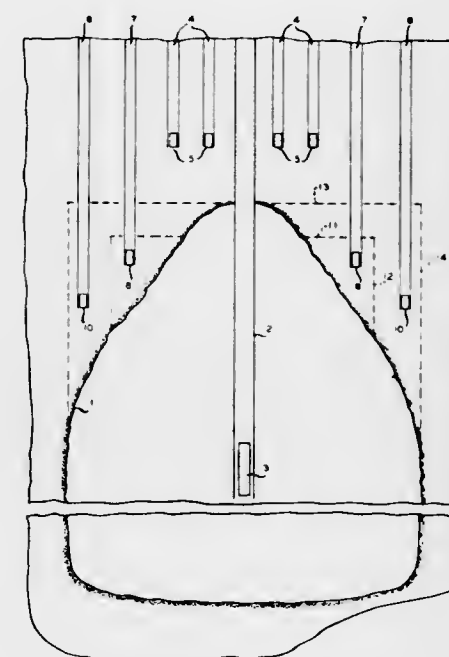
3,611,932
SHAPED WAVE GENERATOR
 Irvin G. Clator, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy
 Filed July 3, 1969, Ser. No. 838,941
 Int. Cl. F42b 1/00
 U.S. Cl. 102—22 8 Claims



A layer of explosive having its shape correlated to its explosive force and detonation rate to form, upon initiation, a shock wave of the desired shape. A layer of fragmenting

material may be provided to initiate, by impact, the entire surface of a charge having the same shape as the shock wave, and a backing layer may be provided to direct the explosive force in the desired direction.

3,611,933
NUCLEAR CAVITY CONFIGURATION CONTROL
 William C. Lanning, Bartlesville, Okla., assignor to Phillips Petroleum Company
 Filed Dec. 29, 1967, Ser. No. 694,649
 Int. Cl. F42d 7/00
 U.S. Cl. 102—23 11 Claims

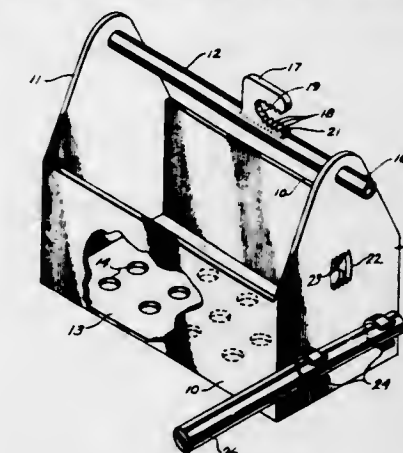


The configuration of a nuclear cavity is controlled and/or enlarged by placing auxiliary conventional explosives, directional explosives or small nuclear charges approximately at the circumference of the chimney or cavity expected and exploding these simultaneously or sequentially before, during and/or after the nuclear shock to create a cavity of desired shape which preferably will be substantially cylindrical. In one embodiment, the invention is applied to the enlargement and control of the shape of the desired cylindrical hole or cavity shot in oil shale thus to substantially enlarge the underground retort volume and amount of shale oil which can be recovered from a given formation area. In an embodiment described, the auxiliary explosives surround the expected cavity just outside its circumference. There are placed in the roof as well as at different levels across the cross-sectional area of the expected hole additional auxiliary explosives wherewith to control the roof configuration and to further enlarge the cavity, if needed. Sequential drilling and exploding of a series of charges, especially in the area of the top of the cavity, is disclosed.

3,611,934
APPARATUS FOR SETTING SAFETY FLARES
 Roger W. Schaefer, Arcadia, Calif., assignor to Kel-Lite Industries, Inc., Covina, Calif.
 Filed Oct. 20, 1969, Ser. No. 867,459
 Int. Cl. C06d 1/04
 U.S. Cl. 102—37.4 13 Claims

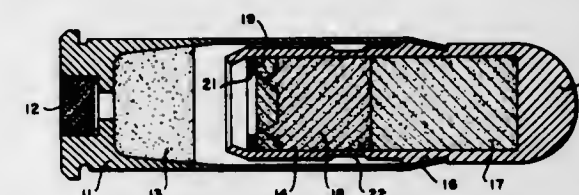
A convenient carrying box or tray is provided for handling pyrotechnic flares such as are widely employed for safety marking at highway accidents and the like. A serrated jaw on the box serves to grip the cap of a flare so that, with one hand, flares can be rapidly decapped for use. A box handle and a ramp guide a flare into the decapper. A cap holder

supports a cap having a striking surface for lighting a flare and spring clips or the like are provided for holding a lighted



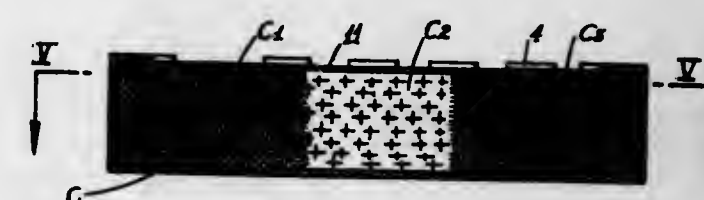
flare for providing safety to the user and an ignition source for subsequent flares.

3,611,935
SMALL CALIBER DUAL COLORED SIGNAL FLARE
 Orville L. Beckes, Washington; John L. Brown, Bedford, and Benjamin F. Harkness, Odon, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy
 Filed Oct. 31, 1969, Ser. No. 872,817
 Int. Cl. C06d 1/10
 U.S. Cl. 102—37.7 6 Claims



A small caliber dual colored signal flare having a cartridge case holding a primer and a charge of expelling powder, and a projectile body partially extending into and attached to said cartridge case. The projectile body contains a first pyrotechnic composition which, upon burning, provides a green colored display and also a second pyrotechnic composition which, upon burning after said first composition is consumed, provides a red colored display. The projectile body is provided with an undercut so that after the first pyrotechnic composition is consumed the projectile body will sever in order to provide better illumination of the burning of said second pyrotechnic composition.

3,611,936
PYROTECHNIC TRACER
 Jean Marie Bouleau, Poudrerie Nationale de, Bont de Buis, and Franck Villey Desmeyerets, Poudrerie Nationale de, St-Chamas, both of France
 Filed Dec. 15, 1969, Ser. No. 885,113
 Int. Cl. C06d 1/10
 U.S. Cl. 102—37.8 13 Claims



A tracer having a pyrotechnic charge as designed for locating and guiding missiles of different types, comprising a casing which accommodates the pyrotechnic charge and a plate covering the charge and serving as a radiation emitter. The

pyrotechnic charge comprises a portion which serves to heat the emitting plate to incandescence and a portion which is capable of producing the destruction of said plate as a result of a rise in temperature.

The tracer thus has both the properties of a plate tracer and of a flame tracer.

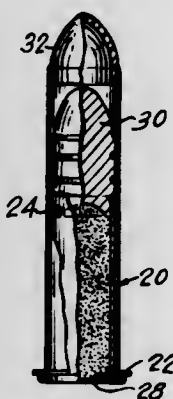
3,611,937
RELOADABLE ADAPTOR FOR RIM-FIRE CARTRIDGES
Friedrich G. Hildebrand, Rural Rte. 2 St. Agathe de Montes, Quebec, Canada

Filed May 15, 1969, Ser. No. 824,853

Int. Cl. F42b 5/00

U.S. Cl. 102-41

2 Claims



An adapter shell for forming rimfire or centerfire ammunition, the shell fitting over a first shell of smaller size, the outside diameter and length of the adapter providing a gastight fit over the smaller size shell.

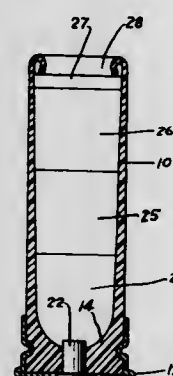
3,611,938
PLASTIC SHOT SHELL
William N. King, and Edward E. Merritt, both of Anoka, Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Continuation of application Ser. No. 486,902, Sept. 13, 1965, now abandoned, Continuation of application Ser. No. 309,824, Sept. 18, 1963, now abandoned, Continuation-in-part of application Ser. No. 132,742, Aug. 14, 1961, now abandoned. This application June 24, 1969, Ser. No. 856,870

Int. Cl. F42b 5/30

U.S. Cl. 102-43 P

17 Claims



A plastic shot shell formed of a seamless one-piece cartridge case made of a crystalline polyolefinic polymer being comprised solely of a single piece tubular member having a base portion of uniform density and a centrally disposed primer bore. The remainder of the tubular portion is biaxially oriented circumferentially and longitudinally with an internal taper and a constant exterior dimension tapering axially in the direction away from the base portion to increase molecular orientation and strength proportionally in said direction. The shell is completed with the addition of primer, powder and shot, the latter being positioned in a pouch near the open end of the tube with the open end being folded down to complete the shell.

3,611,939 PRIMER

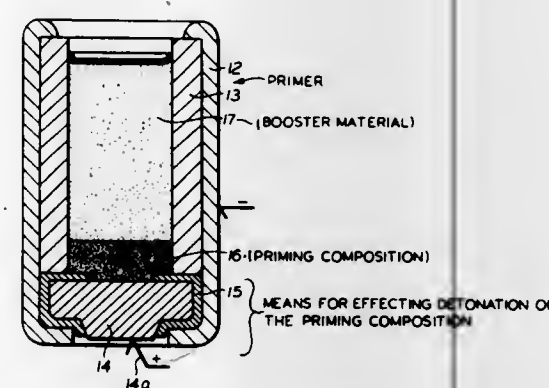
Hans Stadler, Rankestrasse 55, 85 Nurnberg; Heinz Gawlick, Boenerstr. 32, 851 Furth i.B. and Hellmut Bender, Carl v. Lindstr. 28a, 85 Nurnberg, Furth/Bay, all of Germany
Division of Ser. No. 691,647, Dec. 18, 1967, Pat. No. 3,499,386, which is a continuation of application Ser. No. 612,049, Jan. 26, 1967, now abandoned, which is a continuation of application Ser. No. 326,457, Nov. 27, 1963, now abandoned. Filed Jan. 22, 1970, Ser. No. 4,960

Claim priority, application Germany, Nov. 29, 1962, D 40,379.

Int. Cl. F42b 9/08

U.S. Cl. 102-46

2 Claims



A primer comprising a body of priming composition composed of a thermal mixture and an initial detonating agent, and a body of booster material composed of thermal mixture substantially free of initial detonating agent. The booster material and the priming composition are in direct contact.

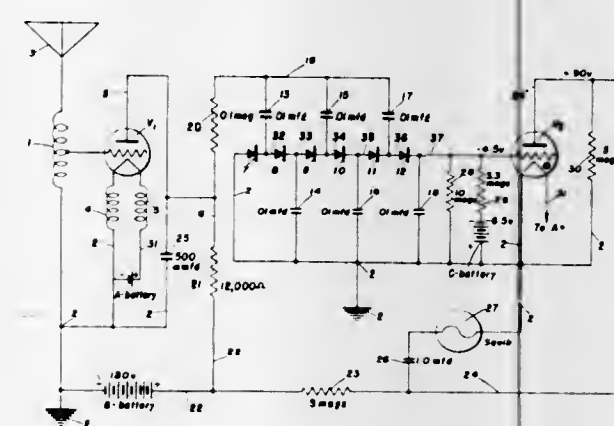
3,611,940
SIMPLIFIED PROXIMITY FUZE FOR MORTAR AND/OR HOWITZER SHELLS
John J. Hopkins, Silver Spring, Md., and Robert H. Thayer, Chicago, Ill., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 27, 1948, Ser. No. 11,478

Int. Cl. F42c 13/04

U.S. Cl. 102-70.2 P

2 Claims



A novel electrical system relating to a proximity fuze which provides rectifying and capacitive amplification as a substitute for tubes.

3,611,941
IGNITING DEVICE
George H. Hopmeier, Rochester, Mich., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Feb. 11, 1969, Ser. No. 798,330

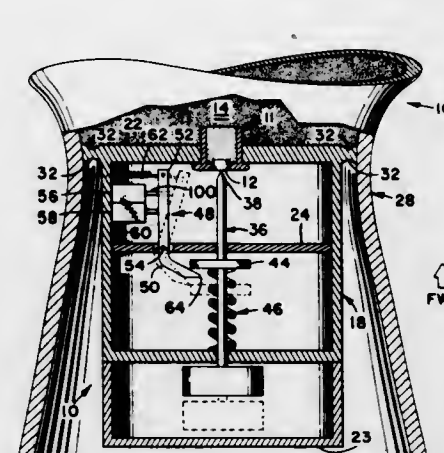
Int. Cl. F42c 15/04, 15/24, 15/24

U.S. Cl. 102-75

5 Claims

A device for actuating a propellant charge of a launched projectile wherein a member moves in response to positive

and/or negative acceleration of the projectile to actuate the propellant charge or to actuate a delaying means and obtain, being coupled to a detonator mechanism so that at the required instant, after a predetermined number of turns of



at a preselected time thereafter, setting off of the propellant charge.

3,611,942
DETONATING MECHANISM FOR A BOMB FUSE
Jaklin Boaz Popper, Kiryat Motzkin, Israel, assignor to The State of Israel, Ministry of Defence, Hakiria, Tel Aviv, Israel

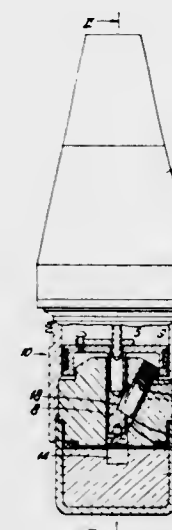
Filed Feb. 25, 1969, Ser. No. 802,111

Claims priority, application Israel, Feb. 27, 1968, 29537

Int. Cl. F42c 9/04, 15/34, 19/12

U.S. Cl. 102-85.6

2 Claims



A bomb fuse whose arming is dependent, inter alia, on the disposing of the fuse detonator in such a position that it is capable of detonating the booster explosive of the fuse.

3,611,943
BOMBS FUSES COUPLED AXIAL IMPELLER AND GENERATOR ROTOR JOINTLY SHIFTABLE REARWARDLY DURING LAUNCHING TO PREVENT ROTATION THEREOF

Jaklin Boaz Popper, Kiryat Motzkin, Israel, assignor to The State of Israel, Ministry of Defence, Hakiria, Tel Aviv, Israel

Filed Feb. 25, 1969, Ser. No. 802,112

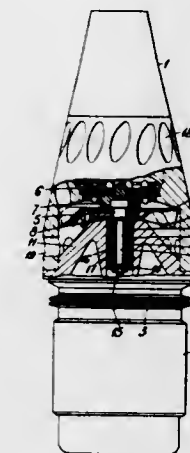
Claims priority, application Israel, Feb. 27, 1968, 29535

Int. Cl. F42c 9/02, 15/26; F42b 9/08

U.S. Cl. 102-86

3 Claims

A bomb fuse having an impeller or turbine adapted to rotate upon release or launching of the bomb, the impeller



the impeller, the motion of the latter is effective in moving the detonator mechanism into the armed position.

3,611,944
SUSPENDED VEHICLE CONSTRUCTION
Otto Reder, Baden-Baden, Germany, assignor to Messerschmitt-Bolkow GmbH, Ottobrunn, near Munich, Germany

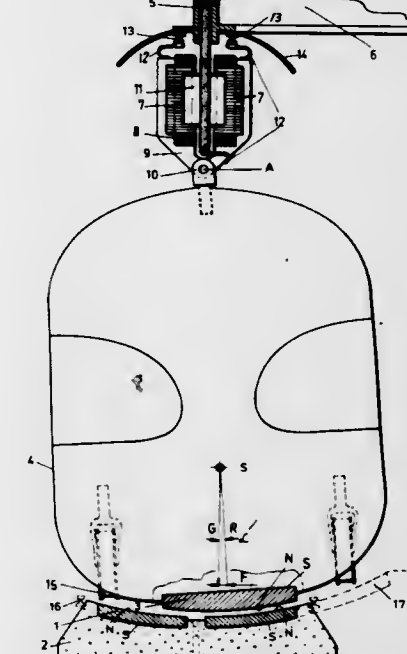
Filed Mar. 3, 1969, Ser. No. 803,619

Claims priority, application Germany, Mar. 6, 1968, P 16 80

Int. Cl. B61b 13/08

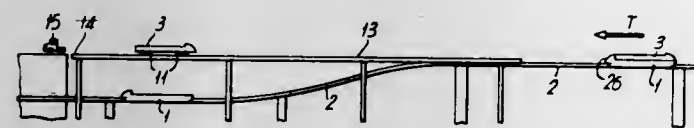
U.S. Cl. 104-23 FS

15 Claims



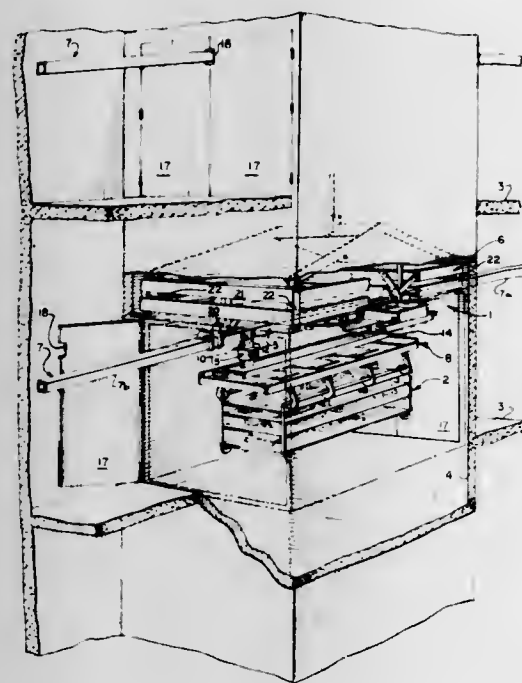
A ground or top supported tracked vehicle includes a carriage which is suspended above a trackway by air pressure or magnetic force and which is moved along the trackway and braked by a linear electric induction motor. The carriage is supported in spaced relationship to a curved track or rail by the air pressure gap or the magnetic force gap and is maintained during motion without ground or track contact. The carriage is constructed to pivot from a pendular hinge for lateral swinging movement. The pendular axis is located above the center of gravity of the carriage and is advantageously formed at the lower end of an induction motor or as one of the moving parts of the motor. The construction includes sliding pads or rollers which run along a substantially vertically arranged electroconductive reaction rail without being supported vertically on the rail.

3,611,945
VEHICLES FOR TRAVELLING ALONG A PREPARED TRACK AND METHOD OF USE
 Geoffrey John Easton, Christchurch, and Michael Anthony Stockford, Cambridge, both of England, assignors to Tracked Hovercraft Limited, London, England
 Filed Apr. 4, 1969, Ser. No. 813,657
 Claims priority, application Great Britain, Apr. 5, 1968, 16583/68
 Int. Cl. B61k 1/00; B61b 13/08; B61k 5/02
 U.S. Cl. 104—32 **2 Claims**



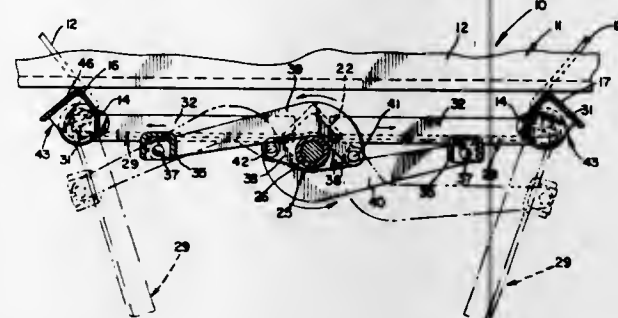
A tracked air cushion vehicle has a detachable passenger compartment. The compartment can carry extendable wheels which will engage an auxiliary track diverging from the vehicle track. If the wheels are extended and means securing the compartment to the vehicle are released, the compartment will automatically become detached and will travel along the auxiliary track as the vehicle continues along the vehicle track. In one use, passengers are conveyed directly from a city center terminal to the desired pier at an airport without leaving the compartment.

3,611,946
ELEVATOR TRANSFER MECHANISM
 Donald G. Heximer, N. Tonawanda, and Walter D. Sullivan, Snyder, both of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.
 Filed Feb. 26, 1970, Ser. No. 14,443
 Int. Cl. B66b 17/18, 17/20
 U.S. Cl. 104—127 **16 Claims**



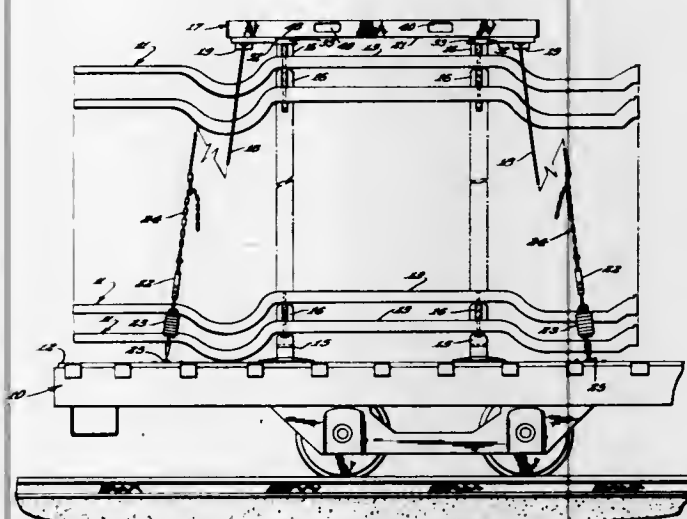
A mechanism for transferring a trolley between a transfer conveyor rail, which is carried for vertical movement by an elevator car, and stationary overhead conveyor rails arranged at the floor levels to be served by the elevator car. The transfer rail, together with a powered device operable to transfer the trolley between the rails, is supported on a platform, which is in turn loosely suspended as a unit from the elevator car. Cam leveler devices are carried on the platform for the purpose of automatically adjusting the unit relative to the elevator car, when the latter is stationary adjacent a floor level to be served, in order to accurately align the transfer rail with the stationary rails at such floor level.

3,611,947
TOGGLE HOPPER DOOR OPERATING MECHANISMS
 Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.
 Filed June 23, 1969, Ser. No. 835,609
 Int. Cl. B61d 7/18, 7/20, 7/26
 U.S. Cl. 105—253 **14 Claims**



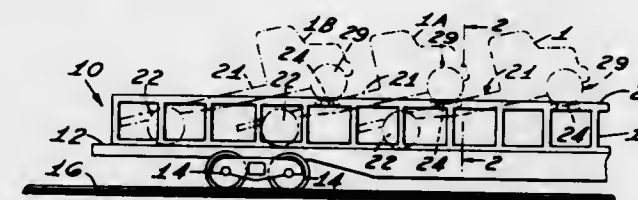
A hopper structure includes a bottom discharge arrangement having hinged doors which are movable to open and closed positions and which include an operating mechanism providing for an initial limited horizontal movement of said doors to disengage them from a locked and supported engagement with the hopper structure and whereupon doors are opened by gravity. The operating mechanism includes a manually actuated operating head which can be indexed to certain positions and with a suitable tool the operator can in one position close said door and in the other position open the same.

3,611,948
ADJUSTABLE HARNESS FOR AUTO FRAME CAR
 Richard A. Tatina, Chicago, Ill., assignor to Portec, Inc., Oak Brook, Ill.
 Filed Oct. 27, 1969, Ser. No. 869,625
 Int. Cl. B60p 7/08
 U.S. Cl. 105—367 **12 Claims**



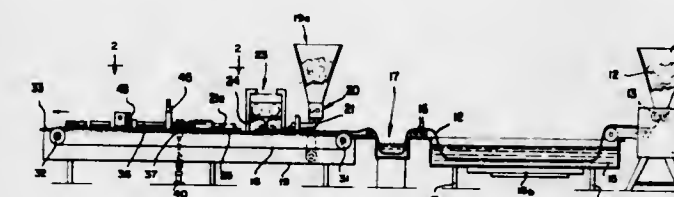
Tiedown harness for tying stacks of vehicle frames to the flat deck of a railway car. The harness has side beams extending along the tops of the outer rails of two side-by-side stacks of vehicle frames and tied together in spaced-apart relation intermediate their ends. End beams extend between the side beams and are bodily adjustable along the side beams in accordance with the length of the vehicle frames in the stacks. Downwardly opening centering cups are carried on the end beams, for engagement with top spacers on the outside rails of the vehicle frames, to hold the frames to the deck of the car and are adjustable along the end beams to take care of varying widths of frames. A centrally downwardly opening centering member is carried by each end beam and is sufficiently long to engage the top spacers on the inner rails of the side-by-side vehicle frames.

3,611,949
SADDLE YOKE ASSEMBLY
 Israel D. Peisner, Huntington Woods, Mich., assignor to Whitehead & Kales Company, River Rouge, Mich.
 Filed July 25, 1969, Ser. No. 844,872
 Int. Cl. B65g 67/00; B60p 7/08
 U.S. Cl. 105—368 R **14 Claims**



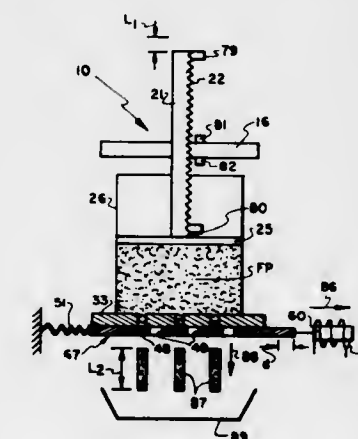
This disclosure relates to saddle yokes for supporting the front ends of vehicles loaded in a simulated "saddleback" arrangement on a vehicle transport such as a railcar. Each saddle yoke has a pair of open substantially rectangular frames defining bottomless pockets adapted to receive the front wheels of a vehicle. Means, such as tiedown chains, and including improved chain locks are provided for holding the wheels down in the pockets.

3,611,950
MANICOTTI-MAKING MACHINE
 Mario Battaglia, 440 North Taylor Ave., South Hackensack, and Frank Chessari, 471 Hudson St., Hackensack, both of N.J.
 Filed Oct. 29, 1969, Ser. No. 872,078
 Int. Cl. A21c 11/10
 U.S. Cl. 107—1 A **6 Claims**



A manicotti-forming machine including means for forming a continuous sheet of dough from a mass thereof and conveying the dough sheet past a filler dispenser for depositing a controlled quantity of filler material onto the dough sheet, means cutting the dough sheet and deposited filler into increments of predetermined dimensions, and means folding the cut dough sheet about the deposited filler to form a completed manicotti unit ready for packing and shipping.

3,611,951
FOOD EXTRUDING MACHINE
 Gordon E. Sloan, Anaheim, Calif., assignor to Logic Display Corporation
 Filed Oct. 1, 1969, Ser. No. 862,757
 Int. Cl. A01f 29/00, 35/22; A01d 55/02
 U.S. Cl. 107—14 BA **14 Claims**

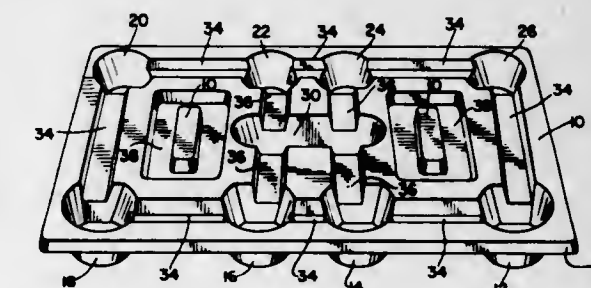


A food-extruding machine has a ram coupled to a piston that compresses moldable food product held in a container

through aligned openings of a removable extrusion plate and a severing plate. When the severing plate is moved to shift the extrusion plate and severing plate openings out of alignment then the food product extrusions are chopped into chunks. The extrusion and severing cycle is repeated until the ram-driven piston has exhausted all the food product from the container.

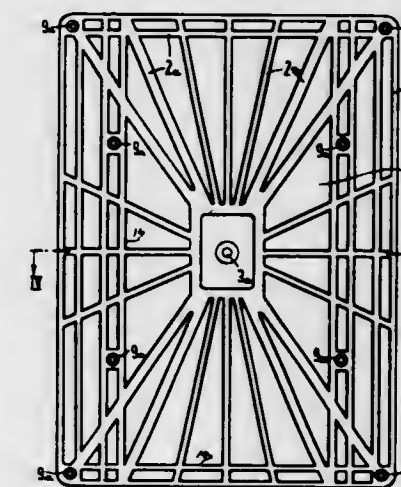
The extrusion lengths may be varied by an adjustable control. The extrusion plate and a retaining recess for holding the extrusion plate have matched locating edges so that the extrusion plate openings and severing plate openings can be quickly and accurately aligned.

3,611,952
MOLDED PALLET
 James H. Hoffman, Mansfield, Ohio, assignor to The Mansfield Tire and Rubber Company, Mansfield, Ohio
 Filed Dec. 9, 1969, Ser. No. 883,481
 Int. Cl. B65d 19/18
 U.S. Cl. 108—51 **4 Claims**



A one-piece, nestable, four-way molded pallet having a deck defining a load-supporting surface, a plurality of hollow pedestals formed integrally with the deck and a network of channels also formed integrally with the deck. The pedestals and channels depend downwardly from the deck to define depressions therein and are located in a preferred arrangement to provide maximum structural rigidity for the pallet.

3,611,953
ROTARY TABLE
 Lorenz Schottl, 8 Munich 83, Sundergastrasse 130, Munich, Germany
 Filed May 14, 1969, Ser. No. 824,644
 Int. Cl. A47b 11/00
 U.S. Cl. 108—139 **3 Claims**



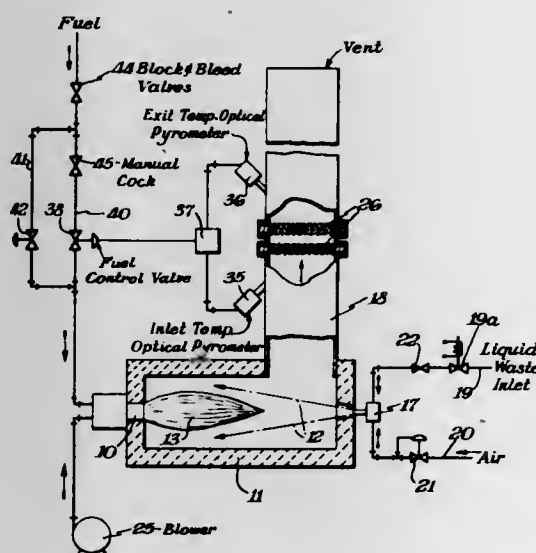
A rotary table which is particularly adapted for supporting a television receiver during assembly. The rotary table includes a pair of plates adjacently positioned and supported for relative rotation by means of a centrally located trunnion. The outwardly disposed surfaces of each of the plates are formed to define a plurality of radially extending bracing ribs. The outwardly disposed surfaces of at least one of the plates is provided with a plurality of blind holes. These holes are adapted to receive support members so as to allow the table to accommodate the lower surface of a television

receiver which is nonuniform in shape. According to an alternate embodiment, the downwardly disposed plate is provided with a plurality of holes extending through the plate and equally spaced about a circular line. The upper plate is provided with an alignment hole. Thus, as the upper plate is indexed with respect to the lower plate, each of the holes in the lower plate are selectively aligned with the alignment hole so as to permit mounting screws to be passed therethrough.

3,611,954
OXIDATIVE WASTE DISPOSAL
Elmer S. Monroe, Jr., Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 8, 1970, Ser. No. 35,604
Int. Cl. F23g 5/12

U.S. Cl. 110-7 R

5 Claims

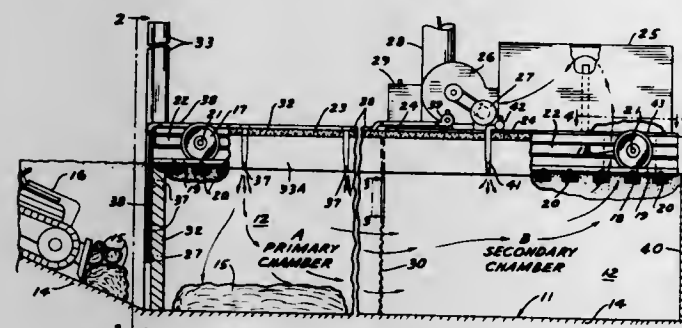


Process and apparatus for oxidative disposal of organic wastes heavily diluted with water by (1) vaporizing the dilute organic waste stream by directly heating waste sprayed counter to a combustion flame in a general envelope pattern and (2) catalytically oxidizing the hot vaporized effluent from the combustion flame to equilibrium products.

3,611,955
METHOD AND MEANS FOR INCINERATING SOLID WASTE
Samuel Nimlin, 12919 Bramel, Detroit, Mich.
Filed Feb. 11, 1970, Ser. No. 10,556
Int. Cl. F23g 5/00

U.S. Cl. 110-8 A

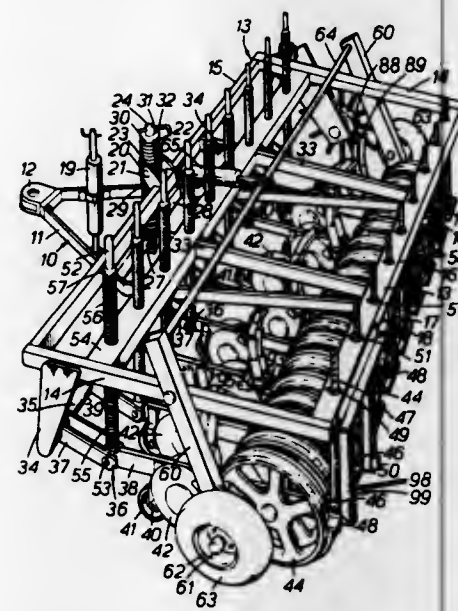
7 Claims



Method and means for disposing of solid waste by using a portable incinerator, in conjunction with a continuous sanitary landfill trench. The method consists of progressively incinerating the waste within the trench with a portable incinerator, and then covering the solid residue, after combustion, with a sanitary landfill. The means consist, in general, of a refractory cap having depending side and end members, which progressively compartmentize areas of the trench with means to sustain combustion in the compartments, means to scrub the combustion gases, and means to move the entire assembly along the trench.

3,611,956
MEANS FOR AGRICULTURAL SEEDING
Samuel Moore, Antrim, Northern Ireland, and Frank E. Jones, Shropshire, England
Filed July 15, 1969, Ser. No. 841,806
Claims priority, application Great Britain, July 20, 1968, 34,711/68
Int. Cl. A01c 5/06, 7/08; A01h 63/00
U.S. Cl. 111-62

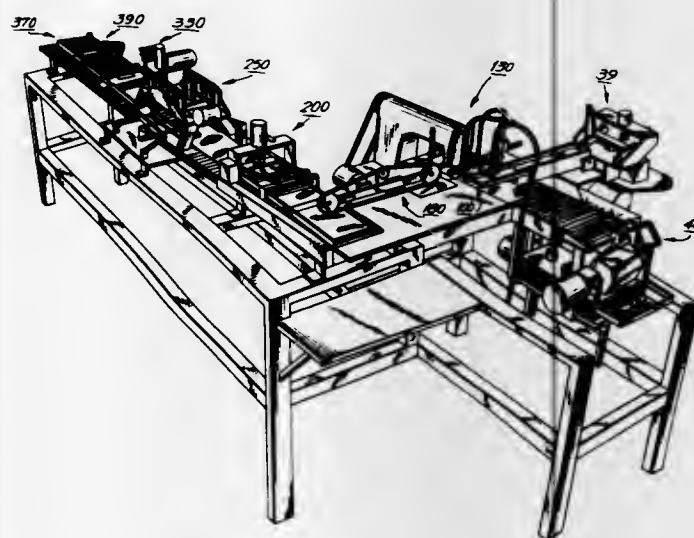
5 Claims



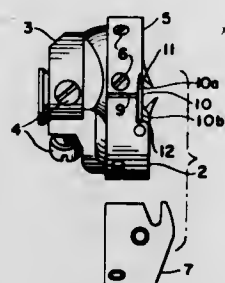
In agricultural sowing of seeds, seeds are delivered through tubes to slits cut in the ground by a plurality of discs. At least one roller is adapted to compact the ground and close the slits after seeds have been implanted in the slits. The discs and the rollers are carried by arm assemblies mounted on a frame connected to a drawbar and a resilient connection is adjustable to effect relative movement between the frame and the drawbar in a vertical plane to vary the loading applied to the discs.

3,611,957
POCKET BLANK FORMING MACHINE
Aubrey G. Beazley, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.
Filed Jan. 26, 1970, Ser. No. 5,809
Int. Cl. D05b 33/00
U.S. Cl. 112-121.29

16 Claims

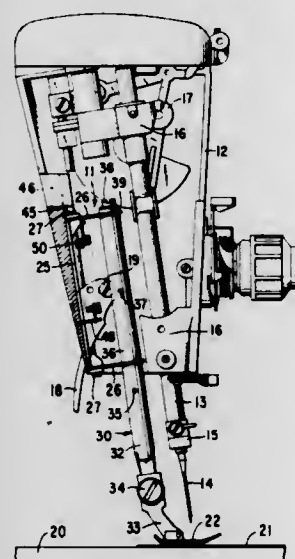


3,611,962
CREVICE GUARD FOR HORIZONTALLY DISPOSED
ROTARY SEWING HOOK
 Samuel Armaso, 447 S. Fifth St., Reading, Pa.
 Filed June 29, 1970, Ser. No. 50,818
 Int. Cl. D05b 57/14
 U.S. Cl. 112-228



A crevice guard for covering the crevice between the hook piece and hook body of a horizontally disposed rotary sewing hook to prevent the thread from becoming caught in the crevice and torn or interrupted in its movement during a stitching cycle.

3,611,963
PRESSER BAR SUSPENSION SYSTEMS
 John A. Herr, Garwood, and Robert B. Brauch, Wayne, both of N.J., assignors to The Singer Company, New York, N.Y.
 Filed Apr. 22, 1970, Ser. No. 30,858
 Int. Cl. D05b 29/00
 U.S. Cl. 112-235



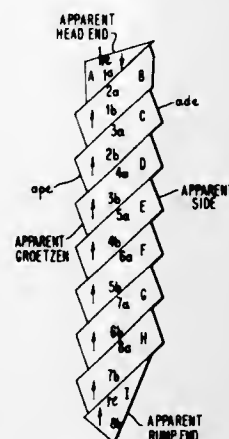
In a sewing machine, a presser bar suspension system wherein the presser bar is attached to two leaf springs, which are cantilevered out from a rigid frame slidable vertically in the sewing machine head. The rigid frame which may be raised to elevate the presser foot above the work, is spring biased downwardly against a stop into a position in which only the pressure of the two leaf springs urges the presser foot against the work.

3,611,964
COMPOSITE FUR-BEARING PELT AND METHOD OF
FABRICATION THEREOF
 Carl P. Plampiano, 2601 Wadsworth Road, Zion, Ill.
 Filed May 11, 1970, Ser. No. 36,127
 Int. Cl. D05b 93/00
 U.S. Cl. 112-401

Letout, reassembled and sewn composite fur-bearing pelt composed of a plurality of separate pieces, e.g. relatively narrow strips, cut from the same natural pelt having the slant, i.e. flow or lay, of the fur hair thereof extending in a direction substantially rearwardly from the normal head end

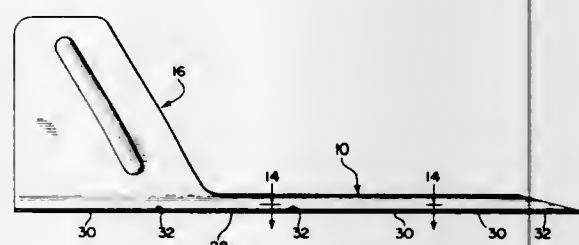
7 Claims

of the pelt to the rump end thereof, including such pieces sewn together in reassembled relation, e.g. offset lengthwise with respect to one another, in the same positional sequence but individually reversed in orientation by rotation approximately one-half turn and having the slant of the hair of each such reversed piece extending in a direction substantially for-



wardly from the resultant apparent rump end of the composite pelt to the resultant apparent head end thereof; and method of fabrication of composite pelt consonant therewith by letting out, reassembling and sewing such pieces in said same positional sequence but individually reversed in orientation by rotation about one-half turn.

3,611,965
DETACHABLE GUIDE NEEDLE
 Carl W. Lange, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
 Filed June 2, 1969, Ser. No. 829,634
 Int. Cl. B21d 53/06; A61m 05/00
 U.S. Cl. 113-116



Methods of forming detachable guide needle devices which are utilized in conjunction with flexible catheters in withdrawing or introducing fluids relative to a body, said method including the stamping of a guide needle blank, the impression of break-apart hinge means therein, and the folding thereof in a manner which will provide separation of the guide needle into detached sections after use thereof for complete removal from an associated flexible catheter.

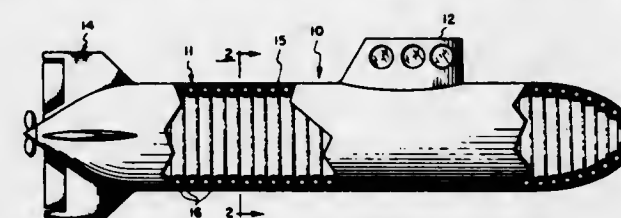
6 Claims

3,611,966
SUBMERSIBLE VEHICLE WITH MULTIPLE TUBULAR
RING HULL
 Frank Baldwin Hunter, 24042 Friar St., Woodland Hills, Calif.
 Filed June 4, 1969, Ser. No. 830,229
 Int. Cl. B63g 8/00
 U.S. Cl. 114-16

A submersible vehicle hull section is fabricated from a series of consecutively aligned tubular rings that are joined together on a common axis and are filled with pressurant material. The material internal pressure operates to pre-tension the rings for counteracting intense depth pressures exerted by ocean water upon the vehicle. When the pressurant

12 Claims

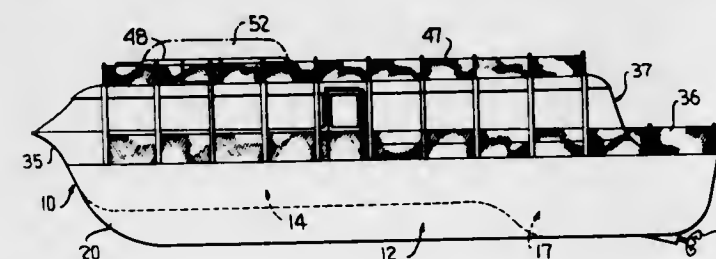
material is fluid a fluid pressure regulating system may be coupled in fluid communication with the tubular rings in



order to selectively vary the fluid pressure inside the rings to accommodate varying depth pressures.

3,611,967
BOAT HULL CONSTRUCTION
 David W. Bossler, 820 North Montana Ave., Helena, Mont.
 Filed May 19, 1970, Ser. No. 38,681
 Int. Cl. B63b 1/10
 U.S. Cl. 114-61

15 Claims



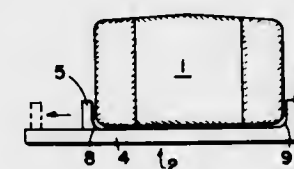
This disclosure relates to a boat hull which includes two widely spaced lateral hull sections which are connected together in the forward and midship portions thereof by a bridging section which is normally disposed well out of the water when the boat is moving forward. The bridging section is a portion of a central hull with the aft part of this central hull being in the form of an inner hull section of a cross section similar to adjacent portions of the lateral hulls and capable of both accommodating an engine and to produce lift to the aft portion of the boat. Each of the three hull sections is provided with a ski-type bottom to effect lift and to permit the hull to ride substantially on the surface of the water, thus reducing the resistance of the hull as it moves along.

ERRATUM

For Class 114-77 see:
 Patent No. 3,611,610

3,611,968
WATERTIGHT FLOATING BOXES FOR UNDERWATER
WORK ON FLOATING BODIES
 Isao Takezawa, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
 Filed Sept. 9, 1969, Ser. No. 856,320
 Claims priority, application Japan, Sept. 12, 1968, 43-65694
 Int. Cl. B63b 3/02
 U.S. Cl. 114-77 R

7 Claims

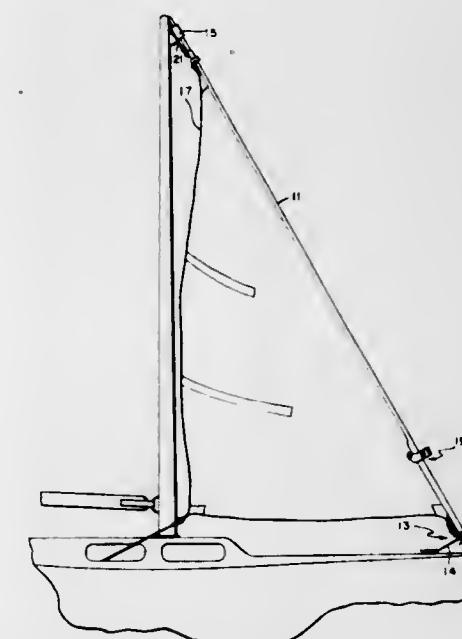


A watertight floating box, for use in working on floating bodies such as ship sections or the like to be assembled, disassembled, repaired, or maintained while afloat comprises caisson means arranged to embrace, in watertight manner,

the underwater portions of the floating body and arranged to be pumped free of water to provide a dry working space along the underwater portions of the floating body. The caisson means includes a bottom structure to extend horizontally and transversely across the bottom of the floating body and sidewall structures extending substantially vertically upwardly in facing relation with the sidewalls of the body. The sidewall structures are arranged for adjustment relative to each other transversely of the floating body in accordance with the beam or width of the floating body.

3,611,969
JIB-FURLING STAY
 Frederick E. Hood, c/o Wood Sailmakers Inc., Little Harbor Way, Marblehead, Mass.
 Filed June 23, 1969, Ser. No. 835,579
 Int. Cl. B63b 9/04
 U.S. Cl. 114-106

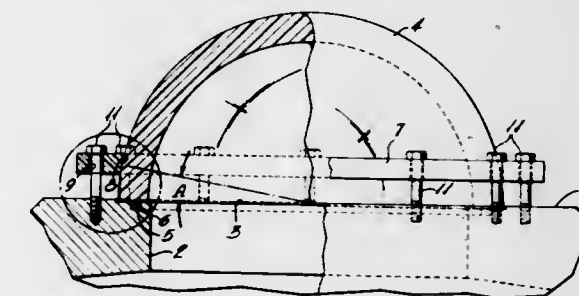
10 Claims



The jib-furling apparatus disclosed herein employs a stay having a C-shaped cross section, the interior of the C shape being adapted to retain a bead on the luff of a jib sail, e.g. a bolt rope, with the sail extending through the mouth of the C. The upper and lower ends of the stay are provided with respective swivel means for attachment to the mast and bow respectively and a further swivel means is provided for coupling a halyard to the head of a jib thereby to permit raising of a jib held by the stay while permitting the stay to rotate without twisting the halyard around the stay.

3,611,970
HIGH-PRESSURE WINDOW ARRANGEMENT
 Richard H. Hagan, Springfield, Pa.; Lewis C. Hazlett, Wilmington, Del., and William Watson, Wallingford, Pa., assignors to Sun Shipbuilding & Dry Dock Company, Chester, Pa.
 Filed Dec. 10, 1969, Ser. No. 883,833
 Int. Cl. B63b 19/00
 U.S. Cl. 114-177

4 Claims



A transparent viewing window for high-pressure use, e.g. in a submarine, is made of an organic thermoplastic material

and has the form of a hemispherical shell. The window is secured in place covering an opening in the submarine hull or skin by means of a clamping ring which engages the outer surface of the window and is bolted to the hull. An O-ring provides a low-pressure seal between the window and the skin of the submarine.

3,611,971

CONTROL OF MOVING SURFACES

Roger Edward Gwynn, Catford; Michael John Turnham, Anerley, and Alexander Arthur Tann, West Wickham, all of England, assignors to Muirhead Limited Beckenham, Kent, England

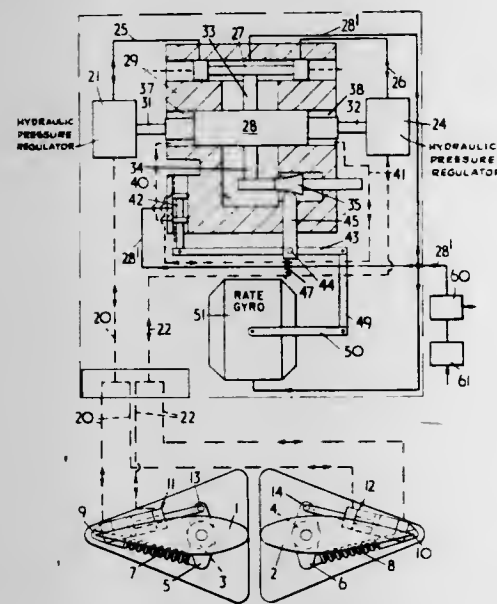
Filed May 23, 1969, Ser. No. 827,278

Claims priority, application Great Britain, May 29, 1968, 25692/68

Int. Cl. B63h 39/06

U.S. Cl. 114—126

6 Claims



A control unit for a ship stabilizer fin is arranged to provide a signal indicative of the tilting torque applied to the fin and which is modified by a cam to provide a signal which varies the output of a roll-velocity sensing gyro which controls the fin settings. The change in the center of pressure of the fin which change in angle of attack can thus be compensated for. The invention has utility in the field of small ship stabilizers such as yacht stabilizers.

3,611,972

SHIP WATER JET DIRECTIONAL CONTROL AND BRAKING MEANS

Jacques P. Duport, Montbonnot Par Saint-Ismier, France, assignor to Societe Grenobleise d'Etudes et d'Applications Hydrauliques (SOGREAH), Grenoble, France

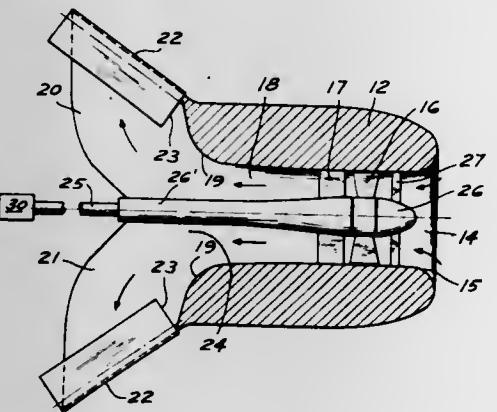
Filed Mar. 20, 1969, Ser. No. 808,965

Claims priority, application France, Mar. 21, 1968, 5,236

Int. Cl. B63h 25/46

U.S. Cl. 114—151

8 Claims



Water jets are discharged from the front of the ship by a pump installed in a Y-shaped duct into which the water flows longitudinally, centrally of the ship and from which the flow discharges on the two opposite sides of the hull.

3,611,973

RUDDER ASSEMBLY

Robert B. Stuart, Penn Yan, N.Y., assignor to Penn Yan Boats, Incorporated, Penn Yan, N.Y.

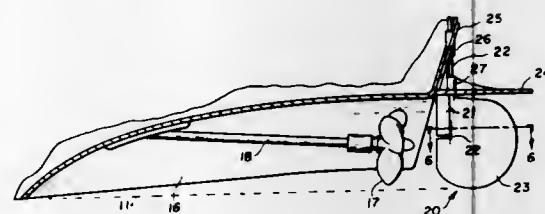
Division of Ser. No. 722,320, Apr. 18, 1968, now abandoned, Continuation-in-part of application Ser. No. 776,829, Oct. 20, 1968, now Patent No. 3,515,087.

Filed Mar. 5, 1970, Ser. No. 16,849

Int. Cl. B63h 25/06

U.S. Cl. 114—162

29 Claims



A rudder assembly for high-speed, planing hulls includes a spray plate extending aft of the stern at the waterline, a propeller forward of the spray plate, a fixed vane extending downward from the spray plate to the center of the propeller, and a pivotal rudder blade behind and below the vane and extending from the top to the bottom of the propeller.

3,611,974

GLIDING ANCHORS

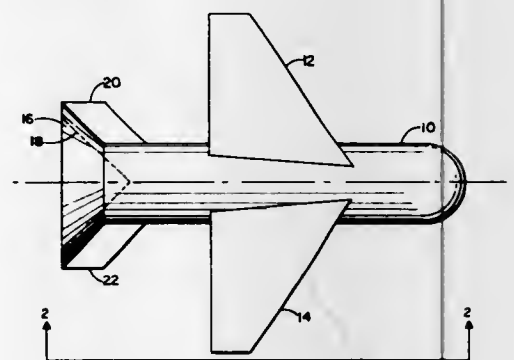
Robert G. Joppa, and David C. Peterson, both of Seattle, Wash., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 16, 1969, Ser. No. 842,130

Int. Cl. B63b 21/24

U.S. Cl. 114—206 R

1 Claim



A gliding anchor for use in an automatic anchor deployment system wherein one or more anchors are launched from a fluid-supported device. Each anchor is designed to glide at a given angle from the deploying device to the bottom of the fluid container where it rests and provides anchor for the deploying device.

3,611,975

PARAVANE DEVICE

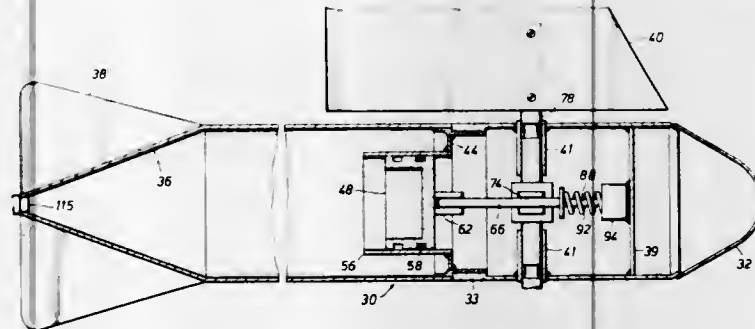
Clifford Logan Ashbrook, 5077 Cheena, Houston, Tex.

Filed Aug. 15, 1969, Ser. No. 850,555

Int. Cl. B63b 21/56, 17/00

U.S. Cl. 114—235 B

8 Claims



A paravane for maintaining a seismic cable being towed through the water at a predetermined distance above the water floor. The paravane includes a cylindrical body characterized by diametrically opposed wing members actuated by

an air pressurized piston which moves the wing members into an ascending or descending position. Predetermined operating depths of the paravane is accomplished by resisting spring means acting in opposition to movement of the pressurized piston. The diving depth of the device may be varied by adjustment of the resisting means and air pressure so as to accomplish uniform depth control of all the paravanes which are connected to the seismic cable.

3,611,976

LOW-DRAG FAIRING CONFIGURATION FOR FLEXIBLE TOWING CABLES

Neville E. Hale, Port Credit, Ontario, and Kenneth Gardner, Mimico, Ontario, both of Canada, assignors to Fathom Oceanology Limited, Port Credit, Ontario, Canada

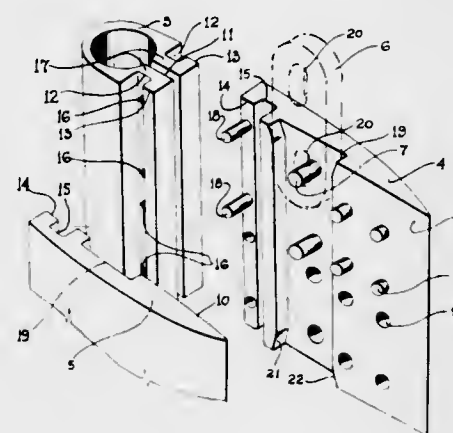
Filed Nov. 12, 1969, Ser. No. 875,864

Claims priority, application Great Britain, Nov. 23, 1968, 55708/68

Int. Cl. B63b 21/00

U.S. Cl. 114—235 F

7 Claims



A cable fairing has a flexible hollow nose and a rigid tail; the fairing is in short sections with each adjacent pair connected by flexible pivotal links.

3,611,977

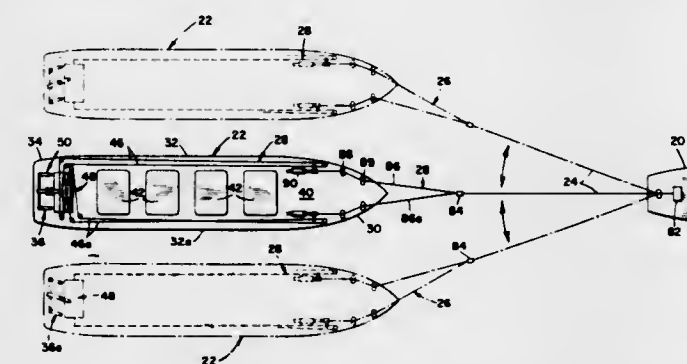
SYSTEM AND APPARATUS FOR AUTOMATICALLY STEERED TOWED VESSELS

Inge Gordon Mosvold, P.O. Box 58, Freeport, Bahamas
Continuation-in-part of application Ser. No. 706,968, Feb. 20, 1968, now abandoned. This application Dec. 3, 1969, Ser. No. 881,938

Int. Cl. B63b 21/00

U.S. Cl. 114—236

26 Claims



A system and apparatus for automatically steering vessels under tow by employment of forces transmitted through tow cables that operatively connect a vessel being towed with its towing vessel so that the towed vessel travels substantially in the path of the towing vessel, by automatic rudder changes at various turning speeds to accommodate for changes in course while being towed. The tow cables from the towing vessel are operatively connected on the towed vessel to a towing and steering mechanism that allows the cables to effect rotation and/or translation of a pinion mechanism that is operatively connected to and controlled by a rudder turning means to effect turning of the rudder or rudders on the towed vessel when changes in course are required.

3,611,978

AMPHIBIOUS VEHICLES

Robert Gray, Furret Cottage, Fishbourne Green, near Ryde, England

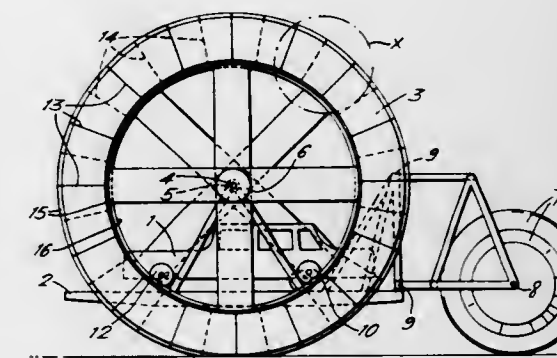
Filed Sept. 4, 1969, Ser. No. 855,277

Claims priority, application Great Britain, Sept. 4, 1968, July 24, 1969, 42,121/68; 37,360/69

Int. Cl. B63h 21/12

U.S. Cl. 115—0.5 A

6 Claims



An amphibious vehicle for the transport of cars or light vans over water, soft mud and the like, in which the car or van supplies the driving force for the two paddle wheels. The paddle wheels have open ended boxes around their circumferences so as to provide buoyancy and traction for the amphibious vehicle.

3,611,979

SUSPENSION FLOATATION CASING

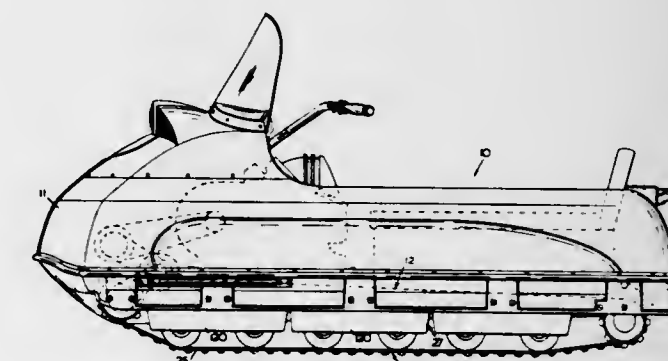
Maurice E. Hebert, Sainte-Foye, Quebec, Canada, assignor to Nanuk Inc., Quebec, Canada

Division of Ser. No. 763,265, Sept. 27, 1968, Pat. No. 3,534,701
Filed Apr. 28, 1970, Ser. No. 32,704

Int. Cl. B63f 3/00

U.S. Cl. 115—1

7 Claims



A suspension for an amphibious vehicle having a buoyant body and a pair of drivable endless tracks. The suspension comprises a flotation casing disposed between the upper and lower travel of each of the tracks and secured to the vehicle frame for resilient displacement thereof to absorb shocks. A plurality of boggy wheels are secured to the underside of the casing to support the vehicle off the ground.

3,611,980

AMPHIBIOUS BOAT WITH VERTICAL AIR SHUTTER
John Van Veldhuizen, 31601 S.W. 197th Ave., Homestead, Fla.

Filed Sept. 18, 1969, Ser. No. 859,069

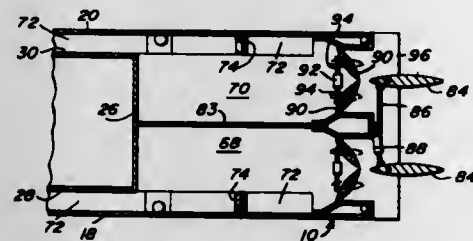
Int. Cl. B63h 11/00; B63b 1/34

U.S. Cl. 115—12

12 Claims

An amphibious air cushion boat including rearwardly opening opposite side compressed air outlets each having a centrally located vertical air shutter operatively associated therewith for steering of the boat. Each of the outlets is provided with a pair of movable and controlled air shutters upstream from the associated air shutter and operable to throttle the discharge of air from the outlet in a manner such that

the rudder is maintained centered in the air discharge from the outlet throughout the full range of movement of the air shutters from the full open positions thereof to substantially fully closed positions thereof and the air being discharged from the outlet, when partially throttled, is directed on op-



posite side surfaces of the rudder whereby the rudder will be maintained effective to steer the boat even when the air discharge from the outlets is throttled to less than 10 percent of the airflow when the air shutters are in the fully opened positions.

3,611,981

GAS PRESSURE OPERATED ALARM DEVICE

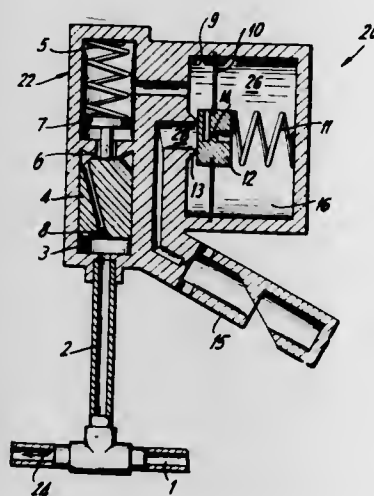
Ernst Warncke, Lubeck, Germany, assignor to Drägerwerk AG, Lubeck, Germany

Filed Nov. 2, 1970, Ser. No. 86,186

Int. Cl. G011 19/12

U.S. Cl. 116-70

6 Claims



An alarm device particularly for respirators having a pressure gas supply includes a housing, or body, having a first gas chamber which is adapted to be connected to the pressure gas supply. A valve is movable in the first gas chamber and it closes off a connection of the chamber with a second chamber having a second valve therein which closes the second chamber in respect to a discharge gas passage which connects to a signaling device such as gas operated whistle. A spring biases the first valve toward an open position and when the gas pressure in the line reduces, it opens the first valve and permits flow of the gas under pressure into the second chamber until it pressurizes sufficiently to open the second valve to permit the gas to flow to the signaling device and actuate the whistle. The second valve includes a control device defining a throttle passage which permits flow from a connecting chamber portion of the second chamber on one side of the second valve into an equalizing chamber portion on the other side of the second valve. After some time, the pressure equilibrium is again established in the second gas chamber to close the second valve again and to stop the flow of gas to the signaling device.

3,611,982

DEVELOPMENT ELECTRODE CONTROL APPARATUS

Samuel Coriale, Webster, N.Y., and Ned J. Seachman, Penfield, N.J., assignors to Xerox Corporation, Rochester, N.Y.

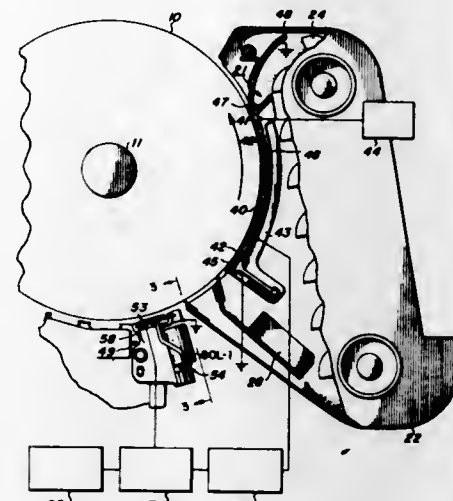
Filed Aug. 29, 1969, Ser. No. 854,086

Int. Cl. G03g 13/08

U.S. Cl. 118-4

Apparatus is herein disclosed for controlling the quality of image development produced by a xerographic developing

apparatus. Circuit means are provided to periodically sample a reference voltage on an exposed xerographic plate prior to image development and to provide an output signal indica-



tive of the sampled voltage. The output signal is then applied to an adjustable power supply which is operatively connected to the development electrode and the electrode potential regulated in response to the reference voltage.

3,611,983

AUTOMATIC HOUSE PAINTER

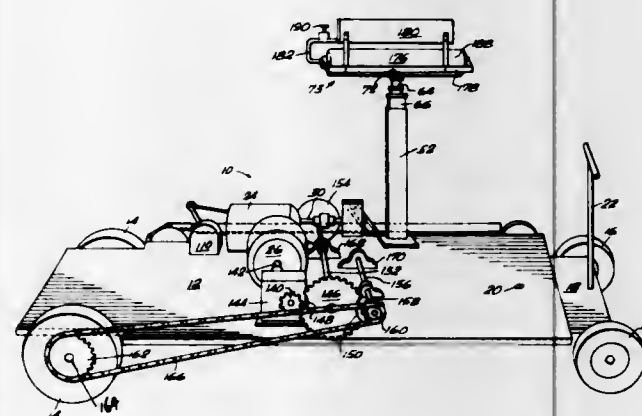
John D. Wise, 99 East 33rd St., Paterson, N.J.

Filed Dec. 24, 1969, Ser. No. 887,806

Int. Cl. B05c 5/00, 1/10

U.S. Cl. 118-9

11 Claims



A mobile paint-applying unit including a truck having a flat bed which carries the paint-applying means and operating mechanism, said bed being provided with four wheels, which may be power driven or, to provide for manual movement thereof along the base of a wall being painted. Means are provided to adapt the automatic house painter to the use of a paint brush having a tubular handle, a rotary-type brush, a roller or a paint spray gun. In general the house painter of the present invention is either power or manually driven along the base of a wall to be painted and applies paint to said wall as the movement progresses.

3,611,984

COATING MACHINE

Raymond H. Angold, 179 Fairway Hill Crescent, Kingston, Ontario, Canada

Filed July 29, 1969, Ser. No. 845,729

Claims priority, application Canada, Apr. 21, 1969, 049,248

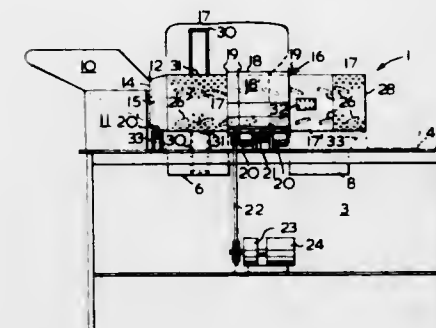
Int. Cl. B05c 5/00

U.S. Cl. 118-19

13 Claims

A coating apparatus is described, particularly for use in applying a coating of edible material onto an article of food. The food is introduced into the interior of a slowly rotating drum, preferably removably mounted, where it is tumbled and conveyed through the drum by number of vanes or paddlelike members. These vanes are separated one from

another to prevent them from trapping and carrying any coating material downstream in the drum. The drum has at least one coating zone which, preferably, has a perforated area therein. A plurality of dish-out members or scoops are provided in each coating zone, exteriorly of the drum for picking up a predetermined quantity of the coating material



from a source of supply and distributing the same by gravity onto the food articles being tumbled within the drum. In preferred forms, automatically operable devices are provided for feeding the food articles into the drum at a controlled rate, and for maintaining an adequate supply of coating material in said source of supply.

3,611,985

IMPREGNATING APPARATUS

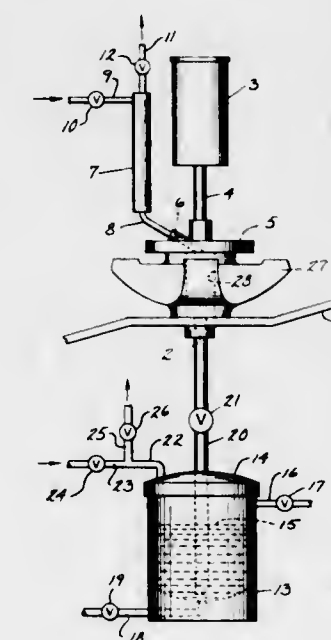
Thomas W. Juday, New Berlin, Wis., assignor to Imprex, Inc., Greenfield, Wis.

Filed Sept. 22, 1969, Ser. No. 859,959

Int. Cl. B05c 7/00

U.S. Cl. 118-50

5 Claims



An apparatus for impregnating a liquid sealant into the bore surface of a wheel hub or the like includes a sealant reservoir with an outlet line leading to the bore and a closed manifold leading from the bore. The manifold and outlet line communicate with the bore through openings in a work surface and a hydraulically actuated platen which together clamp the hub in place and seal off the ends of the bore. During impregnating, the reservoir is pressurized to force sealant through the outlet line into the bore and manifold, and air is trapped in the manifold and compressed until a desired system pressure is reached. After a suitable time, the pressure in the reservoir is released, and the trapped air expands to cause the sealant to move quickly back to the reservoir.

3,611,986

APPARATUS FOR FINISHING METALLIC COATINGS

Marvin B. Pierson, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 708,598, Feb. 27, 1968, Pat. No. 3,533,761

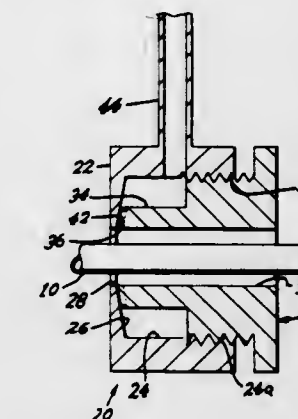
Filed Mar. 25, 1970, Ser. No. 022,423

1970, Ser. No. 022,423

Int. Cl. B05c 11/06

U.S. Cl. 118-63

5 Claims



Apparatus for finishing a molten metallic coating on a cylindrical strand wherein a swirling gas jet is directed at a moving strand carrying still molten coating metal so as to remove excess coating metal and break up pneumatically the oxide skin on the coating metal into small, uniformly distributed particles, including a nozzle having a plurality of slots equally spaced about the strand pass line and directed tangentially toward a strand passing therethrough.

3,611,987

PAPER COATER BLOWOFF APPARATUS

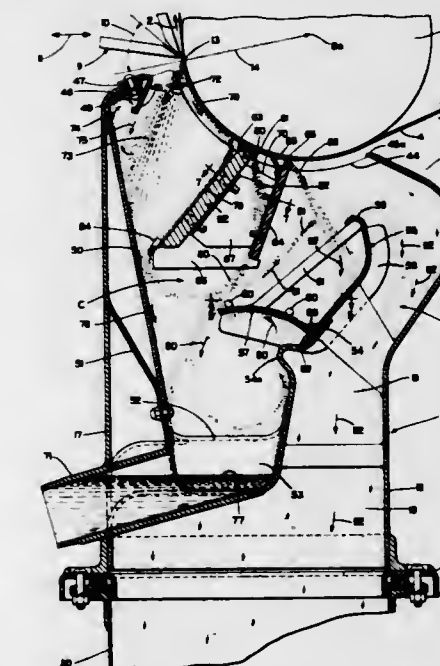
John B. Kohler, and Wallace E. Green, both of North Canton, Ohio, assignors to The Kohler Coating Machinery Corporation, Greentown, Ohio

Filed Sept. 8, 1969, Ser. No. 856,100

Int. Cl. B05c 11/06

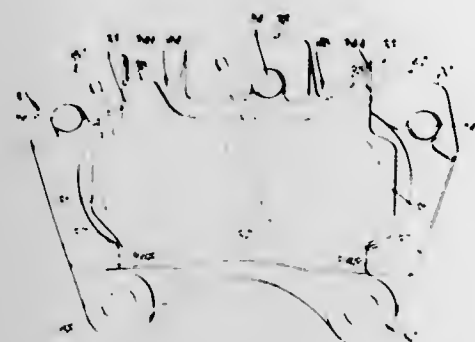
U.S. Cl. 118-63

15 Claims



A paper coater for providing a uniform coating on the surface of a traveling web using an air knife to control the coating thickness and finish, having a blowoff box and related separator and suction mechanisms arranged to completely trap, collect and separate the mist and its components resulting from air knife operation. The blowoff box has a number of vortex suppressor means and spoilers cooperatively related to deliver coating material for return to the coating material supply tank and to collect mist and separate its waste components and air for discharge respectively, to sewer and atmosphere, eliminating mist discharge into the environs of the paper-making machinery of which the coater forms a part.

3,611,988
PARALLEL ABUTMENTS AND CIRCUMFERENTIALLY EXTENDED PADS
 Wolfgang Hess, Oberer Basenhelmer, Germany, assignor to Girling Limited
 Filed June 12, 1969, Ser. No. 832,766
 Claims priority, application Great Britain, June 26, 1968, 30,555/68
 Int. Cl. F16d 35/228
 U.S. Cl. 188-72.5



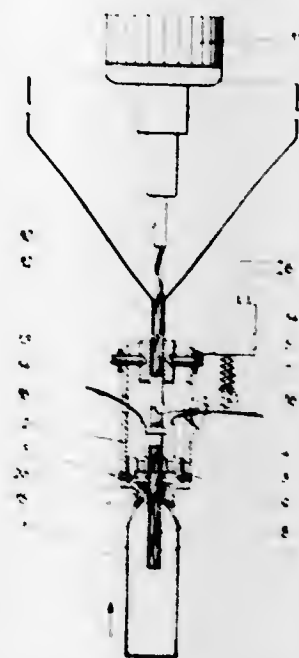
In a vehicle disc brake comprising a caliper structure adapted to straddle the brake disc, each of the two parts of the caliper, which lie on opposite sides of the disc being formed with surfaces extending perpendicular to the plane of the disc for guiding one of a pair of opposed brake pads, the pad guiding surface at each of the circumferentially spaced ends of each pad is divided into two separate coplanar portions with a gap between them and the pad is so shaped and dimensioned that at each end it projects circumferentially outwards beyond the plane of the respective guiding surface, through the gap between the two portions thereof.

3,611,989
RECEPTACLE FOR SAFETY RAZORS
 William F. Lovelace, 299 North Banana River Dr., Merritt Island, Fla.
 Filed Aug. 11, 1970, Ser. No. 68,198
 Int. Cl. B05c 7/02
 U.S. Cl. 118-400



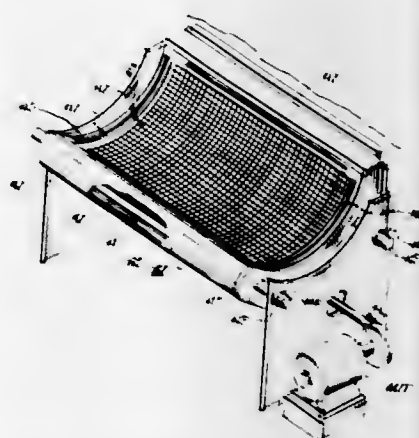
A receptacle for safety razors in the form of a container which may be mounted on a wall and having a well therein adapted to receive the head of the razor. A supply of lubricant is maintained in the bottom of the well so that when the razor is placed therein the blade is prevented from rusting and is lubricated to facilitate shaving. The well also is provided with a shelf just above the level of the lubricant to support the razor, to prevent excess lubricant thereon to drain back into the well prior to using the razor.

3,611,990
APPARATUS FOR PLASTIC LINING CONTAINERS FOR AEROSOLS
 Charles Paoletti, Aulnay-sous-Bois, and Gilles Terrasse, Deuil-la-Barre, both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France
 Filed July 22, 1969, Ser. No. 843,617
 Claims priority, application France, Aug. 13, 1968, 162,937
 Int. Cl. B05c 7/00
 U.S. Cl. 118-408



A fluid containing a polymerizable film forming substance is introduced into a container so as to adhere to the inner walls thereof. The nonadhering portion of the liquid is then withdrawn and the remainder polymerized in situ on the inner surface of the container. Alternatively, the container is a mold coated with a parting compound and the film formed therein is separated from said mold after polymerization.

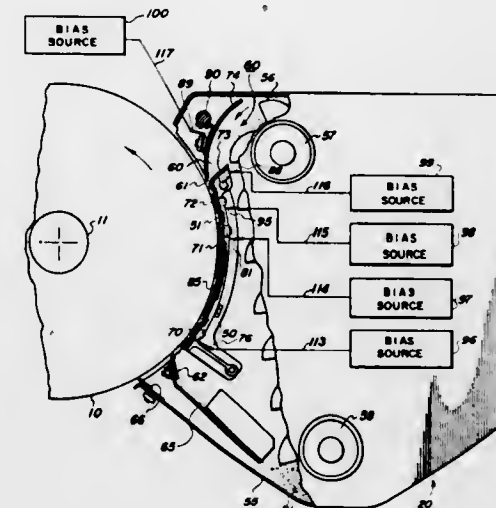
3,611,991
VIBRATING BED DEVELOPING APPARATUS WITH ELECTROMAGNETIC DEVELOPER AGITATOR
 Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Sept. 3, 1969, Ser. No. 854,838
 Int. Cl. G03g 15/04
 U.S. Cl. 118-623



Apparatus for developing electrostatic latent images carried by a support medium with a vibrating bed of two-component magnetizable developer material. The development unit includes a housing, containing developer material positioned adjacent a latent image-bearing support medium and vibrated to convey the developer material into contact with the latent image for effecting the development thereof. A plurality of electromagnets are carried by the inner peripheral surface of the developer housing and sequentially actuated so, in combination with the vibratory movement effect maintaining of the developer material.

5 Claims

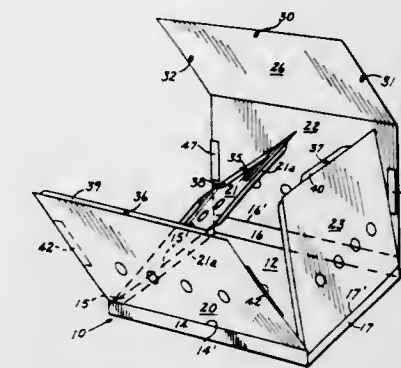
3,611,992
CLEANUP ELECTRODE
 James M. Lyles, Fairport, and Glenn L. Hilt, Webster, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
 Filed July 3, 1969, Ser. No. 838,914
 Int. Cl. G03g 13/00
 U.S. Cl. 118-637



An electrically biased electrode for preventing the formation of toner powder clouds and for cleaning unwanted background development from a member supporting an electrostatic image, the member moving in opposition to a flow of two-component developer material.

6 Claims

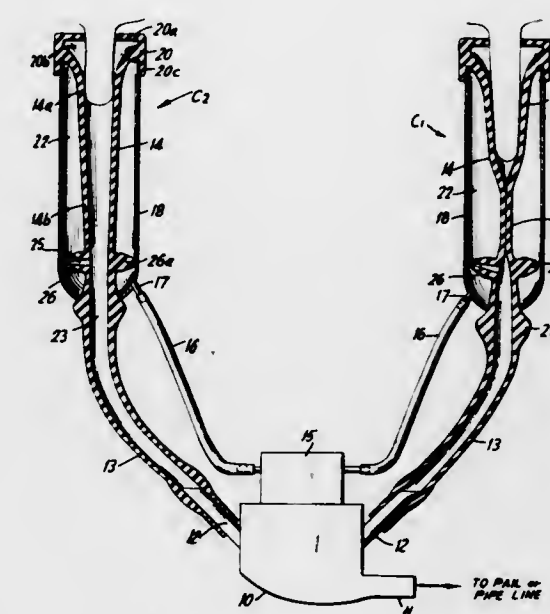
3,611,994
FOLDABLE ANIMAL SHIPPING CONTAINER
 Everett R. Bailey, 1575 Spruce Street, Denver, Colo.; Frank J. Dreckman, 2967 W. Tanforan Drive, Englewood, Colo., and William S. Gass, 215 Woodlawn Avenue, Sumpter, S.C.
 Filed Aug. 13, 1969, Ser. No. 849,728
 Int. Cl. A01k 01/00, 01/02
 U.S. Cl. 119-17



A foldable shipping container, having a rigid bottom, has four short upstanding sides of different height, and a hinged wall on each of said short sides cooperatively form an enclosure with one of said walls including a hinged top; all of the walls interlocking forming a rigid releasable container, and releasable fastening means secures the top to the other three sides.

7 Claims

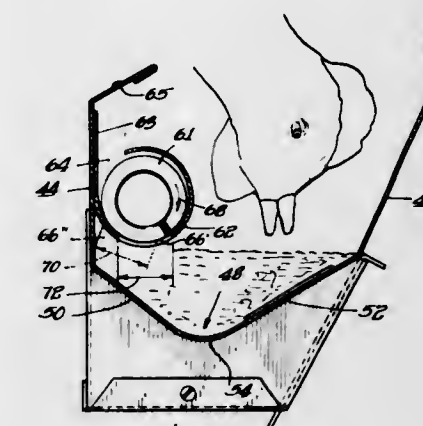
3,611,993
VALVING ARRANGEMENT FOR OPERATING TEAT CUP LINERS
 Douglas J. Norton, Red Hook, N.Y., assignor to The DeLaval Separator Company, Poughkeepsie, N.Y.
 Filed Nov. 10, 1969, Ser. No. 875,360
 Int. Cl. A01j 05/04
 U.S. Cl. 119-14.36



Below its teat-receiving portion, the liner is provided with an orifice through which air is sucked into the liner when it is collapsed by flow of air into the surrounding pulse space within the shell, so that interruption of the latter flow causes the liner to return to its normal position as the pressures within the liner and the surrounding space tend to equalize due to the orifice; and valve means are provided for closing this orifice when the liner is in its normal position, thereby preventing leakage of milk from the liner into the surrounding pulse space.

17 Claims

3,611,995
TROUGH-TYPE POULTRY FEEDERS
 Robert A. Murto, Goshen, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
 Filed Sept. 3, 1969, Ser. No. 854,855
 Int. Cl. A01k 05/00
 U.S. Cl. 119-18



Feed-distributing apparatus for poultry or the like, of the type which include a trough, and conveyor means supplying feed to said trough. The apparatus provide a novel trough and conveyor tube construction which precludes packing of the feed within the trough and promotes more even distribution of said feed along the length of said trough. In addition, said apparatus also provide an improved control arrangement which affords more accurate and dependable regulation of the feeding cycle.

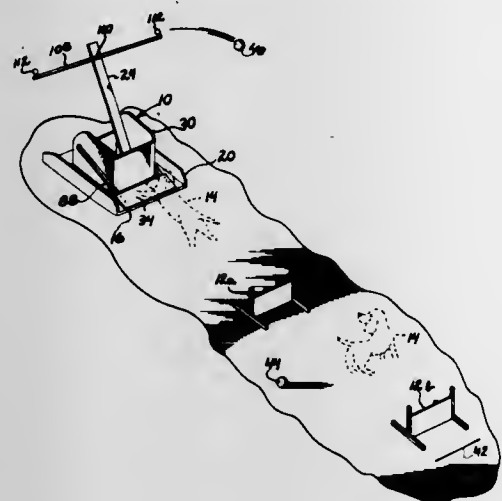
30 Claims

3,611,996
ANIMAL-TRAINING FLYBALL APPARATUS
 Herbert O. Wegner, 200 North Ave. 64, Los Angeles, Calif., assignor to Herbert O. Wegner and Martha Wegner, La Canada, Calif.
 Filed Aug. 29, 1969, Ser. No. 854,186
 Int. Cl. A01k 15/00; A63b 65/00, 69/40
 U.S. Cl. 119-29

The invention provides an animal-training apparatus for hurling a ball into space upon being actuated by the dog who then attempts to catch the ball in his mouth before the ball

2 Claims

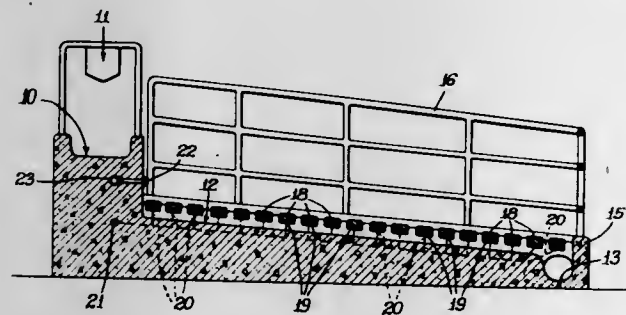
strikes the ground and return the ball to the trainer or some other agreed point. The apparatus when used in team play is placed at the end of a predetermined number of hurdles of variable height. Scoring depends on whether the ball is



caught in midair or on the first, second or more bounces and whether all required hurdles are in fact cleared by the dog with the winning team being the one with the highest score in a fixed time period.

3,611,997
LIVESTOCK FEEDING ARRANGEMENT
Edward L. Benno, Route 1, Box 198, Grayslake, Ill.
Filed Aug. 27, 1969, Ser. No. 853,266
Int. Cl. A01k 01/00, 05/00

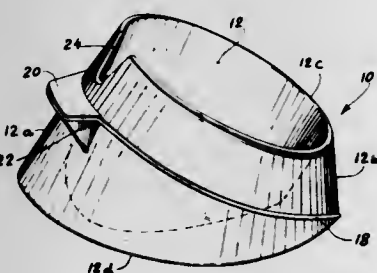
U.S. Cl. 119-51 R 3 Claims



A livestock feeding arrangement for feeding a group of relatively large animals in accordance with their weight comprising a slatted floor pen on which the livestock are completely confined, means for flushing manure from the slatted floor, and weighing means associated with the slats for weighing the livestock as a group after the manure has been flushed therefrom and feeding the livestock according to the weight of the group.

3,611,998
PET FEEDING BOWL
Nicholas R. Loscalzo, Melville, N.Y., assignor to Petcraft Industries Incorporated, Melville, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,720
Int. Cl. A01k 5/00, 7/00

U.S. Cl. 119-61 6 Claims

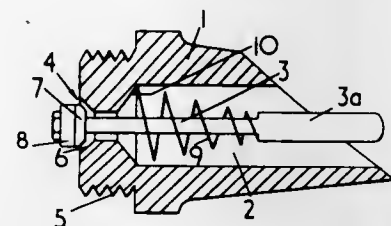


A bowl for pet food or the like having an outer wall forming a truncated conical surface and a floor portion integral

with the outer wall which is sloped downwardly toward the deep end of the outer wall. A reinforcing web and a handle integral therewith may be provided on the outer wall together with a thumb notch in the deep portion of the outer wall above the handle.

3,611,999
ANIMAL DRINKING DEVICES
John Sutcliffe Hey, Horley, England, assignor to Farm Automation Limited, Horley, England
Filed Sept. 25, 1969, Ser. No. 861,034
Claims priority, application Great Britain, Sept. 25, 1968, 45498

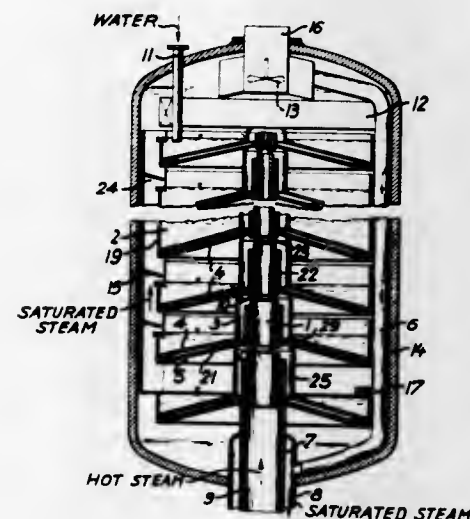
Int. Cl. A01k 07/00 2 Claims



An animal drinking device comprising a valve arrangement operated by tilting a valve stem in a housing to release liquid. The housing is asymmetrically formed about a bore accommodating the stem to expose a part of the stem and allow the stem to be tilted by an animal biting the exposed part against an underlying wall of the housing.

3,612,000
SATURATED-STEAM GENERATOR
Karl-Heinrich Lochmann, Frankfurt-Niederrad, and Gerhard Dinges, Gelnhausen, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany
Filed Mar. 20, 1968, Ser. No. 714,711
Claims priority, application Germany, Mar. 27, 1967, L 56075 1a/13g

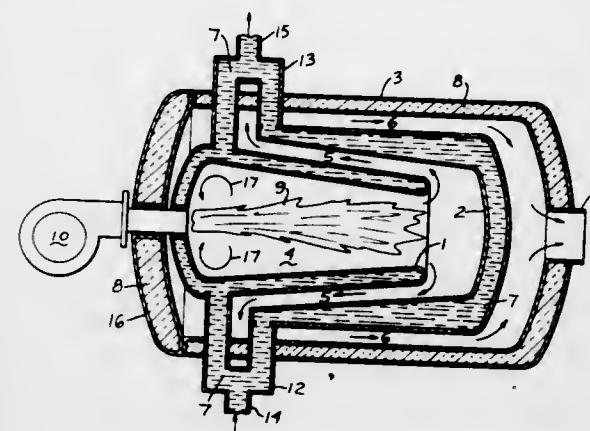
Int. Cl. F22b 1/14 12 Claims



A saturated-steam generator of the Loffler type having a plurality of evaporator cups or levels disposed in series within a boiler vessel and an inlet pipe extending centrally through the evaporator cups. The inlet pipe includes a separate opening for each evaporator cup. A conduit leads from each inlet pipe opening to a chamber in the bottom of the associated evaporator cup. Perforations are provided in the bottom of the evaporator cup. Hot steam is delivered from the inlet pipe to the chamber in the bottom of the evaporator cup. The hot steam then passes through the perforations into boiling water held by the evaporator cup for processing to a supersaturated state.

3,612,001
BOILER
Rene Gossalter, CH 6301, Zug Owl, Switzerland
Filed May 27, 1969, Ser. No. 828,404
Int. Cl. F22b 7/00

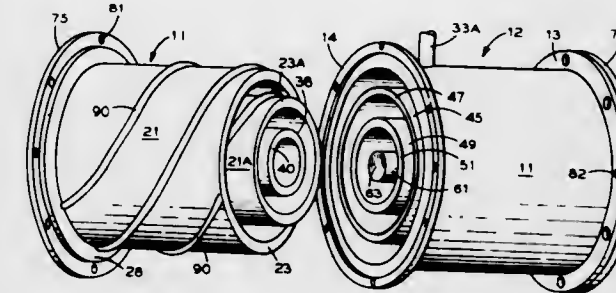
U.S. Cl. 122-136 R 11 Claims



A boiler adapted to be fired by oil or gas for heating liquid, which comprises three double-walled bell-shaped hollow bodies of different diameters arranged in radially and axially spaced relationship to each other and extending one within the other so as to form interconnecting passage means therebetween, the open end of the smallest diameter hollow body being adjacent to the bottom of the adjacent larger hollow body and the bottom of the latter being adjacent to the bottom of the next outer hollow body so that said passage means has a meandering course, the inner wall of the smallest diameter double-walled hollow body defining a combustion chamber communicating with said passage means.

3,612,002
LIQUID-HEATING APPARATUS
Thomas Margittai, 778 Cornwall Drive, State College, Pa.
Filed Nov. 14, 1969, Ser. No. 876,706
Int. Cl. F22b 37/12

U.S. Cl. 122-208 7 Claims



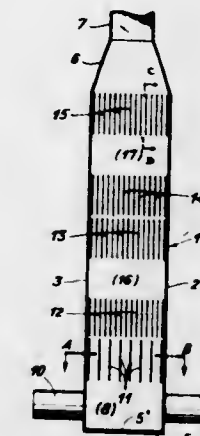
Heating apparatus for liquids which are exceedingly sensitive to even minute amounts of contaminants; such as foods, drugs, chemicals, cosmetics and the like; the apparatus being operable over a wide range of temperatures and pressures and lending itself to quick disassembly and reassembly to permit thorough cleaning of the several parts thereof.

3,612,003
FORCED THROUGH FLOW STEAM GENERATOR
Harendra Nath Sharan, Seuzach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed June 25, 1969, Ser. No. 836,400
Claims priority, application Switzerland, June 26, 1968, 9522/68

Int. Cl. F22b 21/00 14 Claims

The walls of the steam generator are formed of tubes through which the working medium flows and which form at least a part of the preheater surfaces. The flue gas is produced in a turbulence combustion chamber outside the

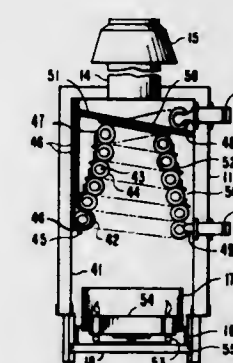
steam generator and fed into a chamber at the bottom. The evaporator, superheater and other such surfaces are formed



as tube platens disposed in parallel to the longer walls of the steam generator.

3,612,004
WATER HEATER
Edward Cancilla, Los Angeles, and Bernard E. McClanahan, La Habra, both of Calif., assignors to Ace Tank and Heater Company
Filed Nov. 24, 1969, Ser. No. 879,153
Int. Cl. F22b 21/26

U.S. Cl. 122-250 R 9 Claims



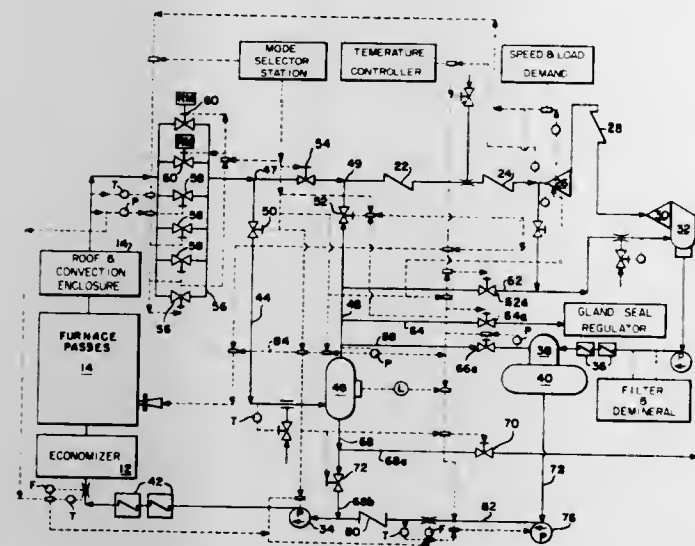
A water heater in which water is circulated through a coil wound in the form of a truncated cone with a base turn thereof of maximum diameter disposed adjacent the inner wall of the heater housing and the remaining turns thereof having diminishing diameters proceeding from the base turn to the top of the coil. By supporting the base turn of the coil, the remaining turns of the coil are substantially self-supporting and can undergo considerable expansion and contraction in response to temperature changes within the heater. The coil generally conforms to the shape of the flame generated by a burner located below the coil and provides for a relatively high rate of heat transfer to the circulating water when equipped with a baffle. The coil baffle may comprise a striplike element wound about and mounted on the outside of the coil so as to extend between adjacent coil turns.

3,612,005
ONCE-THROUGH STEAM GENERATOR RECIRCULATING STARTUP SYSTEM
Robert I. Lytle, Livingston, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Jan. 12, 1970, Ser. No. 2,213

Int. Cl. F22b 29/06 13 Claims

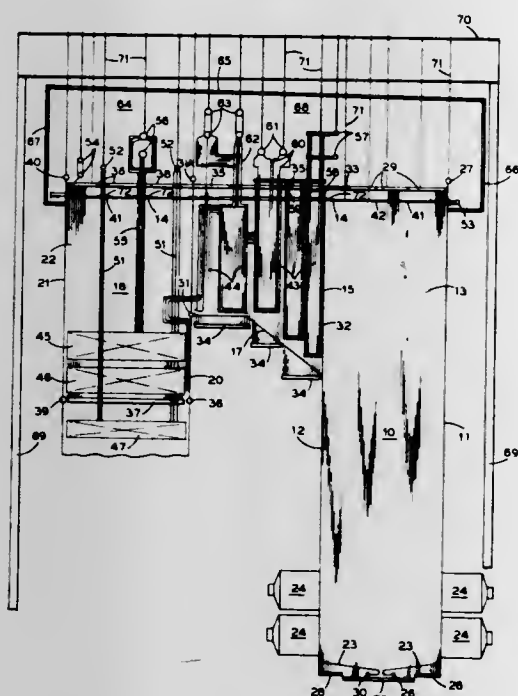
A once-through vapor generator including a startup bypass in which the flow in the bypass is at a reduced pressure. In the bypass, the flow is separated into vapor and liquid streams, the liquid stream being recirculated directly to the suction side of the generator main feed pump. A booster feed pump is provided upstream of the main feed pump and in se-

ries therewith. The booster feed pump is operative during startup to provide to the suction side of the main feed pump



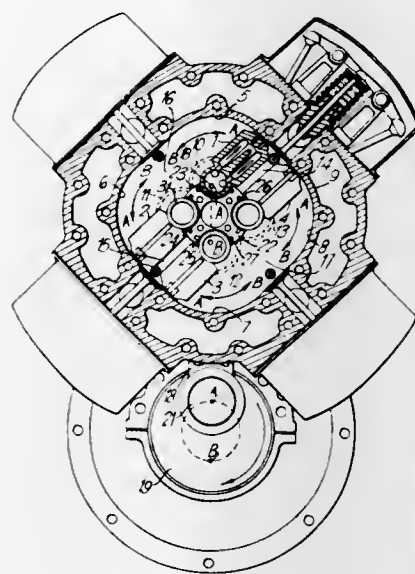
that makeup flow in addition to the recirculated flow necessary to prevent tube burnout in the generator.

3,612,006
EXPANSION SEAL
Michael C. Santucci, Barberton, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,268
Int. Cl. F22b 37/24
U.S. Cl. 122-494



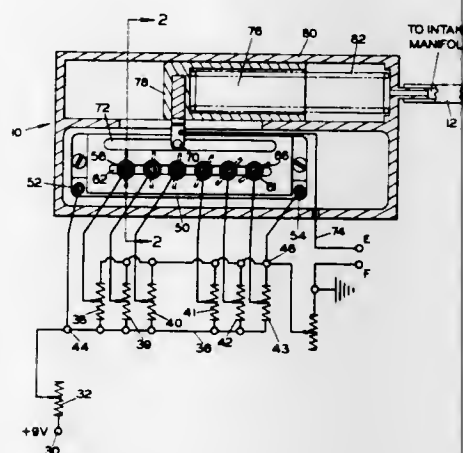
A gastight covering for the roof of a steam generator gas pass enclosure allowing for the passage of fluid-heating tubes terminating at a fixed point of support in an upper adjacent compartment. The covering is seal-welded to the adjoining wall structure and includes deflectable raised portions having perforated sections to admit the penetrating tubes and having the perforated edges seal-welded to the adjoining tube wall. Each raised portion is formed with side and corner sections arranged to readily deflect when subjected to the downward movement of the perforated section caused by the thermal growth of the portion of tube extending above the roof covering.

3,612,007
OSCILLATING PISTON INTERNAL COMBUSTION ENGINE OR COMPRESSOR
Robert Nicolas Balve, Remich 9, rue St. Nicolas, Grand Duchy, Luxembourg
Filed Nov. 24, 1969, Ser. No. 879,292
Claims priority, application Germany, Dec. 6, 1968, 57,486
Int. Cl. F02b 53/00; F04c 21/00
U.S. Cl. 123-18



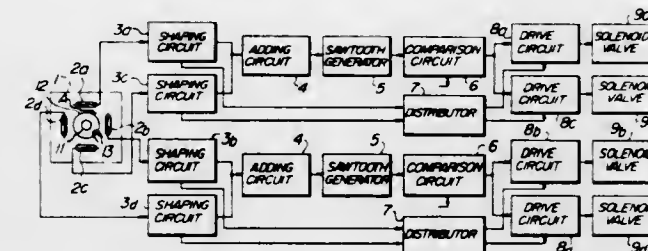
An oscillating piston internal combustion engine or compressor in which at least two oscillating pistons are arranged in a work housing and coupled over gears to reciprocate relative to each other. The work chambers for the corresponding work phases are formed between the oscillating pistons. Self-lubricating hard carbon sealing strips are provided between the radial outer edges of the pistons and the internal surface of the work housing, and the pistons are cooled internally by a continuous stream of cooling fluid.

3,612,008
VACUUM-RESPONSIVE VOLTAGE GENERATOR FOR A FUEL INJECTION SYSTEM
Richard B. Beishir, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,428
Int. Cl. F02n 51/12; F02m 39/00
U.S. Cl. 123-32 EA



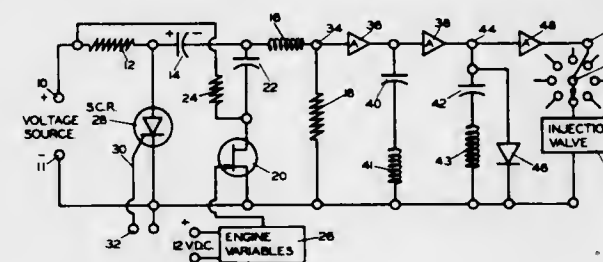
An arrangement for generating an irregularly varying voltage for an automobile fuel injection system includes a potentiometer having a plurality of voltage input taps connected to taps on a voltage divider, and an output tap movable along the potentiometer by a vacuum motor which responds to the pressure in the intake manifold of the automobile engine. The voltage input taps are elongated and are adjustable longitudinally and angularly to provide the required voltage distribution on the potentiometer.

3,612,009
FUEL INJECTION SYNCHRONIZING SYSTEM
Iseji Kamazuka, Kariya-shi, and Kumio Endo, Anjo-shi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed Aug. 19, 1969, Ser. No. 851,318
Claims priority, application Japan, Aug. 28, 1969, 61685
Int. Cl. F02m 51/00
U.S. Cl. 123-32 EA



In a fuel injection control apparatus for use with a multi-cylinder fuel injection-type engine, which gives each fuel injection nozzle-operating solenoid valve an exciting pulse of a duration to satisfy the engine requirement, a fuel injection synchronizing system by which a pulse signal synchronous with the cycle of the engine is produced and the exciting pulse is distributed to each cylinder.

3,612,010
ELECTRONIC FUEL INJECTION CONTROL CIRCUIT
Richard Bert Bekshir, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,332
Int. Cl. F02m 51/00
U.S. Cl. 123-32 EA

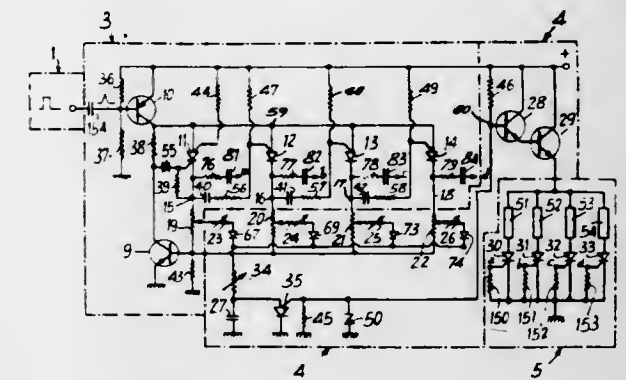


An electronic fuel injection system for automobile internal combustion engines includes a resonant circuit which is formed and whose capacitance is charged by a silicon-controlled rectifier triggered by the engine. The resulting half-sine wave voltages across the load resistance are of constant duration and are changed from a half-sine waveform to more triangular waves. Transistor circuits, at least one of which is biased by a voltage representing a number of engine operating conditions, convert the triangular waves into square wave voltages having a constant amplitude and a duration corresponding to the engine operating conditions. The resulting square waves or pulses are applied to solenoid injector valves to open them synchronously with the engine for required periods of time to supply the needed amounts of fuel.

3,612,011
ELECTRONIC DISTRIBUTOR OF ELECTRIC SIGNALS CONTROLLING THE OPERATION OF INTERNAL COMBUSTION ENGINE
Louis A. Monpetit, L'Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection SOPROMI, Les Mureaux, France
Filed Nov. 10, 1969, Ser. No. 875,185
Claims priority, application France, Dec. 20, 1968, 179,459
Int. Cl. F02m 51/00; F02b 3/06
U.S. Cl. 123-32 EA

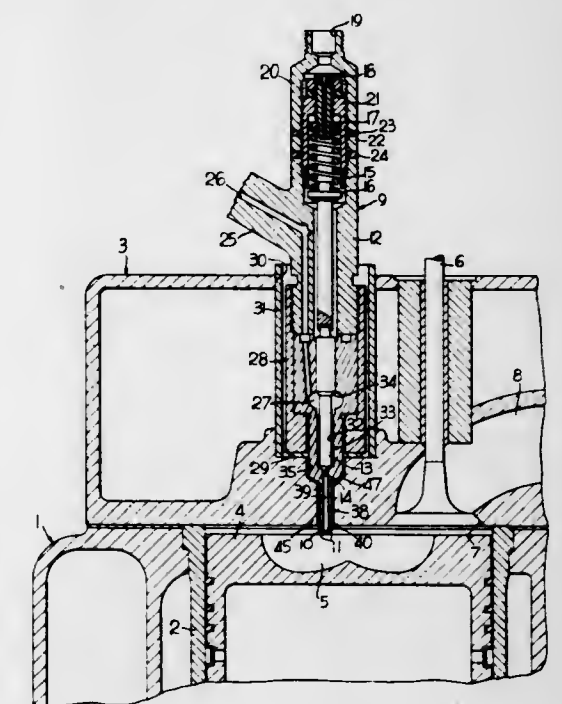
An electronic distributor of electric signals adapted to start operation of the spark plugs or injectors of an internal combustion engine in the desired sequence and if required, for a predetermined lapse of time. This is obtained by means of a

static ring counter including as many semiconductor elements as there are tracks leading to the different cylinders. The operation of the engine produces signals in accordance with the speed of rotation so as to enable a main transistor to



energize the cathodes of said semiconductor elements in sequence and to operate the corresponding sparking plugs or injectors at the desired sequence. Means are provided to constrain the cycle of energization of the counter components to always start with a predetermined component.

3,612,012
FUEL INJECTION NOZZLE
Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 4, 1969, Ser. No. 882,120
Int. Cl. F02m 61/14
U.S. Cl. 123-32

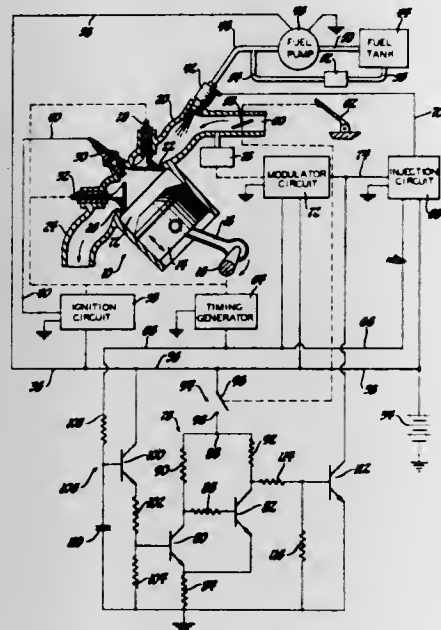


A fuel injection nozzle having a long narrow passage between the differential valve and the discharge orifices with narrow walls surrounding the passage to form a long narrow tip of small cross sectional area. The opening in the cylinder deck facing the combustion chamber receiving the tip is correspondingly small to decrease heat transfer from the combustion chamber to the needle valve.

3,612,013
FUEL SUPPLY CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Charles C. Gambill, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,122
Int. Cl. F02m 51/00
U.S. Cl. 123-32 EA

A fuel supply control system for an internal combustion engine includes a trigger circuit which is switchable between

first and second states. The application of fuel to the engine is permitted when the trigger circuit is in the first state and is prohibited when the trigger circuit is in the second state. An energizing voltage is produced in response to deceleration of the engine. The trigger circuit is responsive to the presence of the energizing voltage to normally switch to the first state in which a feedback signal is developed. A control signal is generated having an amplitude proportional to the speed of the engine so that the amplitude of the control signal is at a trigger level when the engine speed is at a reference mag-



nitude. The trigger circuit is responsive to the absence of the feedback signal to switch to the second state when the amplitude of the control signal exceeds the trigger level. Further, the trigger circuit is responsive to the presence of the feedback signal to remain in the first state when the amplitude of the control signal exceeds the trigger level due to an increase in the speed of the engine produced by the application of fuel to the engine as the engine speed initially decreases below the reference magnitude during deceleration of the engine.

3,612,014 TWO CYCLE REAR COMPRESSION ENGINE PORTING AND TRANSFER PASSAGE ARRANGEMENT

William L. Tenney, Crystal Bay, Minn., 55323

Filed Aug. 22, 1969, Ser. No. 852,182

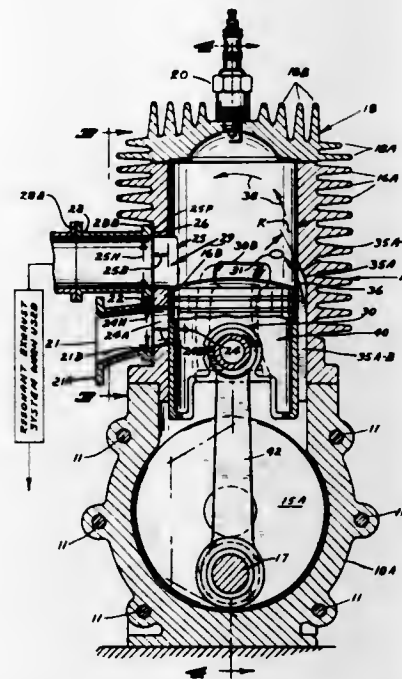
Int. Cl. F02b 33/04; F02n 3/08, 17/02

U.S. Cl. 123-73

13 Claims

Two-cycle, crankcase compression engines, spark or compression ignition, carburetion or fuel injection types, with or without supercharging, having improved balancing of restrictions to flow of air or air-fuel fluids through the engine; having at least one crankcase inlet port(s) location in the cylinder wall on the same side of the cylinder as the exhaust port(s) and below the level of the exhaust ports, having a plurality of transfer ports, at least some of which are located on the opposite side of the cylinder with the flow therefrom directed toward the cylinder head plus other transfer port(s) located and shaped so as to direct flow in a plane more nearly at right angles to the cylinder axis and thence merging with flow from the oppositely located transfer port(s), along the cylinder wall in a direction away from the exhaust port(s); the height of the exhaust port(s) for optimum operational characteristics being more than approximately 35 percent of stroke; in a modified form, in addition to the inlet below the exhaust port, including another subsidiary inlet(s) into the crankcase located below the oppositely situated transfer port(s); in engine propelled vehicles such as snowmobiles, where operator position is such that the engine is between the legs and near his crotch, the improvement of having inlet (carburetor) and exhaust on the same side of engine and locating such slide away from crotch of operator, the side of the engine towards the operator being devoid of hot or vaporous engine protuberances. Improvements that, in

some forms, the engine is combined with a resonant exhaust system; improvements in attachment of inlet and exhaust manifolds are provided to minimize and/or regulate heat



transfer between exhaust manifold, cylinder and intake manifold, to minimize backflow of heat from the exhaust manifold to the cylinder and inlet manifold and to regulate temperature of various engine parts.

3,612,015 HYDRAULIC VALVE CONTROL SYSTEM

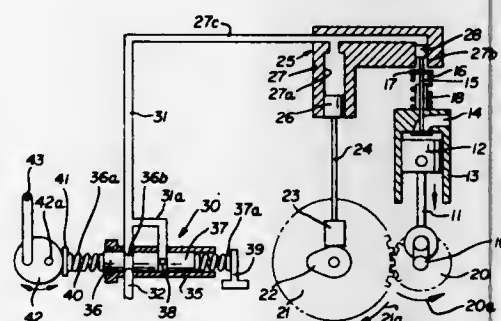
Louis A. Hausknecht, 4504 State Road, Cleveland, Ohio

Filed Mar. 19, 1970, Ser. No. 21,098

Int. Cl. F01I 9/02

U.S. Cl. 123-90.12

6 Claims



A variable control mechanism for regulating the length of time and amount of opening of an engine valve during each cycle of operation. The control mechanism includes a closed hydraulic circuit or system including a reciprocal slave cylinder, a reciprocal master cylinder, and control means, which control the allocation of fluid volume within the hydraulic circuit so as to regulate the movement of the slave cylinders. The control means are adjustable so that the amount of regulation can likewise be adjusted.

3,612,016 VALVE SPRING RETAINER

William J. Jelen, 24634 Water St., Olmsted Falls, Ohio

Filed July 13, 1970, Ser. No. 54,107

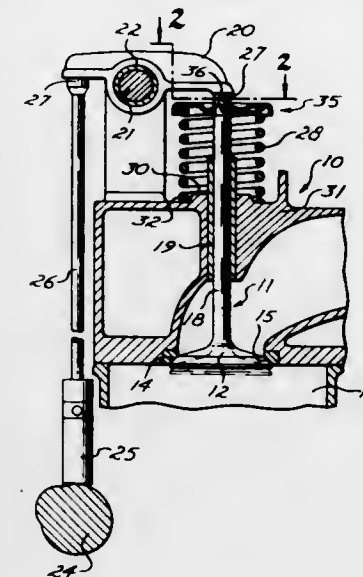
Int. Cl. F01I 3/10

U.S. Cl. 123-90.67

7 Claims

A formed valve spring retainer means is provided which includes an annular ring extending inwardly into a plurality of formed resilient locking means particularly adapted to securely engage an annular groove located proximate to the distal end of a valve stem. The outward portion of the annular ring extends into a downwardly disposed dependent

flange" portion whereby the under surfaces of the retainer means is particularly adapted to maintain a valve spring in



compression and concentric about the valve stem during the operative cycle of an internal combustion engine.

3,612,017 SYSTEM FOR AUTOMATICALLY CONTROLLING VEHICLE SPEED

Masayuki Ishizaki; Koichi Kawatake; Ryoji Kasama, and Masaki Kawai, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

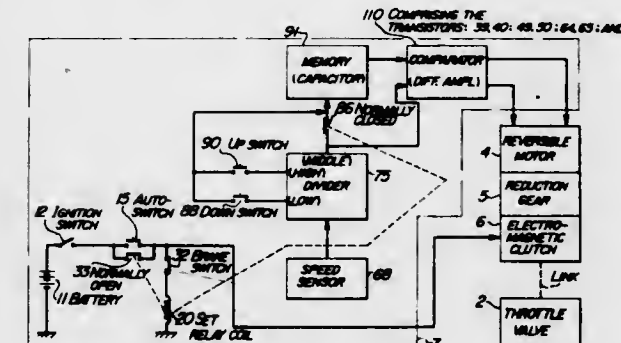
Filed Mar. 25, 1969, Ser. No. 810,201

Claims priority, application Japan, Apr. 10, 1968, 23348/68

Int. Cl. F02d 11/10

U.S. Cl. 123-102

12 Claims



A system for automatically controlling vehicle speed, which is operative in such a manner that a voltage generated by a generator adapted to generate a voltage in proportion to the speed of an automotive vehicle is constantly impressed on the gate electrode of a field-effect transistor and also on the gate electrode of another field-effect transistor and a memory condenser through a normally closed switch, said two field-effect transistors and the respective load resistances forming a bridge circuit, and when automatic control is desired, the potential difference across the potential-detecting terminals of said bridge circuit and its deformation polarity are detected, with said normally closed switch open, whereby an electric motor is controlled for adjusting the degree of opening of the throttle valve of a carburetor.

3,612,018 THERMOSTATICALLY MODULATED VACUUM CONTROL VALVE

George A. Soberski, Des Plaines, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Nov. 10, 1969, Ser. No. 875,425

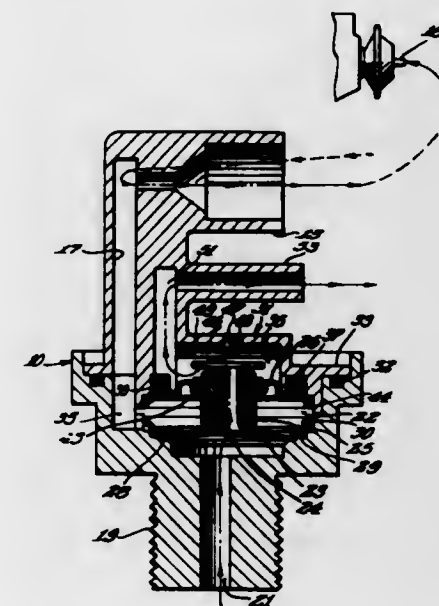
Int. Cl. F02p 5/04; F16k 17/38

U.S. Cl. 123-117 A

10 Claims

Thermostatically modulated vacuum control valve for controlling the distributor vacuum motor advancing the spark of an internal combustion engine. The valve housing has a

vacuum input leading from the housing and a vacuum output leading into the housing and having communication with the vacuum input. The vacuum input is connected with a source of vacuum such as the carburetor of an internal combustion engine. The housing has a second vacuum input connected with the intake manifold of the engine. A diaphragm valve is sealed to a valve chamber in the housing and is seated on a bimetal disk extending across the chamber and having a central opening leading therethrough. The diaphragm valve is biased into engagement with the seat by a spring and is moved out of engagement with the seat by vacuum to control



vacuum from the intake manifold. During normal driving speeds, vacuum is obtained directly from the carburetor through the first vacuum input. When the engine is idling and is below a preselected temperature, the vacuum control valve is closed. As the engine temperature increases above this predetermined temperature range, the bimetallic seat will move away from the valve and a connection is made between the intake manifold and the distributor motor. Upon deceleration of the engine, vacuum from the intake manifold will effect opening of the valve and the supply of intake manifold vacuum to the motor.

3,612,019 VACUUM-CONTROLLED SPARK-TIMING DEVICE

Hisaji Okamoto, Kariya-shi; Yosaki Takeda, Nagoya, and Yosio Hukuhara, Yokohama, all of Japan, assignors to Nippon Denso Company Limited, Kariya-shi, Japan and Kyosandenki Co., Ltd., Tokyo, Japan

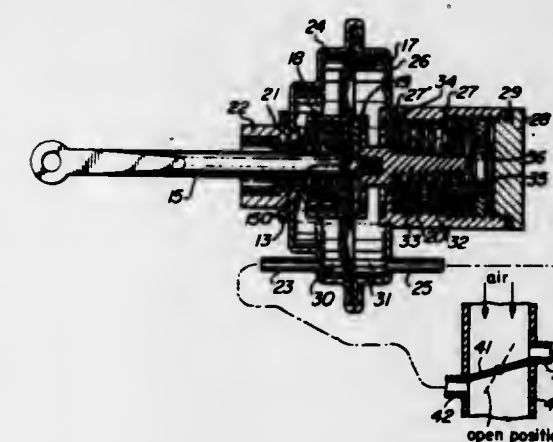
Filed June 11, 1969, Ser. No. 832,191

Claims priority, application Japan, Oct. 5, 1968, 43/72623

Int. Cl. F02p 5/10

U.S. Cl. 123-117 A

4 Claims



A vacuum-controlled spark-timing device for combined use with a contact breaker of a gasoline engine, said device having a rotatable plate mounted for free rotation about a

camshaft in a contact breaker housing, said rotatable plate having thereon a fixed contact point and a contact breaker lever pivotally mounted on said rotatable plate, said pivotable lever having thereon a cam follower in sliding contact with the cam surface of said camshaft and a movable contact point adapted to be brought into or out of electrically conductive contact with said fixed contact point upon rotation of said camshaft, a hermetically sealed casing mounted on said contact breaker housing and having a diaphragm dividing the interior of said casing into two chambers, a connecting rod sealingly extending through said casing and having one end pivotally connected to said rotatable plate and the other end secured to said diaphragm, one of said chambers being in communication with an air inlet conduit of said engine at a point upstream of a throttle valve mounted within said conduit and the other of said chambers being in communication with said conduit downstream of said throttle valve, whereby said diaphragm is displaced in one direction by the vacuum exerted to said one chamber during normal operation of said engine to cause said connecting rod to rotate said rotatable plate in one direction for thereby advancing the ignition timing of the engine and said diaphragm is displaced in the opposite direction by the vacuum exerted to said other chamber during idling or deceleration of said engine to cause said connecting rod to rotate said rotary plate in the opposite direction for thereby retarding the ignition timing.

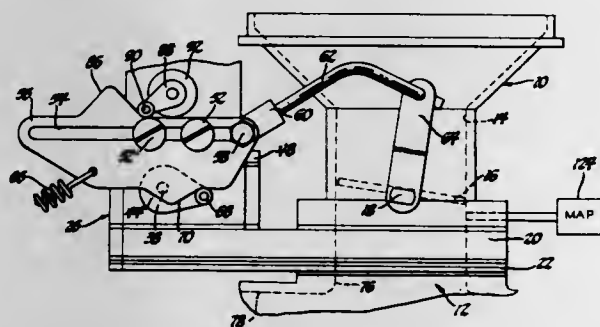
3,612,020 COMPENSATING FUEL METERING FOR EXHAUST GAS RECIRCULATION

John W. Moulds, Penfield, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1970, Ser. No. 39,258
Int. Cl. F02m 25/06

U.S. Cl. 123-119 A

1 Claim



In an internal combustion engine, exhaust gas is recirculated from the intake manifold exhaust gas crossover passage to the induction passage. An exhaust gas recirculation control valve is positioned by the throttle to proportion exhaust gas recirculation flow to induction airflow. In one embodiment, the exhaust gas recirculation passages are cast integrally in the intake manifold. Fuel metering in a timed fuel injection system responsive to manifold absolute pressure is compensated for exhaust gas recirculation.

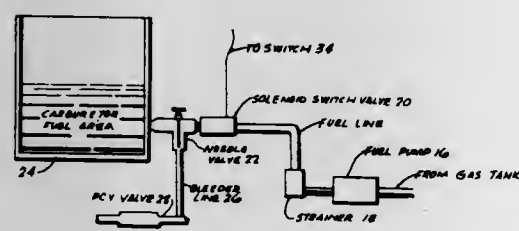
3,612,021 CARBURETOR FUEL LEVEL CONTROL

Ralph R. Ross, Box 4554, Midland, Tex.

Filed Aug. 4, 1969, Ser. No. 847,264
Int. Cl. F02l 9/00; F02b 77/00

U.S. Cl. 123-119 B

4 Claims



A carburetor for an internal combustion engine for a vehicle such as an automobile is provided with a mechanism for

preventing the fuel level in the carburetor from getting too high or too low thereby preventing flooding, hard starting and reduction of efficiency of fuel consumption as well as keeping PCV valve cleaner.

3,612,022 FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Franz-Josef Von Bomhard, Schweinfurt am Main, and Wolfgang Baier, Gochsheim, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

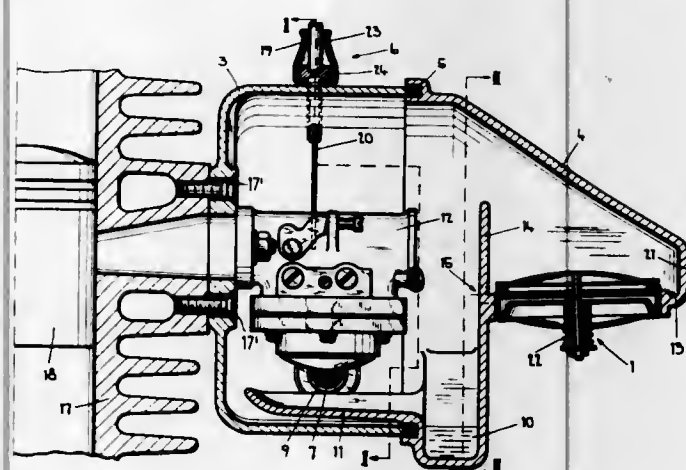
Filed Jan. 13, 1970, Ser. No. 2,514

Claims priority, application Germany, Jan. 18, 1969, P 19 02 440.9

Int. Cl. F02m 17/30

U.S. Cl. 123-136

12 Claims



Fires in the fuel supply system for an internal combustion engine operating in a confined space are prevented by enclosing the carburetor of the engine in a vaportight housing and enveloping the fuel tube leading into the housing in an outer tubular casing. Air of combustion is drawn into the housing through a check valve during the intake stroke of the engine.

3,612,023 IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Gerhard Sohner, Geradstetten, and Gert Strelow, Stuttgart-Stammheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

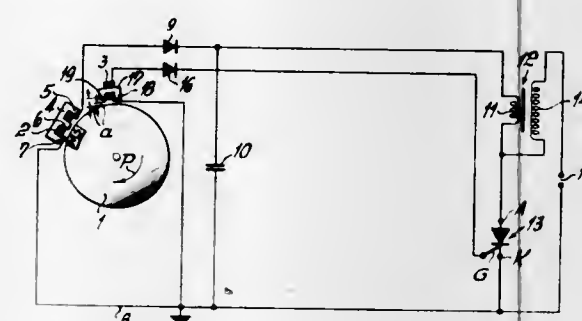
Filed July 2, 1969, Ser. No. 838,423

Claims priority, application Germany, July 4, 1968, P 17 64 609.2

Int. Cl. F02p 3/06

U.S. Cl. 123-149 A

16 Claims



An ignition arrangement for internal combustion engines in which an induced voltage charges an ignition capacitor. A magnetic member driven by the engine induces the charging voltage within a charging coil and, moreover, induces a control voltage within another coil for controlling an electronic switch. When the latter is turned on, the capacitor discharges through the primary winding of an ignition transformer to

generate a voltage for firing the spark plugs. Ignition of the fuel-air mixture is inhibited when the engine is rotating in the wrong direction.

3,612,024 AIR CLEANER BYPASS ARRANGEMENT

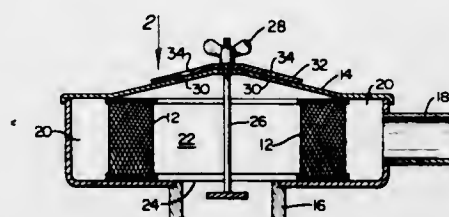
John C. Bandimere, 3740 Fenton St., Wheatridge, Colo.

Filed Nov. 3, 1969, Ser. No. 873,167

Int. Cl. B01d 46/42; F02m 17/34

U.S. Cl. 123-198 E

3 Claims



An internal combustion engine air cleaner, of particular utility for use with vehicle engines, characterized by a bypass valve which permits unfiltered air to enter the carburetor of an otto-type engine, or the intake manifold of a diesel or other solid injection engine, without passing through the filter element of the air cleaner. By comparative road mileage tests, with the valve open or closed, the operator may determine the need for cleaning or replacement of the air filter element. For top or full throttle performance, such as in racing, the operator may eliminate the airflow restriction through the filter element, with the valve open, and permit unfiltered air to enter the engine, thereby delivering a greater rate of flow to same. A further feature resides in the automatic closing of the bypass valve in the event of a backfire in the engine intake manifold to thereby confine the backfire flame to the interior of the air cleaner.

3,612,025 CYCLIC TIME DELAY SYSTEM FOR INTERRUPTING OSCILLATION OF A TARGET-PROJECTING DEVICE

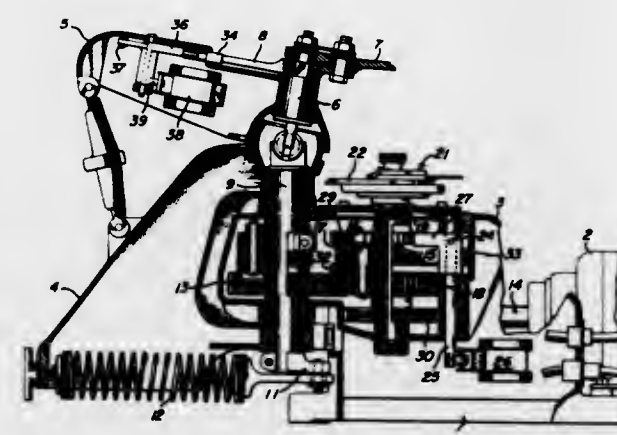
Walter L. Rhodes, Piqua, Ohio, assignor to Rhodeside, Inc., Piqua, Ohio

Filed Apr. 7, 1969, Ser. No. 814,044

Int. Cl. F41b 3/04

U.S. Cl. 124-9

15 Claims



A variably functioning interrupter mechanism applied to a clay-target-launching or like device. It provides a motorized cam and switch assembly which defines an attachment unit integrated to exert an overriding influence on the launching system controls. Adapted to a target-launching device, the cam may be constructed to effect switch operation in intervals of nonuniform frequency and duration to interrupt oscillation of a throwing arm support in a way to obviate reading or anticipating the angle of flight of a released target.

3,612,026 GAS-OPERATED REVOLVER WITH ROTATABLE MAGAZINE

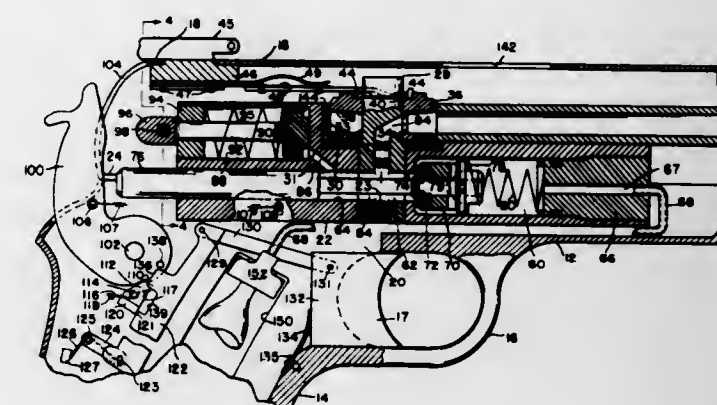
John F. Vadas, Webster, and Sigurd Liepins, Rushville, both of N.Y., assignors to Crosman Arms Company, Inc., Fairport, N.Y.

Division of Ser. No. 697,049, Jan. 11, 1968, Pat. No. 3,549,095. Filed Mar. 18, 1970, Ser. No. 20,500

Int. Cl. F41b 11/00

U.S. Cl. 124-11

11 Claims



This revolver has a revolver barrel indexable about an axis perpendicular to the axis of the bore of the gun barrel, and having radially disposed, projectile-holding chambers indexable successively into registry with said bore. When the trigger is squeezed, the hammer opens a valve, to deliver gas under pressure behind the projectile, which, at the time, is in registry with said bore, to propel said projectile from the gun. Opening of the valve also supplies gas to a piston to retract a reciprocable indexing mechanism on the frame. This mechanism recocks the hammer and permits the valve to close. A spring returns the mechanism to battery. On this return movement, a pawl carried by the mechanism indexes the revolver barrel.

3,612,027 REMOTELY CONTROLLED SPRING-TYPE BALL PROJECTING DEVICE

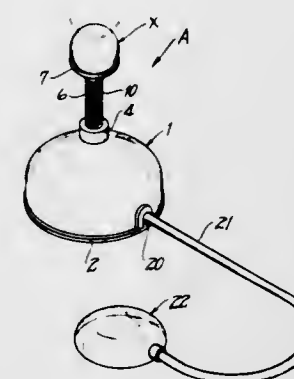
Ginji Makino, Higashi Shinko, Katsumika-Ku, Tokyo, Japan

Filed Feb. 4, 1970, Ser. No. 8,550

Int. Cl. F41b 7/00

U.S. Cl. 124-16

8 Claims

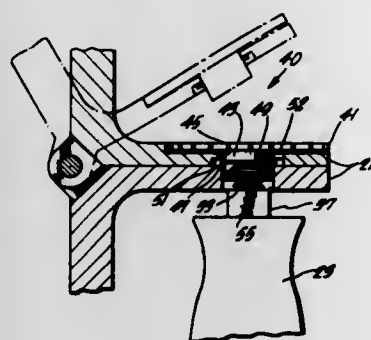


A remotely controlled device for practice batting, which comprises a housing, spring-loaded vertically displaceable member for launching a ball, projecting upwardly through an opening of the housing, and means for releasably locking the ball-launching means, provided within said housing and controlled by a remotely situated remote-control device. It can serve not only for improvement of batting technique, but also for physical training and amusement.

3,612,028
A TAKEDOWN TWO-PIECE HINGEDLY CONNECTED ARCHERY BOW
 Richard S. Karbo, Whittier, Calif., assignor to The Leisure Group, Inc., Los Angeles, Calif.
 Filed Mar. 11, 1970, Ser. No. 18,514
 Int. Cl. F41b 5/00

U.S. Cl. 124-24

7 Claims

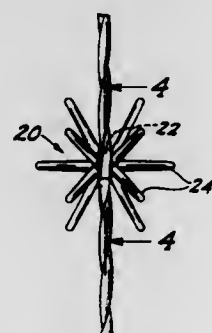


A takedown archery bow having a two-piece handle portion foldable about a hinge with their outer extremities integrally connected to a pair of bow ends. The hinge is operable to provide a rigid and quiet operation while the handle portion is secured in the operable position by a locking assembly that at all times is integral with the bow structure. In the operable position, the bow handles are further characterized in that they are offset transversely from the common plane to provide an unobstructed view of the target area.

3,612,029
BOWSTRING-SILENCING DEVICE
 Cornelius F. Carroll, 1310 Tuxedo Ave., Parma, Ohio; Lloyd E. Abernathy, 10922 Kildare Court, St. Anns, Mo., and Allen W. Miller, 10801 Ridgcrest Drive, St. Anns, Mo.
 Filed Jan. 8, 1970, Ser. No. 1,400
 Int. Cl. F41b 5/00

U.S. Cl. 124-30 A

3 Claims



A bowstring-silencing device constructed of a tough, flexible synthetic thermoplastic material having a central core inserted and retained between the strands of a twisted multiple strand bowstring, and having a plurality of flexible integrally formed vibration-damping arms radiating from the core on opposite sides of the bowstring.

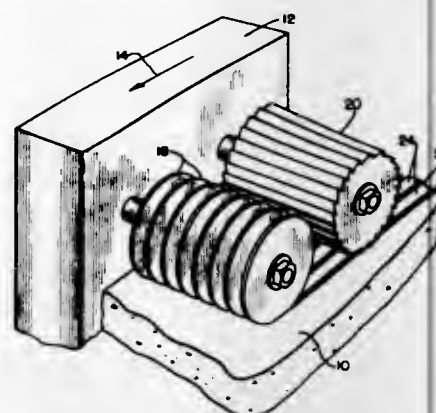
3,612,030
ROCK SAMPLING
 Philip Blum, Lexington, Mass., assignor to National Research Corporation, Cambridge, Mass.
 Continuation-in-part of application Ser. No. 611,414, Jan. 24, 1967, now abandoned. This application Sept. 11, 1969, Ser. No. 857,241
 Int. Cl. B28d 1/00

U.S. Cl. 125-1

10 Claims

A method for sampling rock and other brittle materials and for controlling resultant particle sizes is described. The method involves cutting grooves in the rock surface to provide a grouping of parallel ridges and subsequently machining the ridges to provide a powder specimen. The machining step may comprise milling, drilling, lathe cutting or the like;

but a planing step is advantageous. Control of the particle size distribution is effected primarily by changing the height

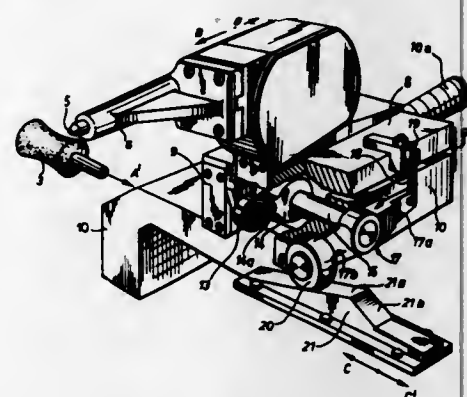


and width of these ridges. This control exceeds that obtainable by conventional grinding.

3,612,031
GRINDING WHEEL DRESSER
 Gian Luigi Mazzarelli, Turin, Italy, assignor to S.p.A. Cimat, Turin, Italy
 Filed June 28, 1968, Ser. No. 741,130
 Claims priority, application Italy, Mar. 15, 1968, 807879
 Int. Cl. B24b 53/00

U.S. Cl. 125-11

7 Claims

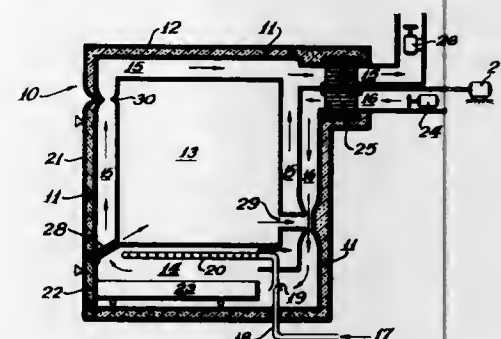


This invention relates to a machine tool for dressing a grinding wheel with a concave profile. The wheel is rotated and is reciprocated axially, and a cutting tool is moved radially relative thereto under control of an eccentric cam. The eccentric cam is rocked under control of the relative movement of the grinding wheel and the tool support by means of a linear inclined cam, which is preferably of adjustable inclination, to control the depth of the concave profile. The dressed grinding wheel may be used in an automatically cycling grinding machine for forming track surfaces of convex profile on bearing outer race rings.

3,612,032
MUFFLE-TYPE GAS-FIRED SELF-CLEANING OVEN
 Escher R. Kweiler, Downers Grove; Robert B. Rosenberg, Evergreen Park, and Dennis H. Larson, Hickory Hills, all of Ill., assignors to Institute of Gas Technology
 Filed Oct. 10, 1969, Ser. No. 865,282
 Int. Cl. F24c 15/32

U.S. Cl. 126-21 A

14 Claims



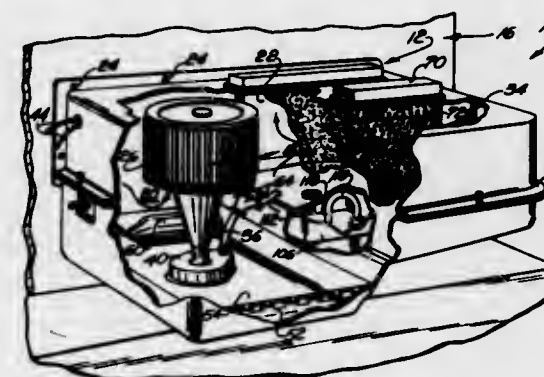
A self-cleaning gas oven having separated cooking and heating compartments in which the smoke and odor-contain-

ing gases from the cooking compartment are mixed with the air required for the combustion of fuel and passed into the heating compartment so that smoke and odor components are incinerated by the combustion process.

3,612,033
FURNACE HUMIDIFIER
 Kermit E. Chilcoat, North Olmsted, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
 Filed Sept. 17, 1969, Ser. No. 858,795
 Int. Cl. F24f 3/14

U.S. Cl. 126-113

16 Claims

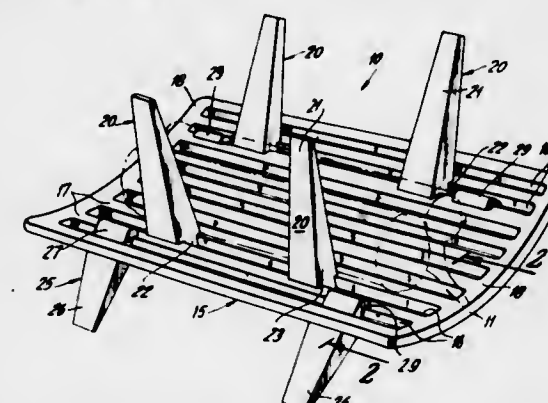


A humidifier includes a housing in which vaporizer means for promoting vaporization of liquid is removably received. The vaporizer means includes a liquid manifold and a porous material. The liquid manifold is connected to a pump assembly by a conduit such that the manifold is supplied with a liquid thereby. The manifold has a portion which grips the porous material such that the porosity of the material is controlled and the flow of liquid from the manifold to the porous material is regulated thereby. The manifold is configured such that the vaporizer means and manifold are removable without disassembly of the humidifier.

3,612,034
GRATE ASSEMBLY WITH LOG-SUPPORTING ARRANGEMENT
 Lyman P. Wood, Cedar Beach, Charlotte, Vt., and Douglas Merrilees, Vine St., Northfield, Vt.
 Filed Apr. 17, 1970, Ser. No. 29,499
 Int. Cl. F23h 13/02

U.S. Cl. 126-165

11 Claims

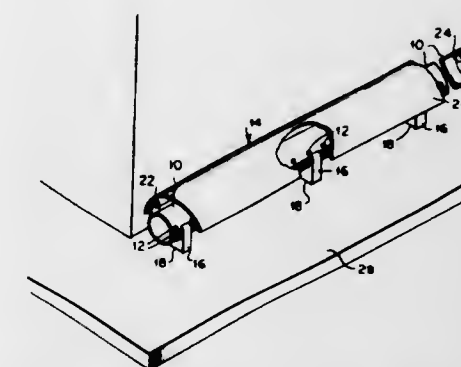


A wood-burning grate assembly for burning logs comprises a metal log-supporting shelf formed with apertures therethrough in the form of spaced, parallel and elongated slots. Means are provided to support the shelf elevated above a support base. Relatively elongated metal prongs are insertable into selected apertures to extend above the shelf to retain logs on the shelf in a selected pattern. Each prong has, at one end, a laterally reduced extension forming a shoulder engageable with one surface of the shelf and having a hook portion at its free end engageable with the other surface of the shelf, when the extension is inserted, with clearance, into an aperture. The prongs may also be used as the support means for the shelf, and either may be solid or may be apertured, to reduce weight. Each prong may have either one such shoulder or may have a pair of oppositely extending shoulders.

3,612,035
SYSTEM FOR CLEARING SNOW AND ICE FROM A SURFACE
 Albert Kronen, 147 E. 82nd St., New York, N.Y.
 Filed Jan. 29, 1970, Ser. No. 6,692
 Int. Cl. E01h 5/10

U.S. Cl. 126-271.1

6 Claims

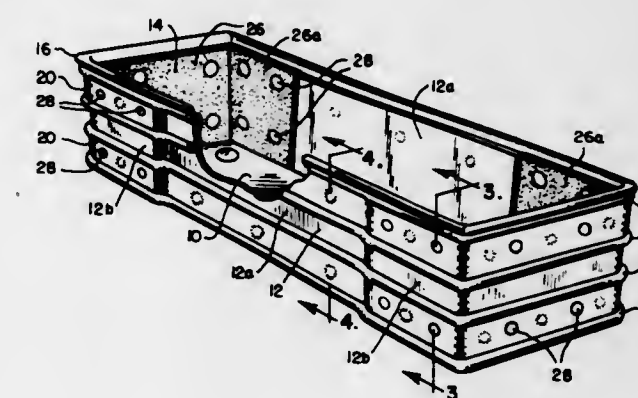


A snow- and ice-clearing system in which a snow- and ice-melting fluid is fed under pressure from a source to a longitudinally disposed tubular body having longitudinally arranged spray openings in its wall; such body resting on spaced supports disposable on the surface to be cleared; the supports interconnected into a unit by a transversely arcuate deflector plate connected by one edge to the supports and overhanging them and arranged to deflect discharged fluid from the tube openings against the surface. The fluid may be hot water or steam and the source a building-heating boiler.

3,612,036
INSULATED BAKE PAN
 Morris Kaufman, Morton Grove, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
 Filed May 6, 1970, Ser. No. 35,094
 Int. Cl. A47j 36/02

U.S. Cl. 126-390

16 Claims



A baking pan having sidewalls and end walls, has insulating inserts along the end walls and along a portion of the sidewalls near the end walls to prevent concentration of heat near the ends of the pan and to provide for slow and uniform heating of the product.

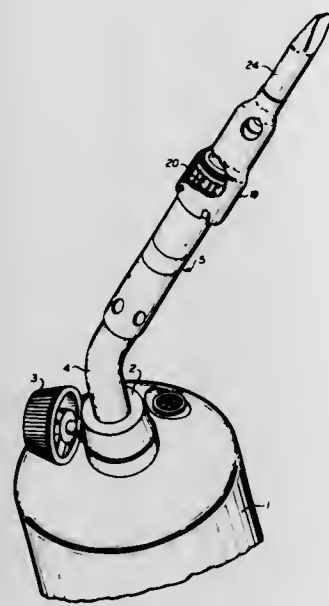
3,612,037
BLOWTORCH BURNER ATTACHMENT QUICK CONNECT-DISCONNECT DEVICE
 John B. Spiggle, Rochester, N.Y., assignor to Bernzomatic Corporation, Rochester, N.Y.
 Filed Apr. 14, 1969, Ser. No. 815,758
 Int. Cl. B23k 3/02; F23d 13/04, 13/30

U.S. Cl. 126-414

4 Claims

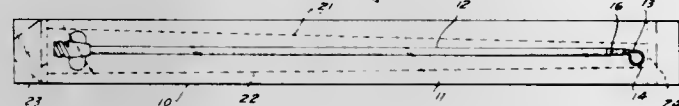
A blowtorch burner attachment which has a quick connect-disconnect device, the attachment formed as a ther-

moconcentrator which directs the flame into an area of the thermoconcentrator provided with a soldering tip or other lar duct cooperate to draw air from an exit port formed in the mixer conduit, causing air within the chamber to be drawn into an entrance port. The resulting flow entrains and



conductive means of transferring heat, or formed to provide flame shapes for special applications.

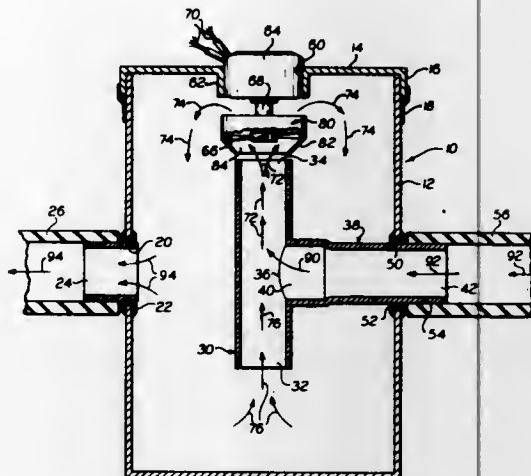
3,612,038
PREFORMABLE CATHETER PACKAGE ASSEMBLY AND METHOD OF PREFORMING
James C. Halligan, Fair Lawn, N.J., assignor to Becton Dickinson and Company, East Rutherford, N.J.
Filed Feb. 3, 1969, Ser. No. 795,896
Int. Cl. A61b 5/02; A61m 25/00
U.S. Cl. 128-2.05 R 11 Claims



A preformable catheter assembly can be given a predetermined curvature while in the sterilized condition which permits the catheter, when removed from the assembly, to substantially assume the predetermined curvature. The assembly includes a plastic catheter having a malleable forming wire inserted in the lumen of the catheter and a flexible, airtight, waterproof envelope enclosing the catheter and wire with a minimum of entrapped air. The catheter is shaped by bending the catheter assembly to the predetermined curvature, heating, cooling and then removing the catheter from the assembly. This catheter assembly eliminates the need for the hospital to stock preshaped catheters and permits the physician to shape the catheter to his own choosing in the sterile condition prior to the operative procedure.

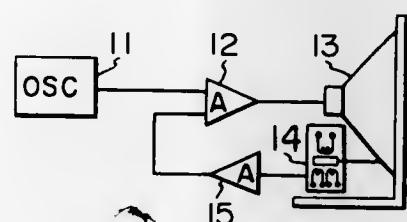
3,612,039
AIR HOMOGENIZER FOR RESPIRATORY GAS ANALYSIS EQUIPMENT
Donald B. Falk, East Seaforth, N.Y., assignor to Instrumentation Associates Inc., New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,804
Int. Cl. A61b 5/00
U.S. Cl. 128-2.07 6 Claims

An air homogenizer device comprising an enclosure defining a chamber formed with an inlet opening and an outlet port, and a mixer conduit within the chamber forming the crossbar of a T-shaped pipe configuration. The other leg of the "T" is an input conduit connecting the center of the mixer conduit to the inlet opening of the chamber. The chamber has a removable lid formed with a central opening which receives a fan motor having a drive shaft depending therefrom. A fan blade on the shaft and a surrounding annu-



draws air from the input conduit into the mixer conduit, and there blends it homogeneously with the air previously contained in the chamber.

3,612,040
METHOD AND APPARATUS FOR MEASURING RESPIRATION RESISTANCE
Yoshihiko Sugiyama, Tokyo; Kaoru Imaoka, Tokyo, and Genzo Tanabe, Kobe, all of Japan, assignors to Nihon Kohden Kogyo, Ltd., Tokyo, Japan
Filed Mar. 12, 1969, Ser. No. 806,563
Claims priority, application Japan, Mar. 16, 1968, 43/17148
Int. Cl. A61b 5/08
U.S. Cl. 128-2.08 4 Claims

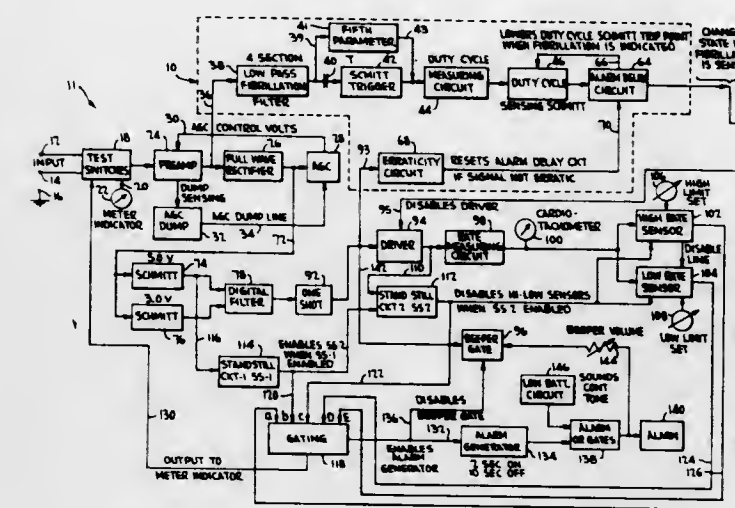


A method and apparatus for measuring respiration resistance comprises a source of fluid pressure for operating a lung-chest system, means for operating the source of fluid pressure, and means responsive to the flow speed and the pressure of the fluid flowing through the lung-chest system for displaying the respiration resistance thereof, there is provided means for detecting variations in the pressure of the source of fluid pressure to provide a negative feedback to the means for operating the source of fluid pressure.

3,612,041
APPARATUS FOR DETECTING VENTRICULAR FIBRILLATION
Charles W. Ragsdale, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed July 25, 1969, Ser. No. 844,996
Int. Cl. A61b 5/04
U.S. Cl. 128-2.06 A 1 Claim

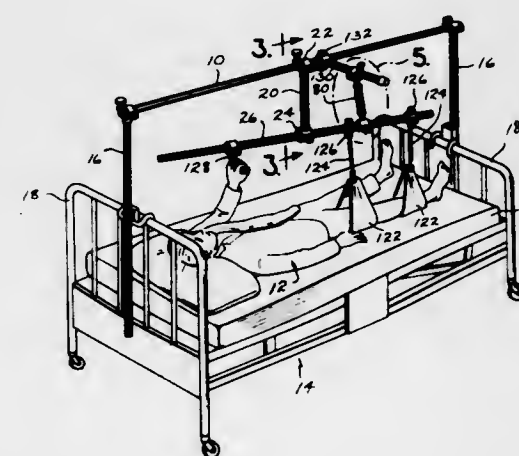
An electronic sensing scheme for the automatic detection and indication of ventricular fibrillation from the myocardial waveforms of a human heart. The circuitry is an improvement upon and is specifically designed to be incorporated into a lightweight, battery-operated heart monitor of a prior United States application cited herein. The additional circuitry provides increased reliability and sensitivity to the heart monitor for distinguishing ventricular fibrillation waveforms from closely related waveforms that formerly gave false indications of ventricular fibrillation. The latter

group of waveforms include those that exhibited pulse rates of less than 150 pulses per minute and/or were unipolar in nature while at the same time had large duty cycles. A



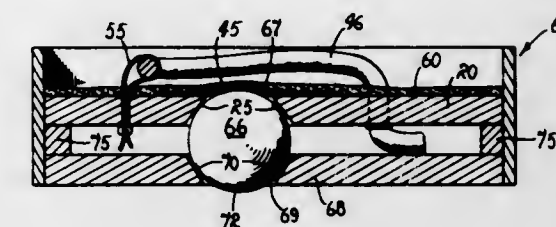
preferred embodiment of the new circuitry requires that at least two positive-going and two negative-going signals, exceeding +4.0-volt and -4.0-volt levels, respectively, and occurring at a 200 to 500 beats-per-minute rate, must be produced at least every 8 seconds in order for fibrillation to be indicated by the monitor.

3,612,042
HIP EXERCISER
Louis R. Fry, 4465 Forest S. E., Mercer Island, Wash.
Filed Jan. 13, 1970, Ser. No. 2,577
Int. Cl. A61h 1/02
U.S. Cl. 128-25 R 12 Claims



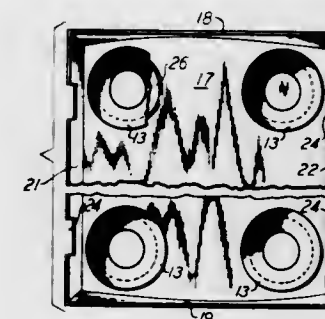
A hip exerciser usable by a bedridden patient which includes a rigid frame positionable adjacent the patient and an elongated, rigid member supported by said frame and having an intermediate part pivotally connected to the frame so as to be swingable about a substantially vertical axis. The elongated member is adapted to be positioned over the patient with the pivotal axis thereof generally intersecting the anatomical center of the femoral head of a selected leg of the patient. One end part of the elongated member carries means for supporting the leg of the patient and the opposite end part of the elongated member is positionable within arm's reach of the patient to enable the patient to grasp or otherwise engage the opposite end part of the elongated member to swing the member about its pivot connection and to cause shiftable movement of the supported leg.

3,612,043
HEALTH SHOE
Toyoyiro Inaki, 58 E. Lincoln, Easton, Calif.
Filed Aug. 21, 1969, Ser. No. 851,940
Int. Cl. A61h 15/00
U.S. Cl. 128-57 1 Claim



A health shoe for stimulating and improving nerve and muscle tone throughout the body of a wearer providing a frame adapted to be worn on the foot of a wearer while walking with the frame having a motion-generating, fast-stimulating member mounted thereon and a flowable, particulate material interposed the foot of the wearer and the stimulating member to transmit and to convert such motion of the stimulating member into a massaging force upon the sole portion of the foot of the wearer.

3,612,044
BACK MASSAGE AND SCRUB FIXTURE
Hector R. Gurrola, 280 Maiden Lane, Montebello, Calif.
Filed Mar. 24, 1969, Ser. No. 809,603
Int. Cl. A61h 7/00
U.S. Cl. 128-62 R 3 Claims

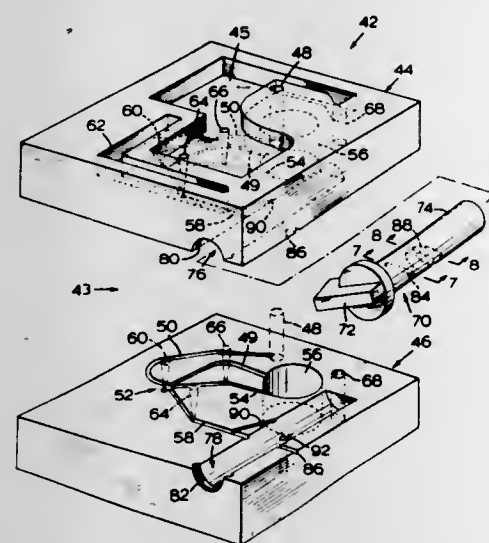


A shallow frame with a concave back supports a friction pad having a multiplicity of friction fingers of equal length. Suction cups on the frame back secure the frame and pad to a support surface such as a wall. Finger grips on the frame afford means for removing the cups from the wall to transfer the scrubber to another position or location. The friction fingers define a horizontally concave area adapted to fit the human back.

3,612,045
PULSATING DENTAL SYRINGE
Frank E. Dudas, Toronto, Ontario; Ingo Glende, Downsview, Ontario; Geza Kardos, Burlington, Ontario, and Edward V. Rippling, Jr., Don Mills, Ontario, all of Canada, assignors to Dudas Juypers Rowan Limited, Toronto, Ontario, Canada, by said Frank E. Dudas, Ingo Glende and Geza Kardos
Filed Feb. 18, 1969, Ser. No. 800,071
Int. Cl. A61h 9/00
U.S. Cl. 128-66 2 Claims

A hygienic dental syringe having a fluidic oscillator for producing pulsations of water for cleansing the mouth and massaging the gums. The device includes a reservoir for

mouthwash, and means for mixing the mouthwash with the

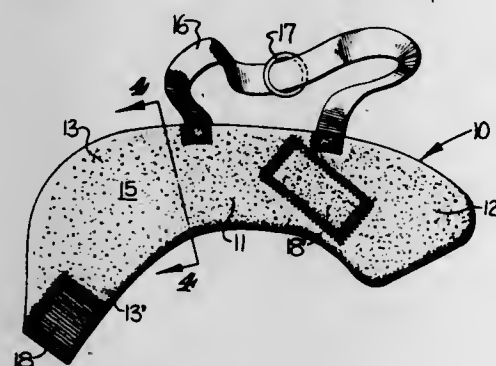


main stream of water passing through the device.

3,612,046
TRACTION DEVICE
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
Filed Sept. 8, 1969, Ser. No. 856,080
Int. Cl. A61h 1/02

U.S. Cl. 128-75

5 Claims

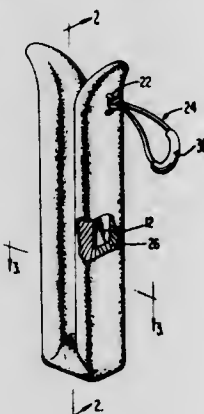


A foot-engaging traction device having a body member formed of air permeable, cushioning material and adapted to surround and closely conform to the anatomy of the ankle and heel and instep portions of a foot, while exerting minimum compressive forces and contacting a relatively large area of the skin. A strap is attached to the body member for connection to a conventional traction applying apparatus, and a fastening means is provided to easily secure the body member about the ankle.

3,612,047
PROSTHETIC GENITAL DEVICE
Francis C. Nesbit, 1112 Floyd St. N.E., Covington, Ga.
Filed Nov. 20, 1968, Ser. No. 777,320
Int. Cl. A61f 5/00

U.S. Cl. 128-79

9 Claims



A clamping action for supplementing the sphincter muscle of the human penis is exerted by a clamping force covered

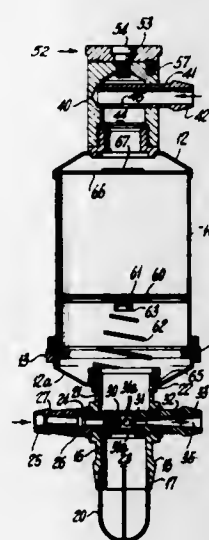
with cushioning material and provided with a resilient band to exert the desired clamping pressure. The clamping frame comprises a pair of elongate legs, hingedly secured together. In one embodiment, one leg is provided with a lateral limb, the two legs being pivotally joined at the free end of the limb. In the other embodiment, the two legs are complementary, the two legs upwardly diverging from a common pivot and then converging gradually. In this way the limb controls the application of clamping pressure to avoid undue constriction of the urethra while allowing the legs to exert pressure to control the return flow of blood and retain the penis in erect condition.

3,612,048
REBREATHING APPARATUS FOR ANESTHESIA
Kentaro Takaoka, Rua Gaspar Laureano 1-c, Sao Paulo
Continuation-in-part of application Ser. No. 596,266, Nov. 22, 1966, now abandoned. This application Feb. 19, 1970, Ser. No. 12,598

U.S. Cl. 128-188

Int. Cl. A61m 17/00

10 Claims

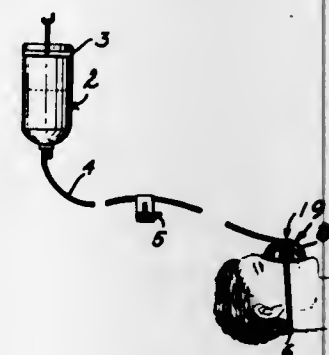


A device for recirculating air to a patient combining the simplicity of the to and fro type of apparatus with the advantages of the circle type. Dead space is avoided by use of two venturis which enhance flow rate through a canister of carbonic gas-absorbing material. The absence of valves lowers resistance and increases efficiency.

3,612,049
PERSONAL HUMIDIFIER
Veldon A. Monson, Hammond, Wis.
Filed May 5, 1969, Ser. No. 821,817
Int. Cl. A61m 15/00

U.S. Cl. 128-195

2 Claims

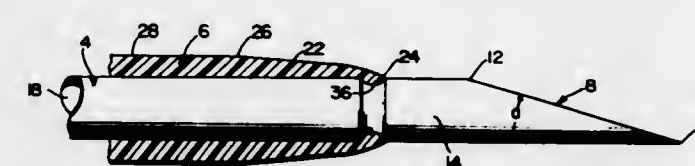


Apparatus for providing humans with a breathing zone of high humidity. The apparatus comprises a face mask, including an absorbent pad, and means for supplying water, with or without added medication, to the face mask.

3,612,050
INTRAVASCULAR CATHETERS
David S. Sheridan, Hook Road, Argyle, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,102
Int. Cl. A61m 05/00

U.S. Cl. 128-214.4

1 Claim

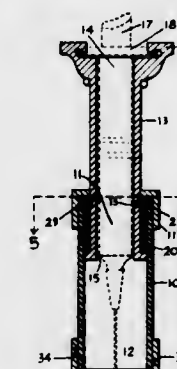


Intravascular catheters of improved vascular insertability are made with a plastic catheter snugly encircling a trocar. The catheter is tapered at the distal end which is blended with the exterior wall of the trocar, e.g., by being shrunk into a groove in the trocar wall. This structure permits smooth intravascular entry of the catheter and reduces occurrence of phlebitis in the use of intravascular catheters.

3,612,051
HYPODERMIC SYRINGE APPLICATING DEVICE
Raul Olvera Arce, Cordobanes 25, Mexico City 19, Mexico
Filed July 24, 1968, Ser. No. 747,277
Int. Cl. A61m 05/00, 05/20

U.S. Cl. 128-215

1 Claim

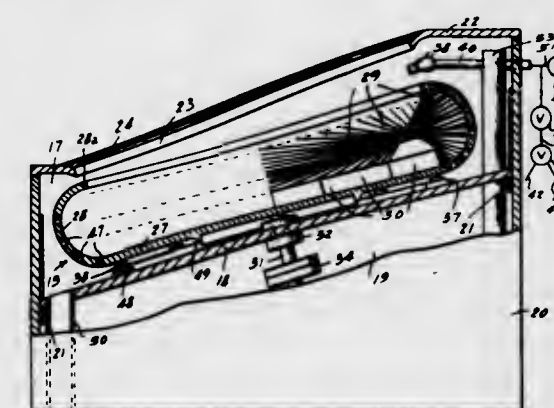


The applicator includes a hypodermic syringe holder telescopically mounted for movement within a guide portion. A spring normally biases the holder and guide into a telescoped position. A pair of arcuate segments within the guide portion are spring biased into an annular groove in the holder for releasably positioning the holder and guide in an extended relationship under spring tension. Adjacent ends of the segments are bevelled and cooperate with bevelled ends of an actuator for releasing the segments from the groove.

3,612,052
APPARATUS FOR PEDICURE
Leo Krummenacher, Luzernerstrasse 36, Ebikon, Switzerland
Filed July 3, 1969, Ser. No. 839,029
Claims priority, application Switzerland, July 3, 1968, 9929/68

U.S. Cl. 128-260

12 Claims



A rotary foot treatment brush is mounted within an open topped treatment chamber within which medicated fluid and

rinse water are supplied to the brushing area, as well as drying air following liquid treatment, and means are provided for programming a treating cycle.

3,612,053
OSTOMY SEALING WASHER
Ronnie L. Pratt, Hammond Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed June 23, 1969, Ser. No. 835,657
Int. Cl. A61f 5/44

U.S. Cl. 128-283

11 Claims

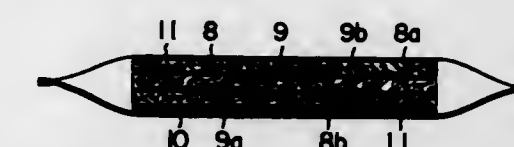


An ostomy-sealing washer is provided which is adapted to fit over an intestinal stoma for use with a postsurgical drainage pouch; it comprises a pliable, resiliently flexible elastoplastic sheet material body having a water-activatable adhesive on one surface which, after activation, becomes water insoluble. The ostomy-sealing washer has an aperture therethrough sufficient to receive the stoma and is adapted to be adhered to the human skin on that side having the adhesive and to an adherent drainage pouch on the other side forming a seal therebetween preventing leakage between the stoma and the pouch.

3,612,054
SANITARY NAPKIN
Tamio Matsuda; Tsutomu Okamura, Tokyo, and Nobu Konishi, Kanagawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan
Filed July 24, 1969, Ser. No. 844,378
Claims priority, application Japan, July 31, 1968, June 19, 1969, 43/65328; 44/57313

U.S. Cl. 128-287

2 Claims



A sanitary napkin comprising a plurality of layers of absorbent material, at least one barrier sheet of liquid repellent material interposed between said absorbent layers, said sheet being completely liquid repellent, a waterproof strip, and an outer wrapper.

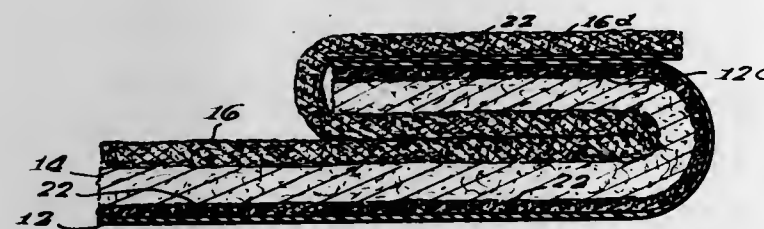
3,612,055
DISPOSABLE DIAPER OR THE LIKE AND METHOD OF MANUFACTURE
Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson
Continuation-in-part of application Ser. No. 861,689, Sept. 29, 1969. This application Jan. 29, 1970, Ser. No. 6,864

U.S. Cl. 128-287

21 Claims

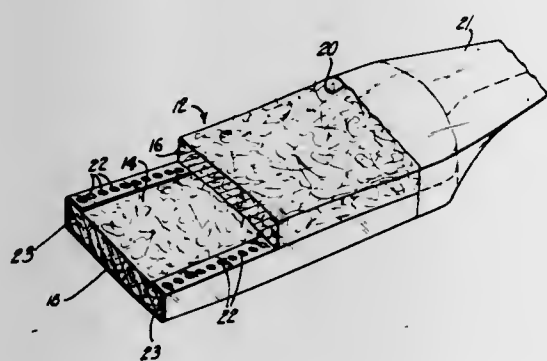
A disposable multilayer diaper of high absorptive capacity is provided which comprises as a first layer, to be brought

into contact with an infant's skin, a porous, fibrous, non-woven bonded facing web of controlled wettability made of mixed long and short fibers. A second layer, in juxtaposition to the facing layer, is a highly porous, loosely compacted cellulosic batt having greater wettability than that of the facing



web. A third layer, integral with the second, is a paperlike, densified, highly compacted layer of the same cellulosic material as the second layer but of substantially smaller average pore size. The final layer is an impervious backing sheet adhered to the densified layer over a widely distributed area of adhesion.

3,612,056
SANITARY NAPKIN
Vladimir Marchuk, Somerville, and James A. Gnocchio, Summit, both of N.J., assignors to Personal Products Company
Filed Sept. 29, 1969, Ser. No. 861,651
Int. Cl. A61f 13/16
U.S. Cl. 128—290 3 Claims

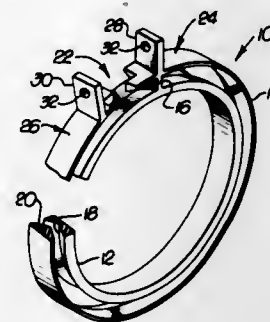


A sanitary napkin that incorporates a fluid impervious barrier of filmlike material having very poor structural stability but which is maintained in place when in use and during manufacture of the napkin by having its lateral marginal edges sandwiched between two relatively thick absorbent fibrous layers that form the absorbent core of the napkin. In one embodiment, the lateral edges of the barrier film are provided with perforations permitting the fibers of one layer of the absorbent core to interlock with the fibers of the next adjacent layer of the core to further enhance the holding of the barrier film in proper position in the napkin when worn and during its manufacture.

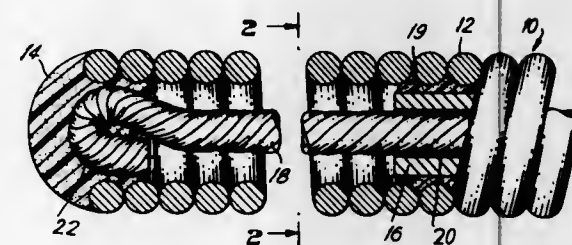
3,612,057
CIRCUMCISION DEVICE
Lawrence D. Freedman, 1541 Wilton Way, La Habra, Calif.
Filed Jan. 22, 1970, Ser. No. 4,984
Int. Cl. A61b 17/00
U.S. Cl. 128—303 9 Claims

A circumcision clamp comprising a pair of concentric plastic rings connected by a generally radially oriented pillar or web so that the rings retain their concentricity when moved into operative position. The inner ring is uninterrupted or solid, and the outer ring is split, preferably adjacent to the pillar, to allow for expansion and contraction of the outer ring relative to the inner ring, the ends of the outer ring having means thereon for drawing them together into clamping position. The foreskin is pulled between the inner and outer rings, with the pillar engaged in the usual dorsal slit in

the foreskin, to set the device proximate the base of the glans, and then the ends of the outer ring are drawn together to constrict the outer ring into clamping position. The rings preferably include opposed, complementary, annular irregularities to assist clamping and to assure that they remain aligned, as for example a V-shaped notch on the outside of the inner ring and a V-shaped projection on the inside of the outer ring.

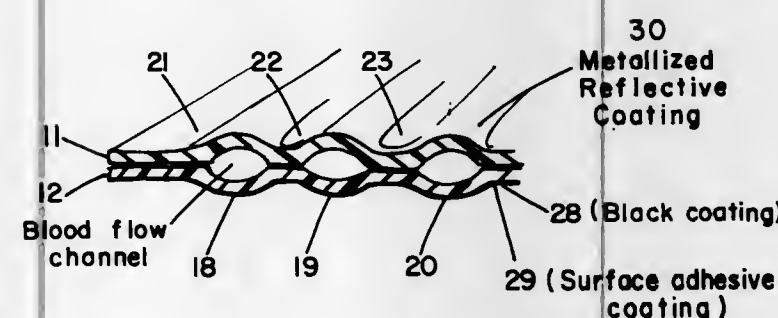


3,612,058
CATHETER STYLETS
Bernard Ackerman, Edison Township, N.J., assignor to Electro-Catheter Corporation
Filed Apr. 17, 1968, Ser. No. 722,015
Int. Cl. A61m 25/00
U.S. Cl. 128—348 10 Claims



Catheter stylet having an elongated bodily flexible outer casing means comprising helically wound wire, and elongated reinforcing means extending generally axially therethrough comprising at least one strengthening portion.

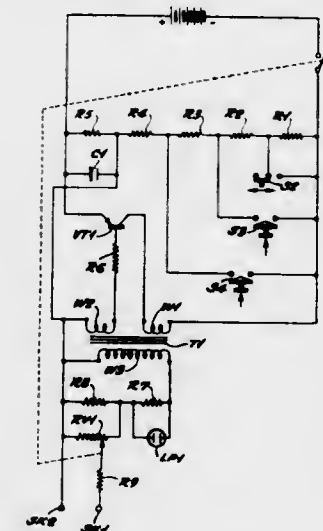
3,612,059
HEAT EXCHANGER FOR BLOOD DURING TRANSFUSIONS
Robert A. Ersek, 8806 Minnetonka Blvd., Minneapolis, Minn.
Filed Mar. 5, 1970, Ser. No. 16,762
Int. Cl. A61f 07/00
U.S. Cl. 128—399 6 Claims



Means for controlling the temperature of intravenous fluids being administered to a patient and comprising a pair of relatively thin films of flexible silicone rubber bonded together to form a generally rectangular parallelepiped having a pair of opposed major surfaces and having a plurality of generally parallel disposed flow channels extending therebetween, the flow channels being arranged transversely to the elongated axis of said parallelepiped; means defining

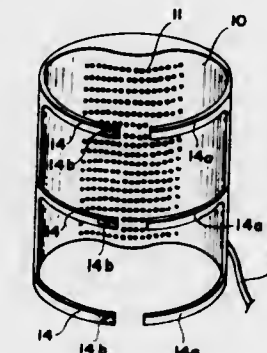
an inlet orifice along one edge thereof communicating with an inlet manifold at one end of said parallel flow channels and an outlet orifice along the opposite edge thereof communicating with an outlet manifold at the opposite end of said flow channels; and a highly thermally emissive coating applied along one of said major surfaces, and a highly thermally reflective coating applied to the opposed major surface.

3,612,060
PERIPHERAL NERVE STIMULATOR
John E. Colyer, Longueville, New South Wales, Australia, assignor to The Wellcome Foundation Limited, London, England
Filed Jan. 6, 1969, Ser. No. 789,265
Claims priority, application Australia, Jan. 5, 1968, 32,043/68
Int. Cl. A61n 1/36
U.S. Cl. 128—422 6 Claims



An electronic peripheral nerve stimulator is disclosed, the nerve stimulator comprising a power supply, a transistorized oscillator circuit coupled to the power supply and including at least one transistor and a resistance-capacitance network defining the oscillation frequency of the oscillator. The transistor is coupled in circuit with the resistance-capacitance network and means are provided to vary the effective impedance of the resistance-capacitance network to provide a selective output pulse repetition rate from the oscillator circuit. A transformer is provided, the transformer having a first primary winding coupled in circuit with the collector of the transistor, a secondary primary winding coupled in circuit with the base of the transistor and through which a "reflected" current is passed by way of a positive feedback loop to the transistor base, and a secondary winding from which an output pulse is obtained.

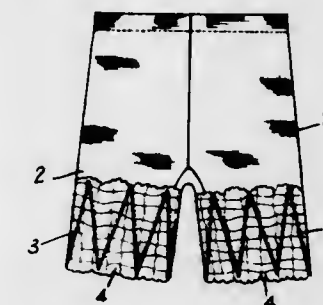
3,612,061
FLEXIBLE CUTANEOUS ELECTRODE MATRIX
Carter C. Collins, Mill Valley, and Robert Bowen, San Bruno, both of Calif., assignors to The Institute of Medical Sciences, San Francisco, Calif.
Filed Feb. 20, 1969, Ser. No. 800,948
Int. Cl. A61n 1/04
U.S. Cl. 128—418 8 Claims



A porous sheet of elastic material supports an array of electrodes adapted to contact the wearer's skin. The sheet

and electrodes are conformed to the wearer's body configuration by an outer less flexible sheath, interposed resilient material, and adjustable fastening means. The several electrodes are connected to a cable fed with electrical pulses adapted to produce a two-dimensional electrical skin stimulation pattern representing or depicting a visible object.

3,612,062
GIRDLE WITH LEGS OF THE SO-CALLED PANTIE TYPE
Andre Henri Silvain, 3, rue Nadoud, Roubaix, Nord, France
Filed Aug. 11, 1969, Ser. No. 849,008
Claims priority, application France, Sept. 20, 1968, 166940
Int. Cl. A41c 1/02
U.S. Cl. 128—535 3 Claims

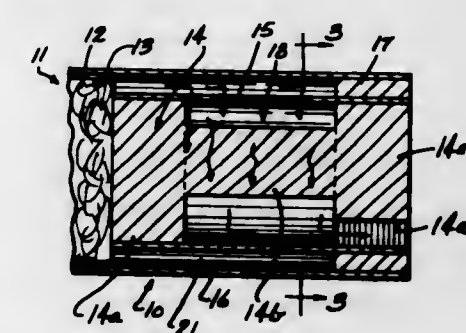


The invention relates to a girdle having legs in which, at the bottom of the legs, strongly elastic fabric constituting the whole of the girdle is cut along a broken line and vertical serrations thus formed are covered by a sleeve or low-grip elastic lace.

3,612,063
OXIDIZED CELLULOSE SMOKING PRODUCT
Theodore S. Brinkin, and Geoffrey R. Ward, both of Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 802,229, Feb. 25, 1969, which is a continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, now Patent No. 3,447,539, and a continuation-in-part of 674,994, Oct. 12, 1967, now abandoned. This application Aug. 18, 1969, Ser. No. 851,104
Int. Cl. A24b 15/00; A24d 01/18
U.S. Cl. 131—2 3 Claims

Smoking products and process for their production wherein organic salts of potassium, lithium and copper, and titanium dioxide are incorporated into oxidized cellulosic materials for the purpose of controlling burning and for supporting glow between puffs. The potassium, lithium and copper organic acid salts employed are those of oxalic, lactic, glycolic, diglycolic, pivalic and tannic acid and in amounts less than 2 percent by weight.

3,612,064
SMOKE FILTER
John D. Woods, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Feb. 9, 1970, Ser. No. 9,515
Int. Cl. A24d 01/04; A24d 01/08, 01/16
U.S. Cl. 131—10.5 6 Claims



A smoke filter is provided which is adapted to be affixed to one end of a tobacco rod. The smoke upon passing through

the filter attains a very high velocity whereupon it impinges against a curved surface causing liquid and/or solid particles entrained in the high-velocity smoke to be deposited upon the impinged surface. The smoke, subsequent to impingement, follows a curved path prior to being discharged from the downstream end of the filter.

3,612,065 METHOD OF PUFFING TOBACCO AND REDUCING NICOTINE CONTENT THEREOF

William E. Rosen, Lafayette Hills, Pa., assignor to Creative Enterprises, Inc., Narbeth, Pa.

Filed Mar. 9, 1970, Ser. No. 17,881

Int. Cl. A24b 15/02, 03/18

U.S. Cl. 131-140 P 15 Claims

A method is provided for treating tobacco to increase the volume of the tobacco and reduce the nicotine and tar content of the tobacco. In the method of this invention, the tobacco is initially treated with catalase and then treated with an aqueous solution of hydrogen peroxide. The treated tobacco produced in accordance with this invention is especially useful in the manufacture of cigarettes and the like.

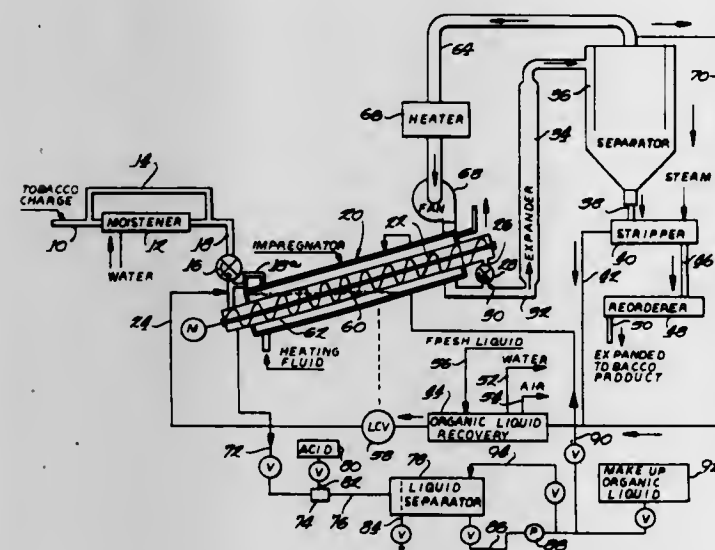
3,612,066 DENICOTINIZING PROCESS

Samuel O. Jones; James Gilbert Ashburn; Grant M. Stewart, and Glenn Philip Moser, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Feb. 5, 1970, Ser. No. 8,858

Int. Cl. A24b 15/02, 03/18

U.S. Cl. 131-143 7 Claims



A process for denicotinizing tobacco is disclosed in which tobacco, in an impregnating zone, is subjected to the action of a pool of an organic fluid which is a nicotine solvent and has a boiling point less than that of water. The fluid treated tobacco is then conveyed into an upper portion of the impregnating zone where it is contacted with the organic solvent fluid from which some of the nicotine has been removed. This solvent then drains down to the solvent pool at the lower portion of the impregnating zone. The tobacco is then contacted with a stream of hot gas whereby the excess fluid is vaporized and the tobacco expanded.

3,612,067 APPARATUS FOR STRETCHING AND SMOOTHING A NATURAL TOBACCO LEAF

Nils Wallenborn, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm, Vallingby, Sweden

Filed Aug. 27, 1969, Ser. No. 853,418

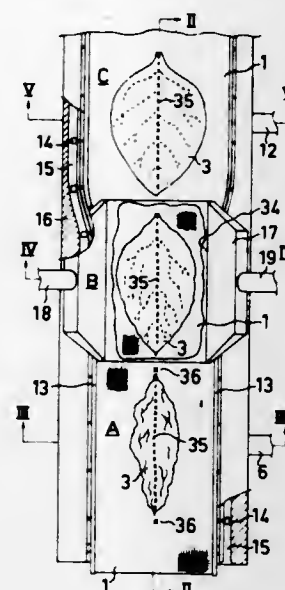
Claims priority, application Sweden, Sept. 9, 1968, Nov. 4, 1968, 12,116/68; 14,923/68

Int. Cl. A24b 05/04, 05/14

U.S. Cl. 131-147 R 8 Claims

An apparatus for stretching and smoothing tobacco leaves comprising an intermittently advanced, air permeable,

stretchable conveyor belt for carrying leaves from a receiving station to a smoothing station to a stretching station. A moist leaf placed and aligned on the belt at the receiving station, and held thereon by suction through the belt, is advanced to



the smoothing station where it is clamped by its central vein and subjected to diverging air currents that flutter the edges of the leaf outwardly. Suction is then reapplied to hold the leaf and it is advanced to the stretching station where the belt is transversely stretched to thereby stretch the leaf as well.

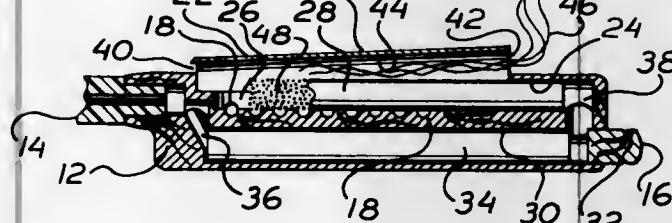
3,612,068 SMOKING DEVICE AND METHOD

James H. Higbee, Banning, Calif., assignor to Marjorie L. Higbee, Banning, Calif., a part interest

Filed Dec. 10, 1969, Ser. No. 883,868

Int. Cl. A24d 01/12

U.S. Cl. 131-175 4 Claims



A holder with a mouthpiece adapted to wholly contain a burning cigarette and its ashes. The cigarette is disposed with its burning end adjacent the mouthpiece and its other end remote from but in communication with the latter via passageways which house filtering material whereby smoke drawn through the mouthpiece is rendered cool and mild. A cover over the cigarette has a hole for igniting the cigarette and is operable to guide smoke rising from the burning cigarette away from the mouthpiece.

3,612,069 HAIR DRYING AND TREATING APPLIANCE

Robert S. Waters, Oak Brook, and William H. Scott, Lombard, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jan. 14, 1970, Ser. No. 2,735

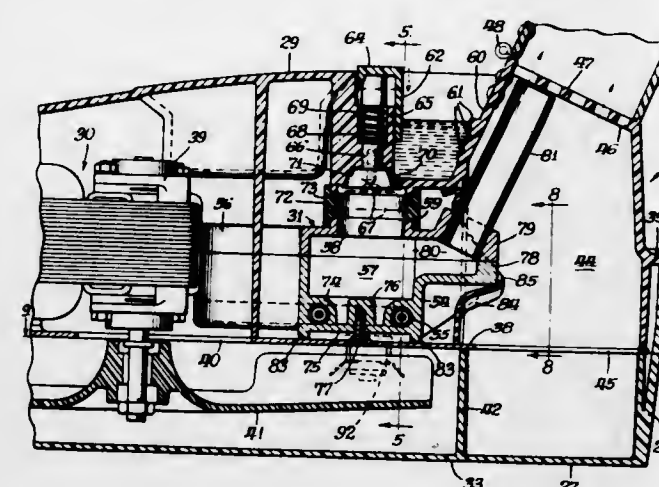
Int. Cl. A45d 20/00

U.S. Cl. 132-9 13 Claims

A hair dryer of the type having a base which supports a rigid head receiving helmet. Means are provided in the base to supply alternatively either hot air or steam which is discharged into the interior of the helmet through perforations in the inner wall of the helmet. The motor driven blower for supplying the hot air and the steam generator are

mounted within the base housing on a transversely extending metal supporting wall. Control means for the appliance permits selective alternative energization of either the steam

the receivers and fasteners cooperating to provide releasable engagement so that the hairpiece is positively fastened to the



generating means or the motor driven blower and the air heater. Simplified measuring and valving means are provided to control the insertion of measured amounts of water into the steam generator.

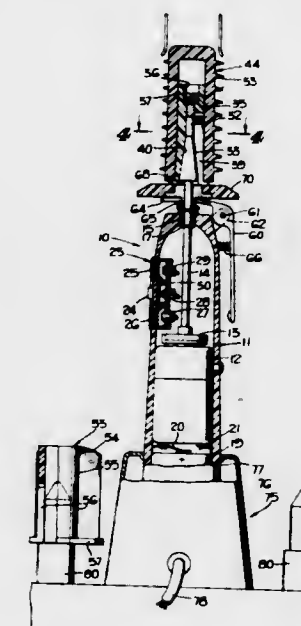
3,612,070 POWER-DRIVEN HAND-HELD HAIR CURLER

Robert M. Reyes, 614 Forest Ave., Los Angeles, Calif.

Filed June 23, 1969, Ser. No. 835,447

Int. Cl. A45d 2/12

U.S. Cl. 132-34 11 Claims



A power-driven hand-held hair curler having provision for selectively supporting both hot and cold types of curler rolls and operable to roll hair thereonto in either direction at the user's option. The accessory includes a support stand for the curler itself and provision for storing the curler rolls in readiness for use as well as a battery recharger.

3,612,071 HAIRPIECE AND FASTENER

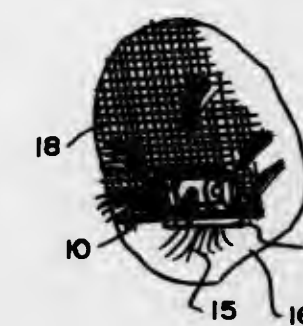
James A. Holly, Richton Park, Ill., assignor to Permalok International, Inc.

Filed Apr. 8, 1970, Ser. No. 26,729

Int. Cl. A41q 3/00

U.S. Cl. 132-53 8 Claims

A wig comprising a hairpiece, a number preferably six to eight of individual fasteners that are attachable each to filaments of natural hair on the head to which the wig is to be attached and a receiver on the hairpiece for each fastener with



head of the wearer by means of filaments or strands of his own hair.

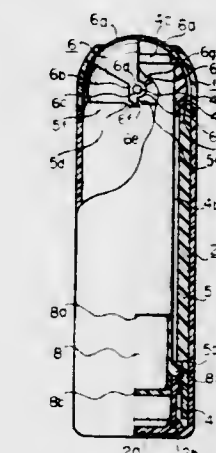
3,612,072 COSMETIC APPLICATOR

Kiyoshi Fukui, Saitama-ken, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan

Filed May 18, 1970, Ser. No. 38,240

Int. Cl. A45d 40/26

U.S. Cl. 132-88.7 8 Claims



A capless cosmetic applicator provided with a finger piece and a cylindrical casing turnably engaged with the finger piece. The tip portion of the finger piece is opened and provided with a pair of shutter pieces swingably engaged with an inside wall thereof so that the shutter pieces are opened when a solid cosmetic contained therein is used or alternately closed when the applicator is not used. The opening or closing motion of the shutter pieces is operated by an actuating means disposed within the applicator when the finger piece is relatively turned with the cylindrical casing.

3,612,073 COIN PAYOUT MECHANISM FOR AMUSEMENT DEVICE

Carl D. Calos, Northridge, Calif., assignor to Centaur Mini Computer Devices, Inc., New York, N.Y.

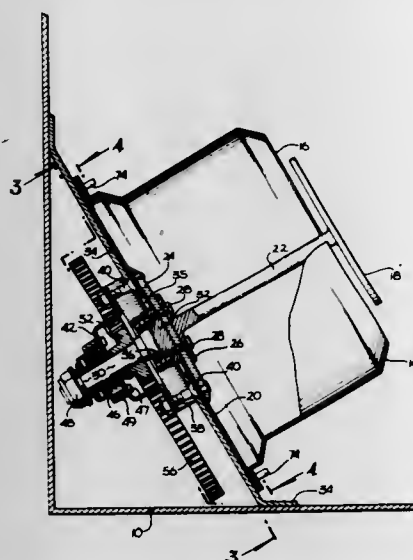
Filed June 5, 1969, Ser. No. 830,677

Int. Cl. G07d 9/00

U.S. Cl. 133-8 6 Claims

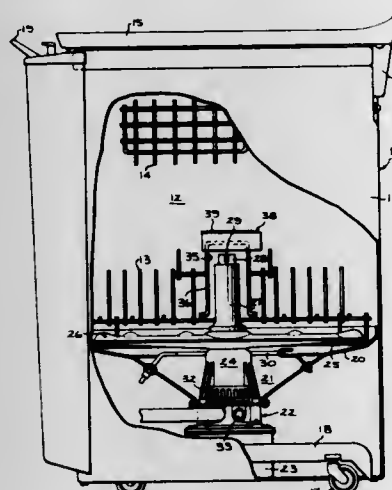
An amusement or gaming device is described which includes a payout device for paying out predetermined amounts of coins contained in a hopper within the gaming device. The payout mechanism includes a rotatably mounted

coin pickup plate which is adapted to rotate with the hopper in relation to a support plate and includes a plurality of holes therein which is adapted to pick up or catch coins therein and slide them out a corresponding and matching hole in the



support plate. The coins are then fed through an output chute and into a payout receptacle. Switching mechanism is provided to count the amount of coins paid out through the output chute.

3,612,074
CLEANING AGENT DISPENSING DEVICE IN A DISHWASHER
Olin Dossey, Louisville, Ky., assignor to General Electric Company
Filed May 20, 1970, Ser. No. 38,934
Int. Cl. B08b 3/02, 13/00
U.S. Cl. 134-93
6 Claims

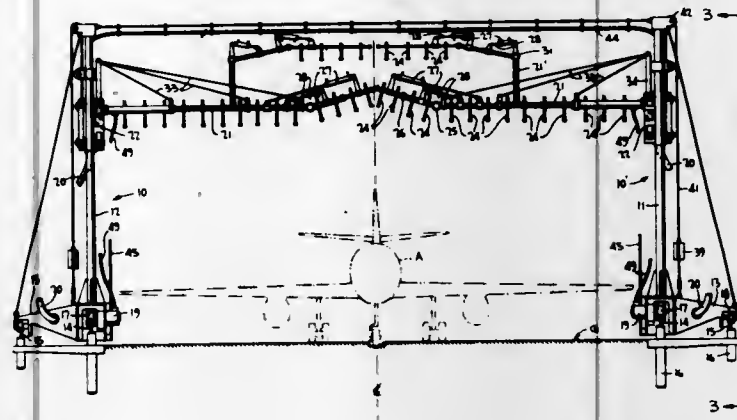


In an automatic dishwashing machine of the type having a cabinet enclosing a wash chamber, dish supporting racks mounted in the chamber and fluid recirculation and distribution apparatus extending into the chamber, a manually fillable cleaning agent receptacle is mounted within the chamber so as to be responsive to the initial movement of a movable part of the fluid distribution apparatus whereby, when the machine is placed into operation, the receptacle is caused to discharge its load into the chamber.

3,612,075
AIRCRAFT DEICING APPARATUS
Vernon H. Cook, RD 2, Far Hills, N.J.
Filed Jan. 14, 1969, Ser. No. 791,024
Int. Cl. B60s 3/00
U.S. Cl. 134-99
22 Claims

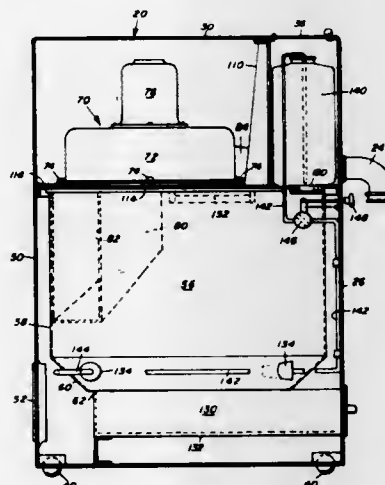
Apparatus for deicing aircraft by means of a permanent structure capable of moving longitudinally between the ends

of the aircraft and vertically adjustable to accommodate different aircraft heights. A frame, comprising a pair of vertical supports, is provided wherein a control cabin and an attached inwardly directed horizontal boom are mounted for vertical elevation on each support, the boom having spray nozzles for delivering deicing fluid onto the fuselage, wing,



tail and control surfaces of the aircraft as the frame is moved therealong. The boom may be automatically adjustable to conform to the horizontal profile of a given aircraft and the control cabin is located just below the boom to enable the operator to maintain eye-level assurance that the aircraft is sufficiently freed from ice and snow.

3,612,076
FEATHER PROCESSING MACHINE
Harry Brahm, Miami, Fla., assignor to Elma, S.A., Panama City, Panama
Filed July 22, 1969, Ser. No. 843,453
Int. Cl. D06m 3/00
U.S. Cl. 134-102
9 Claims

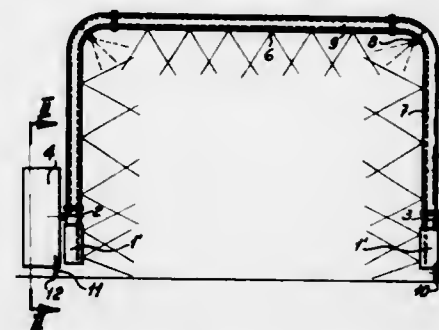


A feather processing machine comprising a cleaning drum, means for introducing soiled feathers into the drum, means for agitating the feathers within the drum and blower means outside of the drum in communication therewith for withdrawing feathers from the drum and discharging them from the machine.

3,612,077
ADJUSTABLE VEHICLE-WASHING MACHINE
Uberto Capro, Vicenza, Italy, assignor to Ceccato & C.S.p.A., Vicenza, Italy
Filed May 16, 1969, Ser. No. 825,243
Claims priority, application Italy, May 29, 1968, 17072A/68
Int. Cl. B60s 3/04
U.S. Cl. 134-123
10 Claims

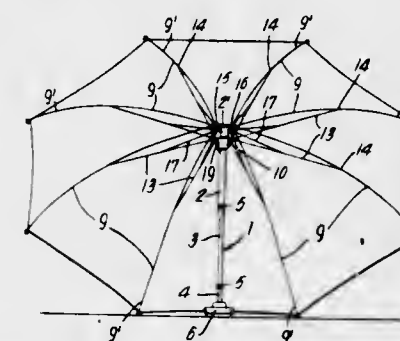
A vehicle-washing machine includes an inverted U-shaped bridge which carries water and detergent nozzles. The bridge is pivoted near its bottom ends, each end having a counter-

weight. The pivots are on wheeled trolleys. One trolley has



an adjustable mechanism which rotates its wheels during oscillation of the bridge.

3,612,078
DOME-RIB ORIENTING SLIDE FOR COLLAPSIBLE UMBRELLAS
Fritz Bremshey, Solingen-Ohligs, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada
Filed Dec. 1, 1969, Ser. No. 881,126
Int. Cl. A45b 19/06
U.S. Cl. 135-26
5 Claims



A collapsible umbrella including a telescopic stick, canopy, dome, auxiliary and spreader struts, in which a handle, primary slide, auxiliary slide and crown piece define a generally rectangular cross section when the umbrella is collapsed and stored in a correspondingly rectangular sheath; the primary slide having struts pivotally connected thereto and including laterally opening orienting means for engaging dome ribs generally adjacent the dome rib tips for orienting the dome rib tips into upwardly opening compartments or recesses of the handle as the umbrella is longitudinally collapsed and the sleeve portion of the primary slide is received in a tunnel or recess.

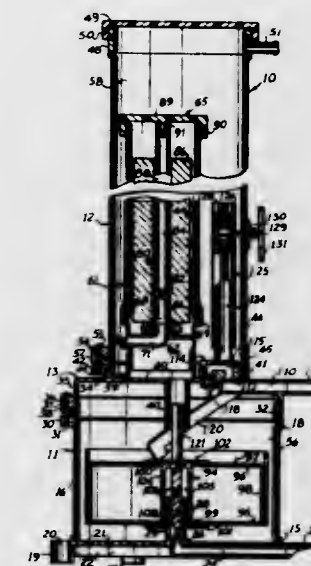
3,612,079
PROCESS AND APPARATUS FOR EQUALIZATION OF FLUID FLOW CONCENTRATION
George R. Schillinger, St. Louis, Mo.; Kenneth W. Axetell, Jr., St. Louis, Mo., and S. James Ryckman, Dayton, Ohio, assignors to Environmental Triple S. Company, St. Louis, Mo.
Filed July 17, 1969, Ser. No. 884,399
Int. Cl. C02c 1/00
U.S. Cl. 137-1
15 Claims



A process and apparatus for equalization of concentrations of fluid materials. The process and apparatus are designed

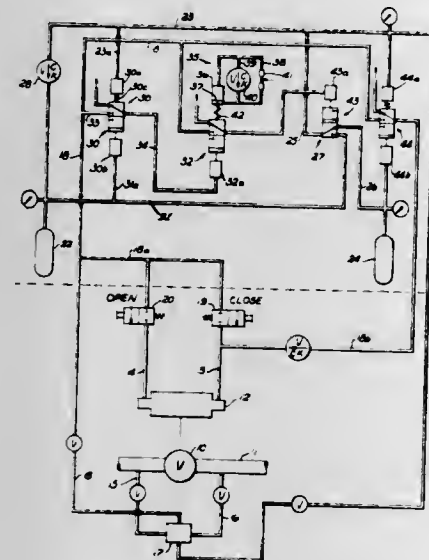
for effluent discharges in industrial plants or sewage systems and the like in which slugs of high concentration of material are charged to an effluent waste or sewer line at intermittent periods. The process and apparatus tend to equalize the slug of high concentration to a value approaching normal or average concentrations in the effluent. The process and apparatus comprise charging the waste material with a slug of high concentration in an equalization tank in which the charge is made at a multiplicity of spaced regions in the tank. The charge into the tank is effected at points generally perpendicular to the flow of fluid to the tank and the influent conduits are disposed generally parallel to the flow of fluid through the tank to accomplish the spread of the high concentration slug through the tank in the form of a "front," which is gradually composited in the effluent conduits and mixed with fluid of average pollutant concentration. Discharge from the tank is effected by a plurality of effluent conduits parallel to each other and to flow having a sealed end in the tank with openings at intervals throughout the length of the conduits for receiving the waste fluid. Thus, a value approaching equalization of the concentration in the effluent of the conduit is effected in the effluent line leading from the tank to discharge.

3,612,080
CHEMICAL FEEDER
Thomas E. Schneider, Jr., c/o Tesco Chemicals, Inc., 445 Bishop St. N.W., Atlanta, Ga.; Marion R. Carstens, and Homer J. Bates, c/o Georgia Institute of Technology, 225 North Ave., Atlanta, Ga.
Continuation-in-part of application Ser. No. 754,535, Aug. 22, 1968, which is a continuation-in-part of application Ser. No. 579,253, Sept. 14, 1966, which is a continuation-in-part of application Ser. No. 403,698, Oct. 12, 1964, now Patent No. 3,323,539, dated June 6, 1967. This application Jan. 19, 1970, Ser. No. 3,684
Int. Cl. B01d 11/02
U.S. Cl. 137-2
8 Claims



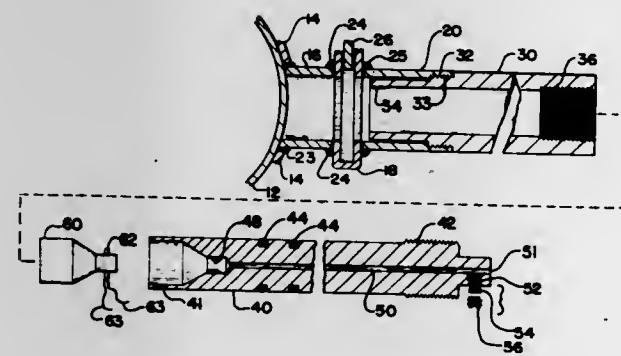
A chemical feeder for adding chemicals from a solid chemical compound into a body of water. The feeder includes a housing divided into upper and lower chambers, a tubular container positioned in the upper chamber for receiving a solidified chemical compound, a liquid inlet conduit communicating with the upper chamber, a liquid outlet conduit communicating with the lower chamber, valves controlling both conduits, and a float positioned in the lower chamber for operating both valves in response to the level of liquid in the lower chamber. The tubular container includes a plurality of apertures at spaced intervals about its lower end, and a nozzle extending inwardly from its lower end for flowing liquid from the upper chamber into contact with the solidified chemical compound to erode the compound. The mixture of liquid and eroded chemical compound then flows from the tubular container within the upper chamber to the lower chamber.

3,612,081
APPARATUS AND METHOD FOR MONITORING A FLUID PRESSURE SYSTEM
 Jack L. Williams, El Paso, Tex., assignor to Textron, Inc.
 Filed Aug. 17, 1970, Ser. No. 64,273
 Int. Cl. F16k 17/20
 U.S. Cl. 137-12



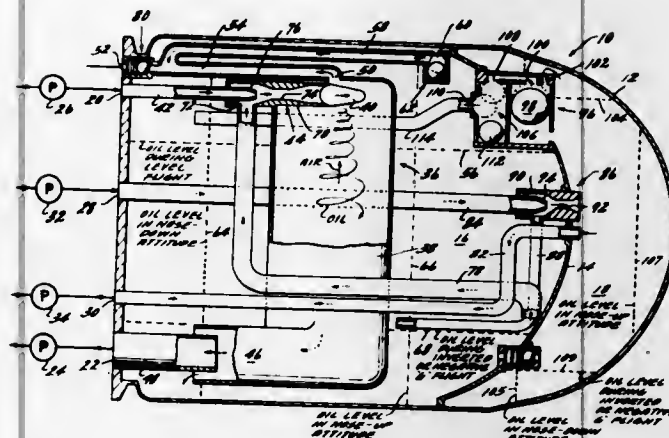
First and second volume chambers are connected to the fluid pressure system being monitored. Fluid from the system can flow to the chambers, but the fluid flow from the first of the chambers back to the system is restricted. Should the pressure differential between the system and the first chamber reach a predetermined amount, the second chamber is isolated from the system for a given period of time. If during this period of time the pressure differential between the second chamber and the system reaches a predetermined value, a signal is produced which signal may be used to actuate a device, such as a valve or warning signal.

3,612,082
APPARATUS FOR COMMUNICATING SERVICE LINES TO MAINS
 Marcus L. Bates, 6904 N. Russell Ave., Odessa, Tex.
 Continuation of application Ser. No. 774,802, July 15, 1968, which is a division of application Ser. No. 620,738, Mar. 6, 1967, now Patent No. 3,396,745. This application Jan. 6, 1970, Ser. No. 930
 Int. Cl. F16k 51/00
 U.S. Cl. 137-15



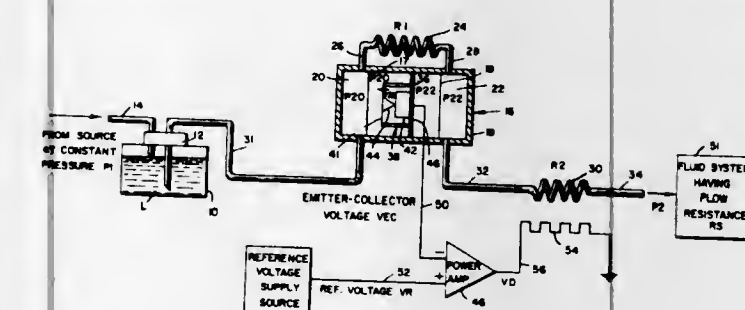
An apparatus for connecting a service line to a main line while fluid is flowing through the main line. The apparatus includes a mandrel which holds a shaped charge. When the mandrel is brought into close proximity to the main line and detonated, the wall of the main line is perforated by the explosive action of the shaped charge to thereby establish flow communication between the main line and a valve means. This action enables a lateral, or service line to be connected to the valve means without disconnecting the flow of fluid through the main line.

3,612,083
FLUID TANK
 Richard M. Kronk, Cincinnati, Ohio, assignor to General Electric Company
 Filed Dec. 24, 1969, Ser. No. 887,908
 Int. Cl. G05d 9/02
 U.S. Cl. 137-43



A fluid tank for use with two discrete fluid systems, such as the hydraulic system and lubrication system of an aircraft gas turbine engine, includes a compartment for each fluid system and a jet pump for exchanging fluid between one compartment and the system associated with the other compartment in response to the fluid requirements of that system.

3,612,084
HIGH RELIABILITY FLOW REGULATOR
 Aaron Kassel, Brooklyn, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.
 Filed Oct. 31, 1969, Ser. No. 872,815
 Int. Cl. F15c 1/04
 U.S. Cl. 137-81.5



New and improved flow regulator means are provided to maintain the flow of a fluid along a flow path at a substantially constant, predetermined rate and comprise pressure responsive means to generate an electrical signal proportional to the rate of flow of said fluid along said flow path, means to provide a reference, or set-point electrical signal, means to amplify the difference between said electrical signals and provide an output signal, and means to apply said output signal to flow controller means which take the form of temperature control means, having no moving parts, and are operable in response to said output signal to control the temperature, and accordingly the viscosity and flow rate, of said fluid flowing in said flow path.

3,612,085
FLUID PRESSURE DETECTOR
 Ruel R. Clark, Salt Lake City, Utah, assignor to I-T-E Imperial Corporation
 Filed Feb. 7, 1969, Ser. No. 797,587
 Int. Cl. F15c 3/04, 1/14
 U.S. Cl. 137-12

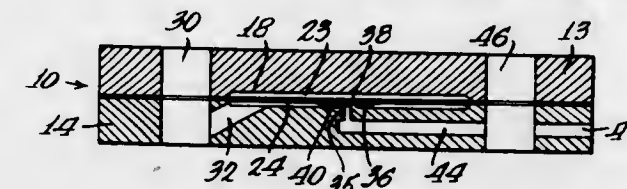
An apparatus, method, or system for comparing fluid pressure input signals and providing an output signal proportional to the difference in pressure between the input signals, employing a housing having a flexible diaphragm separating the

6 Claims

13 Claims

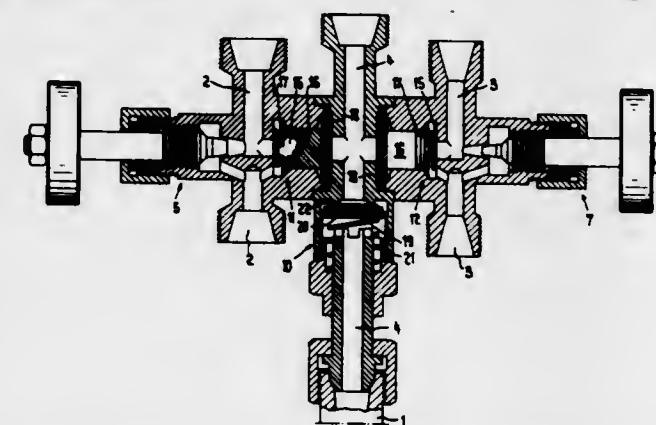
12 Claims

housing into a reference chamber and a feedback chamber, there being provided an output port centrally disposed in the feedback chamber and adapted to be variably controlled by the diaphragm, with one of the fluid pressure signals being



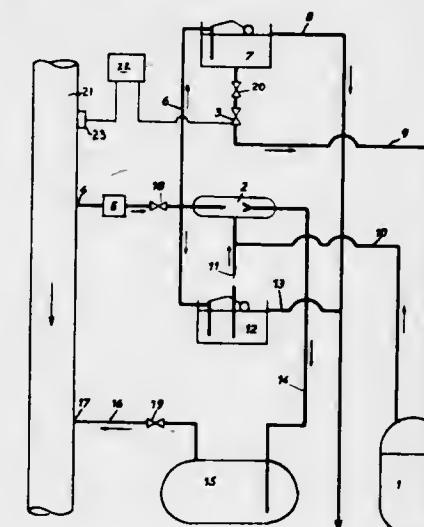
applied to the reference chamber and the other fluid pressure signal being applied to the other chamber, and a device for utilizing the signal in the outlet port representing the difference in pressure between the two input signals.

3,612,086
SUPPLEMENTARY DEVICE FOR USE ON A CUTTING TORCH
 Alfred Roth, Talstrasse 30, 8102 Oberengstringen, Switzerland
 Filed Sept. 22, 1969, Ser. No. 860,855
 Claims priority, application Switzerland, Oct. 22, 1968, 15748/68
 Int. Cl. G05d 16/06
 U.S. Cl. 137-87



A supplementary device for use on a cutting torch having a fuel gas pipe, a heating oxygen pipe and a cutting oxygen pipe, comprising hand-regulating valves and bypass valves and pneumatic means for closing said bypass valves when cutting oxygen is admitted for changing the fuel gas and heating oxygen quantities from heating conditions to cutting conditions.

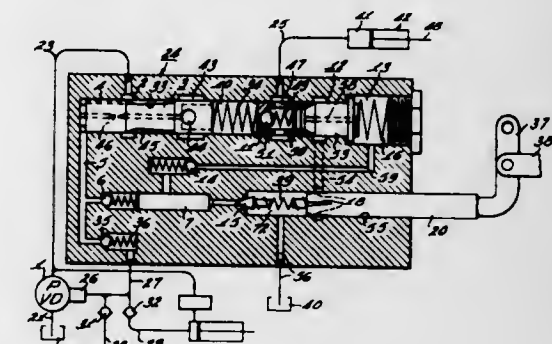
3,612,087
WATER TREATING DEVICE
 Jurion Roland, Richwiller, France, assignor to Mines de Potasse d'Alsace S. A., Mulhouse, France
 Filed Oct. 17, 1969, Ser. No. 867,217
 Claims priority, application France, Oct. 17, 1963, 170259
 Int. Cl. G05d 11/02
 U.S. Cl. 137-93



A device for treating water by controlled injection of bromine. A bromine storage vessel communicates with a

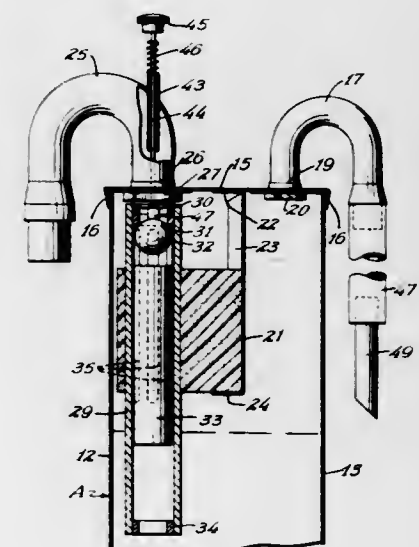
dilution vessel-suction pump which continuously circulates water to be treated therethrough to maintain a negative pressure in the storage vessel. Dosing means communicates with the vessel to intermittently transmit predetermined amounts of brominated water to the dilution vessel.

3,612,088
THROTTLING DRAFT CONTROL VALVE
 James R. McBurnett, Stillwater, Okla., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
 Filed Nov. 3, 1969, Ser. No. 873,392
 Int. Cl. F15b 5/00
 U.S. Cl. 137-116.3



A throttling draft control valve having a pressure control chamber with fluid pressure feedback for supplying pressurized fluid to a hydraulic actuator and releasing the pressurized fluid from the hydraulic actuator and releasing the pressurized fluid from the hydraulic actuator at a controlled rate in response to a position signal.

3,612,089
VACUUM REACTIVATOR
 Luis Beguiristain, St. Paul, Minn., assignor to Torit Corporation, Ramsey County, Minn.
 Filed Oct. 28, 1968, Ser. No. 771,181
 Int. Cl. A61c 17/04
 U.S. Cl. 137-205



A vacuum reactivator is provided for use with an oral evacuator used to draw water, tooth chips and the like to a collector chamber. The chamber is automatically drained when the suction is turned off. A ball float valve is provided to turn off the vacuum when the liquid in the chamber reaches a predetermined depth, emptying the chamber of water. A plunger is provided for manually disengaging the ball valve from its seat after the chamber has been drained to restore vacuum.

10 Claims

8 Claims

1 Claim

4 Claims

3,612,090 FLOW REGULATOR HAVING NO GAS-LIQUID DIAPHRAGM INTERFACE

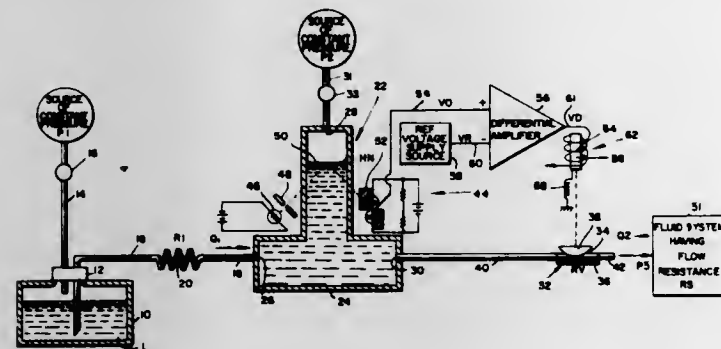
Aaron Kassel, Brooklyn, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,034

Int. Cl. G05d 7/06, 9/12

U.S. Cl. 137-209

13 Claims



New and improved flow regulator means are provided to maintain the flow of a fluid along a flow path at a substantially constant, predetermined rate and comprise fluid level indicating means, fluid level sensing means operatively associated therewith to generate an electrical signal proportional to the rate of flow of said fluid in said flow path, means to provide a reference or set-point electrical signal, means to amplify the difference between said electrical signals and provide said amplified difference as an output signal, and means to apply said output signal to electromechanically operable, variable flow area flow controller means to control the flow resistance thereof and accordingly control the flow rate of said fluid in said flow path.

3,612,091 GASTIGHT JOINT

Wolfgang Gramann, Nd-Gemunden, and Helmut Holzer, Heilbronn, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany

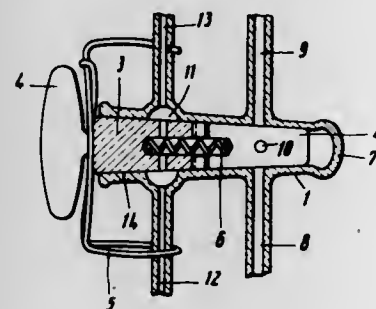
Filed Aug. 28, 1969, Ser. No. 853,815

Claims priority, application Germany, Sept. 2, 1968, P 17 75 617.1

Int. Cl. F16k 5/02; F16l 49/00

U.S. Cl. 137-312

8 Claims



The invention relates to a gastight joint, for example, for sealing gastight stop cocks or in joints between tubular parts in which sealing is carried out by means of an auxiliary gas flowing between the contact surfaces of the two parts. For this purpose an annular passage in the form of a bead like bulge is formed in the wall of one of the two parts. A sealing substance e.g. joint grease may be additionally used.

3,612,092 MUD PIPE MOVER

Ralph D. Boone, 2920 Axtell, Clovis, N. Mex.

Filed May 28, 1968, Ser. No. 732,779

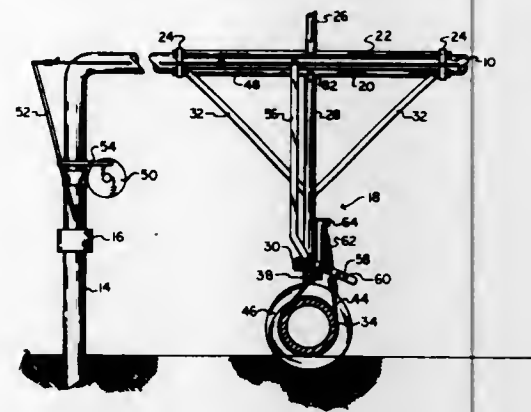
Int. Cl. B05b 9/02; E01h 3/02

U.S. Cl. 137-344

7 Claims

An irrigation pipe to be moved constantly as it waters is supported by a plurality of vehicles. The ground engaging element of each vehicle is an elongated cylinder having a helical vane thereon so that rotation of the cylinder moves

the vehicle along the earth as by an auger. The cylinder is rotated by an encircling band similar to a capstan or brake band. Power is transmitted to each vehicle by a reciprocating cable. To support the pipe, a mast is mounted on each vehi-



cle and guy wires extend from the mast to the pipe. To compensate for uneven ground, a spreader is mounted on the pipe between vehicles and stays extend over the spreader to the vehicles which prevents the pipe from substantially bending upward between vehicles.

3,612,093 REFRIGERATION ARRANGEMENT

Harold E. Gramse, RR 2, Box 220, Chicago Heights, Ill.

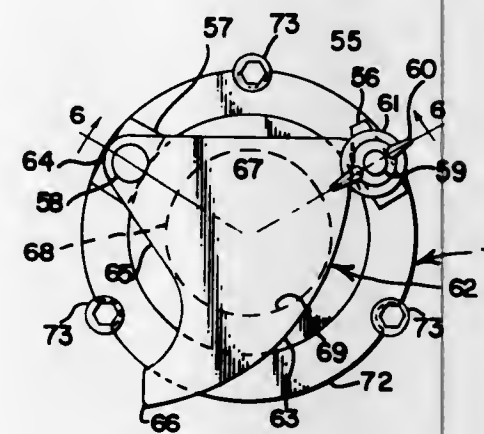
Division of Ser. No. 785,847, Nov. 25, 1968, Pat. No. 3,570,262, which is a division of application Ser. No. 649,819, Sept. 22, 1967, now Patent No. 3,447,336

Filed May 20, 1970, Ser. No. 38,985

Int. Cl. B60p 3/20; F16k 1/20

U.S. Cl. 137-347

2 Claims



A refrigeration arrangement for a railroad car comprising a source of liquid nitrogen under a vapor pressure attendant to delivery of the nitrogen, under thermostatic control, to a converging atmospheric collector disposed within the car, the collector comprising a heat exchanger including encircling coils of the liquid nitrogen about the collector's scoop, the trailing end of the coil being connected with a tube of low thermal conductivity and low coefficient of friction and extending into the scoop from its widened end to its shortened end, a venturi tube being connected to the end of the scoop and the exiting end of the tube having a nozzle being surrounded by the conical venturi tube end portion of the scoop to develop a venturi or suction action and drawing the atmosphere with the car into the scoop for cooling of the atmosphere and dehumidifying same and for depositing moisture in the form of ice and snow on the interior surface of the scoop which is of high thermal conductivity material, the venturi tube being of low thermal conductivity material and receives the atmosphere and the liquid nitrogen which expands to a gas in the venturi throat, the exit end of the venturi tube being coupled to an exhaust tube opening into the car, the exhaust tube being of low thermal conductivity and having an outside air tube connecting with its entrant part and with an outside air control valve on the car for mixing of

outside air and the car atmosphere and nitrogen gas for dispersal into the car environment.

3,612,094 REMOTE CONTROL HIDE-AWAY HOSE

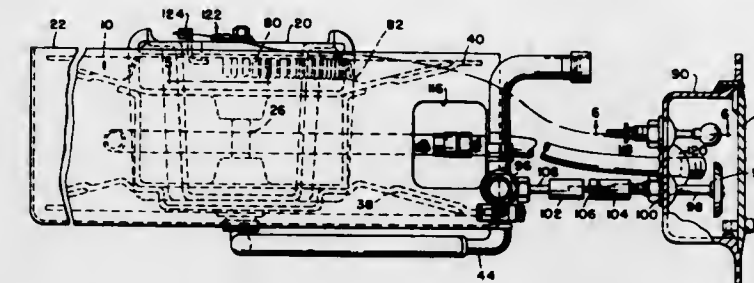
William R. Hare, 6960 Oak Ave., Folsom, Calif.

Filed May 12, 1969, Ser. No. 823,874

Int. Cl. B65h 75/34, 75/30

U.S. Cl. 137-355.2

1 Claim



A garden hose mounted inside a building on a reel and adapted to be withdrawn for outside use. Spring means automatically rewinds the hose. A brake and a water valve are controlled on the outside of the building.

3,612,095 WASHING MACHINE SUMP

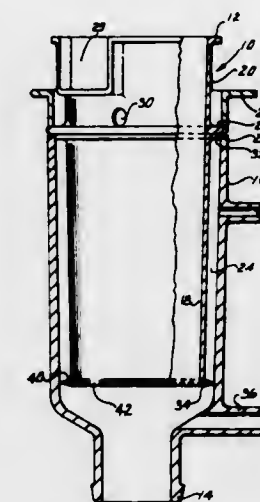
Robert B. Beare, and Curtis R. Hartley, both of Herrin, Ill., assignors to Fedders Corporation, Edison, N.J.

Filed Jan. 20, 1970, Ser. No. 4,294

Int. Cl. D06f 39/00, 39/02

U.S. Cl. 137-403

4 Claims



An improved washing machine sump is provided which includes an air chamber in communication with an air pressure actuated water level control. The air chamber is defined between the body of the sump and the outer surface of an inner liner. The inlet to the sump forms the top portion of the liner and the outlet from the sump comprises the bottom of the body member. The bottom of the liner is spaced upwardly from the bottom of the body member and a seal is provided extending between the body member and liner proximal the top of the body member to define a top for the air chamber.

3,612,096 PILOT OPERATED FLOW CONTROL VALVE

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Filed July 30, 1969, Ser. No. 846,178

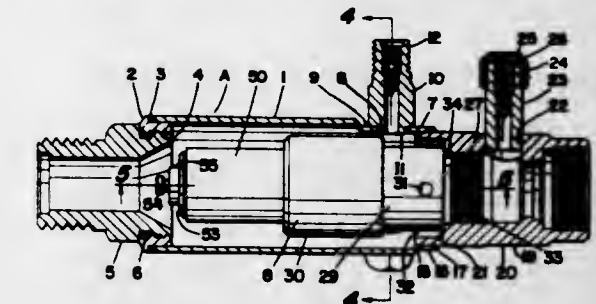
Int. Cl. F16k 31/38

U.S. Cl. 137-454.5

4 Claims

A valve is provided which is characterized by the use of an external housing of simple construction, and which can be easily taken apart to provide access to the parts within the housing. The interior of the valve is composed of units or su-

bassemblies which can be quickly and easily removed for repair or replacement and without any possibility of the elements constituting such units or subassemblies becoming disconnected from each other and falling apart. A particular feature is a slide valve subassembly consisting of a valve



body, piston valve, bellows housing and adjusting valve assembled as a complete easily handled unit. Still another feature is the elimination of certain springs used in similar valves, to reduce the cost of the valve, without impairment of the functioning thereof.

3,612,097 CHECK VALVE

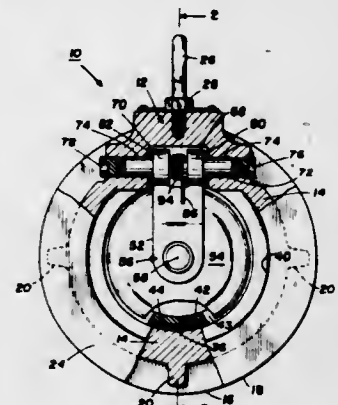
Darryll G. Prince, Norman, Okla., assignor to K-F Prince Valve, Inc., Oklahoma City, Okla.

Filed Oct. 14, 1968, Ser. No. 767,075

Int. Cl. F16k 15/03

U.S. Cl. 137-527.4

6 Claims



A wafer check valve is described having a generally cylindrical body with an axial length approximately one-third the diameter. A pivoted clapper assembly is spring biased against an annular seat disposed normal to the axis of the body to provide a fluid passageway of maximum diameter. The annular seat is formed by a noncorrosive seat ring which interferingly fit in the body. A resilient O-ring seal seals the joint between the seat ring and the body. In one embodiment, the seat ring includes a resilient seating surface. The clapper assembly includes a disk-shaped clapper loosely connected to a spring-biased pivot arm by a brad welded to the clapper.

3,612,098 LIGHTWEIGHT VALVE ASSEMBLY

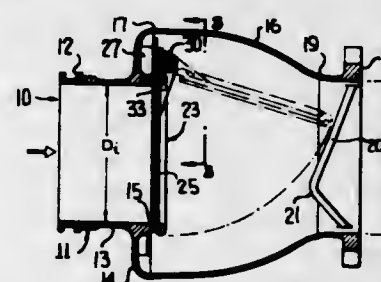
Ronald E. Bora, Torrance; Charles R. Clark, Redondo Beach, and Larry C. Mittell, Palos Verdes Estates, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 3, 1969, Ser. No. 829,985

Int. Cl. F16k 15/03, 15/06

U.S. Cl. 137-527

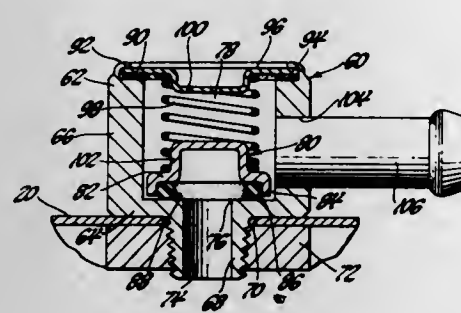
10 Claims



This disclosure relates to a valve assembly for use in aircraft. The assembly includes a main body secured to an

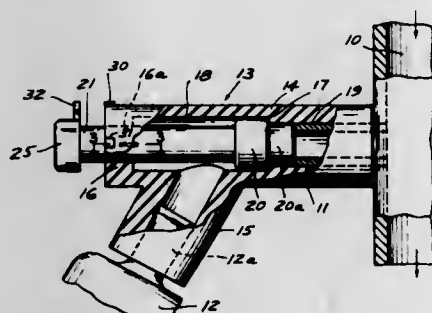
adapter and a check valve disposed within the body and mounted on the adapter. The body and as much of the adapter as possible are constructed of very thin material relative to thicker coupling portions of the adapter whereby the valve assembly is of an extremely lightweight construction.

3,612,099
PRESSURE RELIEF VALVE FOR PRESSURIZED FUEL TANK
Daniel Charles MacManus, Owosso, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 22, 1970, Ser. No. 39,793
Int. Cl. F16k 17/04
U.S. Cl. 137-540 1 Claim



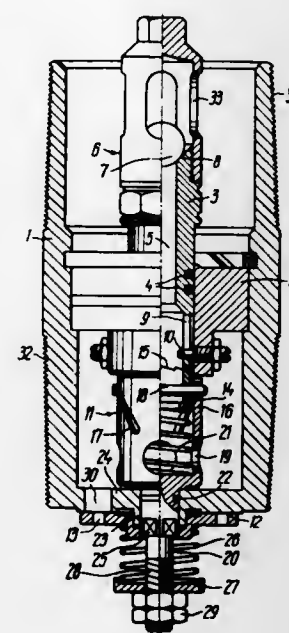
A pressurized fuel tank is disposed transversely over the rear axle of an automobile. A pressure relief valve, discharging from the fuel tank adjacent the vehicle centerline, has a spring-biased valve member carrying an "O"-ring which seats on the valve body; the valve member is raised against the bias of the spring to relieve pressure in the tank.

3,612,100
VACUUM VALVE
Martin Kapeker, 41 Decker St., Copiague, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,502
Int. Cl. F16k 11/07, 37/00
U.S. Cl. 137-556.6 10 Claims



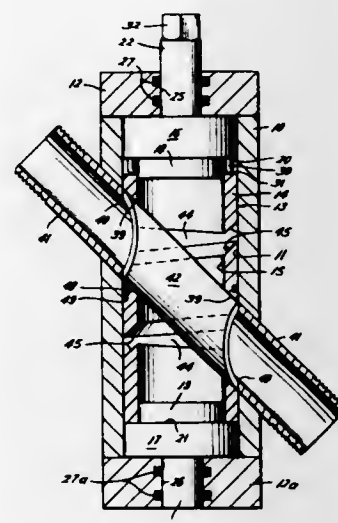
A valve for connecting a flask, an ampul, or any other vessel to be evacuated to a vacuum supply system comprises a tube with which a second tube communicates at a point intermediate the ends of the first tube. One end of the first tube is attachable to a port of the supply system and the other end of the tube is closed by an end wall. The free end of the second tube serves as connector for the flask, etc. to be evacuated. A plunger within the first tube can be displaced by a rod extended through an opening in the end wall of the tube either into a position in which the second tube is connected to the port through the first tube or into a position in which it is closed off from the port. While the second tube is closed off from the port, it can be connected to the atmosphere via a vent port in the end wall of the first tube by turning the plunger into a predetermined angular position in which a slot in the wall of the rod is in registry with the vent and also in connection with the second tube. The resulting venting of the second tube breaks the vacuum produced in a flask, etc. attached to the second tube. The flask can now be removed from the valve without disturbing the vacuum in the supply system.

3,612,101
BOTTOM HOLE FLOW BEAN
Vladimir Pavlovich Maximov, ulitsa Volodarskogo, 43, kv. 35; Leonid Fedorovich Volkov, ulitsa Respubliki, 176, kv. 48; Albert Stepanovich Fomin, ulitsa Sevastopolskaya, 23, kv. 21, and Alexandr Alexandrovich Karabanov, ulitsa Respubliki, 171, kv. 71
Filed May 1, 1970, Ser. No. 33,686
Int. Cl. F16k 21/00
U.S. Cl. 137-614.2 2 Claims



The invention relates to adjustable bottom hole flow beams used in petroleum industry, mainly in flow production for controlling the flow of fluid from the hole. The invention consists in that the hydraulic mechanism for controlling an element serving to vary the bean flow area is arranged directly in the flow bean body and made as a piston with a conduit communicated with the hole space and accommodating a nonreturn valve, and a means adapted to turn the element serving to vary the bean flow area, with which means the piston interacts during its displacement with the closed nonreturn valve.

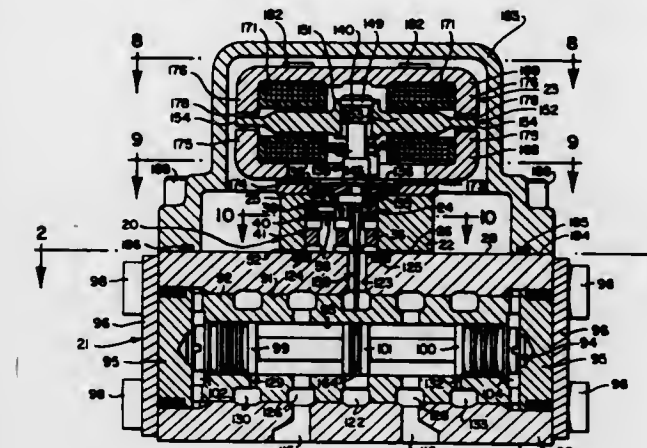
3,612,102
ROTARY CONTROL VALVE
Elden E. Hulsey, P. O. Box 533, Conroe, Tex.
Continuation-in-part of application Ser. No. 699,947, Jan. 23, 1968, now Patent No. 3,558,100, which is a continuation-in-part of application Ser. No. 604,414, Dec. 23, 1966, now Patent No. 3,443,793. This application Apr. 20, 1970, Ser. No. 29,886
Int. Cl. F16k 5/10
U.S. Cl. 137-625.3 6 Claims



A rotary control valve of the hollow plug or ball type having spiral variable area orifice flow ports in combination with

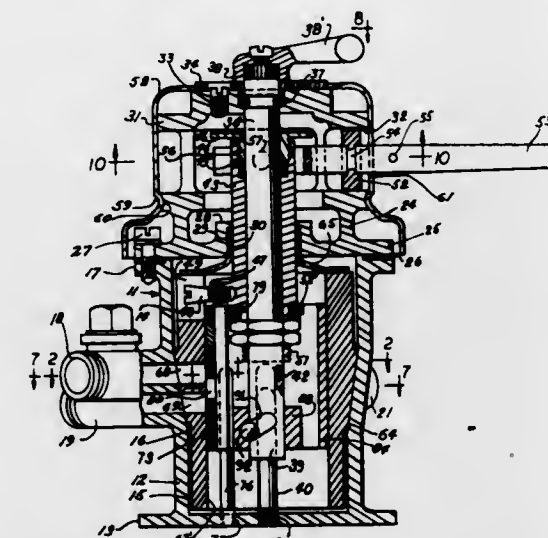
an uninterrupted full-open through-conduit passage adapted to permit selective and variable control of fluid flow over a wide range of settings while maintaining at all settings substantially straight-line or through-conduit flow.

3,612,103
DEFLECTABLE FREE JETSTREAM-TYPE TWO-STAGE SERVO VALVE
Martyn V. Waddington, West Seneca, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Filed July 1, 1969, Ser. No. 838,261
Int. Cl. F16k 11/00; F15b 13/044
U.S. Cl. 137-625.63 9 Claims



An easy to manufacture and service two-stage servo valve of the deflectable free jetstream-type is provided having a split body construction, part of which houses the second-stage or output valve spool which controls the flow of fluid through actuating ports with respect to supply and return ports, and the other part of which supports the jet deflector hydraulic amplifier and torque motor to constitute a separable first-stage assembly. Although there is mechanical force feedback between the valve spool and armature of the torque motor, the servo valve is so constructed that no feedback forces are transmitted through the jetstream deflector. This enables the deflector to be designed as a nonstructural element for ease of manufacture and made of a material having the desired physical characteristics such as one resistant to fluid erosion.

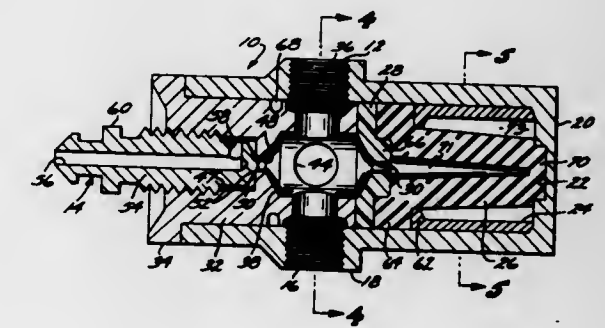
3,612,104
MIXING AND DIVERTER WATER VALVE
Agustin A. Busquets, 404 Virginia Ave., Apt. 6, Royal Oak, Mich.
Filed July 25, 1969, Ser. No. 844,812
Int. Cl. F16k 11/20
U.S. Cl. 137-637.4 4 Claims



A fluid mixing valve having a pair of hot and cold water inlets and two axially spaced outlets and a pair of additional

spaced outlets, with a rotatable valve sleeve for establishing selective communication of said inlets with any one of the three sets of outlets, and variably controlling the volume of flow from said inlets to a mixing chamber, and a pair of separate opposed valve elements mounted within said valve sleeve for independent axial adjustments, one valve element having an inlet port to control the temperature of fluids into said mixing chamber and an outlet in registry with one of said body outlets, the other of said valve elements having a pair of outlet ports in registry respectively with the other body outlets and wherein axial adjustment of the second valve element determines the flow of fluid from the mixing chamber through either or both of the axially adjacent pair of body outlets.

3,612,105
PRESSURE PEAK SUPPRESSORS
Harold W. Martin, 18602 Beachmont Ave., Santa Ana, Calif.
Filed May 12, 1969, Ser. No. 823,915
Int. Cl. F16l 55/04
U.S. Cl. 138-30 6 Claims

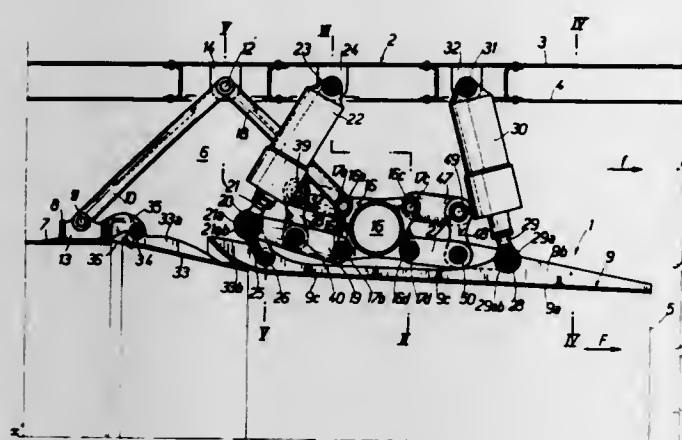


This invention relates to pressure peak suppressors of the accumulator type for fluid pressure systems. The embodiment illustrated employs an elastomeric diaphragm in the form of a tube closed at one end by an integrally formed wall. The other end of the tube is covered by an end member to form a container for system fluid. Communication to the interior of the tube, or container, is afforded through an orifice in the end member. The diaphragm part of the container is arranged so that the incremental pressure required to deform it increases with the degree of its deformation. The end member is arranged so that less resistance is offered to flow out of the container. The diaphragm has uniform wall thickness over the length of its tubular section but the diameter of its central opening diminishes along its length. In the end member, the orifice increases in cross-sectional area in the direction from the interior to the exterior of the tube. The whole container is disposed within an outer housing or container.

3,612,106
ARRANGEMENT FOR CONTROLLING AND SUPPORTING A VARIABLE-GEOMETRY DUCT
Andre Alphonse Mederic Leon Camboulives, Billancourt; Jean-Claude Lucien Delonge, Maisy-Cramayel, and Roger Alfred Jules Vandembroucke, Antony, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France
Filed July 2, 1970, Ser. No. 51,894
Claims priority, application France, July 3, 1969, 6922624
Int. Cl. F15d 1/08; B64c 15/04, 15/06
U.S. Cl. 138-45 9 Claims

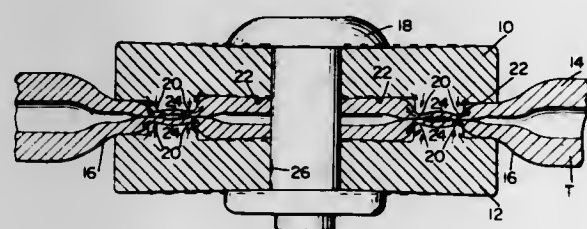
An arrangement for controlling and supporting within a fairing a duct whose section is controllable by means of flaps, said arrangement comprising a transverse body extending within the space defined between said duct and the fairing and being connected to the fairing through the medium of articulated arms, each of the flaps being suspended from said

body through the medium of two independent, adjustable



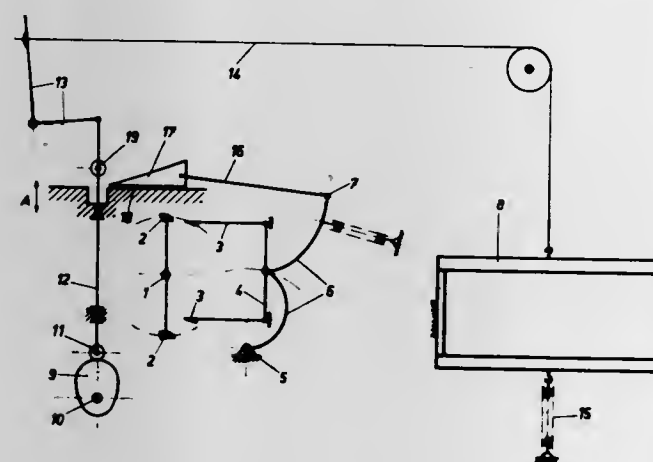
linkages respectively articulated to two zones of the flap which are axially spaced from one another.

3,612,107
GAS PROOF TUBE CLOSURE SEAL
Frederick G. J. Grise, West Brookfield, Mass., assignor to Novelty Tool Company, Inc., Spencer, Mass.
Filed Feb. 16, 1970, Ser. No. 11,581
Int. Cl. F16 55/10, 55/14
U.S. Cl. 138—89



A closure is for floating tube, including two pair of part being provided with a multiple rib structure cooperating to squeeze the tube, deforming the same and flowing material thereof in an inward direction upon itself, between the ribs.

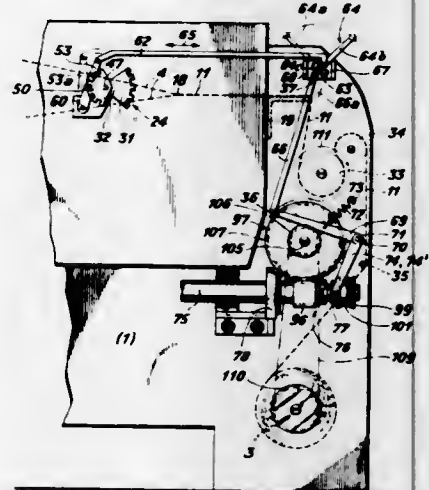
3,612,108
METHOD AND DOBBY FOR WEAVING MIXED WEAVE FABRICS
Rudolf Schwarz, Horgen-Zurich, Switzerland, assignor to Staubli Ltd., Zurich, Switzerland
Filed Apr. 7, 1969, Ser. No. 813,888
Claims priority, application Switzerland, Apr. 8, 1968, 5217-68
Int. Cl. D03c 7/00
U.S. Cl. 139—50



A method of operating a loom having heald frames operable to three positions comprising a lower shed position and

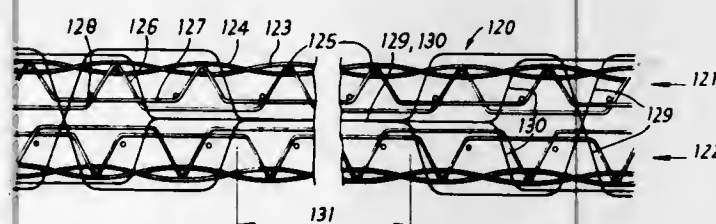
an upper shed position for effecting a normal weave and a half shed position intermediate the other two positions for effecting a leno weave. The loom has a first and a second operating mechanism for weaving mixed fabrics.

3,612,109
WEAVING MACHINE
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Feb. 19, 1970, Ser. No. 12,738
Claims priority, application Switzerland, Mar. 18, 1969, 4023/69
Int. Cl. D03d 47/24, 49/20
U.S. Cl. 139—126



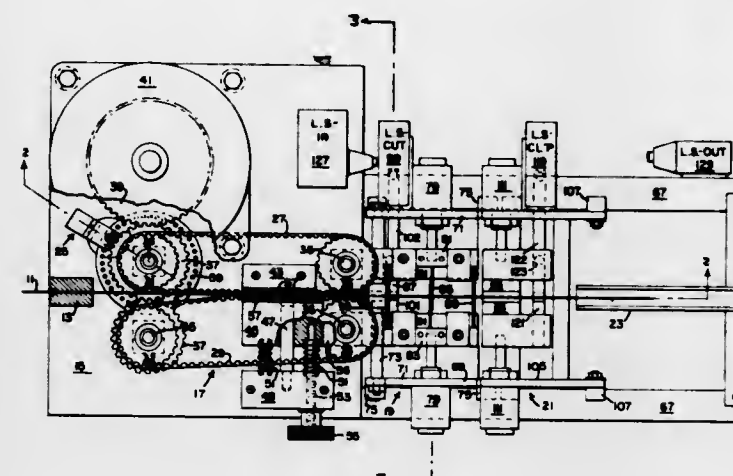
The cloth takeoff mechanism is connected over a releasable coupling to the drive mechanism of the machine so as to be selectively disengaged by the hand lever should a weft yarn break occur. The hand lever also actuates the locking device so as to prevent the Jacquard mechanism from rotating the multiple-weft mechanism segment.

3,612,110
WOVEN TAPES
Gerald Charles Wildi, Hadlow Down, Sussex, and Horace Dunbar Brand, Selsdon, Surrey, both of England
Filed Oct. 22, 1968, Ser. No. 769,683
Int. Cl. D03d 25/00, 23/00
U.S. Cl. 139—383



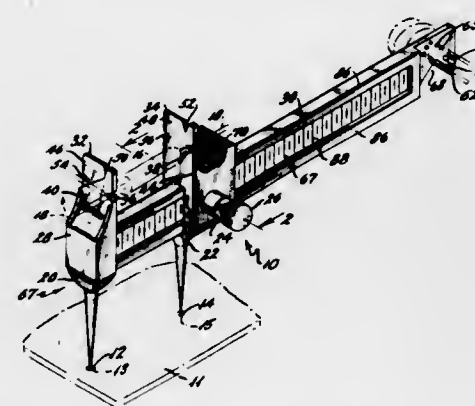
The specification describes a method of making a woven tape of the kind comprising two separate webs which are constituted by warp yarns and weft yarns and which are held together in face-to-face relation by binding warp yarns woven into both webs, the said two webs being capable of being parted by breaking the binding yarns, which method comprises securing the two webs together face to face by means of the binding yarns in one portion of the length of the tape and leaving the webs unsecured together in another portion of the length of the tape. The binding yarns conveniently extend continuously through said other portion of the tape and can be disposed between the two webs or woven into one of the webs in said other portion.

3,612,111
WIRE CUTTING AND STRIPPING APPARATUS
Heinrich F. Meyer, Liverpool, N.Y., assignor to General Electric Company
Filed Sept. 29, 1969, Ser. No. 861,970
Int. Cl. B21f 11/00, 21/00; H02g 1/12
U.S. Cl. 140—1



Apparatus for cutting insulated electrical wire into connectors or leads of desired length and stripping insulation from the cut ends. The apparatus accepts both manual and automatic (N/C) settings of wire length, permits change of length setting from piece to piece at will of the operator, provides good accuracy of wire length measurement even on the first piece cut after each change in length setting, and provides a cut and strip action which avoids kinking or bending of the ends of wires as dispensed from the apparatus. To accomplish these ends the apparatus comprises a continuous belt-type transport mechanism for wire feed with protection against wire slip being afforded through pressure-loading means assuring at least line contact between the belts and wire over a substantial length thereof, photosensor means for measuring the distance of belt travel to thus accomplish accurate measurement of wire length and enable its precise control, and simplified mechanism for wire cutting and stripping and for ejection both of the wire and of the stripped insulation.

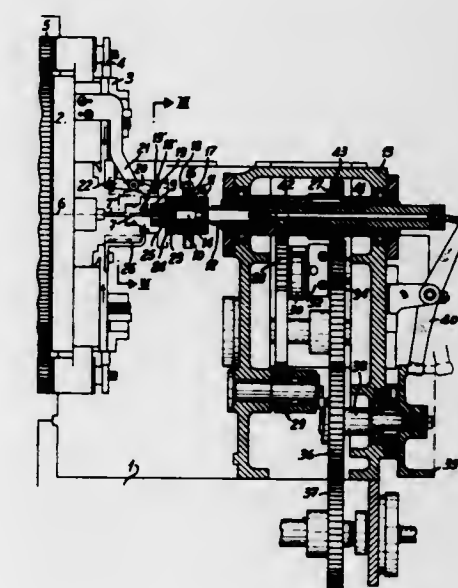
3,612,112
ELECTRONIC COMPONENT FORMING TOOL
William Jordan Siegel, Silver Spring; Linus E. Wallgren, Rockville, and Loring E. Young, Frederick, all of Md., assignors to Pace, Incorporated, Silver Springs, Md., by said Wallgren and said Young
Filed June 2, 1969, Ser. No. 829,301
Int. Cl. B21f 1/00, 45/00
U.S. Cl. 140—102.5



The present invention relates to a hand tool for forming the leads of electronic components into just the right size and shape for insertion into a circuit board. As shown by the drawing the tool itself comprises an integral T-shaped member with a tailpiece slidably mounted on the leg thereof and capable of being locked thereto. The headpiece portion

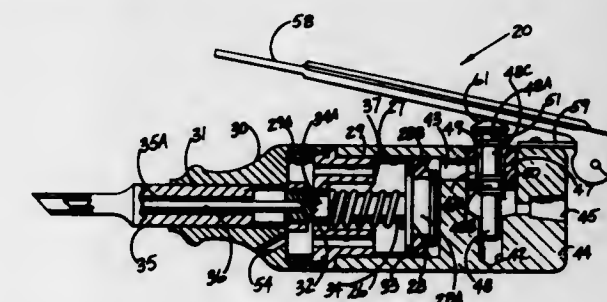
of the T-shaped member and the slidable tailpiece are in an opposing mirrorimage relationship with a set of end portions formed as a pair of locator tips and the opposing end portions as parallel planar surfaces. The planar surfaces have matching apertures therein. When the locator tips are set for the component space, the tailpiece is locked to the leg. Then an electrical component can be positioned between the planar surfaces, and the leads placed in the apertures. Thereafter if the leads are bent against the marginal edges of the apertures the lead spacing will be sized in accord with the distance between the locator tips.

3,612,113
AUTOMATIC MACHINES FOR MAKING STEEL WIRE SPRINGS
Rene Perrenoud, Rue des Sugits 14, 2114 Fleurier, Switzerland
Filed Apr. 23, 1969, Ser. No. 818,687
Claims priority, application Switzerland, Aug. 13, 1968, 12164/68
Int. Cl. B21f 3/00; B21d 3/02
U.S. Cl. 140—103



A machine for making steel wire springs intended particularly for the watchmaking industry has a tray on which are mounted shaping tools movable towards the center of the tray where is positioned a rolling stud. Means are provided for moving, clamping and cutting the steel wire and comprises a spindle rotatably mounted in front of the rolling stud. The spindle is also mounted for longitudinal movement and means are provided for controlling both the longitudinal advancement and rotation of the spindle to effect winding of the steel wire at a given angle around the rolling stud.

3,612,114
WIRE CUTTING AND BENDING TOOL
James A. Pawloski, box 158, Woodstock, Conn.
Filed Apr. 23, 1969, Ser. No. 818,754
Int. Cl. B21f 15/00
U.S. Cl. 140—106

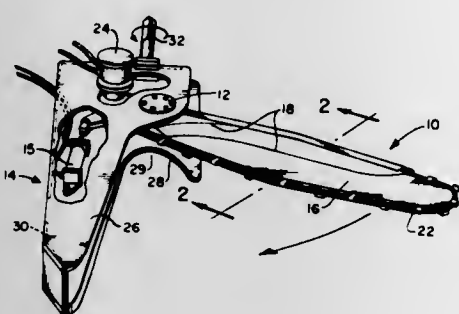


This disclosure is directed to a power tool for cutting and bending or laying over wire, and the tool is particularly

adapted for use in the manufacture of printed circuits or circuits boards. The tool comprises a housing having a fluid-actuated piston to which a cutting quill is mounted for movement relative to a quill guide extending forwardly of the housing. The tip end of the quill guide is provided with a notch for receiving a wire to be cut transversely to the movement of the quill. The improvement resides in the specific construction of the tip end of the quill which greatly improves and enhances the cutting and layingover action of the tool.

3,612,115
CHAIN SAWS
Alva Z. Albright, P.O. Box 762, Woodstock, Ontario, Canada
Filed Nov. 17, 1969, Ser. No. 877,335
Int. Cl. A01g 23/08; B27b 17/02
U.S. Cl. 143—32 N

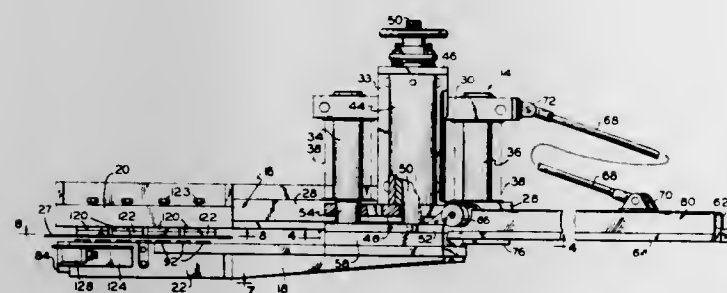
3 Claims



A chain saw having a straight-backed anvil mounted on a powered vehicle for rotation around an approximately longitudinal axis to vertically open and close to pick up felled trees, said anvil being indented to initially engage trees for felling to avoid detracking saw chain and the free end being longitudinally tapered to make sliding contact rather than butting contact with trees, the cutter bar being transversely tapered in its middle part to leave the pivoted end of said bar at full thickness for strength, the free end being flat and thinned to the same thickness as the thinnest part of said transverse taper.

3,612,116
BAND MILL SAW GUIDE
Arthur M. Ferrari, Barnham Ave., Corning, Calif.
Filed Dec. 4, 1969, Ser. No. 882,165
Int. Cl. B27b 13/10
U.S. Cl. 143—160 R

16 Claims



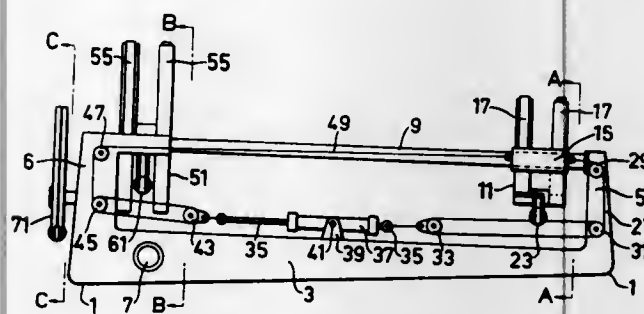
A saw guide for a band mill employed for sawing logs into lumber is provided with an outer guide member which is mounted for sliding movement on a rearwardly extending and upwardly inclined track. This guide member is held in its forward or saw-guiding position by a friction device so that it will be moved rearwardly and upwardly out of the way without being damaged if struck by any portion of the log carriage or log thereon when moving in the log-cutting direction. A plurality of spaced plungers in this guide member are urged toward the side of the saw by air under a predetermined pressure to hold the saw against an inner guide member on the other side of the saw, while at the same time water under a predetermined pressure urges the plun-

gers away from the saw with lesser force so that release of the air pressure rapidly moves the plungers away from the saw. One or more feeler elements are positioned in front of the guide to sense the approach of any portion of the carriage or log which would strike the outer guide member during movement of the carriage in the log-cutting direction. Such movement causes release of the air pressure and also causes rapid upward movement of the entire saw guide by the usual saw-guide-positioning mechanism of a band mill.

3,612,117
APPARATUS FOR THE SURFACE TREATMENT OF TREE TRUNKS
Olof Gunnar Herolf Kjell, Sundsbruk, Sweden, assignor to Soderhamns Verkstader Aktiebolag, Soderhamn, Sweden
Continuation of application Ser. No. 651,732, July 7, 1967, now abandoned. This application Nov. 5, 1970, Ser. No. 87,350
Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z

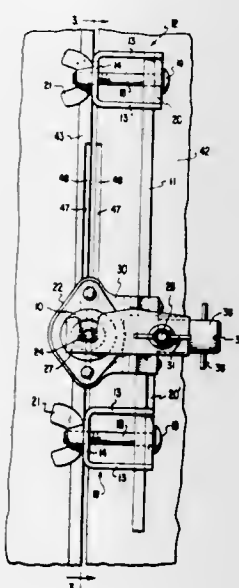
5 Claims



An apparatus for the surface treatment of trees having a frame extending along the tree to be worked upon and a surface-treatment and tree-feeding assembly mounted on and movable along the frame. The assembly is adapted to move back and forth in the longitudinal direction of the tree and has surface-treatment members and tree-gripping members thereon, the latter being adapted to hold the tree while the assembly is moved in one direction and release the tree upon movement in the opposite direction.

3,612,118
METHOD AND APPARATUS FOR SIMULTANEOUSLY MORTISING BUTT SEATS IN A DOOR AND ITS JAMB
Russell K. Davis, 308 S. Lanvale Ave., Daytona Beach, Fla.
Filed Sept. 4, 1969, Ser. No. 855,139
Int. Cl. B27f 5/12
U.S. Cl. 144—27

3 Claims



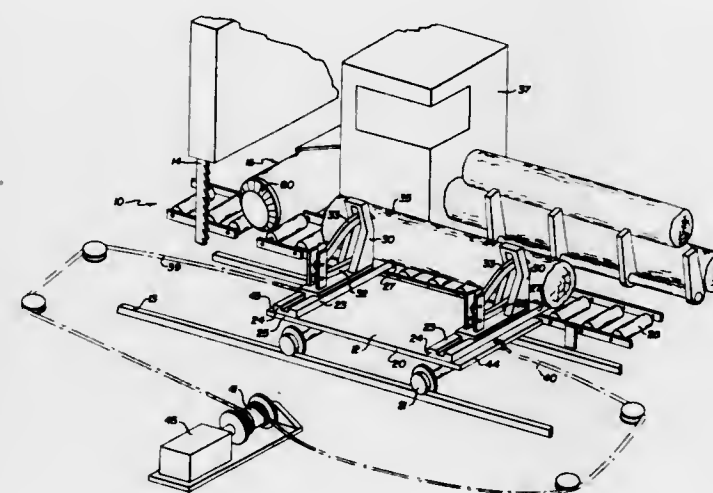
Matching seats for hinge leaves are cut simultaneously in a door and its jamb while the door is fixed temporarily in the jamb in service position. A series of overlapping cylindrical

bores centered on the longitudinal median of the clearance crack between the door and jamb is plunge cut simultaneously half in the door and half in the jamb by a single rotary cutting tool which then is traversed longitudinally along the series to remove the material remaining between the overlaps, thereby providing parallel straight sidewalls constituting a mortise in the door and jamb complementary to a hinge by which the door is to be hung.

3,612,119
COMBINATION LOG CHIPPING AND SAWING APPARATUS
Peter J. Neild, North Vancouver, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Continuation-in-part of application Ser. No. 688,497, Dec. 6, 1967, now abandoned. This application Feb. 19, 1970, Ser. No. 12,687
Int. Cl. B27b 25/00

U.S. Cl. 144—39

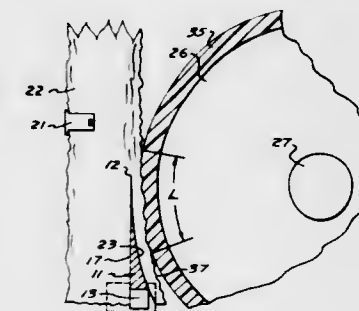
12 Claims



Apparatus for simultaneously removing slab material and cutting a board from a log in a lumber mill. As each log is moved on a sawmill carriage towards a head saw, slab or side material thereof is removed by a chipper head in the form of chips, thereby providing the log with a face parallel to the cutting plane of the saw. The speed of rotation of the chipper head is changed instantly when the carriage speed changes in order to produce chips having predetermined fiber length regardless of the usual variations in carriage speed.

3,612,120
WOOD SLICER
George Knap, 4408 Wildwood Crescent, South Burnaby, Canada
Filed Oct. 13, 1969, Ser. No. 865,813
Int. Cl. B27l 5/06
U.S. Cl. 144—178

3 Claims



A log slicer having a knife arranged to pass longitudinally through a log so as to cut a slice therefrom. A roller is posi-

tioned adjacent to the knife to exert pressure on the log and slice extending over a length thereof in advance of and behind the cutting edge of the knife.

3,612,121
IMPACT TOOL
Ernest O. Estwing, Rockford, Ill., assignor to Estwing Manufacturing Company, Inc., Rockford, Ill.
Filed Apr. 23, 1970, Ser. No. 33,008
Int. Cl. B25d 1/00; B25g 3/34
U.S. Cl. 145—29 R

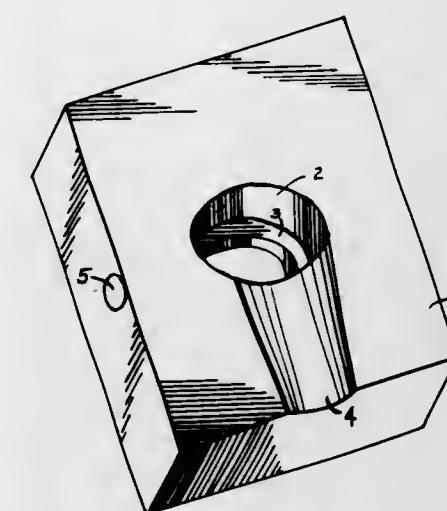
9 Claims



The tool has a head with a tang to which is brazed a tubular steel handle. The handle is generally elliptical in cross section, and a reinforcing rib is located adjacent the head and lies in the plane of the major axis of the handle ellipse. The reinforcing rib is secured both to the tang and to the inside of the tubular steel handle.

3,612,122
EGG OPENER
Richard C. Bjork, 934 Vernal Ave., Mill Valley, Calif.
Filed Aug. 6, 1969, Ser. No. 847,926
Int. Cl. A47j 43/14
U.S. Cl. 146—2 B

5 Claims



A device for opening an uncooked liquid egg, a soft-boiled egg, or a hard-boiled egg. The egg is placed into a cavity in the egg holder. Then a knife blade is thrust into the shell to start a break. The knife blade is then rotated to force the break open so that the albumen and yolk may be readily removed. A trough is provided on the egg holder to facilitate the pouring out of the albumen and yolk of an uncooked egg. The knife blade is then removed.

3,612,123

SHAPING ARTICHOKE HEARTS

Giordano Tomelleri, 22 Via Montorio, Verona, Italy

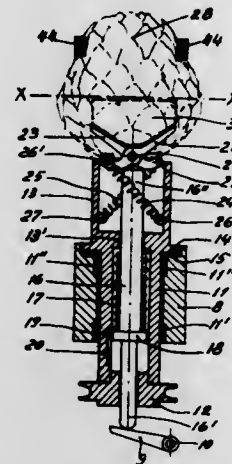
Filed June 2, 1969, Ser. No. 829,253

Claims priority, application Italy, June 5, 1968, 61,258/68

Int. Cl. A23n 15/00

U.S. Cl. 146—52

3 Claims



Apparatus for shaping the base of an artichoke heart comprises a knife which approaches the base of the artichoke along the median axis of the artichoke and rotates about this axis. The knife extends axially until it penetrates the artichoke base but once it has penetrated the artichoke base its inclination with respect to the axis is progressively increased as it advances so that a conical shape is formed which diverges towards the tip of the artichoke. The outer portion of the lower part and top of the artichoke are subsequently removed.

3,612,124

FOOD-CORING APPARATUS

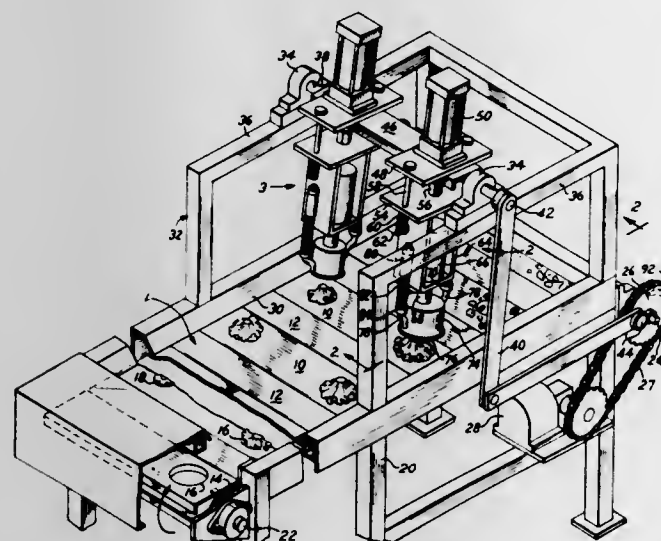
Eugene H. Cunningham, deceased, Watsonville, Calif. (by Ruby Cunningham, administratrix); Robert L. Guinn, Bloomington, Minn., and Edward G. Langill, Aptos, Calif., assignors to Green Giant Company

Filed June 12, 1969, Ser. No. 833,248

Int. Cl. A23n 3/12

U.S. Cl. 146—52

16 Claims



Food-coring apparatus for use in the coring of foods, such as cauliflower, includes a movable flight conveyor having food-holding pockets therein and an air piston operated retractable head having an air-powered coring bit and a cover which is rapidly moved into coring position by the air piston. An actuating eccentric is mounted on the conveyor drive for actuating air to the piston and bit to move the retractable head toward the food to engage the food with the cover and coring bit. The depth to which the food is cored is

controlled independently of the position of the conveyor flights by a switch responsive to the movement of the retractable head to retract the bit and cover and secure the air to the coring bit.

3,612,125

CUTTING DEVICE

Helmut Krauth, Union, N.J., assignor to Unimaco, Inc., Manhasset, N.Y.

Filed Oct. 4, 1968, Ser. No. 765,170

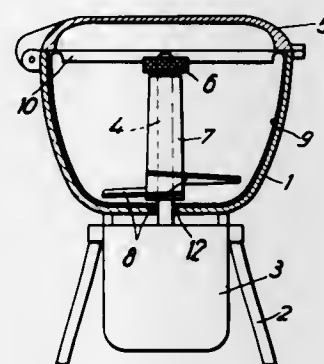
Claims priority, application Germany, Oct. 18, 1967, ST

27474 X/346

Int. Cl. B02c 18/12

U.S. Cl. 146—68

9 Claims



An outer receptacle has removably nested therewithin an inner receptacle, at least a portion of the peripheral wall of which is apertured. A rotatable shaft extends through the bottom wall of the outer receptacle into the interior of the inner receptacle. A hub assembly surrounds that portion of the shaft which is located in the inner receptacle and carries transversely extending cutter blades. Connecting means releasably connects the hub assembly to this portion of the shaft to enable simultaneous withdrawal of the hub assembly and the inner receptacle from the outer receptacle.

3,612,126

LIQUIDIZER SAFETY CLUTCH

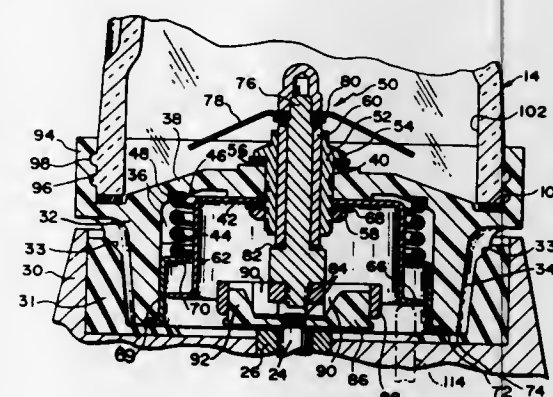
Robert J. Emmons, Manchester, and Maurice P. Samuelian, West Hartford, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,182

Int. Cl. B02c 18/12; A47J 43/042

U.S. Cl. 146—68 A

14 Claims



Liquidizer safety ejection clutch in which a resilient element operatively disposed between two axially engageable clutch elements yields under the combined weight of a jar and base of a two-piece container placed in working position to permit the clutch members to engage yet holds the clutch elements apart under the weight of the base alone to prevent operation of the exposed cutters when the jar is absent from the base.

3,612,127

HAY BALE CUTTER

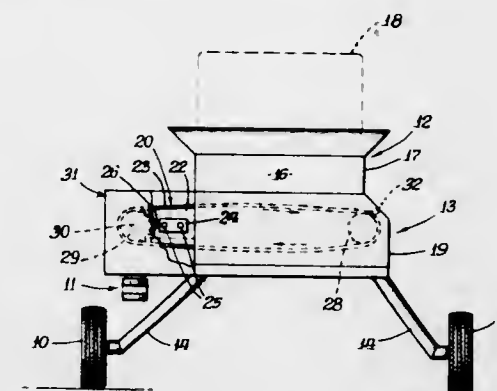
Edward L. Benno, Route 1, Box 198, Grayslake, Ill.

Filed Nov. 26, 1969, Ser. No. 880,204

Int. Cl. A01f 29/00

U.S. Cl. 146—70.1

6 Claims



A hay bale cutter comprising a generally rectangular housing open at opposite ends with a plurality of linear cutters supported exteriorly of the housing and extending through slots in the housing and across the opening through the housing.

3,612,128

FOOD-PROCESSING BELT

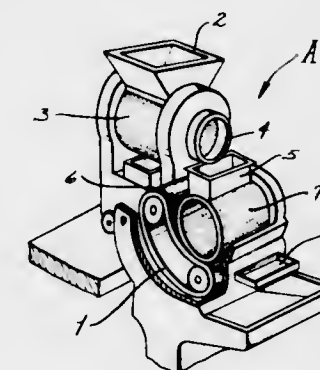
Nicholas Robert Beck, University City, Mo., and Shinji Kurihara, Fukuyama, Japan, assignors to Bibun Machine Construction Company Ltd., Fukuyama, Hiroshima Prefecture, Japan, by said Beck

Filed Dec. 11, 1969, Ser. No. 884,073

Int. Cl. A22c 17/00

U.S. Cl. 146—76

4 Claims



In an apparatus for separating meat from animal bone, a resilient belt, preferably molded from a solid polyurethane elastomer, is constructed having beveled edges which extend into contiguity with the surface of a perforated revolving drum so as to accommodate a quantity of crushed meat-bearing material into compressibility with said drum; and, the surface of the belt in communication with the drum is knurled or ridged to insure retention of said material compressed against the drum.

3,612,129

BARBECUED MEAT-CUTTING MACHINE

Joseph T. Scarborough, Route 1, Box 36, Uniontown, Ala., and Bob Wade, Route 1, Box 271, Marion, Ala.

Filed Feb. 6, 1970, Ser. No. 9,190

Int. Cl. A22c 17/00; B02c 18/06; B26d 9/00

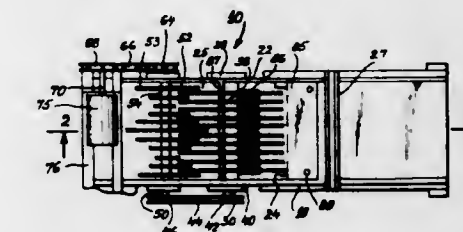
U.S. Cl. 146—78 R

10 Claims

A machine for slicing and chipping barbecued meat has a framework supporting a plurality of spaced, vertical rotating circular blades on a rotating horizontal shaft to cut the meat into slices.

Another rotating shaft supports a plurality of straight, sharp chipper blades which rotate between the circular blades to cut the slices into chips and to keep the circular blades clear of cut meat. A slotted guide blade under the cir-

cular blades guides the meat to the circular blades for cutting and removes pieces of meat sticking to edges of the circular



blades. A drive motor is connected by a chain drive to the shafts to rotate the circular blades and chipper blades in opposite directions simultaneously.

3,612,130

MEAT GRINDER

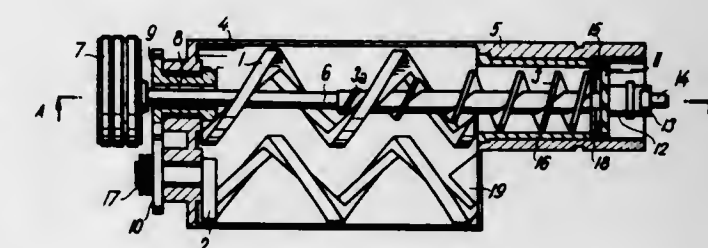
Pan Ponka, Cernosice, and Vaclav Pachovsky, Prague, both of Czechoslovakia, assignors to Chepos Zavody chemicko a potravinarskeho strojirenstvi, oborovy podnik, Brno, Czechoslovakia

Filed Jan. 27, 1969, Ser. No. 794,181

Int. Cl. B02c 18/30

U.S. Cl. 146—181

8 Claims



A meat grinder whose hopper is equipped with two Z-type kneading and mixing blades. One of these blades coaxially envelops an integral portion of the feed screw which projects from the cutter housing into the hopper and pushes meat from the hopper into the housing and to the cutters at the front end of the housing.

3,612,131

METHOD AND APPARATUS FOR MANUFACTURE OF PARTICULATE FATTY MATERIALS

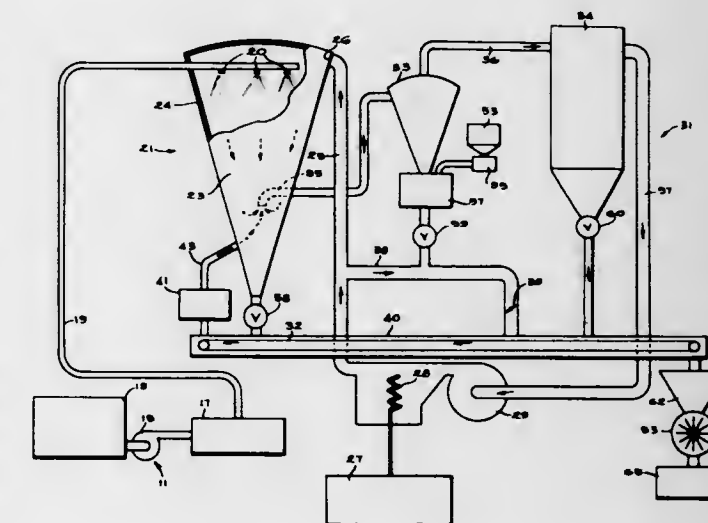
Russell W. Carnahan, Deerfield, Ill., assignor to Kraftco Corp., New York, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,443

Int. Cl. A23p 1/00

U.S. Cl. 146—228

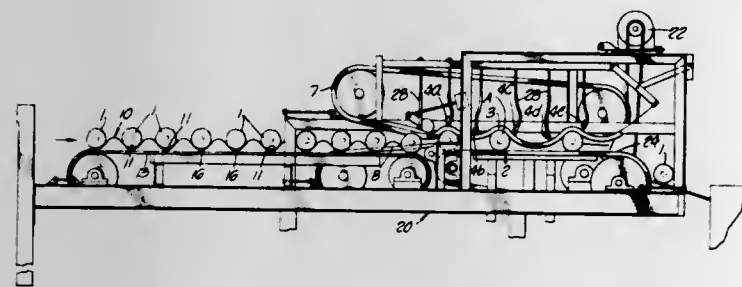
7 Claims



A method and apparatus for providing a flowable particulate product from a fatty material having a melting point

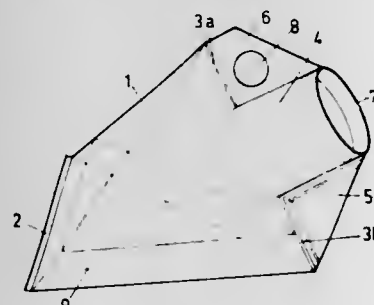
above ambient temperature is provided. The method includes the steps of establishing the fatty material in a melted state, spray chilling the melted fatty material to provide the particulate fatty material, providing a coarse blend of the fatty material and a flow-conditioning agent and subjecting the coarse blend to high-intensity impact mulling so as to texture the coarse blend and provide a homogeneous blend of the flow-conditioning agent and the particulate fatty material. The steps of the method are performed substantially continuously and provide a flowable particulate fatty material which is not susceptible to melting or agglomerizing.

3,612,132
METHOD AND APPARATUS FOR DECROWNING PINEAPPLES
Masato Tsutsumi, Kahului, Hawaii, assignor to Maui Land & Pineapple Company, Inc., Kahului, Maui, Hawaii
Filed Dec. 29, 1969, Ser. No. 888,532
Int. Cl. A23n 15/04
U.S. Cl. 146-237
8 Claims



A method and apparatus for removing the crown from a pineapple by placing the pineapple on a convoluted conveyor belt so as to space each piece of fruit from another, transferring the spaced fruit on a second softly matted conveyor belt traveling in the same direction as the convoluted belt, bringing the top portion of the fruit into contact with a third soft weighted matted member suspended directly above the second matted conveyor belt. This top matted member imparts a spin or twist to the fruit in a direction opposite to their direction of travel. A pair of conveyors running parallel to the second conveyor to receive the crown and stop its rotation while the fruit is still rotating thus twisting the crown off from the fruit.

3,612,133
FOLDABLE CONTAINER PROVIDED WITH AN OPENING, AND METHOD AND MEANS FOR ITS MANUFACTURE
Olle Jarund, Otto Lindbladsvagen 18, Lund, Sweden
Filed Mar. 11, 1969, Ser. No. 806,069
Claims priority, application Sweden, Mar. 20, 1968, 3655/68
Int. Cl. B65d 33/16
U.S. Cl. 150-0.5
4 Claims



The present invention relates to a substantially tetrahedral container manufactured from a flexible material. Such containers may, for example, be used to collect urine from patients confined to bed instead of the conventionally used bottles of glass. Such a container can easily be folded flat during storage before its use and thereafter, when it is to be used, can easily be positioned and stabilized by the weight of the

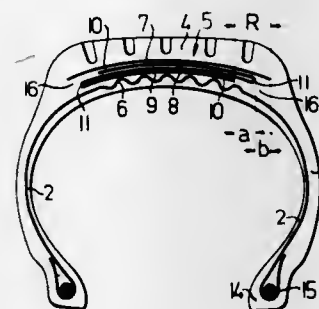
contents on the bottom of the container, whereby the inlet opening of the container is positioned about the liquid level in the container.

3,612,134
ROLLER WHEEL
Franz Minarik, 18, Lenglengasse, Vienna, 6, Austria
Filed Nov. 12, 1969, Ser. No. 875,840
Int. Cl. B60b 9/22
U.S. Cl. 152-9
2 Claims



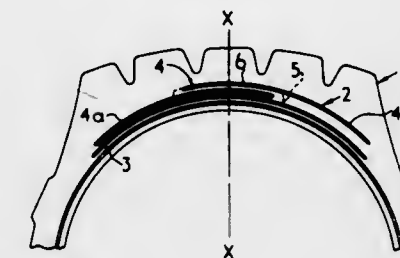
A roller wheel which comprises a wheel hub, a tread ring, which is radially movable relative to the wheel hub, a pneumatic tire, which is disposed between said tread ring and said wheel hub, and two discs, which cover the sides of the roller wheel and one of which is integral with the wheel hub.

3,612,135
PNEUMATIC VEHICLE TIRE
Hermann Wittneben, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Apr. 21, 1969, Ser. No. 817,663
Claims priority, application Germany, Apr. 25, 1968, P 17 55 316.1
Int. Cl. B60c 9/14
U.S. Cl. 152-361
8 Claims



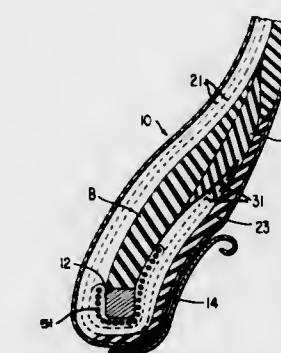
A pneumatic vehicle tire with bead cores and a tread strip and cord fabric layers with pull-resistant thread means located in the sidewalls of the tire and extending approximately at a right angle to the circumferential direction of the tire while being anchored to said bead cores, in which beadlike tread strip reinforcing means are arranged radially inwardly of the tread strip and extend approximately over the width of the tread strip, said tread strip reinforcing means comprising a cord fabric layer folded so as to have a flat S-shaped cross section, the end leg portions of which, are shorter than the leg portions therebetween while an additional cord fabric layer forming part of said tread strip reinforcing means is interposed between the folded cord fabric layer and the tread strip and has its marginal areas protrude beyond said folded cord fabric layer in the direction toward the tire sidewalls.

3,612,136
PNEUMATIC TIRES
Vernon E. Gough, Croyde, near Braunton, North Devon, England, assignor to Dunlop Holdings Limited, London, England
Filed June 9, 1969, Ser. No. 831,434
Claims priority, application Great Britain, June 20, 1968, 29423/68
Int. Cl. B60c 9/18
U.S. Cl. 152-361
18 Claims



A pneumatic tire provided with a breaker assembly of at least one composite breaker layer, each composite breaker layer comprising at least two narrow breaker layers of cord fabric, the cords of each narrow breaker being substantially rectilinear, the narrow breaker layers each being substantially narrower than the total tread width and being arranged in radially spaced apart and partially overlapping relationship, a layer of rubber or rubberlike material being interposed between the overlapping portions thereof, the overall axial extent of each composite breaker layer being substantially equal to the total tread width.

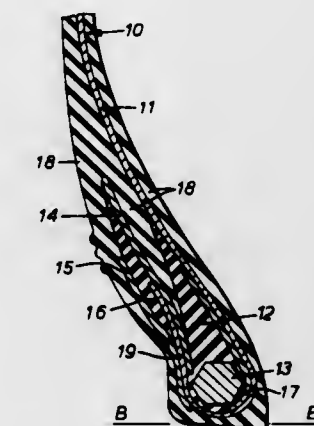
3,612,137
LARGE SIZE TIRES FOR TRUCKS AND OTHER HEAVY VEHICLES
Raymond J. Guyot, Paris, France, assignor to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques, Paris, France
Filed Nov. 19, 1968, Ser. No. 777,119
Claims priority, application France, Nov. 27, 1967, 129,815
Int. Cl. B60c 15/06
U.S. Cl. 152-362 R
6 Claims



A large size tire particularly adapted for trucks and other heavy vehicles, the tire being one that is reinforced by a radial or standard casing of cords turned in the bead in open plies around a single wire, the tire being one in which the turned-back portion of the cords follows a direction substantially parallel to that of the traction cords opposite thereto, the bead being stiffened above the wire to the level of the rim by a core of rubber having a shore hardness greater than 80, said core being covered with a further rubber core having a shore hardness in the order of 55 to 60.

Generally, the length of the turned-back portion of the cords forming the open ply is as slight as possible, the end of the turned-back cords being turned slightly outward.

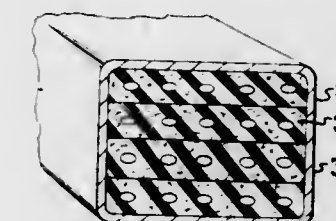
3,612,138
TIRE BEAD TURNUP EXTENSION
Arthur S. Ravenhall, Solihull, England, assignor to Dunlop Holdings Limited, London, England
Filed July 8, 1969, Ser. No. 839,863
Claims priority, application Great Britain, July 23, 1968, 35078/68
Int. Cl. B60c 15/06
U.S. Cl. 152-362 R
14 Claims



A tire with a carcass having a ply or plies turned up around a bead wire. A reinforcing strip of rubberized cord fabric is provided overlapping the turnup and forming a radially outward extension of the turnup. The cords in the reinforcing strip are disposed at the same angle as the cords in the carcass ply, but are more flexible.

The invention is particularly applicable to radial ply tires having metal cord reinforcements.

3,612,139
NOVEL BEAD STRUCTURE FOR PNEUMATIC TIRES
Alfred Marzocchi, Cumberland, and Alfred Winsor Brown, Woonsocket, both of R.I., assignors to Owens-Corning Fiberglass Corporation
Filed Aug. 13, 1969, Ser. No. 849,669
Int. Cl. B60c 15/04
U.S. Cl. 152-362
5 Claims

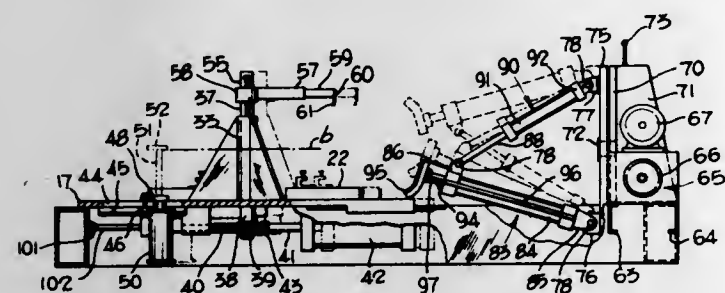


A pneumatic tire construction featuring a wheel-rim-engaging bead structure inclusive of a bead ring containing glass elements of particular form and in particular geometric disposition.

3,612,140
APPARATUS FOR MOUNTING TIRE CASINGS ONTO DUAL-FLANGED RIMS
Sylvester William Malinski, P.O. Box 161, Tamaroa, Ill.
Filed Jan. 28, 1970, Ser. No. 6,469
Int. Cl. B60c 25/06
U.S. Cl. 157-1.17
3 Claims

For mounting large tire casings on tractors and other off-highway vehicles, this apparatus is of the type having a linear actuator whose shoe presses slanting against the tread of a

tire casing, to drive a portion of a sidewall bead against the drop center of the rim; then presses further to shift the continuously heating the layer while it is on the surface. Means for continuously removing vapors issuing from the layer are



sidewall to the other side of center, permitting the remainder of its bead to be deflected over the rim.

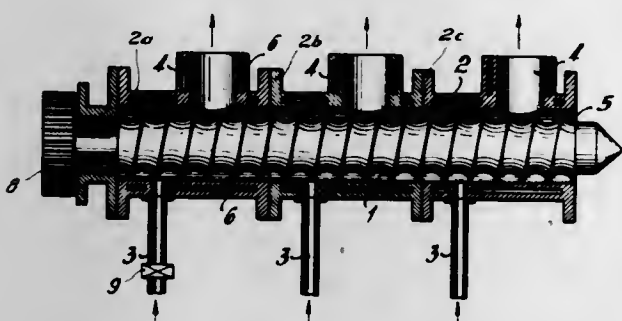
3,612,141 METHOD OF AND DEVICE FOR CONTINUOUSLY EXTRACTING A LIQUID COMPONENT CONTAINED IN A LIQUID

Herbert Ocker, Leonberg, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany
Filed Feb. 10, 1969, Ser. No. 798,197

Claims priority, application Germany, Feb. 15, 1968, P 17 19 453.5

U.S. Cl. 159—2 E Int. Cl. B01d 1/28

6 Claims



A volatile liquid component contained in a liquid is continuously extracted therefrom by volatilizing the component while the liquid is forced to flow through an elongate container. The liquid to be purified is fed into the container at lengthwise spaced points thereof and the volatilized component is removed from the container through ports at intermediate points thereof. The remaining liquid now liberated from the component is discharged at one end of the container. There is also disclosed a device for carrying out the method.

3,612,142 PROCESS AND APPARATUS FOR CONTINUOUSLY POLYCONDENSING OR POLYMERIZING MONOMERS

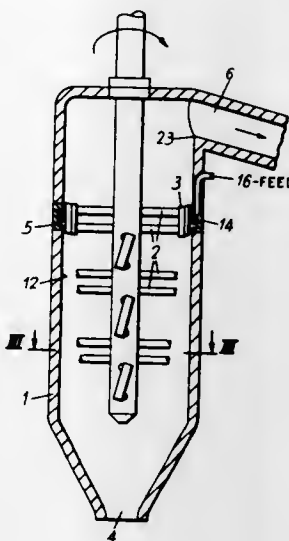
Federico Urgesi, Vercelli, Italy, and Horst Rothert, Berlin, Germany, assignors to Chatillon Societa Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy and Karl Fischer Apparate-u. Rohrleitungsbau, Berlin (Borsigwalde), Germany

Division of Ser. No. 519,836, Jan. 11, 1966, abandoned
Filed June 26, 1969, Ser. No. 850,293

U.S. Cl. 159—6 W Int. Cl. B01d 1/22

5 Claims

There is provided apparatus particularly useful in the conduct of polymerization or polycondensation of a viscous monomer composition, which apparatus is characterized by means for continuously feeding a stream of material toward a peripheral-receiving zone of a surface and rotary means for spreading the material within said receiving zone on the surface in a thin layer to move on the surface toward a discharge zone thereof spaced from the receiving zone. In more specific embodiments, means are also provided for con-



also provided. Discharge means for removing the layer from the surface in the discharge zone are also provided.

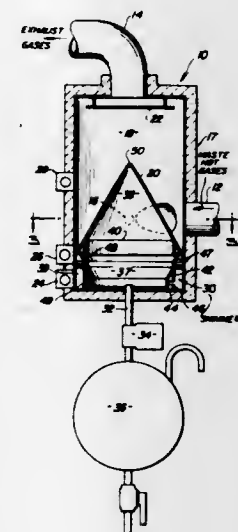
3,612,143 APPARATUS FOR LIQUID WASTE DISPOSAL

Aaron J. Ungerer, Lakewood, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Nov. 3, 1969, Ser. No. 873,229

U.S. Cl. 159—16 Int. Cl. B01d 1/22, 1/14

6 Claims



Heated gases, such as exhaust gases from an engine, and liquid waste materials are mixed in a container with the hot gases vaporizing the liquid. Cyclonic movement of the gases separates unvaporized liquid droplets from the gas and prevents escape of any liquid from the container. The mixed vapors and gases leave the container through a common outlet. The container may also include means for condensing and separating pollutants such as oil from the gases.

3,612,144 RECOVERY OF POLYMER FINES BY SPRAY DRYING

Roy B. Marcum, and George K. Chandler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

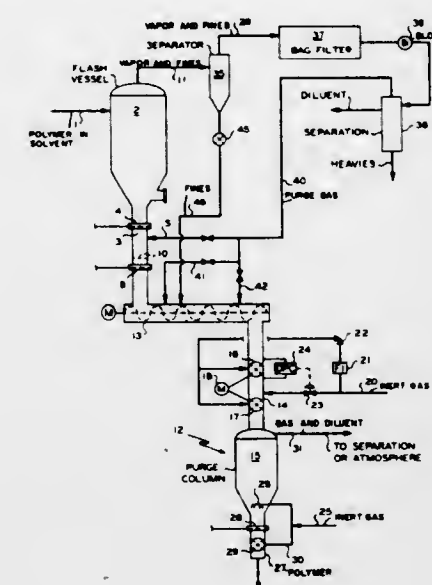
Filed Jan. 23, 1969, Ser. No. 793,511

U.S. Cl. 159—48 Int. Cl. B01d 1/22

7 Claims

A polymer diluent mixture is flashed. Polymer containing residual diluent is conveyed to a location remote from the flashing zone where the residual diluent is purged. Vaporous

diluent containing polymer fines taken overhead from the flashing zone is separated into a purified diluent stream and a



polymer fines stream, the latter being admixed with the polymer leaving the flashing zone.

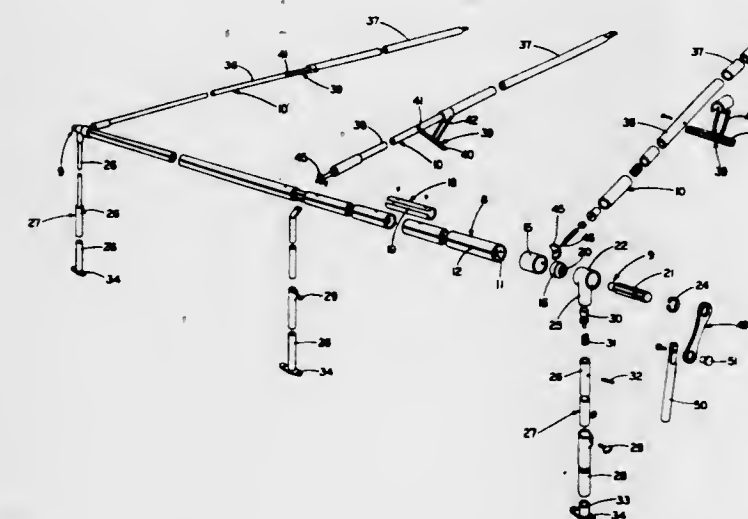
3,612,145 ROLLUP AWNING

Andrew J. Darula, Lakewood, and John D. Knight, Mantua, both of Ohio, assignors to The Astrup Company, Cleveland, Ohio

Filed Jan. 9, 1970, Ser. No. 1,817

U.S. Cl. 160—67 Int. Cl. E04f 10/06

16 Claims



A fabric rollup awning for use on travel trailers, mobile homes, residential patios and terraces, and commercial and industrial applications for quick shade from the sun. A pocket at the upper edge of the fabric molding contains a 1/4-inch nylon cord which is slid through the conventional trailer molding attached to the sidewall of the structure. A front bar roller has a spherical groove which slidably receives a nylon cord located in a pocket attached to the front portion of the fabric awning. Two-piece telescoping spring-loaded rafters extend from the upper end of the fabric awning to the front bar roller and support the same; and uprights are pivotally attached to the ends of the roller and support the same either from the sidewall of the trailer or building or from the ground. Roller end assemblies upon the front bar roller incorporate spring-loaded hexagonal trunnions and ratchet means is associated therewith for rolling the front bar roller up or down.

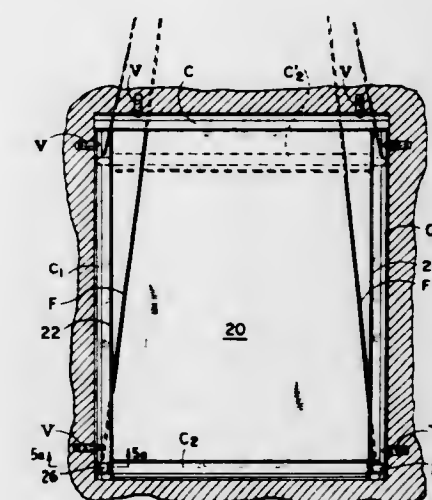
3,612,146 WINDOW-COVERING SUPPORT ASSEMBLY

Alfred Klein, Parc Notre-Dame, Vallauris, France

Continuation-in-part of application Ser. No. 710,891, Mar. 6, 1968, now abandoned. This application Aug. 8, 1969, Ser. No. 856,077

U.S. Cl. 160—273 Int. Cl. E06b 9/52

1 Claim



A support assembly for holding a window covering, such as a curtain, insect screening, and the like, is composed of individual stationary frame sections which are secured to the window frame and a movable frame section which slides relative to the stationary frame sections. Hook means are slidably engaged in the frame sections and secure the window covering to the frame so that it may be moved between a fully opened and a fully closed position. The frame is arranged so that in the assembled position the hooks cannot be removed from the frame sections. The Geneva wheel.

A pair of rotatable perforating knives positioned 180° apart is positioned adjacent the feed drum and rotate into contact with the paper around the drum at the appropriate positions thereof by being driven by the Geneva wheel to perforate the paper at long or short intervals as necessary.

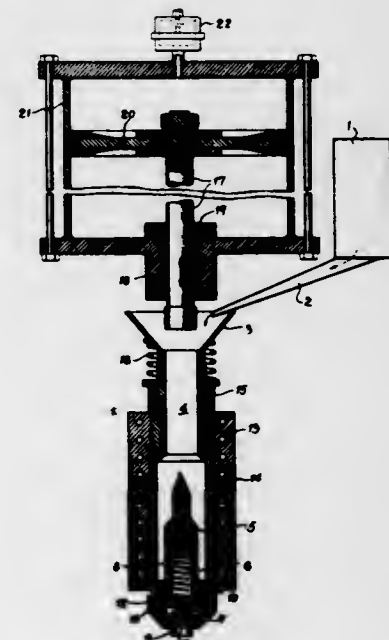
3,612,147 METHOD OF MAKING WAX CASTINGS

Morton S. Kaplan, Hibiscus Island, Miami, Fla., assignor to Waltech Corporation, Miami, Fla.

Filed Oct. 8, 1968, Ser. No. 765,804

U.S. Cl. 164—45 Int. Cl. B22c 7/02

5 Claims



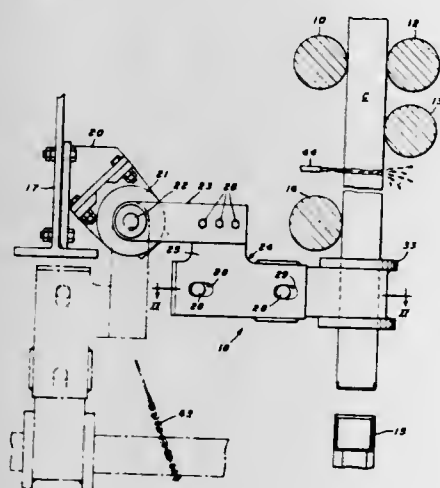
This disclosure is directed to a process and apparatus for making wax castings for use in the lost wax process of mak-

ing articles of jewelry. The process involves injection molding a powdered wax which is heated to a temperature under its melting point. The powdered wax may be made by grinding prefrozen wax. The apparatus includes an injection ram which is operated under a high-pressure and a slow-ram cycle.

3,612,148
METHOD AND APPARATUS FOR REMOVING ABORTED CASTINGS FROM A CONTINUOUS-CASTING MACHINE
Glenn A. Waldschmidt, Ross Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed July 2, 1969, Ser. No. 838,561
Int. Cl. B22d 11/12

U.S. Cl. 164-70

6 Claims

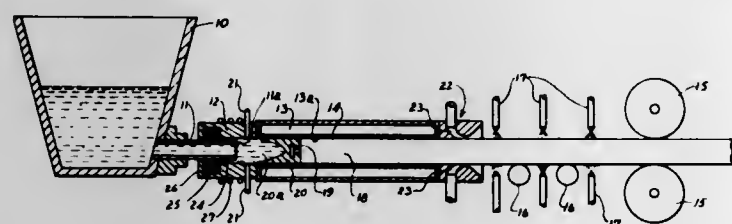


In operating a continuous-casting machine sometimes there is left in the machine a length of casting too short to be handled by the driven rolls of the machine. Such castings are referred to as "aborted." The invention is an apparatus for gripping an aborted casting below the pinch rolls of the casting machine. The casting is severed with a torch, after which the apparatus swings the severed length out of the way. The steps are repeated until the entire casting is removed.

3,612,149
CONTINUOUS CASTING METHOD
Irving Rossi, Morristown, N.J., assignor to Concast Incorporated, New York, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,558
Int. Cl. B22d 11/00

U.S. Cl. 164-73

2 Claims



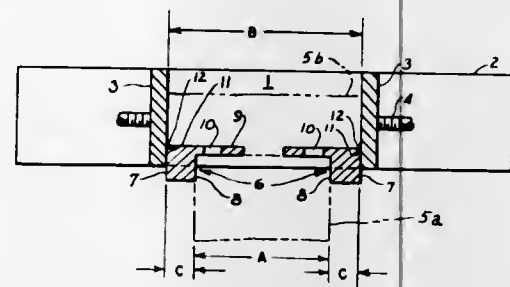
In apparatus which is particularly adapted for continuous casting in a horizontal direction lubrication is provided by feeding a lubricating material to the peripheral edge of the entrance end of the mold cavity and applying a pulsating vacuum at the periphery of the exit end of the mold cavity. Structure producing a venturi effect is utilized for producing the vacuum.

Molten metal from a supply is fed to the mold cavity through a feed spout extending into a duct of refractory material which is connected to the entrance of the mold cavity. Heat is applied to metal in the duct for melting metal which has solidified on the end of the feed spout and for keeping the metal molten in the duct. The high heat required is suitably applied by induction heating coils around the duct.

3,612,150
METHOD OF CHANGING THE CROSS SECTION OF CONTINUOUS CASTINGS
Irving Rossi, Morristown, N.J., assignor to Concast Incorporated, New York, N.Y.
Filed Apr. 27, 1970, Ser. No. 31,932
Int. Cl. B22d 11/08

U.S. Cl. 164-82

3 Claims

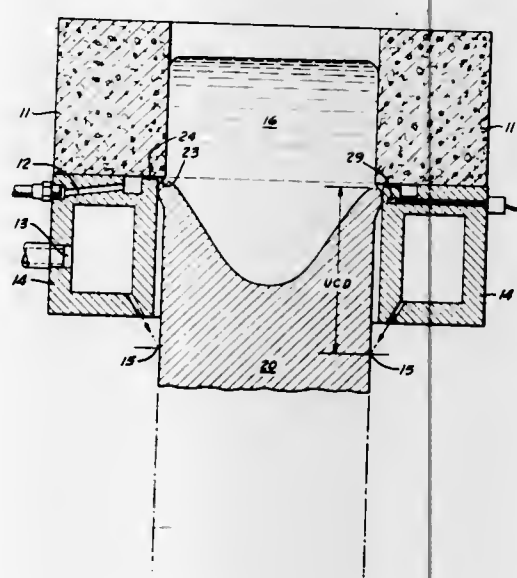


The cross section of a cast strand formed in a continuous casting mold, which has at least one shiftable wall, is changed by stopping the pouring of metal into one end of the mold and the withdrawal of a partially solidified strand from the other and allowing the strand end portion remaining in the mold to cool enough to be self-supporting. An insert having its upper portion corresponding to the new cross-sectional area desired for the strand, and having its bottom portion conforming to the area of the original strand, is placed on the aforesaid strand end portion. If the new cross section is to be larger, the shiftable mold wall, or walls, are moved outward to receive an appropriate insert and to correspond to the new size defined by the upper portion of the insert. If the new cross section is to be smaller, an appropriate insert is placed on the strand end portion in the mold and sufficient metal is poured into the mold to partially fill the interior of the insert; then, when this additional metal has solidified enough to be self-supporting the strand is withdrawn slightly from mold and the shiftable wall, or walls, are moved inward against the upper portion of the insert to define the new strand size.

3,612,151
CONTROL OF CONTINUOUS CASTING
Donald G. Harrington, Liberty Lake, and Thomas E. Groce, Spokane, both of Wash., assignors to Kaiser Aluminum and Chemical Corporation, Oakland, Calif.
Filed Feb. 14, 1969, Ser. No. 799,450
Int. Cl. B22d 11/02

U.S. Cl. 164-89

4 Claims



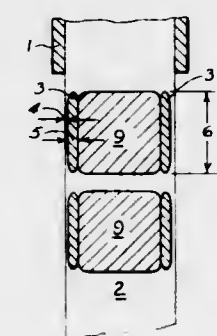
A method for metal casting in a direct-chill continuous mold having an insulated feed reservoir. The feed reservoir is axially aligned with the mold and has an overhang over the mold face of not more than one-eighth inch. The casting

speed for the metal is established so that the upstream conduction distance which is measured from the liquid wetting line of the chill liquid on the ingot surface extends to within about 1 inch of the reservoir. The casting speed and upstream conduction distance are controlled to satisfy a critical relationship which gives control over the heat transfer during the casting operation. During the casting, the mold wall temperature should not fluctuate more than about $\pm 25^\circ$ F. per cycle when the temperature cycling rate is from about 0.5 to about 10 cycles per inch of length of metal being cast.

3,612,152
BILLET COOLING METHOD FOR CONTINUOUS CASTING
Peter J. Koenig, Zumikon, Switzerland, assignor to Concast A.G., Zurich, Switzerland
Filed Apr. 20, 1970, Ser. No. 29,834
Claims priority, application Switzerland, Apr. 15, 1969, 5647/69
Int. Cl. B22d 11/00

U.S. Cl. 164-89

5 Claims

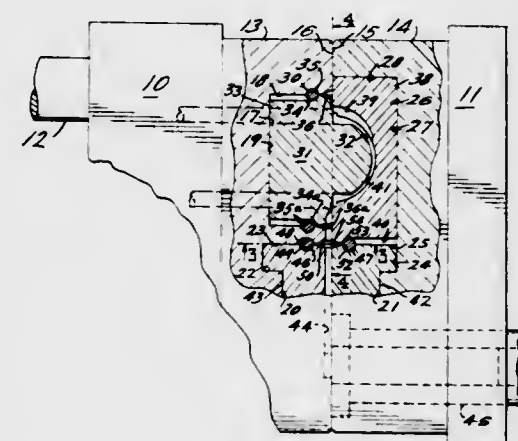


In a method of cooling continuously cast billets of polygonal cross section the surfaces of the casting are sprayed with coolant from atomizing nozzles as it leaves the mold. The sides adjacent the edges are sprayed by nozzles having a relatively high-average delivery per unit area in an approximately rectangular pattern; the central portions of the sides are sprayed with nozzles of relatively low-average delivery and a spray delivery that decreases toward the edge regions.

3,612,153
METHOD AND APPARATUS FOR DIECASTING INCLUDING A FLASH CAVITY
Byron W. Koch, Toledo, Ohio, assignor to National Lead Company, New York, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,638
Int. Cl. B22d 17/00

U.S. Cl. 164-113

10 Claims



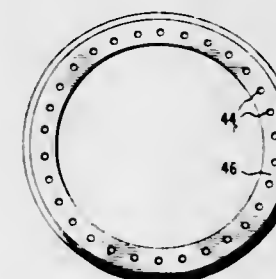
The present invention is a diecasting method and apparatus. The apparatus includes a dieholder having an opening defined in one surface. A recess portion is provided in the

sidewall of the dieholder opening. A die block is removably positioned in the dieholder opening. The die block surface is complementary with the sidewall recess portion for forming a flash stop. In one embodiment, the dieholder defines a shoulder and the die block has a complementary flange. In another embodiment, the die block and dieholder define complementary openings which receive a separable flash stop member. In both embodiments, a flash groove or chamber is located adjacent the flash stop and is in communication with the die casting cavity. The flash chamber is in liquid communication with the die cavity. When molten metal solidifies it forms an integral casting having flash thereon of a predetermined configuration.

3,612,154
CENTRIFUGAL PIPE CASTING METHOD
Jean Denyszyn, Lynchburg, Va., assignor to Glamorgan Pipe & Foundry Co.
Division of Ser. No. 639,535, May 18, 1967, Pat. No. 3,499,479.
Filed Dec. 3, 1969, Ser. No. 881,719
Int. Cl. B22d 13/02

U.S. Cl. 164-114

2 Claims



Centrifugal pipe-casting method utilizing a rotatable mold and a permanent-type reusable core for partially closing the mold at its pipe withdrawal end. The portion of the core-facing casting material within the mold presents a surface with indentations for receiving and solidifying casting material so as to hold the end of the pipe and prevent distortion and end-cracking prior to removal of the pipe from the mold.

3,612,155
ANTIPIPING COMPOUND AND PROCESS FOR THE HEAT RETAINING OF HOT TOP SURFACE
Shigeru Matsuyama, Utsunomiya, and Yukio Ito, Imaichi, both of Japan, assignors to Alkoh Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1970, Ser. No. 89,455
Claims priority, application Japan, July 3, 1970, 45/57719
Int. Cl. B22d 7/10, 27/04

U.S. Cl. 164-123

2 Claims

An antipiping compound for hot top surface for ingot making which essentially more than 5 percent by weight of coffee grounds in components selected from the group consisting of easily oxidized metal powders, powdery metal oxides, carbonaceous materials, fibrous materials, fluorides, nitrates, nonporous and porous refractory materials and other effective materials.

3,612,156
PLAY-FREE GUIDE ROLLERS FOR CONTINUOUS CASTING MOULD
Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed May 21, 1970, Ser. No. 39,456
Claims priority, application Austria, May 30, 1969, A 5142/69

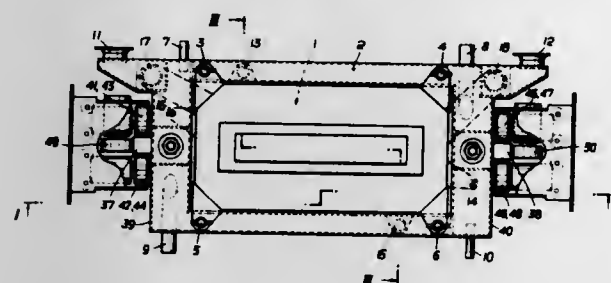
U.S. Cl. 164-260

Int. Cl. B22d 11/02, 27/08

5 Claims

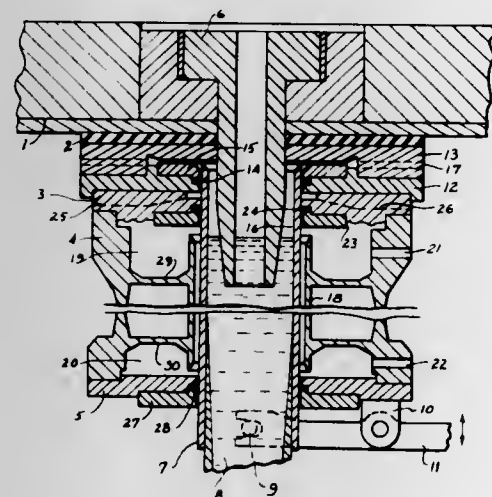
A continuous casting plant for slabs comprising a lifting table to be oscillated in vertical direction, a water-cooled casting mould releasably connected to said lifting table, and a short, vertical bar guiding means arranged below said casting mould, wherein said lifting table is designed as a rectangular, closed, water-cooled, box-type frame having two vertical

ledges arranged on its two narrow sides, said ledges engaging with guiding means supported on the pouring platform and adjustable to be exactly vertical. By this guiding mechanism



any displacements between the casting mould and the bar guiding means are safely eliminated and cracks in the bar are avoided.

3,612,157
CONTINUOUS-CASTING ARRANGEMENT COMPRISING A RECIPROCATING OPEN-ENDED MOLD AND A TUNDISH
Klaus Brock, Dusseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Apr. 3, 1969, Ser. No. 812,993
Claims priority, application Germany, Apr. 8, 1968, P 17 58 133.8
Int. Cl. B22d 11/00, 27/08
U.S. Cl. 164—260

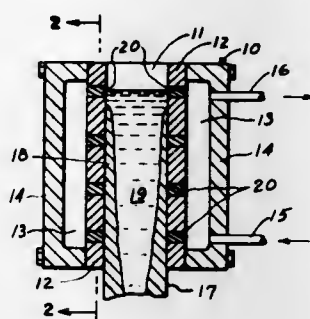


A continuous-casting arrangement comprises open-ended mold and a tundish disposed above it wherein the space between molten metal in the mold and the tundish is sealed for the purpose of pressure regulation. The invention is characterized by the fact that the mold consists of a stationary outer part that is fixed to the tundish and of an inner part facing metal in the mold with a sliding seal interposed between the inner and outer mold parts, there being means connected for oscillating the inner part within the outer part.

3,612,158
CONTINUOUS CASTING MOLD HAVING MULTIPLE INSERTS THROUGH THE CASTING SURFACE WALL
Irving Rossi, Morristown, N.J., assignor to Concast Incorporated, New York, N.Y.
Filed Oct. 29, 1968, Ser. No. 771,592
Int. Cl. B22d 11/00
U.S. Cl. 164—283

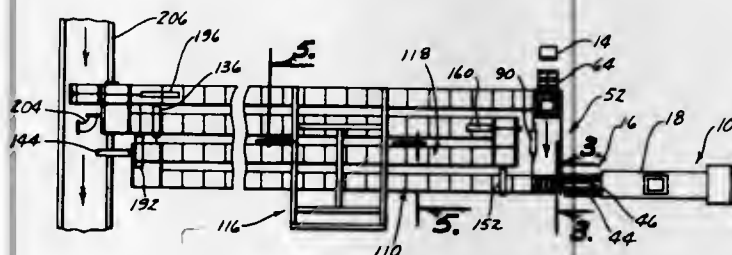
In a continuous-casting mold the wall defining an open-ended mold cavity has inserts therethrough at spaced intervals. The inserts are made of a material, such as copper, having high heat conductivity while the wall is made of a materi-

al, such as steel, which has lower heat conductivity. The ends of the inserts are exposed respectively at the casting surface



of the mold cavity and in a conduit through which a coolant is circulated in contact with the wall.

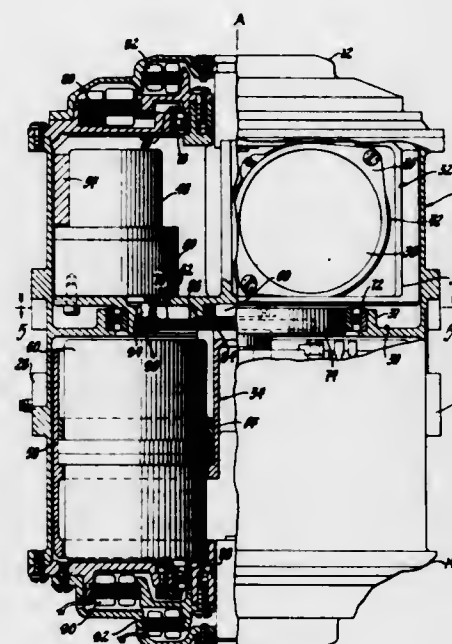
3,612,159
AUTOMATIC MOLD-HANDLING SYSTEM
Milton L. Galinsky, 400 Pelletier, Sioux City, Iowa
Filed Feb. 11, 1970, Ser. No. 10,544
Int. Cl. B22d 33/00, 42/02
U.S. Cl. 164—324



A mold-handling conveyor system for use with an automatic match plate molding machine adapted to produce sand molds on a perforated bottom board. First, second, third and fourth track means are laterally positioned with respect to each other with one end of the first track means positioned adjacent the molding machine. Movable pallets are mounted on the track means in an end-to-end relationship. Means is provided at the machine end of the first track means for receiving the bottom board and mold thereon. A first transfer means extends between the far ends of the first and second track means for transferring the pallets from said first track means onto said second track means. The weights and jackets are shifted from the molds on the pallets on the second track means to the molds on the pallets on the first track means. A second transfer means extends between the machine ends of the second and third track means for transferring the pallets from said second track means to said third track means. A third transfer means extends between the far ends of the third and fourth track means for transferring the pallets from the third track means to the fourth track means. A casting removal means is provided at the third transfer means which removes the casting from the bottom board and drops the casting onto a conveyor. A fourth transfer means extends between the machine ends of the first and fourth track means for moving the pallets from the fourth track means into position adjacent the first track mean so that the pallet may again receive a bottom board and mold thereon. A bottom board removal means is provided at the fourth transfer means for removing the bottom board from the pallet as it is being moved to the position adjacent the machine end of the first track means. Power means are provided for operating the various transfer means. A control means is connected to the power means for coordinating the movement of the pallets with respect to the operation of the molding machine.

3,612,160
INERTIAL REFERENCE APPARATUS
William W. Burroughs, Jr., Manchester, Mass., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1968, Ser. No. 752,907
Int. Cl. G01c 19/08
U.S. Cl. 74—5.34

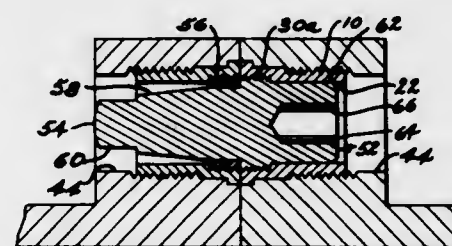
6 Claims



An inertial reference unit for navigation and control systems comprising gimbal platforms carrying inertial measurement instruments. Upper and lower platforms are disposed in stacked relation within a cylindrical inner roll gimbal. The upper platform, which is rotatable relative to the gimbal, is stabilized in azimuth by a closed-loop torque system. The lower platform depends from the upper platform and is rotated relative thereto at a uniform angular rate.

3,612,161
GUIDE PIN AND BUSHING ASSEMBLY FOR FLASK, PATTERNS, AND THE LIKE
Gerald R. Rusk, Maumee, Ohio, and Robert E. Koch, Ottawa Lake, Mich., assignors to The Freeman Supply Company, Toledo, Ohio
Filed Sept. 15, 1969, Ser. No. 857,819
Int. Cl. B22c 21/10
U.S. Cl. 164—385

3 Claims



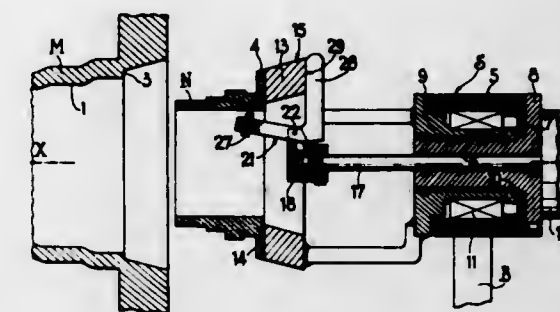
A two-part bushing or guide pin for aligning foundry flasks, hotboxes, and the like comprising: a machinable body portion having external threads for threading into a flask, hotbox, etc., and internal threads for receiving either a hardened nonmachinable guide ring or a hardened nonmachinable guide pin.

3,612,162
CENTRIFUGAL CASTING CORE SUPPORT DEVICE HAVING PIVOTAL CLAW MEANS
Michel Pierrel, Pont-A-Mousson, France, assignor to Centre De Recherches De Pont-A-Mousson, Pont-A-Mousson, France
Filed July 2, 1970, Ser. No. 51,859
Claims priority, application France, July 3, 1969, 6922530
Int. Cl. B22c 13/10
U.S. Cl. 164—397

5 Claims

Core support device for a centrifugal pipe-casting machine. The device comprises a housing having a nonrotat-

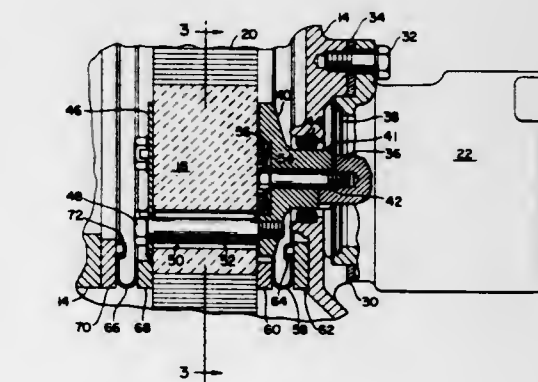
ing part and a rotating part which is connected to a support ring through at least one branch. The nonrotating part carries a piston-and-cylinder fluid motor whose piston rod extends through the nonrotating part of the housing and carries at



one end a core-seizing device which is capable of engaging the inner face of the core and is rotatable on the piston rod. The core-seizing device comprises spring-biased pivotal claws which are pivoted to the core-engaging position by abutment of heel portions of the claws against the support ring.

3,612,163
SUPPORT AND DRIVE MEANS
Louis Powell, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Oct. 16, 1969, Ser. No. 867,015
Int. Cl. F28d 19/04
U.S. Cl. 165—8

7 Claims



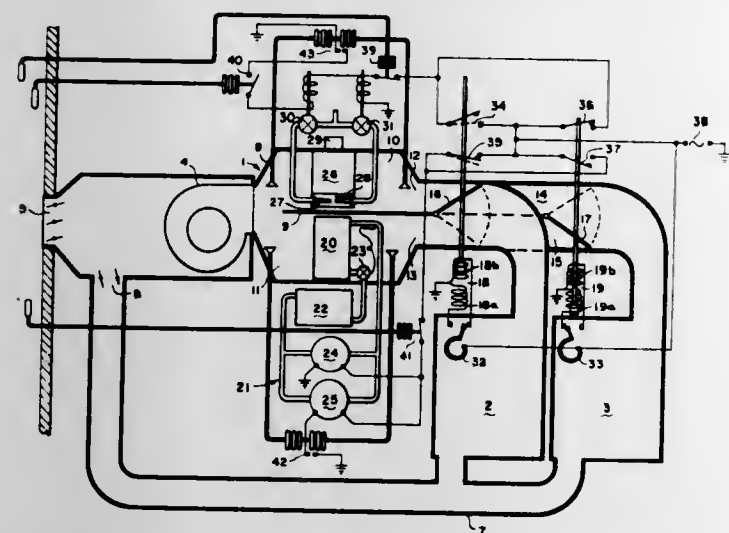
A resilient support and drive system for a rotary regenerator.

3,612,164
MULTIZONE AIR CONDITIONING APPARATUS
Robert G. Miner, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Apr. 17, 1970, Ser. No. 29,435
Int. Cl. F24f 3/00
U.S. Cl. 165—22

10 Claims

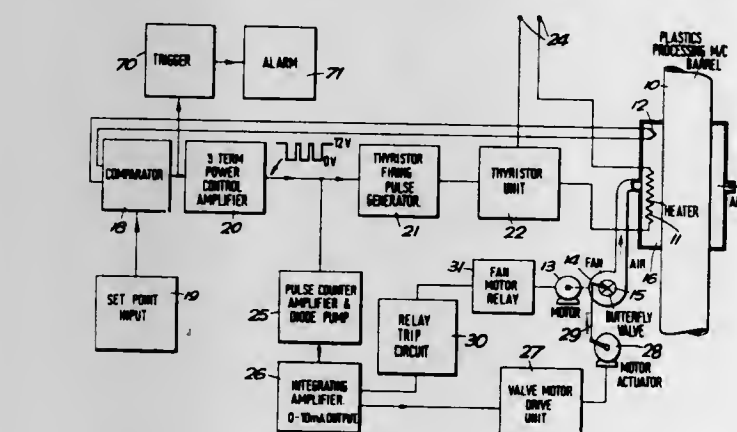
A multizone air conditioning apparatus is shown having both a heating deck and a cooling deck. Each deck has a plurality of outlets each leading to one of a plurality of zones to be air conditioned. Each zone is provided with thermostatic control means for selecting the desired amount of air from the heating and cooling decks. The amount of heat exchange

medium delivered to each of the heating and cooling decks is controlled in response to the rate of airflow through each of



the decks as measured by the pressure differential across the heat exchanger of each of the heating and cooling decks.

3,612,165
TEMPERATURE CONTROLLERS
Anthony Charles Rendell Haynes, Brighton, England, assignor to Gulton Europe Limited, Brighton, England
Filed Nov. 12, 1969, Ser. No. 875,630
Claims priority, application Great Britain, Nov. 12, 1968, 53660/68
Int. Cl. F25b 29/00
U.S. Cl. 165—26

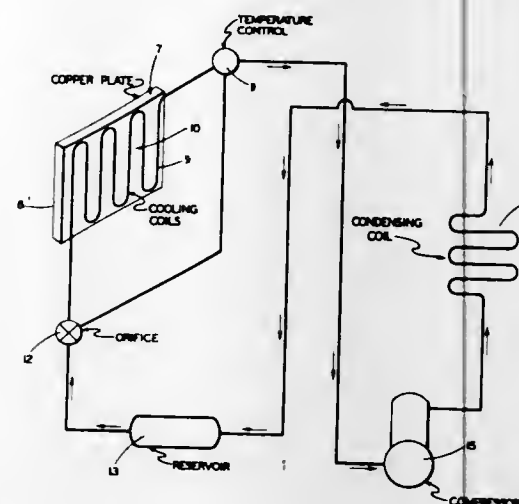


A temperature controller for maintaining temperature at a set point, controls both heating and cooling. Means responsive to a temperature-error signal provide a first output including proportional and integral terms or proportional, integral and derivative terms. This signal is utilized to control heating power and means are provided operative when the heating power is less than a predetermined proportion of the maximum to provide a second output signal for controlling the cooling power. The second output signal is derived directly or indirectly from the first output signal or directly or indirectly from an initiating signal producing the first output signal so that the cooling power increases from a minimum to a predetermined level as the heating power falls from said predetermined level to a minimum.

3,612,166
BURNING BAR ATTACK RESISTANT DEVICE FOR VAULT DOORS
Newton J. Krug, Cincinnati; James D. Shoop, Canton, and Robert J. Bohland, North Canton, all of Ohio, assignors to Diebold, Incorporated, Canton, Ohio
Filed Sept. 8, 1969, Ser. No. 856,114
Int. Cl. B60h 1/00
U.S. Cl. 165—39

A compartment-forming jacket faced on one side with a copper plate, and cooling medium in the compartment or

directly acting to carry heat applied to and conducted through the copper plate away from the copper plate. The



cooling of the copper plate and maintaining the copper plate at a cool temperature provides a protective device for a vault doors and the like which resists penetration of a burning bar.

3,612,167
MULTIPLEX JOIST SYSTEM
Leonard A. Bihler, 25 West 671 Jewell Road, Wheaton, Ill.
Filed Feb. 24, 1969, Ser. No. 801,378
Int. Cl. F24f 3/00
U.S. Cl. 165—50

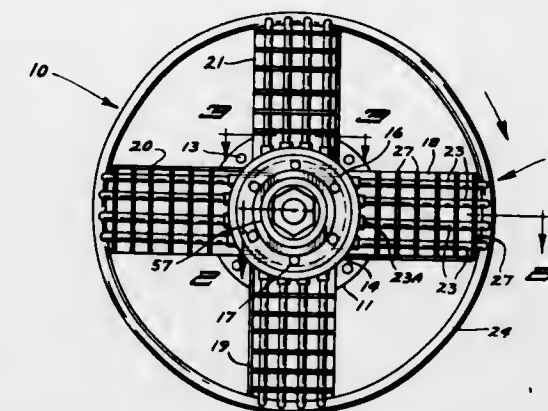


The multiplex joist system comprises a series of spaced parallel joists, each having upper and lower hollow tubular chords with webbing therebetween. At regular intervals the hollow tubular chords of the joists are employed as branch supply and return conduits for the various fluids necessary to service the building, such as heating water, cooling water and chilled water. At regular intervals the hollow chords are also employed to carry electrical lines. One chord may be employed for power lines and the other for signal lines. Various utilization devices may be connected between the hollow tubular chords of the various joists so that the fluids will be circulated through such devices. The electrical lines are also connected to the utilization devices. At frequent intervals, the hollow tubular chords are provided with outlet fittings so that connections may be made at virtually any convenient location. The webbing may be in the form of a zigzag member connected to the tubular chords by means of clips which are welded to the chords and also to the webbing. In some cases, the zigzag member may be in the form of a hollow tube adapted to carry fluids.

3,612,168
ROTATABLE HEAT TRANSFER MEANS
Maurice L. Peterson, Kerkhoven, Minn.
Filed July 10, 1969, Ser. No. 840,658
Int. Cl. F28d 11/00; F28f 5/00
U.S. Cl. 165—86

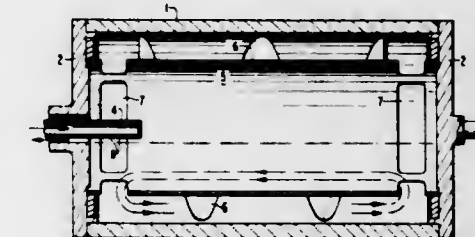
A rotatable heat transfer fan has a plurality of radially extending blades secured to a rotatable hub having fluid inlet and outlet passages. A plurality of radially extending heat exchange tubes are spaced from opposite faces of the blades by a plurality of radially spaced fins secured to the blades and the tubes. The inner ends of the tubes are connected to the inlet and outlet passages in the hub whereby a heat exchange fluid may be circulated through the tubes. The outer ends of each tube is fluidly connected to a tubular ring secured to the outer peripheral portions of the blades. The

tubular ring defines a circumferentially extending annular fluid passage which equalizes the fluid pressure on all of the



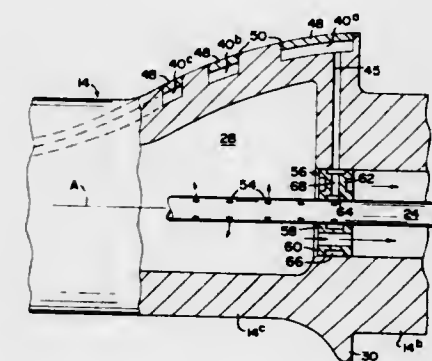
mounted on a stator which is provided with a heating or cooling means. Between the stator and rotor is a connecting element of a solid, heat-conducting lubricating material, e.g. a ring or rings of sintered metal impregnated with a lubricating oil.

3,612,171
HEATABLE OR COOLABLE ROLLER
Bermann Trautner, Niederwalluf/Rheingau, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Aug. 5, 1969, Ser. No. 847,664
Claims priority, application Germany, Aug. 6, 1968, P 17 75 394.5
Int. Cl. F28g 5/02
U.S. Cl. 165—90



3,612,169
TEMPERATURE-CONTROLLED BLADED ROTOR
James T. Matsuoka, Brecksville, and Armino Cantarutti, Akron, both of Ohio, assignors to Intercole Automation, Inc., Cleveland, Ohio
Filed Feb. 28, 1969, Ser. No. 803,196
Int. Cl. F28f 5/06
U.S. Cl. 165—86

2 Claims



This invention relates to a heatable or coolable roller which comprises a hollow cylindrical exterior shell, at least one hollow cylindrical interior shell secured to the exterior shell and having aperture means therein adjacent each end thereof, flow-causing means on the exterior of the interior shell for causing flow of a heat transfer medium, and means for introducing heat transfer medium into said roller and discharging said medium from said roller.

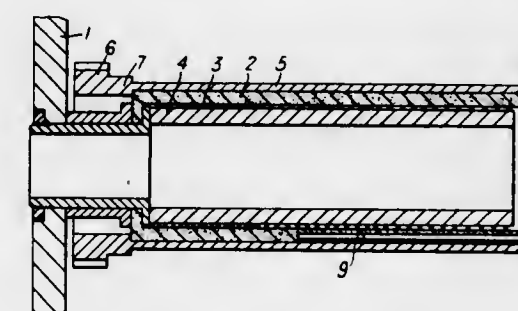
3,612,172
AIR-COOLED CONDENSER
Dietrich Dohnt, Berlin, Germany, assignor to Borsig Gesellschaft mit beschränkter Haftung, Berlin, Germany
Filed Sept. 22, 1969, Ser. No. 859,829
Claims priority, application Germany, Sept. 25, 1968, P 17 76 130.7
Int. Cl. F28f 13/04
U.S. Cl. 165—111

10 Claims

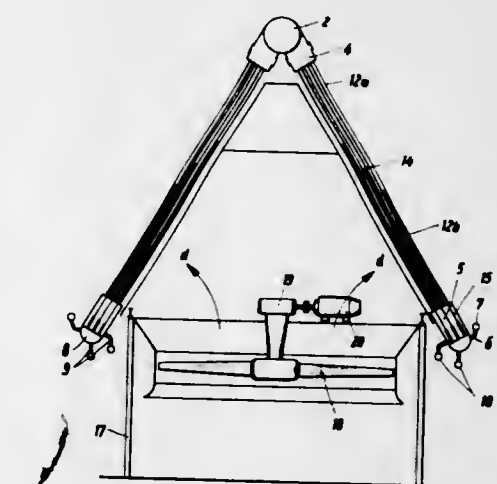
A bladed rotary member for working and/or mixing materials such as rubber, plastic and the like, with helical passageways extending lengthwise of and beneath a generally helically curved surface of a blade portion, through which heat transfer liquid is circulated.

3,612,170
THERMAL TREATMENT ROLL
Paul Juppé, Lyon; Robert Konopatsky, Lyon, and Jean Ruetsch, Tassin, all of France, assignors to Societe Rhodiaceta, Paris, France
Filed Apr. 3, 1969, Ser. No. 813,127
Claims priority, application France, Apr. 3, 1968, 146,894
Int. Cl. F28d 11/02; F28f 5/02
U.S. Cl. 165—89

7 Claims



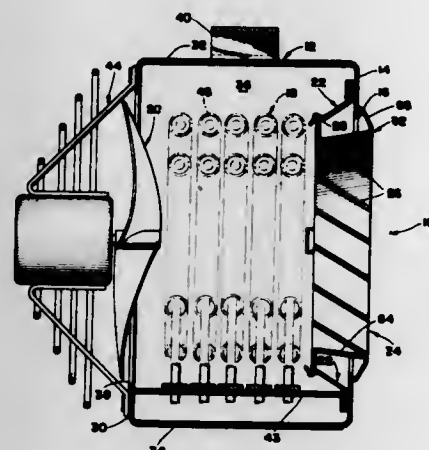
The specification describes a thermal treatment roll, e.g. for heating or cooling a textile yarns etc., wherein a rotor is



An air-cooled condenser in which pipes extending between an upper header and a lower header are divided into upper and lower axial sections by the upper ends of condensate tubes which lead downwardly to a condensate chamber. Steam is supplied through the headers to opposite ends of the pipes and condensate from the upper section of each pipe draining down the respective tube to the condensate chamber which condensate from the lower section of each pipe drains into the lower header. A fan causes cooling air to pass over the pipes which, for efficient heat transfer, may be

3,612,173
UNIT HEATER DEVICE
 Ragbir C. Goyal, Niles, Mich., assignor to Ilg Industries Inc., Chicago, Ill.
 Filed Jan. 10, 1969, Ser. No. 790,421
 Int. Cl. F24b 3/02
 U.S. Cl. 165—122

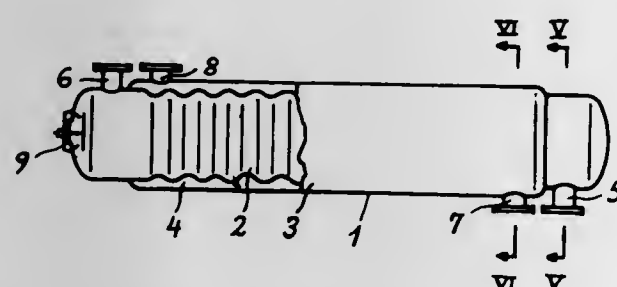
7 Claims



A unit heater is provided having a housing with an opening in one wall and a fan and heating element adapted to cause heated air to flow through the opening. An air deflector assembly is positioned adjacent the opening by clips which permit rotation of the air deflector assembly as well as easy removal thereof to permit substitution of a different air deflector assembly.

3,612,174
APPARATUS HAVING CONNECTING MEANS BETWEEN CONTAINERS FOR PREPARING CONSUMER WATER
 Alfred Vogt, Schaan, and Hellmut Gutmann, Balzers-Mals, both of Liechtenstein, assignors to Gustav Ofselt Hovalwerk AG, Vaduz, Liechtenstein
 Filed June 20, 1969, Ser. No. 835,086
 Int. Cl. F28d 7/10
 U.S. Cl. 165—156

2 Claims



A unit for preparing consumer water, in which an inner longitudinal container arranged in radially spaced relationship within an outer longitudinal container has its end portions protruding from said outer longitudinal container while the coextensive portions of both containers define with each other an annular chamber communicating with fluid inlet and outlet means on the outside of said outer container. The protruding end portions of said inner container likewise being provided with fluid inlet and outlet means communicating with the interior of said inner container.

3,612,175
CORRUGATED METAL TUBING
 James A. Ford, North Haven, and Wade Wolfe, Jr., Mount Carmel, both of Colo., assignors to Olin Corporation
 Filed July 1, 1969, Ser. No. 838,172
 Int. Cl. F28f 1/42
 U.S. Cl. 165—179

6 Claims

The instant disclosure teaches an improved corrugated metal tubing having an improved heat-transfer coefficient and having a plurality of lands and grooves extending along the circumference thereof. The grooves comprise at least two

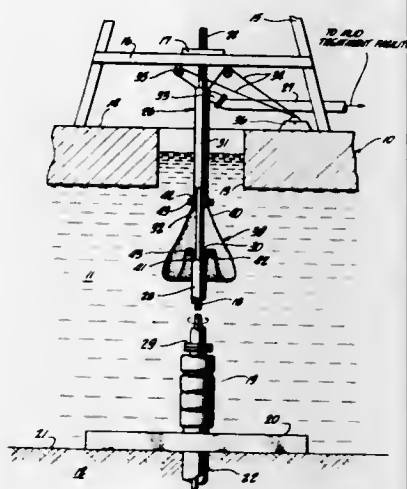
independent, continuous grooves extending helically along the circumference of the tube, with each groove being in spaced relationship to each other. Improved heat transfer is obtained by providing that the land width, the groove width



and the angle of advance of the helically extending grooves are related in a particular defined manner.

3,612,176
FLEXIBLE AND EXTENSIBLE RISER
 Robert F. Bauer, Whittier; Russell B. Thornburg, Palos Verdes, and Paul R. Rininger, Westlake Village, all of Calif., assignors to Global Marine Inc., Los Angeles, Calif.
 Division of Ser. No. 725,784, May 1, 1968, abandoned.
 Filed Oct. 31, 1969, Ser. No. 870,710
 Int. Cl. E21b 7/12
 U.S. Cl. 166—5

4 Claims



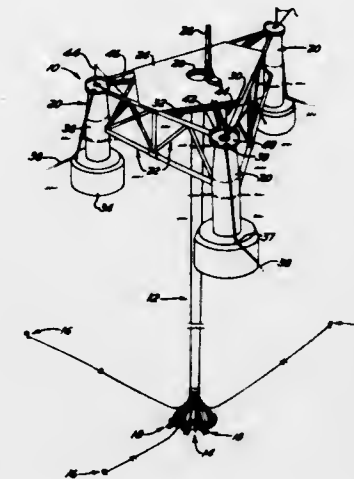
An improved riser structure for use in transporting drilling mud to a floating drilling vessel from a submarine wellhead. The riser structure is defined principally of essentially rigid riser ducting within the length of which, and preferably closer to the vessel than to the wellhead, is disposed a laterally and longitudinally flexible sleeve coupled to the ducting to form a part of a mud flow path from the wellhead to the vessel.

3,612,177
DEEP WATER PRODUCTION SYSTEM
 Paul L. Gassett, Houston, Tex.; Richard J. Goeken, Lagos, Nigeria; James E. Knizner, Houston; Francis M. Smith, Houston, Tex., and Lawrence M. Wilson, Ventura, Calif., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
 Filed Oct. 29, 1969, Ser. No. 872,298
 Int. Cl. F21b 43/01
 U.S. Cl. 166—6

27 Claims

A complete system for developing underwater hydrocarbon fields which utilizes a floating topside facility, a template fixed to the submarine terrain below the topside facility, and a composite riser interconnecting the template and the topside facility. The template includes subsea well bases from

which all the wells are drilled. Guide tubes are provided from the template, through the riser, and up to the topside facility for guiding control lines, flow lines, and the like. An im-



formation traversed by a well bore, the acid solution being displaced into the formation by an aqueous solution of a foaming agent, in situ foaming of the foaming agent being caused by the pumping of gas into the formation to commingle with the foaming agent, and the foam plugs off the more permeable formation to allow injection of acid solution into the less permeable formation to break down the less permeable formation not blocked by the foam.

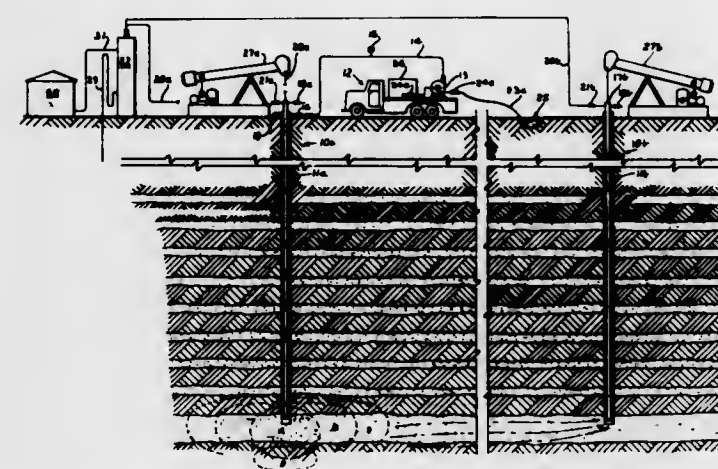
3,612,180
SELECTIVE ZONE CONSOLIDATION OF INCOMPETENT FORMATIONS BY METALLIZATION
 Edwin A. Richardson, Houston, Tex., and Leo P. Broussard, New Orleans, La., assignors to Shell Oil Company, New York, N.Y.
 Filed Aug. 25, 1969, Ser. No. 852,936
 Int. Cl. E21b 33/138

U.S. Cl. 166—292 1 Claim
 A method of consolidating an incompetent heterogeneous earth formation by selectively isolating or plugging off certain zones, e.g., nonproductive zones of said formation, and thereafter consolidating the oil-producing zones with an electrodeless metal-plating solution.

proved substantially vertical entry connection means between the ends of the well lines and the well heads is also provided.

3,612,178
METHOD OF RECOVERING OIL USING FLOW STIMULATING SOLUTION
 Walter F. Germer, Jr., Hwy. 111, Edna, Tex., and Carl W. Stringer, 8023 Springtime, Houston, Tex.
 Filed Oct. 20, 1969, Ser. No. 867,500
 Int. Cl. E21b 43/22
 U.S. Cl. 166—267

3 Claims



The disclosure of a flow-stimulating liquid solution and methods of use is based primarily on the combination of a linear alkyl sulfonate as a detergent and penetrant, serving as a special carrier for a lauric amide emulsifier to draw oil into emulsion and for a phosphate, as sodium phosphate, to draw water into emulsion. A preservative may be added, as a formaldehyde, as to inhibit deterioration due to bacteria, or other factors. Also when in the course of usage, it may be desirable to quicken the setting action, as by clarifying a floated emulsion, a base, as sodium hydroxide, may be added as a stimulant to break the emulsion. The solution may be used in recovering oil from an oil-bearing formation, or in reclaiming contaminated or used oil.

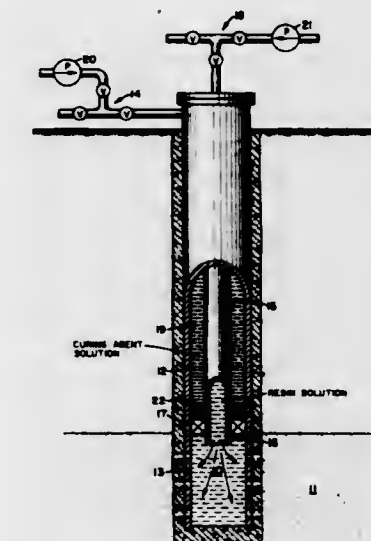
3,612,179
METHOD OF STIMULATING WELL PRODUCTION
 James L. Anderson; Ernest M. Cloughly, and Charles L. Smith, all of Arlington, Tex., assignors to Byron Jackson Inc., Long Beach, Calif.
 Filed July 17, 1969, Ser. No. 842,700
 Int. Cl. E21b 43/27
 U.S. Cl. 166—281

4 Claims

The method of stimulating the production of wells by injecting a body of acid solution into a portion of the earth's

3,612,181
METHOD FOR CONSOLIDATING INCOMPETENT FORMATIONS
 Fred A. Brooks, Jr., Houston, Tex., assignor to Esso Production Research Company
 Filed Feb. 16, 1970, Ser. No. 11,495
 Int. Cl. E21b 33/138
 U.S. Cl. 166—295

9 Claims



A method for the consolidation of incompetent formations wherein a thermosetting resin is injected into the formation through a first conduit and a curing agent for the resin is injected into the formation through a second conduit.

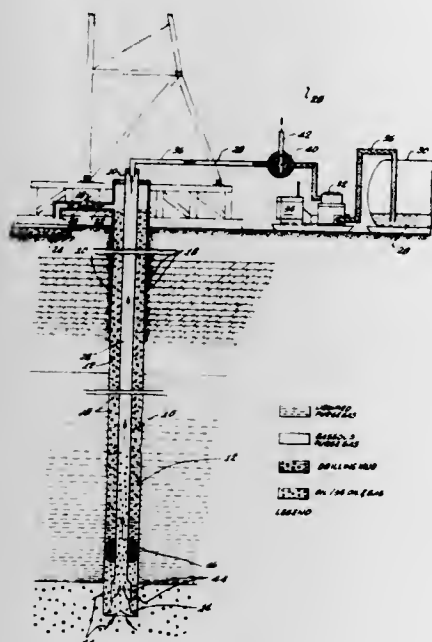
3,612,182
OIL RECOVERY PROCESS
 Philip J. Raifsaider, deceased, late of Denver, Colo. (by Dorothy E. Raifsaider, executrix), assignor to Shell Oil Company, New York, N.Y.
 Filed Aug. 25, 1969, Ser. No. 853,235
 Int. Cl. E21b 43/22, 43/27
 U.S. Cl. 166—307

10 Claims

In a fluid drive oil recovery process, alternate slugs of acidizing liquid and concentrated, water-swellable, gel-forming surfactant are injected prior to the injection of the drive fluid. The treatment provides improvements such as a more uniform injection profile and increased stability and permeability with respect to an aqueous drive fluid.

3,612,183
PROCESS FOR PURGING A DRILL STEM
 Harold E. Shillander, 414½ Central S.E., and Roy M. Eidal,
 P. O. Box 2087, both of Albuquerque, N. Mex.
 Filed Dec. 11, 1969, Ser. No. 884,287
 Int. Cl. E21b 21/00, 49/00
 U.S. Cl. 166—312

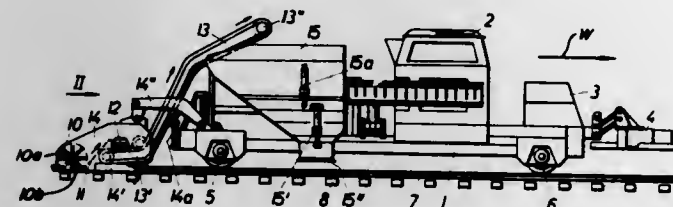
16 Claims



A process for purging a drill stem of drilling fluid and relieving the hydrostatic pressure within the stem to perform a production test or introduce treating fluids into a formation at the bottom of the stem. The process comprises the steps of: pumping a liquefied purge gas into the stem to displace the drilling fluid out of the stem and into the annulus; setting an expandable packing carried by the stem; relieving the pressure on the liquefied purge gas; and bleeding the purge gas from the stem. The purge gas is a gas capable of being liquefied at ambient temperatures under moderate pressures yet is gaseous at normal ambient temperatures and atmospheric pressures.

3,612,184
MOBILE BALLAST SWEEPING AND REDISTRIBUTION MACHINE
 Franz Plasser, and Josef Theurer, both of Johannesgasse 3,
 1010 Vienna, Austria
 Filed Mar. 3, 1969, Ser. No. 803,570
 Claims priority, application Austria, Mar. 20, 1968, A
 2786/68
 Int. Cl. E01b 27/00
 U.S. Cl. 171—16

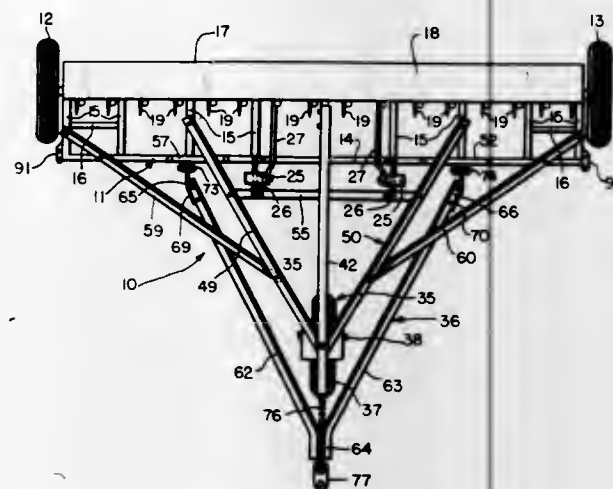
8 Claims



A mobile ballast sweeping and redistributing machine comprises a rotary broom, ballast conveyor means continuously operable independently of the machine movement for conveying the swept ballast away from the broom, and means for the continuous redistribution of the ballast received from the conveyor means.

3,612,185
IMPLEMENT SYSTEMS
 Darrel Grauberger, and Roy Grauberger, both of R.R. # 2,
 Fleming, Colo.
 Filed Mar. 24, 1969, Ser. No. 809,630
 Int. Cl. A01c 5/00; A01b 49/00
 U.S. Cl. 172—314

10 Claims

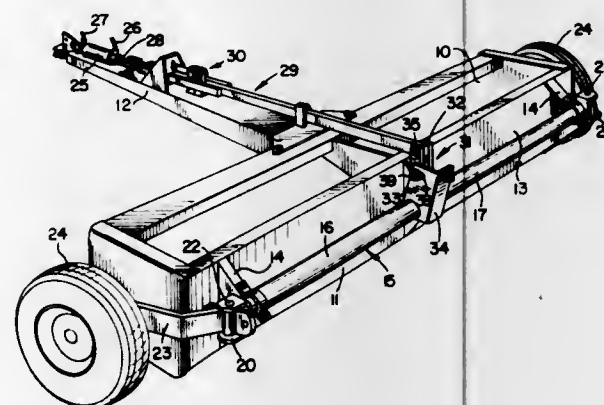


An agricultural implement system includes at least two towed units with each having a frame carried between a pair of wheels. As illustrated, the frame supports a seed drill. Each of the units has a castor wheel assembly rigidly but adjustably fixed from and ahead of its frame. A V-shaped drawbar is secured to each frame so as to swing vertically and is suspended in an adjustably fixed horizontal position from the respective castor wheel assembly.

The two units may be towed in common behind a tractor by means of a hitch system that locates one unit behind the other with a relative overlapping of wheels so that the operative end of one drill is aligned behind the opposite end of the other. The system includes a strut projecting laterally from the forward unit onto the outer end of which the drawbar of the rear unit is coupled. An element coupled to the tractor is in turn interconnected to the two units by links and linkages that resemble spokes fanned outwardly from that element. The strut is arranged to swing vertically, while loose-fitting vertically oriented pins serve to interconnect at least most of the different links, linkages and the strut so as to permit flexibility and quick and easy assembly and disassembly of the system. The different coupling elements also are structured to permit the units, instead, to be towed in cascade.

3,612,186
LEVELING MECHANISM
 Jerome L. Fueslein, Linden, Calif., assignor to International Harvester Company, Chicago, Ill.
 Filed Dec. 29, 1969, Ser. No. 888,684
 Int. Cl. A01b 63/22
 U.S. Cl. 172—421

3 Claims

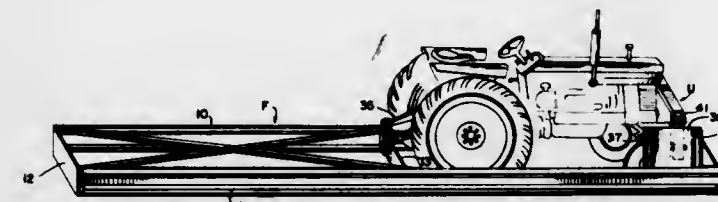


In an earth-scraping implement of the transversely elongated type supported by laterally spaced wheels which can be vertically moved to raise and lower the implement, the wheels are mounted on arms affixed to and projecting from a

transverse rockshaft formed of two parts, one of which can be angularly adjusted relative to the other to level the bowl and scraper blade.

3,612,187
LAND LEVELER
 Price H. Glass, Rte. 1 Box 187, Amity, Oreg.
 Filed Apr. 28, 1970, Ser. No. 32,546
 Int. Cl. E02f 3/64
 U.S. Cl. 172—780

10 Claims

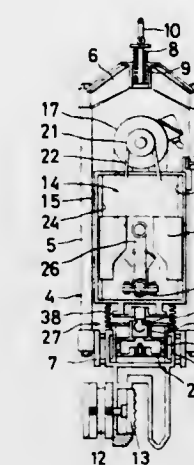


This specification discloses a land leveler comprising a massive rectangular frame including reinforced side bars and three crossbars that engage the ground surface for leveling purposes. These are a tail bar, an intermediate bar and a front bar which is pivotally mounted on the side bars. It may be lowered into position on the ground surface to permit a tractor to be backed thereover into the space between the front and intermediate bars. An inverted U-shaped frame is secured to the front end of the tractor and side legs thereof carry rollers which ride on wear plates upstanding from the side bars.

The section between the intermediate crossbar and tail bar is more extensive than the tractor-receiving section and is provided with diagonal braces. Thus, it is appreciably heavier than the tractor-receiving section. Upstanding from the intermediate crossbar is a bracket which is pivotally connected to the standard drawbar of the tractor hoist. The U frame at the front end of the tractor is provided with stops which cooperate with the wear plates in limiting upward movement of the front end.

3,612,188
NOISELESS PILE DRIVER
 Takenosuke Ono, Tokyo, Japan, assignor to North Engineering Co., Ltd.
 Filed July 10, 1970, Ser. No. 53,877
 Int. Cl. E02d 7/00
 U.S. Cl. 173—122

7 Claims



A pile-driving apparatus in which the inertia of a reciprocated weight produces a force impulse at one end of each stroke which is applied to the head of a pile via an impact-enforcing mechanism which includes resilient means such as a cushion of air or oil, thereby driving the pile in a relatively quiet manner without the noise of hammer impacts.

3,612,189
WELL PERFORATING AND TREATING APPARATUS
 Fred A. Brooks, and Leroy H. Simons, both of Houston, Tex.,
 assignors to Esso Production Research Company
 Filed Oct. 24, 1969, Ser. No. 869,156
 Int. Cl. E21b 43/117, 43/119
 U.S. Cl. 175—4.54

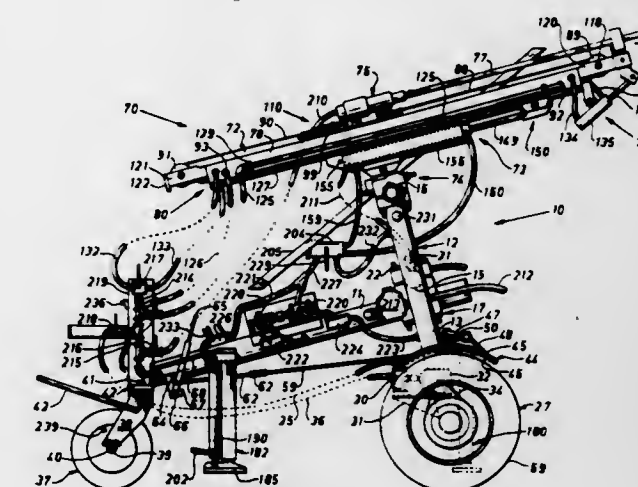
10 Claims



A well completion apparatus for perforating and injecting a fluid into a formation surrounding a cased wellbore. The apparatus includes a body unit defining an enclosed chamber, a perforator mounted in the chamber, a conduit in fluid communication with the chamber and adapted to conduct fluid from the surface to the chamber, and a mechanism for firing the perforator to form a flow passage between the formation and the chamber.

3,612,190
ROCK DRILL SUPPORTING VEHICLES FOR CUT-AND-FILL STOPPING OPERATIONS
 Mac Gordon Wills, R.R. # 2, Chelmsford, Ontario, Canada
 Filed Apr. 24, 1970, Ser. No. 31,587
 Int. Cl. E21c 11/02
 U.S. Cl. 173—20

10 Claims

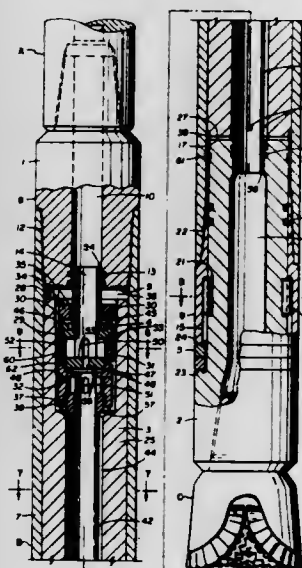


A rock drill supporting vehicle particularly intended for use in cut-and-fill stopping operations has one or more fluid-operated drill guiding and supporting cable cylinders adjustably mounted on a chassis structure of the vehicle. Three spaced-apart hydraulic jacks are provided for levelling the vehicle on the mine floor and a bubble level is provided on the vehicle for indicating when the vehicle has been moved into a level disposition. With this structure, a constant but

adjustable predetermined drill hole angle is obtained. A fixed lug permanently secured to one of the wheels of the vehicle functions as an odometer and permits accurate control of drill hole separation.

3,612,191
PERCUSSION DRILLING TOOL
Leo Andrew Martini, 5920 Sandhurst, Dallas, Tex.
Filed Mar. 11, 1970, Ser. No. 18,635
Int. Cl. E216 1/00
U.S. Cl. 173-73

12 Claims



A unique percussion motor is disclosed that is operable on liquid or gaseous fluid under pressure for rotary drilling of oil, gas, and water wells, geophysical holes, open strip mining blastholes, construction holes and the like for greatly increasing the rate at which said boreholes are drilled. This comparatively simple prime mover produces sustained high-frequency, high-longitudinal-force spikes on a drill bit by synchronizing application of percussive force and drill collar weight energy and superimposes one force upon the other to obtain instantaneous anvil accelerations of much greater magnitude than either force could, acting separately, to produce rock-crushing forces of greater effectivity. Rebound of tough elastic masses is also used to decided advantage for conserving system energy and applying it usefully, allowing this device to adjust cycle frequency and percussive blow force to the hardness of the formation being drilled. This tool has essentially a positive displacement allowing use of properly sized drill bit jet nozzles for hole bore cleaning.

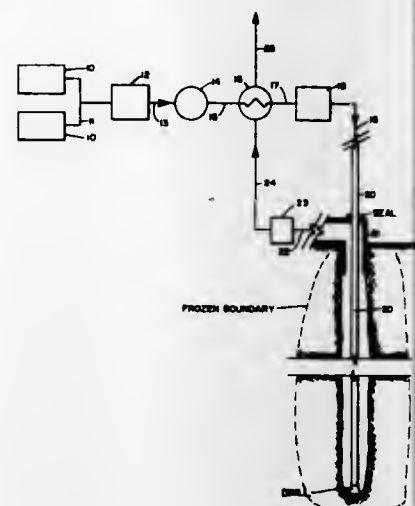
This tool also incorporates a unique tubular single valving element and seat arrangement located totally in hammer allowing use of maximum hammer surface area for fluid-biased hammer accelerations in both directions, simultaneously and alternately permitting fluid flow to one pressure chamber while exhausting the other, and has an unusually fast, short-stroke valve-shifting action at the end of each hammer stroke, thereby eliminating precise part dimensions, hammer stroke, and anvil locations as well as reducing valve-timing and erosion problems. Limited-life tool components consisting of valve and valve seats are separate, easily replaceable and disposable.

3,612,192
CRYOGENIC DRILLING METHOD
James Q. Maguire, Jr., 210 N. Sherry, Norman, Okla.
Filed Apr. 14, 1969, Ser. No. 822,839
Int. Cl. E21b 21/04
U.S. Cl. 175-17

11 Claims

A process for air drilling by cooling the air to cryogenic temperatures, forcing the cooled air down the drill column and up the well bore. The cold air will cause the well bore to freeze eliminating many of the problems in air drilling such

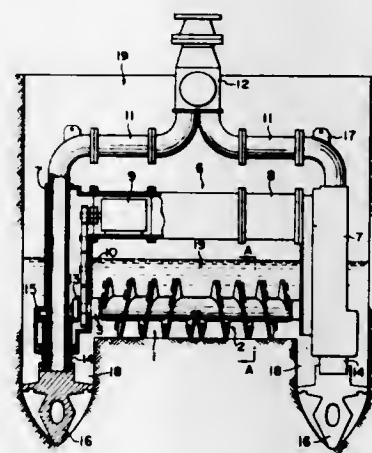
as water influx and sloughing of shale. The process will also permit efficient use of the electric drill. The process may also



be applied to other gaseous drilling fluids such as, for example, natural gas, nitrogen, propane, neon and the like.

3,612,193
RECTANGULAR DRILLING FOR EARTH EXCAVATION
Shigeru Hirata, Tokyo, Japan, assignor to Kajima Kensetsu Kabushiki Kaisha, Minato-ku, Tokyo, Japan
Filed Aug. 11, 1969, Ser. No. 848,849
Claims priority, application Japan, Aug. 26, 1968, 43/60436
Int. Cl. E21b 11/00, 7/00
U.S. Cl. 175-91

4 Claims



A drilling machine for forming a vertical hole having an oblong and somewhat rectangular horizontal cross section in the earth, comprising a supporting frame housing a driving means which drives a horizontally arranged auger which is supported by the supporting means and comprises two spiral screw threads coaxially arranged and completely symmetrically formed with respect to each other. The supporting means supports a soil-sucking pipe means at its bisected branches arranged over both extremities of the auger and is provided with bits under the branches, respectively.

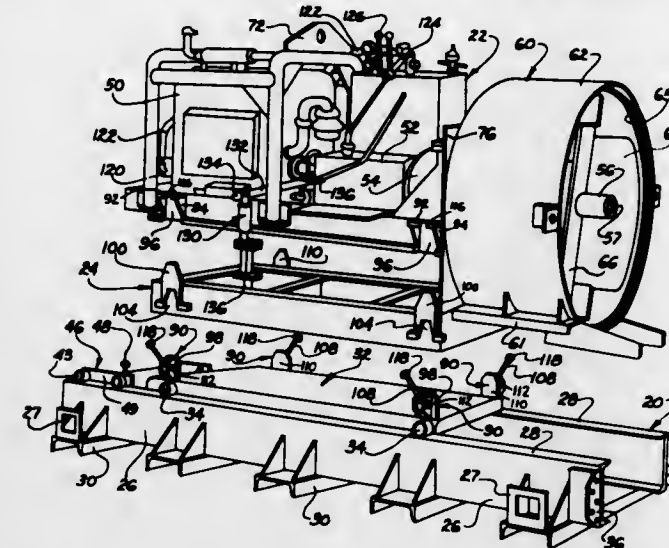
3,612,194
EARTH-BORING MACHINE
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio
Filed Oct. 20, 1969, Ser. No. 867,814
Int. Cl. E21c 1/10
U.S. Cl. 175-122

6 Claims

A machine for the horizontal boring of shafts for the insertion of pipelines where excavation from the surface is undesirable, such as under freeways or the like, which comprises a boring mechanism for forming the holes as well as the push function for advancing the pipeline casings. This novel arrangement includes a pusher ring frame which is removably mounted on the track means and a power means

frame which is in turn removably mounted on said pusher ring frame such that the frames can be removed from one another or removed from the carriage as an assembly. More

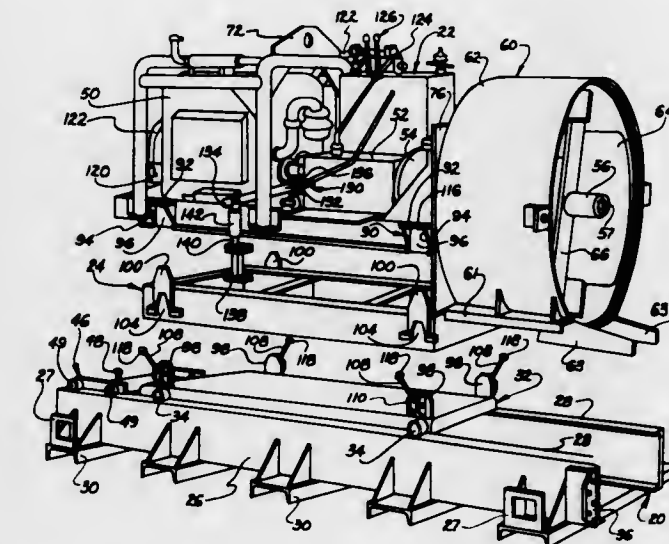
closely positioned end-to-end, the cutters being supported by journals having restricted endwise movement in their mounts, and the mounts including journal end receiving saddles and



particularly, the base means on the track includes a novel latch means for selective movement between a retracted released position and an extended latch position provided with means for selected shifting between said positions.

3,612,195
EARTH-BORING MACHINE
Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio
Filed Oct. 20, 1969, Ser. No. 867,816
Int. Cl. E21c 1/10
U.S. Cl. 175-122

12 Claims

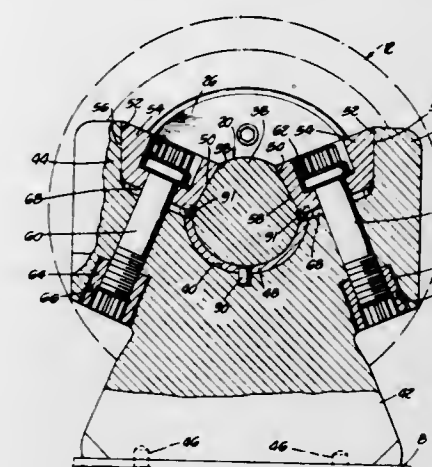


A machine for the horizontal boring of shafts for the insertion of pipelines where excavation from the surface is undesirable, such as under freeways or the like, which comprises a boring mechanism for forming the holes as well as the push function for advancing the pipeline casings. This novel arrangement includes a pusher ring frame which is removably mounted on the track means and a power means frame which is in turn removably mounted on said pusher ring frame such that the frames can be removed from one another or removed from the carriage as an assembly.

3,612,196
ROCK-BORING CUTTER
Robert L. Dixon, Whittier, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed May 1, 1970, Ser. No. 33,819
Int. Cl. E21c 13/12; F16c 19/08
U.S. Cl. 175-364

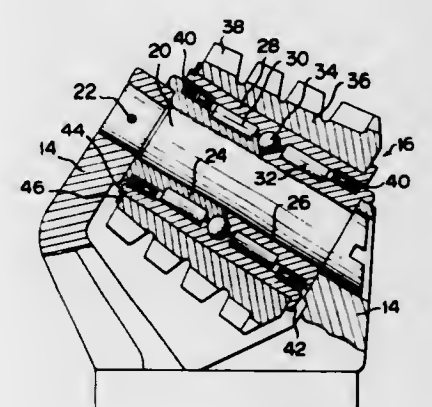
8 Claims

A cutter assembly particularly adapted for use on headplates of rock-boring tools wherein a plurality of cutters are



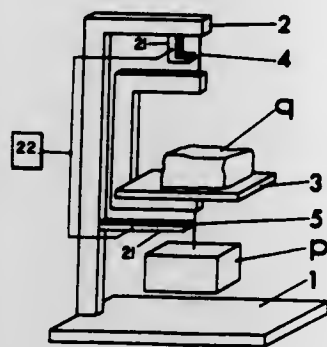
3,612,197
BIG HOLE DRILLING BIT
Hiroyasu Motoyama, Tokyo, Japan, assignor to Koken Suisi Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,266
Claims priority, application Australia, Dec. 24, 1968, 48341/68
Int. Cl. E21b 9/10, 9/36; F02t 15/44
U.S. Cl. 175-364

3 Claims



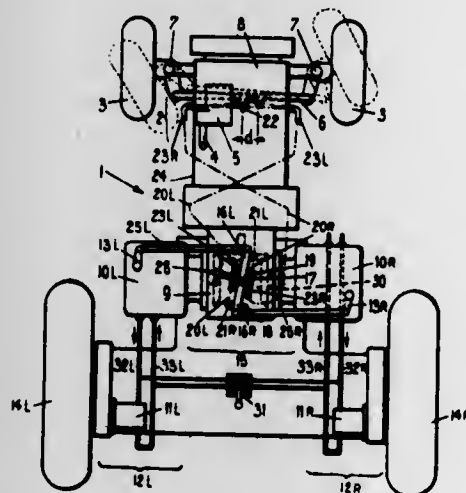
An improved large diameter hole drilling bit consisting of a cutter head with a plurality of yokes fixedly mounted on the cutter head and a like plurality of roller cutters each rotatably mounted on a yoke. The drilling bit is adapted to be supported by a drilling rod which is rotated by a power unit of the drilling machine. During drilling operation, the cutter head is rotated about the axis of the drilling bit and at the same time the roller cutters are rotated about their own axes with respect to the yokes by contact to the rock or the like. Each roller cutter includes a load pin supported by the yoke fixed on the cutter head, a cutter cone having cutting teeth or individually replaceable tips thereon and bearing balls and/or rollers interposed between the cutter cone and the load pin so that the cutter cone is supported for free rotation on the load pin. Pressure-responsive seals and dust filters prevent foreign material from passing into the bearings. The load pin, cutter cone and bearing are preferably held in permanent assembly.

3,612,198
ELECTRICAL MASS METER
 Mario Gallo, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland
 Filed Oct. 8, 1968, Ser. No. 765,879
 Claims priority, application Switzerland, Jan. 26, 1968, 1434/68
 Int. Cl. G01g 3/14
 U.S. Cl. 177-210 5 Claims



A mass meter comprising a baseplate, a weighing platform and two electronically excited, transversely vibratable pretensioned strings, wherein the first string is tensioned by a pretensioning mass and the second string is tensioned by a mass to be measured.

3,612,199
VEHICLE
 Herbert Vlasers, Nieuw-Vennep, Netherlands, assignor to Landbouwwerktuigen Machinefabriek H. Vlasers N.V., Nieuw-Vennep, Netherlands
 Filed Sept. 3, 1969, Ser. No. 854,966
 Claims priority, application Netherlands, Sept. 9, 1968, 68.12831
 Int. Cl. B62d 11/04
 U.S. Cl. 180-6.32 6 Claims

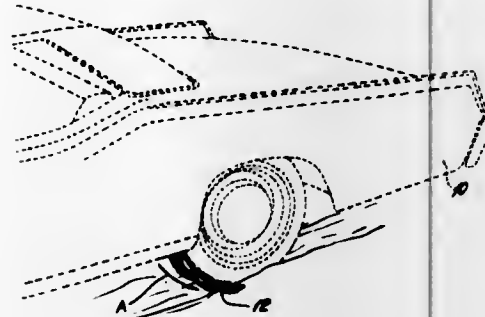


A vehicle having wheels which are each driven by hydraulic gears which are provided with such a control mechanism for controlling the speed of rotation and the relative speed of operation of said driven wheels that the adjustment of the travel direction and the adjustment of the travel speed do not influence each other, resulting in the vehicle having improved steering characteristics.

3,612,200
TRACTION DEVICE FOR A SPINNING TRACTION WHEEL
 Rene E. Callyer, 3032 Laurier Ave. East, Montreal 405, Quebec, Canada
 Filed Oct. 17, 1969, Ser. No. 867,151
 Int. Cl. B62d 57/00
 U.S. Cl. 180-7 4 Claims

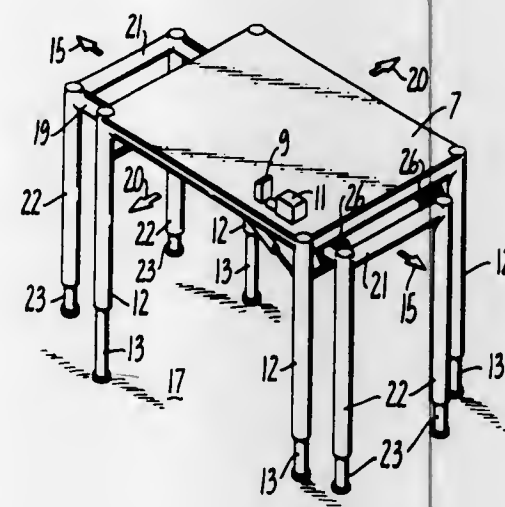
A mat extending over a segment of a traction wheel of a vehicle and spaced therefrom in its upper position is

mounted on the casing of the axle of the wheel so as to eccentrically rotate thereabout to touch the tire in its lower position. A device locks the mat in its upper inoperative position and unlocks it to let it fall towards its lower position when additional traction is needed. The device locks back the mat in its upper position to which it returns by the spinning of the wheel.



tion and unlocks it to let it fall towards its lower position when additional traction is needed. The device locks back the mat in its upper position to which it returns by the spinning of the wheel.

3,612,201
SELF-PROPELLED PLATFORM TOWER
 Richard H. Smith, 30 Bates Road, Hillsborough, Calif.
 Filed June 18, 1970, Ser. No. 47,299
 Int. Cl. B62d 57/02; E02b 17/00
 U.S. Cl. 180-8 E 1 Claim

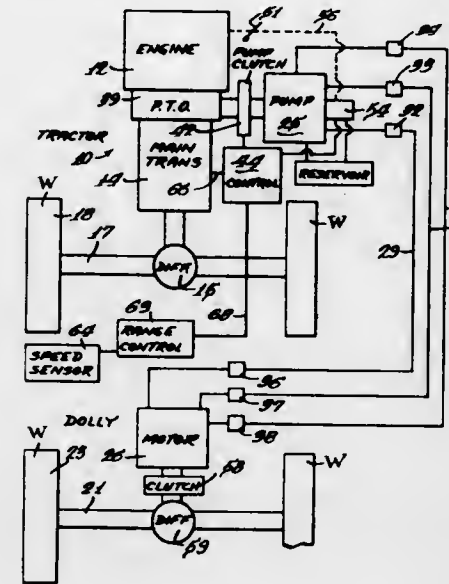


This invention relates to a deck or work platform supported so that it can be moved in a selected direction and to a selected extent over the ground both under water and on land. It may be used on the sea bottom, particularly in an offshore location. It may also be used on tundra, muskeg, swampy locations and the like.

3,612,202
HYDROSTATIC WHEEL ASSIST
 Harry C. Moon, Jr., Ogelesby, and John W. Pinkerton, La Salle, both of Ill., assignors to Sundstrand Corporation
 Filed June 2, 1969, Ser. No. 829,440
 Int. Cl. B62d 59/04
 U.S. Cl. 180-14 A 18 Claims

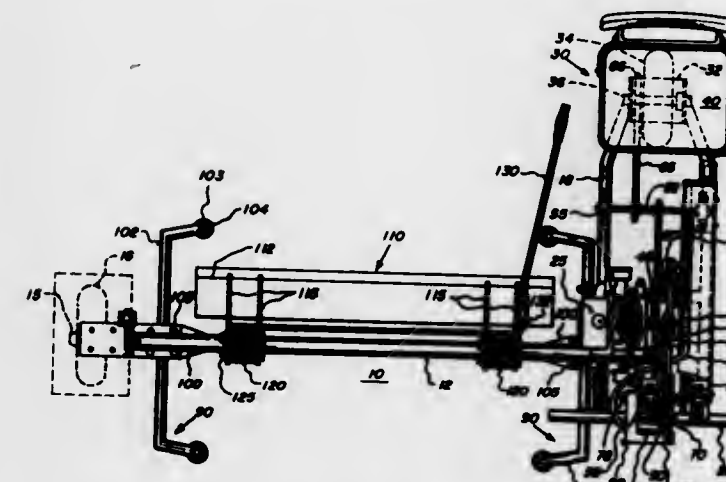
A hydrostatic assist drive for a tractor-trailer driven by the prime mover of the tractor, that may be selectively initiated to drive the wheels of the trailer through a two-speed differential, there being provided a control which maintains the torque of the hydrostatic drive a percentage of the total tractive effort of the tractor-trailer, and also a delay device on the torque control for the hydrostatic drive to maintain the

tractive effort provided by the hydrostatic assist drive during shifting of the main tractor transmission, there being also one of the suspension arms and the motor, the ball joint being apertured to allow passage of working fluid between



provided a valve for unloading the hydrostatic drive train during shifting of the two-speed differential.

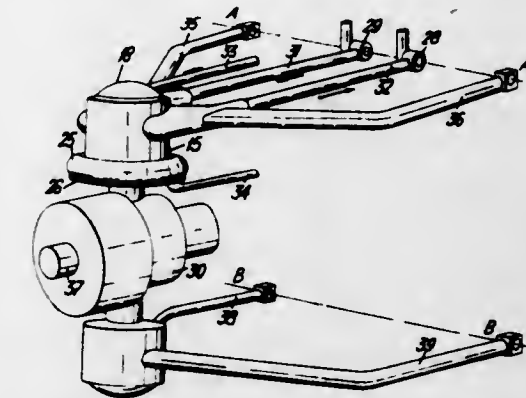
3,612,203
WHEELED IMPLEMENT
 Floyd W. Kuecker, 1620 S. 29th St., La Crosse, Wis.
 Filed Aug. 25, 1969, Ser. No. 852,771
 Int. Cl. B65f 3/00
 U.S. Cl. 180-25 9 Claims



A wheeled implement and an improved power transmission for employing a gasoline engine or equivalent unidirectional rotating power source in which a lever-mounted belt-drive system is positioned in contact with a pulley on an output shaft of the engine selectively at varying points thereon and held in contacting relationship therewith to impart rotation to the belt system which is coupled through positive drives to the wheels of an implement. The implement includes a scraper blade which is adjustably positioned about portions of the frame and the structure is guided by means of additional guide wheels positioned on the frame and contacting a portion of the surface to be worked.

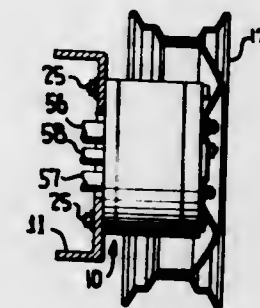
3,612,204
VEHICLE WHEEL SUSPENSION
 Arthur Frederick Allen, Littleover, Derby, England, assignor to Rolls-Royce Limited, Derby, England
 Filed Apr. 7, 1969, Ser. No. 813,818
 Claims priority, application Great Britain, Apr. 15, 1968, 16382/68
 Int. Cl. B60k 17/30
 U.S. Cl. 180-43 R 18 Claims

A vehicle wheel suspension for a wheel having a hydrostatic motor mounted thereon comprises a ball joint between



the rotor and the arm.

3,612,205
FLUID MOTOR
 George M. Barrett, R.R. # 5, Galt, Ontario, Canada
 Filed Apr. 25, 1969, Ser. No. 819,155
 Int. Cl. B60k 7/00
 U.S. Cl. 180-66 F 7 Claims

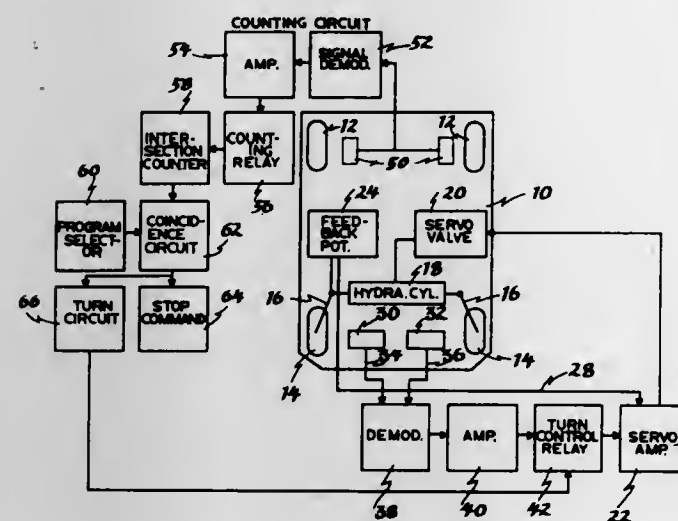


A fluid motor which is particularly constructed for mounting a driven member substantially concentric thereto with the driven member being preferably in the form of a vehicle wheel although the motor can drive other elements such as pulleys, shafts, etc. One of the principal features of the fluid motor is the arrangement of the components thereof, the use of fluid bearings throughout, and fluid thrust bearings particularly adapted to accommodate axial thrusts, such as those imposed by a vehicle wheel.

3,612,206
AUTOMATIC GUIDANCE SYSTEM FOR WAREHOUSE TRUCKS AND THE LIKE
 Frederick F. Ohnstrup, Plymouth Meeting, Pa., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
 Filed July 7, 1969, Ser. No. 839,417
 Int. Cl. B62d 5/04
 U.S. Cl. 180-98 20 Claims

A self-steering vehicle such as a warehouse truck is guided over a preprogrammed path by guidance wires which are arranged to form an x-y coordinate grid. The vehicle navigates by following a first coordinate guidance wire while counting the number of second coordinate guidance wires which it crosses. When the number of crossings counted indicates arrival at a particular grid intersection where a 90° course change is required, the vehicle executes a right angle turn. Thereafter it follows one of the second coordinate wires while counting first coordinate wire crossings. A series-connected sinuous wire configuration simplifies the problems of energizing the wires, to make them detectable by inductive sensors on board the vehicle. The excitations applied to the two coordinate wires are 90° out of phase with each other, so as to cancel steering errors which would otherwise be caused by a distortion of the guidance wire fields which occurs when permeable material is in, on, or adjacent to the vehicle. The

90° course changes are accomplished by a pivotal maneuver; a special type of in-place turn which avoids losing the orientation of the vehicle relative to the guidance wires. A perpen-



dicularity sensing circuit detects when the pivotal turn has been completed and the vehicle has been rotated into proper alignment with the next coordinate wire to be followed.

3,612,207

VEHICLE DOOR LOCK SAFETY LATCHING SYSTEMS
Alain Cabanes, and Andre Lefevre, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine), France and Automobiles Peugeot, Paris, France

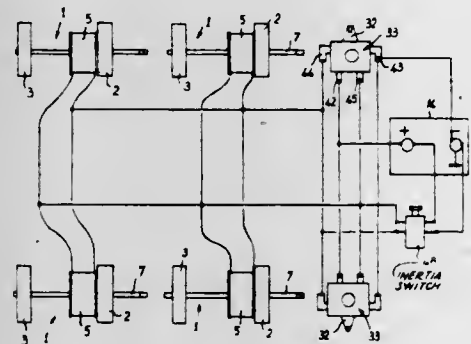
Filed May 11, 1970, Ser. No. 36,113

Claims priority, application France, May 19, 1969, 69/16090

Int. Cl. E05b 65/36

U.S. Cl. 180—112

7 Claims



This latching system comprises a control member with, for each door, a coil movable axially between a pair of ferrite disks, the reversal of current in the coil causing the reversal of the direction of travel thereof, all the coils being connected in parallel to the output terminals of at least one four-pole reversing switch of the transitory action, front-contact type, connected to a source of current, the control member constituting a compact unit independent of the door lock, said reversing switch being adapted to be actuated by means of either an external key for the front door lock or a control member accessible from the interior of the vehicle.

3,612,208

AIR-CUSHION VEHICLE WITH REVERSE THRUST BRAKES

Hugo S. Ferguson, Averill Park, N.Y., assignor to Air Cushion Vehicles, Inc., Poestenkill, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,160

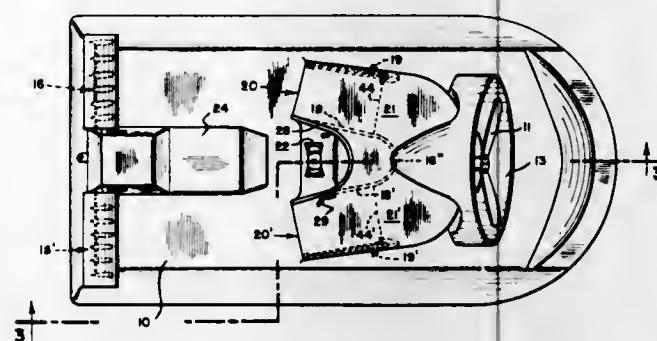
Int. Cl. B60v 1/14

U.S. Cl. 180—120

7 Claims

A single propeller mounted toward the front of the vehicle provides both propulsion and air cushion. Two point steering

is provided by front and rear steering vanes with air channels on each side which direct a portion of the downstream flow of air, under the control of the front vanes, to the rear vanes. To reduce forward thrust without reducing engine power, collapsible airbrakes are mounted on the outer walls of the



air channels and in their collapsed position form a part thereof. The airbrakes include flexible sheets which in their extended positions, form concave arcuate surfaces extending across respective air channels and outside thereof to intercept downstream flow of air and divert it outwardly of the vehicle.

3,612,209

PROPULSION NOZZLE WITH COMBINED THRUST REVERSER AND SOUND SUPPRESSOR MECHANISM

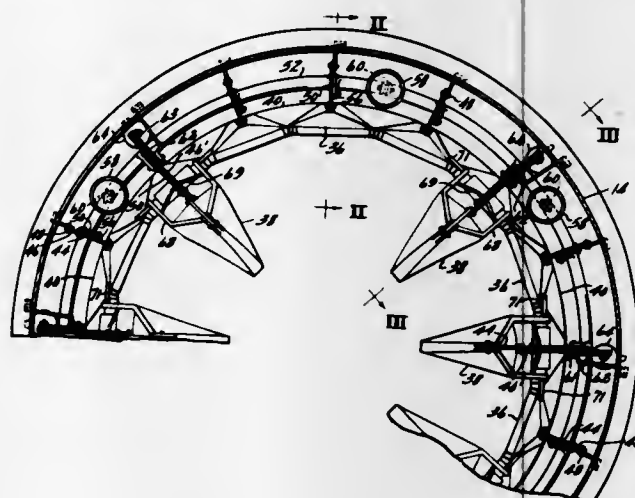
John W. Vdoviak, and Roy A. Krabacher, both of Cincinnati, Ohio, assignors to General Electric Company

Filed Nov. 28, 1969, Ser. No. 880,815

Int. Cl. B64d 33/06; F01n 1/14

U.S. Cl. 181—33 HC

9 Claims



A convergent-divergent nozzle for supersonic propulsion is shown. Flaps are pivotally mounted at the throat of the divergent, secondary nozzle and form a part of the secondary nozzle during normal supersonic propulsion. Spaced flaps, on opposite sides of the nozzle, are pivoted inwardly for sound suppression. All of the flaps are pivoted inwardly to block the hot gas stream and direct it forwardly and laterally through blow-in doors to provide reverse thrust. The flaps are controlled by a unique linkage system.

3,612,210

PNEUMATIC SOUND SOURCE EMPLOYING AN ELECTROMAGNET FOR CONTROLLING ITS RELEASE VALVE

George B. Loper, Duncanville, Tex., assignor to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 663,800, Aug. 28, 1967, now Patent No. 3,506,085, dated Apr. 4, 1970.

This application Feb. 27, 1970, Ser. No. 14,904

Int. Cl. G01v 1/38

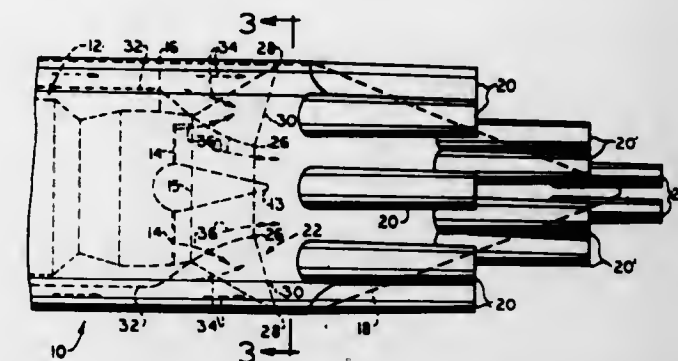
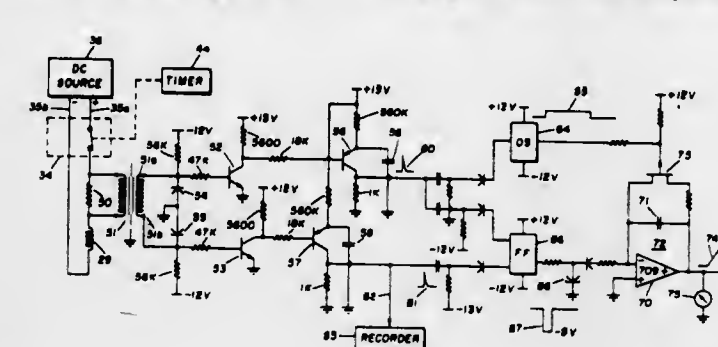
U.S. Cl. 181—5

8 Claims

The specification disclosed a pneumatic sound source comprising a pressure chamber for receiving gas and having a

controllable valve for opening and closing an outlet port. An electromagnet including an electrical coil is energized to hold the valve in its closed position and is deenergized for releasing the valve for the generation of an acoustic pulse. Current is applied to the coil by way of a normally closed switch which is opened to deenergize the coil. Sensing means is provided for sensing the current change in the coil to produce

which is disposed between the aft end of the ring and the forward ends of the nozzles serves as a mixing chamber for fan air and exhaust gas. Ambient air flows around the nozzles and mixes with exhaust gas (or exhaust gas and fan air where



signals representative of the time that current flow is interrupted and representative of the time that the valve begins to move to its open position. Opposing surfaces of the valve and electromagnet are coated with a thin layer of aluminum to provide a nonmagnetic gap and to provide corrosion protection. In addition, a simple seal is provided for sealing the chamber. This seal comprises a metal rim surrounding the port for contacting a disklike resilient member coupled to the valve surface facing the electromagnet.

a fan-jet engine is used) discharged from the nozzles, producing turbulence at selected locations in the exhaust plume of the engine and thereby directing sound energy in predetermined direction.

3,612,211

METHOD OF PRODUCING LOCALLY OCCURRING INFRASOUND

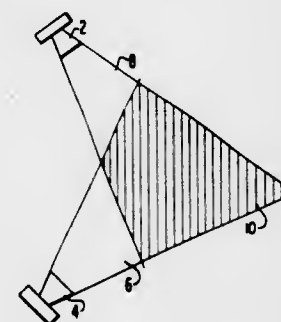
William T. Clark, III, Number Six Davis Blvd., New Orleans, La.

Filed July 2, 1969, Ser. No. 838,564

Int. Cl. G01s 7/52; G10k 10/00

U.S. Cl. 181—0.5 J

7 Claims



Two spaced directional acoustical transducers are directed towards a common point so that the acoustical waves produced thereby intersect throughout a given area. By utilizing a frequency difference between the acoustical waves of less than 20 Hz., or by propagating the acoustical waves at the same frequency while phase modulating one of them at less than 20 Hz., resultant acoustical waves of less than 20 Hz. are produced in the area of intersection.

A silent housing for air pumps and compressors is of sound-deadening material and has an air inlet filter, a pair of air intake resonant valves tunable to an upper frequency of the pump or compressor, and a pair of outlet valves tuned to the same frequency as the intake valves and discharging in opposite directions into a common outlet channel for sound interference.

3,612,214

PRESSURE RELEASE SAFETY INDUSTRIAL AIR EXHAUST SILENCER

Leland Francis Blatt, 24121 Mound Road, Warren, Mich., and Frank H. Wiesenhofer, East Detroit, Mich.

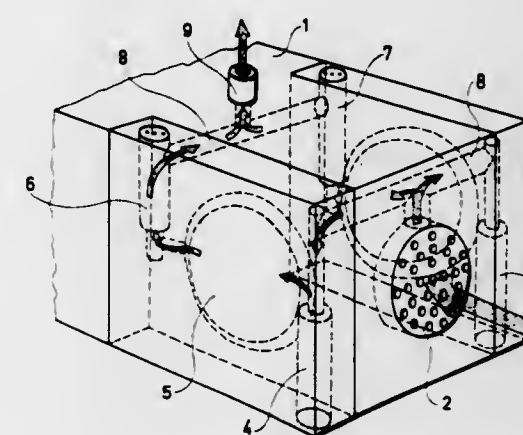
Filed Nov. 19, 1970, Ser. No. 91,125

Int. Cl. F01n 1/10, 1/20, 3/00

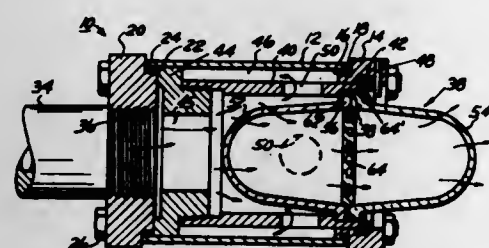
U.S. Cl. 181—37

12 Claims

An air exhaust silencer comprises a barrel which has a piston head, the barrel is contained for reciprocation within a cylinder and is normally retained in the cylinder in a retracted position so as to permit air exhaust through the silencer structure which embodies a pair of gas permeable frequency distorters adapted to muffle the noise of the exhaust air to below a predetermined maximum noise level; the barrel of the silencer is provided with a plurality of relief ports which are in open communication with the barrel



retaining cylinder, mechanical releasable retaining means are employed to normally retain the barrel in the retracted position, however, upon buildup of back pressure in the silencer assembly, due to clogging of the gas permeable members of the silencer, the increased air pressure through the silencer



will act to move the barrel of the silencer out of the cylinder overcoming the force of the retaining means to expose the relief ports of the barrel to the atmosphere to thereby permit air pressure to bypass said clogged gas permeable members of the silencer for direct passage to the atmosphere.

3,612,215

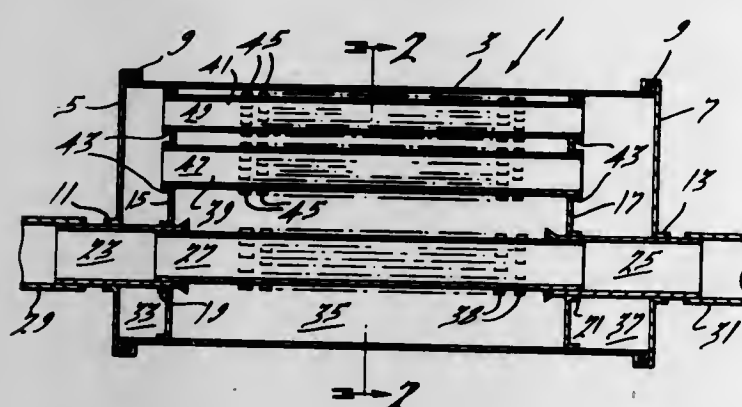
MULTILOUVERED ROUGHNESS SILENCER
Bert Du Bois, Brooklyn, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed July 27, 1970, Ser. No. 58,396

Int. Cl. F01n 1/04, 1/10

U.S. Cl. 181-48

7 Claims



A muffler has a plurality of open-ended perforated tubes mounted within a casing to extend parallel to a perforated straight-through gas flow tube and arranged so that they provide expansion chambers that are fed by gas pulses emanating radially from the flow tube.

3,612,216

MUFFLER CAN

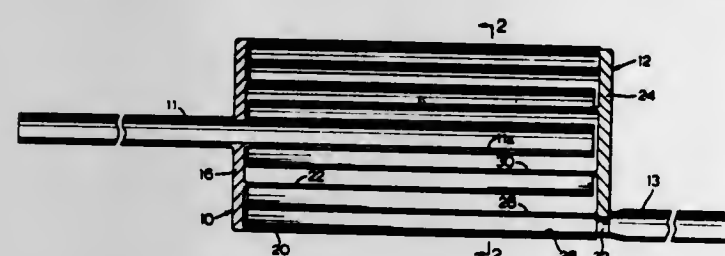
Otto E. Rieder, Etobicoke, Ontario, Canada, assignor to General Impact Extrusions (Manufacturing) Ltd., Toronto, Ontario, Canada

Filed Dec. 1, 1969, Ser. No. 881,192

Int. Cl. F01n 1/08, 7/18

U.S. Cl. 181-53

1 Claim



This invention relates to a muffler can for use in the muffling of devices such as compressors for air conditioning units. The novelty of the device consists of the manner in which the resistance path for the exhaust fluids is arranged. It consists essentially of a series of baffle paths within a can

which are formed by tubular extensions from each of the end walls of the can. Each of the tubular baffles originates with a wall and stops short of the opposite wall. All tubular baffles have a substantial portion of their extent coextensive with all others so that in effect a series of interconnected baffle paths is formed in the casing that progresses in a radial direction from the center baffle.

3,612,217

ANTIWHISTLE MEANS FOR EXHAUST SYSTEM

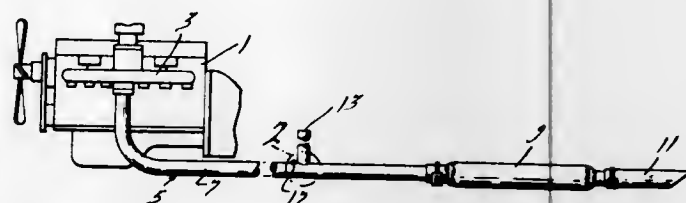
Robert A. Heath, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed Aug. 26, 1970, Ser. No. 67,035

Int. Cl. F01n 1/02, 7/00

U.S. Cl. 181-59

1 Claim



A gas passage conduit of the type used in internal combustion engine exhaust systems has an outwardly extending recess formed in its wall adjacent a sharp-edged hole that is connected to the housing of a sound attenuating chamber.

3,612,218

LADDER CARRIAGE

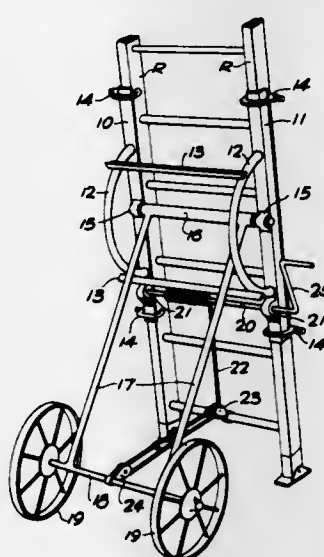
Charles W. Blair, Route 3 Box 273, Cortland, Ohio, and Margaret C. Blair, executrix, of said Charles W. Blair, deceased

Filed Mar. 3, 1970, Ser. No. 16,189

Int. Cl. E06c 5/24

U.S. Cl. 182-127

2 Claims



A ladder carriage for transporting and erecting a ladder includes a frame attachable to the ladder inwardly from an end thereof, trailing arms pivoted to the frame and a wheel and axle assembly carried on the trailing arms. A winch mounted on the frame is provided to move a rope thereon which is also trained over a pulley on the wheel and axle assembly so that the wheel and axle assembly may be moved in pivotal relation to the ladder whereby the ladder may be moved from substantially horizontal to the substantially vertical position.

3,612,219

SCAFFOLD STRUCTURE

Robert W. Fortner, Memphis, Tenn., assignor to Bluff City Manufacturing Co., Inc., Memphis, Tenn.

Filed Feb. 11, 1970, Ser. No. 10,368

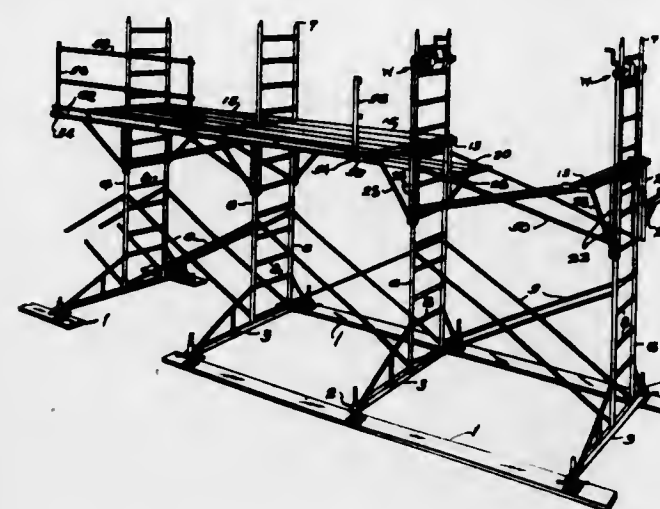
Int. Cl. E04g 1/20

U.S. Cl. 182-146

9 Claims

A ground-supported scaffold for use in erecting a building wall, having at least two upright ladderlike frames spaced

apart lengthwise of the scaffold, a platform-mounting carriage vertically movable on each of two adjacent frames, and a winch including attaching elements readily applicable to and removable from a selected rung on each upright frame.



The winch is manually actuated to wind up a cable to lift one of the carriages. Preferably each carriage has spring-actuated latches automatically engaging successive rungs on the respective frame as the carriage is raised to support the carriage independently of the winch and cable.

3,612,220

ELEVATOR CONTROL

Donivan L. Hall; Richard C. Loshbough, and Gerald D. Robaskiewicz, all of Toledo, Ohio, assignors to The Reliance Electric and Engineering Company, Cleveland, Ohio

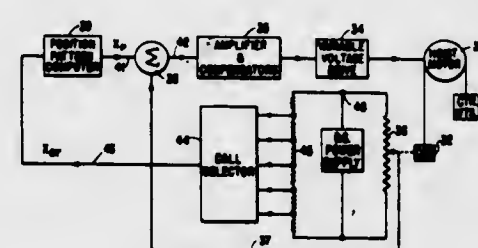
Division of Ser. No. 380,385, July 6, 1964, Pat. No. 3,523,232.

Filed Oct. 29, 1969, Ser. No. 872,184

Int. Cl. B66b 1/30

U.S. Cl. 187-29 R

30 Claims



A commanded position signal generator adapted for position based servocontrols as applied for example to elevators wherein the commanded position at which the controlled object will stop while subject to constraints of constant jerk, constant maximum acceleration, and constant maximum velocity is indicated through accelerating and constant velocity intervals. Stopping distance computation is performed in a first computation mechanism throughout the interval the commanded position signal is operating in an accelerating mode. Means recognize the mode of commanded position signal generation which is currently effective. As acceleration is curtailed to bring the commanded position signal into a constant velocity mode, a storage mechanism maintains the final maximum acceleration mode computed stop position for the pattern as the position at which the pattern would stop. During the constant maximum velocity mode of the commanded position signal, another computing mechanism indicates the predicted stop position. Each predicted stop position signal is compared to the signals for stops requested by registered calls for service and when a desired relationship between the predicted stop position signal and the call position signal exist the stop of the commanded pattern is initiated. Generation of a precise commanded position signal during the terminal portion of a run is enhanced by shifting from an initial position base for the signal to a final position base at a point in the signal generation when no discontinuity is encountered.

3,612,221

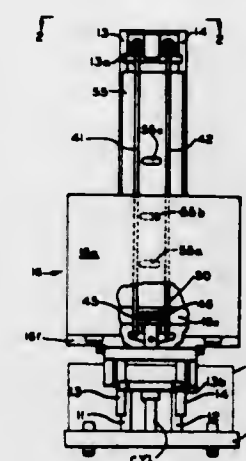
LIFT TRUCKLOAD CARRIAGE SAFETY DEVICE
George F. Branham, Cheango Forks, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,104

Int. Cl. B66b 5/16

U.S. Cl. 187-84

10 Claims



A pair of load carriage lifting chains are connected to opposite ends of a rocker arm pivotally connected on the load carriage so that the rocker arm is maintained in a reference pivot position during normal operation, but rotated on one direction or the other upon failure of one or the other of the chains. Rotation of the rocker arm in either direction from the reference position urges a stop means perpendicular to the plane of the truck mast structure to engage one of a plurality of cooperating stop means spaced vertically along the mast structure to half free fall of the load carriage. Spring means normally overcome by the torques applied to the rocker arm by the two chains rotates the rocker arm to translate the stop means if both chains break substantially simultaneously.

3,612,222

POLE DAMPING SYSTEM

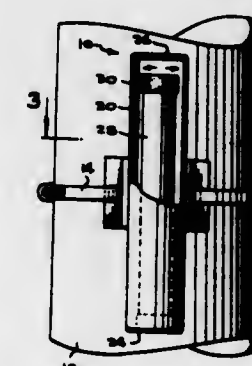
Ray C. Minor, Abingdon, Va., assignor to Kearney-National Inc., New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,359

Int. Cl. F16f 7/10

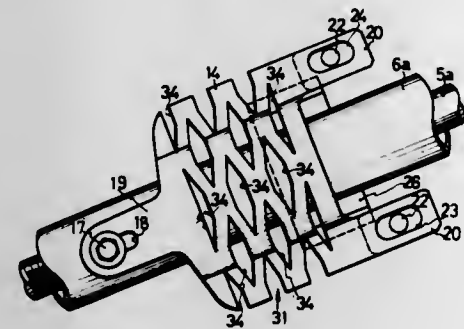
U.S. Cl. 188-1 B

4 Claims



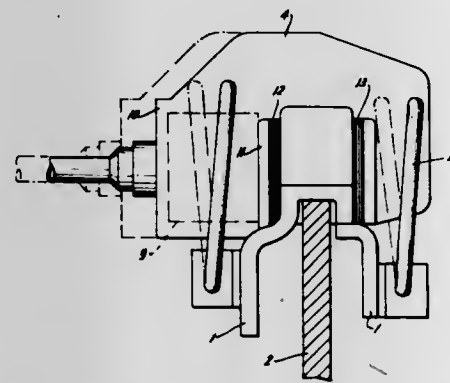
A pole damping system in which a hollow tubular member is attached to the wall of a hollow pole with an inertia mass in the form of a solid rod on the interior of the tube but unattached to the tube for limited movement on the interior of the tube for damping vibrations of the pole; in one embodiment the tubular member is mounted on the exterior of the pole but is mounted on the interior of the pole in another embodiment.

3,612,223
ENERGY-ABSORBING DEVICE
 Masanao Shiomi, Toyota-shi, and Tadataka Narumi, Kariya-shi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
 Filed Dec. 5, 1969, Ser. No. 882,582
 Claims priority, application Japan, Dec. 17, 1968, 43/92762
 Int. Cl. F16f 7/12
 U.S. Cl. 188—1 C 7 Claims



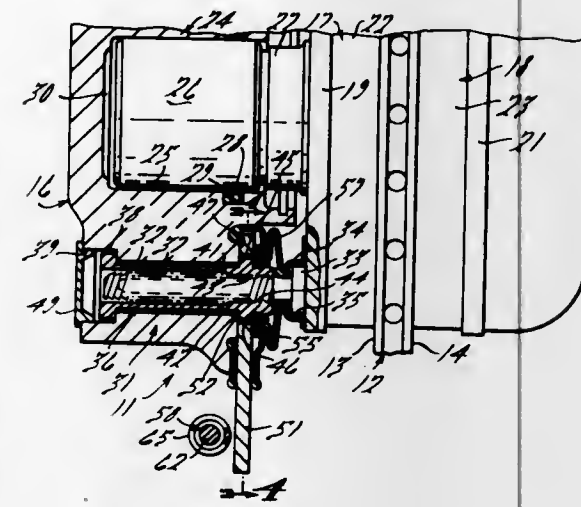
An energy-absorbing device having an elongated platelike member formed of a material having a high resistance to plastic deformation and provided with a plurality of spaced narrow slits whose edges lie in close or abutting relation, the slits lying in spaced lines perpendicular to the longitudinal direction of the plate, certain of said slits being closed at both ends and said slits being opened only upon application of an external force tending to elongate the plate, said member being fixed at one end through a force receiving member to a vehicle accessory, such as a bumper, and being fixed at the other end through a support member to the vehicle chassis.

3,612,224
DISK BRAKE CALIPER AND SUPPORTING STRUCTURE THEREFOR
 Ulrich Wakther, Bergneustadt, Germany, assignor to Dr. Hermann E. Muller Metallwarenfabrik Bergneustadt G.m.b.H., Cologne, Germany
 Filed June 12, 1969, Ser. No. 832,615
 Claims priority, application Austria, June 20, 1968, 5921/68
 Int. Cl. F16d 55/224
 U.S. Cl. 188—71.1 11 Claims



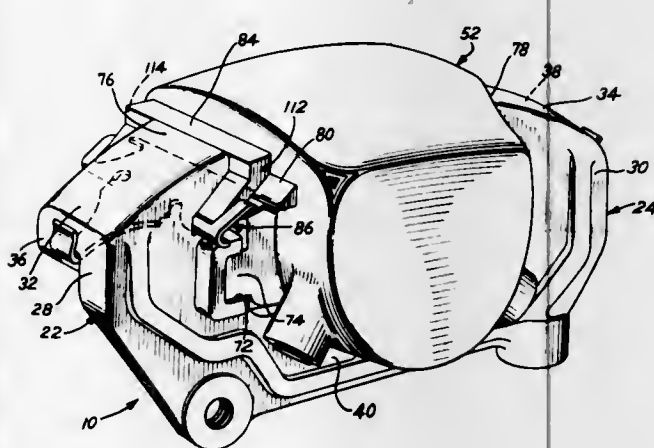
A disk brake has a rotor disk whose circumferentially extending margin is partially straddled by a U-shaped yoke. Resilient mounting means mounts the yoke in such a manner that it is permanently biased to one position in which it freely straddles the marginal zones with its arms located at opposite axial sides of the rotor, but has freedom of movement against the biasing action of the mounting means both axially and circumferentially of the rotor. Friction means is arranged intermediate the respective arms of the yoke and the associated sides of the rotor, and actuating means is provided on one of the arms of the yoke and, when actuated, presses one of the friction means against one side of the rotor and thereby draws the yoke in opposite direction so that the other arm presses the other friction means against the other side of the rotor. When the operation of the actuating means is terminated, the yoke will return to its predetermined inoperative position under the biasing action of the resilient mounting means.

3,612,225
SELF-ADJUSTING DISK PARKING BRAKE
 Anthony C. Evans, Westland, Mich., assignor to Kelsey-Hayes Company
 Filed Oct. 8, 1969, Ser. No. 864,598
 Int. Cl. F16d 55/16, 65/56
 U.S. Cl. 188—72.6 9 Claims



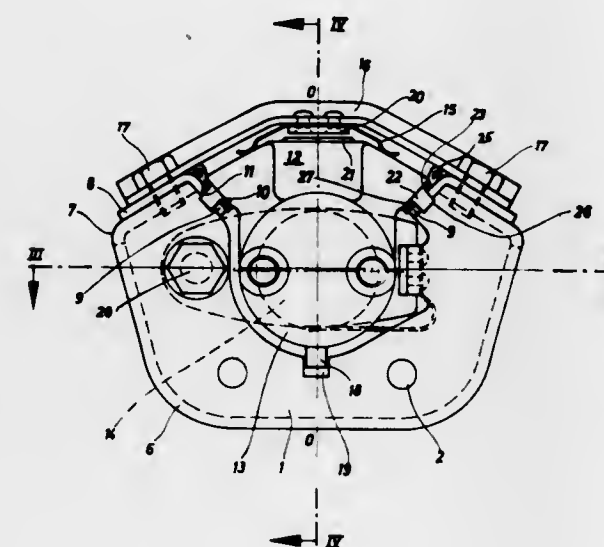
A disk brake assembly embodying a separate mechanical actuator for the primary brake pad. This mechanical actuator embodies a releasable screw-and-nut mechanism that is effective to accomplish an automatic adjustment of the at rest position of the brake pad.

3,612,226
CALIPER BRAKE HOUSING SUPPORT AND SHOE ANTIRATTLE SPRING
 Maurice P. Pauwels, and Bert A. Gumkowski, both of South Bend, Ind., assignors to The Bendix Corporation
 Filed Oct. 8, 1969, Ser. No. 864,779
 Int. Cl. F16d 55/224
 U.S. Cl. 188—73.3 2 Claims



A disc brake includes a caliper and a pair of friction elements slidably mounted on a U-shaped fixed support that straddles the rotor. A clip of resilient material interconnects the fixed support and the caliper for urging the caliper radially outwardly with respect to the rotor toward a pair of projections on the fixed support. The clip includes a pair of legs extending generally downwardly from the clip to engage the friction elements, thereby urging the latter toward the fixed support to prevent the shoes from rattling. The clip further includes a pair of upwardly extending arms engaging opposite ends of a removable key disposed between the caliper and one of the projections for retaining the key in the installed position.

3,612,227
DISK BRAKE CONSTRUCTION
 Erich Schaftner, Stuttgart-Zuffenhausen, Germany; Giorgio Eggstein, Ospedaletti, San Remo, Italy, and Heinz Ungerer, Stuttgart-Zuffenhausen, Germany, assignors to Ernst Heinke Aktiengesellschaft, Stuttgart-Zuffenhausen, Germany
 Filed Aug. 18, 1969, Ser. No. 850,955
 Claims priority, application Austria, Aug. 16, 1968, 8A8044/68
 Int. Cl. F16d 65/02
 U.S. Cl. 188—73.3 7 Claims

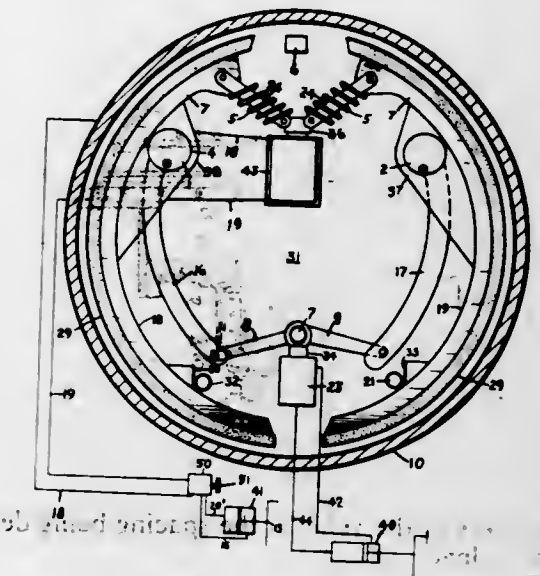


A disk brake comprises a rotor disk mounted for rotation about a predetermined axis. A mounting element straddles a section of the periphery of the rotor disk and has at opposite sides of the same a pair of cutouts aligned axially of the rotor disk and each extending in direction inwardly of the periphery. The cutouts each have opposite side faces at opposite sides of the axis. A presser element for friction pads also straddles the section of the periphery and has portions located at opposite axial sides of the rotor disk, each of which extends into one of the cutouts. Yieldable-retaining means retains the presser element yieldable but with freedom of displacement both axially and radially outwardly relative to the rotor disk. Cooperating slide surfaces is provided on the portions of the presser element and on the side faces, respectively, for enabling sliding displacement of the presser element axially of the rotor disk. Anticontaminant means prevents the entry of contaminants between the respective slide surfaces.

3,612,228
HYDRAULIC BRAKE AND PLURAL ACTUATING MEANS THEREFOR
 Frank G. Rick, 174 Gillfillan St., Franklin, Pa.
 Filed Aug. 1, 1968, Ser. No. 846,764
 Int. Cl. F16d 65/24
 U.S. Cl. 188—106.1 2 Claims

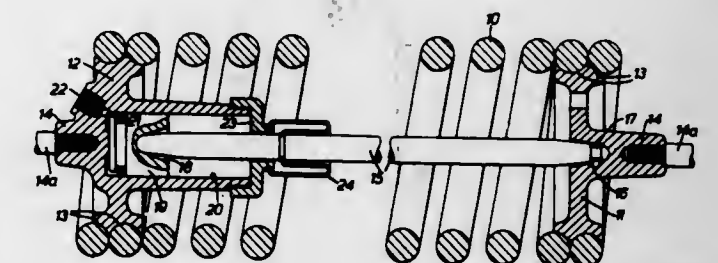
This specification discloses a dynamic hydraulic brake for use in motor vehicles, heavy equipment, and aircraft. The invention consists of a parking brake, antitheft device, and an emergency brake. The invention is carried out by a double action brake master cylinder, a pre-set hydraulic flow

valve with locking mechanism, a single action emergency master brake cylinder, two telescoping toggle links, springs,



stop block brake shoes and brake drum. An improved suspension for the brake shoes is provided.

3,612,229
VEHICLE BRAKING SYSTEMS
 Richard Thomas Fowler, and Charles Newstead, both of Birmingham, England, assignors to Girling Limited
 Filed Aug. 6, 1969, Ser. No. 847,951
 Claims priority, application Great Britain, Nov. 5, 1968, 52,304/68
 Int. Cl. F16d 65/24
 U.S. Cl. 188—170 11 Claims

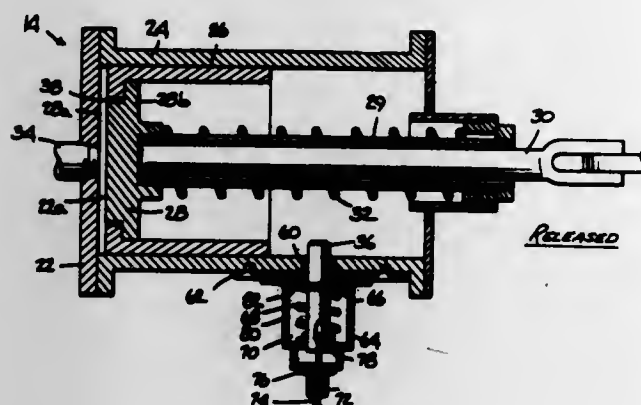


This invention relates to a vehicle drum brake actuator unit comprising a pair of elongate connecting members for attachment one to each of the drum brakes at opposite sides of the vehicle, spring means preferably in coil form for biasing each member in a direction along its length to tend to apply its respective drum brake, and a piston and cylinder assembly operable when fluid under pressure is applied thereto to prevent brake actuation and operable when the fluid pressure is released to allow the spring means to bias the members in said direction to actuate their respective drum brakes.

3,612,230
BRAKE MECHANISM FOR DIFFERENTIAL VEHICLE LOADINGS
 Robert L. Ludington, Stop 34, Dupont, Beach, Michigan City, Ind., and Robert M. Holloman, 324 North Maple Trail, Pottawattomie, Michigan City, Ind.
 Filed Aug. 7, 1969, Ser. No. 1,266,444
 Int. Cl. F16d 65/24
 U.S. Cl. 188—185 24 Claims

A fluid cylinder and piston and piston sleeves arrangement for providing different brake pressures with different vehicle

loads in which the piston sleeve is limited in its movement by the frame is twofold, in that it serves to stiffen and support means controlled in accordance with the spacing between a the garment bag, and in addition it provides a convenient



pair of members of the vehicle, the spacing being determined by the vehicle load.

3,612,231

BRAKE HAVING A VENTILATED ROTOR

Jean-Marc Hauth, Pont-A-Mousson, France, assignor to Centre De Recherches De Pont-a-Mousson, Pont-a-Mousson, France

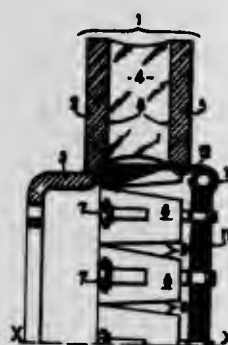
Filed June 5, 1970, Ser. No. 43,719

Claims priority, application France, Aug. 6, 1969, 69-26981

Int. Cl. F16d 65/84

U.S. Cl. 188-264 A

5 Claims



Wheel brake having a ventilated rotor consisting of two discs defining radial air passages. One of the discs is fixed to a drum adapted to be secured to the wheel to be braked and a circular arrangement of plates pivoted to the drum is so arranged that the plates pivot in opposition to spring return means to a position in which they are applied against the inner periphery of the other disc so as to close the air passage as soon as a predetermined speed of rotation of the wheel is reached.

3,612,232
GARMENT CARRIER

William E. Larson, 3119 Southhampton Court #8, Richmond, Calif.

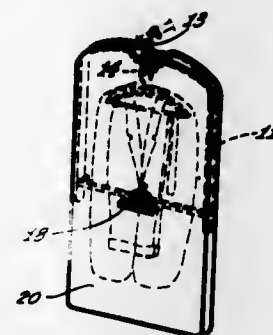
Continuation-in-part of application Ser. No. 651,179, July 5, 1967, now abandoned. This application Aug. 1, 1969, Ser. No. 861,530

Int. Cl. B65d 13/04

U.S. Cl. 190-49

3 Claims

A garment carrier is provided which includes a frame and a specifically configured garment bag which extends over the frame, and in which one or more suits may be hung, each on its own hanger. A feature of the garment carrier is a transverse handle portion which extends across the bottom of the frame, to be grasped by the hand of the carrier, so as to enable the frame and garment bag conveniently to be tucked under the arm when it is carried. Therefore, the purpose of



support for the suits carried within the bag, and a convenient handle for carrying the assembly.

3,612,233

INJECTION-MOLDED ONE-PIECE PLASTIC CARRYING CASE WITH INTEGRAL HINGE AND DUST SEAL

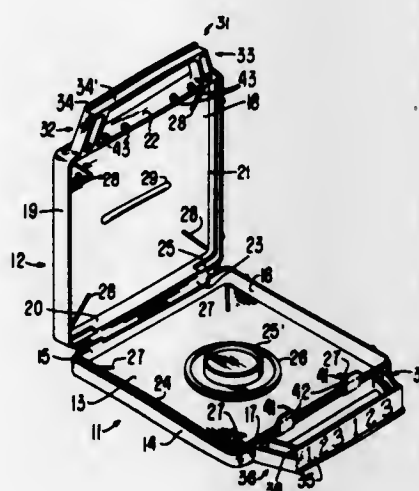
Ramchand B. Nagpal, Sunnyvale, and Robert H. De Vore, San Jose, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed July 24, 1969, Ser. No. 844,474

Int. Cl. A45c 13/26; B65d 25/28

U.S. Cl. 190-57

2 Claims



A plastic carrying case for magnetic tape reels made in one integral injection molded structure is described. The base and cover sections of the case are coupled by a flexible strip which serves as a hinge. The base is provided with a lip around its edge which mates with a recess around the edge of the cover to form a dust seal, the hinge strip overlapping the ends of the dust seal for additional sealing. Matching handle sections provide an extended surface area to accommodate printed matter. Internal ridges serve to prevent tape reels in the case from abrading the inner surfaces of the case and generating debris which might contaminate the tape. Flexible plastic straps extending from the base mate with lugs extending from the cover to latch the cover closed on the base.

3,612,234

ONE-REVOLUTION CLUTCH

Alexander J. Albrecht, Franklin Lakes, N.J., assignor to Brunswick Corporation

Division of Ser. No. 719,801, Nov. 13, 1967, Pat. No. 3,499,648, which is a division of application Ser. No. 388,051, Aug. 7, 1964, now Patent No. 3,409,296, dated Nov. 5, 1968

Filed Feb. 25, 1970, Ser. No. 13,961

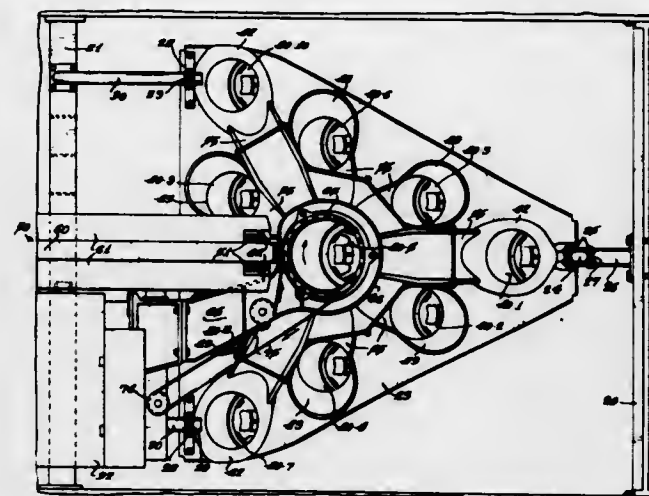
Int. Cl. F16d 71/00

U.S. Cl. 192-28

4 Claims

A one-revolution clutch mechanism having a pivotal pawl on a driven member for selective engagement with a rotatable driver member as controlled by a pawl-engaging stop, and

power means effective when the pawl is adjacent the stop clutch parts while the tool spindle remains retracted. A bolt and operative to urge the driven member in the direction of keeps normally said one clutch part poised therebetween and



rotation of the driver member at the point of engagement and disengagement.

3,612,235

SLIDE SLEEVE FOR GEAR SHIFTING AND SYNCHRONIZATION OF POWER VEHICLES

Karl Ashauer, and Dieter Manthey, both of Wolfsburg, Germany, assignors to VOLKSWAGENWERK Aktiengesellschaft, Wolfsburg, Germany

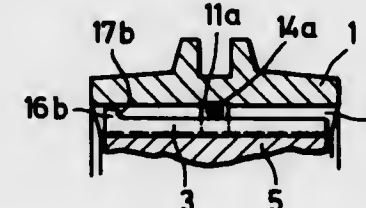
Filed Dec. 9, 1969, Ser. No. 883,398

Claims priority, application Germany, Dec. 10, 1968, P 18 13 621.5

Int. Cl. F16d 23/06

U.S. Cl. 192-53 F

1 Claim



A sliding sleeve for the gear shift and synchronizing devices of motor vehicles having a clutch gear with coupling teeth and a ring-shaped spring to encircle the teeth of the clutch gear.

3,612,236

THREADED FASTENER-SETTING TOOL WITH TORQUE RELEASE MEANS

Gustaf Harry Fernstrom, Kilten, and Karl Ake Moberg, Tyreso, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 22, 1970, Ser. No. 48,083

Claims priority, application Sweden, June 27, 1969, 9186/69

Int. Cl. F16d 43/20

U.S. Cl. 192-56 R

9 Claims

In the housing of a threaded fastener-setting tool with predetermined torque release, a motor rotates a driving clutch part and a rotatable tool spindle carrying a driven clutch part is movable in the housing from advanced to retracted position therein to bring the driving and driven clutch parts together into engagement for rotation of the tool spindle. During such engaging movement a separating spring is compressed between the clutch parts. At torque release the separating spring moves one of the clutch parts axially relative to the other and to the tool spindle to disengage the



between said separating spring but is displaced by a torque responsive coupling to release disengagement.

3,612,237

LIQUID PRESSURE-OPERATED FRICTIONAL CLUTCH APPARATUS

Seichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

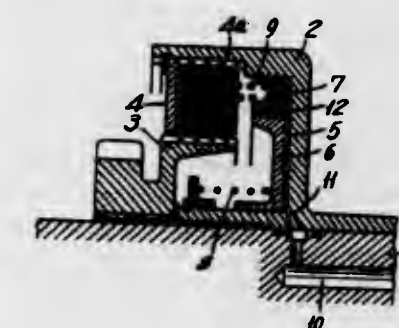
Filed May 16, 1969, Ser. No. 825,181

Claims priority, application Japan, May 16, 1968, 32521/68

Int. Cl. F16d 25/00

U.S. Cl. 192-85 AA

3 Claims



A fluid pressure-operated friction clutch is provided with a piston operating within a pressure chamber and constituted by two piston members having respective return springs of different strengths so that the pressure chamber can be opened to the atmosphere through a small escape passageway by the advance movement of one piston member whereafter the passageway is closed by the relative movement of the other piston member, whereby the piston which is coupled to frictional clutch plates applies a weak initial force to engage the plates without shock and a subsequent strong force to fully engage the clutch plates.

3,612,238

FEED CONTROL DEVICE

Edward M. Newsome, 25700 D'Hondt Court, Chesterfield Township, Mich.

Filed May 11, 1970, Ser. No. 35,957

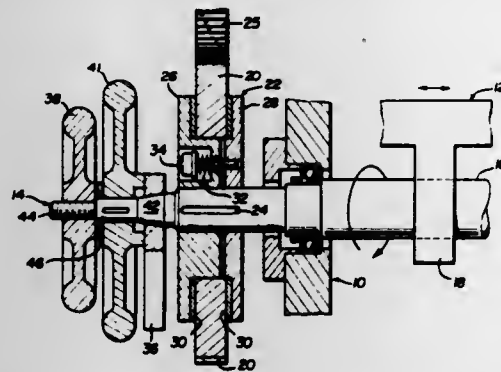
Int. Cl. F16d 71/00, 7/02

U.S. Cl. 192-142 R

3 Claims

A clutch normally connects a driving wheel to a rotating drive shaft which controls the linear advance of a tool into a workpiece. The clutch is set to slip when the torque transmitted therethrough exceeds a predetermined limit, thereby ceasing advance of the tool while permitting the driving wheel to continue its rotation. The maximum advance of the tool is controlled by a stop arm which rotates with the drive shaft and which can be angularly adjusted thereon. Advance

of the tool continues until the stop arm engages a micrometer-type adjustable stop, at which point the torque applied to



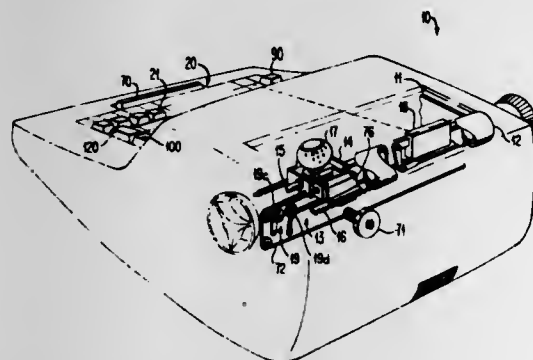
the clutch exceeds its predetermined capacity, causing the clutch to slip and advance of the tool to cease.

3,612,239 TYPEWRITER WITH ANCILLARY FUNCTION CONTROL

John O. Schaefer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,840
Int. Cl. B41j 23/02, 19/58

U.S. Cl. 197-16

17 Claims



A plurality of ancillary nonprint typewriter functions such as word space, tabulation, backspace and carrier return are at least partially performed by operating members carried by a moving-type-element carrier. The overall mechanism of the typewriter is significantly simplified by enabling selection of individual functions through use of presently existing character selection mechanism in combination with a special nonprint mode selection control.

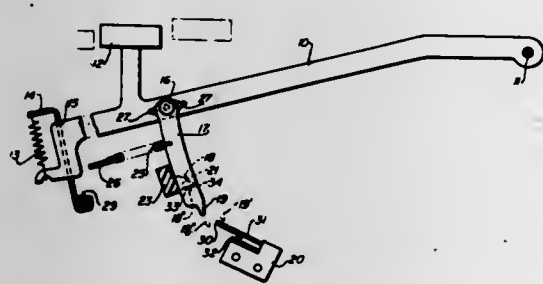
3,612,240 KEY-RESPONSIVE SWITCHING MECHANISM

Ralph L. Parker, Rockville, Conn., assignor to Litton Business System, Inc., New York, N.Y.
Filed Jan. 30, 1970, Ser. No. 7,169

U.S. Cl. 197-98

Int. Cl. B41j 5/08

14 Claims



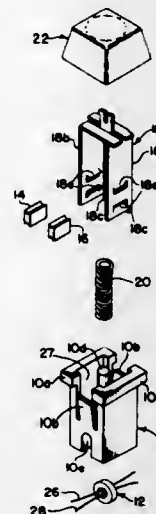
A code-generating keyboard mechanism wherein during downstrokes of control keys an element is pivotally deflected to store spring energy and then is freed suddenly for operation by the stored spring energy in a defined swinging path to effect one or a combination of switching operations for remote control of machine elements.

3,612,241 KEYBOARD SWITCH CONSTRUCTION

Victor M. Bernin, Mount Prospect, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Mar. 30, 1970, Ser. No. 23,639
Int. Cl. B41j 5/08

U.S. Cl. 197-98

11 Claims



The disclosure describes solid-state keyboards employing a saturable magnetic core switch for each key. Each key has a keystem of magnetic material, the keystem having legs extending on opposing sides of the core. Two permanent magnets are attached to the keystem. When a key is not depressed, the magnets are located adjacent opposing sides of the core so that a flux path is formed through the core, the keystem, and the two magnets, to thereby saturate the core. When a key is depressed, the permanent magnets are moved away from the core so that it becomes unsaturated. The core is threaded by one or more wires, at least one of them being excited from an AC drive source. A switch housing of unitary construction is designed to guide the keystem, lock the switch in place in the keyboard, and hold the magnetic core in a position which facilitates threading wires through the cores.

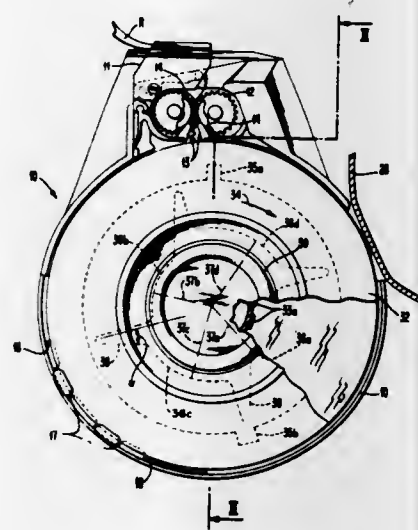
3,612,242 AUTOMATIC RIBBON TAKEUP

John N. Cassell; Vencil D. Engle; Lawrence Hymes, and Donald C. Roller, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 495,774, Oct. 14, 1965, now abandoned. This application Feb. 1, 1968, Ser. No. 702,486

U.S. Cl. 197-151

Int. Cl. B41j 33/14

6 Claims



Typewriter carbon ribbon is automatically attached to a takeup reel by the combined provision of: (1) a flexible

camming plate that creates significant friction interaction between the reel and the ribbon and is constructed to be effective even when substantial amounts of ribbon have been previously wound on the reel; (2) an electrically neutral flange to eliminate the adverse effects of static electricity on automatic attachment; (3) a reel enclosure for maintaining loose ribbon in the proximity of the reel; (4) several selective control modes of operation to assist the operator; and (5) several other features of construction relating principally to effective handling of a loose flimsy ribbon end.

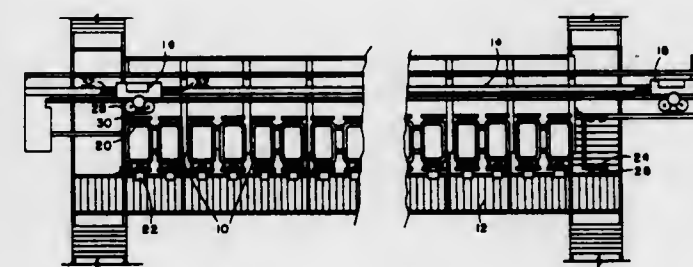
3,612,243 MATERIAL HANDLING APPARATUS

Lewis L. McAllister, Marion; Harry M. Passman, Cedar Rapids, Iowa, and James P. Wiles, Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed Mar. 23, 1970, Ser. No. 21,801

U.S. Cl. 198-19

Int. Cl. B23q 5/22

8 Claims



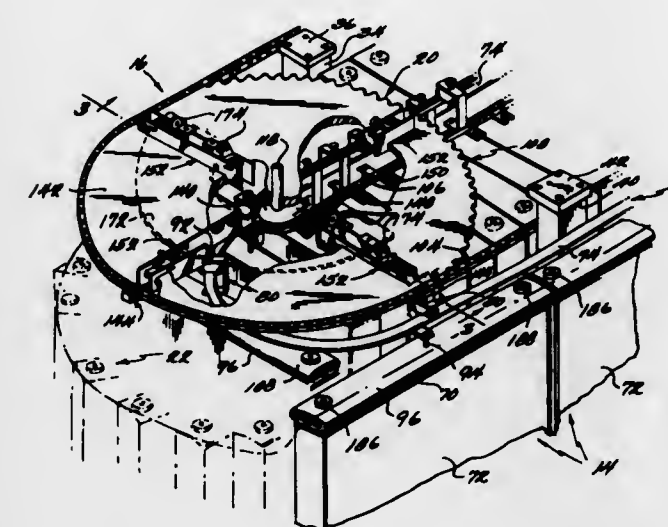
Material handling apparatus of the conveyor type especially suited for computer controlled operation. Mechanical features and electronic control features including safety precautions are described in a printed circuit processing application.

3,612,244 DISPLAY DEVICES MOVABLE THROUGH A DISPLAY SPACE AND A STORAGE SPACE AND A CONVEYOR MECHANISM THEREFOR

Edward L. Raub, Sr., New London; Edward L. Raub, Jr., New London, Conn., and Richard P. Scholfield, Armonk, N.Y., assignors to New Concepts, Inc., Peekskill, N.Y.
Division of Ser. No. 607,702, Jan. 6, 1967, abandoned
Filed June 13, 1969, Ser. No. 832,998
Int. Cl. B65g 47/24, 47/32; G09f 11/30

U.S. Cl. 198-25

5 Claims



A conveying mechanism, for example, for moving each of a multiplicity of display devices through both a viewing area and a storage area. In the embodiment described herein, the mechanism includes a first and second sprocket wheel of dif-

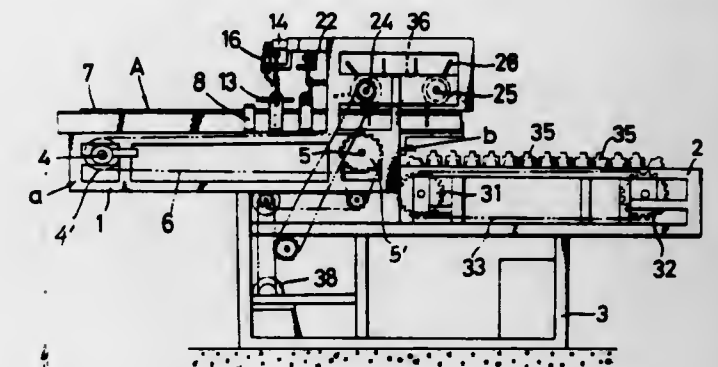
ferent diameters mounted for rotation about a common axis at a common angular speed, first and second endless chains trained about the wheels and first and second drive means on the two chains for engaging a carrier assembly and moving it along the first chain at the speed of that chain and along the second chain at the speed of that chain.

3,612,245 APPARATUS FOR COORDINATING RANDOMLY PLACED EGGS RELATIVE TO A RECEIVING DEVICE

Hikoji Noguchi, No. 10-1251, Narahashi, Ooaza, Yamato-cho, Kitatamagun, Tokyo, Japan
Filed Dec. 5, 1969, Ser. No. 882,427
Int. Cl. B65g 47/24, 47/26

U.S. Cl. 198-33

4 Claims



An automatic apparatus for use with an egg-accommodating or storage equipment, said apparatus being adapted for coordinating eggs randomly placed on the supply section of the apparatus relative to said accommodating or storage equipment in a positive and easy manner so that the eggs may be stored with shorter sides, viz. blunt sides upwards to retard the degradation of the eggs as much as possible during their prolonged storage.

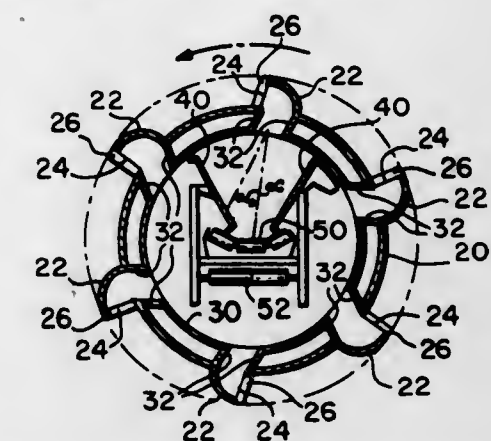
3,612,246 BARREL-TYPE BUCKET RECLAIMER

Paul Elze, Uffeln, and Wilhelm Schapsmeier, Holzhausen, Porta, both of Germany, assignors to Eisenwerk Weserhütte A.G., Mindener Strasse, Germany
Filed Mar. 21, 1969, Ser. No. 809,173
Claims priority, application Germany, Mar. 21, 1968, P 17 56 021.3

U.S. Cl. 198-36

Int. Cl. B65g 59/00

8 Claims

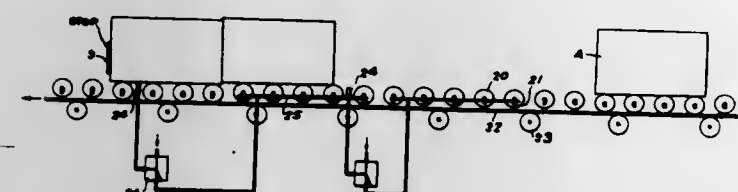


An outer tubular body means carries a plurality of buckets disposed in annular rows thereabout. An inner tubular body means is interconnected with the outer tubular body means by channel-defining means which define channels each of which extends at an angle to a radius of the body means extending through the center of a channel. A longitudinally extending conveyor means is disposed within the inner body means. Twin buckets may be mounted in pairs to operate in opposite directions of rotation of the body means, and these buckets may be tiltable about an axis extending parallel with the longitudinal axis of the body means. The buckets may also include a cutting means as well as a flexible backwall.

3,612,247
ACCUMULATING ROLLER CONVEYOR SYSTEM
 Walter B. Pipp, Glen Ellyn, Ill., assignor to American Chain Cable Company, Inc., New York, N.Y.
 Filed Aug. 1, 1969, Ser. No. 846,891
 Int. Cl. B65g 43/08

U.S. Cl. 198—37

21 Claims

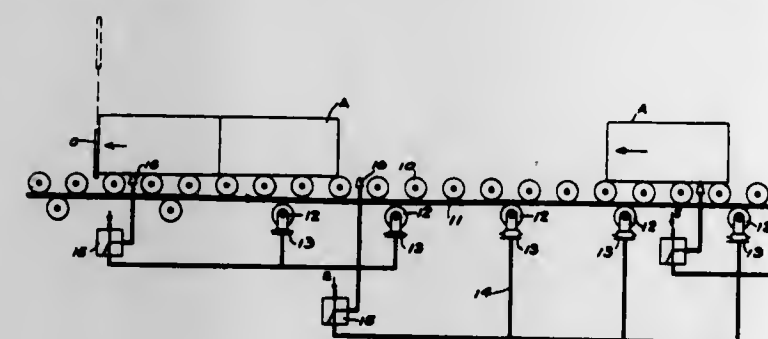


An accumulating roller conveyor system comprising a plurality of longitudinally spaced transversely extending article-carrying rollers which are yieldingly biased upwardly out of contact with a drivebelt. When articles engage the rollers, the weight of the articles forces the rollers downwardly into driving contact with the drivebelt. Sensing devices at longitudinally spaced points sense the interruption of movement of the articles along the article-carrying rollers and causes expandable chambers to be inflated to hold the rollers out of engagement with the drivebelt.

3,612,248
ACCUMULATING ROLLER CONVEYOR
 Charles W. Wallis, Cary, Ill., assignor to American Chain & Cable Company, Inc., New York, N.Y.
 Filed Aug. 1, 1969, Ser. No. 846,893
 Int. Cl. B65g 43/08

U.S. Cl. 198—37

8 Claims



An accumulating roller conveyor comprising a plurality of longitudinally spaced transversely extending article-carrying rollers with a belt positioned beneath the rollers. Pressure rollers are normally held in position against the belt to hold the belt against the article-supporting rollers by expandable chambers to which fluid is supplied. A fluidic switch is provided along the path of the articles and when an article is stopped in position overlying the switch, the fluidic switch functions to deflate the expandable chamber permitting the pressure rollers to move away from the belt and thereby permitting the belt to move away from the article-carrying rollers so that the rotation of the article-carrying rollers is interrupted.

3,612,249
VERTICAL CONVEYOR TRANSFER MEANS
 Erich Schneider, Wiesenstein, Germany, assignor to Organisation Ralfs K.G., Wiesenstein, Germany
 Filed Mar. 9, 1970, Ser. No. 17,476
 Claims priority, application Germany, May 31, 1969, P 19 27 888.7
 Int. Cl. B65g 43/08

U.S. Cl. 198—38

8 Claims

A vertical conveyor formed by a plurality of serially arranged upward and downward runs. Switch means are

located between successive runs for transferring articles from one direction to the other. The switch means are provided

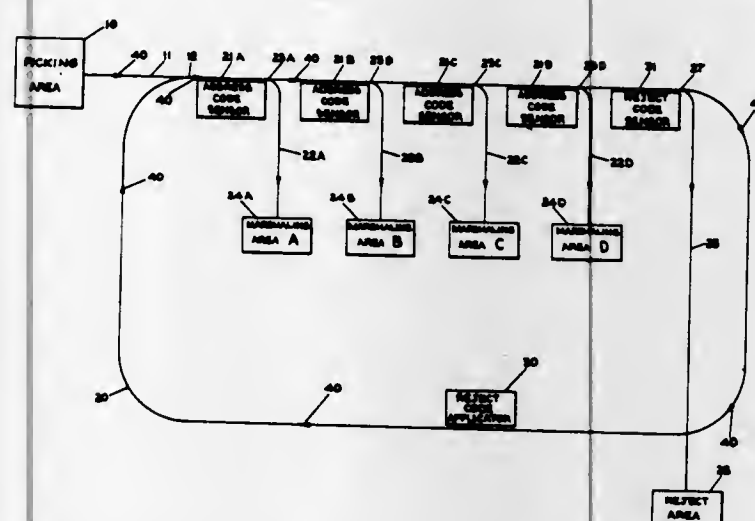


with sensing devices for determining which articles are to be transferred and for controlling such transfer.

3,612,250
RECIRCULATION LIMIT SYSTEM FOR CONVEYORS
 Gerald F. Thompson, and Francis J. Fitzgerald, both of Grand Rapids, Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.
 Filed Apr. 6, 1970, Ser. No. 25,945
 Int. Cl. B65g 43/00

U.S. Cl. 198—38

4 Claims



A recirculation limit system particularly adapted for utilization in conjunction with recirculating conveyors which, conventionally, recirculate articles carrying a specific address code until such time as they can be diverted to the proper destination. In accordance with the principles of this disclosure, the articles are permitted to recirculate past the various destination diversion gates two times and are then diverted to a reject area. This is accomplished by placing a reject code on the containers or articles after their initial pass by the destination diverters and then diverting them on to a reject conveyor in accordance with the reject code if they are not diverted to a destination on their second pass by the destination diverters.

3,612,251
PALLET FEEDER FOR A TILE-MOLDING MACHINE
 Frank A. Gory, and Clarence Peavy, both of Hallandale, Fla., assignors to Gory Industries, Boca Raton, Fla.
 Filed Sept. 24, 1969, Ser. No. 860,623
 Int. Cl. B65g 15/14, 59/00

U.S. Cl. 198—76

7 Claims

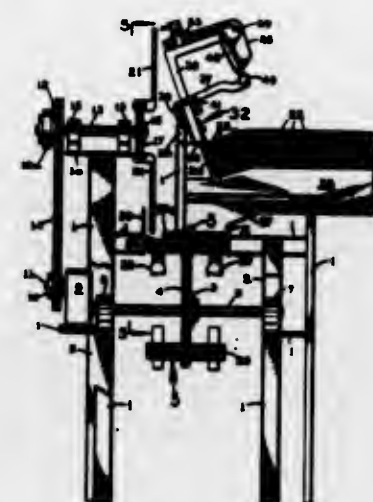
An automatic mechanism for feeding tile-molding pallets onto a conveyor of an automatic tile-molding machine in

predetermined precise sequential spaced relation from a stack of nested pallets positioned on a loading hopper in the mechanism including a power transmission driven by the

3,612,253
RECESSED CHAIN-TRACK ASSEMBLY FOR DISHWASHERS
 Roger L. Hoffman, Pequannock, N.J., and Gary Thomas Johnson, Chicago Heights, Ill., assignors to General Electric Company
 Filed Feb. 17, 1969, Ser. No. 799,751
 Int. Cl. B65g 19/02

U.S. Cl. 198—173

5 Claims

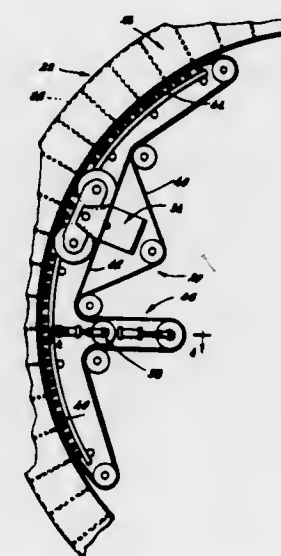


molding machine for operating the feeding mechanism including an independent electric controlled mechanism for sequentially releasing the pallets on the conveyor in timed relation with the conveyor.

3,612,252
CABLE TRAINED SEAL BELT
 Alting T. Yu, Kinnerton, N.J., assignor to Hewlett-Packard Incorporated
 Filed Jan. 9, 1970, Ser. No. 1,703
 Int. Cl. B65g 37/00, 15/14

U.S. Cl. 198—103

3 Claims



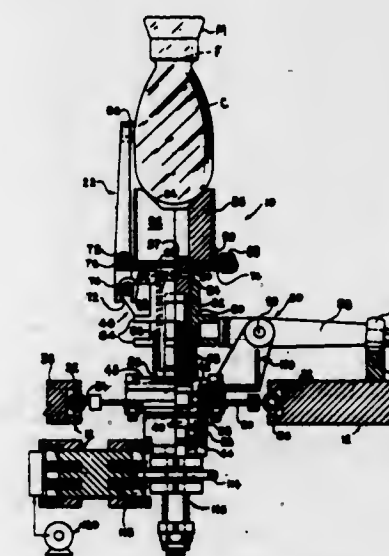
A rotatably mounted wheel, having a plurality of radially extending, open-ended peripheral storage cells therein for elevating material, employs a cable trained seal belt assembly which engages the inner annular surface of the wheel to seal the inner ends of the cells and maintain material within the storage cells during elevation. A conveyor belt, which transfers material to the storage cell, is wrapped part way about the outer peripheral surface of the wheel, driving the wheel which, in turn, drives the cable trained seal belt so that the linear speeds of cooperating wheel and belt sealing surfaces are the same or substantially the same. The cables of the seal belt assembly, which are located adjacent the lateral edges of the belt, maintain the seal belt in proper alignment with the wheel and the lateral edge portion of the seal belt in tight sealing contact with the inner sealing surfaces of the wheel for the entire length of the seal belt run.

A conveyor system for propelling dish racks on a pair of slide tracks through a dishwasher by means of lugs carried on a single, rearwardly disposed conveyor chain which rides on a separate chain rail positioned directly below the rearmost one of the aforesaid pair of slide tracks, the chain rail supporting the drive run of the conveyor chain on a top external surface thereof and the return run of the conveyor chain on a lower internal surface thereof, the lower internal surface of the chain rail being of a lesser width than the top external surface thereof thereby permitting the lugs on the return run of the chain to travel along the edge of the lower internal surface unobstructed, and means being associated with each of the aforesaid pair of slide tracks for tightening and locating the track assembly against the main body of the dishwasher while still permitting both of the slide tracks to be directly removed from the dishwasher with a minimum of effort.

3,612,254
CONTAINER-HANDLING CHUCK
 Luther H. Wideman, Toledo, Ohio, assignor to Owens-Illinois, Inc.
 Filed Apr. 24, 1970, Ser. No. 31,555
 Int. Cl. B65g 15/00

U.S. Cl. 198—179

13 Claims



A chuck for handling and manipulating glass containers in a container production line. The chuck includes a container seat formed to receive and center the bottom of a glass con-

tainer between three or more symmetrically disposed clamping arms mounted upon the seat assembly to cooperate with the seat in holding the container in position on the chuck. The seat assembly is mounted for rotation in a chuck housing about an axis which is coincident with the axis of a container held on the seat. The housing is adapted to be carried upon an endless chain so that a series of chucks can be linked together in series and driven in succession past work stations at which various operations are performed on the containers. An operating lever carried by the housing projects to one side of the path of travel of the chucks and is engageable with stationary cams at selected points along the path to open or close the chuck to enable the chuck to receive or discharge containers. A sprocket mounted on the seat assembly is engageable with chains extending along the path of travel of the chucks to drive the chucks in rotation during their transit of selected portions of their path of movement.

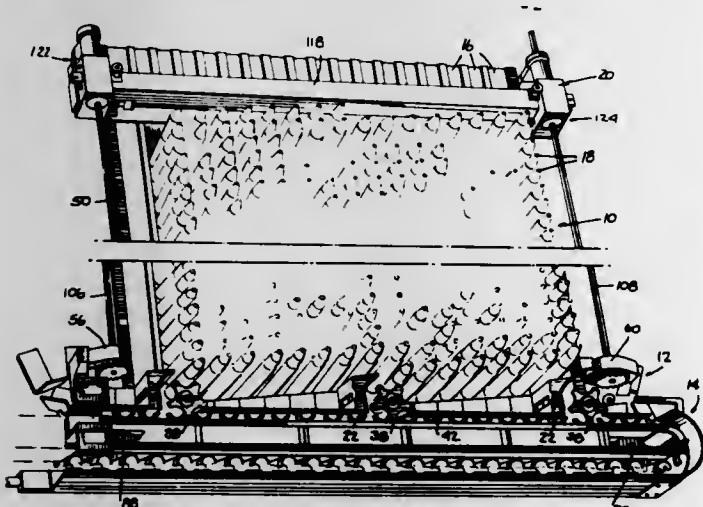
3,612,255

ENDLESS CONVEYOR SYSTEM

Douglas P. Tassie, St. George, and Calvin H. Baxter, Milton, both of Vt., assignors to General Electric Company
Filed May 22, 1969, Ser. No. 826,796
Int. Cl. B65g 17/00

U.S. Cl. 198-189

12 Claims



An endless conveyor system includes a train of links, each link being coupled to its next adjacent link by a pivot member, the distance between the center lines of immediately adjacent pivot members being fixed, the pivot members being guided between the distal pairs of mutually confronting guide surfaces but not guided between the distal ends of the pair of guide surfaces, i.e., the turnarounds, the distance between the centerlines of the pairs of guide surfaces being the same as the distance between the center lines of the pivot members, and both runs being engaged by the driving means.

3,612,256

CONVEYOR BELT AND FABRIC THEREFOR

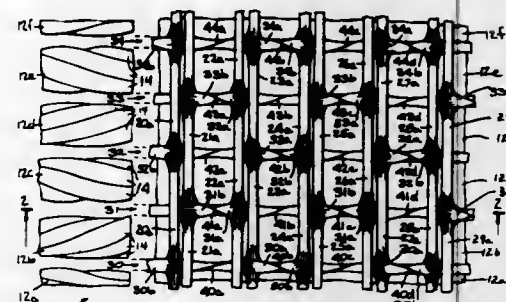
George R. Limbach, Wayne; John Rieger, Teaneck; Martin F. Sheridan, Wayne, and Richard H. Voss, Rutherford, all of N.J., assignors to Uniroyal, Inc., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 26,013
Int. Cl. B65g 15/30

U.S. Cl. 198-193

20 Claims

An elastomer-covered conveyor belt employing a belting fabric having warps of metallic cables which are maintained coplanar, parallel and linear to equalize stress distribution therein and to insure that the belt will track truly. Selectively inwardly crimped, nonmetallic wefts are employed in respective layers above and below the warps in order to maintain the warps in proper positions relative to one another and to impart a desired degree of transverse stiffness to the fabric. The inward crimping of the wefts is achieved by positioning a plurality of nonmetallic binders between the warps in each pair of adjacent warps and selectively interlacing the binders with the upper and lower wefts. The binders between adjacent warps cross one another and form intersection points which abut against the warps and assist in maintaining the

warps in proper position relative to one another. The belting fabric is preferably dipped in a resorcinol formaldehyde latex solution after weaving and then heat treated to remove the volatile components of such solution and shrink the non-metallic weft and binder strands therein.



3,612,257

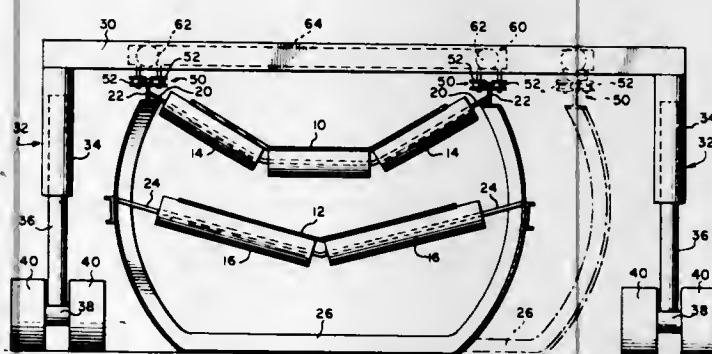
EQUIPMENT FOR SHIFTING BELT CONVEYOR LINES

Hans Goergen, Weiden/Cologne, and Hans Hupp, Bruhl, Cologne, both of Germany, assignors to Eisenwerk Weserhutte A. G., Bad Oeynhausen, Germany
Filed Apr. 14, 1969, Ser. No. 815,560
Claims priority, application Germany, Apr. 13, 1968, E 26816

Int. Cl. B65g 15/60

U.S. Cl. 198-204

4 Claims



A generally horizontal transverse support means has generally vertical adjustable support means connected to opposite ends thereof, these vertical support means being adjustable in a vertical direction and including wheel means at the lower ends thereof adapted to move along a supporting surface. An associated conveyor has shifter rails at the upper part thereof, and conveyor-engaging means includes antifriction rollers engageable with these shifter rails. Lateral shifting means is provided for shifting the conveyor line engaging means laterally to thereby laterally shift the associated conveyor line.

3,612,258

BELT CLEANER

Wilbur W. Bagby, 105 Conover Drive, Birmingham, Ala.
Filed Oct. 27, 1969, Ser. No. 869,482
Int. Cl. B65g 45/00; F16h 57/04

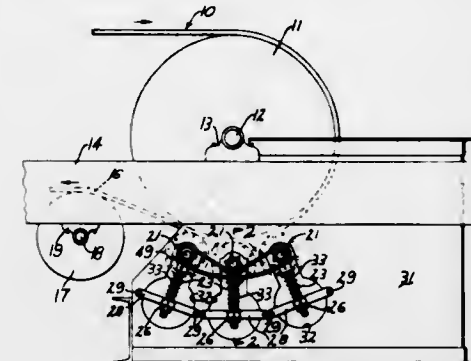
U.S. Cl. 198-230

5 Claims

Endless belt cleaning unit having cylinder with plurality of angularly spaced, abrasion-resistant, resilient rods extending

parallel to each other and in spaced relation to the outer surface of cylinder. Annular flanges carried by ends of cylinder

end portion secured to the flexible handle at a point between the first loop and the garment bag such that the lock strap, when formed into a second loop, extends generally at a right angle to the longitudinal dimension of the flexible handle



retain rods in position to contact return flight of belt to impart rotation to cylinder and rods carried thereby.

3,612,259

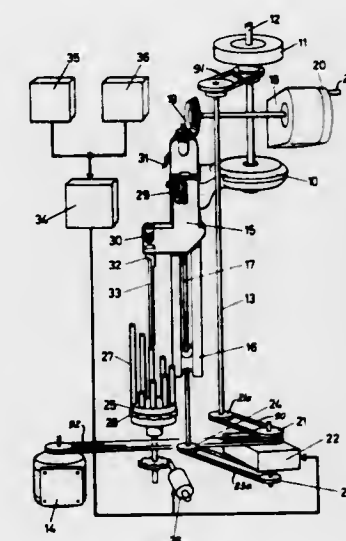
DEVICE FOR THE AUTOMATIC CENTRAL FORMAT SETTING IN A COMPOSING AND LINECASTING MACHINE

Karl Debus, Bad Homburg, Germany, assignor to Linotype GmbH, Frankfurt am Main, Germany
Filed May 9, 1968, Ser. No. 728,030
Claims priority, application Germany, May 11, 1967, L 56,484

Int. Cl. B41b 9/06

U.S. Cl. 199-18

5 Claims



The invention includes a device for automatically setting, in response to a key operation or a perforated control tape signal, the line length controlling elements of a linecasting machine. These elements are generally the assembler slide, the particular mold in use, the vise jaws, the slug ejection mechanism, and, in machines equipped with a saw, the saw. When the saw is provided, there is no need to change the mold in use or to alter the ejection mechanism.

3,612,260

OVER-THE-SHOULDER GARMENT CARRIER

Robert A. Brillhart, 315 3rd St., Huntington Beach, Calif.
Filed May 20, 1970, Ser. No. 38,932
Int. Cl. A45c 7/00

U.S. Cl. 206-7 H

6 Claims

The disclosure describes an over-the-shoulder garment carrier comprising a garment bag, a flexible handle comprising an elongated loop and an end portion or linking piece which is secured to said garment bag, the flexible handle carrying a first loop adapted for carrying the hook end portion of a conventional suit hanger, such that the weight of the garments are supported primarily by the first loop rather than by the end portion of the flexible handle, said flexible handle additionally carrying a lock strap, said lock strap having a first

end portion secured to the flexible handle at a point between the first loop and the garment bag such that the lock strap, when formed into a second loop, extends generally at a right angle to the longitudinal dimension of the flexible handle



3,612,261

GOLF TEE HOLDING MEANS

Edward L. Cicero, 52-62 66th St., Maspeth, N.Y.
Filed Oct. 28, 1969, Ser. No. 870,034
Int. Cl. A45c 11/00

U.S. Cl. 206-37 R

10 Claims



For the containment and organization of golf tees a holding means may be used to hold nine or 18 tees so that they will be readily available for use during a golf game and to provide a relatively flat packet of tees from which the latter may be selectively removed or replaced. The packet protects the player from the sharp ends of the tees as they are carried around during the game and keeps the tees in one place for ready use.

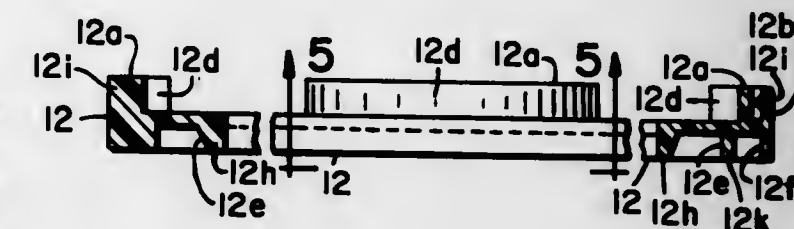
3,612,262

PACKAGING PROTECTOR

David J. Freiman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,467
Int. Cl. B65d 85/00

U.S. Cl. 206-46 FR

10 Claims



A packaging protector comprising an annular divider member or partition of resilient material, such as

polyethylene, for nesting within a frangible dish-shaped or bowl-like piece of ware a separate complementing and frangible cover in an impact-absorbing or cushioned spaced-apart relationship with the piece of ware as well as providing for impact absorbing or cushioning between the walls of a package and the rims of the piece of ware and its associated cover packed in the carton of the package for shipping or storage purposes.

3,612,263 STRIP OF SEPARABLE COMBUSTIBLE INSERT SLEEVE BLANKS

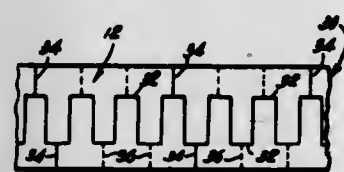
Clarence M. Doering, Nederland, and Leonard S. Seal, Port Arthur, both of Tex., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 693,878, Dec. 27, 1967, Pat. No. 3,495,924

Filed Apr. 13, 1969, Ser. No. 834,575

Int. Cl. B65d 69/00, 3/24

U.S. Cl. 206—56 AB



A strip of separable combustible insert sleeve blanks for use in a solid fuel heater container, the insert sleeve having supporting legs for predetermined positioning with respect to the fuel in the heater container.

3,612,264 SHEET MATERIAL DISPENSER PACKAGE

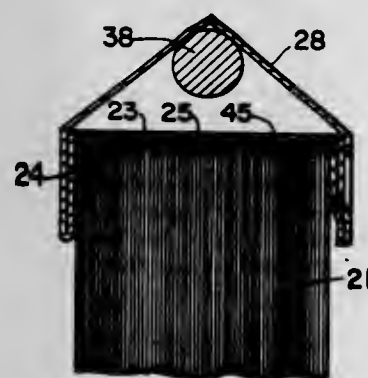
Robert E. Trunick, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 11, 1969, Ser. No. 848,775

Int. Cl. B65d 85/04

U.S. Cl. 206—57

15 Claims



A dispensing package for sheeted materials such as towels, napkins, and tissues in which a stack of the sheeted materials is adhesively fastened along one end to a header piece, each sheet being connected to the header. Flexible extensions attached to the header piece are adapted to form a hanging support so as to permit the package to be hung from a support rod such as a bathroom towel bar. The sheeted material hangs vertically from the header piece and allows individual sheets to be removed, as desired, from the dispensing package.

3,612,265 ADHESIVE BANDAGE AND ENVELOPE

Arthur C. Dickerson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 10, 1969, Ser. No. 805,428

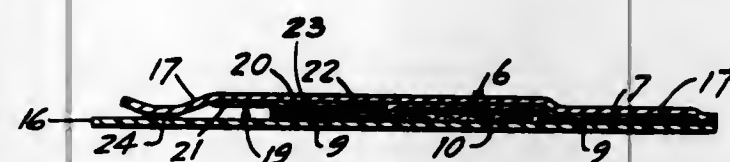
Int. Cl. A61b 19/02

U.S. Cl. 206—63.2

3 Claims

A packaged adhesive bandage comprising an adhesive bandage and an envelope therefor, said bandage including a

backing strip having a tacky adhesive coating on one surface thereof with a dressing pad adhered to the backing strip generally centrally of said one surface, a first package panel having a low adhesion surface contacting said adhesive-coated surface of said bandage and extending beyond the peripheral edges of said bandage, the narrow strip of material having opposed ends and an intermediate adhesive-coated area on one surface, said intermediate adhesive-coated sur-



1 Claim

face being placed in contact with the surface of said backing strip opposite the said one surface coated with said tacky adhesive, said opposed ends of said strip of material lying parallel with said backing strip, and a second package panel overlying said adhesive bandage and said strip of material and extending beyond the peripheral edge portions of said bandage and being secured to said first package panel.

3,612,266 CROWN-SUPPORT CARRIER

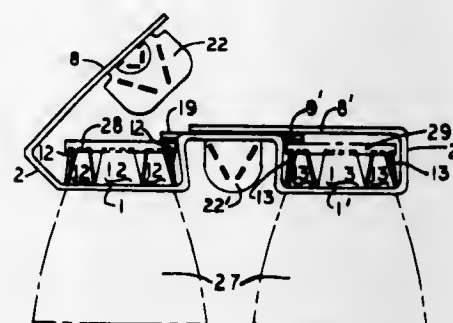
Earl J. Graser, Monroe, La., assignor to Olinakraft, Inc.

Filed Nov. 6, 1969, Ser. No. 874,429

Int. Cl. B65d 71/00; B66f 19/00

U.S. Cl. 206—65 E

9 Claims



An improved carrier of the crown-support variety comprising at least two article-support panels, which panels comprise means for securing said blank to a carried article. The carrier also comprises side panels and overlapping top panels which are locked above the article crowns.

3,612,267 TESTING AND SORTING APPARATUS FOR RING-SHAPED ELEMENTS

Werner Eckert; Heinrich Rothmann; Heinz Scheibe, and Karl Beer, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 13, 1970, Ser. No. 19,287

Claims priority, application Germany, Mar. 18, 1969, P 19

13 680.2

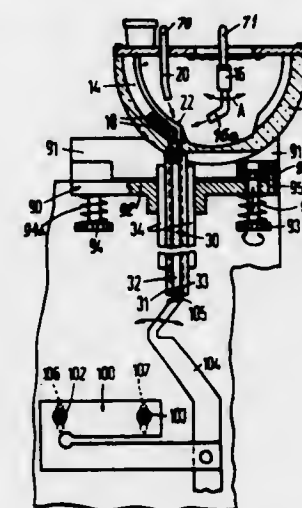
Int. Cl. B07c 1/04

U.S. Cl. 209—73

24 Claims

Apparatus for measuring the electrical and/or magnetic properties of electrical constructional elements, particularly ferromagnetic ring cores, includes a guide for conveying the elements one at a time for testing. The guide includes a longitudinal slot having cross-sectional dimensions slightly greater than the diameter and thickness of an element to be tested and the guide is constructed of a material that is highly wear resistant, electrically insulating and possesses excellent sliding frictional properties. The guide is preferably constructed of a precious stone, such as sapphire, or from a hard or finely porous ceramic material. The guide is connected in a thick-disconnect manner to a supply container with the slot thereof in communication with a feed trough for the elements to be tested. The supply container is provided with a

plurality of inner jets and internal sloping surfaces of the trough to present the elements one at a time into the slot of the guide. The guide includes a bore therethrough perpendicularly oriented with respect to the longitudinal dimension of the cross section of the slot to receive a test needle therethrough and through a ring core of the like positioned concentrically of the bore. The needle is mounted for reciprocation and includes a pair of electrical members insu-



lated one from the other and contacting test apparatus upon each insertion action of the reciprocation. One member of the needle is of greater electrical capacity than the other in that it is to be included in a higher electrical loading circuit as a primary winding for the element under test while the other member is in a lesser electrical capacity in a secondary circuit for the test element.

3,612,268 SILVERWARE ORIENTING MEANS

Aldrich L. Jackson, Eustis, Fla., assignor to Dynasort Corporation

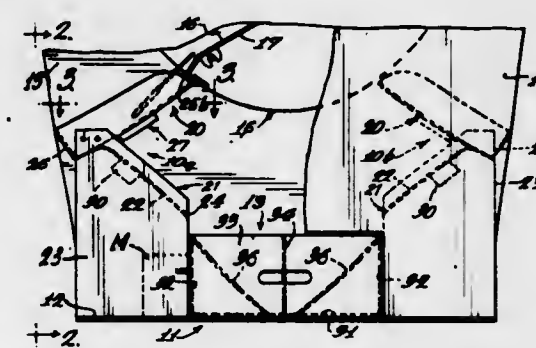
Continuation-in-part of application Ser. No. 707,164, Feb. 21, 1968, now abandoned. This application Apr. 15, 1970, Ser.

No. 28,879

Int. Cl. B07c 5/06; B65g 1/12

U.S. Cl. 209—73

36 Claims



Apparatus for receiving and orienting randomly arranged pieces of silverware, and for discharging the silverware to a storage means with all the handles of the silverware at one end. The silverware receiving and orienting structure is associated with a machine that separates forks, knives, teaspoons and soup spoons; and a movable, multicompartimented storage structure is associated with the apparatus, so that each type of silverware can be discharged in oriented fashion into a single compartment.

3,612,269 SHUFFLE FEED MECHANISM

Earl R. Anderson, Los Gatos, Calif., assignor to Brex Corp., trustee, Los Gatos, Calif.

Division of Ser. No. 776,682, Nov. 18, 1968

Filed Aug. 27, 1970, Ser. No. 67,317

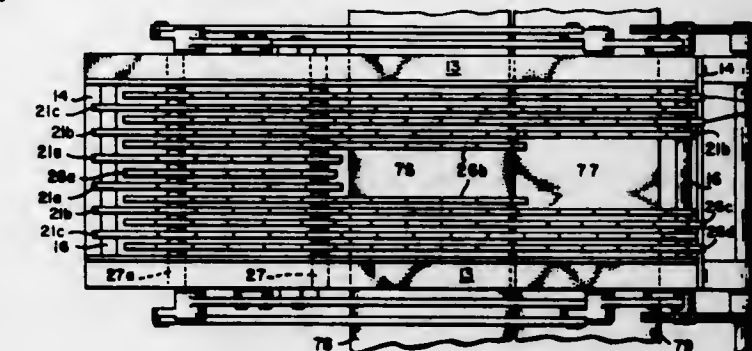
Int. Cl. B07c 5/04

U.S. Cl. 209—73

5 Claims

This mechanism comprises a shuffle feed mechanism having two sets of longitudinally extending serrated members

forming a grid or bed, at least one of the sets being movable longitudinally with respect to the other so as to progress articles from pocket-to-pocket or valley to valley along the length of the mechanism by pushing of the articles upwardly along an inclined wall of a V-shaped notch and over the apex so as to slide or roll down into the next notch.



The spaces or slots between adjacent longitudinally extending members may be used as sorting openings either for small debris fed along with the articles being progressed or to provide different sizes or grades of the articles.

Also this type of shuffle feed may be used as an open grid work for the passage of upwardly directed air blasts to separate light articles of debris from the articles being progressed.

3,612,270 CUTTER PILER WITH ELECTROSTATIC LAYBOY

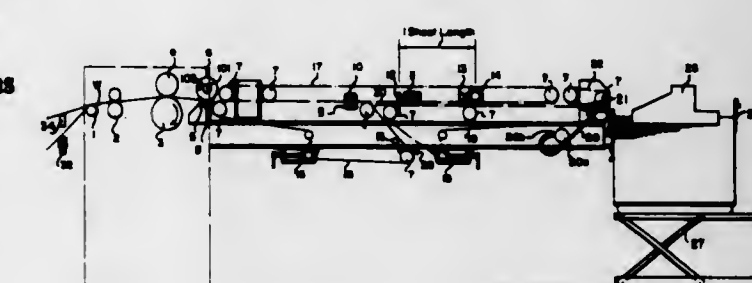
Waldyn J. Benbenek, Lee; Frank A. Grosse, Pittsfield, and James G. Wellspeak, Lee, all of Mass., assignors to The Clark-Alken Company, Lee, Mass.

Filed June 16, 1969, Ser. No. 833,592

Int. Cl. B07c 5/344

U.S. Cl. 209—74

10 Claims



A paper-handling machine with slitters and a rotary knife cutter for cutting traveling webs of papers has opposing conveyor belts to move sheets of paper downstream from the cutter to a collection area. A reject section is located upstream of the piling section and conveyors are positioned to move the cut sheets to either the piling section or the reject section responsive to a signal received from a sensing device or other switch. Either the reject section and/or the piling section includes a conveyor capable of attracting and holding a cut sheet of paper properly charged with static electricity. Each cut sheet of paper has an electrical charge imparted to it by an electrical charge element positioned adjacent a conveyor belt downstream from the rotary knife. A charge element is signalled to impart a charge to selected paper sheets as the latter pass the device. A charge can be imparted to one side of a cut sheet so that the sheet is shunted to reject section. If a sheet overlap with conveyor belt receptive to an electrical charge is included in the piling section, a second charge element can also be placed adjacent the conveyor belt on the side opposite from the first charge element to charge the opposite side of selected moving paper sheets. The leading edges of the cut sheets being moved to overlap are attracted upwardly to the overhead conveyor and thereafter slowed down and moved over the trailing edges of preceding sheets so that succeeding sheets overlap one another. A static eliminator device is positioned to neutralize the charges imparted to the sheets as they are collected.

3,612,271

PNEUMATIC CAPSULE SEPARATOR

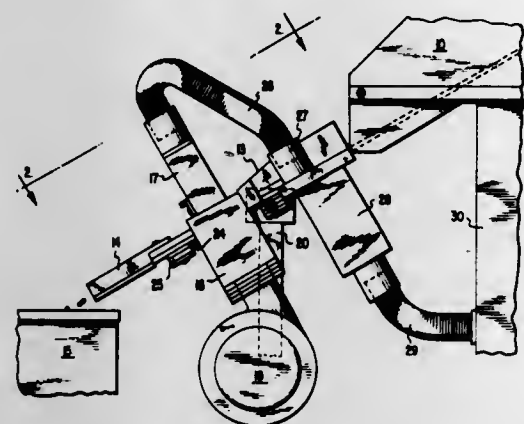
Richard C. Behling, Goshen, N.Y., assignor to Gelgy Chemical Corporation, Greenburgh, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,808

Int. Cl. B07b 13/10

U.S. Cl. 209-74

8 Claims



A mass of identical capsules disposed in a single layer and each containing a charge of medicament flows by gravity down an inclined chute. Each capsule is intended to contain a prescribed standard amount of medicament which, by weight and composition, is identical to the charges in all the other capsules. Incompletely charged capsules, being lighter than the others, are blown out of the layer by a stream of air which deposits them in a collection chamber from which they are removed by suction to a point of discharge.

3,612,272

SEPARATOR-CONVEYOR

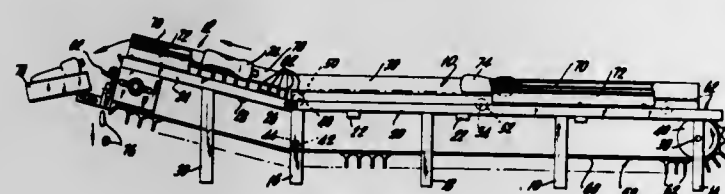
Samuel S. Aldlin, 214 Beaumont St., and Stephen H. Aldlin, 3855 Shore Parkway, both of Brooklyn, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,665

Int. Cl. B07b 13/04

U.S. Cl. 209-92

10 Claims



A separator-conveyor for the products of molding or casting or like apparatus, including the produced articles and the associated scrap, in which one of the two items is of larger size than the other, consisting of an endless conveyor belt mounted below the outlet of the molding apparatus, and provided with a continuous row of transversely disposed cleats along its center, spaced a distance sufficient to accommodate between them the smaller of the two items but insufficient to accommodate the larger of the items; the latter resting on top of the cleats. Guards are provided for retaining the items between the cleats and the items on top of the cleats in position while moved by the conveyor belt.

3,612,273

SEPARATOR

Wallace R. Pritchett, 11340 S. W. 208th Drive, Miami, Fla.

Filed Apr. 21, 1969, Ser. No. 817,699

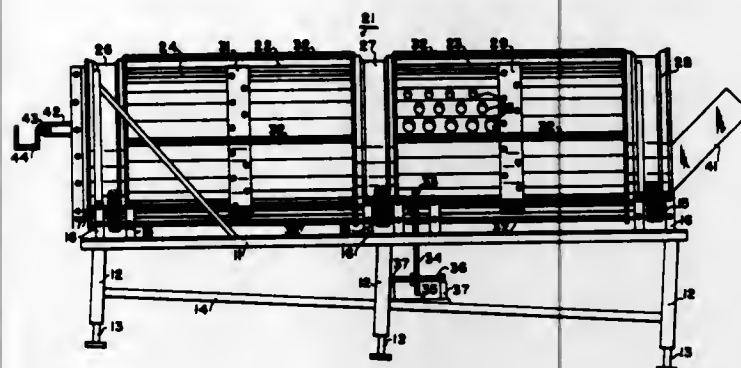
Int. Cl. B07c 3/04

U.S. Cl. 209-95

5 Claims

A cylindrical separator comprises a cylinder formed of any suitable material with openings formed in its interior wall. The openings determine the threshold size of the items being separated. Items are inserted into one end of the cylinder which is mounted on an angle with the horizontal and is rotated. Those items which are smaller than the diameter of the openings in the interior wall of the cylinder are carried upwardly by its rotation and are discharged at the top onto a

conveyor which carries them away. Those items which are larger than the diameter of the openings remain in the



cylinder at the bottom and slowly move to the low end where they are discharged onto another conveyor.

3,612,274

PHOTOELECTRIC FOOD SORTING METHOD AND APPARATUS

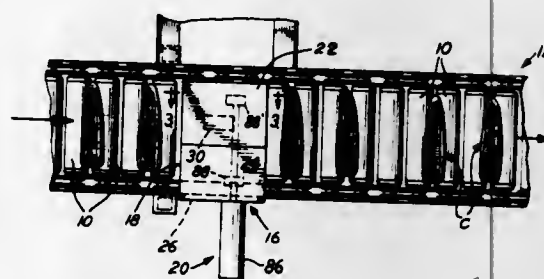
Edward D. Schmidt, St. Peter; Morgan P. Camery, Le Sueur, and John G. Martland, Le Sueur, all of Minn., assignors to Green Giant Co.

Filed Apr. 21, 1969, Ser. No. 817,641

Int. Cl. B07c 5/342

U.S. Cl. 209-111.6

10 Claims



Food sorting of foods which display only minimal color variation between the grades which are to be distinguished from each other are sorted by simultaneously sensing more than one of the characteristics of the food. The food is illuminated with light and a reflected light beam is formed having an intensity which varies as a function of the size, color and texture of the food. The food is sorted directly in response to the variation of the intensity of the reflected light beam which is within a predetermined wavelength range, the food being accepted or rejected when the intensity within the given range is above or below a predetermined magnitude.

3,612,275

APPARATUS FOR THE TREATMENT OF VEGETABLES

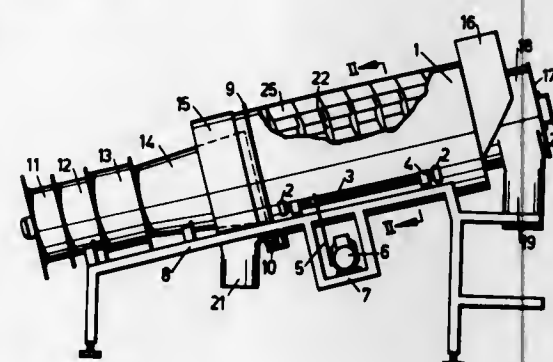
Robert Ernst Carl Herbert Tiepel, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 15, 1968, Ser. No. 767,656

Int. Cl. B07b 5/00

U.S. Cl. 209-152

7 Claims



An apparatus for removing extraneous vegetable matter from vegetable products such as Brussels sprouts comprising

3,612,278

WASTE TREATMENT AND DISPOSAL SYSTEM

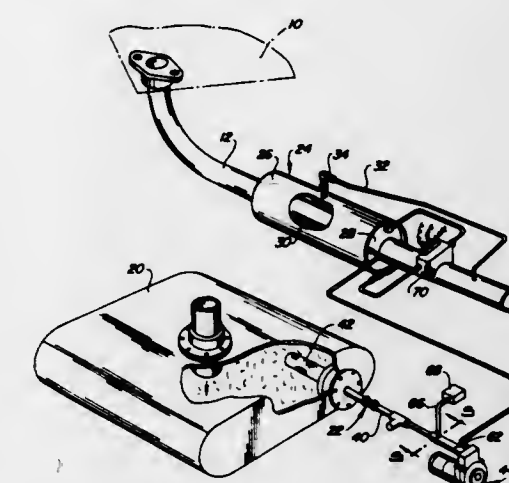
Melvin L. Dieterich, North Olmsted, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Nov. 3, 1969, Ser. No. 873,251

Int. Cl. B01d 1/14; C02b 1/18

U.S. Cl. 210-152

1 Claim



A fluid treatment system in which a peristaltic pump employs concentric tubes to define separate flow paths for the treating agent and the material to be treated. In this manner, a single pump may be used to pump both fluids. The flow paths may merge either interior or exterior of the pump whereby a metered amount of treating agent is mixed with the fluid. A specific application is in waste disposal system in which deodorants or antifoaming agents are added to the waste products prior to final disposal.

3,612,276

VORTEX-TYPE SEPARATOR APPARATUS

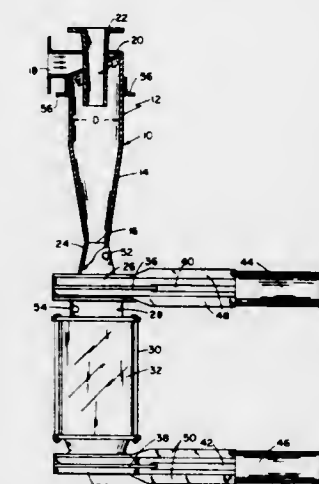
Thomas William Lowe, Needham, Mass., assignor to Bird Machine Company, South Walpole, Mass.

Filed Apr. 29, 1969, Ser. No. 820,261

Int. Cl. B04c 5/081, 5/14

U.S. Cl. 209-211

5 Claims



A vortex separator is provided which is substantially more efficient than prior separators in cleaning fiber slurry at concentrations of 3 percent and above of impurities which will pass a 1/4-inch hole screen, the separator and its connections to a sump having specified design parameters and features some of which are critical for obtaining such efficiency and others of which are preferred for maximizing it.

3,612,277

METHOD OF RECOVERING OIL FROM AN OIL SLICK

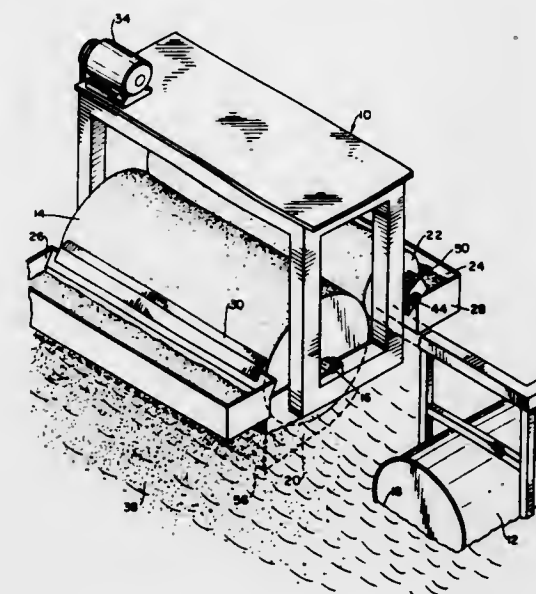
Merle H. Van Stavern; Wylie T. Jones; Howard F. Cossey, and Wendall J. Clark, all of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed June 15, 1970, Ser. No. 46,057

Int. Cl. B01d 17/02

U.S. Cl. 210-83

2 Claims



A rotatable drum type of oil skimmer which is continually rotated to pick up a film of oil and water on the surface of the drum, having a supplemental or transfer drum located substantially above the oil slick and well out of contact therewith, so as to come into contact with film on the pickup drum and receive a portion of the film, product oil being recovered from both drums.

3,612,279

CARBON WATER FILTER

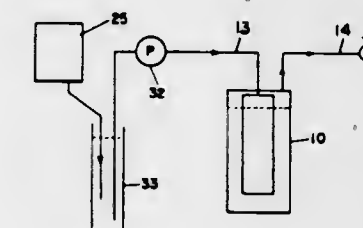
Ernest W. Hostetter, Lincoln, Iowa

Filed Nov. 21, 1969, Ser. No. 878,693

Int. Cl. B01d 35/02, 29/24

U.S. Cl. 210-170

6 Claims



A filter for liquid, including well water, comprised of four large tubes, plugged at their ends and suspended vertically as a unit within a tank. The liquid is introduced into the tank in such a manner as to be sprayed in diverse directions near the tank's bottom to assure even circulation. The circulation is through circumferential slots or perforations in the tubes, but the liquid must first pass through a filter cloth wrapped around each tube, this cloth being coated with a mixture of activated powdered carbon, diatomaceous earth, and fiber. During this flow through the mixture, the filter cloth, and into the tubes through the slots or perforations, the taste of chlorine, rust, sediment, or any other undesirable substance is removed from the liquid. The tubes are connected with each other at their tops, from which connection is an outlet for the liquid.

3,612,280

OIL-SKIMMING APPARATUS

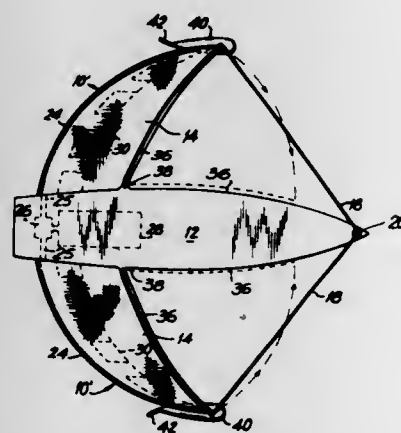
Hugh J. Fitzgerald, Austin, and Ernest H. Koepf, Dallas, both of Tex., assignors to Ocean Pollution Control, Inc., Dallas, Tex.

Filed Jan. 21, 1970, Ser. No. 4,602

Int. Cl. B01d 21/18

U.S. Cl. 210-242

9 Claims



A pair of wing assemblies attached to opposite sides of the hull of a marine vessel, each including a cover with tensioning means engaging its outer end to keep it extended outwardly, means to support its leading edge above the water to allow oily material at the surface to pass beneath it, an angled skirt portion at its trailing edge to funnel the oily material inwardly toward the vessel, conduits at the hull of the vessel to remove the oil, and lines engaging the outer ends of the wing members for hauling them inwardly to clear lateral obstructions.

3,612,281

PARALLEL MEMBRANOUS LAYER TYPE FLUID DIFFUSION CELL

Ronald James Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

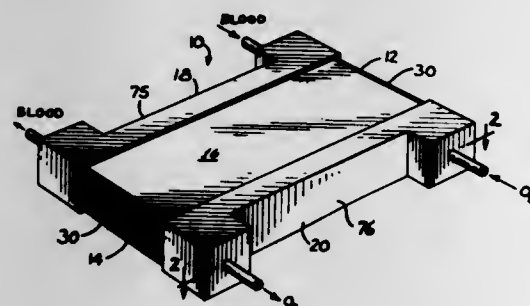
Division of Ser. No. 712,066, Mar. 11, 1968, Pat. No. 3,560,340

Filed Jan. 26, 1970, Ser. No. 6,015

Int. Cl. A61m 1/03; B01d 13/00

U.S. Cl. 210-321

14 Claims



A fluid diffusion cell having a diffusion membrane folded to define a first set and a second set of oppositely opening pockets. Each pocket in both sets contains a support member, and a pair of manifolds are provided to provide a fluid inlet and outlet at opposite ends of each of said sets of pockets to permit fluid to pass from each inlet into one end of each of the pockets of one set, to pass through each of the pockets and the outlet.

3,612,282

SUPPORTING STRUCTURES AND CONTAINING VESSELS FOR REVERSE OSMOSIS AND FILTRATION

Sing-Wang Cheng, c/o Dr. Chen-Yen Cheng 3555 E. Evans Ave., Denver, Colo.

Filed Aug. 14, 1969, Ser. No. 850,135

Int. Cl. B01d 31/00

U.S. Cl. 210-321

11 Claims



A reverse osmosis separator unit having many small composite membrane tubes 0.5 mm. to 5 mm. O.D. placed together in a membrane tube assembly. Several membrane tube assemblies are installed in a honeycomb pressure vessel to form a separator unit. A small membrane supporting tube is made by forming either a strip of solid sheet material which may or may not be perforated or a strip of porous sheet material. The seam of the formed tube, the perforations and the pores serve as intermediate passages for collecting product water into the supporting tube.

3,612,283

MEMBRANE FOR AN IN-VITRO RESORPTION MODEL OF THE GASTROINTESTINAL TRACT

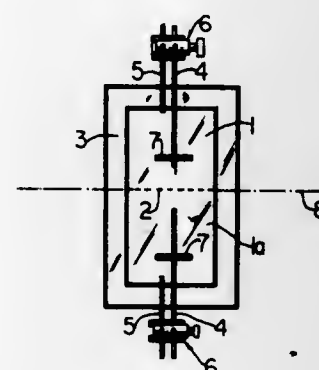
Herbert Stricker, Ingelheim/Rhine, Germany, assignor to C. H. Boehringer Sohn, Ingelheim/Rhine, Germany

Filed Sept. 29, 1969, Ser. No. 861,777

Int. Cl. B01d 39/14, 31/00

U.S. Cl. 210-490

5 Claims



A porous membrane adapted for use as the filter element in an in-vitro resorption model of the gastrointestinal tract, said membrane consisting essentially of solid porous carrier material, especially porous cellulose nitrate, impregnated with a liquid phase consisting of a mixture of a higher fatty acid and a neutral lipid component, particularly a mixture of lauryl alcohol and caprylic acid.

3,612,284

WALL-MOUNTED FOLDING CLOTHES DRYER

George R. Stoltz, North Miami, Fla., assignor to Russell Aluminum Corporation, Miami, Fla.

Filed Aug. 3, 1970, Ser. No. 60,439

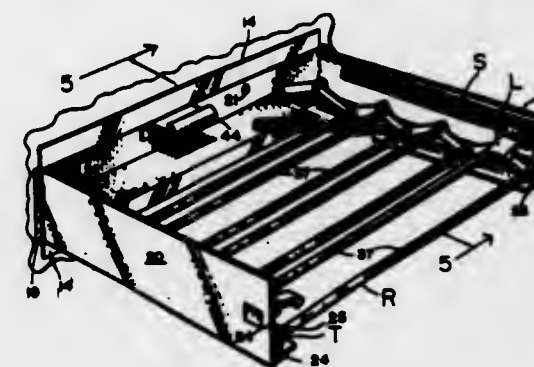
Int. Cl. A47b 53/00

U.S. Cl. 211-1.3

3 Claims

A wall-mounted folding clothes dryer adapted to be mounted flush with a bathroom wall having a boxlike receptacle enclosed by a pair of doors on whose inner sidewalls and doors are a pair of spaced flanges forming opposed trackways that are aligned but spaced from each other to permit closing of the doors. A collapsible frame is formed by horizontal rods joined together by pivot links with rollers secured to the ends of the rods and rotatably mounted in the

trackways. Hinge elements are provided with a portion that between substantially vertical positions to substantially horizontal pipe-receiving positions.



the doors are in the open position to provide an uninterrupted trackway for the rollers of the collapsible frame.

3,612,285

DISHWASHER DISHRACK

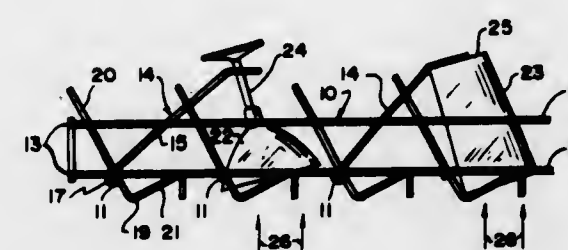
Anthony Mason, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed Feb. 16, 1970, Ser. No. 11,480

Int. Cl. A47g 19/08

U.S. Cl. 211-41

7 Claims



A dishwasher dishrack for holding articles during the washing operation which is of open construction to receive upwardly projected sprays of washing liquid in which the dishrack comprises an article-holding basket and a pivotally mounted retainer therein having spaced-apart sides and a crossbar connecting these sides at their outer ends, the crossbar comprising a succession of recessed sections such as successive scallops so that the retainer under the force of gravity acting thereon embraces inverted stemware in the basket to hold the stemware against the force of the upward projected liquid to prevent breakage and also to rest on top of articles such as plastic cups, glasses and the like to prevent their being displaced by the force of the upwardly projected liquid.

3,612,286

HORIZONTAL PIPE RACK

Faustyn C. Langowski, and James Bernard Walling, both of Houston, Tex., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed Oct. 22, 1969, Ser. No. 868,549

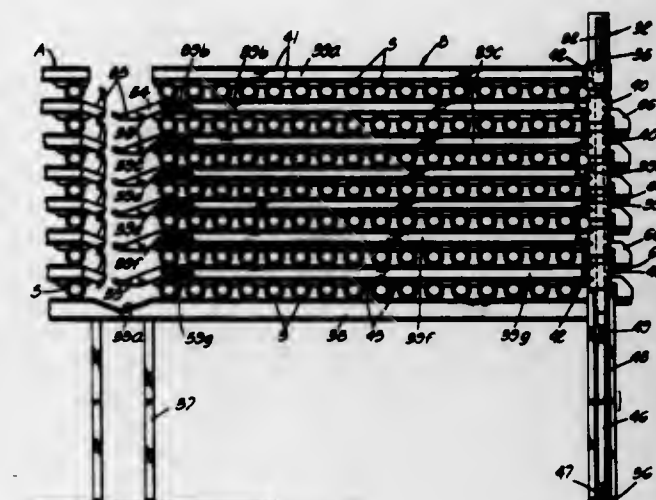
Int. Cl. A47i 7/00

U.S. Cl. 211-60 R

21 Claims

Pipe-racking apparatus in which stands of oil well pipe are supported on horizontally spaced beams, a number of such beams being supported for vertical movement on a vertical post so as to confine the racked pipe between the beams when the beams are lowered and so as to allow racking and unracking of the pipe when the beams are elevated.

The beams on each post are vertically movable in succession from top to bottom and each beam has therebeneath spacing devices engageable with the racked pipe below the beam to retain the pipe against movement. The spacing devices are adjustable to accommodate pipe of different sizes. The beams have fingers pivoted thereto and movable



Operating and control hydraulic and pneumatic systems for effecting elevation of the racker beams and actuation of the pivoted fingers.

3,612,287

FLOOR DISPLAY FIXTURES

Roy A. Maltese, Chicago, Ill., assignor to Poster Products, Inc., Chicago, Ill.

Filed Oct. 13, 1969, Ser. No. 865,686

Int. Cl. A47i 5/00

U.S. Cl. 211-86

2 Claims



Floor display fixtures are provided in which tubular upright support members for shelves, dividers, structures containing drawers and other display devices are tapered at one end and inserted into tapered tubular floor plugs or are secured to a tapered tubular adapter which is inserted into a tapered tubular floor plug.

3,612,288

HINGED DISPLAY RACK

James Richard Lanley, P. O. Box 685, Clayton, Ga.

Filed Aug. 27, 1969, Ser. No. 853,422

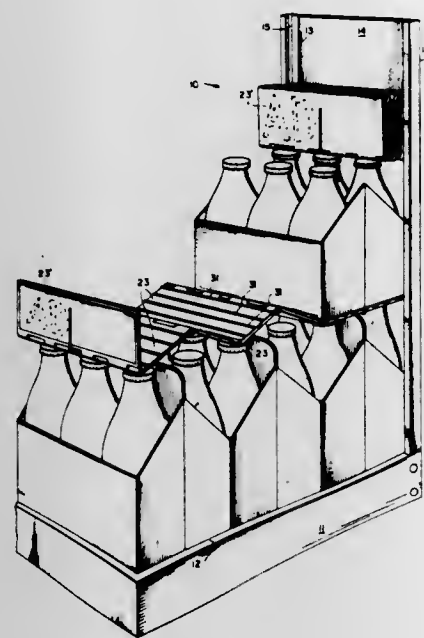
Int. Cl. A47i 3/14, 5/10

U.S. Cl. 211-132

9 Claims

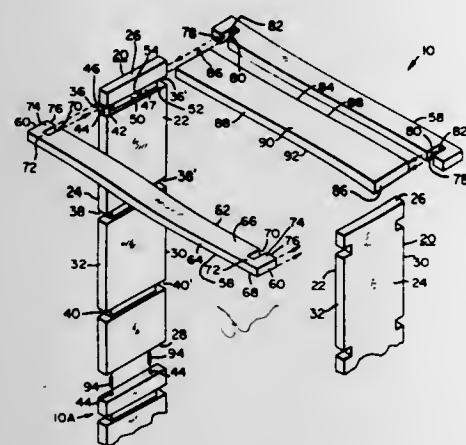
A display rack for stacking articles which normally do not

form a stable stack in which the shelves are constructed of a plurality of sections hingedly connected at their sides and



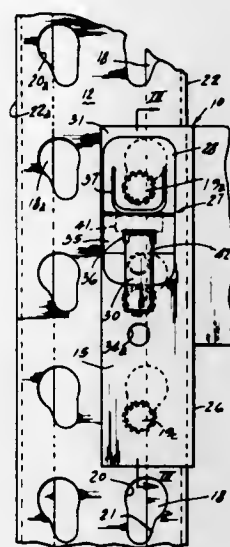
spring loaded to retract in an accordionlike manner as each article is removed from the stack.

3,612,289
FURNITURE CONSTRUCTIONS
Leonard N. Zink, Philadelphia, Pa., assignor to Line Products, Inc., Philadelphia, Pa.
Filed June 23, 1969, Ser. No. 835,488
Int. Cl. A47f 5/00
U.S. Cl. 211-148



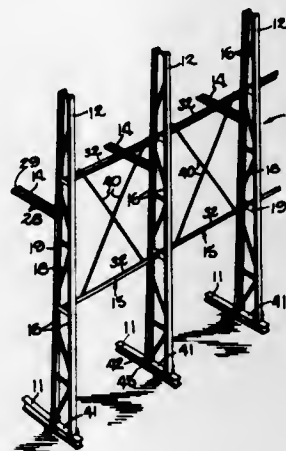
Furniture constructions, such as desks, credenzas, record racks, room dividers, bookcases, and the like, have a pair of spaced-apart vertical endpieces and one or more horizontal shelves, each endpiece having notches entering both side edges at each shelf level. A groove in the inner face of each endpiece connects each pair of notches at each shelf level. Each shelf consists of three, substantially flat, longitudinal sections; namely, a center section and a pair of outer sections which are mirror duplicates. The longitudinal ends of the center section are received within the grooves in the inner faces of the endpieces. Each end of each outer section extends beyond the corresponding end of the center section and is formed with an inwardly opening recess which defines a neck and an return tab. In assembled condition the necks are fitted in corresponding notches in the endpieces, and the tabs overlie the outer faces of corresponding endpieces.

3,612,290
RELEASABLE KEY CLAMP FOR A PALLET RACK
Robert J. Evans, Aurora, Ill., assignor to Aurora Equipment Company, Aurora, Ill.
Filed Aug. 12, 1969, Ser. No. 849,426
Int. Cl. A47f 5/10
U.S. Cl. 211-176



A connecting structure adapted to adjustably and releasably connect two supporting members of a structure such as a pallet rack. The connecting structure includes one structural member having headed connecting elements spaced thereon and the other structural member having spaced slots or apertures having a wide portion for receiving the headed connecting elements and a narrow portion preventing the removal of the connecting elements once they are inserted therein. To prevent the accidental disengagement of the headed connecting element from the slots, a safety locking means comprising a pin-locking member urged by a spring through an aperture adjacent one of the connecting elements into the wide portion of the slot receiving the connecting element is provided and includes a release lever engageable with the spring to release the spring pressure holding the locking pin in its locking position and to withdraw the locking pin to enable the disassembly of the connecting structure or system.

3,612,291
CANTILEVER RACK WITH TRUSS UPRIGHTS
Leroy F. Skubic, Long Beach, Ind., assignor to The Paltier Corporation
Filed Mar. 19, 1969, Ser. No. 808,419
Int. Cl. A47f 5/10; E02d 27/42; E04c 3/30; E04h 12/10
U.S. Cl. 211-176



A cantilever rack having upright columns formed of a truss construction and being tapered upwardly to provide a structure of maximum strength and stability with a minimum of material. The columns each include a pair of generally C-shaped channels which are inclined toward each other to

12 Claims

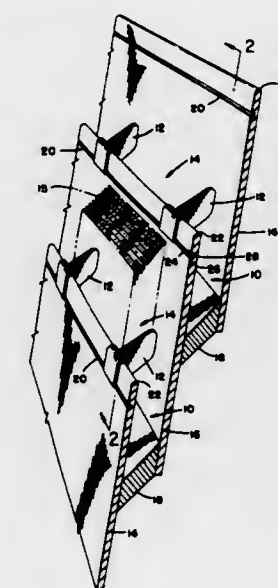
13 Claims

5 Claims

provide a wider column base than top and are interconnected by horizontal and diagonal truss members. The upright columns are secured to the rack base by tension fasteners which incur only minimal shearing stresses.

for controlling all lateral movement of the crane. The control system includes an orientation responsive switching network for translating the control of the lateral drive motors by the "joystick."

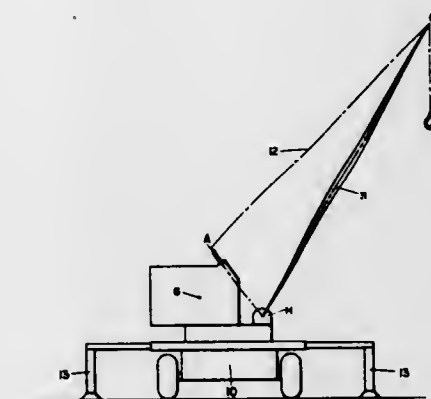
3,612,292
DISPLAY RACK AND DIVIDER
Charles H. Nervig, Berea, Ohio, assignor to American Greeting Corporation, Cleveland, Ohio
Filed Aug. 28, 1969, Ser. No. 853,791
Int. Cl. A47f 5/00, 7/00
U.S. Cl. 211-184



A display rack of the type used for displaying stationery items such as cards and the like. The rack comprises troughlike shelves and associated divider members. The divider members and the shelves are arranged so that the members can be easily adjusted longitudinally of the shelves but cannot be readily removed.

10 Claims

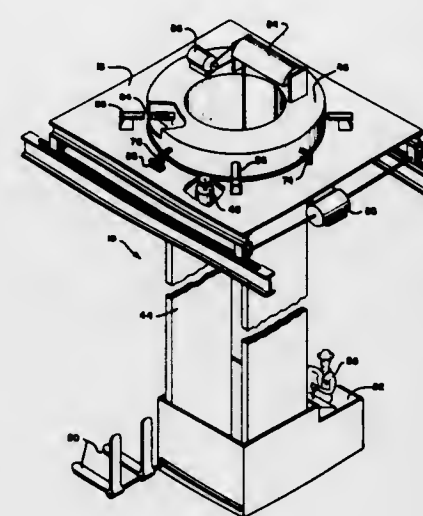
3,612,294
LOAD CONTROL APPARATUS FOR CRANES
Alvin H. Wilkinson, Talala, Okla., assignor to Auto Crane Company, Tulsa, Okla.
Filed July 31, 1969, Ser. No. 846,387
Int. Cl. B66c 13/50
U.S. Cl. 212-39 MS



Apparatus for preventing the tipping over of cranes which includes a loading beam positioned colinear with the line extending from the hinge point of the boom to the anchor point of the boom support means, one end of the beam being connected to the frame, the other end of the beam constituting the anchor point, and means responsive to the deflection of the anchor end of the beam for limiting the tilting moment of the crane.

2 Claims

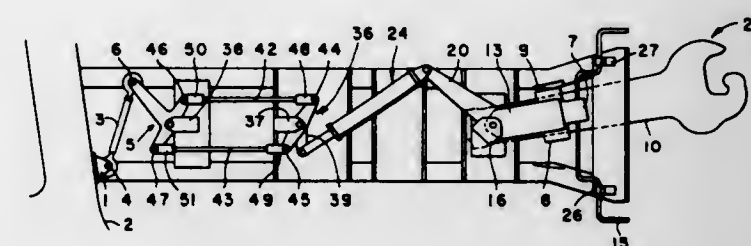
3,612,293
AUTOMATIC CONTROL TRANSLATION SYSTEM FOR MATERIAL STACKER
George K. Ostrander, Angelica, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,601
Int. Cl. B66c 17/00
U.S. Cl. 212-21



A control translation system for automatically changing the drive controls of an operator driven rotatable stacker crane when the crane rotates to an orientation other than a predetermined reference orientation. The system is particularly applicable in stacker cranes which employ a "joystick"

9 Claims

3,612,295
COUPLER-POSITIONING DEVICE FOR RAILWAY CARS
Wilbert G. Glauser, Alden, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 8, 1969, Ser. No. 855,916
Int. Cl. B61g 5/00, 7/12
U.S. Cl. 213-15



In a coupler-positioning device, the truck is used to position the coupler to achieve "face-on" or "in-line" coupling or as near to this condition as practicable. The "face-on" or "in-line" position may be defined as that position in which the centerlines of the two adjacent couplers are in-line or coincident. The coupler is not necessarily on the centerline of track. A mechanical arrangement is provided to be used in conjunction with the centering yoke assembly to provide a straight mechanical system that suits the fixed sill construction of a long high-capacity freight car. Motion of the mechanism is initiated from a bracket attached to the transom or bolster of a truck. Means are provided for disengaging the device to allow manual positioning of the coupler for coupling at tangent points to curves and on crossovers.

14 Claims

3,612,296

BEARING BLOCK CONTOUR

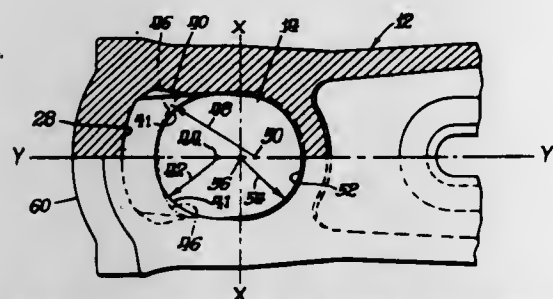
Frederick C. Kullcke, Tallmadge, Ohio, assignor to Amstead Industries Incorporated, Chicago, Ill.

Filed Sept. 11, 1969, Ser. No. 857,124

Int. Cl. B61g 9/00, 9/20

U.S. Cl. 213-69

4 Claims



A railway coupler shank mounting comprises a pin extending through a pinhole of the shank and seated against a complementary cylindrical surface of a pin-bearing block which is seated against a complementary spherical surface of the shank defining the rear extremity of the pinhole. The block is recessed at the top and bottom of said spherical surface to prevent stress concentration on the shank at the upper and lower rear corners of the pinhole during extreme vertical angling of the coupler shank. Also the contour of the pinhole and block have been changed to minimize downward movement of the block from its normal and proper position during buffing forces on the coupler. Top and bottom edges (41 of FIG. 10) are made on a full radius (42) to reduce stress concentration in the rear corner areas under normal draft use and/or during angling up or down.

3,612,297

DEVICE FOR HANDLING OBJECTS WHICH ARE
SUBJECTED TO SURFACE TREATMENTS

Pierre Lapostollet, Ecouen, France, assignor to Les procedes Rovac Chemin des Reniers, Villeneuve-la-Garenne (Hauts-de-Seine), France

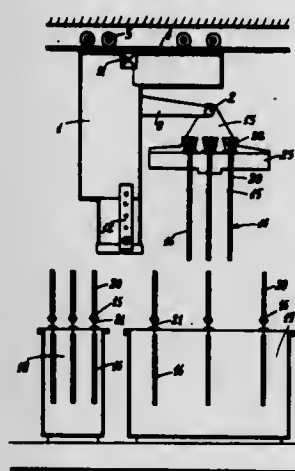
Filed Feb. 9, 1970, Ser. No. 9,874

Claims priority, application France, Feb. 12, 1969, 6903312

Int. Cl. B66c 19/00

U.S. Cl. 214-1 BB

9 Claims



This invention relates to a device for handling objects which are intended to be subjected to surface treatments by immersion in a row of processing tanks in which the objects undergo electrolytic and chemical processes or any operations such as rinsing, dipping and the like.

The device comprises a trolley adapted to move above the row of processing tanks and having an arm adapted to move in vertical translation with respect to the trolley and carrying a plurality of object carriers which are applied on completion of their downward vertical translation motion against contact-stops supplied with electric current and disposed at the top of the processing tanks. The object carriers are fastened

on the carrying arm by means of two oppositely facing assemblies of blocks capable of moving parallel to the direction of displacement of the trolley and are each provided with a bearing surface, the object carriers being provided with bearing surfaces of complementary shape. The device comprises also means for modifying simultaneously in said both assemblies the spacing of at least two of the blocks of one assembly. This arrangement makes it possible to modify the spacing of the object carriers in synchronism and thus to employ different tank lengths according to the treatment to be performed.

3,612,298

AUTOMATIC BAR-FEEDING APPARATUS

Shiro Azuma, 2-10-13 Higashimotomachi, Kokubunji, Tokyo, Japan

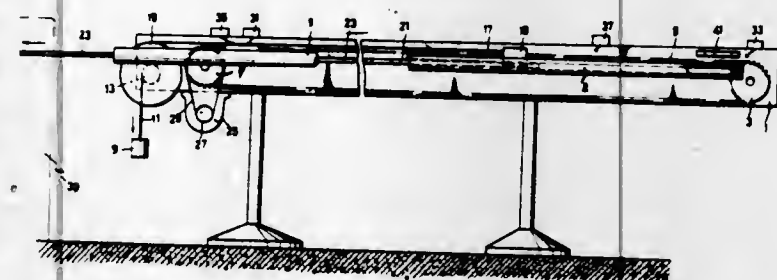
Filed Oct. 14, 1969, Ser. No. 866,204

Claims priority, application Japan, Nov. 15, 1968, 43-83267

Int. Cl. B23q 5/22

U.S. Cl. 214-1.2

10 Claims



Automatic bar-feeding apparatus having a pusher rod movable to and from a bar machine such as an automatic lathe, for feeding a bar material thereto, the pushing rod being driven by a motor at the initial stage of the feeding stroke and then by gravitational drive through the rest of the stroke, including the machining operation. Means are provided to prevent the bar material from being accelerated by the gravitational drive to strike against parts of the bar machine. The motor drive further functions, in cooperation with a clamping mechanism, to engage the bar material with the pusher rod at the beginning of the feeding stroke, and also to disengage the scrap end of the machined bar from the pusher rod at the end of its return stroke.

3,612,299

PALLETIZER FOR CANS

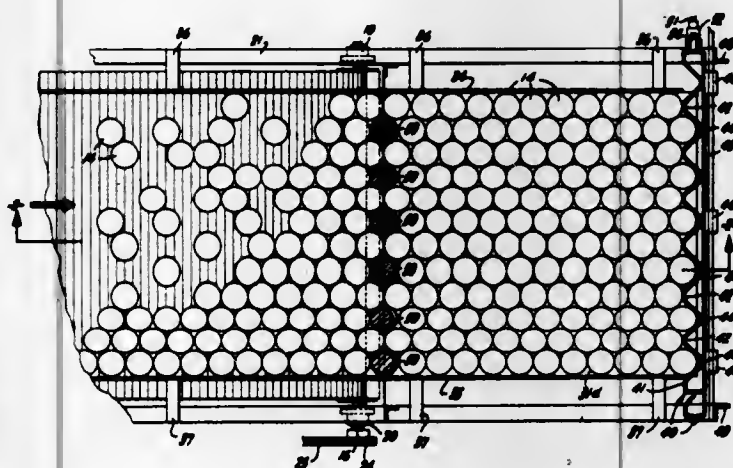
Stanley B. Shaw, Sunol, and Ronald H. Gehl, Fremont, both of Calif., assignors to C. T. Supply Co., Fremont, Calif.

Filed Feb. 18, 1970, Ser. No. 12,351

Int. Cl. B65g 57/20

U.S. Cl. 214-6 N

16 Claims



A palletizer for organizing a mass of containers in the form of open metal cans continuously delivered thereto by an in-feed conveyor into ordered rows, and for stacking the ordered rows of containers layer by layer onto a pallet therefor. The pallet is removably supported upon a vertically

reciprocable elevator operative to lower the pallet progressively step by step so that the successive layers of containers can be stacked one upon another. The palletizer is operative to offset or stagger the vertically aligned rows of successive layers; and to effect this result it includes transversely reciprocable stop structure having alternate ridges and grooves which define the outer ends of the container rows in each layer, transversely reciprocable interrupter structure that defines the terminal ends of the rows, and plungers forming a part of the interrupter structure which are selectively movable between extended operative and retracted in-operative positions so as to be engageable with certain of the containers advanced theretoward by the conveyor and constrain such containers to terminate the rows thereof forming any particular layer.

3,612,300

INSTALLATION FOR THE PALLETIZATION OF FLAT
RECTANGULAR OBJECTS

Marius Berghgracht, Le Vieux Logis Place Jayal, Vincennes, France

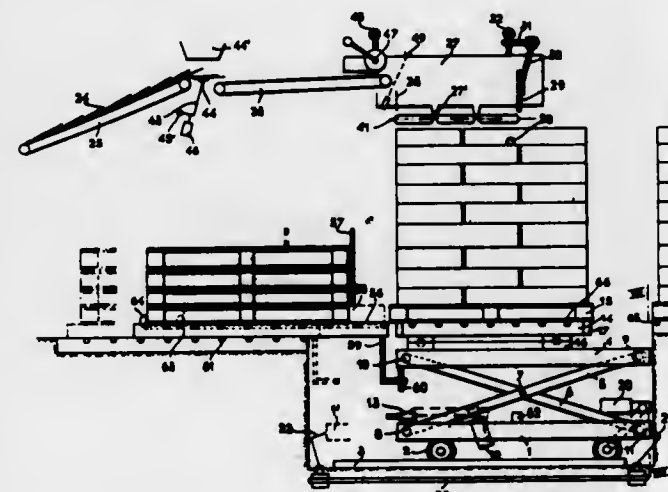
Filed Mar. 26, 1969, Ser. No. 810,537

Claims priority, application Luxembourg, Mar. 27, 1968, 55,769

Int. Cl. B65g 57/06

U.S. Cl. 214-6 DK

10 Claims



The installation includes means for automatically stacking the objects in superimposed layers on a pallet, each layer comprising four objects arranged so that the assembly thereof has a square outline and in such manner that each object of a following layer simultaneously rests on adjacent portions of two objects in the preceding layer.

3,612,301

CUSHION PAD INSERTABLE BETWEEN HEAVY
PANELS

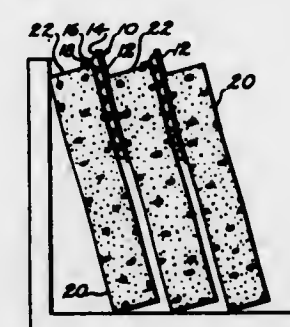
Bobbie D. Peacock, 325 Elizabeth St., N.E., Atlanta, Ga.

Filed July 7, 1969, Ser. No. 839,450

Int. Cl. B65g 1/14

U.S. Cl. 214-10.5 R

5 Claims



A molded plastic cushion pad for insertion between respective heavy panels such as precast concrete, architectural slabs used in building construction. A typical plastic pad is molded from polyethylene about the size of a small book and is rectangular in formation with a flat, smooth backside

and a front side substantially covered with large protruding bumps, and in a pertinent location near one end of the pad there is molded integrally with a pad a short, stubby hanger that extends alongside the panel when the pad is in place. The bumps have spaces between them so that air may circulate.

3,612,302

LOADING EQUIPMENT FOR HOPPER CRAFT

Robert De Groot, Kinderdijk, Netherlands, assignor to N. V. Industriele, Handelscombinatie, Netherlands

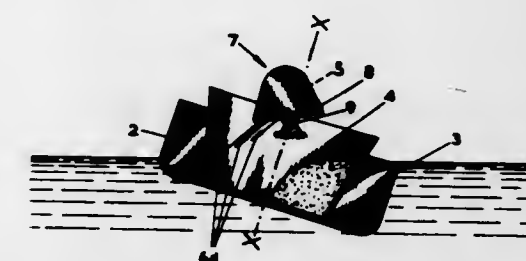
Filed June 15, 1970, Ser. No. 45,972

Claims priority, application Netherlands, June 16, 1969, 69,09161

Int. Cl. B63b 27/00

U.S. Cl. 214-15 R

8 Claims



Loading of a hopper craft during loading is counteracted by directing the material to the higher side of the craft. Servomechanism tilts a distributor oppositely to the craft, through a weight-and-linkage system.

3,612,303

MARINE BULK CARGO LOADING ARRANGEMENT

Suke Yoshi Ikeda, Yao, Japan, assignor to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan and Kishichi Miyazaki, Tokyo, Japan, part interest to each

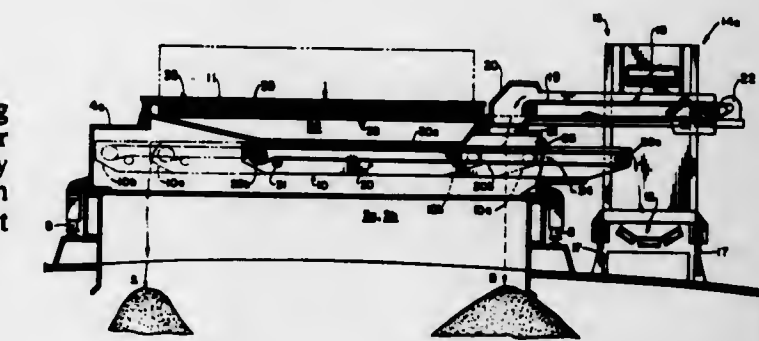
Filed Oct. 6, 1969, Ser. No. 863,993

Claims priority, application Japan, Oct. 5, 1968, 43/72624

Int. Cl. B65g 65/02

U.S. Cl. 214-15 E

5 Claims



Material-handling arrangement, such as in a bulk freighter, for loading and unloading bulk cargo by the use of a main conveyor mounted by the side of the hatches. There are two kinds of hatch cover panels, one being used only for the purpose of closing the respective hatch, and another kind both for shutting the hatch and for handling the cargo. A closable hopper is provided as well as a traversing conveyor, whereby the function of delivering the cargo into a hold, supplied from the main conveyor, can be achieved, and whereby the function of delivering the cargo from the hopper to the main conveyor can also be obtained so that the hatch cover is utilized for cargo handling.

3,612,304

STORAGE STACKER UNIT AND A TRANSFER UNIT
THEREFOR

Paul H. Troth, Euclid, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Apr. 13, 1970, Ser. No. 27,768

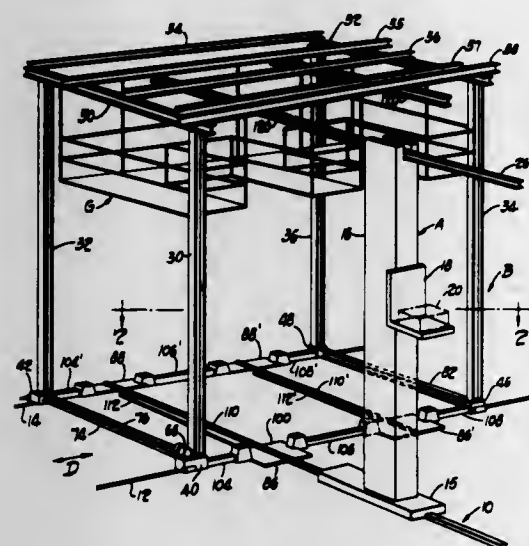
Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 B

1 Claim

A material-handling apparatus comprising a floor-supported traveling stacker unit having a horizontally movable

load carrier supported for vertical movement along an upright mast horizontally movable in parallel aisles between tiered rows of storage compartments and a free-standing,



floor-supported carrier or transfer unit movable transversely of the one end of the aisles into which one or more stacker units may be temporarily positioned for service and/or transfer from one storage aisle to another.

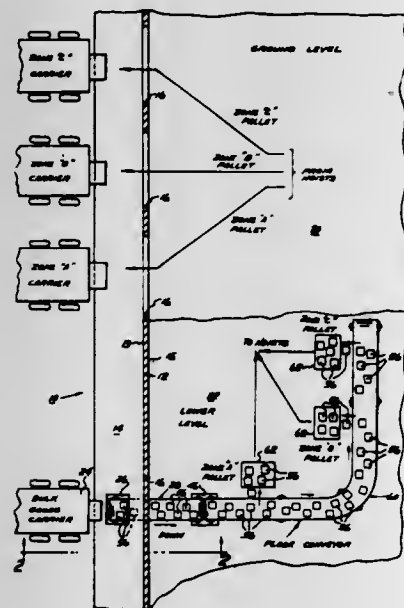
3,612,305 LOADING DOCK STRUCTURE AND SMALL GOODS HANDLING SYSTEM

Alvin Wasserman, 1521 Charrington Drive, Birmingham, Mich.

Filed June 16, 1969, Ser. No. 833,303
Int. Cl. B65g 1/00

U.S. Cl. 214-16 B

7 Claims



A small goods handling and distribution system for a trunk line terminal for over-the-road hauling carriers including a loading dock conveyor in the form of an endless belt or chain extending directly through an opening in the loading dock surface to provide a means for conveying small goods and packages to a lower level of a warehouse or terminal for sorting and distribution of the small goods according to delivery zones and immediate dispatch to respective zone carriers parked at the same terminal.

3,612,306 TAPERED SIDE SHIELD FOR SILO UNLOADER

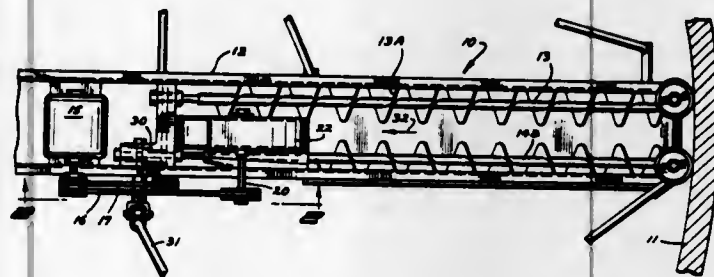
Elvind M. Rambo, Maple Plain, Minn., assignor to Van Dusen & Co., Inc., Wayzata, Minn.

Filed Mar. 16, 1970, Ser. No. 19,735

Int. Cl. B65g 65/38

U.S. Cl. 214-17 DB

3 Claims



A direct throw silo unloader having two feed augers, and utilizing a tapered shield on one auger of the feed in system so that both sides of the direct throw impeller are fed evenly, in order to increase throw discharge volume of the direct throw silo unloader.

3,612,307 FEEDER AND LINER ASSEMBLY THEREFOR

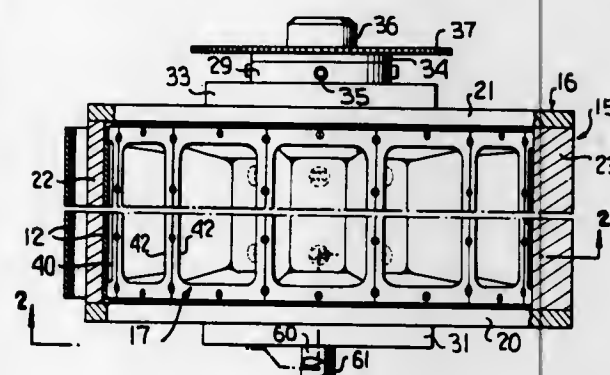
Clarence W. Vogt, Box 232, Weston, Conn.

Filed Jan. 28, 1969, Ser. No. 794,627

Int. Cl. B65g 65/32

U.S. Cl. 214-17 CC

10 Claims



This disclosure relates to a rotary feeder of the pressure differential type which includes a housing having a cylindrical cavity therein with an inlet and an outlet opening therein, a rotor mounted within the cavity for rotation relative to the housing, and a fixed stator telescoped within the rotor and supported by the housing. The rotor is provided with a plurality of circumferentially adjacent pockets in which liners are positioned. The liners are separately formed and then bonded together in situ to form a continuous liner assembly having exposed surfaces engageable with the housing to form a seal therewith between the inlet and the outlet. The stator is in the form of a valve, which is preferably formed of a stable plastic and which controls the flow of gases into and out of the pockets as the rotor rotates.

3,612,308 LOADING INSTALLATION FOR ROAD TRANSPORT VEHICLES

Kaspar Klaus, 46 Schlachthofstrasse 894, Memmingen/Bavaria, Germany

Filed Feb. 5, 1969, Ser. No. 796,736

Claims priority, application Germany, Feb. 6, 1968, P 16 80 137.9

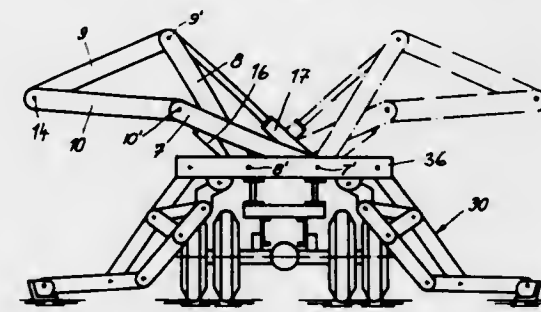
Int. Cl. B60p 1/48

U.S. Cl. 214-77

8 Claims

A load transport vehicle having a frame provided with a loading installation for the lateral loading and unloading of at least an essential part of the load in which the installation in-

cludes at least two pivoting units, one unit being located before and the other unit behind the load on the frame in the direction of movement of the vehicle, each unit being provided with a first lifting arm means pivotally mounted on the frame with the pivotal axis extending parallel to the longitudi-



dinal axis of the vehicle, and a second lifting arm means pivotally connected to the first arm means for movement about an axis extending parallel to the longitudinal axis of the vehicle, the second lifting-arm means constituting a load support component, and the operating range of both arm means extending over both sides of the vehicle frame.

3,612,309 APPARATUS FOR MOVING BALES OF FIBERS OR THE LIKE FROM A BALING PRESS

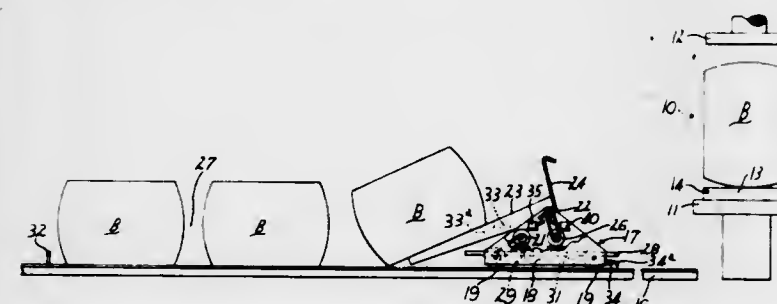
Donald W. Van Doorn, and James B. Hawkins, both of Columbus, Ga., assignors to Lummus Industries, Inc.

Filed Aug. 18, 1969, Ser. No. 851,014

Int. Cl. B65g 47/08

U.S. Cl. 214-91

5 Claims



A system for moving bales of fiber or the like from a baling press to a discharge point which includes a powered vehicle having a tiltable bale receiving carriage movable from position to receive the bales to a position gently to discharge the bales. A control system automates the travel of the vehicle between the pickup and discharge positions and causes the carriage to move into bale receiving and bale discharge attitudes at the proper time. The control system also may space the bales from each other on the floor or place them on a conveyor. Also, a bale ejecting mechanism of the press may be included in the control system thus to cause the vehicle automatically to position itself in bale receiving position.

3,612,310 DREDGING LOADER

Hans Schaeff, Langenburg, Germany, assignor to Karl Schaeff KG, Maschinenfabrik, Langenburg am Wurttemberg, Germany

Filed June 20, 1969, Ser. No. 834,959

Claims priority, application Germany, June 20, 1968, P 17 59 912.1

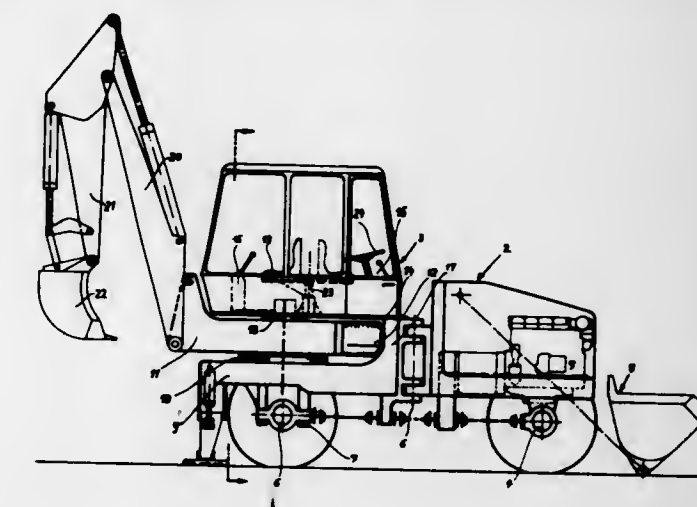
Int. Cl. E02f 3/28

U.S. Cl. 214-138

10 Claims

A dredger-loader vehicle having a shovel loader at the

front and a dredging outrigger in the rear. The dredger swingably mounted on the rear portion and including a coun-



terweight, all above the rear axle. The motor is located above the front axle.

3,612,311 TRACTOR LOADER

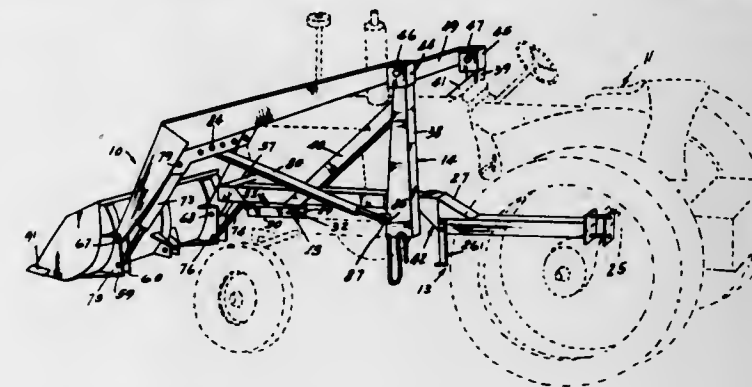
Hass S. Eldy; Edward M. Jankowski, and Richard H. Mott, all of Sioux Falls, S. Dak., assignors to Du-Al Manufacturing Co., Sioux Falls, S. Dak.

Filed Apr. 9, 1969, Ser. No. 814,595

Int. Cl. B66f 9/04

U.S. Cl. 214-140

17 Claims



A loading implement is operatively connected to an implement carrying frame which is constructed to receive a tractor in releasable engagement by apparatus which provides a quick contact type of coupling.

The implement cooperates with a stand to support the loader apparatus in a self-supported, freestanding condition. The stand is pivotally connected to the frame and movable between a ground-engaging position and a storage position by tractor-mounted slides which, upon entry of the tractor into the frame, replace the support offered by the stand and pivot the stand into its storage position within hollow sections of the frame.

A safety linkage is provided between the stand in its downwardly rearwardly extending ground-engaging position and the rear of the frame to prevent forward pivoting of the stand and attendant collapse of the loader apparatus in the event that the apparatus is inadvertently bumped.

3,612,312 METHOD FOR HANDLING VERY HEAVY UNIT LOADS

George Behrmann, Lauf, Pegnitz, Germany, assignor to Karl Heinz Schmidt, Hersbruck, Germany

Filed June 12, 1968, Ser. No. 736,464

Claims priority, application Germany, June 12, 1967, P 16 55 176.1

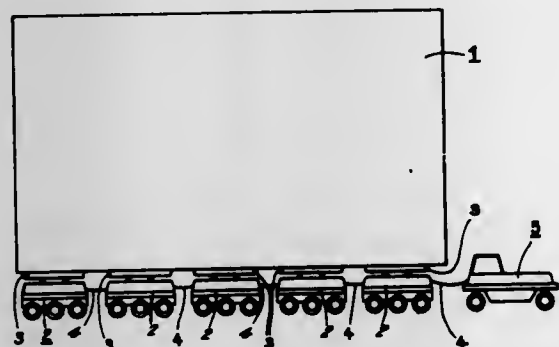
Int. Cl. B60p 1/52, 3/40

U.S. Cl. 214-152

6 Claims

The handling of very heavy unit loads, such as semfinished or finished sections of ships' hulls, ships' superstructures and

sections of ships' superstructures in which at least one lifting means provided with holding means is mounted on at least one multiwheeled vehicle capable of being steered throughout 360°. The vehicle is moved into position beneath the unit load, the lifting means and holding means actuated



to elevate and hold the load, the vehicle is then driven to the desired location and by maneuvering of the vehicle, the lifting means and the holding means, the unit load is placed in the required position.

3,612,313

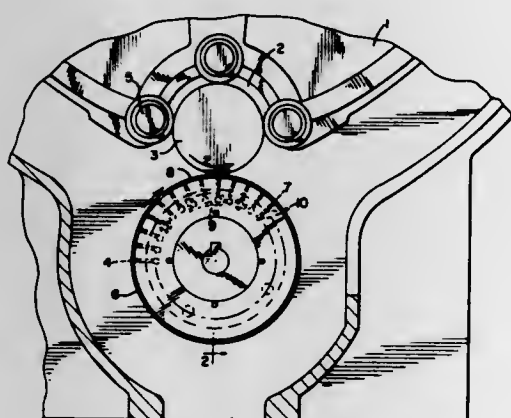
ROTARY VACUUM CAN HOLDDOWN AND METHOD
Harry Lehning, Jr., Elmhurst, Ill., assignor to Continental Can Company, Inc. New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,326

Int. Cl. B65g 47/24

U.S. Cl. 214-340

5 Claims



Can spinning is provided by a spinning wheel having a rubberized face. The rubberized face is pierced by conduits connected to a vacuum source. In this way, as a can comes to the spinning operation, the can wall contacts the spinning wheel and is held down against the rubberized material by the vacuum. The vacuum is applied through the conduit only in the area of the surface contact between the can and the wheel. The vacuum is connected to a conduit in the rubber face at a point slightly before the section of the wheel approaches the can wheel contact point. In this way, vacuum is being fully applied at the time the surface area of the wheel adjacent to the conduit contacts the can wall.

3,612,314

BOAT LOADER AND UNLOADER FOR VEHICLES
Eugene L. Cooper, Route 4, Box 308-C, Sherwood, Oreg.

Filed Apr. 27, 1970, Ser. No. 32,056

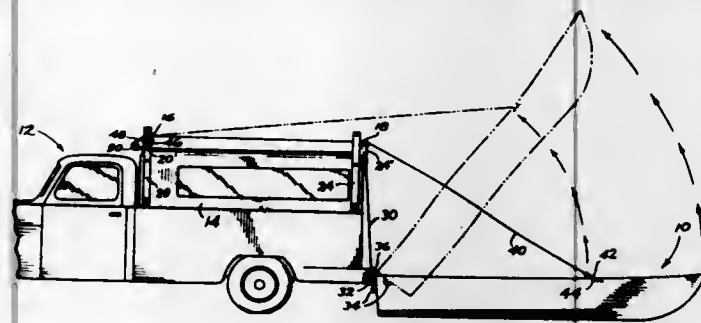
Int. Cl. B60r 9/00

U.S. Cl. 214-450

8 Claims

A pair of longitudinally spaced boat-supporting rollers are mounted transversely on top of a vehicle and a driven one of the rollers anchors a pair of laterally spaced boat-handling lines which extend rearward over the rollers for attachment of their rearward ends to opposite sides of a boat forward of the longitudinal center of gravity thereof, with the boat extending longitudinally rearward of the vehicle. A pair of

laterally spaced boats support lines extend downward behind the vehicle from adjacent the rear roller for attachment of



their lower ends to laterally spaced external points on the rearward end of the boat.

3,612,315

CARGO CONTAINERIZATION APPARATUS AND SYSTEM

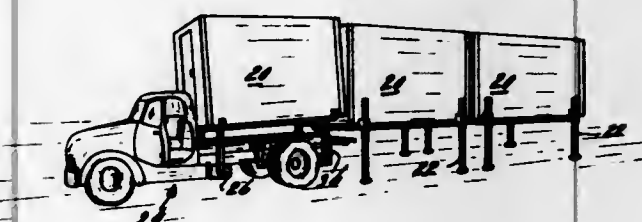
Horace D. Blackburn, 333 6th Ave. West, Bradenton, Fla.

Filed Sept. 4, 1969, Ser. No. 855,225

Int. Cl. B60p 1/64

U.S. Cl. 214-515

10 Claims



Cargo containerization apparatus and system of a type wherein one or more selectively movable containers for cargo and the like are adapted for individual or collective transportation from and to material or cargo loading and discharge points. The individual units are adapted for transportation on truck chassis, trains, or the like, and are readily placeable on or removed from the conveyance for temporary storage following long-distance hauling and the like, or pickup or local handling. The system includes operating and control means for raising and lowering the individual container units, or a plurality thereof, and is particularly suited and adapted for so raising and lowering an individual unit with respect to an adjoining unit in a line or in areas of restricted clearance to prevent damage to the container during the lifting or placement operation.

3,612,316

CARGO LOADING AND RESTRAINT SYSTEM
Floyd G. Baldwin, Long Beach, and Raymond P. Brenner, Whittier, both of Calif., assignors to McDonnell Douglas Corporation

Filed Dec. 22, 1969, Ser. No. 887,124

Int. Cl. B60p 1/64

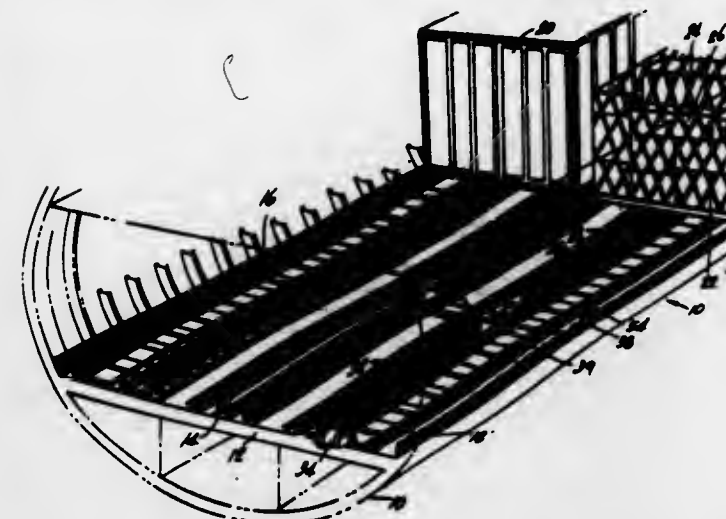
U.S. Cl. 214-516

4 Claims

A cargo loading and restraint system within the cargo deck of an aircraft in the form of a conveyor mechanism involving an endless chain assembly continuously operated by a suitable motor. The chain comprises a plurality of interconnected rollers with support pads which are raised by inflatable bags positioned thereunder to contact the bottom surface of cargo pallets to be moved on support rollers from station to station on the cargo deck. The frictional engagement of the support pads with a cargo container moves it to the next station on the support rollers. Each station has its own inflatable bag to be inflated and deflated as desired to move or halt the movement of the pallets along the cargo deck. A latch system is in-

terlocked to the drive system for quickly locking down the containers for pallets when they reach selected positions on

cludes an elongated tubular guide having a heavy pulley member vertically movable and guided therein. The hose enters the upper portion of the guide, passes under the pulley member, and extends from the upper end of the guide for communication with movable structure mounted upon the



the cargo deck and to deflate bags at those stations to release the drive system from the locked pallets.

3,612,317

LOADING WAGON AND CHARGING MEANS THEREFOR

Ernst Weichel, Bahnhofstr. 1, 7326 Heilbronn, Germany

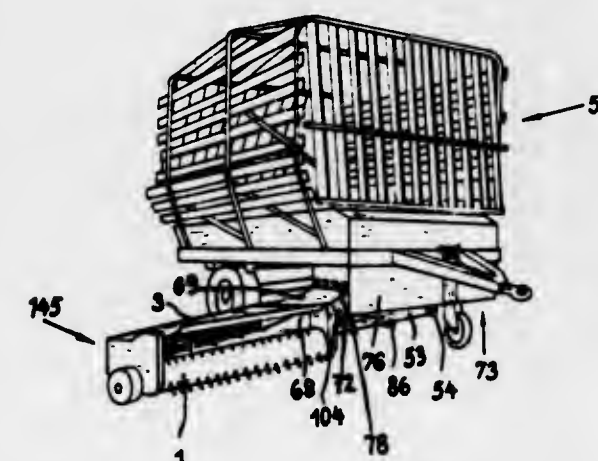
Filed May 19, 1969, Ser. No. 825,598

Claims priority, application Germany, May 18, 1968, P 17 57 555.2

Int. Cl. B60p 1/00

U.S. Cl. 214-519

27 Claims



A loading wagon, having a laterally chargeable conveyor duct, is provided with a substantially U-shaped guide trough, open at the top, extending laterally of the conveyor duct and including at least front and rear walls interconnected by a bottom wall. Conveyor prongs are arranged for extension into the guide trough laterally thereof, and are operable to lift material in the guide trough for discharge through the open top thereof onto the conveyor duct. The guide trough receives agricultural commodities from a harvesting implement arranged adjacent the loading wagon. Cutting means preferably are provided to sever the material in the guide trough from material being fed to the guide trough during lifting of the material by the prongs.

3,612,318

HOSE CONFINING AND DISPENSING APPARATUS
Keith E. Ramsey, Pleasant Lake, Mich., assignor to The Knickerbocker Company, Jackson, Mich.

Filed Mar. 5, 1969, Ser. No. 804,529

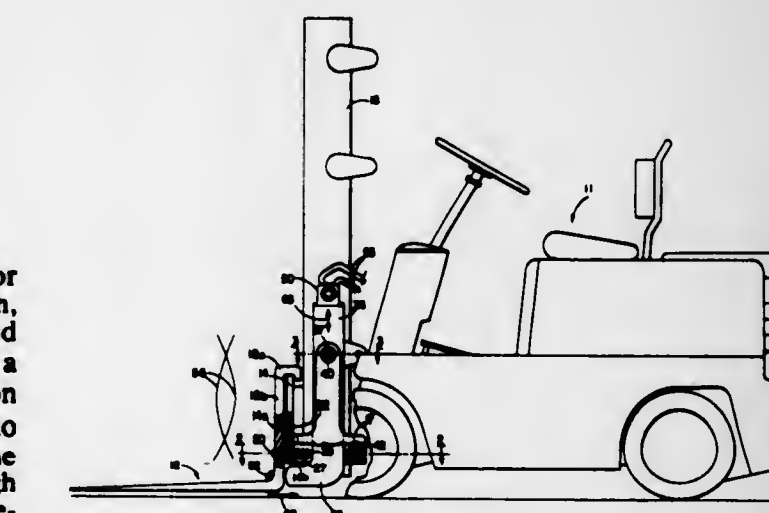
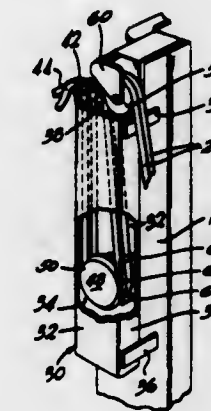
Int. Cl. B66f 9/14

U.S. Cl. 214-731

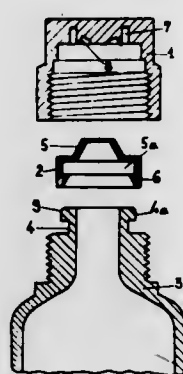
7 Claims

Apparatus for confining, protecting, dispensing and retrieving flexible hose lines used with lift masts, such as the type mounted upon lift trucks, wherein the apparatus in-

Means are provided to apply sonic energy to selected portions of material handling equipment to reduce the friction at the interfaces between either this portion of the equipment and material to be handled thereby, or in certain instances at the interfaces between equipment portions and the surface over which the equipment is to be moved. Sonic rectifier means are provided for providing a rectified or nonlinear acoustical wave action at the interface at which relative motion is desired, this sonic action providing a propulsive force for either loading material onto the equipment or aiding in the propulsion of such equipment from one position to another.

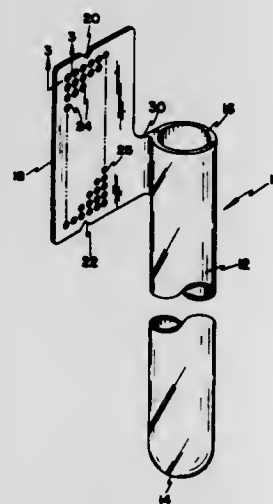


3,612,320
INVOLABLE FASTENING FOR RECEPTACLES
 Victor Wassiljeff, 57, Rue de Maubeuge, Paris 9^{eme}, France
 Filed July 24, 1969, Ser. No. 844,476
 Claims priority, application France, July 29, 1968,
 160919
 Int. Cl. A61j 1/00; B65d 55/02
 U.S. Cl. 215—7 5 Claims



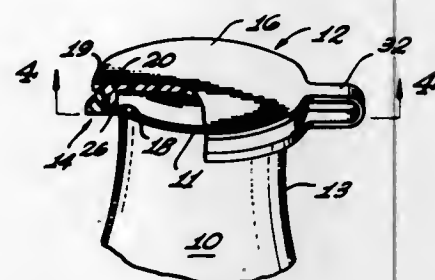
An inviolable fastening for receptacles comprising at least one intermediate member inserted between two other members represented by the cap and the neck of the receptacle, in which the inserted member is friction fitted on a corresponding part of one of the two other aforesaid members by means of a previous elastic deformation of one of the two parts, the inserted member being moreover fixed during the closing of the receptacle latter to the aforesaid fitting on the corresponding part of the other of the two members.

3,612,321
CONTAINER FOR BIOLOGICAL FLUIDS
 Roger V. Larson, Murray, Utah, assignor to Bio-Logics, Inc.,
 Salt Lake City, Utah
 Filed Sept. 15, 1969, Ser. No. 857,975
 Int. Cl. B65d 1/00
 U.S. Cl. 215—7 3 Claims



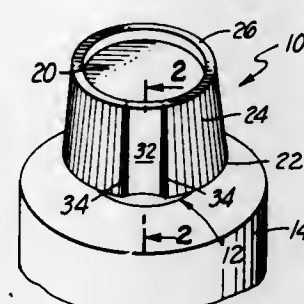
A one-piece container for a biological fluid having a fluid-receiving receptacle and an identification device presenting selectively encodable sites to uniquely identify the source of the biological fluid and tests to be performed therewith. The method of forming the container includes either one-shot molding of the receptacle and identification device, or the identification device is inseparably molded upon an existing receptacle.

3,612,322
CONTAINER CAP
 Robert P. Linkletter, 9372 Wilshire Blvd., Beverly Hills, Calif.
 Filed Aug. 11, 1969, Ser. No. 848,834
 Int. Cl. A61j 1/00; B65d 45/30, 55/02
 U.S. Cl. 215—9 13 Claims



An improved bottle cap comprising a closure member adapted to snap over the mouth of a bottle having a peripheral lip, and a locking ring releasably surrounding the closure member to secure it in place. The closure member and the locking ring are provided with cooperating safety lock surfaces which positively lock the two members together. The locking ring may also be provided with radial projections which frictionally engage the bottle neck when the locking ring is released from engagement with the closure member and pushed thereof.

3,612,323
SAFETY CLOSURE
 Dell M. Malick, Route 1, Box 31 A, Santa Rosa, Tex.
 Filed Sept. 25, 1969, Ser. No. 861,010
 Int. Cl. A61j 1/00; B65d 55/02
 U.S. Cl. 215—9 9 Claims

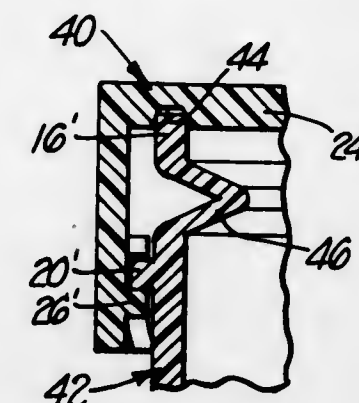


The specification discloses so-called "safety" closure and container neck constructions. A container neck as disclosed carries a ratchet or ratchetlike structure the closure disclosed carries a hinged lever which in turn carries a pawl structure. In a normal locked position of the closure the pawl structure engages the ratchet structure so that the closure cannot be removed from the container. The lever is capable of being moved to an unlocked position in which the pawl and ratchet structures are disengaged. In such an unlocked position the closure may be removed from the container neck.

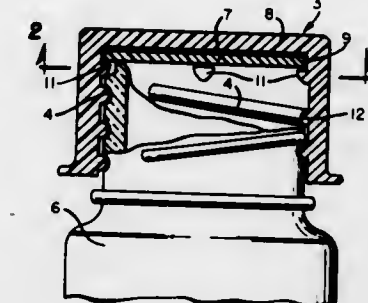
ERRATUM
 For Class 215—40 see:
 Patent No. 3,612,340

3,612,324
SAFETY CAP AND CONTAINER NECK CONSTRUCTION
 Dell M. Malick, Route 1, Box 31A, Santa Rosa, Tex.
 Filed Sept. 25, 1969, Ser. No. 861,013
 Int. Cl. A61j 1/00; B65d 55/02
 U.S. Cl. 215—9 7 Claims
 A safety cap and container neck construction is disclosed which is adapted to be opened by the cap being pushed downward upon the neck and being twisted. Cooperating

holding means adapted to be snapped together are located on the interior of the skirt of the cap and on the exterior of the

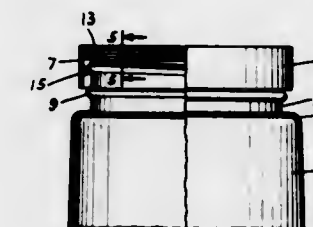


3,612,325
PLASTIC SCREWCAP WITH ROTATABLE WASHER
 Robert J. Williams, Dover, Ohio, assignor to Dover Molded Products Company, Dover, Ohio
 Filed June 19, 1968, Ser. No. 738,149
 Int. Cl. B65d 23/00
 U.S. Cl. 215—40 1 Claim



A plastic screwcap for bottles, of the type relying upon a soft washer or gasket for the actual sealing, the cap being provided with means such as an undercut or a central pin for holding the washer in place on the cap so that it does not adhere to the bottle when it is unscrewed. The arrangement is such that the sealing gasket can rotate freely with the bottle during the last fractional turn while the cap is being tightened, to prevent the sealing washer from being torn at this stage, yet the washer is retained in the cap when the latter is unscrewed instead of adhering to the lip of the bottle which it seals thereby retaining the sealing qualities of the cap for reuse.

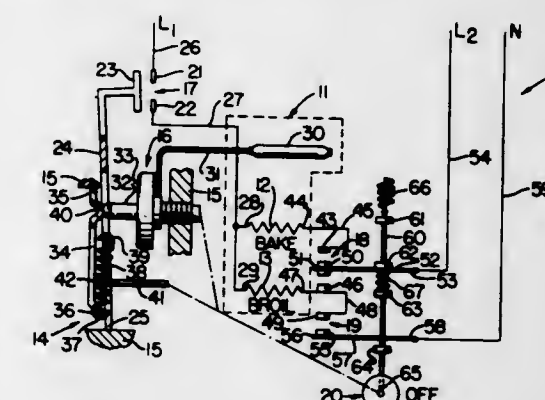
3,612,326
EXTENSION SEAL FOR A PLASTIC CONTAINER
 Raymond H. Marks, Woodcliff Lake, N.J., assignor to Tenneco Chemicals, Inc.
 Filed Mar. 20, 1969, Ser. No. 808,761
 Int. Cl. B65d 23/00, 53/00
 U.S. Cl. 215—40 5 Claims



A container comprising a body portion composed of a rigid polyvinyl chloride composition, said body portion having an

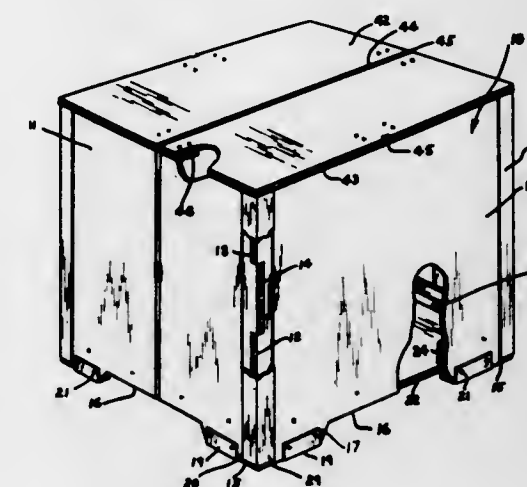
annular threaded neck adapted to receive a reciprocally threaded closure, said neck terminating in an annular lip, and an annular extension portion composed of a flexible polyvinyl chloride plastisol affixed to said lip by fusing a vinyl chloride plastisol in juxtaposition with said lip to provide, in combination with the body portion, a unitary structure, said extension portion being adapted so that the extremity thereof will fit securely against the top of said threaded closure when the threads of said closure fully engage the threads of the neck to provide an airtight and a watertight seal.

3,612,327
CONTROL MEANS FOR A COOKING APPARATUS OR THE LIKE
 Siegfried E. Manecke, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
 Filed Dec. 21, 1967, Ser. No. 692,374
 Int. Cl. H05b 1/02
 U.S. Cl. 219—515 12 Claims



This disclosure relates to an electrical control system for an oven having a bake heater and a broil heater to be operated by a power source having a neutral line and a pair of powerlines, the control means operating the bake heater at substantially full rated power and the broil heater at part of its rated power when the oven is set for maintaining a selected bake temperature below a broil temperature and above approximately 300° F. and the system demands heat input, whereas the control means operates both of the bake and broil heaters at part-rated power thereof in interconnecting the bake and broil heaters in series across one powerline and the neutral line when the temperature of the oven is above the selected bake temperature.

3,612,328
COLLAPSIBLE SHIPPING CONTAINERS
 William L. Talbert, York, Pa., assignor to Canton Company of Baltimore, Baltimore, Md.
 Filed Sept. 12, 1969, Ser. No. 857,482
 Int. Cl. B65d 9/12, 9/38
 U.S. Cl. 217—12 R 4 Claims



A collapsible shipping container having its vertical walls provided with tongues and notches to interfit, and corner

locking members to hold the sides together. The base fits within the setup sides. Each side has a unitary leg which includes a base support. Locking means are provided to hold the base in position, and an alternative design prevents shearing between the base support and the leg, should the loaded box be dropped on a corner.

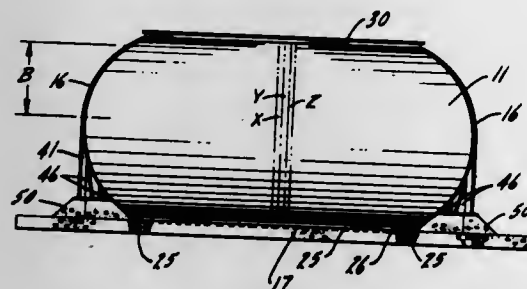
3,612,329 TANK

John W. Parks, Overland Park, and William K. Mathews, Prairie Village, both of Kans., assignors to Union Tank Car Company, Chicago, Ill.

Filed Sept. 25, 1969, Ser. No. 861,041
Int. Cl. B65d 7/04, 87/02

U.S. Cl. 220-1 B

11 Claims



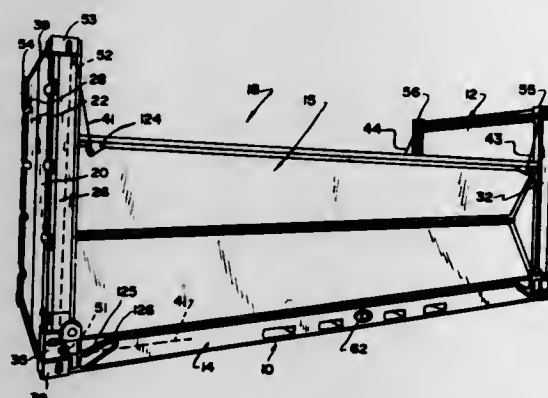
A large tank for holding a fluid substance. Sidewalls of the tank are outwardly convex, or arcuate. The upper edges of the sidewalls are unrestrained so that a relatively high degree of distortion or freedom of the walls is permitted under a fluid head in the tank. The shear flow which is developed in the tank walls acts in summation as a horizontal beam which, anchored at its opposite ends to vertical beam-columns, supports the walls and contained fluid.

**3,612,330
HOIST MECHANISM**
Austin R. Baer, Elmhurst, Ill., assignor to Allied Products Corporation, Chicago, Ill.

Filed Sept. 11, 1969, Ser. No. 857,117
Int. Cl. B65d 7/26; B65j 1/02

U.S. Cl. 220-1.5

8 Claims



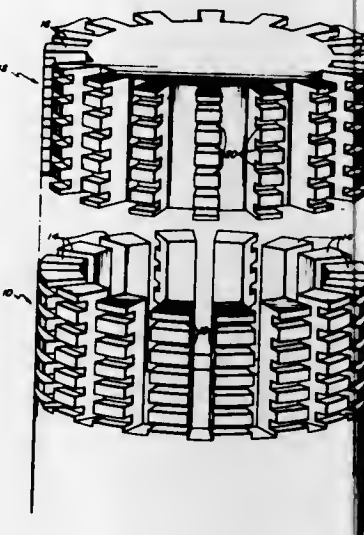
The hoist mechanism includes four winches which are mounted on the base of a frame structure having upstanding supports on the base. The winches are connected to a common drive shaft rotatably mounted on the base. A pair of upper and lower guide rollers are associated with each of the winches and are mounted on the upstanding supports. Each winch has a length of cable, a portion of which is wound on the winch and a portion of which is trained over the guide rollers and then secured to one corner of a panel which is horizontally disposed over the base. Each cable is trained over a movable sheave assembly which is resiliently biased to place tension on the cable. A slip clutch is located in the drive connection between the drive shaft and each winch to stop rotation of each winch when a predetermined tension is placed on each cable wound on each winch, such as when a corner reaches its upward limit of travel.

**3,612,331
PRESSURE VESSEL WITH SHEAR BANDS**
Svend M. Jorgensen, Tenafly, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed May 21, 1969, Ser. No. 824,549
Int. Cl. B65d 45/32; A47j 36/10

U.S. Cl. 220-3

4 Claims



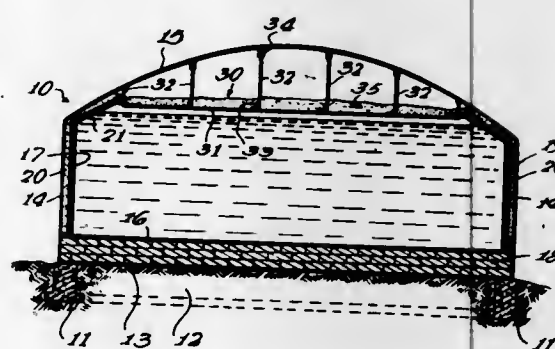
A pressure vessel in which a pair of vessel members are attached by means preventing relative rotative movement between the members, and means for preventing relative axial movement between the members.

**3,612,332
INSULATED STORAGE TANK OF INCREASED CAPACITY WITH SUSPENDED INSULATED CEILING**
Merwin Bailey Clapp, Homewood, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 10, 1969, Ser. No. 865,410
Int. Cl. B65d 7/22

U.S. Cl. 220-10

14 Claims



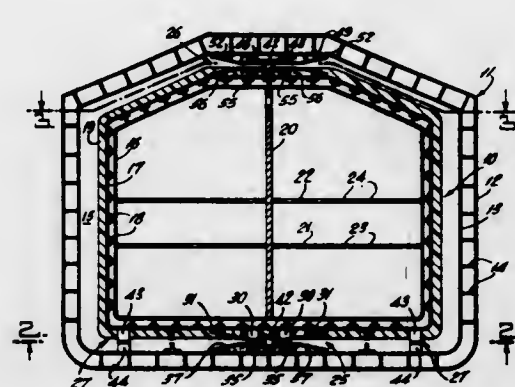
An enclosed insulated tank having an external metal shell with a metal bottom, a metal wall and a sloped metal roof, an internal metal shell having a metal bottom and a metal wall, insulation between the internal and external bottoms and the internal and external walls, a metal canopy member fluidly secured to and extending from about an upper part of the inner wall inwardly and upwardly and terminating in spaced relationship from the roof, an insulated fixed-position ceiling suspended from the inside of the roof having its periphery adjacent to, and conforming with, the internal peripheral terminus of the metal canopy, and insulation between the canopy member and the roof.

**3,612,333
SECUREMENT SYSTEM USING LOOSE KEYS FOR INDEPENDENT STORAGE TANKS**
Walter C. Cowles, Stamford, Conn., assignor to Esso Research and Engineering Company

Filed Feb. 27, 1970, Ser. No. 15,040
Int. Cl. B65d 25/00

U.S. Cl. 220-15

12 Claims



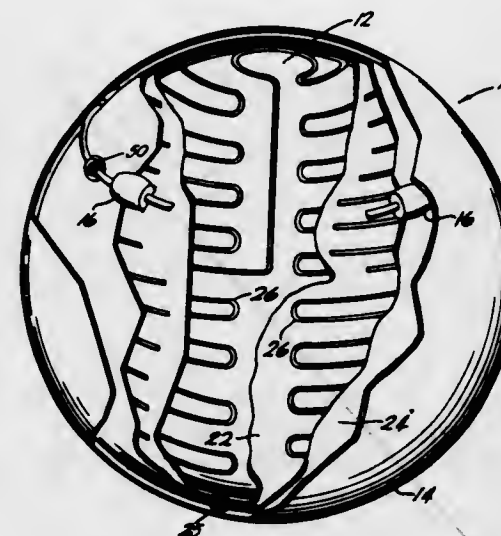
An arrangement for securing independent storage tanks or containers in a tanker or other vehicle of transportation for transporting cargoes below or above ambient temperature wherein the arrangement comprises a system of key-keyway-bearer combinations removed from the neutral axis of the container, preferably located at the top and the bottom of the storage tank and utilizing loose keys, or in other words, keys that are detached from the surrounding keyway-bearer structure.

**3,612,334
CONTAINER FOR CRYOGENIC FLUIDS**
Paul J. Gardner, Davenport, Iowa, assignor to The Bendix Corporation

Filed Nov. 21, 1968, Ser. No. 777,761
Int. Cl. B65d 25/00

U.S. Cl. 220-15

9 Claims



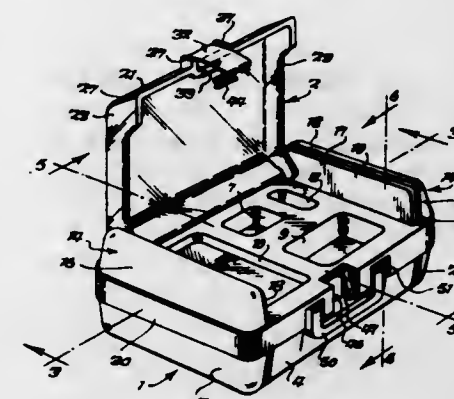
A container having an inner and outer vessel for storing cryogenic fluid. The inner vessel is concentrically separated from the outer vessel by bumper members. The bumper members are spaced on a conduit around the inner vessel. A shield member is located in the space between the inner and outer vessel. A mounting member attached to the conduit is secured to the shield member for preventing direct contact between the outer vessel and the shield member and thereby effectively reduce conductive heat transfer to the inner vessel.

**3,612,335
CONTAINER**
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.

Filed Jan. 23, 1969, Ser. No. 793,499

U.S. Cl. 220-16

10 Claims



A plastic container having a blow-molded body and a movable cover member injection molded of a clear plastic material. The movable cover member extends between a pair of end caps formed with the body as an integral part thereof, the end caps being located adjacent the opposite ends of the cover to complete the cover portion of the container. Hinge pins formed as part of the movable cover member engage openings in the end caps, and a latch carried by the cover member has locking engagement with the body.

**3,612,336
ELEMENT HOLDER OR STORAGE CASE**
John V. Willich, 136 Forest St., Kearny, N.J.

Filed Oct. 20, 1969, Ser. No. 867,782

U.S. Cl. 220-21

4 Claims



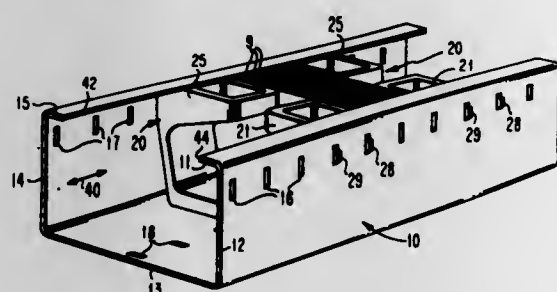
An impact resistant element holder or storage case for glass bottles, ceramic parts and the like frangible elements comprising a body member preferably of molded or compressed plastic material or light expanded metal material shaped to define a plurality of receiving spaces or recesses extending inwardly and downwardly relative the longitudinal line of the body member the receiving spaces or recesses having at least one element receiving opening on at least one face of the body member and a vent and cleanout opening communicating with the receiving space or recess to permit air to escape from the receiving space when an element is placed therein and washing fluid to pass through said receiving space when it is flushed for cleaning purposes. Additionally, each receiving space or recess is provided with a drain means at substantially the lowermost end to permit fluid to drain to and be collected at the lower portion of the body member. The body member is further adapted to receive a handle to render the element holder or storage case portable.

Additionally, the receiving space is provided with a stop means at the inner most end for cushioning the impact of the element and the inner wall of the receiving space is designed to snugly engage the element placed in said receiving space.

Additionally, the body member is so constructed and arranged that it can be stacked easily into a plurality of units for compact storage and ease in carting upon a truck or other conveyor.

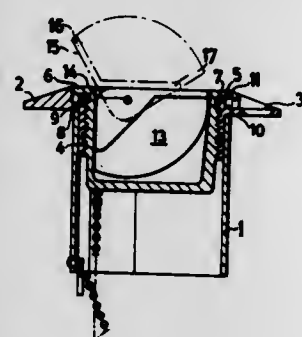
The device also includes in combination a bottle opener formed at a convenient point thereon the body being adapted to collect bottle caps from the bottle opener in the position placed on the body member.

3,612,337
CREDIT CARD BATCH CARRIER
William H. Harger, Weaverville, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 9, 1969, Ser. No. 831,477
Int. Cl. B411 47/16; B65d 25/06
U.S. Cl. 220-22.3 2 Claims



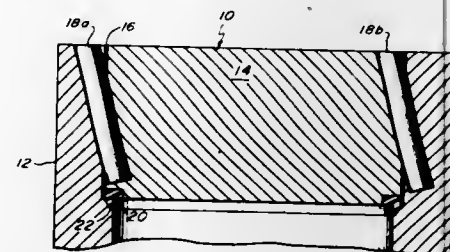
A holder or tray for credit cards or the like. A generally U-shaped tray has open ends, and sides bent over the top to form a pair of rails. A pair of retaining clips hold the cards within the tray in a locked or sliding position. In the locked position, projections on the clip engage apertures in the sides and bottom of the tray. In the sliding position, channels in the clip engage the rails. Cards may be removed by separating the clips and turning the cards to clear the rails, or by sliding a clip and then the cards out of an open end.

3,612,338
CLOSURE DEVICE ESPECIALLY FOR FUEL AND WATER TANKS
Lars Olav Ekman, Box 482, 80106 Gavle 1, Sweden
Filed Feb. 20, 1970, Ser. No. 13,031
Claims priority, application Sweden, Feb. 25, 1969, 2579/69
Int. Cl. B65d 41/04
U.S. Cl. 220-39 6 Claims



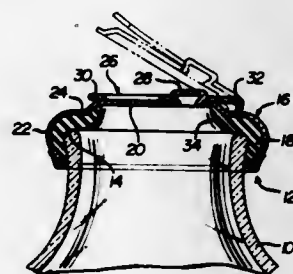
A plug for engagement within the opening of fuel or water tanks particularly of the type utilized in boats and formed of a body adapted to be engaged in said tank opening, said body having a top opening groove or recess and a sector-shaped disc pivotally mounted within said groove or recess along an axis normal to the plug axis and movable between a fully recessed condition and an outwardly pivoted condition whereat to serve as gripping means for manipulating the plug, the disc including counterweight formations preferably along one straight edge thereof to enable self-return of the disc from its outwardly pivoted condition; the pivot axis of the disc being offset from the center of the plug body.

3,612,339
PRESSURE VESSEL WITH SHEAR PINS
Svend M. Jorgensen, Tenafly, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed May 21, 1969, Ser. No. 826,632
Int. Cl. B65d 53/00; A47J 27/08, 36/10
U.S. Cl. 220-46 10 Claims



A pressure vessel in which a plurality of shear pins are disposed along an innerface defined between a pair of adjoining vessel components. The studs extend at an angle with respect to the generatrix of the innerface.

3,612,340
CONTAINER CLOSURE AND SEAL WITH PROTECTIVE LIP
Vernon C. Heffran, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.
Filed Sept. 10, 1969, Ser. No. 856,675
Int. Cl. B65d 23/00, 53/00
U.S. Cl. 215-40 6 Claims

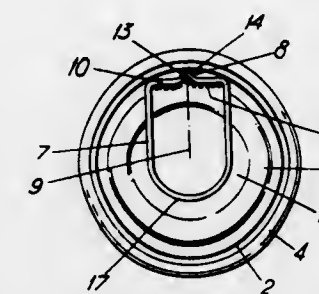


A container closure utilizing a metal cap with a tear tab and a sealing liner. The cap has a tear tab secured to an integral rivet part of an upraised removable panel, which is defined by a score line and is removed when the tab is pulled. The sealing liner is positioned within the cap with an edge that extends into the removable panel, so as to expand and cover the edge of the opening when the panel is removed. The cap also has an integral skirt with the end bent onto itself.

3,612,341
WIRE FORMED PULL-TAB
Jozef Tadeusz Franek, Chorleywood, and Peter Rhodes, Watford, both of England, assignors to The Metal Box Company, Limited, London, England
Filed Oct. 6, 1969, Ser. No. 863,940
Claims priority, application Great Britain, Oct. 7, 1968, 47466/68
Int. Cl. B65d 17/24
U.S. Cl. 220-54 7 Claims

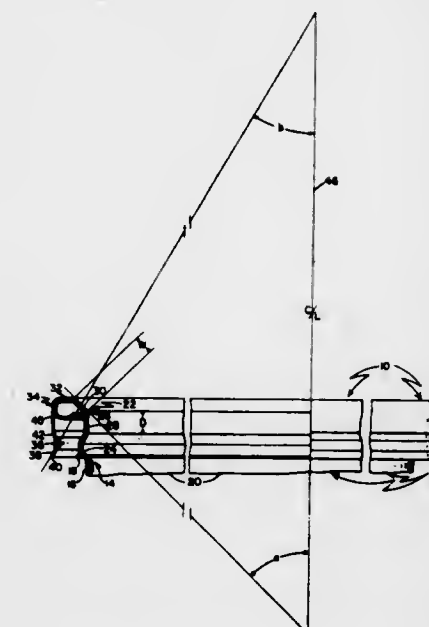
An easy-opening can end having an end panel in which a single panel-opening score is spaced from the periphery of the panel and extends completely around the panel is provided with a pull-tab consisting of a length of wire which is bent to provide a finger loop with the end portions of the wire juxtaposed and extending outwards from the loop to form a score-rupturing member and the tab is secured to the end panel at a position adjacent to the inner end of the score-

rupturing member and inside the panel-opening score in a manner such that on raising the finger loop from the end



panel the outer end of the score-rupturing member effects rupturing of the score.

3,612,342
CONTAINER LID
Willard J. Rathbun, Castalia, Ohio, assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed July 14, 1969, Ser. No. 841,336
Int. Cl. B65d 43/10, 51/00
U.S. Cl. 220-60 R 11 Claims



A stackable lid or closure for use with containers having a complementary open mouth rim portion, the lid having a configuration which insures smooth and instant release during coin-feeding of the bottom lid from a vertical stack thereof, the same configuration providing a stack of lids which will resist displacement or jamming of the lids in the stack.

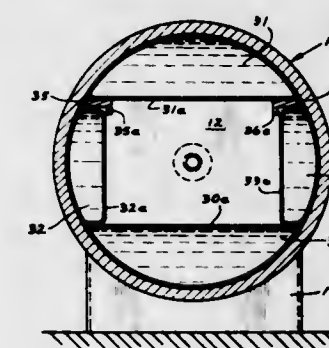
3,612,343
SUPPORT FOR FLOWER BASKET
Cornelius Mark Phipps, Glen Ellyn, Ill., assignor to Plastic Specialties, Inc., Glen Ellyn, Ill.
Filed Dec. 18, 1969, Ser. No. 886,107
Int. Cl. B65d 7/42
U.S. Cl. 220-69 7 Claims



A molded plastic container is relatively long between two ends and relatively narrow between two sides. Secured to the bottom of the container is a downwardly extending molded plastic base of substantially the same configuration as the container. The base defines a cavity between the bottom

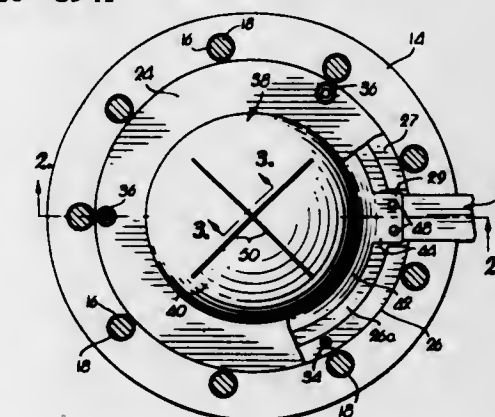
plate of the base and the bottom of the container. Within this cavity is a supplemental support pivotally connected to the base by interfitting annular bosses. The supplemental support is rotatable between a position at which it is entirely within the cavity and a position at right angles thereto at which the supplemental support extends outwardly beyond the sides of the container. Cams on the bottom of the container force the supplemental support downwardly as it is rotated into the latter position. A molded plastic handle extends upwardly in a loop above the container. The plastic handle has downwardly extending prongs which are received in openings in the container and engage the container.

3,612,344
VACUUM DISPLACEMENT APPARATUS
Robley V. Stuart, 536 63rd Ave. N.E., Minneapolis, Minn.
Filed Aug. 11, 1969, Ser. No. 849,101
Int. Cl. B65d 25/10, 25/02
U.S. Cl. 220-85 B 2 Claims



A cylindrical housing having a chamber of substantial size for use in a vacuum process wherein the improvement herein relates to the reduction in size of the free space or volume of said chamber to that of the requirement of any given use for said chamber, the improvement consisting of placing enclosed cells within said chamber, said cells being formed of somewhat flexible sheet material and after placement within said chamber being filled with a relatively gas-free liquid having very small response to pressure differentials whereby the space not occupied by said cells will have a vacuum drawn thereon and the walls of said cells will flex sufficiently to equalize the pressure between the working or free space of said chamber and that of the interior of said cells.

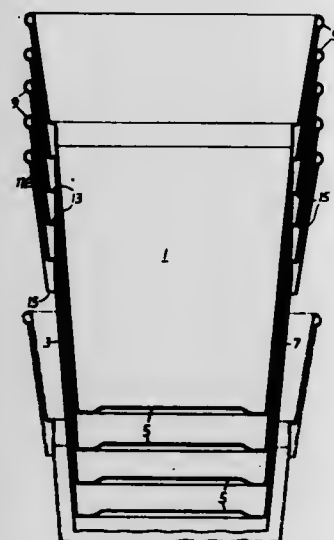
3,612,345
RUPTURE DISC PRESSURE RELIEF STRUCTURE FOR POLYMERIZATION REACTORS
Lester L. Fike, Jr., Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.
Filed July 22, 1969, Ser. No. 843,653
Int. Cl. F17b 1/14
U.S. Cl. 220-89 A 5 Claims



A rupture disc assembly for use in a system susceptible to both positive and negative pressures and wherein polymerization of resinous materials necessitates cleaning of the assembly. The need for a heretofore required separate vacuum support is eliminated by constructing the rupture member in a manner such that it will withstand substantial negative pres-

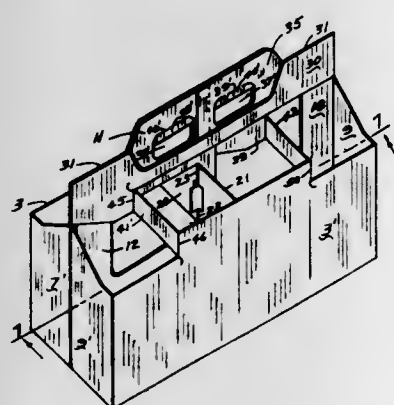
tures while still being rupturable at a preselected positive pressure. The nonfracturing rupture member is provided with a pair of intersecting grooves extending across the low-pressure side thereof, and the member is constructed of a thickness at least three times as great as would be required to rupture it in the absence of the grooves. A layer of chromium on the high-pressure side of the rupture member presents a surface to which resinous materials have little tendency to adhere and which may be readily and effectively cleaned. The disc clamping unit of the assembly has opposed inner annular edges which tightly engage the disc without the usual groove therearound to preclude accumulation of polymer around the exposed perimeter of the disc.

3,612,346
PLASTICS CONTAINERS
Jack M. Schneider, Chiltern Lodge, 4 Furze Hill, Purley, Surrey, England
Filed Mar. 4, 1969, Ser. No. 804,123
Claims priority, application Great Britain, Mar. 8, 1968, 11484/68
Int. Cl. B65d 21/02, 1/00
U.S. Cl. 220-97 C 4 Claims



An open-topped, thin-walled, disposable plastics container and a method of and tooling apparatus for making the same, the container comprising an inner member having a bottom wall and a sidewall which extends from the bottom wall to the top rim of the container and an outer, heat-insulating member comprising a skirt which depends from the top rim of the container closely alongside the sidewall of the inner member and is formed in one with the inner member and from one and the same piece of thermoplastic sheet material from which the inner member is formed.

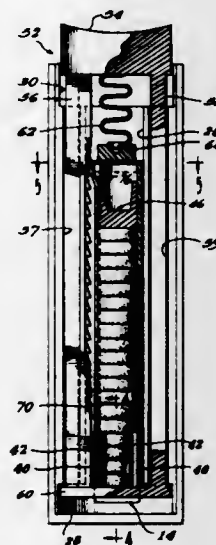
3,612,347
ONE-WAY BASKET-STYLE ARTICLE CARRIERS
Glen R. Harrelson, Monroe, La., assignor to Olinkraft, Inc.
Continuation-in-part of Ser. No. 827,773, May 26, 1969, Pat. No. 3,570,706
Filed Aug. 18, 1969, Ser. No. 850,719
Int. Cl. B65d 75/00
U.S. Cl. 220-113 10 Claims



A strap-style, basket carrier requiring a reduced amount of blank material. The carrier is specifically designed for the

packaging of at least eight articles and comprises an improved handle structure. In a preferred embodiment, the bottom and sidewall panels are interconnected by means of sloping marginal panels which further reduce the total amount of blank material required.

3,612,348
PILL DISPENSER WITH DISPOSABLE MAGAZINE AND INDICIA
Michael D. Thomas, 3269 N. California Ave., Chicago, Ill.
Filed Nov. 17, 1969, Ser. No. 877,085
Int. Cl. G07f 11/00
U.S. Cl. 221-2 9 Claims



A dispensing device including a disposable magazine supported in a container with a plurality of pills carried in the magazine. The magazine has releasable retaining means on one open end for maintaining the pills within the magazine and receives a plunger through the opposite open end for engaging a stack of pills therein. An actuator member is interposed between the container and the plunger which will force individual pills from the magazine and will at all times maintain the plunger in engagement with the stack of pills.

The dispensing device further includes indicia of periodicity on the magazine which are aligned with an opening in the container and which cooperate with the plunger to serve as a reminder of whether a pill has been taken for any given period.

The device is designed so that the magazine and indicia may be sold as a disposable unit, and the remainder of the device may be reused.

3,612,349
PILL DISPENSER HAVING RATCHET-ACTION FOLLOWER
Michael D. Thomas, 3269 N. California Ave., Chicago, Ill.
Filed Sept. 5, 1969, Ser. No. 855,488
Int. Cl. B65d 83/04
U.S. Cl. 221-4 8 Claims

A device for dispensing pills and the like and including a hollow member having an exit opening at one end thereof with an actuator slidable in the hollow member. The actuator has a pill support on one end thereof and is biased to normally block the exit opening while being movable to expose the exit opening. A plunger engages one end of a group of pills to maintain the other end of the pills in engagement with the pill support. The plunger cooperates with the actuator and hollow member to move relative to the hollow member when the actuator is moved to expose the exit opening and is fixed relative to the hollow member when the actuator is returned to close the exit opening.

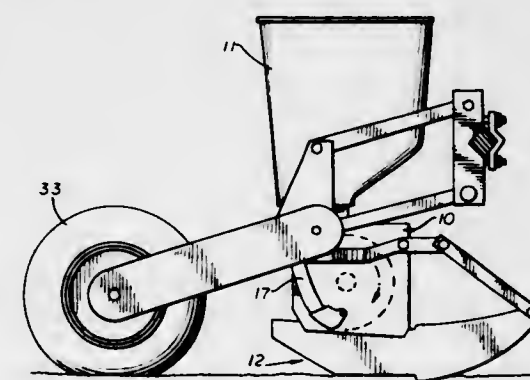
Indicia are normally packed with the device and the indicia comprises a strip having indicators serially arranged and corresponding to the respective days of the week. There are

seven more indicators than there are pills in the device so includes means to arrange fruit received from the delivery that the starting date for taking the pills may be aligned with ramp in staggered rows. The transfer ramp may be lowered



the plunger and serve as a reminder as to whether a pill has been taken for any given day.

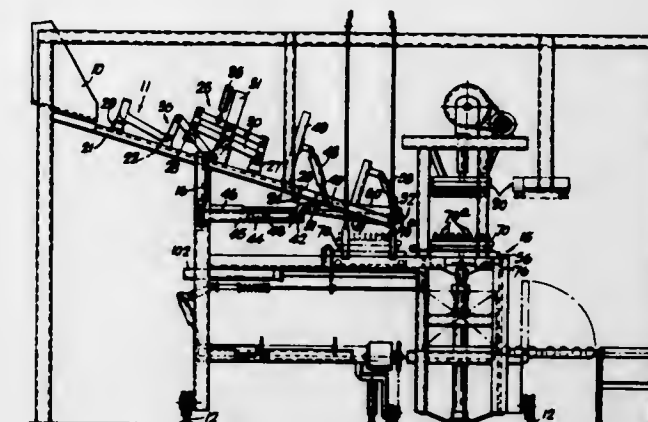
3,612,350
PLANTER WITH RADIAL OSCILLATABLE ROD SEED GRIPPER
James Morkoski, Clarendon Hills; Otto E. Johnson, Hinsdale, and Gordon R. O'Neill, Westmont, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 12, 1970, Ser. No. 2,012
Int. Cl. A01c 9/00
U.S. Cl. 221-219 5 Claims



A rotatable seed selecting wheel for a planter comprises a disc having circumferentially spaced radially disposed seed selecting members each having a seed receiving finger or pad projecting therefrom in the direction of rotation of the disc, the finger portions of said members being rotatable with the disc through a seed supply and said members being axially rockable against spring bias by actuating means to an open position to receive and grip a seed between the pad and the disc, the seed being discharged after a predetermined rotation of the seed wheel.

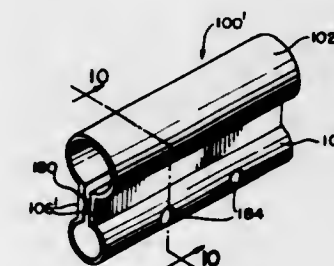
3,612,351
FRUIT FEEDING MEANS OF FRUIT PACKING MACHINES
Izak Johannes Vullaire, Monak, New South Wales, Australia
Filed May 12, 1970, Ser. No. 36,570
Claims priority, application Australia, May 15, 1969, 55063/69
Int. Cl. B65h 3/30 5 Claims

In a fruit packing machine a downwardly inclined delivery ramp having guides to form fruit fed from a supply bin into a plurality of rows, and a tray having rows of seats to support it in a specified layer formation. The transfer ramp extending downwardly from the lower end of the discharge ramp and



to a level below the delivery ramp while retaining a downward inclination moved rearwardly over the tray in the direction of the rows of seats to deposit the fruit in the seats.

3,612,352
AMALGAM CARTRIDGE AND METHOD OF MAKING SAME AND METHOD AND APPARATUS FOR DISPENSING AMALGAM FROM A CARTRIDGE
Donald G. Smith, 299 Alhambra Circle, Coral Gables, Fla.
Filed Sept. 16, 1969, Ser. No. 858,366
Int. Cl. B67b 7/30; G01f 13/00
U.S. Cl. 222-1 48 Claims



An amalgam cartridge comprises a closed flexible body means having a pair of separate chambers containing amalgam powder and mercury respectively. The body means includes a passage means for providing communication between the chambers, and deformable closure means normally closes off the passage means but can be deformed to permit mixing of the powder and mercury when desired.

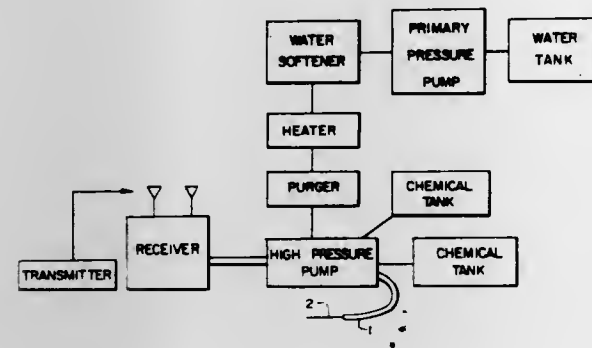
An amalgam cartridge mixing and dispensing apparatus includes compression means for compressing a portion of an amalgam cartridge and deforming same to force the contents in the two chambers of the cartridge into engagement with one another. Mixer means is provided for engaging exterior of the cartridge to deform the cartridge in such a manner as to cause intimate mixing of the materials within the cartridge. Reshaping means engages the cartridge to reshape the mixed body of material within the cartridge to a desired configuration. Cutter means is provided for cutting off opposite ends of a cartridge within the apparatus, and ejection means is provided for ejecting the mixed body of material from the cartridge.

3,612,353 RADIO CONTROLLED MOBILE CLEANING APPARATUS

Robert Haase, and Robert Tompkins, both of Quakertown, Pa., assignors to Aero Wash Services, Inc., Quakertown, Pa.
Filed Mar. 13, 1970, Ser. No. 19,380
Int. Cl. B67d 5/06

U.S. Cl. 222-76

7 Claims



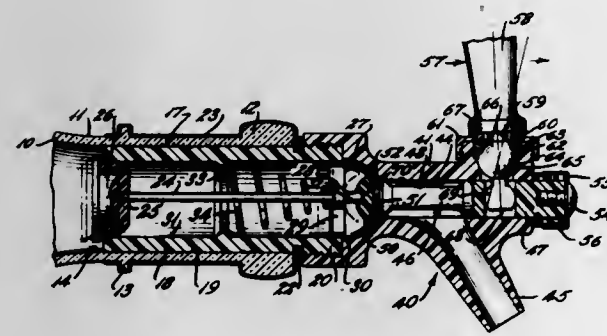
A remotely controlled cleaning apparatus in which the cleaning composition is provided in response to a radio signal.

3,612,354 CONTAINER DISPENSER

Robert E. Sitton, 4829 Bay Court Ave., Tampa, Fla.; Milton P. Zamore, 57 Martinique, Tampa, Fla., and Howard H. Burris, 300 Dolphin St., Gulf Breeze, Fla.
Filed Feb. 18, 1970, Ser. No. 12,313
Int. Cl. B67b 7/24

U.S. Cl. 222-80

3 Claims



Apparatus for dispensing effervescent liquid contents from a container and for sealing the container when a portion of the contents remains therein. The apparatus includes a first valve structure carried by the container and a second valve structure selectively attachable to the first structure in a manner that operation of the second valve structure will operate the first valve structure to permit the contents of the container to be dispensed.

3,612,355 COMBINATION SHOWER AND TOILETRIES DISPENSER

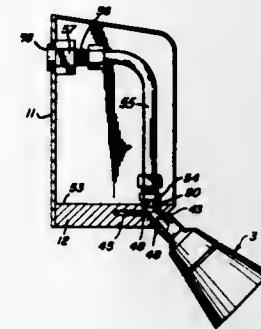
Karl R. Stucky, and Walter A. Stogsdill, both of Phoenix, Ariz., assignors to Frank W. Turben, by said Stogsdill, a part interest
Filed Jan. 14, 1970, Ser. No. 2,875
Int. Cl. B67d 5/52

U.S. Cl. 222-135

2 Claims

A device for storing and dispensing in a wall fixture associated with a shower head, a plurality of shower bathing fluids. The fluids are stored in aerosol cans receptacled in the

device. The cans are selectively actuated by remote push buttons to discharge their contents into a mixing chamber as-



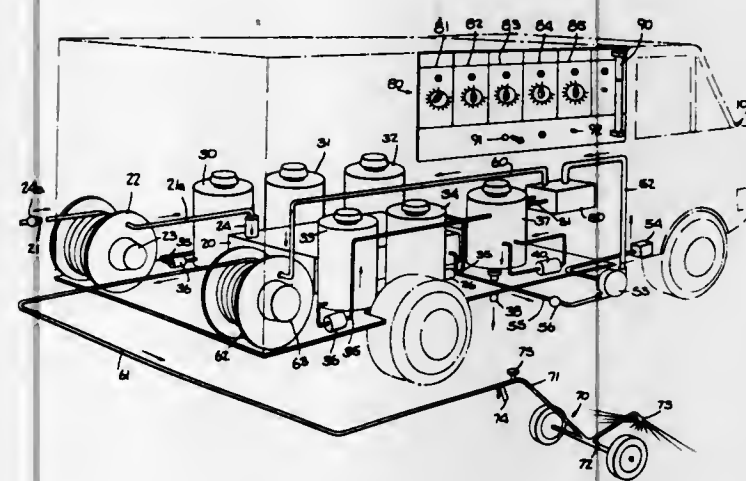
sociated with the shower head or into the hand for application to the body.

3,612,356 APPARATUS FOR SPRAYING TURF AND THE LIKE

James B. McVey, Hill City, S. Dak.
Filed Apr. 1, 1969, Ser. No. 811,918
Int. Cl. B67d 5/22

U.S. Cl. 222-145

10 Claims



The disclosure relates to a method and apparatus for spraying a predetermined mixture of liquid chemicals onto turf and the like. A small size panel truck is provided with a plurality of containers for housing liquid chemicals, a means for automatically mixing the chemicals in accordance with a predetermined selection, means for connecting an external water supply to the vehicle, and means for introducing chemicals into the water which is then ultimately applied to the turf or the like.

3,612,357 MOLTEN MATERIAL DISPENSERS WITH CONTROLLED FORCIBLE MANUAL FEEDER FOR RATCHET-TOOTHED HEAT-LIQUEFIABLE ROD, HAVING HEATER AND THERMOSTAT

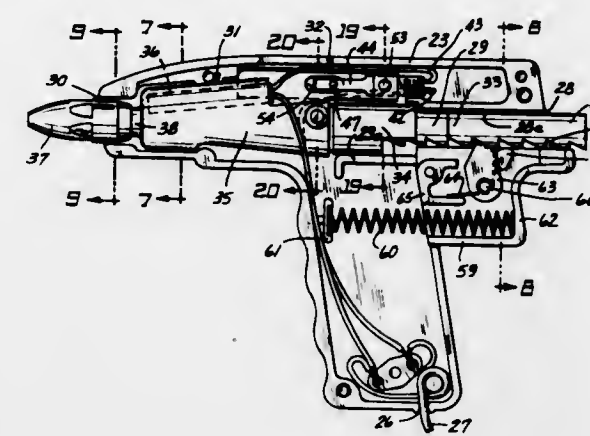
Henry Ruskin, Cranford, N.J., assignor to Swingline Inc., Long Island City, N.Y.
Continuation-in-part of application Ser. No. 721,722, Apr. 16, 1968. This application Oct. 6, 1969, Ser. No. 864,109
Int. Cl. B67d 5/62

U.S. Cl. 222-146

19 Claims

The disclosed gun especially for glue sticks has a melting chamber with an electric heater conspicuously closer to the melted-material discharge nozzle than to the solid material inlet end and a thermostat conspicuously closer to the solid material inlet end than to the nozzle end of the heating chamber for accommodating the supply of electric heat to the rate of discharge of the molten material. The gun has a hand grip carrying the heating chamber, and a pawl-carrying reciprocable manual driver is disposed at the side of the hand grip remote from the nozzle. The driver is controllably but powerfully operable by the squeeze of a hand that embraces

the hand grip and the driver. The liquefiable material has ratchet teeth engaged by the manually driven pawl. The



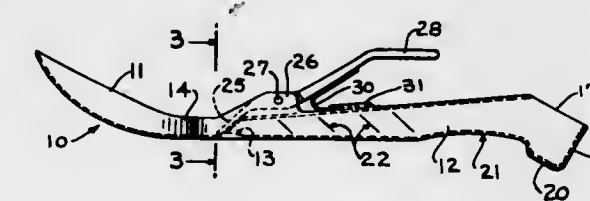
ratchet-toothed rod enters the melting chamber in solid state and acts as a piston for the molten material in the melting chamber.

3,612,358 SPOON COMBINATION HAVING A CHAMBER WITH AN OUTLET AND A VALVE

Gerald Massa, 49 Northern Blvd., Staten Island, N.Y.
Filed Jan. 16, 1970, Ser. No. 3,397
Int. Cl. B67d 5/06

U.S. Cl. 222-191

5 Claims



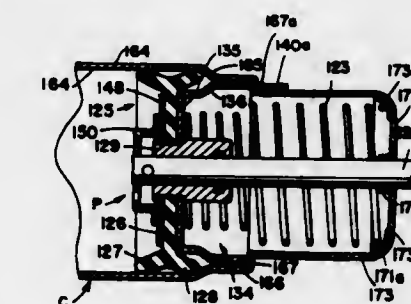
The invention is directed to a spoon combination having a bowl and a chamber with an outlet adjacent to but spaced from the bowl, a valve closing the outlet and an opening on the top of the chamber which is large enough to pour a liquid into the chamber. The spoon combination may include a well underneath the opening in which a pill may be crushed and liquid poured thereover so that a mixture is contained in the chamber until it is dispensed.

3,612,359 HAND OPERATED MULTILOAD GREASE GUN

Edwin P. Sundholm, R.R. 1, Albert City, Iowa
Filed Sept. 2, 1969, Ser. No. 854,574
Int. Cl. G01f 11/06

U.S. Cl. 222-309

6 Claims



A hand-operated grease gun adapted to use grease in either bulk form or cartridge form includes a grease container having a cylindrical barrel and a cylindrical sidewall of reduced diameter formed integrally with the barrel portion of the container and connected to it by means of a peripheral

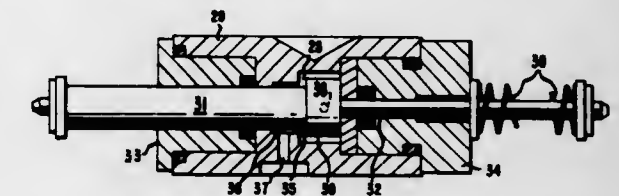
shoulder which defines a number of curved slots which admit passage through the container wall in an axial direction. A plunger assembly is mounted within the container for reciprocation therein; and it includes a flexible, resilient sealing means for selectively sealing either with the interior surface of the barrel or a grease cartridge, if it is used. Latch members are connected to the plunger assembly for moving with it; and as it is retracted into the rear portion of the container, the latch members pass through the slots in the shoulder of the barrel to extend exterior of and adjacent to the rear cylindrical sidewall of reduced diameter. Each of the latch members includes a laterally projecting finger so that when the plunger assembly is rotated, the latch members hold the plunger assembly in its retracted state for receiving a grease cartridge.

3,612,360 APPARATUS FOR FLUID HANDLING AND SAMPLING

William J. Ambrose, Springfield, Pa., and James E. McErlane, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 16, 1968, Ser. No. 753,199
Int. Cl. G01f 11/06

U.S. Cl. 222-340

11 Claims



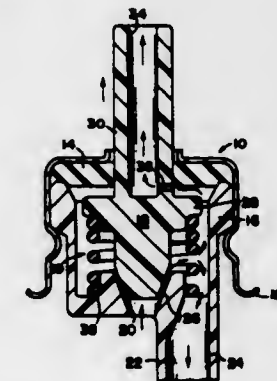
An apparatus and a method for handling and sampling fluids which comprises principally a nonpumping valve designed so that in operation it moves less than a microliter of fluid, and a pumping valve designed to aspirate a precisely determined amount of fluid into the body of the valve with no more motion than is inherent in the operation of the valve itself and with no change in the physical dimensions of the valve. These valves, when used in combination with a transfer probe and a pump designed to handle minute quantities of fluid, form a precision fluid handling and sampling system which will not contaminate or dilute the fluid to be sampled.

3,612,361 SELF-CLEANING VALVE

Ronald F. Ewald, Rollings Meadows, and Norman E. Platt, Fox River Grove, both of Ill., assignors to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.
Filed Oct. 20, 1969, Ser. No. 867,622
Int. Cl. B65d 83/14

U.S. Cl. 222-402.18

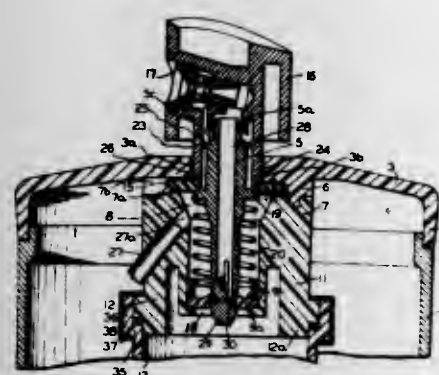
6 Claims



A self-cleaning valve for an aerosol container wherein a propellant is dispensed prior and subsequent to the aerosol product to clean the valve. This operation is obtained by designing the valve body with separate openings in respective communication with the aerosol product and propellant. As the valve stem is depressed, first the propellant escapes through the propellant opening and cleans the valve until the

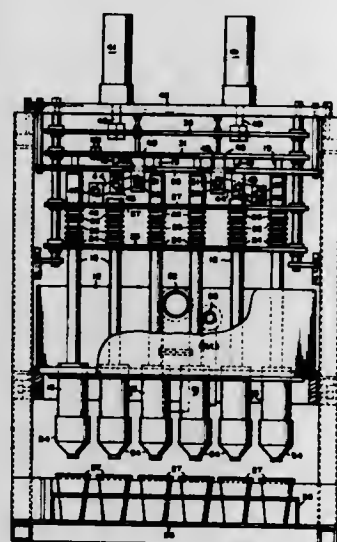
opening is closed by a valve seat on the lower portion of the valve stem; then the product is discharged. The process is reversed when the valve stem is released.

3,612,362
AEROSOL DISPENSER WITH PLASTIC PROPELLANT CARTRIDGE
Edward R. Champagne, Bridgeport, Conn., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.
Filed June 12, 1969, Ser. No. 832,650
Int. Cl. B65d 83/00
U.S. Cl. 222-402.24 2 Claims



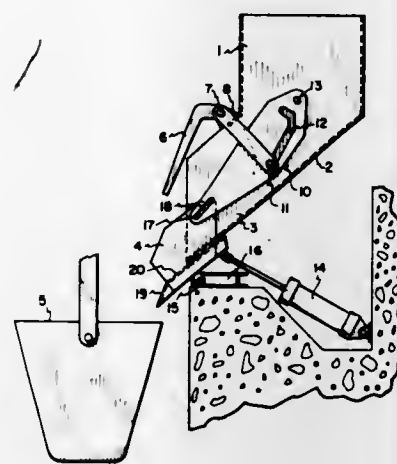
An aerosol-type dispenser for fluent products. A cap for a container for a fluent product has a plug valve assembly depending from the undersurface of said cap. The plug valve assembly has a depending flange and propellant cartridge of a different plastic material than said depending flange and has the open end thereof joined to the bottom of said flange with the plug valve assembly sealing the said open end of said propellant cartridge.

3,612,363
LIQUID DISPENSING MACHINE
Paul H. Carter, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed Oct. 6, 1969, Ser. No. 863,832
Int. Cl. G01f 11/28
U.S. Cl. 222-426 9 Claims



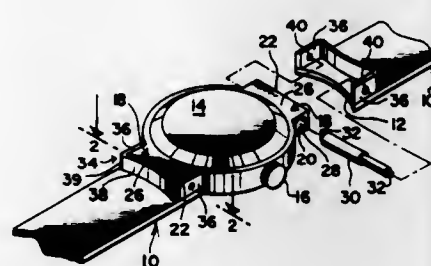
A liquid dispensing machine comprises a series of tubes connected to the bottom of a liquid tank. The tubes have plugs at their tops and bottoms, and means are provided for opening either the top or the bottom plugs exclusively from a position where both plugs are closed. This permits first the filling of the tubes with a given amount of liquid and then discharging the given amount of liquid into receptacles at the bottoms of the tubes.

3,612,364
SKIP-LOADING GATE
Robert Coucher, Salt Lake City, Utah, assignor to United Park City Mines Company, Salt Lake City, Utah
Filed Apr. 6, 1970, Ser. No. 25,913
Int. Cl. B65g 11/20
U.S. Cl. 222-537 15 Claims



The invention pertains to a positive-locking skip-loading gate for a bin having a sloped bottom and an opening at the bottom thereof. The gate comprises a door member rotatably suspended near the top thereof about a pin member, said door contacting a chute extension of said bin and blocking the discharge opening of said bin when in a closed position. The door member, when not positive-locked in a closed position, is forced open by the weight of material in said bin and remains open until the contents of the bin are discharged. After the flow of material has stopped, the door is returned by gravity to a closed position. The door is locked in a closed position by cam means interconnecting said door and a slidable spout extension for the chute of said bin. A piston connected by a shaft to said spout and located in a protected position under bin retracts and extends the spout, said piston also rotating the cam means and locking said door in a closed position when the spout is retracted.

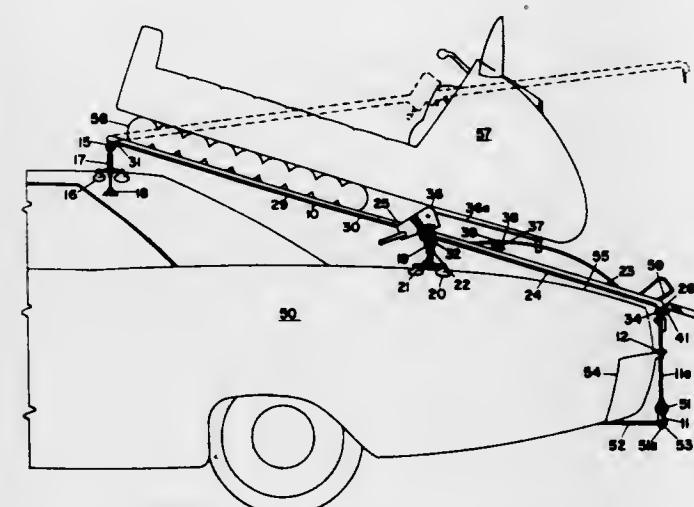
3,612,365
SIMULATED UNITARY BRACELET AND WATCH CASE
Hyman Dintzman, 115 Central Park West, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,411
Int. Cl. A44c 5/14
U.S. Cl. 224-4 E 12 Claims



A boss having parallel short side edges and a substantially flat elongated end projects from opposite sides of a watch case. A bracelet watch strap is mounted on the boss. The bracelet includes U-shaped brackets having an elongated reach and short parallel legs. A bracket is affixed to the bracelet adjacent each end thereof with the bracket being open ended to coincide with the ends of the bracelet strap. The side edges of the boss are received between the legs of the bracket and a spring pin extends through a bore in the boss with the ends of the pin extending into registered openings in the bracket legs to retain the bracelet strap. The reach of the bracket is free of the bracelet strap intermediate its end and acts as a leaf spring, bearing against the flat end edge of the boss. Thus, the reach holds the bracelet strap rigid against the watch case simulating a unitary bracelet and case. In an alternate embodiment the reach is unitary with the bracelet along its entire length and spaced from the end

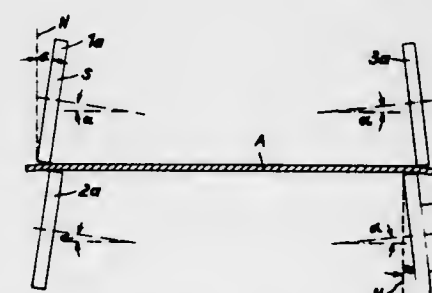
of the boss. A separate leaf spring is inserted in the space between the reach and the end of the boss to hold the bracelet strap rigid.

3,612,366
SNOWMOBILE CARRIERS FOR AUTOMOBILES
Herbert J. Schneider, 509 Airline Road, and Daniel J. Kedrowski, 309 N. Division St., both of Stevens Point, Wis.
Filed Apr. 9, 1970, Ser. No. 27,075
Int. Cl. B60r 19/02
U.S. Cl. 224-42.08 6 Claims



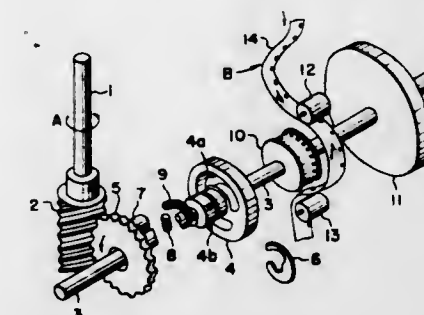
A carrier for transporting snowmobiles and boats on the rear deck area of an automobile. A generally U-shaped support frame is mounted on the trailer hitch assembly of the automobile. The carrier platform is supported on the U-shaped frame, on a forward cross-support assembly mounted on the roof of the automobile, and on a vertically adjustable intermediate cross-support bar mounted on the rear deck of the automobile. The platform is pivotally connected at the forward cross-support whereby the platform may be pivoted upwardly to permit access to the trunk of the automobile. Removable V-rollers are provided on the platform for hauling boats. A winch mechanism and a ramp are provided for loading.

3,612,367
CONTINUOUS LONGITUDINAL DIVIDING OR LONGITUDINAL TRIMMING OF METAL PLATES
Willi Benz, Neuss, and Gerhard Toltsch, Dusseldorf, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Apr. 8, 1969, Ser. No. 814,419
Claims priority, application Germany, Apr. 10, 1968, P 17 52 152.7
Int. Cl. B26f 3/00; B23d 19/06
U.S. Cl. 225-97 6 Claims



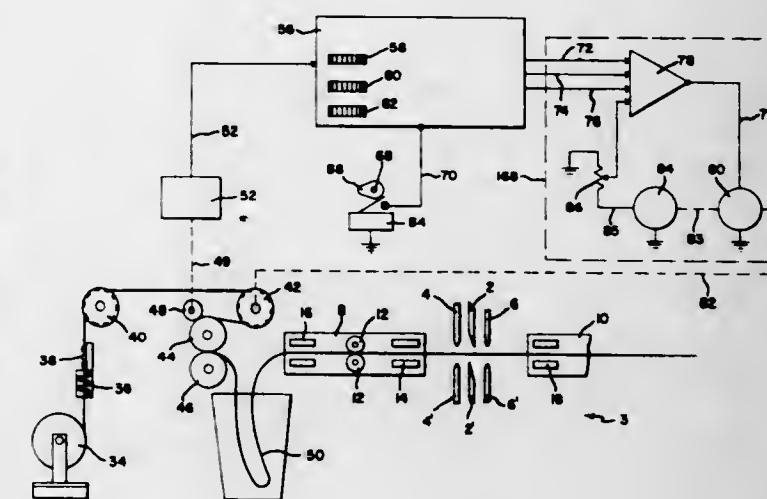
A method of and means for the longitudinal trimming or longitudinal dividing of metal plates, particularly of plates more than 20 millimeters thick, by means of pairs of circular blades, wherein the cutting plane is a vertical plane perpendicular to the surface of the plate, and the surfaces that form the cutting edge of at least one of the blades are nowhere either parallel or perpendicular to the cutting plane, but form an angle of preferably between 2° and 20° therewith.

3,612,368
FILM LOOP FORMING DEVICE FOR SMALL-SIZED CINEPROJECTOR
Tokusaburo Kakiuchi, and Hidenaki Akiyama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 15, 1969, Ser. No. 841,796
Claims priority, application Japan, July 15, 1968, 43/49765
Int. Cl. B65h 17/26
U.S. Cl. 226-13 3 Claims



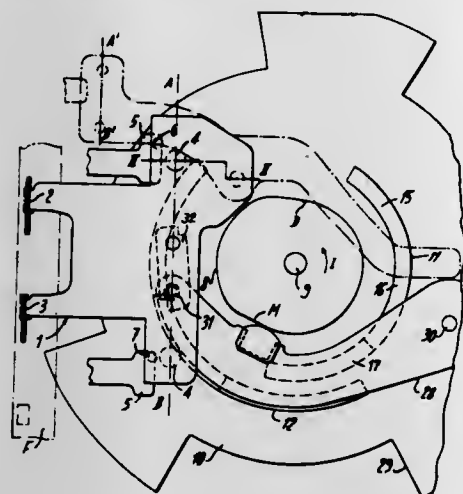
A film loop forming device for a small-sized cineprojector comprising a pulldown mechanism drivingly coupled to a drive mechanism and a sprocket wheel mechanism driven through a spring by the drive mechanism whereby the rotation of the sprocket lags behind that of the drive mechanism because of the compression of the spring due to the inertia of the driven mechanism, the film winding resistance, and the rotary frictional resistance, thereby forming a loop between the pulldown mechanism and the sprocket.

3,612,369
WIRE FEED FOR LEAD MAKING MACHINE
Robert Karl Grebe, Hershey, and Robert Ullman, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 14, 1969, Ser. No. 876,639
Int. Cl. B65h 23/18
U.S. Cl. 226-24 5 Claims



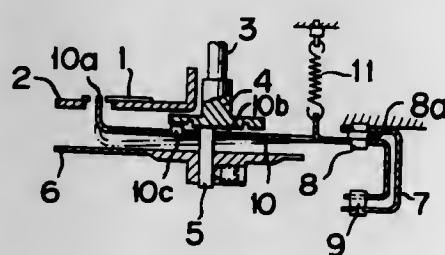
Wire feeding and measuring means for lead making machine comprises capstan which withdraws the wire from a reel or barrel during a major portion of the operating cycle and a set of high speed rolls which operate during only a minor portion of the cycle. Wire is measured and accumulated by the capstan and the measured and accumulated wire is then fed into the machine during the minor portion of the cycle by the high speed rolls. The capstan is controlled by means of a pulse generator which generates a series of pulses in response to the feeding of the wire, the number of pulses generated having a fixed ratio to the length of wire fed. The pulses are transmitted to a counter/controller which controls a printed circuit motor that drives the capstan. The counter can be preset to stop the printed circuit motor after a predetermined length of wire has been fed for a single operating cycle.

3,612,370
INTERMITTENT DRIVE MECHANISM FOR
CINEMATOGRAPHIC FILM
 Louis Thevenaz, Les Rasses, Switzerland, assignor to Paillard
 S. A., Sainte-Croix, Vaud, Switzerland
 Filed Sept. 24, 1969, Ser. No. 860,668
 Claims priority, application Switzerland, Sept. 27, 1968,
 14584
 Int. Cl. G03b 1/22
 U.S. Cl. 226-51 4 Claims



An intermittent drive device for the film engaging claw of a cinematographic projector mechanism includes a first cam profile providing movements of the claw in the forward and reverse direction of the film and second and third cam profiles driving the penetrating movements of the claw relative to the perforations in the film. Each of the cam profiles is rotatably driven by the shaft of the projector motor and a plunger member which transmits the film penetrating movements to said claw is selectively displaceable to cooperate with either the second or third cam profiles. The second and third cam profiles are offset relative to the first cam profile and one of the second and third profiles causes the penetration of the claw before its displacement in the direction of advancing of the film and also causes retraction of the claw before displacement thereof in the reverse direction. The other of said second and third cam profiles causes penetration of the claw before its displacement in the reverse direction of the advance of the film, and its retraction before its displacement in the direction of advance of the film.

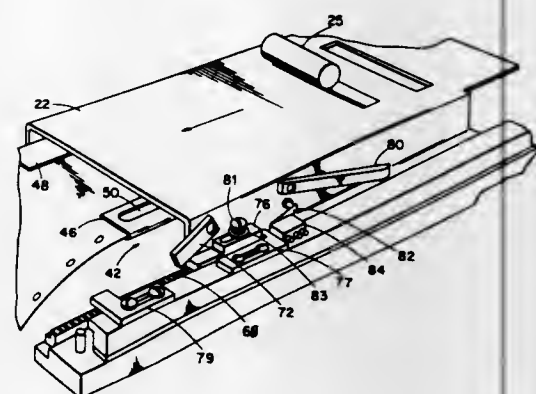
3,612,371
FILM TRANSMITTING DEVICE OF MINIATURE MOVIE
CAMERA
 Yoshihisa Katsuyama, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
 Filed Jan. 16, 1969, Ser. No. 791,567
 Claims priority, application Japan, Jan. 20, 1968, 43/3,574
 Int. Cl. G03b 1/22
 U.S. Cl. 322-62 2 Claims



A film transmitting device for a miniature movie camera has a cam associated with a rotary shaft for the shutter and a film transmitting plate provided with a projection cooperable with the cam. The film transmitting plate, which has a claw at one end for entry and retraction from perforations in the

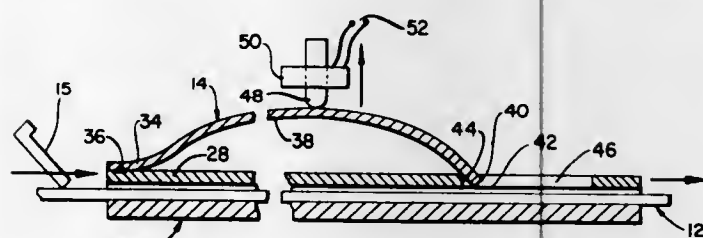
film, has its other end formed in substantially U-shape to provide a pair of substantially parallel arm portions. One arm portion is provided with a hole and the other arm portion has a slot which is elongated in the direction toward the plate's claw. Pin means is extended through the hole and the slot. A tension spring is connected to the film transmitting plate to urge the plate's projection against the cam, one end of the spring being connected to the camera body and the other end to the film transmitting plate between the plate's projection and the pin means.

3,612,372
DOOR ACTUATED TICKET DISPENSER
 Donald R. Richer, Manchester, N.H., assignor to Fort Howard Paper Company
 Filed Apr. 6, 1970, Ser. No. 25,891
 Int. Cl. B65h 17/38
 U.S. Cl. 226-74 6 Claims



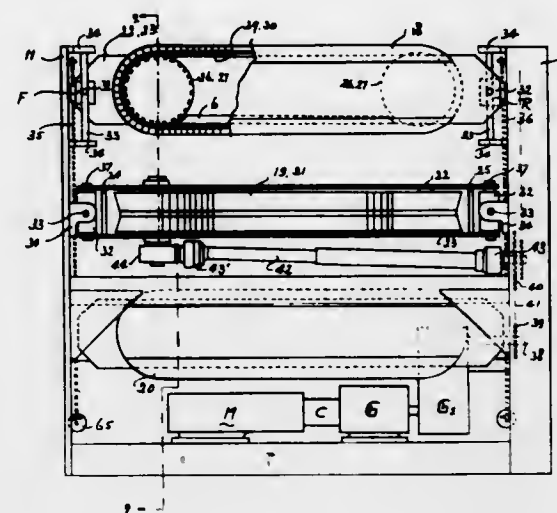
A remote controlled, automatic ticket dispenser for sweepstakes or the like has a single elongated horizontal straight stretch of an endless registration pin chain to register and advance each ticket of a web of tickets, the stretch being advanced by a sliding door. On retraction of the door a ticket is exposed for inscription. On advance of the door the chain is advanced to deliver the ticket. Pawls, or detents, and toothed racks are provided to assure full opening and full closing of the door before the direction of the door can be reversed.

3,612,373
PRECISION ADVANCING DEVICE FOR SHEET
MATERIAL
 Robert Hermann, Rye Beach, N.H., assignor to Di/An Controls, Inc., Boston, Mass.
 Filed Oct. 13, 1969, Ser. No. 865,902
 Int. Cl. B65h 17/36
 U.S. Cl. 226-162 10 Claims



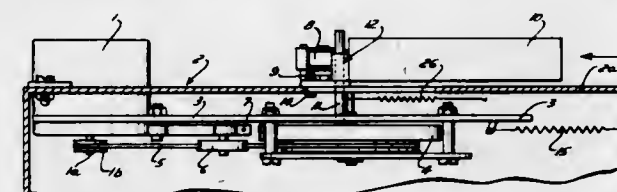
A precision device for advancing sheet material comprises a guide through which the sheet material is adapted to advance, a leaf spring, one end of which is affixed to the guide and the other end of which projects through an opening in the guide toward the sheet material, and a solenoid actuated core, which projects into contact with a medial portion of the leaf spring in such a way as to depress the forward end of the leaf spring into frictional engagement with the sheet material and to advance the sheet material a predetermined increment for each actuation of the solenoid. Since each stroke of the spring is predetermined by stops on the guide, each actuation of the solenoid constitutes a digital input by which the sheet material is advanced by a single increment.

3,612,374
PIPE PULLING DEVICE
 Kenneth B. Shartzer, 2416 Randolph Road, Janesville, Wis.
 Filed Sept. 10, 1969, Ser. No. 856,767
 Int. Cl. B65h 29/12
 U.S. Cl. 226-172 7 Claims



A device for pulling elongate articles such as pipe through a processing machine. The device comprises a plurality of caterpillarlike traction members which engage the pipe periphery and exert a pulling force thereon. The traction members are self-centering and can accommodate various pipe diameters.

3,612,375
DRIVING MECHANISM FOR CASSETTE TYPE SOUND
RECORDING AND REPRODUCING APPARATUS
 Hisashi Baba, Tokyo, Japan, assignor to Kyokuyo Electric Co. Ltd., Idoguchi Ageo-shi Saitama-ken, Japan
 Filed July 22, 1969, Ser. No. 843,379
 Int. Cl. B65h 17/20
 U.S. Cl. 226-188 9 Claims



A tape recorder wherein the frame supports a motor which drives a flywheel by means of an endless belt. The flywheel is mounted on a platform which is reciprocable toward and away from the motor, and the belt is tensioned by a spring-biased roll which is mounted on the platform. A spring biases the platform away from the motor and the platform is moved toward the motor in response to placing of a cassette onto the frame and in response to subsequent shifting of the cassette toward the motor.

3,612,376
TAPE TRANSPORT FOR A HELICAL SCAN TAPE
RECORDER
 Delmar R. Johnson, Des Plaines, Ill., assignor to Ampex Corporation, Redwood City, Calif.
 Filed Mar. 24, 1970, Ser. No. 24,051
 Int. Cl. G11b 15/50
 U.S. Cl. 226-194 4 Claims

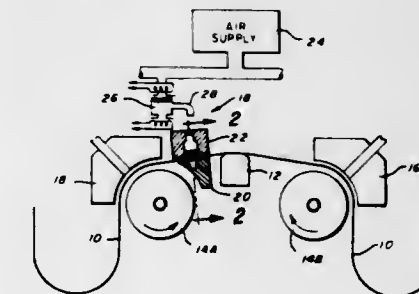
A closed loop capstan for a tape transport of a helical scan, magnetic tape recording and reproducing apparatus. The capstan includes a first portion which is fixedly attached to a shaft of the capstan which fixed portion engages a magnetic tape exiting from a transducing tape loop formed about a scanning assembly. The capstan also includes a second portion which is rotatably coupled to the drive shaft by a viscous damping fluid. This viscous coupled second portion engages

the tape as it enters the transducing loop. Thus, the second portion of the capstan rotates relative to the first portion of the capstan but because of the viscous coupling, the torque



required to cause rotation thereof is related to the rate of rotation. The capstan thereby effectively isolates supply tape tension fluctuations, but at the same time, passes changes in the level of supply tape tension without attenuation.

3,612,377
TAPE BRAKING APPARATUS
 Richard W. Pembroke, Tulsa, Okla., assignor to Midwestern Instruments, Inc., Tulsa, Okla.
 Filed Mar. 23, 1970, Ser. No. 21,704
 Int. Cl. B65h 23/10
 U.S. Cl. 226-195 9 Claims

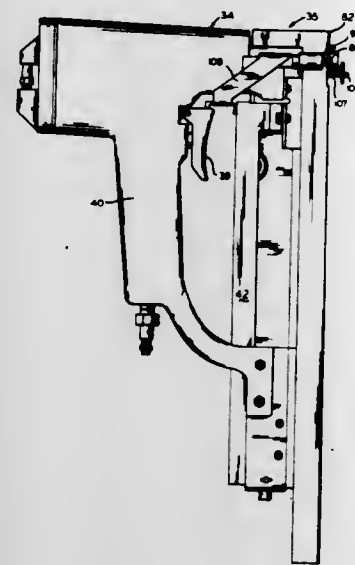


A brake for stopping a magnetic tape having a first brake block and second brake block providing a tape channel therebetween, the first brake block having apertures therein communicating with the channel and a passageway communicating with the apertures and extending exteriorly of the brake block, the second brake block having a cavity opposite the apertures, a brake pad positioned in the cavity, the brake pad being formed of sintered metal spheres and having porosity permitting air to pass therethrough into and out of the cavity, and means for supplying air pressure to the first brake block passageway whereby air flows through the apertures and against the tape to force the tape into contact with the brake pad.

3,612,378
WING-HEADED FASTENERS AND TOOL
ATTACHMENTS FOR APPLYING FASTENERS
 Richard W. Pabich, c/o Acme-Lane Co. 4904 W. Fullerton, Chicago, Ill., and Richard W. Treiber, deceased, late of Glenview, Ill. (by L. Louise Treiber executrix, 1340 Sherwood Road Glenview, Ill. 60639).
 Continuation-in-part of application Ser. No. 615,830, Feb. 13, 1967, now abandoned, and a continuation-in-part of 689,939, Nov. 24, 1967, now Patent No. 3,429,013, and a continuation-in-part of 777,652, Nov. 21, 1968. This application Feb. 12, 1969, Ser. No. 800,362
 Int. Cl. B25c 1/04
 U.S. Cl. 227-8 11 Claims

Tool attachments associated with air tools that force nails or other fasteners into members. Uniquely formed wing-headed fasteners and tool attachments are correspondingly adapted to each other to enable the wing-headed fasteners to

be pivotally mounted to said members with the nails from the tool for releasably holding a first member, such as a cabinet



backing in a position relative to a second member such as a cabinet frame therebehind.

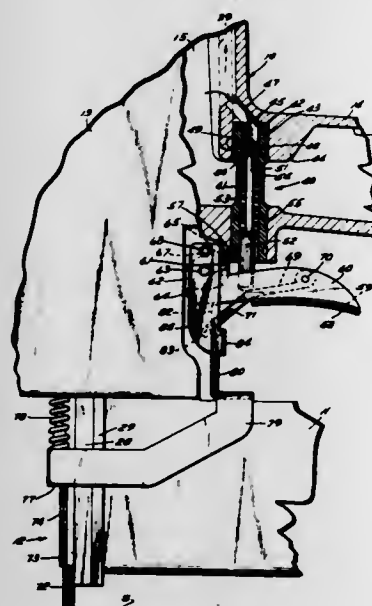
3,612,379 PNEUMATICALLY OPERATED FASTENER-DRIVING MACHINE

Walter Charles Panock, Addison, Ill., assignor to Spotnails, Inc.

Filed May 24, 1965, Ser. No. 457,924
Int. Cl. B27f 7/06

U.S. Cl. 227-8

2 Claims



1. In a driving machine of the character described including a motor and means for controlling said motor having a control member movable between motor activating and motor inactivating positions:

- a pivoted lever trigger;
- a plunger type safety trigger;
- a lever pivotally connected to said lever trigger and operatively related to said safety trigger and to said control member to drive the control member into motor activating position by concurrent operation of the triggers; and
- removable means normally restraining said lever trigger against operating movement of said control member except with concurrent operation of the safety trigger, removal of said removable means enabling operation of said lever by the lever trigger to move said control member throughout its operative range independently of said safety trigger.

3,612,380 Mallet Drive Fastener Driving Machine

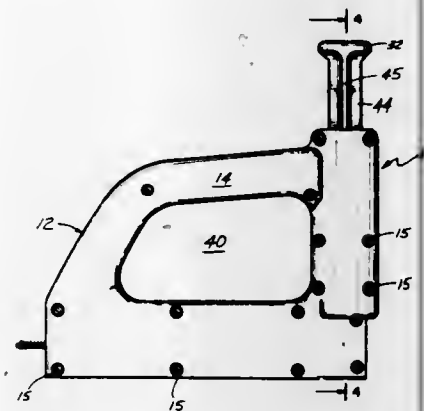
Richard A. Kuhlman, Forest Park, Ill., assignor to Spotnails, Inc., Long Island City, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,625

Int. Cl. B25c 1/00

U.S. Cl. 227-120

2 Claims



A mallet drive stapling machine is shown which includes a housing, a magazine, a piston raceway and a drive channel within the housing. A follower is movable within the magazine to sequentially propel fasteners contained therein into operative relationship with the drive channel. A piston having an enlarged upper portion, an outwardly projecting intermediate portion, and a lower portion is movable within the piston raceway. A driver blade is secured to the lower portion of the piston and is selectively movable within the drive channel to drive fasteners contained therein into work. The lower portion of the piston is substantially circular and between the lower portion and the enlarged upper portion is an intermediate portion which is formed with four projecting portions, each two of these portions are oppositely extending with respect to one another and each pair of said oppositely extending portions are perpendicular with respect to one another.

A coil spring is retained within said piston raceway and surrounds the piston, with the piston raceway having an inwardly extending portion to retain the spring. A resilient bumper is selectively abutable with the base portion of the piston when the piston is moved downwardly.

3,612,381 SNAP FASTENER ATTACHING MACHINE

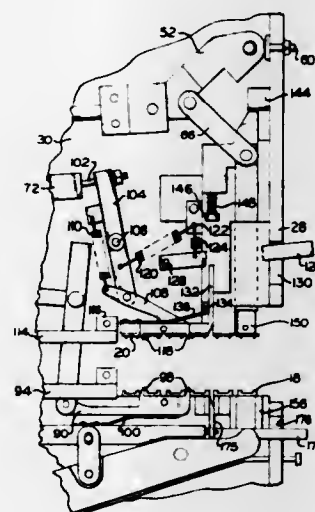
Erich A. Schmidt, Lexington, Ky., assignor to Textron, Inc., Providence, R.I., a part interest

Filed Nov. 12, 1969, Ser. No. 875,688

Int. Cl. A41h 37/04

U.S. Cl. 227-18

18 Claims



A machine for attaching the components of a snap fastener to a material, wherein the snap fastener components are fed

from strips in spaced relation to each other, are separately cut from the fed strips and are clamped together with the material therebetween by means of a ram and cooperating anvil; the feeding, cutting and clamping operations are performed in a particular sequence and are performed automatically upon initial operation of a control device.

3,612,382 SNAP FASTENER ATTACHING APPARATUS

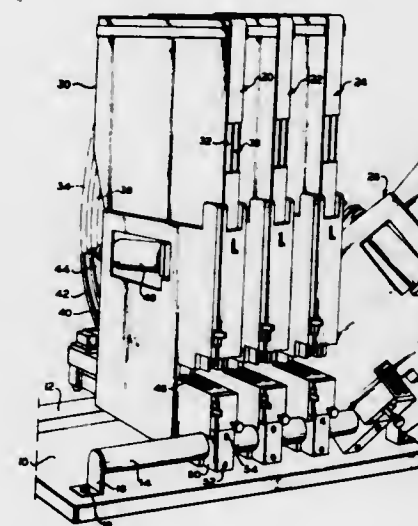
Gilbert A. Littell, Versailles, Ky., assignor to Textron Inc.

Filed Nov. 12, 1969, Ser. No. 875,687

Int. Cl. A41h 37/04

U.S. Cl. 227-18

9 Claims



Apparatus for attaching plastic snap fasteners to an article of clothing or the like including a plurality of snap fastener attaching machines mounted in spaced relation to each other on a cylindrical rod permitting each attaching machine to be adjustably spaced from the adjacent attaching machine and permitting each attaching machine to be pivoted away individually from the other machines for servicing and for refilling with snap fastener elements.

3,612,383 MAGAZINE CONSTRUCTION FOR FASTENER DRIVING MACHINE

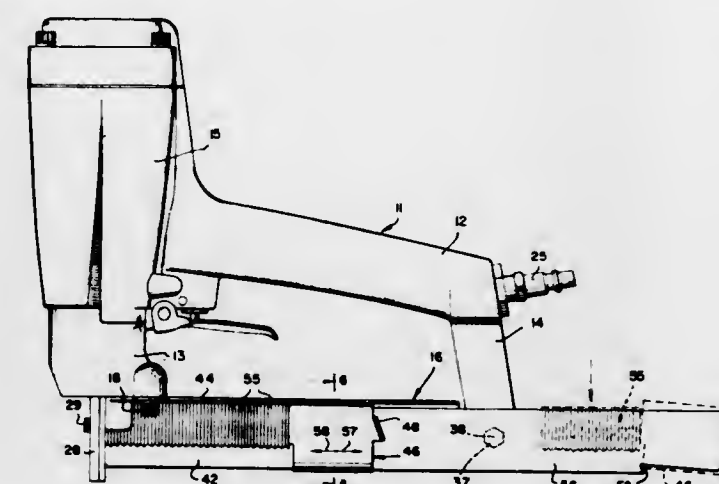
Garry R. Perkins, Cary, and James Whiteside, Rolling Meadows, both of Ill., assignors to Spotnails, Inc., Long Island City, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,620

Int. Cl. B25c 5/16

U.S. Cl. 227-125

3 Claims



A magazine construction for a fastening device as shown which is integrally formed and includes a body having a longitudinally disposed support. A rail parallel to the support is carried by the body and is provided with a cutout portion at the rear thereof. A base portion joins the support element to the rail. A roof portion is likewise carried by said support ele-

3,612,384 SPINDLE CHUCK ACTUATOR ASSEMBLY

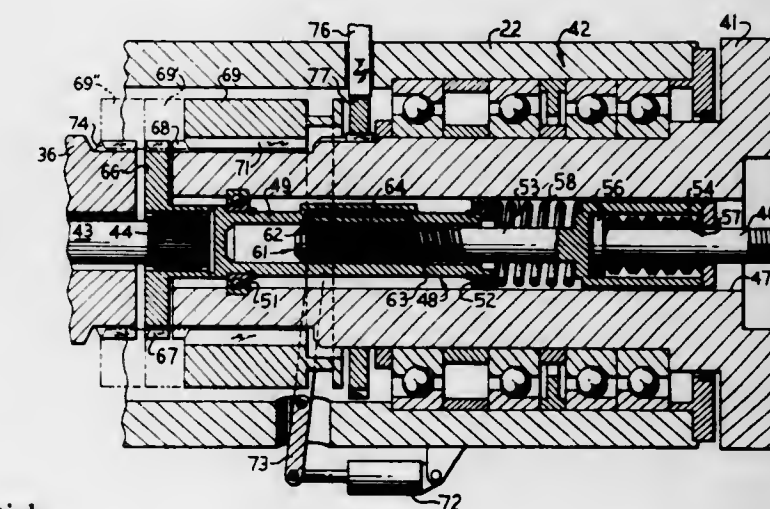
Calvin D. Loyd, Peoria; Theodore L. Oberle, Washington, and Ronald L. Satzler, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 25, 1969, Ser. No. 819,336

Int. Cl. B23k 27/00

U.S. Cl. 228-2

15 Claims



A spindle-mounted chuck operated for engagement with a workpiece by an axially movable member and having a rotational drive for rotating the spindle-mounted chuck, the chuck assembly including a screw mechanism for coupling the rotational drive with the axially movable member for selectively engaging the chuck assembly with the workpiece.

3,612,385 ULTRASONIC WELDING TOOLS

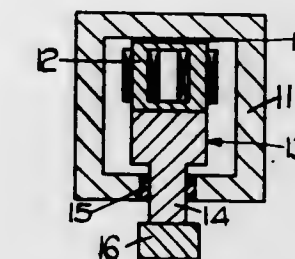
Roy William Humpage, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of application Ser. No. 688,548, Dec. 6, 1967. This application Mar. 10, 1969, Ser. No. 805,655

Int. Cl. B23k 1/06, 5/20

U.S. Cl. 228-1

6 Claims



In an ultrasonic welding tool of the kind comprising a relatively fixed frame, which supports an assembly including a transducer for converting electrical energy into ultrasonic vibrations, and a velocity transformer carried by the transducer for altering the amplitude of the vibrations produced by the transducer, the assembly is supported against lateral movement relative to the frame, by engaging an axially extending portion of the assembly, which is of substantially uniform cross section, as an axially sliding fit in a bearing, which is fixed relative to the frame in use, so as to support the assembly against lateral movement relative to the frame.

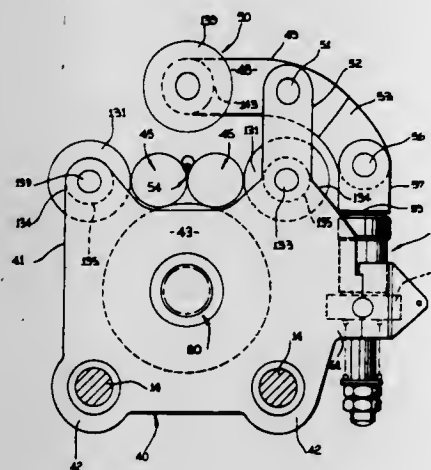
3,612,386

APPARATUS FOR FRICTION WELDING

John Gibson, Penn., Wolverhampton, and Alan Woodall, Claverley, Wolverhampton, both of England, assignors to John Thompson (Pipework and Ordnance Division) Limited, Wolverhampton, England
Continuation-in-part of application Ser. No. 689,876, Dec. 21, 1967, now abandoned. This application Aug. 22, 1969, Ser. No. 852,441
Int. Cl. B23k 27/00

U.S. Cl. 228—2

8 Claims



A friction welding machine for joining together two workpieces by the interposition of a third insert workpiece, the latter having an external cylindrical surface. The machine includes respectively hydraulically actuated clamping devices for holding the free workpieces. The clamping device for the insert workpiece includes two free rollers, defining in combination a cusp-shaped channel, supported by backing rollers driven from a motor and a third pressure roller movable to press the insert workpiece into engagement with the two free rollers so that the insert workpiece is rotated thereby.

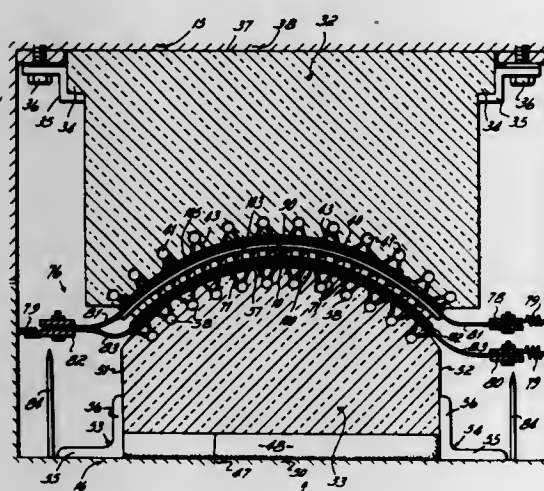
3,612,387

BRAZING METHOD AND APPARATUS

Robert R. Rathbun, Middletown, Ohio, assignor to Aeronca, Inc., Middletown, Ohio
Filed Jan. 7, 1970, Ser. No. 1,234
Int. Cl. B23k 5/00, 1/00

U.S. Cl. 228—6

10 Claims



A method and apparatus are disclosed for brazing articles such as honeycomb sandwich structures. The apparatus includes a cold wall boxlike housing separable into upper and lower sections. Each section carries a ceramic die member provided with passageways terminating in small ports for conducting a cooling fluid adjacent to the work. The workpiece is heated by electrical resistance heater strips passing above and below the workpiece. Means are provided for evacuating the housing and backfilling it with argon. When

the workpiece is brought to brazing temperature, two expandable bags are inflated. One bag raises the lower die section to form a general fit with the upper one. The second bag is in direct contact with the upper face of the workpiece and exerts a uniform pressure normal to its surface. After brazing, the bags are deflated and chilled argon is introduced through the die passages to cool the work. Other features include localized temperature control by electron emission or cooling tubes and vapor removal by means of a cold trap.

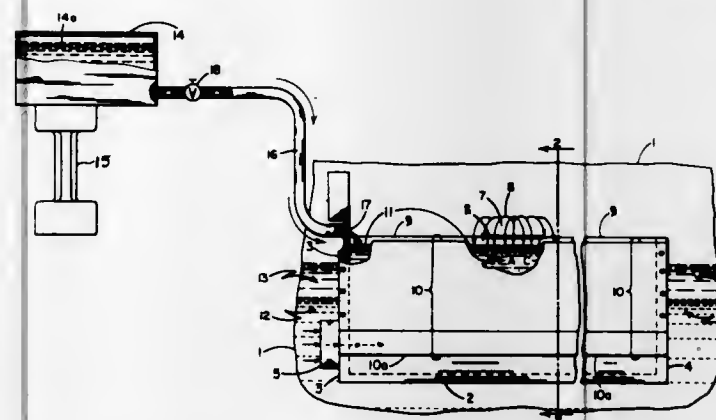
3,612,388

MASS SOLDERING MACHINES

Howard W. Wegener, Rte. 2, Box 91, Wilton, N.H., and Kenneth G. Boynton, Osgood Road, Milford, N.H.
Filed Apr. 14, 1969, Ser. No. 815,970
Int. Cl. B23k 1/00, 5/22

U.S. Cl. 228—34

4 Claims



An apparatus which eliminates the formulation of hot solder dross in the operation of an automatic mass soldering machine of the type which produces a high vertical wave of solder alone or solder and oil and having a horizontal crest.

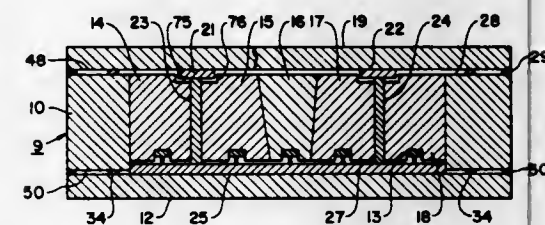
3,612,389

APPARATUS FOR SOLID-STATE WELDING

Eugene D. Green, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Division of Ser. No. 569,303, Aug. 1, 1966, Pat. No. 3,497,945
Filed Dec. 23, 1968, Ser. No. 800,312
Int. Cl. B23k 19/00

U.S. Cl. 228—44

2 Claims



A vacuum pack encapsulation device for containment of metal members to be joined together by solid-state welding. Positioners are assembled inside the pack in and around the metal members for support thereof during the welding process. Certain of the individual elements of the pack are spaced from one another and spaced from the metal members by deformable spacers. The spacers deform under compression force to permit the pack elements to move toward one another whereby the compression force is transmitted to the metal members to effect welding thereof.

3,612,390

CONTINUOUS WEB ENVELOPE

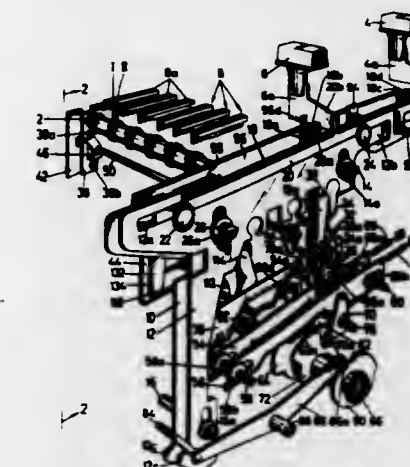
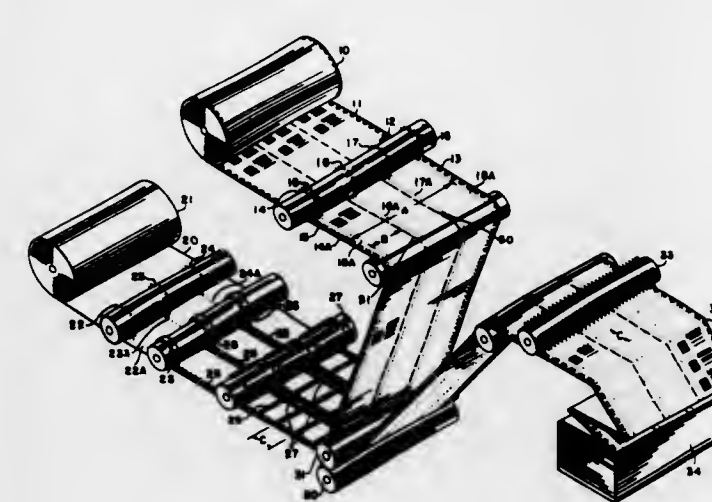
Kenneth W. Howard, 5550 Monticello, Dallas, Tex.
Filed Sept. 2, 1969, Ser. No. 854,434
Int. Cl. B65d 27/10

U.S. Cl. 229—69

3 Claims

Disclosed is continuous web process for producing a plurality of serially edge-attached envelopes in a double web

without folding or cutting the envelope paper prior to fabrication of the envelope structure. Accounting information and second means cooperate so that the totalizer intended



may be recorded on the envelopes individually or in web form.

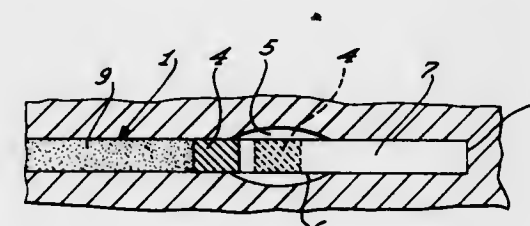
3,612,391

SHOCK TUBE BYPASS PISTON TUNNEL

Stellan P. Knoos, Malibu, Calif., assignor to National Aeronautics & Space Administration
Filed Dec. 13, 1967, Ser. No. 690,172
Int. Cl. B65d 31/00

U.S. Cl. 230—54

17 Claims



A gas, preferably preheated, is released in a tube having a free piston, a piston bypass structure, and a vacuum chamber. In operation, a portion of this gas bypasses the piston into the vacuum chamber. The gas which is not bypassed brings the piston into motion to automatically close the bypass and then compress the bypassed gas and build up a very high temperature and pressure in the bypassed gas. A second, perforated, piston may be initially placed downstream of the first piston to increase system efficiency and act as a safety device.

3,612,392

TOTALIZER CONTROL DEVICE

Rolf Bjorn Israelsson, Solna, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden
Filed Dec. 22, 1969, Ser. No. 887,300
Int. Cl. G06c 15/48

U.S. Cl. 235—60 MT

5 Claims

A totalizer selecting mechanism for a cash register having at least two totalizers mounted on a shaft. The selecting mechanism comprises of first and second control means the first of which moves the totalizer shaft towards the totalizer racks during each totalizer selecting cycle and the second of which can be set in one of several positions the number of which corresponds to the number of totalizers. When the

totalizer shaft is moved towards the totalizer racks the first cation of the envelope structure. Accounting information and second means cooperate so that the totalizer intended

for selection is moved in line and into engagement with the totalizer racks.

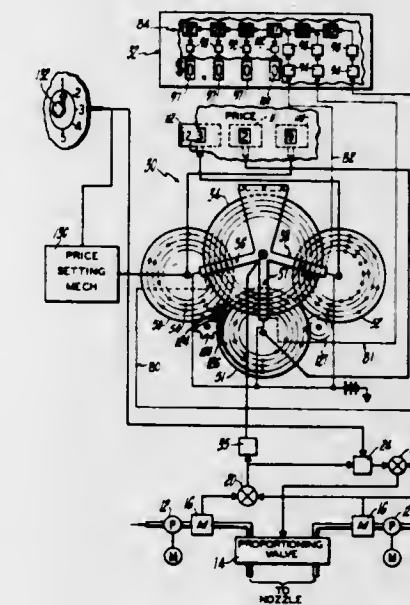
3,612,393

COMPUTING DEVICE

William F. Jones, Wethersfield, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Oct. 21, 1969, Ser. No. 868,069
Int. Cl. G06m 1/272

U.S. Cl. 235—92 FL

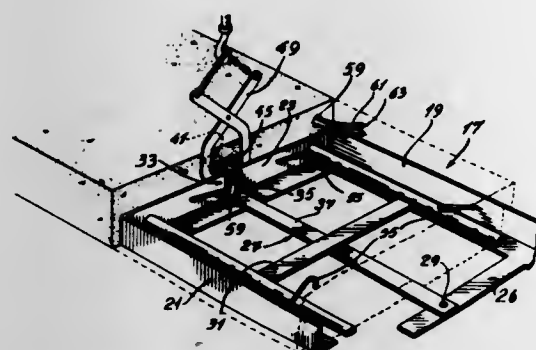
30 Claims



A cost-computing device for a fuel-dispensing system having a rotary pulser disc with a plurality of light apertures arranged in four pulser circles, a plurality of output heads, each having a photoelectric pickup, angularly spaced about the axis of the pulser disc for being operated by the light apertures on the pulser disc, and a rotary selector disc associated with each output head having a plurality of light apertures arranged in four selector circles for selectively activating the pulser circles for operating the respective pickup. The selector discs are connected by intermittent gearing in the manner of a counter such that a rotary input to the lowest order selector disc can be rotated to set the disc counter and thereby set the variator to establish a corresponding multiple place unit volume price. In an alternative embodiment six banks of coaxial selector drums are mounted on a selector plate to be selectively rotated to a control position in operative association with a rotary pulser drum to selectively activate the light aperture circles in the pulser drum to operate the photoelectric pickups.

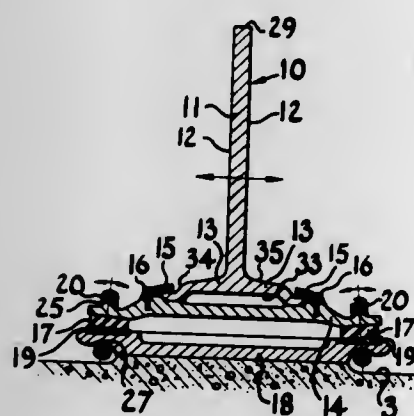
3,612,394
RAILROAD CROSSING
 Wilfrid Gagnon, Comte Temiscouata, Le Etroits, Quebec, Canada
 Filed Oct. 3, 1969, Ser. No. 863,574
 Int. Cl. E01b 26/00

U.S. Cl. 238-8 12 Claims



Building railroad crossing with concrete slabs which are dowel connected at the ends thereof, and by interconnecting these slabs by means of a spring hook provided at one end of a concrete slab and providing a recess at the mating end of an adjacent concrete slab to receive the spring hook in snapping engagement therein.

3,612,395
LINEAR MOTOR REACTION RAIL ASSEMBLY
 Christopher Durrant English, Burwell, England, assignor to Tracked Hovercraft Limited, London, England
 Filed July 16, 1969, Ser. No. 842,152
 Claims priority, application Great Britain, July 17, 1968, 34096/68
 Int. Cl. E01b 25/00, 26/00
 U.S. Cl. 238-122 17 Claims

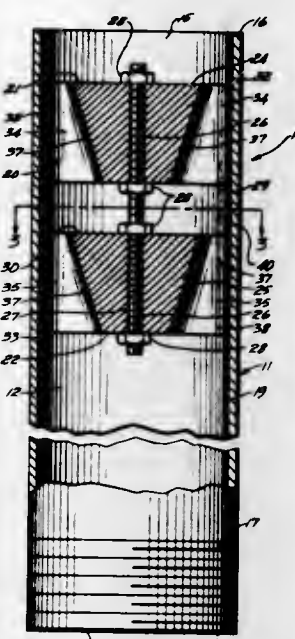


A reaction rail for cooperating with a linear induction motor stator connected to a high-speed vehicle is resiliently mounted for lateral movement. The stator can be guided by wheels running on the rail. Resilient blocks capable of deforming in shear are disposed between a rail-carrying member and the fixed track for the vehicle. In the preferred embodiment the resilient blocks are precompressed by rockable stirrups which reduce the tendency for the rail to tilt under a lateral force.

3,612,396
TURBULENT FLOW LIQUID DISCHARGE NOZZLES
 John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.
 Continuation-in-part of application Ser. No. 784,541, Dec. 9, 1968, now Patent No. 3,558,053, Continuation-in-part of application Ser. No. 691,111, Dec. 8, 1967, now abandoned, Continuation-in-part of application Ser. No. 492,389, Oct. 4, 1965, now abandoned. This application Apr. 27, 1970, Ser. No. 32,332
 Int. Cl. B05b 17/08

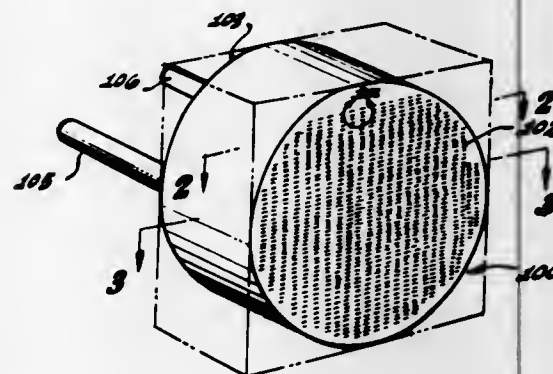
U.S. Cl. 239-17 21 Claims
 A family of aerating liquid discharge nozzles, each of which has the feature that it contains no moving parts and in-

cludes a hollow body defining a liquid inlet at one end and an outlet opening at the other end. The body has an internal chamber arranged in communication with both the inlet and outlet ends of the body. Plug means, having substantial length between its opposite end surfaces, is disposed across the chamber adjacent the body outlet end and defines a plu-



ality of grooves which comprise constricted liquid outlet means from the body. The body outlet opening has an area greater than the area of the liquid outlet means. The grooves intermediate their length are increased in cross-sectional area in a discontinuous manner relative to the adjacent portions of the grooves.

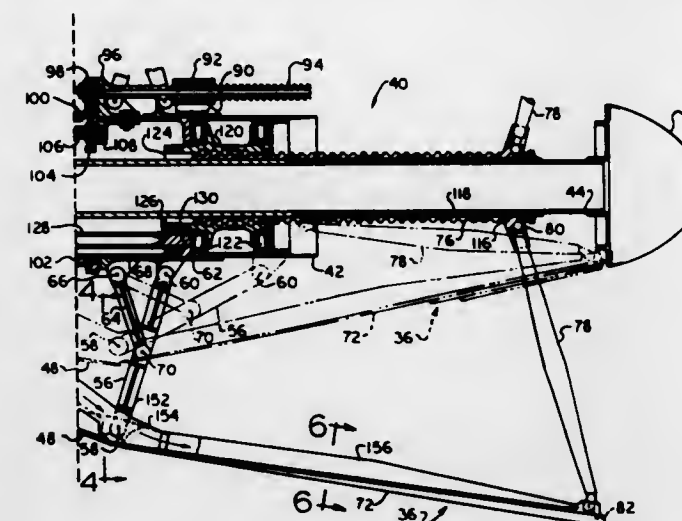
3,612,397
FLUID INJECTOR
 Ronald K. Pearson, 10350 Vacco St., South El Monte, Calif.
 Continuation-in-part of application Ser. No. 578,275, Sept. 9, 1966, now abandoned. This application July 24, 1969, Ser. No. 849,566
 Int. Cl. B64d 33/04
 U.S. Cl. 239-127.1 24 Claims



A plurality of preformed individual metal platelets are stacked in registry and brazed together to form a monolithic structure capable of being machined to a desired final overall configuration of injector. Each platelet is formed on one surface with a patterned depressed area defining, with an abutting surface of a contiguous platelet, fluid flow passages exiting at one edge of the platelet in one face of the injector, aligned apertures of the stacked platelets define manifolds for conducting fluid to each platelet, and the individual platelets may be provided with baffling arrangements in the depressed area thereof for equalizing fluid pressures in the several outlets of the platelet.

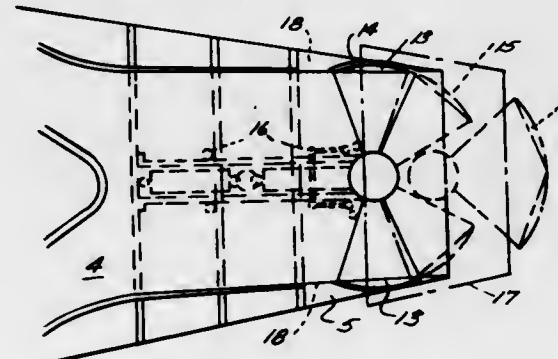
3,612,398
MODULATABLE NOZZLE SYSTEM
 Richard H. Timms, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
 Filed July 6, 1970, Ser. No. 52,210
 Int. Cl. B64d 33/04

U.S. Cl. 239-127.3 12 Claims



Apparatus generally includes a convergent-divergent outer nozzle duct and a dual cone nozzle plug within and coaxial with the duct and serving as an inner nozzle duct defining with the outer duct a variable area flow path of annular cross section. Forward cone section extends forward from plane of throat of outer duct and aft cone extension extends rearward from throat plane to exit plane. Nose cone forward of dual cones streamlines entire plug. Both cone sections are made up of elongate peripherally overlapping petals with aft ends of forward petals pivoted to forward end of aft petals. Forward ends of forward petals are pivoted to mounting ring on central coaxial support member. Aft ends of forward petals are pivoted to support struts which are pivoted to axially moving second mounting ring to expand and contract both cones at throat plane. Aft ends of aft petals are pivotally connected to actuating struts which are pivotally connected to sleeve which slides axially on support member to expand and contract aft end of aft cone independently of expansion and contraction at throat plane. Support member is hollow, and air supplied to it from external source flows to and through the petals and the forward tip of the nose cone to cool the parts exposed to the hot exhaust gases.

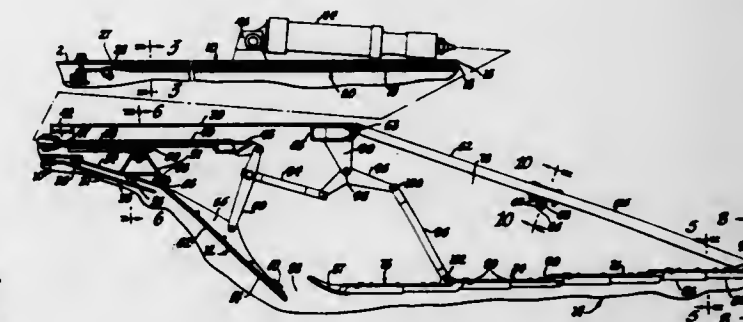
3,612,399
VARIABLE DIRECTIONALLY SILENCED NOZZLE
 Barry Rodgers, Mansfield; James A. Petrie Littleover, and Michael John Talbot Smith, Newart, all of England, assignors to Rolls-Royce Limited, Derby, England
 Continuation-in-part of application Ser. No. 716,906, Mar. 28, 1968, now abandoned. This application Dec. 5, 1969, Ser. No. 882,457
 Int. Cl. B63h 11/10
 U.S. Cl. 239-265.19 8 Claims



A nozzle assembly for a gas turbine engine intended to effect noise reduction when the aircraft carrying the nozzle is

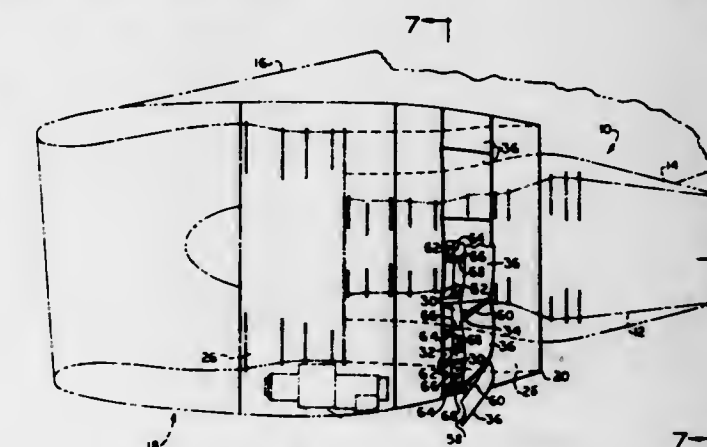
landing or taking off. The nozzle is variable between a cruise configuration in which it has a section which is circular or of regular polygonal form and a noise reduction configuration in which the nozzle dimension in one direction is substantially greater than that in a perpendicular direction. A pair of clamshell doors effect the change in configuration for the nozzle.

3,612,400
VARIABLE JET PROPULSION NOZZLE
 Douglas Johnson, and Henry M. Mar, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
 Filed June 2, 1970, Ser. No. 42,679
 Int. Cl. B64c 15/06
 U.S. Cl. 239-265.19 3 Claims



An exhaust duct and variable convergent-divergent propulsion nozzle for a supersonic turbofan engine. The nozzle includes a ring of leaves providing a convergent nozzle portion and a second ring of leaves downstream of the first defining a divergent nozzle portion. The downstream end of the divergent nozzle portion is connected to a ring of leaves defining a fairing around the nozzle. The fairing and divergent leaves are free to float radially at their downstream ends. The converging nozzle leaves and the forward end of the diverging nozzle leaves are actuated by a common linkage so as to coordinate the movement of the two and permit the floating movement of the downstream end of the nozzle. The structure, including the exhaust duct wall, is characterized by lightweight construction and arrangements for cooling the structure exposed to hot gas. Outward movement of the fairing leaves is limited by a ring of swinging links which includes stop means limiting their extending motion to a degree short of straightening the joints.

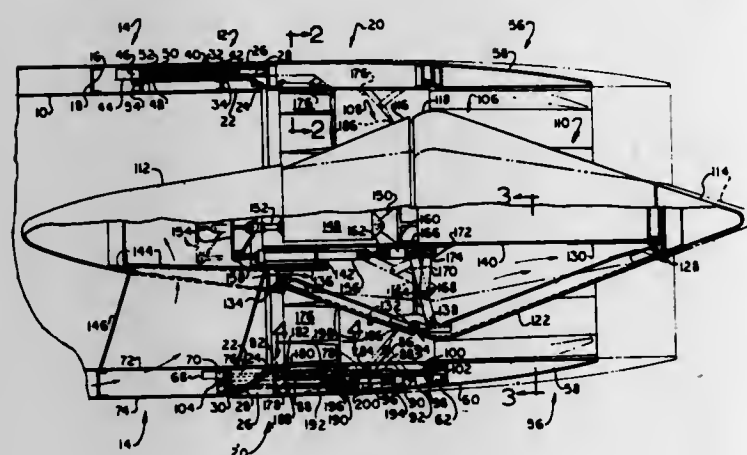
3,612,401
THRUST-REVERSING APPARATUS FOR TURBOFAN JET ENGINE
 Peter H. Ellis, and Samuel I. Peraky, both of Chula Vista, Calif., assignors to Rohr Corporation, Chula Vista, Calif.
 Filed Jan. 29, 1970, Ser. No. 6,694
 Int. Cl. B64c 15/04
 U.S. Cl. 239-265.29 5 Claims



Turbofan jet engine fan air is discharged through passage between engine housing and cowling spaced therearound.

Doors are pivoted to inner and outer sides of cowling adjacent aft edges of openings spaced circumferentially thereof and move between a retracted position closing the openings and a deployed position extending laterally therefrom, the inner doors blocking the fan air passage and deflecting fan air through the openings in the deployed position and the outer doors deflecting the fan air forwardly to reverse thrust. During deployment the inner doors completely block fan air passage only after outer doors are fully deployed, and when doors are retracted the inner doors open the fan air passage slightly before outer doors begin to close.

3,612,402
THRUST-CONTROLLING APPARATUS WITH VARIABLE AXIAL FLOW AREA FOR DIFFERING FLIGHT REGIMES AND THRUST REVERSAL
Richard H. Timms, San Diego, and Leonard Holman, Imperial Beach, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.
Filed Dec. 22, 1969, Ser. No. 887,061
Int. Cl. B64c 15/06
U.S. Cl. 239-265.29

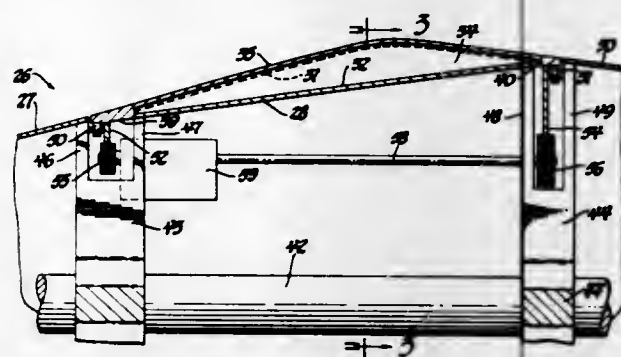


Apparatus includes shroud positioned at rear or jet nozzle to surround and control gas stream. Shroud includes forward fixed section secured to engine at outlet flange or tailpipe and aft section axially movably mounted to fixed section. In stowed position aft section cooperates with forward section to define shroud as substantially imperforate conduit in continuation outlet or tailpipe. In deployed position, one or more gaps are formed between forward end of aft section and rearward end of forward section for reverse thrust gas flow. Diversion plug coaxial with shroud varies axial flow area for differing flight regimes. Swingable flaps or blades form trailing edge of aft section and vary shape of outer wall. Blades and plug are operable independently to produce all necessary outlet combinations. For reverse thrust, plug is expanded and aft section deployed. Blocker doors on inner wall of aft section are caused to swing into engage-expanded plug and block axial rearward flow of gas, forcing it through reverse thrust openings.

3,612,403
VARIABLE-AREA DUCT
Samy Baghdadi, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 2, 1970, Ser. No. 42,678
Int. Cl. B64c 9/38

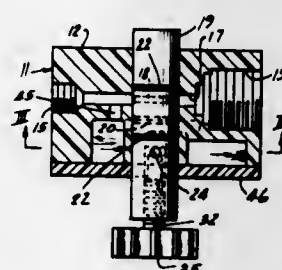
U.S. Cl. 239-265.37
A variable-area diffusing duct in a gas turbine engine is of generally annular cross section and has provision for varying the area of the duct by varying the average diameter of one or the other or both walls of the duct. The arrangement for varying the area involves a circumferentially stepped diam-

eter construction of the duct wall and movable wall units overlying portions of the duct wall and movable circumferentially



of the duct to increase or decrease the relative portion of the greater and lesser diameter portions of the duct wall.

3,612,404
LIQUID SOAP MIXER AND DISPENSER FOR SHOWER BATHS AND THE LIKE
Vincent Vicari, 8253 W. Maple, Norridge, Ill.
Filed May 15, 1970, Ser. No. 37,539
Int. Cl. B05b 7/26
U.S. Cl. 239-310

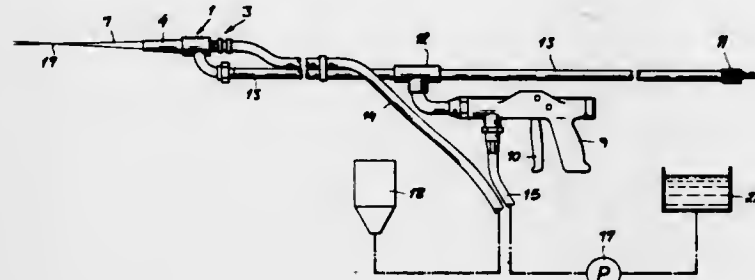


Mixing and dispensing shower head including a valve block having an inlet at one end connected with a supply pipe for clear water and having an axially aligned outlet at the opposite end having a spray shower nozzle extending therefrom. The valve block has a liquid soap container extending upwardly from its top with a passageway leading from the soap container to a soap diluting and mixing chamber within the valve block. A water chamber is also contained within the valve block and is supplied with water by a passageway connected with the inlet, and is connected with the soap-mixing chamber to admit water to dilute the soap in the soap-mixing chamber and effect the mixing of soap and water in the diluting and mixing chamber. A slide valve slidably extends through the valve body transversely of the inlet and outlet and controls the supply of soap to the soap chamber and has one passageway of a relatively large diameter leading diametrically therethrough for supplying clear or rinse water to the shower head, and a second diametral passageway of a smaller diameter providing the pressure drop to educt a mixture of soap and water from the soap-mixing chamber to the outlet of the valve. A metering valve has cooperation with the diametral liquid soap passageway in the slide valve to control the supply of liquid soap to the soap diluting and mixing chamber.

3,612,405
NOZZLE FOR HIGH-PRESSURE BLASTING APPARATUS
Willi Heinrich, Rheinkamp-Repelen, Germany, assignor to Fa. Woma-Apparatebau Wolfgang Maasberg & Co. GmbH, Rheinhausen, Germany
Filed July 28, 1969, Ser. No. 845,400
Claims priority, application France, Nov. 19, 1968, P 18 09 677.0
Int. Cl. B05b 7/06
U.S. Cl. 239-427.3

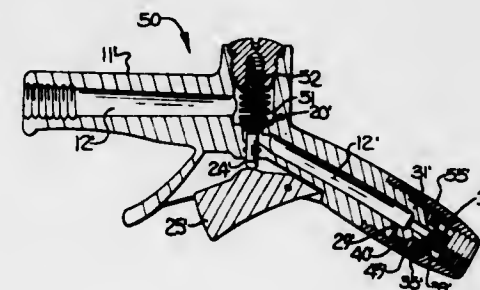
A nozzle for high-pressure blasting apparatus usable with water at pressures between 300 and 600 atmospheres has a

nozzle housing in which a tubular body is fitted. One end face of the tubular body is formed with a group of small slits surrounding the central bore of the tube and directed slightly inwardly toward the axis of the tube. Sand, corundum (silicon carbide) or metal particles are fed through the central bore of the tube and water is forced through the small



openings in a crownlike array. A sleeve is tightly fitted in the tube to act as a particle-accelerating restriction. The forward end of the sleeve can be recessed from, can be flush with, or can extend beyond the front face of the tubular body, according to desired operating characteristics.

3,612,406
SAFETY BLOWGUN
John E. Bass, Jr., Charlotte, N.C., and George R. Ferguson, Clover, S.C., assignors to G. W. Murphy Industries, Inc., Houston, Tex.
Filed Nov. 3, 1969, Ser. No. 873,205
Int. Cl. B05b 1/32
U.S. Cl. 239-526

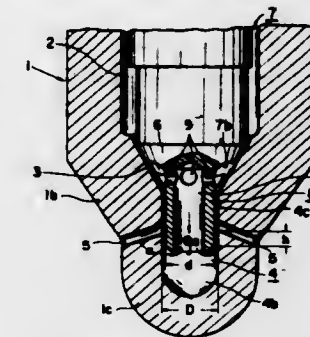


A safety compressed-air blowgun for protecting a user thereof against exposure to dangerously high pressures and wherein a pressure-responsive valve is arranged in series flow relation with a manually operable valve for precluding delivery of air from the blowgun at dangerously high pressures through movement of a pressure-responsive valve member relative to a valve seat in response to balancing of air pressures and in such a manner that the valve member is seated to preclude passage of air when the pressure of air downstream of the pressure-responsive valve is above a predetermined safe pressure.

3,612,407
MULTIORIFICE-TYPE AIRLESS INJECTION NOZZLE
Takumi Itano, Tokyo, Japan, assignor to Komatsu Manufacturing Co., Ltd., Tokyo, Japan
Filed Sept. 19, 1969, Ser. No. 859,286
Claims priority, application Japan, Sept. 20, 1968, 43/67594
Int. Cl. B05b 1/30
U.S. Cl. 239-533

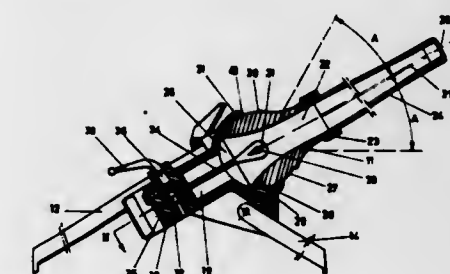
This specification discloses an improved airless fuel injection nozzle which injects a controlled amount of finely particularized fuel into predetermined zones of a combustion chamber prior to ignition and thereafter provides a steadily increasing flow of fuel for controlled combustion during the remainder of a combustion cycle. Means are provided for particularizing the fuel prior to ignition by dividing a fuel supply flow into two separate flows and then recombining

these flows by a collision process to effect particularization. Means are also provided for cyclically terminating this par-



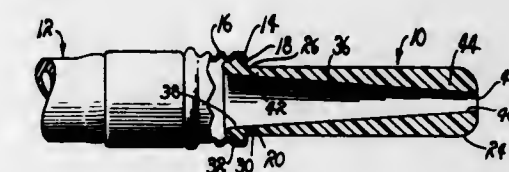
ticularization process and for providing a relatively greater fuel flow during the remainder of a combustion cycle.

3,612,408
DEVICE FOR DEVIATING IN A CHANGEABLE DIRECTION A FLOW OF MATTER
Abram Jacobus Holleman, Paltrokstraat, Zaandam, Netherlands
Filed Oct. 21, 1969, Ser. No. 868,169
Claims priority, application Netherlands, Oct. 21, 1968, 6815054
Int. Cl. B05b 15/08
U.S. Cl. 239-587



A device for delivering a flow of matter in a variable direction, comprising an inlet piece and an outlet piece, said pieces being interconnected in a ball-jointlike manner in which the forces caused by the flowing pressure and tending to move the two pieces apart are compensated by a tie member disposed in the flow passage through and between the two pieces.

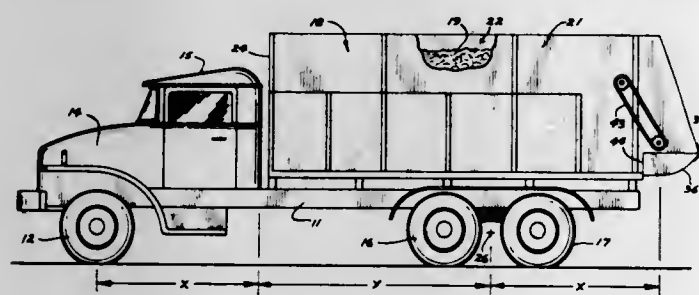
3,612,409
QUICK-CONNECTING, SELF-SEALING FLEXIBLE HOSE NOZZLE
Raymond C. Henning, 205 El Cerrito Drive, Bakersfield, Calif.
Filed Oct. 20, 1969, Ser. No. 867,557
Int. Cl. B05b 1/00
U.S. Cl. 239-602



An elongated hose nozzle of resilient material adapted to be attached quickly and conveniently to the male-threaded coupling at one end of a garden hose is the essence of this disclosure. The nozzle has an inner end and an outer end. The inner end has a cylindrical periphery adapted to fit through the opening in the coupling, which includes an in-

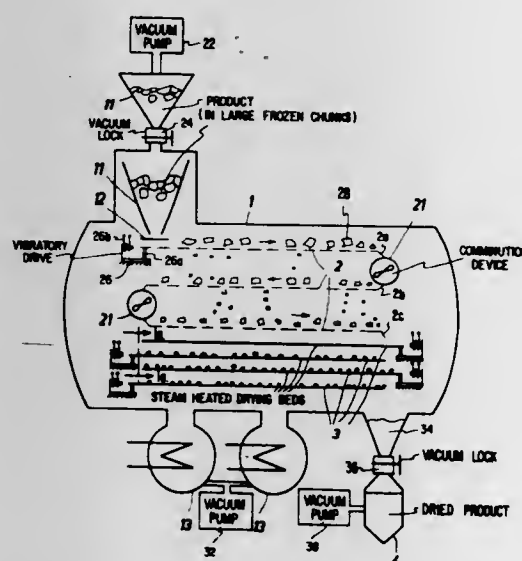
turned flange terminating in a circular opening. A bead of torus form circumscribes the nozzle at its inner end and extends radially outwardly to a dimension greater than that of the cylindrical periphery of the nozzle. A frustoconical passage is formed longitudinally through the nozzle with its greater dimension at the inner end, thus forming a thin wall at the inner end of the nozzle. The thin wall permits the bead and inner end of the nozzle to be resiliently collapsed by hand to a smaller diameter for insertion through the circular opening and past the internal flange into the coupling, where the thin wall of the nozzle is released and resiliently expands towards its normal shape bringing it into locking engagement with the flange and opening in the coupling.

3,612,410
COMBINATION SIX-WHEEL-DRIVE VEHICLE AND SELF-UNLOADING BOX
Charles W. Steinke, 413 North Park, Fairfax, Minn.
Filed June 2, 1969, Ser. No. 829,431
Int. Cl. A01c 19/00; E01c 19/20
U.S. Cl. 239-675 10 Claims



A truck having front drive wheels and dual tandem rear drive wheels carrying a self-unloading box having a rotating spreader for selectively discharging material rearwardly and to either side of the box. The box is mounted on the truck frame so that a major portion of the box is located forwardly of the transverse loadline between the rear dual tandem drive wheels.

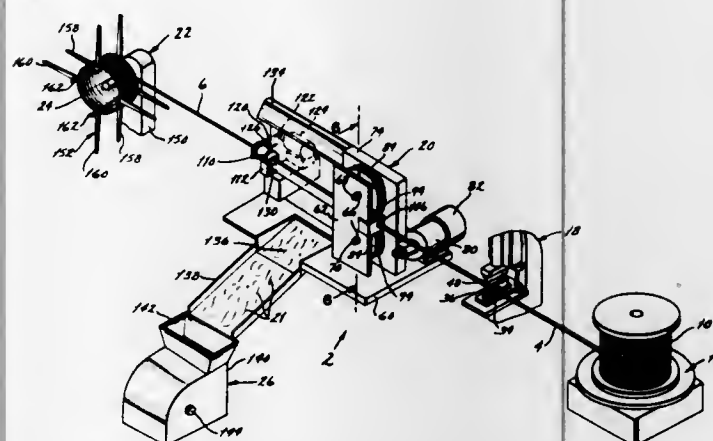
3,612,411
CONTINUOUS FREEZE DRYER
Georg-Wilhelm Oetjen, Köln-Marlenburg; Franz-Joseph Schmitz, Weiden, and Hanns Ellenberg, Rosrath, all of Germany, assignors to Leybold-Heraeus-Verwaltung GmbH, Köln-Bayental, Germany
Filed Aug. 6, 1969, Ser. No. 847,987
Claims priority, application Germany, Aug. 6, 1968, P 17 79 393.0
Int. Cl. B02c 11/08
U.S. Cl. 241-23 14 Claims



A continuous freeze-drying apparatus and method utilizes a vacuum chamber within which large chunks of frozen material are comminuted into particles of a desired size, are

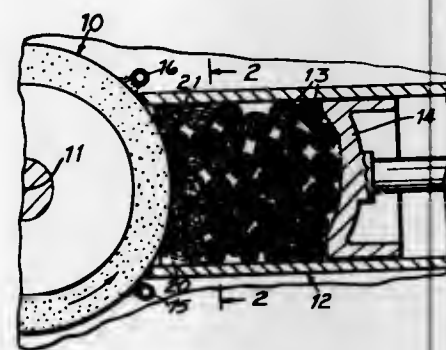
screened within the chamber to separate particles of other than the desired size, and are heated within the chamber to evaporate moisture and to freeze dry them.

3,612,412
PROCESS AND APPARATUS FOR RECOVERING METALS FROM CABLES
Fred J. Graveman, St. Charles, Mo., assignor to Aluminum Converter Sales & Research, Inc., St. Charles, Mo.
Filed June 18, 1970, Ser. No. 47,353
Int. Cl. B26d 1/56
U.S. Cl. 241-25 21 Claims



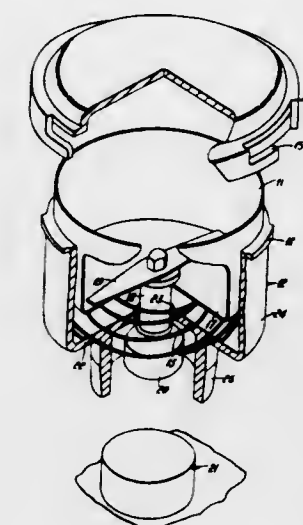
Cable comprising aluminum strands wound about a steel core is reduced to its separate metal components by cutting substantially through the aluminum strands at closely spaced intervals, but leaving the steel core intact. This frees small aluminum strand segments from the core and these segments may be reduced still further in a reduction mill. The core is wound into a roll after the segments are cut away from it. The aluminum strands are severed into the segments by blades having notches therein which are sized to fit around the core but not around the strands about the core. The blades may be mounted on revolving wheels or they may reciprocate.

3,612,413
ANGLE GRINDING PULP GRINDER
James H. Perry, Worcester, Mass., assignor to Norton Company, Worcester, Mass.
Filed May 7, 1969, Ser. No. 822,539
Int. Cl. B02c 19/18, 23/02
U.S. Cl. 241-28 5 Claims



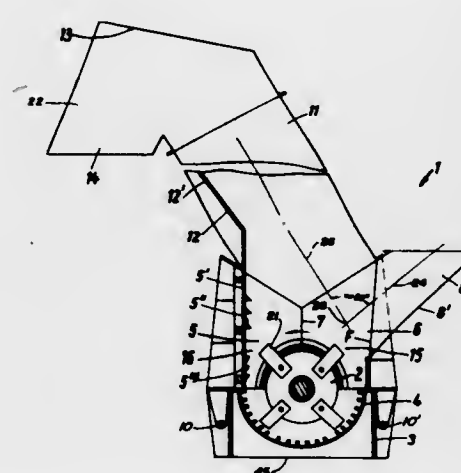
A grinder for making wood pulp wherein the logs are presented to the grinding face of the pulpstone with their longitudinal axes generally parallel to a plane that includes the line of tangency where the logs engage the pulpstone but with the axes of the logs at an angle to the axis of the pulpstone. The axes of the logs are turned at an angle of from about 2° to 30° to the axis of the pulpstone during grinding so that the sides of the logs are progressively disintegrated as the angularly disposed logs are pressed into the grinding wheel.

3,612,414
COFFEE MILL
James M. Nevison, Fareham, and Ronald Leslie Smallbone, Havant, both of England, assignors to Kenwood Manufacturing (Working) Limited, Havant, Hampshire, England
Filed Apr. 10, 1970, Ser. No. 27,228
Claims priority, application Great Britain, May 29, 1969, 27370/69
Int. Cl. B02c 18/12
U.S. Cl. 241-36 5 Claims



A domestic appliance, such as a coffee mill, comprising a fixed casing within which a spring is positioned to support an axially movable drum. A shaft to which a cutter is attached, is rotatably mounted in a floor of the drum. The spring serves to hold the shaft out of engagement with a drive motor coupling. The drum is provided with a lid which preferably is lockable to the casing. When the lid is properly in place the force exerted by the spring is overcome and the drum and thereby the shaft are depressed so that the shaft engages the drive motor coupling.

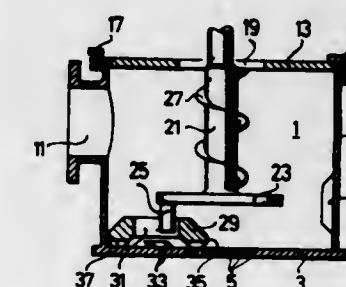
3,612,415
BEATER MILL FOR SEPARATING NONGRINDABLE AND GRINDABLE MATERIALS
Herbert Alfred Merges, Wolfgang, near Hanau, Germany, assignor to Ultrax-Chemic G.m.b.H., Wolfgang bei Hanau, Germany
Filed Feb. 24, 1969, Ser. No. 801,534
Claims priority, application Germany, Feb. 27, 1968, Oct. 12, 1968, P 16 07 608.7; P 18 02 819.8
Int. Cl. B02c 13/00, 13/284, 19/12
U.S. Cl. 241-73 14 Claims



A beater mill for grinding grindable materials and separating nongrindable materials from a mixture comprises a fill chute, a rotor carrying rotating beaters partially surrounded by a sieve, and a discharge chute into which nongrindable materials are driven by the beaters. The discharge chute axis extends tangentially from the rotor for receiving the non-

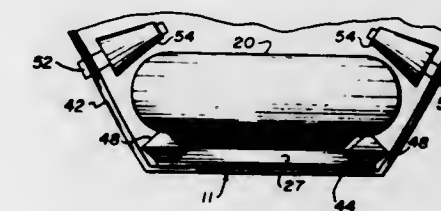
grindable materials. The fill chute has a bottom surface which is connected to the rotor housing at a point which is below the greatest height of the rotor diameter so that the mixture to be ground is struck by the beaters as it flows into the rotor region. The discharge chute is arranged at an angle to the fill chute and has an axis which intersects the fill chute axis within that quadrant of the rotor that faces the fill chute. Accordingly, materials falling back towards the rotor from the discharge chute are more likely to be again driven into the discharge chute and less likely to become jammed between the rotor and the sieve.

3,612,416
COMMINUTING APPARATUS WITH COMMINUTING MEMBER
Ernst Frei, Würenlingen, Switzerland, assignor to Meto-Bau AG, Würenlingen, Switzerland
Filed Mar. 28, 1969, Ser. No. 811,322
Int. Cl. B02c 19/00
U.S. Cl. 241-90 10 Claims



A comminuting apparatus. A receptacle is provided for liquids which contain solids. The receptacle has a bottom wall on which rests at least one and, if desired, more than one comminuting member slidable thereon. A drive is associated with the member and serves to slidably advance it on the bottom wall in a substantially circular path while permitting the member to perform independent movements in direction radially and/or tangentially with respect to the path.

3,612,417
PULVERIZER MILL
Francis M. Barton, Parsippany, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Sept. 25, 1969, Ser. No. 861,101
Int. Cl. B02c 15/00
U.S. Cl. 241-103 6 Claims

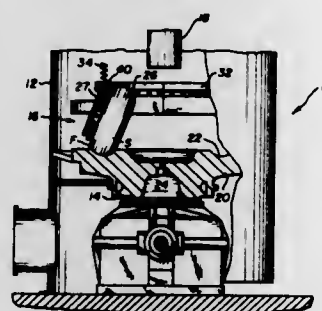


A pulverizing mill is provided with a spider frame which is mounted on the main pulverizing rollers. Flexibly secured to the spider frame are spacer means which are positioned between the rollers.

3,612,418 PULVERIZER

Francis M. Barton, Parsippany, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Nov. 3, 1969, Ser. No. 873,256
Int. Cl. B02c 15/00; F16h 1/12
U.S. Cl. 241-118

3 Claims

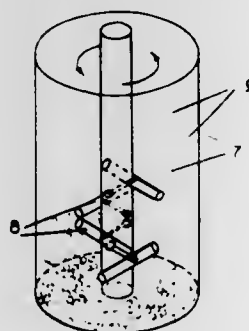


Apparatus is provided for pulverizing raw coal feed stock into comminuted particles which can be conveyed to the combustion chamber of a furnace. A meshing gear arrangement is provided between the rollers and the thrust ring of the pulverizer to prevent skidding of the rollers.

3,612,419 AGITATOR

Andrew Szegvari, 201 Castle Blvd., Akron, Ohio
Filed June 30, 1967, Ser. No. 650,392
Claims priority, application Great Britain, Aug. 9, 1966, 35542/66
Int. Cl. B02c 17/16
U.S. Cl. 241-172

2 Claims



For agitation—that is, either for grinding or for mixing—substantially spherical agitating elements are kept in a state of continuous agitation by means of an agitator formed of a vertical shaft with arms attached tangentially to the shaft. The arms may be straight or curved. Usually the arms are so attached that the distance from the point of attachment to one end of the arm is several times the distance from the point of attachment to the other end of the arm.

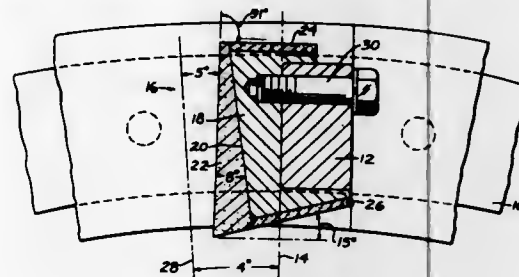
3,612,420 STRIKING BAR FOR CAGE MILL

Frank W. Hull, Orlando, Fla., assignor to Kennametal Inc., Latrobe, Pa.
Filed Oct. 1, 1969, Ser. No. 862,787
Int. Cl. B02c 13/28
U.S. Cl. 241-191

6 Claims

A striking bar for a cage mill in which the striking bar comprises a steel-backing member channel shaped toward the rear so as to fit over the front face of an axial bar extending between the end rings of the cage of the cage mill. The steel backing for the striking bar has carbide facing on the radially outer and radially inner sides and on the side facing away from the axial bar on which the striking bar is mounted.

The striking bar is connected to the axial bar of the cage mill by bolts located near the radially outer side of the axial bar

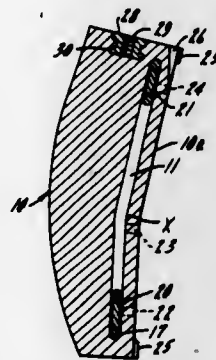


so that the radially inner part of the steel-backing member of the striking bar is not interrupted by bolt holes.

3,612,421 WEARING PARTS FOR CRUSHERS

Erik Arne Sabel, Box 128, Ojebyn, Sweden
Filed July 22, 1969, Ser. No. 843,576
Int. Cl. B02c 2/00, 1/00
U.S. Cl. 241-291

10 Claims



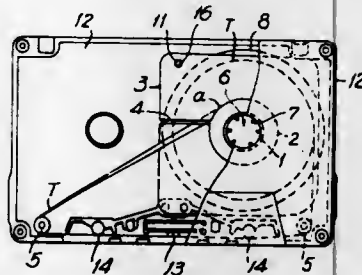
The present invention is related to wear-taking members or plates for crushing or grinding mills, for example, for cone or gyratory crushers, or for jaw crushers. The particular structure shown illustrates a gyratory crusher in which plates involving the invention are shown as surrounding a lower part of a gyrated head, and, therefore, as constituting the wear-taking part of a bowl liner. It will be understood that plates having the same general characteristics, with slightly changed form, may also be employed in connection with one or both jaws of a jaw crusher in which jaws are mounted for relative movement, whereby to define between them a crushing cavity. It will be understood that crushing parts take tremendous wear, and wear away rapidly. A major purpose of the invention is to provide a wear-taking part and a method of making it which permits the use of hard but brittle metals.

3,612,422

CARTRIDGE FOR ENDLESS TAPE

Fukuzo Ito, Yokohama-shi, and Masaaki Sekine, Kawasaki-shi, both of Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo-to, Japan
Filed Sept. 5, 1969, Ser. No. 855,502
Claims priority, application Japan, Sept. 7, 1968, 43/64556
Int. Cl. B65h 17/48
U.S. Cl. 242-55.19 A

7 Claims



An endless tape cartridge having a hub on which a looped endless tape is wound up in a convoluted manner. A hub

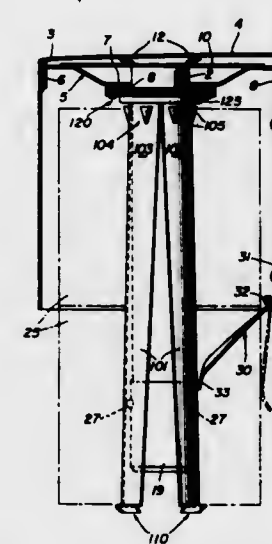
consists of a driving wheel and a driven wheel constructed rotatably. An endless tape is arranged for being wound up on the outermost periphery of the driven wheel pulled out of the innermost convolution of the tape wound up on the driven wheel, and rewound on the outermost convolution on the periphery of the driven wheel. In addition, an antifriction pad is mounted at the pulling-out position of the tape wound on the outer periphery of the above described driven wheel, while, an engaging slit for leading out the tape is installed on the smooth sheet. In the endless tape cartridge, the tape passes through the engaging slit smoothly to be pulled out.

3,612,423

ROLLED PAPER DISPENSER

Erwin B. Bahnsen, Oakbrook, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Filed Jan. 26, 1970, Ser. No. 5,610
Int. Cl. B65h 19/04
U.S. Cl. 242-55.42

28 Claims



There is disclosed a tissue dispenser comprising a well-mounted casing having connected thereto a vertically depending tubular spindle, cam mechanism within the spindle including a pair of balls movable between a retracted position therewithin and an extended position protruding therefrom, a lock for locking the balls in the extended position, and a pair of part-cylindrical arms disposed about the spindle and hingedly connected to the casing by a toothed collar insertable over the spindle for attachment adjacent to the upper end thereof, the balls in their extended position engaging the inner surfaces of the arms for moving them to a roll-holding position, the lower end of each arm having a flange for holding rolls of tissue thereon when the arms are in their roll-holding position.

3,612,424

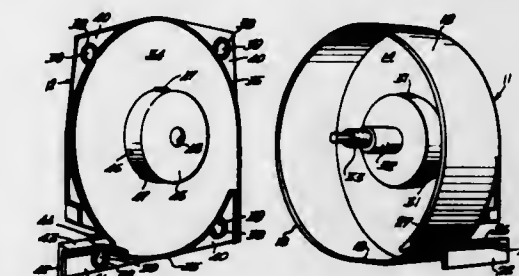
STORAGE AND DISPENSING MAGAZINE FOR ROLLED STRIPS OF LIGHT SENSITIZED MATERIAL

Murray Friedel, North Miami Beach, Fla., assignor to Visual Graphics Corporation
Filed Mar. 27, 1970, Ser. No. 23,265
Int. Cl. G03b 1/04
U.S. Cl. 242-71.1

10 Claims

A container or magazine comprising interfitting, integrally formed magazine body and magazine cover members, each having sidewardly inwardly directed spool holding means for supporting a contained roll of photosensitive strip material is described. Lighttight interfitting engagement is achieved by the reception of peripheral edge portions of the body member in a complementary groove in the cover member, and permanent and rigid interfitting securement is effected by the application of small amounts of a suitable liquid-sealing agent to a plurality of wells or receptacles provided along the path of interfitting engagement, from which the sealing agent

flows in each direction along the path of interfitting engagement by capillary attraction. The dispensing slot, extending exteriorly of the magazine, follows a shallow S-shaped path to prevent light piping. The opposite sides of the assembled



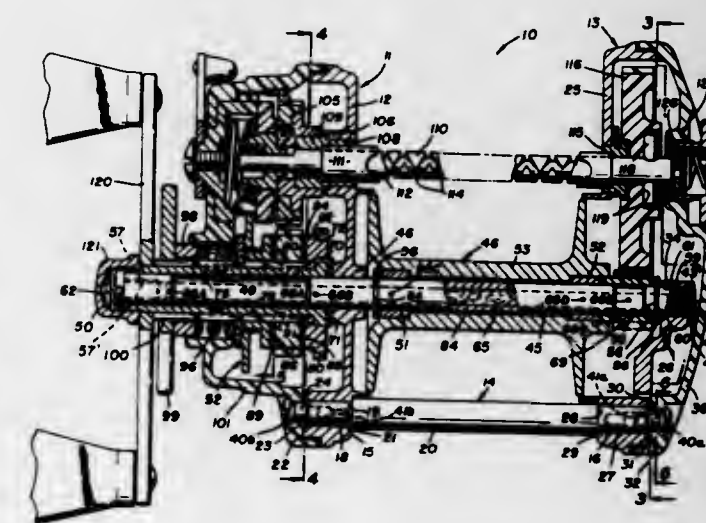
magazine are sufficiently flexible to permit clamping against the opposite ends of a contained roll by means of a central, side-to-side threaded post and thumb nut mechanism which can readily be tightened to secure the roll in place to prevent unraveling of the strip material during transport and storage.

3,612,425

BAIT-CASTING REEL

Henry G. Shakespeare, and Gerald Dale Harrington, both of Kalamazoo, Mich., assignors to Shakespeare of Arkansas, Inc., Fayetteville, Ark.
Filed June 23, 1969, Ser. No. 835,382
Int. Cl. A01k 89/04
U.S. Cl. 242-84.1 R

12 Claims



A bait-casting reel. The reel has a head plate and a tail assembly conjoined in spaced relation to provide an integrated, rigid frame. The tail assembly comprises a tail plate and a spider. The spider has a plurality of legs extending radially from a nave, and the legs are detachably mounted to the tail plate radially of a cylindrical access through the tail plate. An arbor is supported through the head plate, and a connecting means anchors the arbor to the nave of the spider so that the arbor can be selectively positionable axially of itself. A line spool is rotatably mounted on the arbor between the head and tail plates, and removable locating means retain the spool in fixed axial relation with respect to the arbor and permit the spool to be selectively removed from the arbor through the cylindrical access. A drive shaft, to which a crank is secured, is rotatably mounted on the arbor exteriorly of the head plate, and a drive train operatively connects the drive shaft to the line spool so that rotation of the former effects multiple revolutions of the latter. A traversing shaft is journaled between the head and tail plates in spaced relation with the line spool. A first gearing means operatively joins the traversing shaft to the drive shaft, and a second gearing means operatively joins the traversing shaft to the line spool. Both the first and second gearing means are solely supported from the rigid frame.

3,612,426

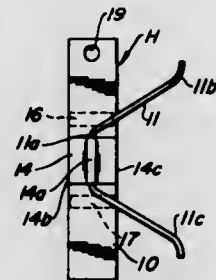
EXTENSION CORD CADDY

John Germeck, Jr., 20270 Lake Shore Blvd., Euclid, Ohio
Filed June 11, 1970, Ser. No. 45,320

Int. Cl. B65h 75/36

U.S. Cl. 242—85.1

2 Claims



A holder for storing a length of electric cord. Clips on the holder allow it to be attached to and remain with the electric cord when the cord is in use. The holder has a coiling form pivotable to one position for coiling an electric cord thereon and pivotable to another position to be out of the way when the cord is in use with the holder attached thereto. The holder need never be separated from the cord and is always available for storing the cord.

3,612,427

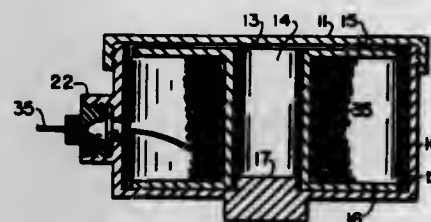
FILAMENT DISPENSER

John M. Bishop, Orange, and Emmet F. Simon, Garden Grove, both of Calif., assignors to The Conolon Corporation
Filed Mar. 2, 1970, Ser. No. 15,451

Int. Cl. B65h 49/18

U.S. Cl. 242—137.1

4 Claims



A filament is disposed in a liquidtight container wrapped about a spool which is free to rotate therein, the filament passing through a dispensing nozzle fixed in the side of the container, the dispensing nozzle having an outward-facing conical block of deformable plastic containing a filament passage and the dispensing nozzle also having a pressure plug turned inward about the conical block compressing it about a filament passing therethrough.

3,612,428

TRAVERSE MECHANISM USEFUL IN TEXTILE MACHINES

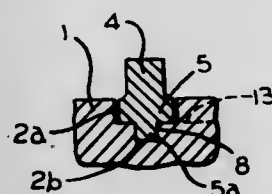
Rudolf Hohle-Halske, am Stadtwald 30, Remscheid-Lennep, Germany

Filed June 16, 1969, Ser. No. 833,575
Claims priority, application Germany, June 15, 1968, P 17 60 659.6

Int. Cl. B65h 57/28

U.S. Cl. 242—158.3

11 Claims



Traverse mechanism for the winding of yarns, threads, and the like on spools with a reciprocating thread guide driven by

a compound threaded spindle reciprocally driving a shoe follower with one segment riding in oppositely helical arranged grooves or threads crossing each other at least once and another segment of said shoe follower guiding it through parabolic or arcuate thread reversal segments of cross section different from that of the helical arranged threads.

3,612,429

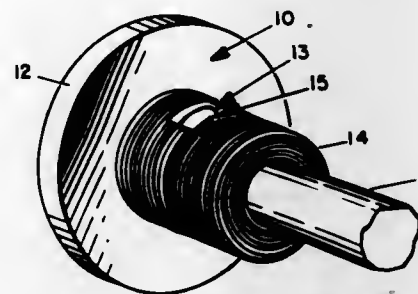
INSULATED WIRE COIL

Hans A. Koenig, 4313 Joplin Drive, Rockville, Md.
Continuation-in-part of application Ser. No. 871,460, June 19, 1969, now abandoned, Continuation-in-part of application Ser. No. 724,725, Apr. 29, 1968, now abandoned. This application Feb. 11, 1970, Ser. No. 10,600

Int. Cl. B65h 55/00

U.S. Cl. 242—159

10 Claims



A conductive wire coil of insulated wire or cable, stretches of which are wound in opposite directions to minimize inductive effect, in which the wire is paid out internally at high lineal rates of speed without rotating the coil assembly, and which includes protective wire turn pads of soluble material placed at reversal points. The pads are grooved so as to provide 180° turn guides for the wire to insure against breakage of insulation, and are of sufficient thickness to protect the turn loops of wire therein from being cut by overlaid layers. The soluble pads dissolve rapidly upon exposure to sea water during payout so that they do not snarl or cause breakage of wire.

3,612,430

DEVICE FOR FEEDING WEBS IN RECORDING INSTRUMENTS

Reginald E. Freeman, High Wycombe, Buckinghamshire, England, assignor to Instron Corporation, Canton, Mass.

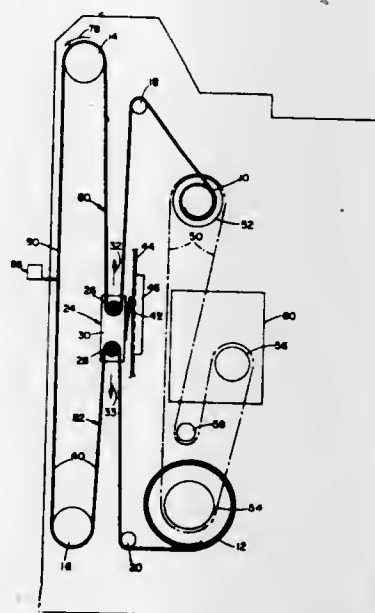
Filed July 23, 1969, Ser. No. 843,930

Claims priority, application Great Britain, July 26, 1968, 35,840/68

Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32

U.S. Cl. 242—189

9 Claims



Web-feeding device including web supply and takeup reservoirs mounted for movement to respectively supply and

take up the web longitudinally of the web, a web drive mounted intermediate the reservoirs longitudinally of the web and being actuable to move the web and having an inertia incident to that movement less than the inertia characterizing at least one of the reservoirs in respective movement to supply and take up the web; and a dual loop control in spaced relation to each other with the loops extending in generally opposite directions, one guide being intermediate of the supply reservoir and the web drive in a direction longitudinal of the web, the other guide being so intermediate of the web drive and the takeup reservoir, the support being movable toward and away from a generally central position.

3,612,431

TAPE HANDLER WITH ANTIHUNT AND PNEUMATIC REWIND CONTROL

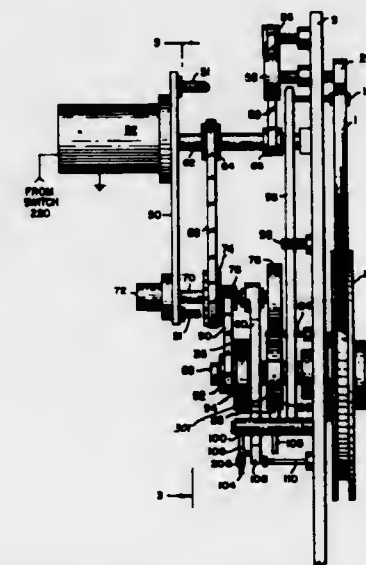
Raymond G. Poland, Holland Patent, and Gerald S. Stevens, Jr., Utica, both of N.Y., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,660

Int. Cl. B65h 59/38, 63/02; G11b 15/32

U.S. Cl. 242—189

10 Claims



A tape handler having a shiftable drive capstan engageable with the takeup reel shaft under control of the takeup dancer arm employs an antibackup detent acting on the takeup shaft to prevent the takeup reel from oscillating in a hunting-type action when the dancer arm resides in its nominal or rest position. Additionally, pneumatic control means are provided to actuate the tape rewind drive and to simultaneously disable the antibackup detent.

3,612,432

TAPE UNIT CASSETTE HOLDER

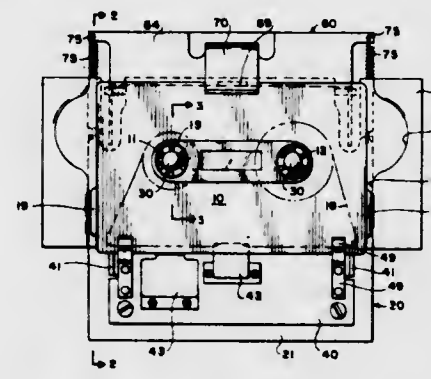
Richard M. Johnson, Dallas, Tex., assignor to International Computer Products, Inc., Addison, Tex.

Filed Mar. 3, 1970, Ser. No. 16,170

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242—198

14 Claims



A vertically oriented mounting plate supports an upward facing recording head. The mounting plate includes brackets

and guides for locating the cassette both vertically and laterally relative to the recording head and other components. The cassette is received in the holder at an angle from the vertically oriented plate, with its lower edge guided to correct position. Manual urging of the cassette to a position parallel to the plate automatically latches the cassette in operative position, with the cassette spools being positioned over the drive spindle hubs. The spindle hubs give way should there be misalignment of the hubs and the cassette spools.

3,612,433

SWITCHING APPARATUS FOR CASSETTE TAPE-RECORDING EQUIPMENT INCORPORATING AN INTERLOCK SYSTEM

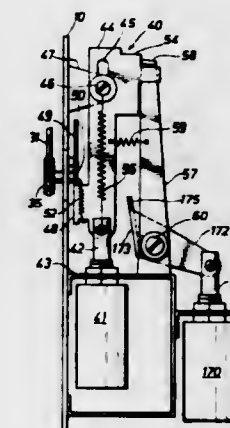
Nelson H. Patton, Jr., Houston, Tex., assignor to Electronic Laboratories, Inc.

Filed Oct. 17, 1969, Ser. No. 867,252

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242—201

9 Claims



For use with tape-recording equipment preferably using a cassette which has a pair of reels and a magnetic tape, the forward direction of movement of the tape being the record direction and the reverse direction being the rewind or playback direction, the apparatus including electric actuators which pull in and lock the tape-recording apparatus in either the record or the playback mode, the position being held without the continued application of electrical power to the electric actuators, and further including a release electric actuator which unlatches the record and playback actuators, and an interlock system preventing actuation of both modes of operation.

3,612,434

TAPE UNIT DRIVE MECHANISM

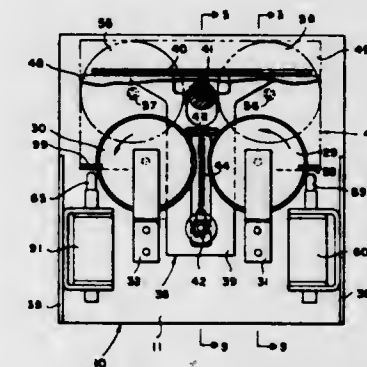
Richard M. Johnson, Dallas, Tex., assignor to International Computer Products, Inc., Addison, Tex.

Filed Mar. 2, 1970, Ser. No. 15,581

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242—204

14 Claims



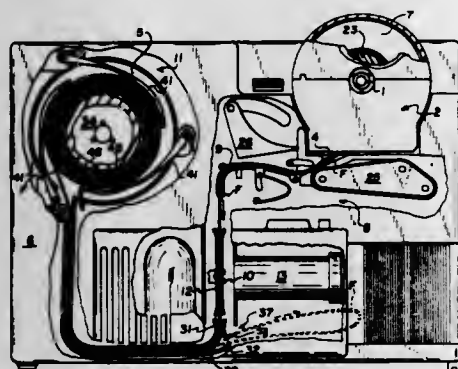
A tape unit for cassette-loaded magnetic tape includes a pair of drive wheels including projecting spindles for driving engagement with the cassette spools. The spindles are braked by a brake member which frictionally engages the drive

wheels. Drive shafts, for selective driving engagement with the drive wheels, are rotatably mounted on a pivot frame which also supports the respective drive motors. Solenoid plungers selectively rock the pivot frame to engage one or the other of the drive shafts with a respective drive wheel; and cam means associated with the pivot frame disengage the brake in either drive position.

3,612,435
SAFETY DEVICE FOR A MOTION-PICTURE PROJECTOR HAVING AN ENCLOSED TAKEUP MECHANISM

Robert J. Roman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,406
Int. Cl. B11b 15/32; G03b 1/04
U.S. Cl. 242-205

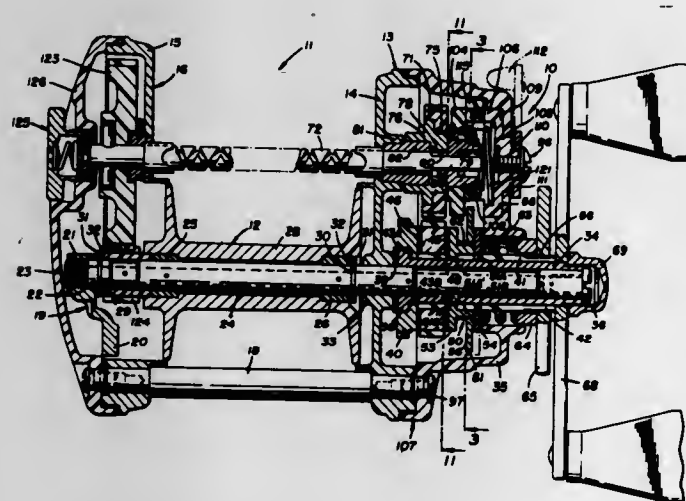
6 Claims



A motion-picture projector having an enclosed takeup mechanism is provided with a safety device which avoids film damage and alerts the projector operator if the takeup mechanism malfunctions. A film guiding passageway leading to the film takeup mechanism is provided with an aperture through which film may escape to the exterior of the projector housing when the film is caused to buckle in a takeup malfunction.

3,612,436
FREE SPOOL MECHANISM
Henry G. Shakespeare, and Gerald Dale Harrington, both of Kalamazoo, Mich., assignors to Shakespeare of Arkansas, Inc., Fayetteville, Ark.
Filed June 23, 1969, Ser. No. 835,639
Int. Cl. A01k 89/02
U.S. Cl. 242-216

10 Claims

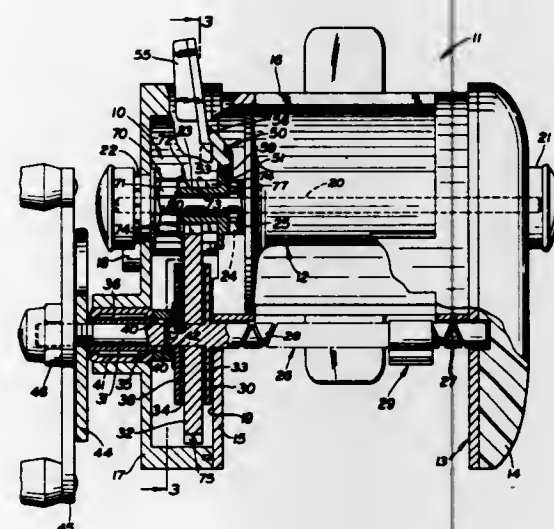


A free spool mechanism for a fishing reel. The free spool mechanism employs a clutch by which a driving connection between two rotatable members in the drive train operatively joining the crank and line spool can be selectively disengaged and automatically reengaged upon rotation of the crank. The clutch has opposed, interfitting clutch elements, one

mounted to rotate with one member of the drive train and the opposed clutch element mounted to rotate with another member of the drive train. A throwout means is selectively operative to separate said clutch elements for disengaging the driving connection therebetween. The throwout means also maintains the clutch elements separated until a trip means operates in response to rotation of the crank to reengage the driving connection between the clutch elements. The trip means may be provided with a finger mounted for resilient movement through a predetermined range. Because of the resilient mounting, even interaction of the finger with the throwout means while the throwout means is being actuated to separate the clutch elements does not block the clutch elements in engaged position and/or result in untimely reengagement of the clutch elements. This desirable result obtains irrespective of whether or not the reel is provided with an antireverse mechanism. Nevertheless, predetermination of the range through which the finger is yieldingly movable assures reengagement of the clutch elements, when desired.

3,612,437
FREE SPOOL MECHANISM
Franze E. Allebach, and Lester H. Courtney, both of Fayetteville, Ark., assignors to Shakespeare of Arkansas, Inc., Fayetteville, Ark.
Filed July 14, 1969, Ser. No. 841,331
Int. Cl. A01k 89/00
U.S. Cl. 242-216

3 Claims

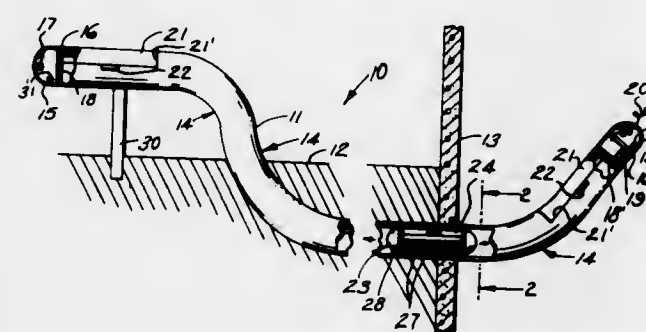


A free spool mechanism for a fishing reel. The free spool mechanism employs a clutch by which a driving connection between two rotatable members in the drive train operatively joining a crank and line spool can be selectively disengaged and automatically reengaged upon rotation of the crank. The clutch has opposed, interfitting clutch elements, one mounted on a pinion and the opposed clutch element mounted on said line spool. The pinion is mounted to be not only rotatable but also axially translatable. A shift means selectively translates the pinion to disengage the clutch elements, the pinion being retained in its translated position by gripping means when the clutch elements are separated. Irrespective of whether the clutch elements are engaged or disengaged, the pinion continuously meshes with a drive gear operatively connected to revolve in response to rotation of the crank. The teeth on the pinion and drive gear are of the helical variety and the helical teeth on the pinion are selected to present a hand such that the driving connection between the teeth on the pinion and the drive gear occurs only on the sides of the pinion teeth distal with respect to the clutch element mounted on the pinion when the crank is rotated to retrieve line. As such, reengagement of the clutch elements is occasioned solely by a component of the pressure applied by the teeth on the drive gear against the teeth on the pinion.

3,612,438
PNEUMATIC TRANSPORT APPARATUS
Charles Herndon, 9 John, Shelbyville, Ind.
Filed Nov. 6, 1969, Ser. No. 874,667
Int. Cl. B65g 51/32

U.S. Cl. 243-19

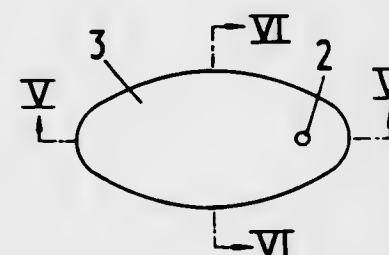
2 Claims



A device for transporting mail in cities, suburbs, and rural districts. This device utilizes fins in order to stabilize it in travel within hollow rigid tubes which extend underground. The transport vehicle within the tubes is of such structure so as to easily navigate turns in the tube and included on the vehicle are flexible rings which engage the interior surface of the tube so as to cause little or no loss of air compression.

3,612,439
STATIC VENTS FOR AIRCRAFT
Philip John Wingham, Bath, England, assignor to Avimo Limited, Taunton, Somerset, England
Filed May 1, 1969, Ser. No. 820,885
Claims priority, application Great Britain, May 2, 1968, 20800/1968
Int. Cl. B64c 43/02
U.S. Cl. 244-1 R

2 Claims



Certain aircraft instruments are dependent on static pressure readings derived from a static vent. It is necessary for accuracy that the reading at the static vent shall be independent of airspeed. In order to enable this to be achieved there is provided an aircraft or part thereof including a static vent, the smooth aerodynamic shape of the aircraft or part being modified locally in the region of the vent to modify the airflow thereover in operation so as substantially to compensate the position error arising from variation in Mach number.

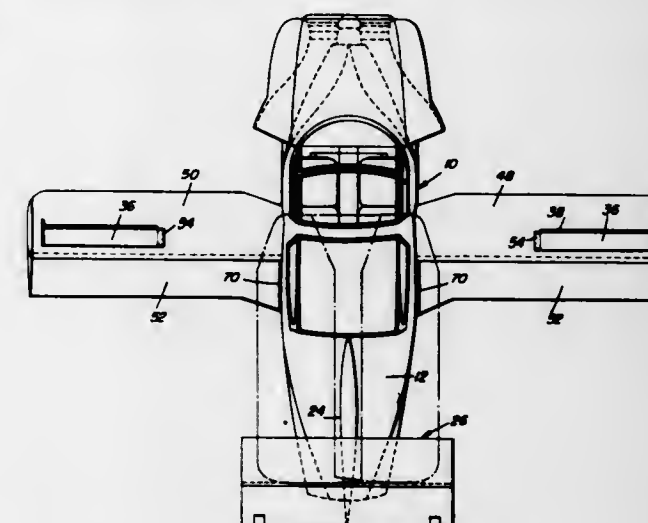
3,612,440
WARP ACTION SPOILER PLATE AILERON AND COMBINED AIRPLANE AND AUTOMOBILE
Richard A. Strong, 6106 Hope Drive, Washington, D.C.
Filed Sept. 4, 1969, Ser. No. 855,084
Int. Cl. B64c 37/00

U.S. Cl. 244-2

9 Claims

The invention relates to an aircraft having roadability features and includes wing structures which fold from operative positions to inoperative positions nested within the body of the aircraft.

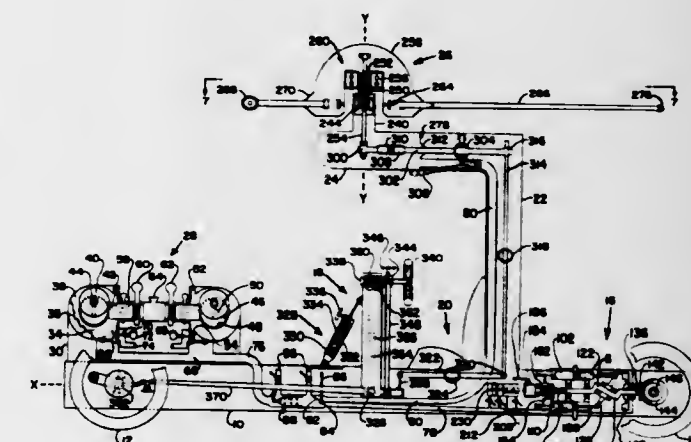
The wing has a warp action spoiler plate aileron in it and has a full span flap which, with the wing, may be swung into



3,612,441
COMBINED LAND AND AIR VEHICLE
John Abramopoulos, 24-29 42nd St., Long Island City, N.Y.
Filed May 12, 1969, Ser. No. 823,639
Int. Cl. B64c 37/00

U.S. Cl. 244-2

7 Claims



A land air vehicle comprising a chassis in which is journaled a pair of front steerable wheels and rear driven wheels, a superstructure mounted to said chassis journaling a helicopter rotor assembly, a compressor for creating a supply of pressurized air, a pneumatic motor coupled to the rear wheels, which motor is driven by the compressed air, and a jet propulsion system coupled to the rotor assembly also driven by said compressed air. The vehicle includes control means for selectively operating one or the other of the pneumatic motor or jet propulsion system in manual or automatic operation.

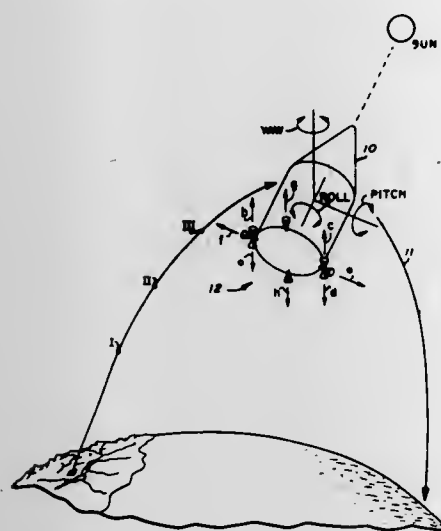
3,612,442
FLUIDIC PROPORTIONAL THRUSTER SYSTEM
Dean M. Chisel, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Apr. 3, 1969, Ser. No. 812,998
Int. Cl. F42b 15/18

U.S. Cl. 244-3.22

2 Claims

A proportional thruster system utilizing a fluidic vortex apparatus as means for controlling the continuous flow of gases supplied to a plurality of thrusters in response to detected vehicle attitude error signals. Continuous variable thrust for

attitude control applications is provided by the flow of gas to a plurality of thruster nozzles through modulated vortex ele-



ments. The thruster system is responsive to electronic or fluidic sensed attitude error, sensors, and logic.

3,612,443

THRUST-PRODUCING GYRO SYSTEM

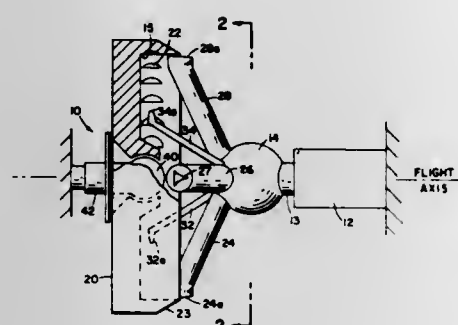
William W. Stripling, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed July 3, 1969, Ser. No. 838,814

Int. Cl. B64c 15/04; F42b 15/02, 15/18

U.S. Cl. 244-3.2

6 Claims



A thrust-producing gyro system for attitude control of missiles. The gyro system guides a missile along a path determined by the attitude of a space-oriented rotating wheel without using intermediate amplifiers. The gyro system includes a hot gas source that supplies gas to a housing enclosing a plenum chamber. The chamber has a pair of tubular members radially disposed for providing gas flow to the inner surface of a high-momentum wheel for rotation thereof. Additional tubular members extend radially from the plenum chamber to terminate adjacent the interior annular surface of the high-momentum wheel and provide gas flow which is exhausted from the tubes at ports in the missile skin adjacent the end of each tube. The output gases spin the wheel at a high momentum. The rotating wheel covers a portion of each tube outlet so that relative motion between the missile and wheel varies the gas escaping from each tube, increasing the gas escaping from one port while decreasing the gas escaping from an opposing port, and thereby provides a restoring force to the missile.

3,612,444
CONTROLLED CIRCULATION STOWABLE ROTOR FOR V/STOL AIRCRAFT

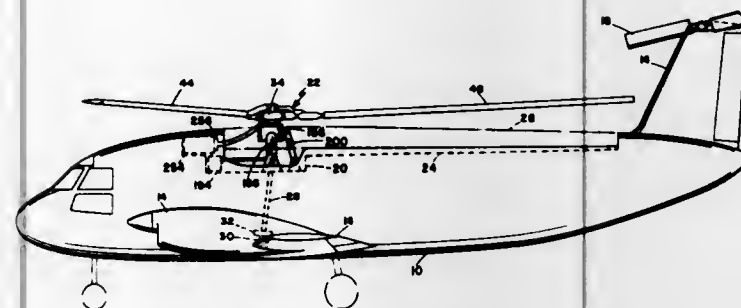
Peter F. Girard, La Mesa, Calif., assignor to Ryan Aeronautical Company, San Diego, Calif.

Filed Nov. 10, 1969, Ser. No. 875,226

Int. Cl. B64c 27/22

U.S. Cl. 244-7

16 Claims



A stoppable helicopter-type rotor is provided with means to blow air angularly outward toward the leading and trailing edges, above and below each rotor blade. The rotor includes means to stop and fold the blades and stow the folded structure in an enclosure in an aircraft, the air blowing being used during transition between vertical and horizontal flight modes to spoil the lifting effect of the blades during stopping of rotation of the rotor and so eliminate the blade-bending loads which are a major problem with stoppable rotors.

3,612,445

LIFT ACTUATOR DISC

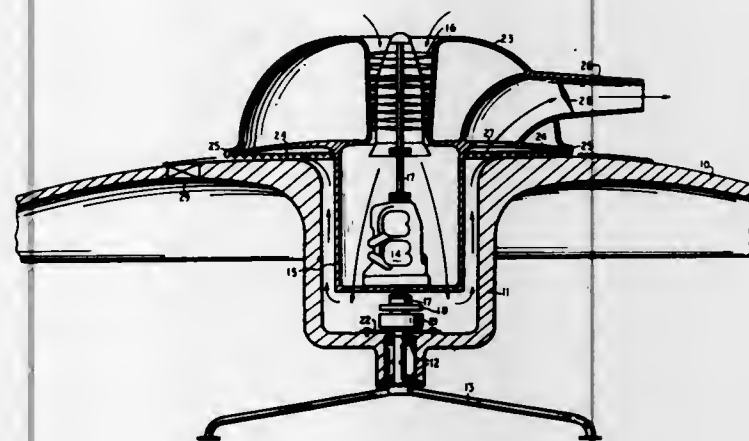
Duan Arthur Phillips, 123 Marshall St., Kotara Heights, New South Wales, Australia

Filed Nov. 5, 1968, Ser. No. 773,462

Int. Cl. B64c 29/00

U.S. Cl. 244-12 C

11 Claims



A machine such as an aircraft in which lift is produced by directing a fluid such as air in a radial direction along the surface of a disc which is rotated about its polar axis.

3,612,446

MEANS AND METHOD FOR PREVENTING THE FORMATION OF AUDIBLE FREQUENCIES IN FLUIDS PASSING OVER AN AIRFOIL SECTION

Herbert A. Lebert, 8 Corte Dorado, Millbrae, Calif.

Filed Oct. 10, 1969, Ser. No. 865,305

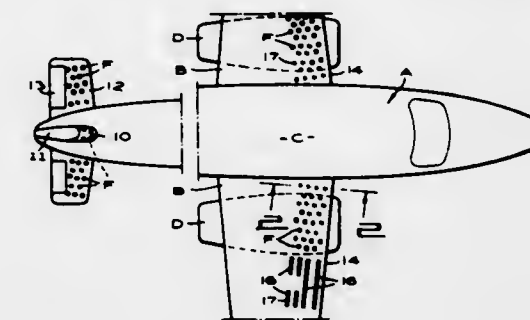
Int. Cl. B64c 3/04

U.S. Cl. 244-35

8 Claims

Means and method for preventing the formation of audible

frequencies in fluids passing over an airfoil section in which the potential audible frequencies are converted into inaudi-



ble frequencies at the source of the fluid disturbance with the airfoil section.

3,612,447

EXTERNAL SURFACE STRUCTURE FOR HYPERSONIC VEHICLES

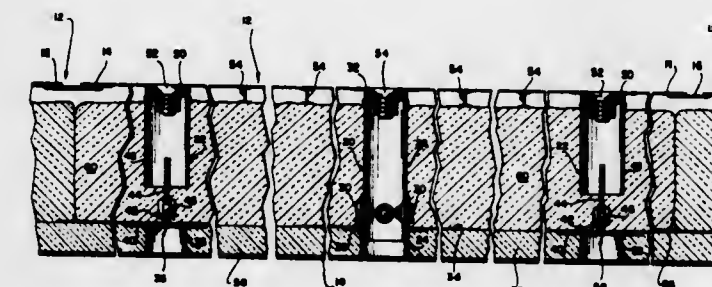
Gail S. Newsom, Studio City, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 2, 1969, Ser. No. 788,393

Int. Cl. B64c 1/38

U.S. Cl. 244-117

15 Claims



An external surface structure construction is disclosed which is intended to be utilized in hypersonic vehicles such as aircraft. This structure includes a plurality of panels spaced from the substructure of the vehicle and located adjacent to one another so that the adjacent edges of these panels overlap. Each of the panels is supported on the substructure by a rigid mounting member and by at least one flexible mounting member permitting expansion of each panel about the rigid mounting member employed with it. Preferably a plurality of these flexible mounting members are used with each panel. The panels are preferably as large as can be conveniently handled during assembly and maintenance operation.

3,612,448

AERIAL DELIVERY SYSTEM

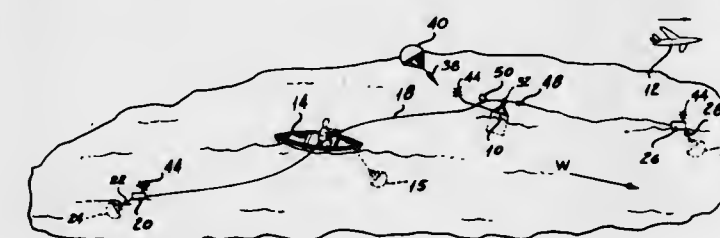
Leonard P. Frieder, Clarks Green, Pa., assignor to Gentex Corporation, New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,278

Int. Cl. B64d 1/02

U.S. Cl. 244-138 R

12 Claims



An aerial delivery system for delivering a load of supplies or the like to a boat at sea from an aircraft in which respective buoyant weights carrying marker lights and having small parachutes attached thereto are secured to the ends of a

buoyant guideline which slidably receives a ring attached to the load for movement to a position between spaced stops on the line at a location intermediate the line ends. A larger parachute attached to the load automatically releases upon impact of the load on the water. The auxiliary parachutes attached to the weights act as sea anchors which are automatically released after a period of time in the water. In use of the system the first weight and then the load and then the second weight are sequentially released from the aircraft along a flight path upwind of the boat.

3,612,449

BOUNDARY LAYER CONTROL PARACHUTES

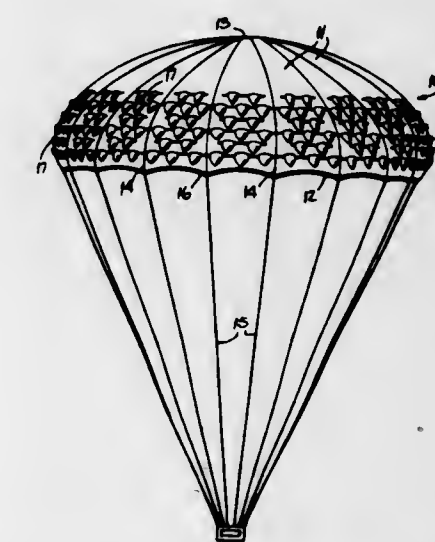
Oscar W. Sepp, 1 Mansion Drive, Morgan Island, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,401

Int. Cl. B64d 17/02

U.S. Cl. 244-145

21 Claims



A parachute canopy has narrowing vents arranged annularly in ascending tiers uniformly about the canopy and covering a substantial portion of its radial length; the surface of the canopy beyond the mouth of the vent acts as an airfoil.

3,612,450

FOLDABLE KITE

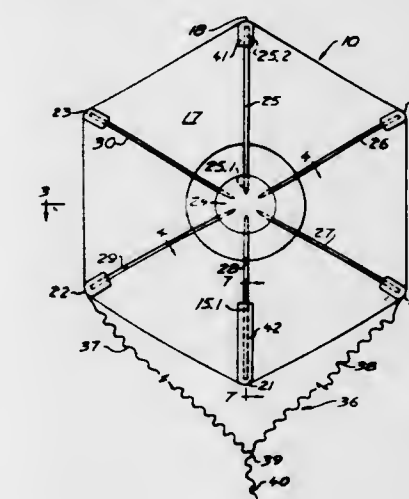
John Sinka, 3823 East Hasting, North Burnaby, British Columbia, Canada

Filed Sept. 15, 1969, Ser. No. 857,693

Int. Cl. B64c 31/06

U.S. Cl. 244-153

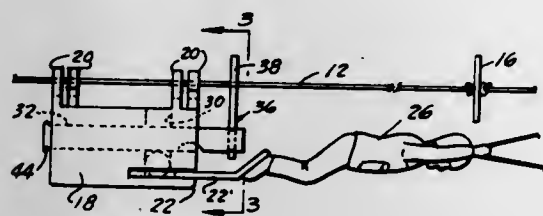
5 Claims



Kite with demountable framework of radial frame members secured in slots of a center disc. Cap screwed on core of disc clamps inner ends of frame members in disc. Lifting element with pockets accepting outer ends of frame members; when frame members assembled tightening of cap stretches lifting element taut on demountable framework.

3,612,451
PARACHUTE RELEASE DEVICE
 James N. Wharton, 1124 Carlissa Drive, Tallahassee, Fla.
 Filed Sept. 12, 1969, Ser. No. 857,381
 Int. Cl. B64c 31/06
 U.S. Cl. 244—155 R

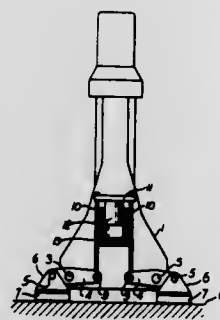
6 Claims



A parachute release device for use with a kite comprising a block member with means for detachably connecting it to a kite line, said block member having a horizontal slot therein for slidably receiving a flat member to which is attached a parachute and a parachute with said flat member having an opening therein and a ball member disposed in said opening, said block member having a vertically disposed slot therein with said ball member being disposed therein, a slidable pin member disposed in said block member above said vertically disposed slot and ball, with said pin member having a detent therein to receive said ball member therein, and a release wire member on said pin member adapted to contact a stop member on said kite line to permit said ball to enter said detent to release said flat member from said block member.

3,612,452
POWER HAMMER
 Pavel Harvanke, Brno, Czechoslovakia, assignor to Vyzkumny ustav tvarech Stroj a technologie tvareni, Brno, Czechoslovakia
 Filed Oct. 8, 1969, Ser. No. 864,581
 Int. Cl. F16f 15/00
 U.S. Cl. 248—20

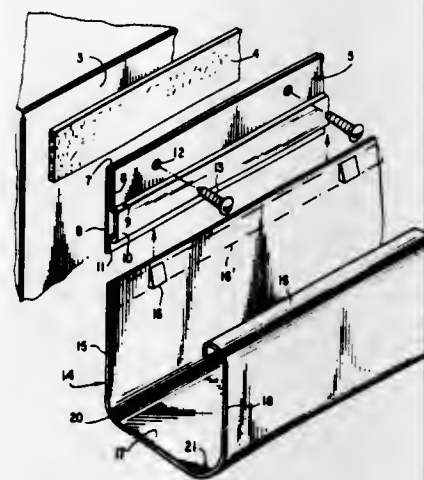
4 Claims



In a power hammer, and particularly in a mounting structure therefor, the power hammer has a frame carried by levers which in turn are carried by blocks mounted on a floor. The frame carries damping cylinders pistons which act on a shock-absorbing damping medium within the cylinders. A transmission extends between the levers and the pistons to cause the latter to tend to move into the cylinders to provide shock absorption by the damping medium in the cylinders when the ram of the hammer strikes against work carried by an anvil of the hammer. In this way, the frame is situated over and out of engagement with a floor which is protected against injury.

3,612,453
GUTTER SUPPORT AND TRIM MEANS FOR MOBILE HOMES AND THE LIKE
 Ernest C. Zimmer, R.D. #2, Wellsburg, N.Y.
 Filed Nov. 19, 1969, Ser. No. 878,130
 Int. Cl. E04d 13/06
 U.S. Cl. 248—48.2

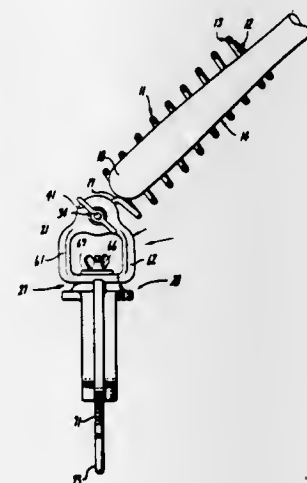
10 Claims



A gutter support and trim means for mobile homes and the like comprising an elongate attaching strip of metal or other suitable material having parallel and juxtaposed backwall and front wall portions, one of said wall portions having a flange or lip along its lower marginal edge directed toward and in close proximity to the other of said wall portions for yieldably but securely receiving in snap-fitting engagement a gutter backwall having disposition means thereon for behind said flange or lip and further including a strip of sealing material or the like disposed between a sidewall of the mobile home or the like and the attaching strip. Screws or other suitable fastening means hold the attaching strip to the mobile home or the like.

3,612,454
FISHING ROD HOLDER
 Frank F. Linn, 3049 W. 8th, Los Angeles, Calif., assignor to Frank F. Linn, Jr.
 Filed Sept. 11, 1969, Ser. No. 857,009
 Int. Cl. A01k 97/10; E04h 12/22
 U.S. Cl. 248—42

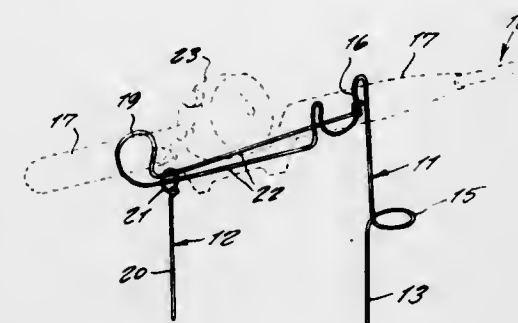
5 Claims



A universally mounted resilient helix dimensioned for receipt and support of the butt of a fishing rod in combination with a quick detachable mounting means for selectively stationing the holder for and during fishing.

3,612,455
FISHING POLE HOLDER
 Charles G. Cole, and Judy I. Cole, both of P. O. Box 147, Sheldon, Mo.
 Filed Dec. 1, 1969, Ser. No. 881,262
 Int. Cl. A01k 97/10; A45f 3/44
 U.S. Cl. 248—44

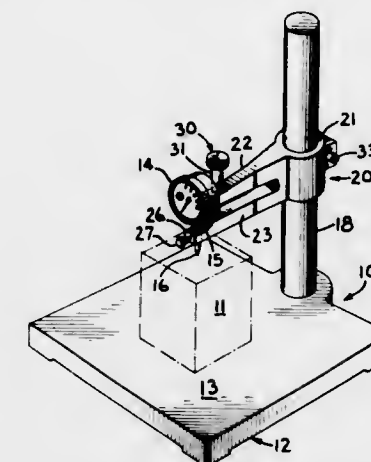
2 Claims



A holder for supporting a fishing pole, the holder comprising a pair of wire members which are bent into particular shapes and attached together to form a unitary assembly, each wire having one end extended downwardly to form a leg which can be inserted into the ground or sand while the opposite ends of the wires serve to support the fishing pole thereupon during fishing.

3,612,456
SUPPORT DEVICE FOR MEASURING GAGES
 William V. Palmer, 11841 Franklin Ave., Franklin Park, Ill.
 Filed Oct. 3, 1969, Ser. No. 863,438
 Int. Cl. A47g 29/00; G01b 5/28
 U.S. Cl. 248—125

5 Claims



A support device for measuring gages is provided, which accurately and securely locates a measuring gage in a desired position. The device comprises an integrally formed fork-shaped member, adapted to be mounted on an upstanding column and having two tines, one of which supports the measuring gage. An adjusting screw, carried by the other tine deflects the gage-supporting tine up or down over a small range of distances for accurately locating the gage plunger in a desired position. Coarse adjustments of the gage plunger may be made by moving the gage on its tine support, and also by moving the gage support device upon the column.

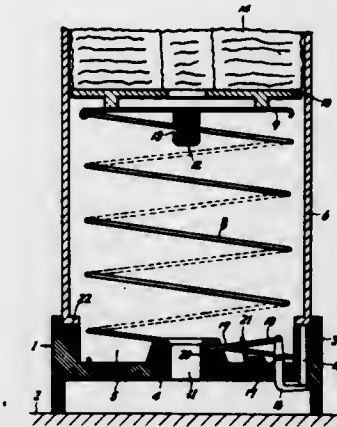
3,612,457
DEVICE FOR RECEIVING SLIVER IN CAN
 Takashi Morikawa, Amagasaki, and Minoru Endo, Ibi-gun, both of Japan, assignors to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Hara Shokki Seisakusho
 Filed Jan. 28, 1970, Ser. No. 6,477
 Claims priority, application Japan, Feb. 10, 1969, 44/9935
 Int. Cl. B65g 1/16

U.S. Cl. 248—128

3 Claims

A device for supporting a sliver as it is fed into a can. A can support is positioned in a sliver-feeding location, and is

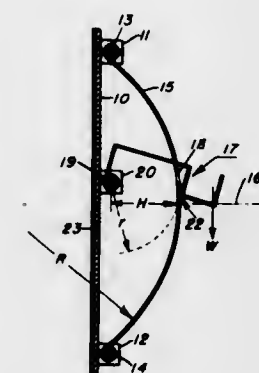
adapted to support a sliver can. A spring supports a sliver-receiving plate within the sliver can, and in turn is supported on the can support. A sensing element is provided in the can support which senses the presence or absence of a can, and is



coupled to means for retaining the spring within the support under compression when no can is present on the support, and for releasing the spring to urge the plate upwardly within a can when a can is positioned on the support.

3,612,458
HANGER
 Bakari Mwanyoha, 40 Washington St., East Orange, N.J.
 Filed Jan. 2, 1970, Ser. No. 36
 Int. Cl. A47f 7/14
 U.S. Cl. 248—205 A

5 Claims



A hanger having an arcuate member attached to a mounting plate, which plate is secured to a surface by an adhesive. The load is carried by a hook member arranged to apply a pressure to the arcuate member, which pressure varies with the load weight and is transmitted to end portions of the mounting plate.

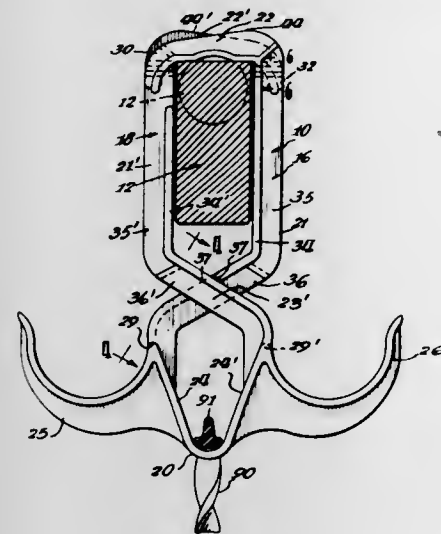
3,612,459
MOLDED HANGER
 Leroy C. Walls, Ogden Dunes, Ind., assignor to Lewals, Inc.
 Filed Apr. 25, 1969, Ser. No. 819,401
 Int. Cl. A47f 5/00; A47b 15/00

U.S. Cl. 248—215

13 Claims

A hanger formed of tough resilient material such as polycarbonate or nylon-type plastic has a pair of legs joined at a bight or hinge portion, which legs have portions which cross over each other short of said bight portion and have other portions which terminate in inwardly directed juxtaposed end portions which are adapted to transmit the load on the hanger to a suspended support. The juxtaposed end portions of the various embodiments have latching means which when operative serve to resist unwinding or twisting of said legs during excessive loading of the hanger. Certain embodiments of the hanger have interengaging means on each arm which resist unwinding or twisting of said legs. Hooks or

other article-engaging means are formed integrally with the legs in the vicinity of the hinge portion. A separate hook



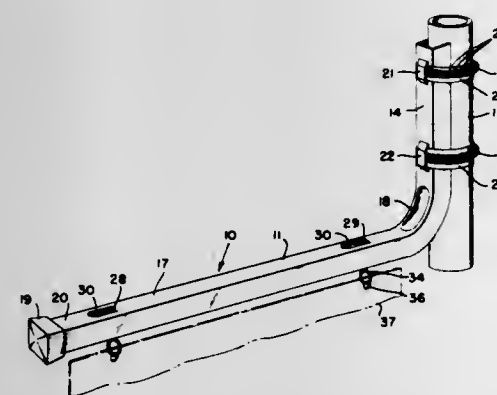
member may be provided for suspended attachment to the bight or hinge portion of the hanger.

3,612,460 SIGN SUPPORT

Harvey J. Smith, Greensboro, N.C., assignor to Modern Metal Products Company, Inc., Greensboro, N.C.
Continuation-in-part of application Ser. No. 749,124, July 31, 1968, now abandoned. This application Dec. 4, 1969, Ser. No. 881,967

Int. Cl. G09f 7/16
U.S. Cl. 248-221

6 Claims



A pole-mounted sign support in which an L-shaped channel is secured to a pole along one leg and a sign is supported along the other horizontal leg with means along one leg for supporting a sign to a pole and means along the horizontal leg for supporting a sign thereon.

3,612,461 LIGHT FIXTURE SUPPORTING CLIP

William R. Brown, Carol Stream, Ill., assignor to Mineralac Electric Company, Chicago, Ill.

Filed Apr. 20, 1970, Ser. No. 29,953

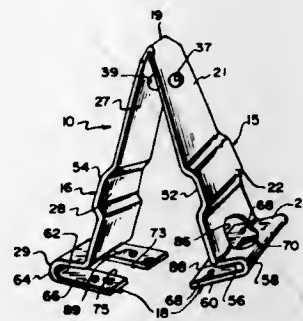
Int. Cl. E04b 5/52; E06b 3/54

U.S. Cl. 248-317

10 Claims

The clip includes first and second metal strip sections which are formed by bending a metal strip about a centrally located fold line and which are formed with a configuration to closely fit about opposite sides of an inverted T-shaped grid member of a false ceiling supporting structure in a building structure. The lower end portions of the strip sections extend laterally below the grid member in overlapping relationship to each other with one end portion having a square opening and the other end portion having a slot aligned with the opening. A stud having a head and a shank is received in the opening with the head disposed between one of the end portions and the bottom side of the grid member and with

the shank extending through the opening and the slot. The upper end portion of each of the strip sections has a hole therein and the holes register with each other to form an aperture through which a drop wire is received for securing one end of the wire to the clip. The other end of the drop



wire is secured to the building structure so that a light fixture, mounted by a threaded fastener to the stud extending from the clip, is supported by the building structure solely through the clip and drop wire and does not bear upon or load the grid member.

3,612,462 INSTRUMENT MOUNT ASSEMBLY

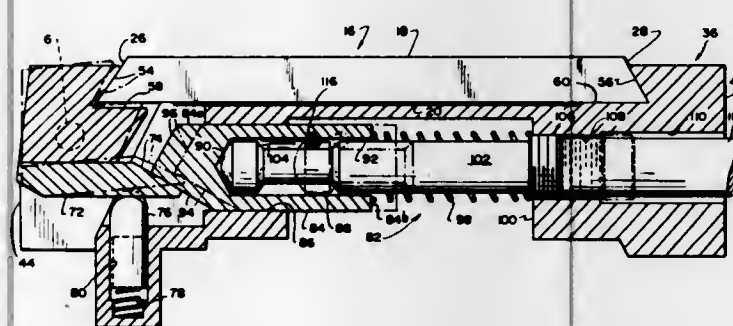
Paul C. Mooney, Northbrook, and Howard Emmett Shelley, Niles, both of Ill., assignors to Quick-Set Incorporated

Filed Aug. 26, 1969, Ser. No. 853,099

Int. Cl. A47g 29/00; F16m 1/100

U.S. Cl. 248-346

16 Claims



An improved instrument mount assembly including a plate and base for securing a sighting or photographic equipment to a support, the assembly being characterized by a pivoted clamp bar in the base, which, when engaged by an instrument bearing the plate element thereon, automatically retracts to an instrument retaining position. A locking latch is associated with the clamp bar to lock the same to tightly clamp the plate and hold the instrument against any movement relative to the mount following emplacement of the sighting or camera instrument thereon.

3,612,463

WEDGING DEVICE FOR PALLET LOADS

Andrew Grant, 81 Drakefield Road, Markha, Ontario, Canada

Filed Sept. 2, 1969, Ser. No. 854,450

Claims priority, application Canada, Feb. 6, 1969, 42,123

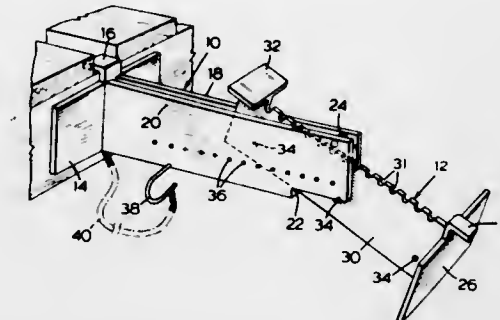
Int. Cl. F16f 15/04

U.S. Cl. 248-354 P

6 Claims

A device for wedging pallet loads comprising a two-part extensible brace, a first part of the device consisting of a pair of side-by-side parallel plates fixed together along their bottom edges and having an end plate carrying means for securing the first part to the pallet, the second part of said device being a single plate member fitted between the two side

plates of the first part. The first and second parts are adapted to cooperate with one another by means of a releasable pin



gravity-free environment. A plurality of multilobed support disks are rotatably mounted on the surface to define glide paths. A glide plate, to which the person or other body to be stably oriented is attached, includes a clamping disk having a stem which is movable within the glide paths when the clamping disk is in its released position. At the location at which it is desired to stably orient the person or other body, the clamping disk is moved to its clamped position, thereby holding the glide plate and thus the person or other body in stable orientation with respect to the surface.

3,612,466

RETRACTABLE LOCKING DEVICE

Arthur James Arnold, Doncaster, England, assignor to Container Twistlocks Limited, Doncaster, England

Filed Aug. 29, 1969, Ser. No. 854,221

Int. Cl. B65j 1/22

U.S. Cl. 248-361 R

2 Claims

and complementary coupling to secure adjacent portions of a pallet load.

3,612,464

BRUSH SUPPORT HOOK

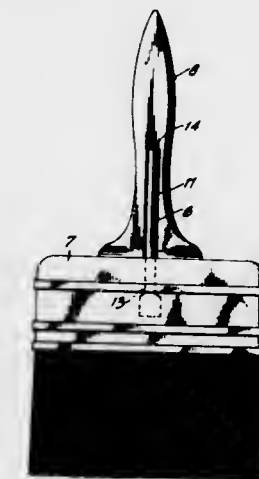
John L. Harrah, 79 West Glendale, Bedford, Ohio

Filed Aug. 4, 1969, Ser. No. 855,066

Int. Cl. A46b 17/00

U.S. Cl. 248-360

1 Claim



A one-piece wire hook for use on paint, varnish, whitewash, kalsomining and associated brushes. A wire hook that will assist in their proper care and one to prevent contorting or sloping of the bristles.

3,612,465

SUPPORTING APPARATUS FOR USE IN A GRAVITY-FREE ENVIRONMENT

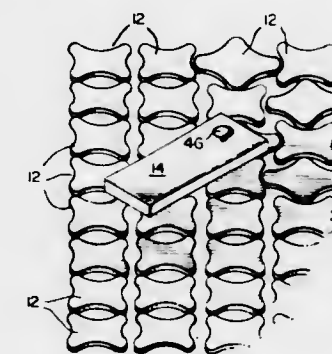
Lloyd O. Barrett, 340 N. Stone St., Deland, Fla.

Filed Aug. 1, 1969, Ser. No. 846,809

Int. Cl. A63c 19/10; A63j 5/00; B65j 1/22

U.S. Cl. 248-361 R

11 Claims



Apparatus for stably orienting an animate or inanimate body with respect to a surface, particularly suited for use in a

A locking device for a vehicle platform comprising a locking member with a horizontal lug adapted to engage in a slot in a container on the platform in a first position and which can be released from locking engagement by twisting the locking member and then lowering the same to a second position.

3,612,467

POSITIONING DEVICE FOR STRUCTURAL MEMBERS

Kiyoshi Terai, Ashiya-shi, and Tatsumi Kurioka, Kobe-shi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Ikuta-ku, Kobe, Japan

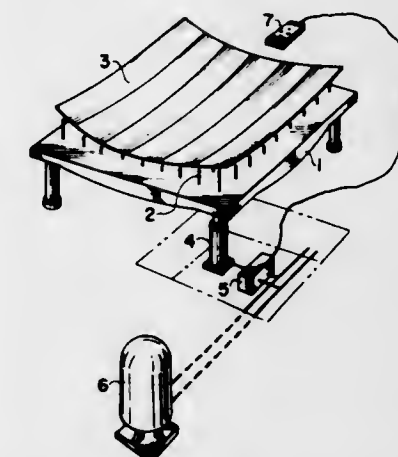
Filed Mar. 27, 1969, Ser. No. 811,050

Claims priority, application Japan, Apr. 3, 1968, 43/21978

Int. Cl. F16m 13/00

U.S. Cl. 248-396

2 Claims

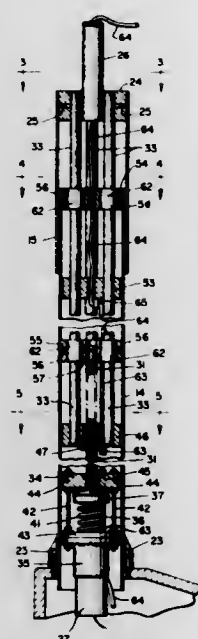


A positioning device in the form of a steel surface plate is supported by individual supporting means, each capable of raising or lowering the plate and control means to operate the spacing means individually or in various combinations for inclining at various angles to facilitate assembling or welding of structural members carried on the upper surface thereof.

3,612,468
HEIGHT ADJUSTING MEANS FOR A SURGICAL MICROSCOPE
 Josef K. Hoppl, and Helmut A. Golda, both of Lindenhurst, N.Y., assignors to J. K. Hoppl Corporation, Lindenhurst, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,751
 Int. Cl. F16m 11/04
 U.S. Cl. 248—405

6 Claims

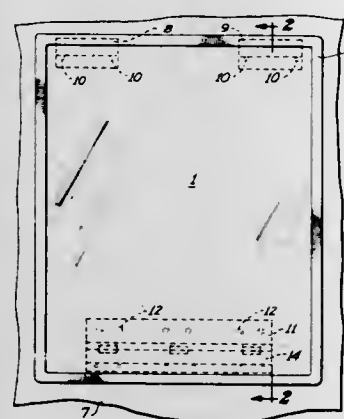


An improved surgical microscope particularly useful in ophthalmic surgery of the type comprising a base member, an adjustable support column extending upwardly therefrom and means projecting from the support column to suspend the optical components of a microscope and related auxiliary equipment above the operating area. The improvement resides in a novel arrangement of structural elements providing an adjustable support column which is advantageously integrated with other structural components of the microscope.

3,612,469
THEFT-PROOF WALL-HUNG MOUNTING FOR MIRRORS AND THE LIKE
 Harry F. Dennis, Cincinnati, Ohio, assignor to The F. H. Lawson Company, Cincinnati, Ohio

Filed Oct. 10, 1969, Ser. No. 865,460
 Int. Cl. A47f 7/14
 U.S. Cl. 248—475 R

4 Claims



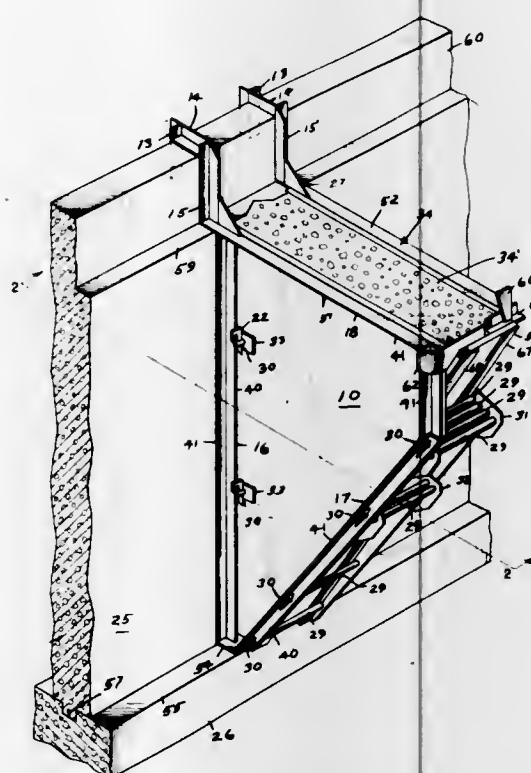
A wall-hung mirror frame or the like adapted to be suspended from one or more frame engaging hangers, the rear of said frame being provided with a resilient locking bracket having an intumed flange selectively engageable with a series of louvers formed in a catch hanger affixed to the wall, the parts being positioned so that the locking bracket and catch hanger, when interengaged, will fixedly secure the frame so that it cannot be removed from the frame hangers.

3,612,470
WALL FORM
 Tony Car, Troy; Mike Milkovich, Allen Park, and Ante Ivošic, Allen Park, all of Ill., assignors to Tru-Wall Construction Co., Inc., Southfield, Mich.

Filed Aug. 13, 1968, Ser. No. 752,238
 Int. Cl. E04g 11/00

U.S. Cl. 249—19

3 Claims

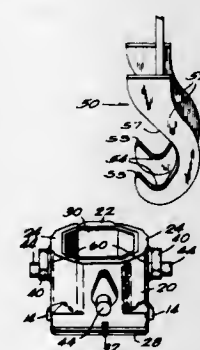


The forms disclosed herein are intended for use in making porch foundations. The form is especially suitable for use with precast wall design. The forms are made up of two generally right triangular shaped side members each having a hook at one side of each of the right angles, suitable to be hooked over an existing foundation wall. One end of the form adjacent one of the acute angles is suitable to rest on a footing that supports the wall. A unique arrangement of the forms made up of an edge and clamp arrangement is provided which rigidly holds the side members together.

3,612,471
TURNABLE HOT TOP AND LIFTING FORK
 Donald C. Atkinson, Ellwood City, Pa., assignor to Universal Refractories Corporation, Milwaukee, Wis.
 Continuation of application Ser. No. 668,010, Sept. 15, 1967, now abandoned. This application Oct. 13, 1969, Ser. No. 865,937

Int. Cl. B22d 7/10
 U.S. Cl. 249—202

4 Claims



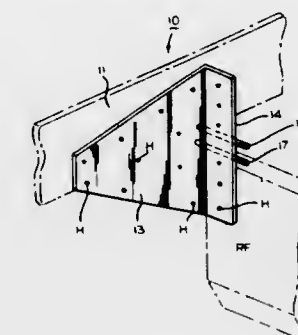
A hot top having a one-piece casing lined with a heat insulating lining and having a single-use refractory bottom ring assembly secured to the bottom of the casing to support the lining. The casing is provided with an elliptical lifting lug integral with the outside surface of each of the side and end

walls of the casing and a round turning trunnion integral with each of the lifting lugs. The casing is lifted by a lifting yoke having lifting surfaces corresponding to the surfaces of the lifting lugs.

3,612,472
GAUGE FOR CONCRETE STAIR CONSTRUCTION
 Henry Steigerwaldt, Jr., 6341 W. Peterson Ave., Chicago, Ill.
 Filed July 7, 1969, Ser. No. 839,193
 Int. Cl. E04g 13/00

U.S. Cl. 249—208

3 Claims

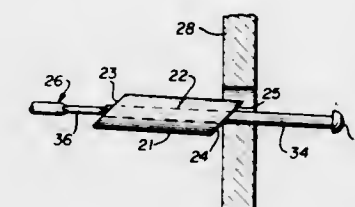


A gauge for concrete stair construction comprising a stringer extending in a direction corresponding to the rise and run of the completed stair, a plurality of flat gauge brackets secured to the stringer, each bracket having an edge extending in a direction, generally vertical, and bearing against the riser form, the bracket having spacer structure secured to the rear edge of the bracket and contacting the underside of the stringer and the upper edge of the riser form to hold same in place. The flat gauge brackets may be rocked in a vertical plane, so that the riser form may be given a desired amount of kick back.

3,612,473
CONE OR PLUG FOR FORM TIES
 James W. Franklin, P.O. Box 3646, Albuquerque, N. Mex.
 Filed Mar. 13, 1969, Ser. No. 806,858
 Int. Cl. E04g 17/06

U.S. Cl. 249—213

5 Claims



A spacer, cone or plug device for use with form ties to prevent escape of concrete which provides a resilient tubular body for closely engaging form ties and an angular end face to facilitate useage. The end face operates as a guide and self-finding element when the forms are erected; as a convenient gripping element when the device is removed from a poured wall; and, it further preserves an opening in the poured wall that may be easily filled. When used with break-back ties, the resilient device further facilitates the breaking away of tie ends.

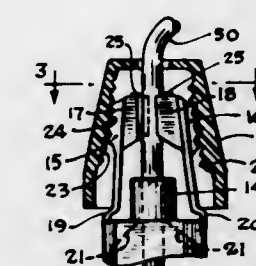
3,612,474
FLOW CONTROL DEVICE FOR FLEXIBLE TUBES
 Clair Lafayette Strohl, Jr., Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
 Filed May 9, 1969, Ser. No. 823,460
 Int. Cl. F16k 7/06

U.S. Cl. 251—9

5 Claims

A flow control device for flexible tubing to control and regulate the rate of flow of fluid through the tubing and comprising at least a pair of movable jaws engageable with the tubing and affixed to one member and a second member en-

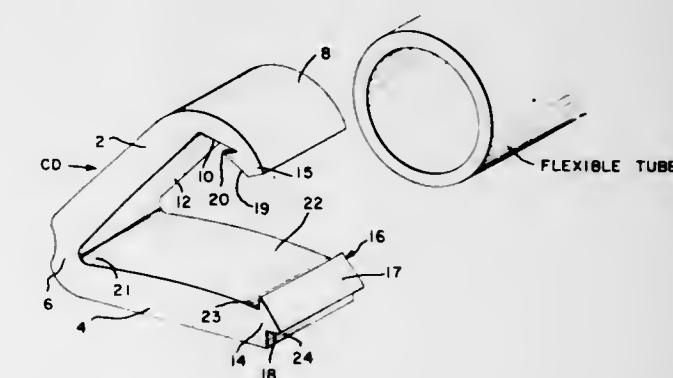
gageable with the jaws and movable along the longitudinal axis of the first member to thereby move the jaws into and out of engagement with the tubing when the second member



3,612,475
FLEXIBLE TUBE CLOSURE
 Leon Joel Dinger, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
 Filed Apr. 2, 1969, Ser. No. 812,811
 Int. Cl. F16k 7/04

U.S. Cl. 251—10

1 Claim



Tube closure devices comprising bendable members, each having a pair of arms connected together by integral hinges are disclosed. Coacting latch arrangements are disposed on the extending ends of the arms to latch the arms over sections of flexible tubes which are placed under compression via the closure devices. Raised floor sections on at least one of the arms serve to compress and sealingly close the tube such that residual pressures are provided in a closure. Alternate curved floor sections also assure a sealed closure and provide strain relief means in a closure where the flexible tubes join closure devices.

3,612,476
APPARATUS FOR ACTUATING CLOSURE ORGANS FOR HIGH PRESSURES

Anton Leitgeb, Aesch, Switzerland, assignor to Maschinenfabrik Burckhardt AG, Basel, Switzerland
 Filed May 22, 1969, Ser. No. 826,829
 Claims priority, application Switzerland, May 23, 1968, 7620/68

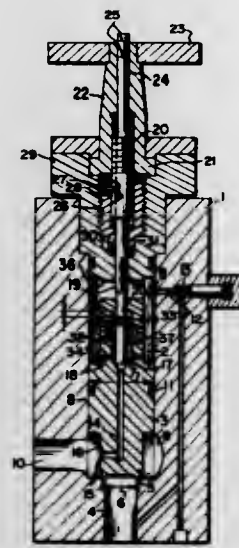
Int. Cl. F16k 31/383

U.S. Cl. 251—38

1 Claim

A piston moves within a bore in a valve housing to open and close an inlet and outlet port. One face of the piston is directly responsive to the pressure of a working fluid while the other face thereof is simultaneously responsive to the working fluid received through a diverting duct. A spindle is

directly connected to the piston to move the same. The piston is provided with a fluid relief duct operable by the



movement of the spindle to create a pressure differential on the faces of the piston to enhance movement.

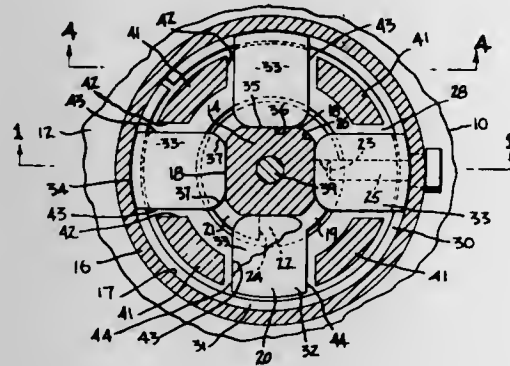
3,612,477 SELF-LOCKING VALVE WITH UNITARY LOCKING ELEMENT

George G. Allenbaugh, Jr., Rittman, Ohio, assignor to Akron Brass Company, Wooster, Ohio

Filed May 4, 1970, Ser. No. 34,058
Int. Cl. F16k 51/00

U.S. Cl. 251-77

12 Claims



A self-locking valve with means for preventing flow-induced movement of the flow control member, thereby releasably locking the valve at any desired setting. A unitary lock element, in the form of a plate, extends radially between a valve-operating shaft and a concentric arcuate wall of a fixed coaxial sleeve. A drive arm underlies the lock element and is affixed to the shaft for rotation therewith. A valve-adjusting member is mounted for rotation coaxially of the shaft and is provided with dependent leg portions which straddle the lock element and the drive arm to engage them simultaneously and maintain them in alignment or registry during the operative rotation of the valve. When the desired valve setting has been achieved, any flow-induced rotation of the shaft causes misalignment of the locking element with the drive arm and causes camming means on the shaft to displace the lock element into locking engagement with the arcuate wall surface so that the previously adjusted valve setting is not distributed.

3,612,478 VALVE

George A. Blazek, Hinsdale, Ill., assignor to Advance Valve Installations, Inc., Hinsdale, Ill.

Filed May 25, 1970, Ser. No. 39,987

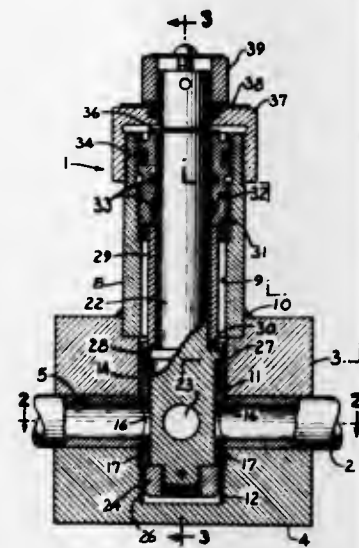
Int. Cl. F16k 3/22

U.S. Cl. 251-145

7 Claims

A valve of the type that may be installed in a pipeline without interruption of the service of the pipeline comprises

a valve body having a bore that intersects the pipeline, a non-rotatable resilient seal in the bore, and a valve stem rotatable in the seal for opening and closing the valve. Structure is provided for compressing the seal axially so that it expands radi-



ally against the perimeter of the pipe openings to form seals thereat. Bearings are carried by the housing for taking the thrust that is exerted against the stem in a direction axially of the pipeline.

3,612,479 DOUBLE SEAT VALVE

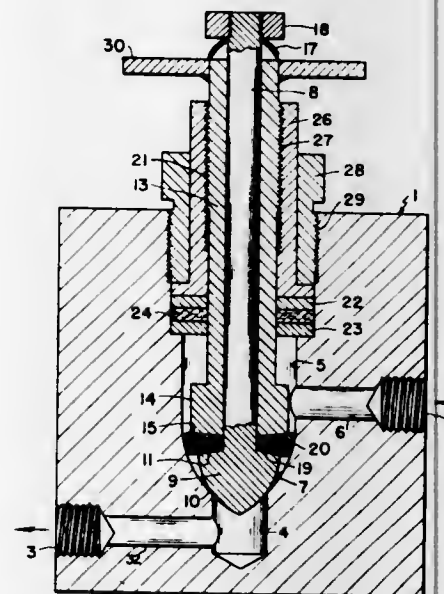
Charles W. Smith, Jr., Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed July 11, 1969, Ser. No. 840,991

Int. Cl. F16k 1/04, 3/16, 3/150

U.S. Cl. 251-176

5 Claims



A double seat valve having a hard seat for metering and initial closing and a soft or plastic seat for final sealing. The valve according to this invention has a two part stem. The inner stem terminates in a closure head for cooperating with a hard seat or boot. An outer stem is positioned concentrically and slideably about the inner stem and has a flanged end and face adjacent the back or base of the closure head. An annular plastic sealing means is positioned between the base of the closure head and the flange or face of the outer valve stem. A biasing means urges the two parts of the valve stem against the plastic sealing means. During closing the outer valve stem carries the inner valve stem and closure head against the boot to form the initial seal. Thereafter, the outer valve stem moves relative to the inner valve stem deforming the plastic sealing means out against the walls of the valve body.

ERRATUM

For Class 251-306 see:
Patent No. 3,612,483

3,612,480 FEED WHEEL FOR STRAP TENSIONING TOOL

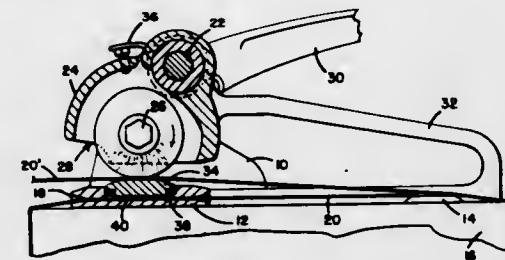
Warren H. Guy, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 21, 1970, Ser. No. 4,674

Int. Cl. B66f 1/00

U.S. Cl. 254-51

7 Claims



A feed wheel-type package-strap tensioning apparatus particularly adapted for use with nonmetallic strapping involves an improved tensioning wheel having effectively a rough metal surface for engaging the strapping and deforming under pressure so as to provide greater than line-contact with the strapping.

3,612,481 STRAP TENSIONING MECHANISM

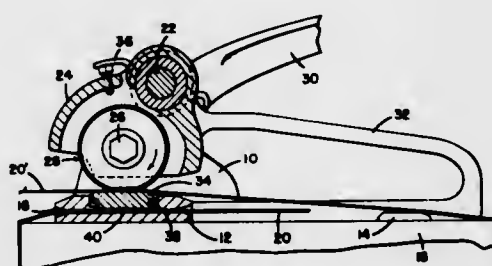
Warren H. Guy, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 17, 1969, Ser. No. 885,913

Int. Cl. B66f 1/00

U.S. Cl. 254-51

6 Claims



Feed wheeltype strap tensioning mechanism designed for providing a high tension on nonmetallic strapping without damaging the strapping. Instead of the normal line contact between the feed wheel and the strapping, the mechanism is arranged to provide an appreciable area of contact whereby the pulling and gripping force of the wheel is spread over a sufficient area of the strapping as to avoid damaging the same.

3,612,482 PORTABLE APPARATUS FOR APPLYING A PULLING FORCE TO STRUCTURES

Leonard Eck, McPherson, Kans., assignor to Kansas Jack Inc., McPherson, Kans.

Filed Jan. 16, 1970, Ser. No. 3,429

Int. Cl. B66f 3/24; B21d 41/02

U.S. Cl. 254-1

11 Claims

A portable apparatus for applying a pulling force to structures includes a base member having a standard mounted thereon and upstanding therefrom with the standard being connected to an anchor spaced from the base member. An extensible member has one end thereof pivotally connected to a fixed point relative to the base member and the other end pivotally connected to a lower portion of a leverage arm having an intermediate portion thereof pivotally mounted on the standard and a guide member is rotatably mounted on an upper portion of the leverage arm. A flexible member has one end secured to a selected portion of the structure to

receive the pulling force and the other end fixedly connected relative to the standard with an intermediate portion of the flexible member engaging the guide member whereby exten-

sion of the extensible member moves the leverage arm and the guide member mounted thereon to effect a pulling force in the flexible member thereby applying a pulling force to the structure.

3,612,483 VALVES WITH DEFORMABLE SEALING

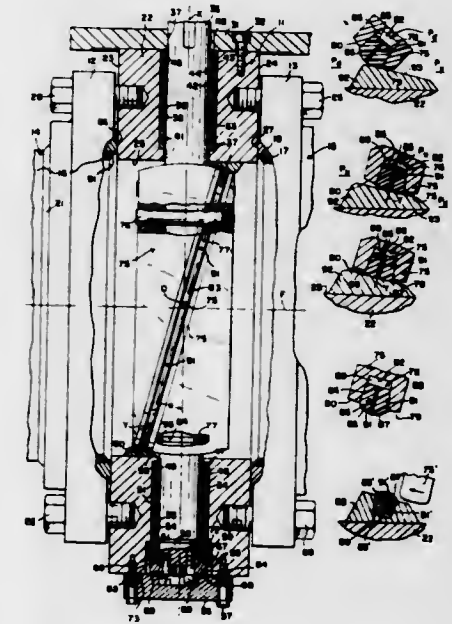
Eldert B. Pool, Pittsburgh, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 12, 1968, Ser. No. 720,941

Int. Cl. F16k 1/22, 3/00, 5/06

U.S. Cl. 251-306

24 Claims

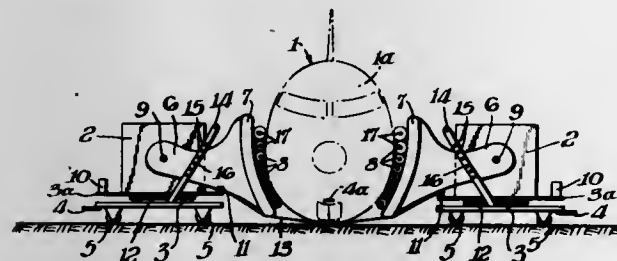


A valve assembly comprises a relatively rigid member defining a fluid flow port and a movable member adapted to engage the port with a fluidtight fit. One of the members is formed with an annular recess in which is mounted a resilient seal ring adapted to engage and be compressed against the rigid member to provide a sealing closure. This seal ring has its opposite sides sealed and maintained immovable as by suitable bonding or clamping to the opposite sides of the recess. A space is provided internally of the seal of such volume that deformation of the compressed seal ring in engagement with the rigid valve member does not fill the space, and that space is vented for pressure equalization.

3,612,484
APPARATUS FOR LIFTING AND TRANSPORTING DISABLED AIRCRAFT
 Arthur A. Gallagher, Bryn Mawr, Pa., and Edward A. Gallagher, III, Timonium, Md., assignors to National Steel Erecting Corp., Philadelphia, Pa.
 Filed Jan. 6, 1969, Ser. No. 789,187
 Int. Cl. B60p 3/12

U.S. Cl. 254-2

5 Claims

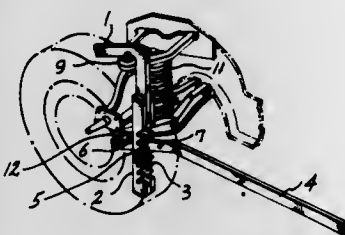


A mobile apparatus for lifting and transporting a disabled aircraft without substantially damaging the aircraft, having, in combination, a mobile frame, a support element attached to the frame and at least one inflatable expandable bag secured to the frame, said bag adapted to lift and support the aircraft when inflated and the process for rapidly lifting and transporting a disabled aircraft without substantially damaging the aircraft using at least one of the apparatus of this invention. The apparatus and method of this invention are useful for lifting and for transporting a grounded disabled aircraft.

3,612,485
AUTOMOTIVE SUSPENSION BALL JOINT CHECKING TONGS
 Loyd O. McAfee, 9036 S.W. 37th, Seattle, Wash., and James P. Bohannon, 8820 S. Gayle Ave., Tacoma, Wash.
 Filed Oct. 17, 1968, Ser. No. 768,418
 Int. Cl. B66f 3/00

U.S. Cl. 254-130

2 Claims



A hanger suspended by a hook from the upper control arm of an automotive wheel support carries a disengageable lever, the short end of which engages beneath the lower control arm. Downward swinging of the long arm of the lever will contract the tongs formed by the hook and short lever arm engaged with the upper and lower control arms and straddling the compression spring engaged between them. The fulcrum pin of the lever is engageable selectively with any set of socket notches in furcations of the hanger for application to differently spaced control arms. Contraction of the tongs compresses the spring between the control arms to relieve the ball joints between the spindle support and the control arms from load so that the amount of backlash between the spindle support and the control arms can be checked.

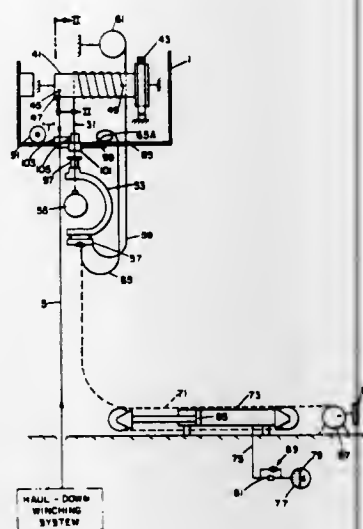
3,612,486
VERTICAL LOAD TRANSFER
 Gerald Joseph Martin, and John Murray Vines, both of Bedford, Nova Scotia, Canada, assignors to Her Majesty the Queen in right of Canada as represented herein by the Minister of National Defence of Her Majesty's Canadian Government
 Filed Oct. 17, 1969, Ser. No. 867,277
 Int. Cl. B66d 1/50, 1/48

U.S. Cl. 254-172

14 Claims

This application discloses a system for lowering a delicate load to the deck of a ship from a helicopter. A first cable

maintained at constant tension extends up from the ship, round a pulley or drum carried by the helicopter and down to the said load. This provides support which is substantially constant for the load. A second cable extends down from the

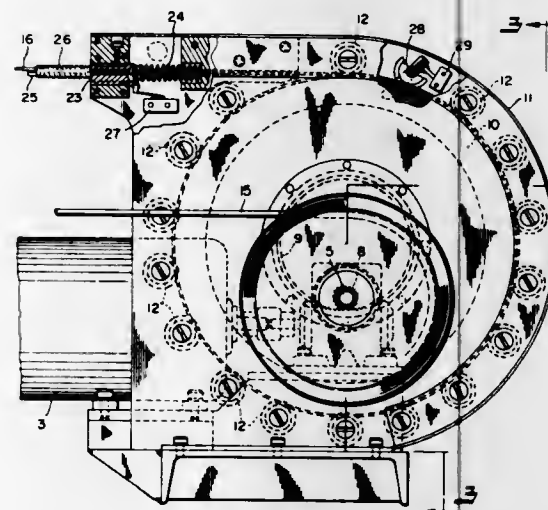


load to the ship, and is used to winch the load down to the ship. The system can be used to raise loads from the ship to the helicopter, and can be used for other similar load transfer situations.

3,612,487
DEVICE FOR PUSHING AND PULLING IMPLEMENTS, INCLUDING CABLES, INTO AND FROM CONDUITS AND THE LIKE
 William E. Raney, 511 Morewood Parkway, Rocky River, Ohio, and Milan J. Siebert, 5617 Onaway Oval, Parma, Ohio
 Filed Sept. 24, 1968, Ser. No. 762,061
 Int. Cl. B66d 1/48

U.S. Cl. 254-174 R

4 Claims

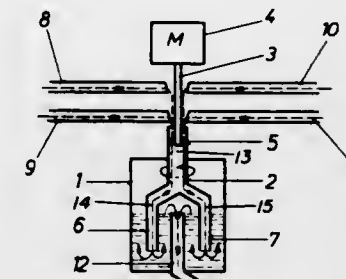


Device for pushing and pulling implements (e.g. pipe coating testers, pipe markers, pipe cleaners, pipe spray guns) along pipes or like elongated workpieces, said device having adjacent spools or reels with spirally coiled implement feeding and operating elements wound on the respective reels, the feeding element being operative to push and pull the implement into and from the pipe (or along the pipe) while the implement operating element is unwound from or rewound onto its reel.

3,612,488
MIXER
 Gunter Friedrich Bartel, Lotte Kreis, Tecklenburg, and Martin Klawitter, Rieste, both of Germany, assignors to Die Kunststoffburo Osnabruck Dr. Reuter GmbH & Co. KG, Lotte, Germany
 Filed Oct. 31, 1960, Ser. No. 873,003
 Claims priority, application Germany, Nov. 2, 1968, P 18 06 639.2
 Int. Cl. B01f 15/02, 7/20

U.S. Cl. 259-8

4 Claims

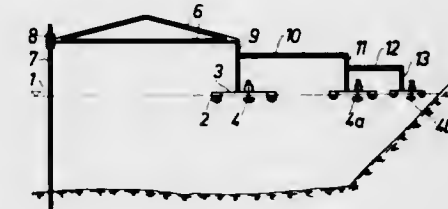


A mixer is provided with a forked tubular stirrer adapted to receive liquids at its upper end and to discharge them into a mixing chamber through tines. An overflow pipe extends through the bottom of the tank and insures an accumulation of liquids in the chamber.

3,612,489
APPARATUS FOR THE SURFACE AERATION OF STILL AND RUNNING WATERS BY MECHANICAL MEANS
 Endre Abraham, and Laszlo Tasfi, both of Budapest, Hungary, assignors to Vizgazdalkodasi Tudomanyos Kutato Intezet, Budapest, Hungary
 Filed Mar. 3, 1969, Ser. No. 803,694
 Claims priority, application Hungary, Mar. 6, 1968, VI 606
 Int. Cl. B01f 7/30

U.S. Cl. 259-102

3 Claims



A mechanical water-aerating device known per se and preferably having a vertical main shaft, is mounted on a float, the latter being connected by means of a rod or cable to a stay fixed in the bed of the water. The rotation of the aerating device causes revolution of the float around the stay so that a large surface of the water is aerated.

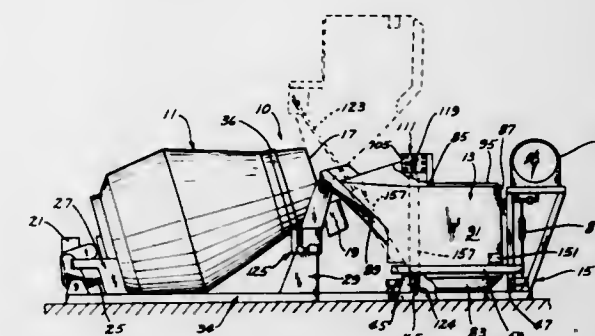
3,612,490
COMBINATION WEIGHING AND MIXING APPARATUS FOR FERTILIZER OR THE LIKE
 Cecil W. Bopp, James B. Porter, Jr., and William H. Cone, all of Waterloo, Iowa, assignors to Construction Machinery Company, Waterloo, Iowa
 Division of Ser. No. 682,347, Nov. 13, 1967, Pat. No. 3,539,029
 Filed June 13, 1969, Ser. No. 833,067
 Int. Cl. B28c 7/04; G01g 19/00

U.S. Cl. 259-154

9 Claims

A combination weighing and mixing apparatus for fertilizer or the like comprising a skip loader normally freely supported on a weigh scale and which is pivotal about one of its upper ends by a hydraulic cylinder means to facilitate the

dumping of the material therefrom into a mixing drum after the material has been weighed. The mixing drum is of the type used in the cement-mixing industry and is designed to mix the material deposited therein while revolving in one direction and to discharge the material therefrom while revolving in the opposite direction. The apparatus also in-

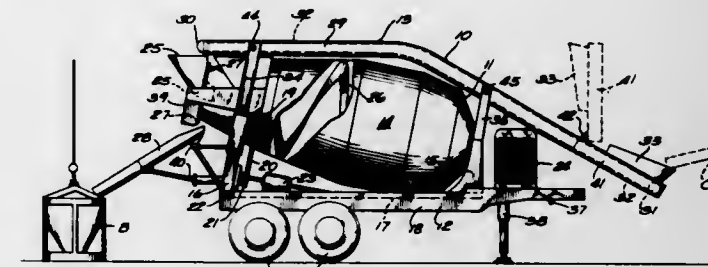


cludes means for automatically freeing the skip loader from the cylinder means and the skip loader support means while the skip loader is supported on the weigh scale. The cylinder means includes means thereon to insure that the skip loader will be gently placed on the weigh scale after the material has been dumped therefrom.

3,612,491
CONCRETE HOLDING MIXER
 Robert W. McKillop, Milwaukee, and William Stanis, Muskego, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
 Filed May 21, 1970, Ser. No. 39,495
 Int. Cl. B28c 7/00

U.S. Cl. 259-161

6 Claims



A concrete mixer is adapted for use as a temporary concrete holding drum by providing a conveyor for charging the mixer drum with premixed concrete for holding or discharge directly to the mixer discharge chute. The entire unit is transportable and the conveyor is separately demountable therefrom such that the mixer may be operated as a conventional transit mixer.

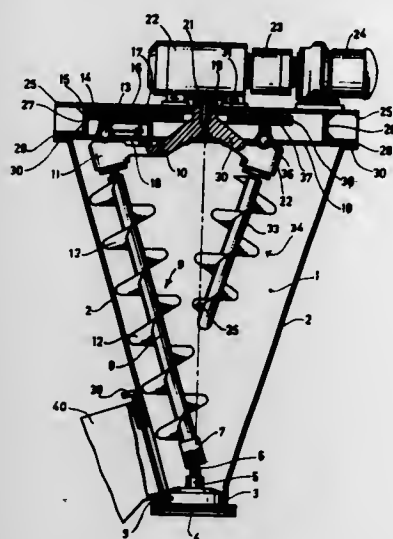
3,612,492
DEVICE FOR MIXING, KNEADING OR DRYING SUBSTANCES
 Constant Johan Nauta, Overveen, Netherlands, assignor to Nautamix Patent A.G., Zug, Switzerland
 Filed Feb. 18, 1970, Ser. No. 12,317
 Claims priority, application Netherlands, Feb. 21, 1969, 69,02737
 Int. Cl. B01f 7/00

U.S. Cl. 259-102

12 Claims

A device for mixing, kneading or drying substances includes one mixing screw which extends substantially along the longitudinal length of the inner surface of a frustoconical vessel in which it is mounted. A second mixing screw which

is supported and driven from its upper end is also mounted in the vessel. The lower end of the second mixing screw is un-

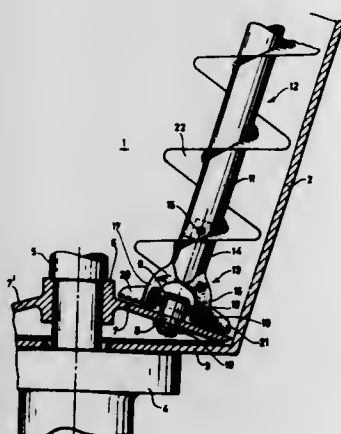


supported and spaced from the bottom of the vessel at a location in or close to the axis of symmetry of the vessel.

3,612,493
LOWER BEARING ASSEMBLY FOR A MIXING SCREW
Constant Johan Nauta, Overveen, Netherlands, assignor to Nautamix Patent A. G., Zug, Switzerland
Filed July 11, 1969, Ser. No. 840,999
Claims priority, application Netherlands, July 19, 1968, 6810332
Int. Cl. B01f 7/00

U.S. Cl. 259-102

7 Claims



A lower bearing for the shaft of a mixing screw has a fork-shaped lower end portion having two spaced legs between which a guide plate is adapted to be slid laterally into assembled position and thereafter supported by said legs in said assembled position. A vessel in which the mixing screw is mounted has a lower arm mounting a circular pin. The guide plate has an opening in which said pin is received to thereby rotatably support the lower end of the mixing screw in said vessel.

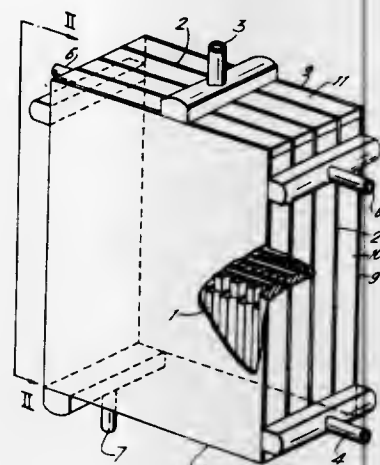
3,612,494
GAS-LIQUID CONTACT APPARATUS
Akira Toyama, Kobe-shi; Yukio Nakako, Nishinomlya-shi, and Toshio Kanazawa, Kobe-shi, all of Japan, assignors to Kobe Steel, Ltd.
Filed Sept. 10, 1969, Ser. No. 856,622
Claims priority, application Japan, Sept. 11, 1968, Sept. 20, 1968, Sept. 22, 1968, 43/65339; 43/6805
43/70051
Int. Cl. B01f 3/04

U.S. Cl. 261-112

12 Claims

In a gas-liquid contact apparatus comprising a gas-liquid contact part accommodating metal fin material, a liquid dis-

tributor provided on the gas-liquid contact part, a gas distributor provided at an appropriate position on the gas-liquid contact part, a liquid inlet provided in connection with the liquid distributor, a liquid outlet provided at the lowest position of the apparatus, a gas inlet provided in connection with the gas distributor and a gas outlet provided at the highest

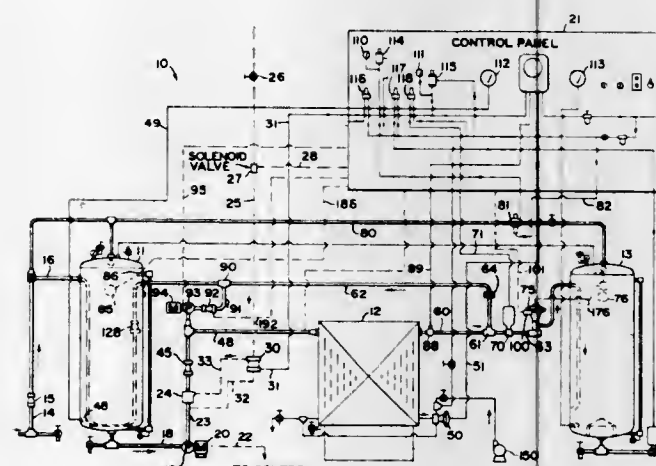


position of the apparatus, an improvement wherein the fin material consists of one or more corrugated metal fins mounting to each other and at least one gas-liquid redistributor for forming a gas passage on the side of a liquid distribution conduit and in which are provided at the bottom at a position lower than the liquid distributor and higher than the gas distributor.

3,612,495
CARBONATOR AND METHOD OF OPERATION THEREOF
Bruce G. Copping, Akron, Ohio, assignor to A-T-O, Inc., Willoughby, Ohio
Filed July 3, 1969, Ser. No. 838,845
Int. Cl. B01f 3/04

U.S. Cl. 261-140 R

10 Claims

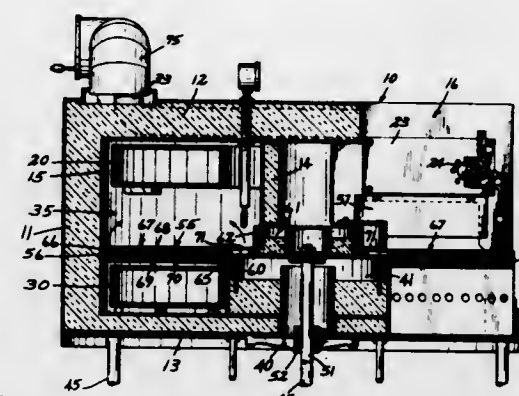


The carbonator system includes first and second beverage vessels with a heat exchanger operatively connected between the vessels with the output of the heat exchanger flowing to the second beverage vessel or receiver. Means provide for pressure flow of beverage to and through the heat exchanger and to the second beverage vessel, carbonation means are present for injection of CO₂ gas under pressure into the beverage prior to its flow to the heat exchanger, and means are present to divert part of the output of beverage from the heat exchanger for return flow to the first beverage vessel. Control means are present to provide the carbonation gas to the system only when beverage is flowing to the second vessel, and in controlled proportion to the rate of flow.

3,612,496
OVEN
Peter N. Latuff, 868 University Ave., St. Paul, Minn.
Filed Oct. 17, 1969, Ser. No. 867,144
Int. Cl. F27b 9/16; A21b 1/10

U.S. Cl. 263-7

9 Claims

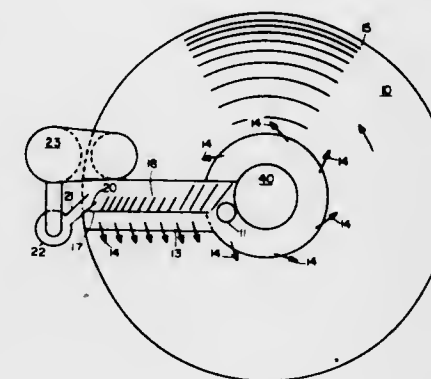


An oven having a toroidally shaped heating cavity therein with toroidal fire chambers coaxially mounted within the cavity in axially spaced-apart relationship and a rotatably mounted disk positioned therebetween to receive thereon materials to be heated. The oven has a central opening insulated from the cavity in which the mechanism for mounting the disk is mounted. The upper and lower fire chambers have flames injected therein in opposite directions and a wedge-shaped opening provides access to the disk.

3,612,497
CENTER FEED ROTARY HEARTH CALCINER
Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed Dec. 22, 1969, Ser. No. 887,450
Int. Cl. F27b 9/18

U.S. Cl. 263-22

8 Claims



A rotary hearth calciner having a hearth somewhat like a phonograph turntable rotating within a covered chamber. Granular material to be calcined is fed to the center of the rotating hearth and is gradually moved outward by rabbles so that it discharges near the outer edge of the rotary hearth. Thus, the coke bed is thinnest at the outermost portion of the hearth, permitting highest temperature exposure when the last volatiles are to be driven from the coke.

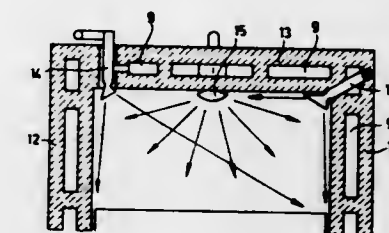
3,612,498
APPARATUS FOR HEATING AND CONTROLLING KILN ATMOSPHERE
Otto Voigt, Am Plannenstiel 14,89, and Alois Steimer, Unterfelstr. 5, 8902 Goggingen b., both of Augsburg, Germany
Filed Oct. 7, 1969, Ser. No. 864,403
Claims priority, application Germany, Oct. 7, 1968, P 18 01 613.2
Int. Cl. F27b 7/00

U.S. Cl. 263-28

11 Claims

In the wall or ceiling of a furnace or kiln for the heat treatment of materials there is disposed at least one burner tube

assembly which introduces a mixture of additional air and fluid fuel into the firing zone at supersonic speed; the blow

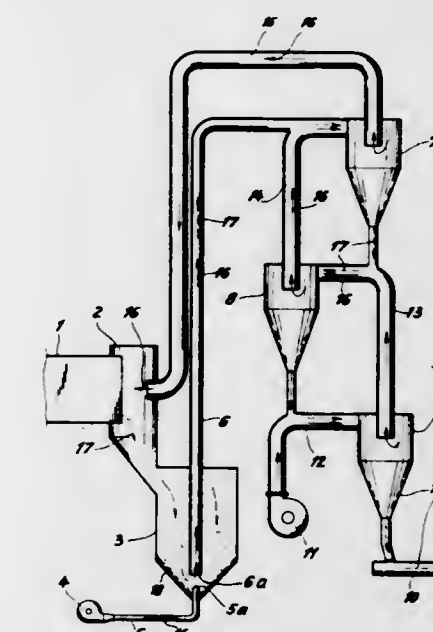


nozzle of the burner is constructed as a Laval nozzle for supersonic pressure ratio.

3,612,499
APPARATUS FOR HEAT TREATMENT OF FINE MATERIAL
Paul Oelde Weber, and Gerhard Butschko, Jr., both of Enningerloh, Germany, assignors to Polysius AG., Neubecku, Graf-Galen-Strasse, Germany
Filed Dec. 15, 1969, Ser. No. 884,876
Claims priority, application Germany, Feb. 12, 1969, P 19 06 896.3
Int. Cl. F27b 7/38

U.S. Cl. 263-32

4 Claims



The apparatus comprises a rotary kiln, an intermediate chamber which is connected to the discharge end of the kiln and is arranged to receive fired material therefrom, and which extends a substantial distance below the discharge end of the kiln, so as to hold a column of substantial height of material discharged from the kiln, and apparatus for discharging air under pressure in a zone in the lower portion of a column of material in the chamber. A duct for conveying the material by air entrainment to a cooling zone, has its inlet in the zone in which the air is discharged in the lower portion of the column, and a conduit is provided for conducting to the rotary kiln air discharged from the cooling zone. The column of material in the chamber serves as a seal between the rotary kiln and the zone in which the air is discharged in the lower portion of the column.

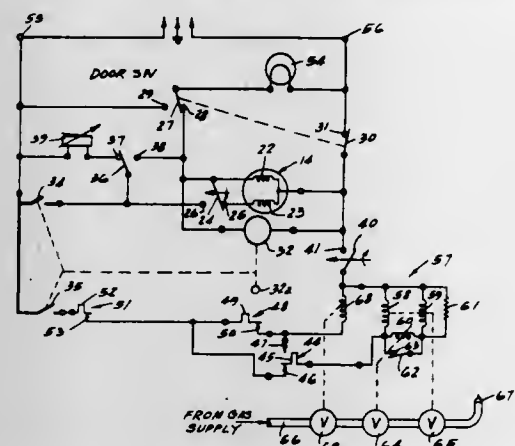
3,612,500
DRYER CONTROL CIRCUIT
Norbert P. Cramer, and Jay A. Wiechert, both of Benton Harbor, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 29, 1969, Ser. No. 888,574
Int. Cl. F27b 7/00

U.S. Cl. 263-33 B

4 Claims

A source of heat is operated at a high-output level during an initial portion of a drying cycle and at a lower output level

during a subsequent portion of the drying cycle under the control of a dryer control circuit which includes a plurality of thermostats which control the electrical disposition of cor-



responding portions of the source of heat in circuit with an electrical supply. The dryer control circuit is applicable to both gas and electric dryers.

3,612,501

FURNACE-COOLING APPARATUS

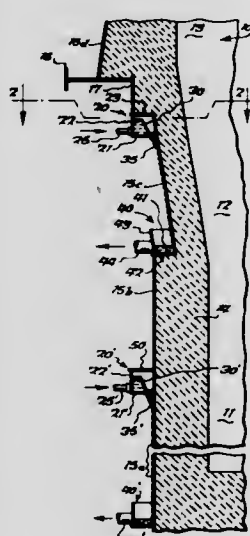
Frank A. Berczynski, Williamsville, and Herbert L. Benz, Orchard Park, both of N.Y., assignors to A. E. Anderson Construction Corporation, Buffalo, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,742

Int. Cl. F27b 1/24

U.S. Cl. 263-44

9 Claims



An annular liquid-distributing chamber encircles the exterior shell of a furnace and has an open space in the bottom wall thereof extending the entire length of the chamber. A resilient sealing strip attached to the chamber bottom wall extends across the open space into contact with the exterior shell so as to distribute cooling liquid therealong. One or more conduits deliver cooling liquid to the chamber behind a weir over which liquid flows to the sealing strip. A trough spaced below the chamber receives cooling liquid after it has traveled downwardly along the shell surface.

3,612,502

APPARATUS FOR CUTTING HOLES IN STRUCTURES AND DETAILS HAVING CYLINDRICAL SURFACE

Viktor Mikhailovich Vasiliev, ulitsa dzerzhinskogo, 3, kv. 60; Robert Ashtovich Shiganov, ulitsa Shurukhina, 26, kv. 75; Alexander Ilich Remesnikov, prospekt Lenina, 179, kv. 114; Jury Nikolaevich Kosik, ulitsa Gelendzhskaya, 21, kv. 2; Nikolai Borisovich Skorikov, prospekt Lenina, 179, kv. 140, and Alexandr Arkadievich Krikorian, prospekt Lenina, 21, kv. 92, all of Volgograd, U.S.S.R.

Filed Dec. 23, 1969, Ser. No. 887,648

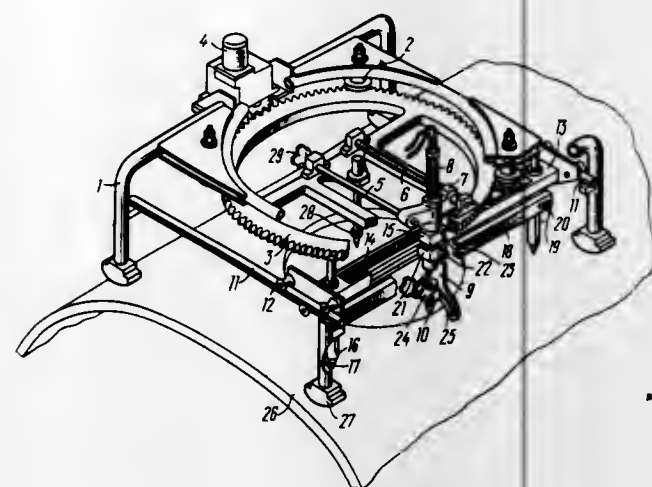
Int. Cl. B23k 7/04

U.S. Cl. 266-23 M

2 Claims

An apparatus for cutting holes in structures and details having cylindrical surface with the aid of a cutter mounted

with a possibility of simultaneous displacement in horizontal and vertical planes, in accordance with a mode set by a profiling device whose cams are placed on both sides of the cutter and are connected with the latter by means of a rod



pivotally connected to the cutter and the cams, which rod, capable of tilting in a vertical plane, serves to maintain the cutter position at the level of a preset distance between the cutter and the surface of a structure in which a hole is being cut.

3,612,503

VEHICLE STABILIZER DEVICE

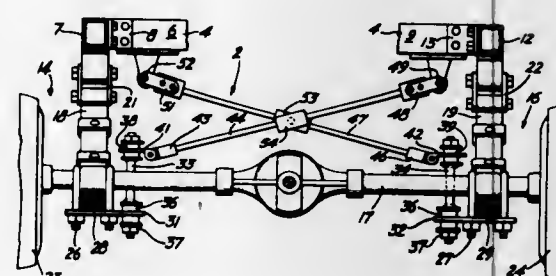
Gene S. Tanno, 3451 Rosedale Drive, San Jose, Calif.

Filed Sept. 26, 1968, Ser. No. 762,903

Int. Cl. B60g 21/04

U.S. Cl. 267-11

5 Claims



A vehicle stabilizer device is presented that is particularly useful for automobile and trucks, but which is applicable in a broad sense to any kind of vehicle that requires or which would benefit from stabilization between a chassis and running gear supporting the chassis. The stabilizer device of the invention provides a pair of beams, each of which is connected to an associated one of the frame members of the chassis, with the opposite end of that beam being connected to the running gear associated with the opposite frame member of the chassis. Intermediate their ends the beams are juxtaposed and interconnected by a pivotal and slidable union which permits a scissoring action between the beams when forces are imposed thereon. Such scissoring action cooperates with the inherent resilience of the beams to stabilize relative movement between the chassis and the running gear of the vehicle.

3,612,504

ROLL AND SWAY CONTROL SYSTEM

Julian C. Garate, Reno, Nev., assignor to Charles V. Prather; Birgit K. Preston and C. A. Luckey, Reno, Nev., part interest to each

Filed Nov. 10, 1969, Ser. No. 875,388

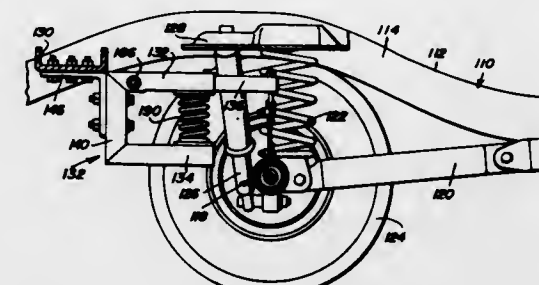
Int. Cl. B60g 11/16

U.S. Cl. 267-20

14 Claims

A spring-controlled structure operatively connected between a corresponding vertically shiftable wheel of a vehicle and frame and body of an associated vehicle and func-

tioning to increasingly yielding resist upward motion of body and frame of the associated vehicle from a predetermined position when the vehicle is in a stationary position. The structure increasingly resists the distance of separation between the vertically shiftable wheel and a predetermined position of vertical travel of the vertically shiftable body in an up movement past the predetermined stationary rebound point. However, the structure does effectively slow the downward motion of the vertically shiftable wheel and increasingly speeds up the rebound to the original



static or predetermined position between the vertically shiftable frame and vertically shiftable wheel. The structure does not aid in laden weight carrying capacity of the associated vehicle, but does effectively control laden weight and high center of gravity laden weight by increasingly yielding resisting the frame and body of associated vehicle in any upward and side-to-side motion of high loads. Also, the structure does effectively control the upward movement of an associated vehicle without weight other than that of the associated vehicle.

3,612,505

SPRING ASSEMBLY

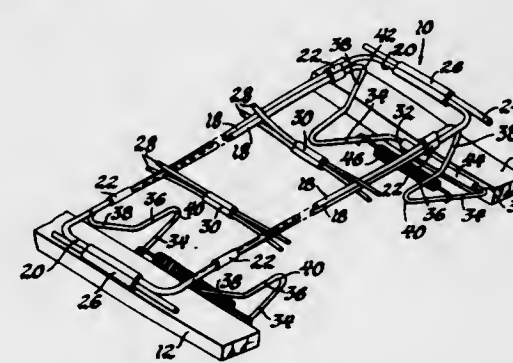
John J. Bond, Wickenburg, Ariz., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 22, 1969, Ser. No. 868,301

Int. Cl. F16f 3/00; A47c 23/02

U.S. Cl. 267-107

12 Claims



A box spring assembly including a frame having a pair of opposite and generally parallel extremities interconnected by ends with a plurality of spring members extending between the extremities. Each spring member is defined by an integral wire having parallel and spaced fishmouth sections interconnected by a generally U-shaped support section. The fishmouth sections are interconnected at the lower ends thereof to the extremities of the frame with the U-shaped sections of pairs of spring members being disposed in overlapping relationship with the base portions of the U-shaped sections being connected to a border wire.

3,612,506

CUSHIONING DEVICE

Andre Alfred Malherbe, 81, rue Pasteur 59, Waziers, France

Filed Sept. 25, 1969, Ser. No. 861,007

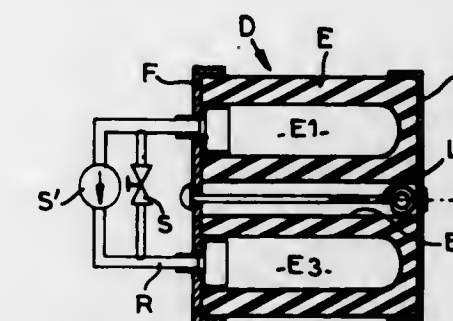
Claims priority, application France, Sept. 25, 1968, 167,590

Int. Cl. B60s 11/22

U.S. Cl. 267-152

10 Claims

A block of elastomeric material provided with at least two sealed internal cavities interconnected by a duct means is



stretched around the other cavity whereby a liquid filling said cavities and said duct means is forced to flow through the latter which is provided with throttling means operative for impeding the flow of said liquid.

3,612,507

VALVE ASSEMBLING APPARATUS

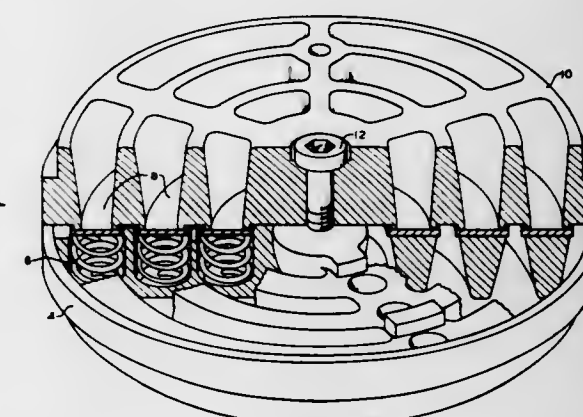
Edward E. Stokes, Borger, Tex., assignor to Phillips Petroleum Company

Filed Dec. 18, 1969, Ser. No. 886,089

Int. Cl. B25b 27/14

U.S. Cl. 269-47

3 Claims



An apparatus having protrusions for holding a plurality of rings of a multiring-type valve against lateral movement during assembly of said valve.

3,612,508

HEATER CORE FIXTURE FOR FACE SOLDERING

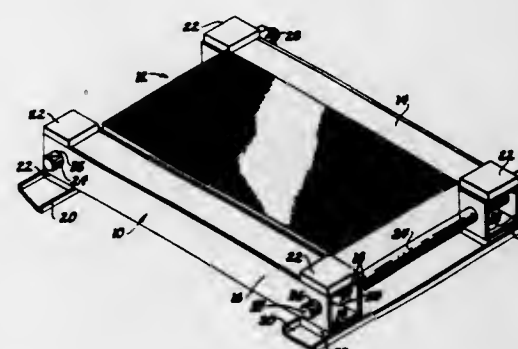
William E. Rise, Portage, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1970, Ser. No. 26,564

Int. Cl. B25b 5/02

U.S. Cl. 269-90

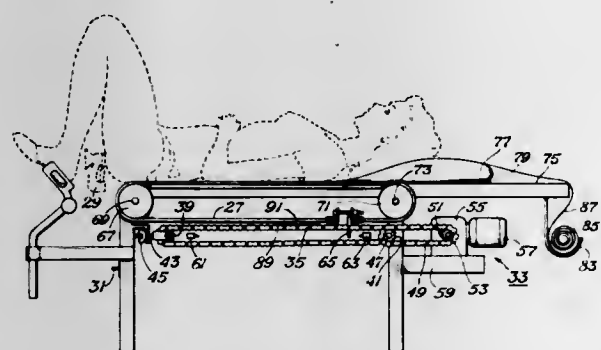
3 Claims



In preferred form a fixture for clamping a rectangular heater core between first and second parallel framing mem-

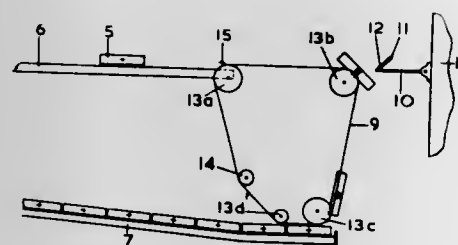
bers for a subsequent face-soldering operation. The fixture is readily adapted to automatic loading of the heater cores accomplished first by the application of an external clamping force normally against the parallel framing members and next by the application of a locking force axially on a cross rod which maintains the spatial relation between the framing members established by the external clamping force. Cam surfaces on the ends of the cross rod coact with cam surfaces on the ends of two parallel rods which extend normally between and through the framing members to create a frictional holding force between the parallel rods and the framing member.

3,612,509
APPARATUS FOR ADJUSTING LITHOTOMY POSITION OF A PATIENT
Don W. Boston, 3700 Oak Haven, Fort Worth, Tex.; Charles R. Boston, 3801 Carman Drive, Fort Worth, Tex., and Paul D. Suhovy, 3255 Mary's Lane, Fort Worth, Tex.
Filed Feb. 26, 1970, Ser. No. 14,519
Int. Cl. A61g 13/00
U.S. Cl. 269—328 13 Claims



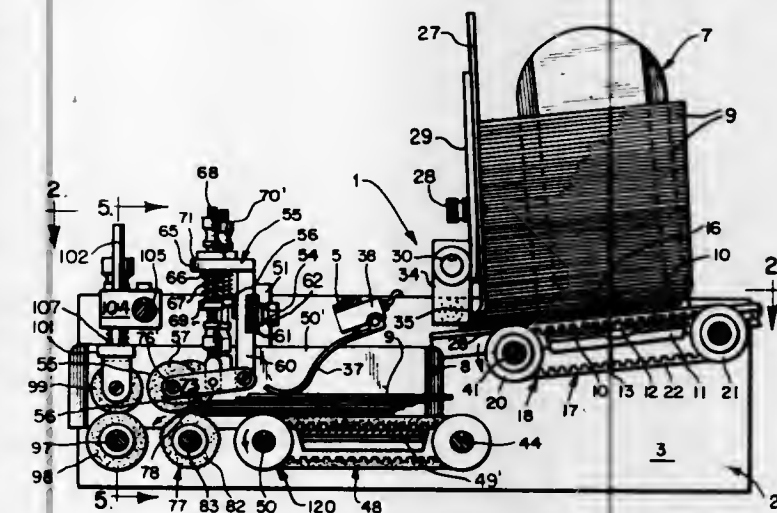
A patient support facilitating examination of a patient in the lithotomy position characterized by a longitudinally reciprocally movable belt for effortlessly positioning a reclining patient with feet in the usual stirrups to properly position the intercrural portion of the patient's anatomy at the stirrup end of the patient support; the belt moving away from the patient's anatomy at the stirrup end to facilitate examination. Also disclosed are preferred structural embodiments including the positive drive mechanism, with limit switches for safety; the belt and upholstery interconnections; the pillow support and paper fastener arrangement; and the optimum thickness of a top structure for use as a replacement top for conventional examining tables.

3,612,510
BAG-HANDLING APPARATUS
Robert Walker Dickson, Ormesby, England, assignor to British Visqueen Limited, London, England
Filed Apr. 20, 1970, Ser. No. 30,163
Claims priority, application Great Britain, May 12, 1969, 24087/69
Int. Cl. B65h 39/02
U.S. Cl. 270—58 4 Claims



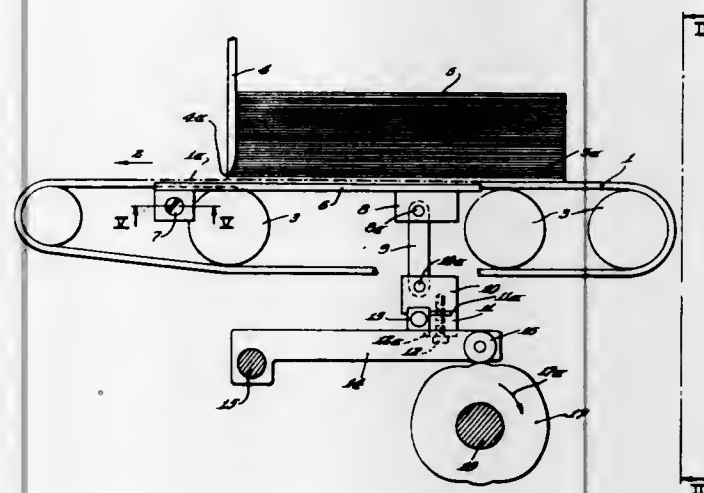
Bag-handling apparatus by which bags received from a bag-making machine are stacked over bars, and means are provided for storing a number of stacked bars before unloading.

3,612,511
FEEDING MECHANISM
Edward S. Godlewski, 531 Walnut St., Des Plaines, Ill.
Filed June 5, 1969, Ser. No. 830,787
Int. Cl. B65h 1/06, 3/06
U.S. Cl. 271—35 9 Claims



A mechanism for feeding stock in batches from the bottom of a pile of stock located in a primary magazine to a secondary magazine and arranging the items shingle fashion thereupon, a timed conveyor discharging the stock one at a time from the bottom of the secondary conveyor in conjunction with a pair of serially arranged spaced parallel metering rollers which are timed to move incrementally with the conveyor to advance the bottom stock item to a pullout roller assembly, the stock items being metered by a series of retards offset along the path of travel of the item and the downstream retard forming with the second metering roller on intake nip for the bottom item being fed thereinto.

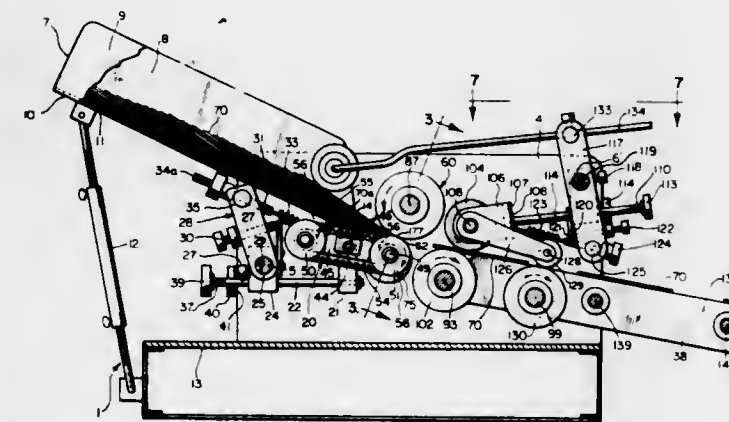
3,612,512
SHEET MATERIAL FEED CONTROL APPARATUS
Pierre Lang, Ecublens, Switzerland, assignor to J. Bobst & Sons, Inc.
Filed June 24, 1969, Ser. No. 835,936
Claims priority, application Switzerland, June 24, 1968, 9770/68
Int. Cl. B65h 3/34
U.S. Cl. 271—35 8 Claims



Feeding sheet material on a conveyor means continuously moving in a first direction past a gauge means is efficiently accomplished by means of a feed control means comprising elongated lifting members positioned adjacent and in some cases between the conveyor means behind the gauge means whereby when the lifting member upper surface is below the upper surface of the conveyor means the sheet material may be fed past the gauge means and when the upper surface of the lifting member is above the upper surface of the con-

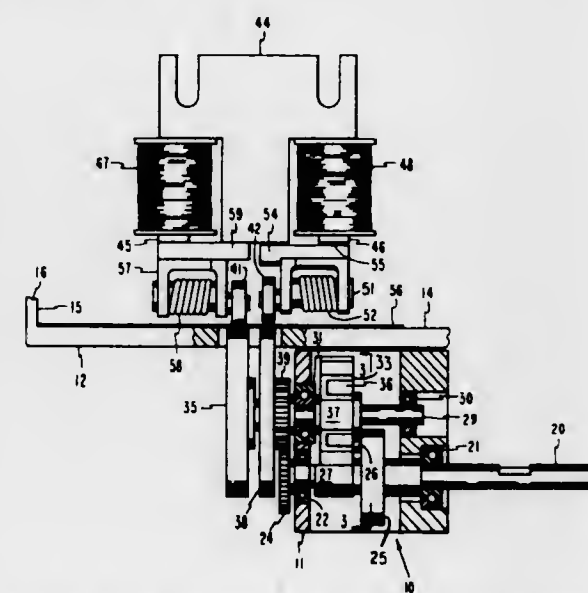
veyor means the sheet material is out of engagement with the conveyor means and feeding is halted. Synchronized movement of the lifting members is provided by a lifting assembly which includes a pair of rotating cams, a pair of follower means riding on said cam, a rod connecting the follower means with the lifting member and a transverse beam connecting the follower means whereby movement of the cam is transmitted through the follower arms and the connecting rods to the lifting members to cause them to move together into and out of engagement with the sheet material, thereby controlling the feeding of the sheet material past the gauge means.

3,612,513
FEEDING MECHANISM
Edward S. Godlewski, 531 Walnut St., Des Plaines, Ill.
Filed Sept. 30, 1968, Ser. No. 763,820
Int. Cl. B65h 1/08
U.S. Cl. 271—37 14 Claims



A feeder mechanism for feeding stock items such as sheets of paper, cards, manifolds, stuffed envelopes, etc. and comprising a magazine, a metering roller assembly, and a transition fanning device extending from the magazine to the metering roller assembly which delivers the stock items into an aligner from which the items issue into an associated mechanism such as an imprinter, slitter, perforator, etc. in desired progression.

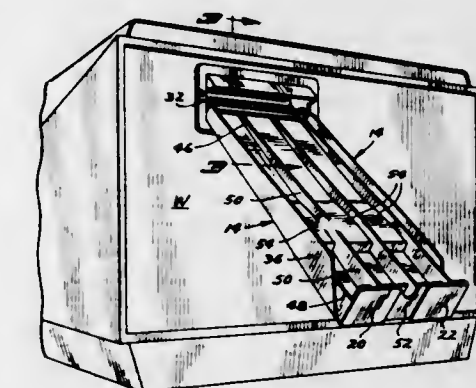
3,612,514
MULTIPLE MODE GENEVA DRIVE MECHANISM
Jess J. Schweihs, Rochester, Minn., and Klaus Hausler, Columbia, Mo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,829
Int. Cl. B65h 5/06
U.S. Cl. 271—51 8 Claims



A Geneva drive mechanism having output feed wheels which rotate about a common axis, for driving a document

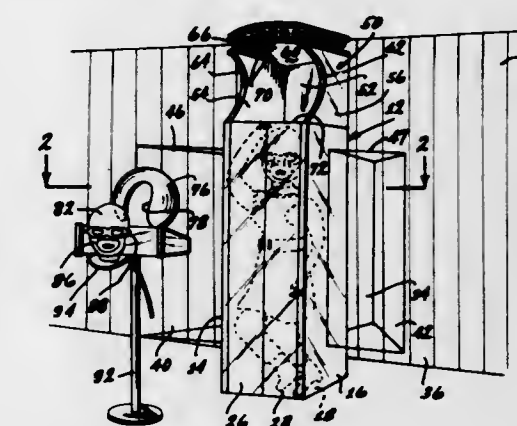
selectively in either an incrementing mode or a continuous transport mode.

3,612,515
DEVICE FOR COLLECTING, IDENTIFYING AND STACKING FILM PIECES
Emory K. Bergeson, St. Louis Park, Minn., assignor to Pako Corporation, Minneapolis, Minn.
Filed Sept. 3, 1969, Ser. No. 855,161
Int. Cl. B65h 31/22, 31/24
U.S. Cl. 271—86 4 Claims



The disclosure includes a device for collecting, identifying and stacking film pieces delivered from a film processing machine having a chute for receiving film pieces and formed with stop means at the lower end thereof, means for supporting the chute on the machine at an oblique angle to the vertical to receive film pieces delivered from the machine together with means for substantially eliminating static electricity from film pieces delivered from the machine on the chute.

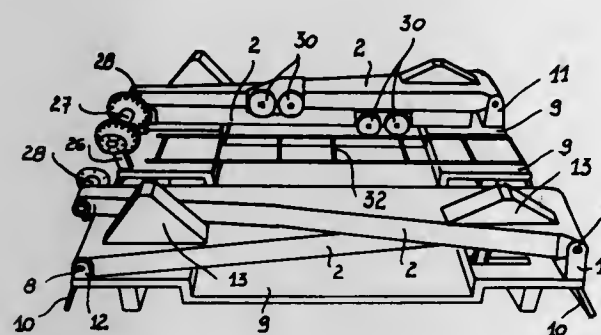
3,612,516
APPARATUS AND METHOD FOR PRODUCING DISPLAY ILLUSIONS
James Mark Wilson, 4914 Regal Oak Drive, Encino, Calif.
Filed Jan. 13, 1969, Ser. No. 790,606
Int. Cl. A63j 5/00
U.S. Cl. 272—9 8 Claims



The invention is an apparatus and method for producing illusionary display effects. The device or apparatus includes a cabinet having doors and provided with concealed means and a passageway with trap doors whereby a person can enter the cabinet unknown to an audience. The passageway is concealed by members mirrored on both sides positioned between the cabinet and a backdrop. The mirror surfaces are positioned to provide for equal angles of incidence and reflection between the mirrors and adjacent reflected surfaces whereby the space between the cabinet and the backdrop appears to be vacant. There is provided also a robot head for which the head of a person is substituted. A girl assistant enters the cabinet through the concealed passageway and stands in a concealed position. The magician places the robot head in position where it is grasped and held

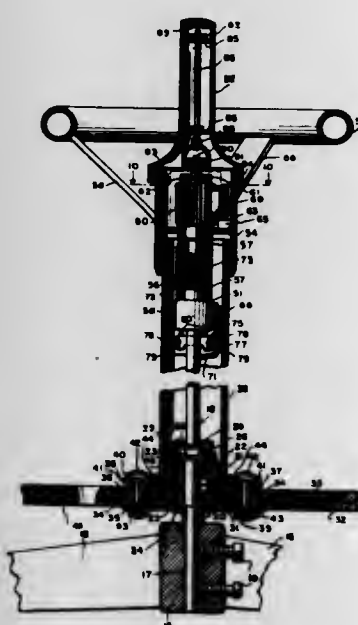
by the girl. A globe with a cutout is placed over the head and manipulated to momentarily conceal it, at which point the girl removes it, and substitutes her own, after which she steps forth, the disembodied head apparently having become embodied.

3,612,517
FERRIS WHEEL
Anton Schwarzkopf, Munsterhausen, Schwaben, Germany, assignor to A. Schwarzkopf Stahl-u. Fahrzeugbau, Munsterhausen, Schwaben, Germany
Filed Nov. 14, 1968, Ser. No. 775,791
Claims priority, application Germany, Nov. 14, 1967, P 16 03 179.1
Int. Cl. A63g 1/00
U.S. Cl. 272-29 9 Claims



A collapsible Ferris Wheel has a shaft with a central hub section and two outer sections detachably interconnected, the outer shaft sections being journaled in legs swingably supported on respective carriages while a further carriage, sandwiched between the other two, has a cradle to receive the hub section upon disassembly of the structure. The legs, which come to rest on their carriages in the collapsed position, may have telescoped extensions carrying the journal bearings for the shaft and are also provided with hoods projecting upwardly in that position while being downwardly open to receive the upper ends of elevating jacks rising from these carriages.

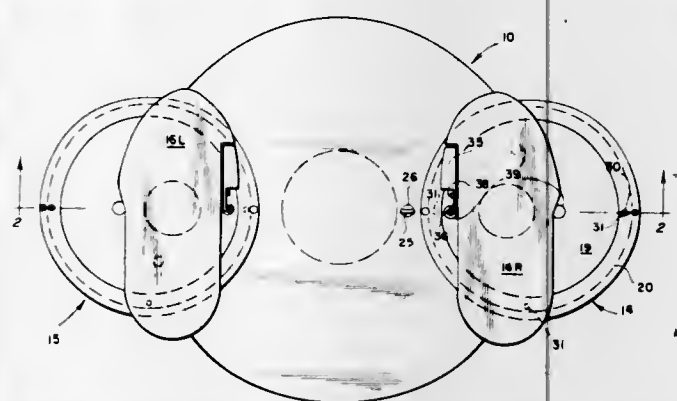
3,612,518
OCCUPANT PROPELLED MERRY-GO-ROUND
David F. Bennett, 1100 Fleetwood Ave., Daytona Beach, Fla.
Filed Dec. 2, 1969, Ser. No. 881,544
Int. Cl. A63g 1/12
U.S. Cl. 272-33 R 7 Claims



An occupant propelled merry-go-round having a tub-shaped passenger compartment providing an annular seat and an annular backrest surrounding the seat. The passenger compartment is rotatably supported by a stationary support

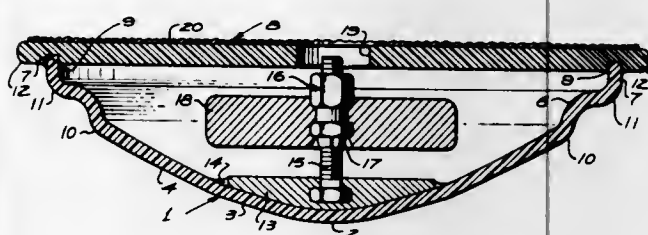
structure which additionally supports a handwheel centrally of the passenger compartment. The handwheel is rotatable in one direction only relative to the supporting structure so that when torque is applied thereto in the opposite direction by one or more of the occupants, the compartment is caused to rotate in the first mentioned direction. A brake including a lever conveniently disposed and mounted for universal rocking movement for manual actuation by any of the passengers is provided to effect stopping of rotation of the passenger compartment.

3,612,519
EXERCISING DEVICE WITH LOCKABLE ROTATING FOOT PEDALS
William F. Larson, Carson, Wash. 98610
Filed July 9, 1968, Ser. No. 743,394
Int. Cl. A63b 23/04
U.S. Cl. 272-57 A 12 Claims



A device for exercising the lower torso and legs including a rotatable platform and a pair of foot pedals rotatably mounted on the platform. Locking elements are provided to selectively and individually lock the platform or either pedal against rotation. Each pedal is mounted off center on a rotatable adjusting disc for varying the distance between the pedals.

3,612,520
ROCKABLE EXERCISING PLATFORM FOR SKIERS
Quong Y. Chang, Los Angeles, Calif., and John W. Stone, Beckley, W. Va., assignors to Life Systems Engineering, Los Angeles, Calif.
Filed Aug. 5, 1969, Ser. No. 847,625
Int. Cl. A63b 23/04
U.S. Cl. 272-57 B 5 Claims

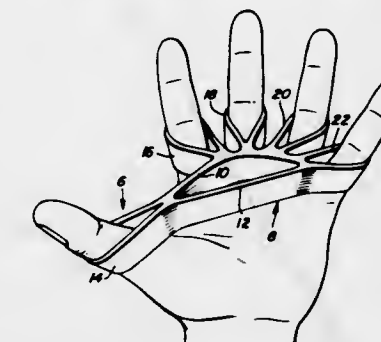


An exerciser for skiers in the form of a hollow bowl having a platform on which the skier stands; the outer surface of the bowl having a spherically shaped base portion and angularly related essentially conical portions which permit the skier to select angles at which the platform is tilted to predetermine the intensity of the exercise; the bowl containing a fixed weight at its base portion to lower its center of gravity and a vertically adjustable weight to change the center of gravity.

3,612,521
FINGER EXERCISING APPLIANCE
J. D. Wendeborn, 640 Allende, Laredo, Tex.
Filed June 11, 1969, Ser. No. 832,347
Int. Cl. A63b 21/30
U.S. Cl. 272-67 3 Claims

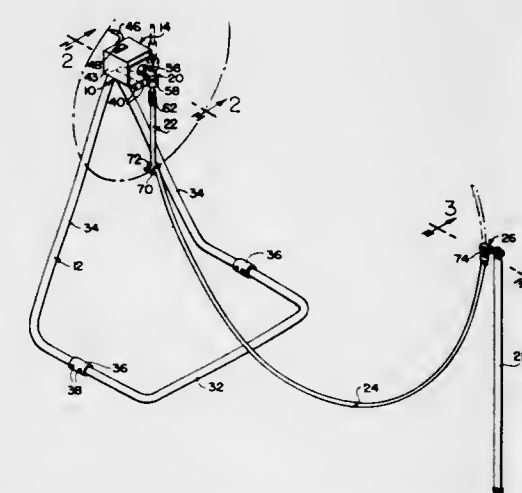
A physical therapy appliance designed and structurally adapted to be removably harnessed on a wearer's hand in a

manner to enable the thumb and fingers to perform movements of extension and abduction simultaneously. It comprises a plurality of individual loops which are conformable



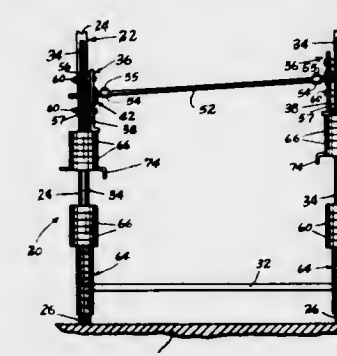
with and adapted to comfortably but retentively encircle base portions only of the thumb and fingers of the selected hand. It also embodies connecting means integrally joined with and operatively linking like end portions of the loops together.

3,612,522
POWER OPERATED SKIPPING ROPE APPARATUS
Martin A. Ekonen, 29581 Puritan Ave., Livonia, Mich.
Filed June 22, 1970, Ser. No. 48,169
Int. Cl. A63b 5/20
U.S. Cl. 272-75 8 Claims



The invention provides a power operated skipping rope secured at one end to a flexible, elastic, metallic arm of music wire attached to a tightly wound coil spring mounted upon a pin member. An elbow fitting provides a slip coupling secured to a motor-driven output shaft and to the pin member allowing slip to occur at the shaft or at the pin member. The other end of the skipping rope is secured to a swivel-type fitting mounted upon a supporting member.

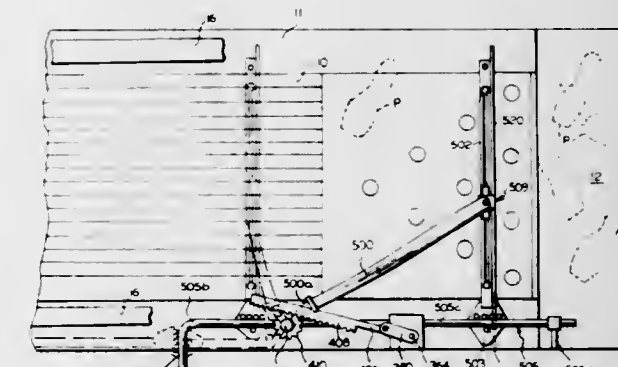
3,612,523
TILTING LIFT BAR WEIGHT TRAINER
Robert P. Glynn, Memphis, Tenn., assignor to Challenger Athletic Goods Company, Memphis, Tenn.
Filed Feb. 16, 1970, Ser. No. 11,675
Int. Cl. A63b 23/00, 23/04
U.S. Cl. 272-81 7 Claims



An improved weight lifting apparatus used primarily in gymnasiums and the like for training athletes. It includes a

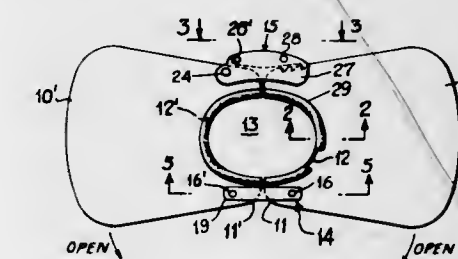
rigid framework structure that supports two opposed pairs of guide rods. A tiltable lifting bar and weight supporting assembly is slidably mounted on each pair of the guide rods, the lifting bar serving to join the two assemblies so that they reciprocate in unison when the apparatus is in use. The principal feature of the invention resides in universal joint means connecting the lift bar to a slide plate, such that one end of the lifting bar may be elevated with respect to the other. Another principal feature resides in guide wheels located on the slide plate which mate with the opposite sides of the guide rod through a concave configuration of the periphery of the guide wheels.

3,612,524
SWEEP APPARATUS FOR AN AUTOMATIC BOWLING PINSETTING MACHINE
Kenneth Clark Sherman, P. O. Box 6, Gambrills, Md.
Filed July 17, 1970, Ser. No. 55,684
Int. Cl. A63d 5/08
U.S. Cl. 273-54 A 7 Claims



A sweep apparatus for an automatic bowling pinsetting machine has a sweep mounted on a guide for guiding the movement of the sweep in a generally pivoting movement in which the sweep is positioned across the alley, and then in a rectilinear motion along the alley. A sweep drive arm is mounted on a vertical sweep drive shaft which is rotatable back and forth, and the free end of the sweep drive arm is articulated to the sweep for driving it in said pivoting movement and rectilinearly along the guide.

3,612,525
BALL BOUNCE GAME DEVICE
John E. Carter, Wilmington, Del., assignor to None Such Enterprises, Inc., New Castle, Del.
Filed Sept. 16, 1969, Ser. No. 858,396
Int. Cl. A63b 59/00
U.S. Cl. 273-67 R 9 Claims



A ball bounce game device comprising a pair of winglike members disposed end to end and having an aperture for mounting the wings on the body of an individual is provided whereby an individual wearing the wings secured about his waist can use a resilient ball, such as a ping-pong ball, tennis ball, rubber ball and the like to bounce the ball from one wing member over his head to the other wing member and back again. The wings are joined together with a pivot means and are detachably secured together by a latch means, with at least one of said pivot means and latch means preferably including means for adjusting the spacing of said wings and the resulting size of the body engaging aperture. A resilient cushion is also preferably provided around the periphery of

said aperture for the comfort of the player wearing the device.

3,612,526
RACKET WITH METAL I-BEAM FRAME
Joseph M. Brull, 451 Lenox Ave., Oak Park, Ill.
Filed Sept. 19, 1969, Ser. No. 859,364
Int. Cl. A63b 49/08, 49/12
U.S. Cl. 273-73 C

11 Claims



A racket and the like formed of a frame member made of a single continuous strip of aluminum or like material having a substantially I-shape in transverse cross section forming an outer channel and an inner channel extending the length of the strip, with certain other reinforcing metal parts secured to the frame by cement to eliminate riveting and welding.

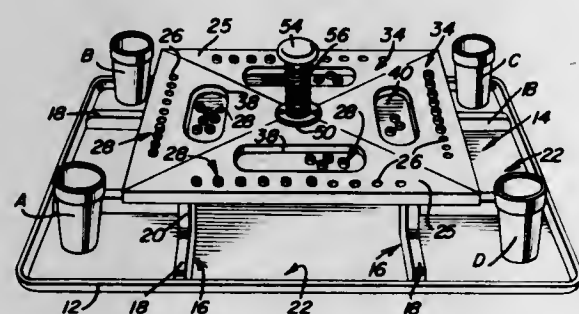
3,612,527
GAME BOARD HAVING COMPARTMENTS WITH TRAP DOORS

John R. Rogerson, Box 10, Leonardville, New Brunswick, Canada

Filed Jan. 12, 1970, Ser. No. 2,065
Int. Cl. A63f 9/14

U.S. Cl. 273-86 R

8 Claims

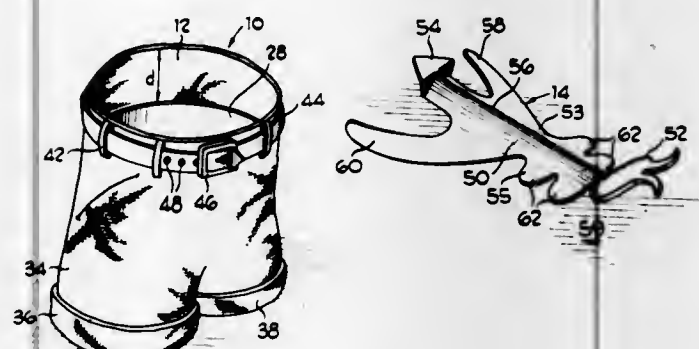


A table-type game device for two or more players characterized by a shallow panlike base providing a receiver and provided in its corners with paired right angularly disposed vertical blocks. These blocks support and elevate a horizontal game board. They also define individual checker trapping bins. The areas of the game board directly above and aligned with the bins are delineated and colored to provide distinguishable zones for the players. Each zone has an ovate slot and an underlying trap door conjointly defining a traylike well in which the distinctively colored and numbered checkers are deposited, according to the rules of the game. When a player succeeds in accumulating his ten checkers in his well, he pushes a spring returned plunger which is linked to the trap doors. All four of the doors then open and chute all collected checkers into the receiver and the lucky player is the winner of the then finished game.

3,612,528
DEFORMABLE PROJECTILE AND TARGET HAVING A VARIABLE OPENING
Marvin I. Glass, and Jeffrey D. Breslow, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Mar. 28, 1969, Ser. No. 811,509
Int. Cl. A63b 71/00

U.S. Cl. 273-95 R

3 Claims



Game apparatus for playing a target game including a target member having a variably sized target opening and projectiles of unitary construction having deformable leg members which quickly resume their original positions upon release of an applied force to flip the projectile vertically and cause it to move in a horizontal direction.

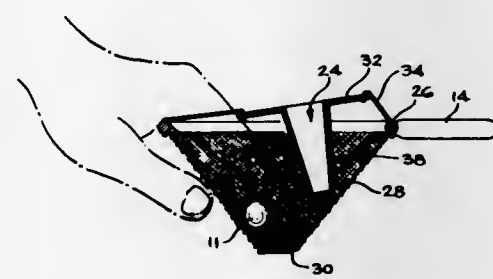
3,612,529
PLAY APPARATUS INCLUDING A MOVABLE STRIKING SURFACE

William E. Witting, 4218 North Damen Ave., Chicago, Ill.

Filed Feb. 6, 1970, Ser. No. 9,212
Int. Cl. A63b 67/00

U.S. Cl. 273-96 R

10 Claims



Handheld play apparatus for use with a playing piece such as a ball. A receptacle with an opening for entry of the piece is fixedly attached to a handheld framework. A striking surface for striking the piece is movably suspended from the framework partially covering the opening of the fixed receptacle to provide a variable target area and a variable position of the striking surface. The striking surface has a central aperture opening into a second receptacle to provide a second movable target area. The playing piece may be placed in a recess on the striking surface. The framework is set in motion to impart motion to the playing piece. Points may be scored by catching the playing piece in either of the receptacles.

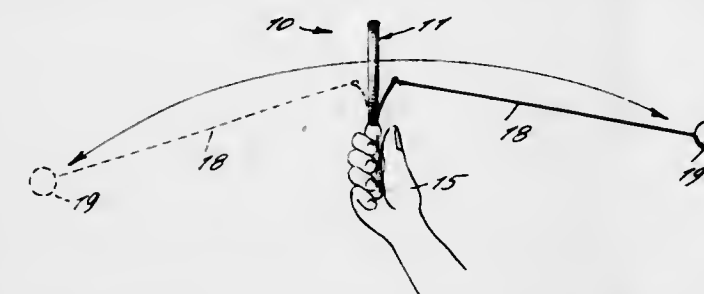
3,612,530
BALL TETHERED TO A CIRCULAR HOOP
Henry S. Smith, 1226 E. 71st Pl., Chicago, Ill.
Filed Feb. 26, 1970, Ser. No. 14,433
Int. Cl. A63b 71/04

U.S. Cl. 273-98

8 Claims

A game implement comprised of a circular hoop with a handle secured to the outer side thereof for being grasped in a person's hand, the hoop having a radially inwardly extending projection of flexible nature and to which there is secured one end of a tethering line, the opposite end of the tethering

line being secured to a small ball, and which in operative use is attempted to be driven through the hoop from both op-



mounted on a specially formed spiral shaft, enabling the player to quickly push the cover upwardly to open position relatively to the bowl, causing a vibratory sound by slip passage of flexible pawl means on the cover. Then the player endeavors to throw into the bowl as many indicators, such as those of a group of colored balls assigned to him for the play, before the rapidly spinning downward moving cover closes the bowl.

3,612,533
MANUAL MANIPULATION TOY
Jeffrey D. Breslow, Evanston, Ill., assignor to Marvin Glass & Associates

Filed June 25, 1969, Ser. No. 836,478
Int. Cl. A63f 7/04

U.S. Cl. 273-113

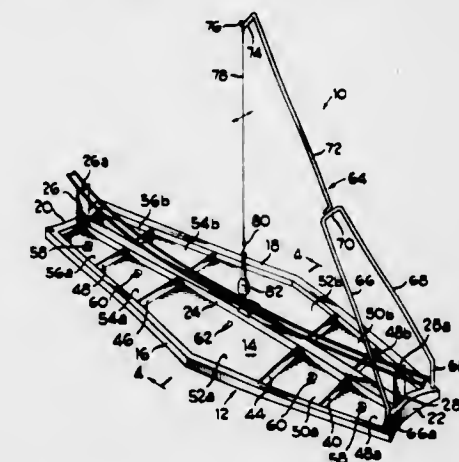
4 Claims

3,612,531
GRAVITY PROJECTED BALL GAME INCLUDING DISLODGING MEMBER
Gordon A. Barlow, Evanston, Ill., assignor to Marvin Glass & Associates

Filed Nov. 3, 1969, Ser. No. 873,449
Int. Cl. A63d 13/00

U.S. Cl. 273-101

10 Claims



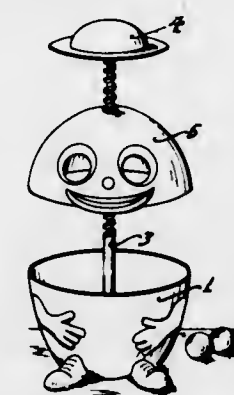
A game of the type having an arcuate track with a rolling member for traversal thereof and a freely suspended weighted member, characterized by the provision of a base on which the arcuate track is located, the base being divided into scoring zones of reduced dimension near the upturned ends of the arcuate track and enlarged dimension near the medial portion thereof, with the object of the game being to attempt to remove the traversing rolling member from the track by means of the freely suspended weighted member.

3,612,532
APPARATUS HAVING A COVER CONTINUALLY DECREASING THE DEGREE OF ACCESSABILITY OF A TARGET
Ned Strongin, 936 Willow Bend, Baldwin, N.Y.

Filed Apr. 13, 1970, Ser. No. 027,677
Int. Cl. A63b 63/00

U.S. Cl. 273-102 R

3 Claims



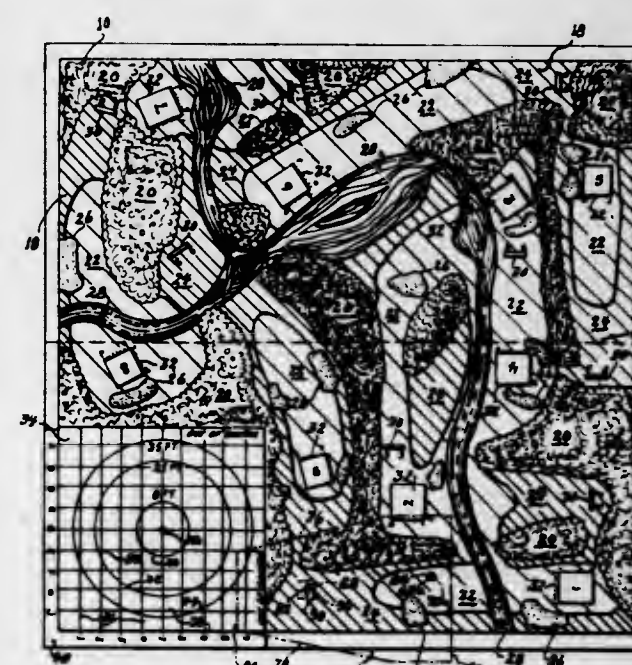
A game device for two or more players embodying a bowl and a gravity-induced cover therefor, the cover being

A manipulation toy having a pair of generally parallel spaced-apart plates spanned by pinlike ribs with a ball-holding pocket on the periphery thereof between the spaced plates. The center of the plates has aligned openings therethrough spanned by a generally circular enclosure having a ball-receiving slot. Sleeve-like members project laterally outwardly from opposite sides of the center of the plates in communication and alignment with the openings therein and with the enclosure.

3,612,534
SIMULATED GOLF GAME
Edmond G. Browne, Medford, Mass., assignor to Walter J. Kreske, Newton Centre, Mass., a part interest
Filed May 2, 1968, Ser. No. 726,074
Int. Cl. A63f 3/02

U.S. Cl. 273-134 CG

10 Claims



A golf game comprised of a plane surface carrying a pictorial scaled configuration of a multihole golf course having fairways, greens having coded areas, and playing hazards on which is a moveable golf ball locating template having an index reference alignable with a simulated golf ball wherever it may lie on the golf course and having a plurality of coded

golf ball possible destinations in spaced relation to the index reference with the particular destination being determined by a spinner associated with golf club cards wherein each card represents a different golf club and carries such portion of the destination identifying code markings with respect to the spinner as are realistic probabilities of golf ball destinations for the particular golf club represented by the selected card. Also included is a golf green to enlarged scale having intersecting lines and associated coded templates for identifying the lines so as to provide an intersecting line position for each of the golf course green coded areas for ready transfer of a golf ball from any of the golf course greens to an intersecting line position on the enlarged scale green for putting out each hole in cooperation with said spinner.

3,612,535

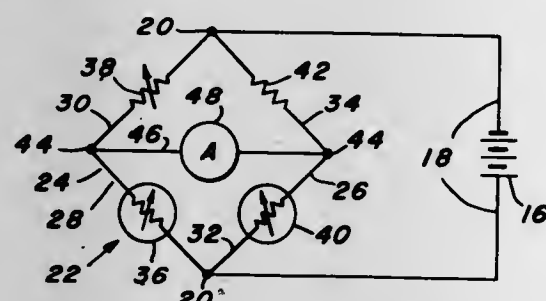
BODY HEAT COMPARISON GAME

Robert E. Davis, Murrysville; Fred M. Hedding, Pittsburgh, and Wallace H. Kirkpatrick, Pittsburgh, all of Pa., assignors to Pennsylvania Electronics Technology, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1969, Ser. No. 795,157
Int. Cl. A63f 3/00

U.S. Cl. 273-135 R

25 Claims



Novel game devices in which players bring a finger or other body part into contact with a thermistor-containing element, and by operation of electrical circuitry, values are observed on an ammeter. The thermistor containing element is preferably "thermally decoupled" from the chassis in which it is located. One disclosed feature involves the use of an audiofrequency oscillator and a speaker, with the thermistor being placed in the tank circuit of the oscillator, to afford an audible indication. A plurality of differently wired plugs or a keyboard, are disclosed for electrically interconnecting the thermistor members at the different stations to provide a multiperson game apparatus.

3,612,536

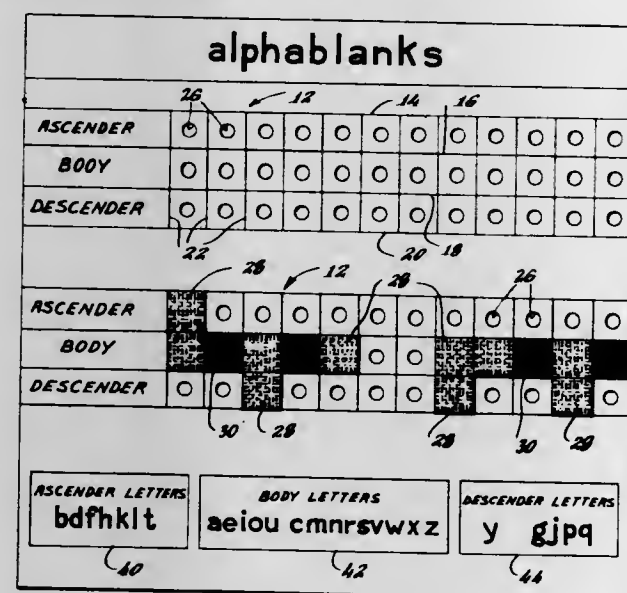
WORD GAME AND TEACHING ASSEMBLY

Rosalie R. Saul, 94 Deer Hill Ave., Danbury, Conn.

Filed Sept. 17, 1969, Ser. No. 858,735
Int. Cl. A63f 9/06

U.S. Cl. 273-153 R

7 Claims



An educational game apparatus which comprises a game board having one or more word rows with each word row di-

vided up into a succession of alphabet character spaces. Each character space is divided into an upper ascender section, a middle body section, and a lower descender section. A game piece is selectively position in at least one section of each character space to describe the envelope of a group of letters forming a word to be ascertained. The game pieces are color coded to differentiate between vowels and consonants of the word.

3,612,537

ASSEMBLING TOY

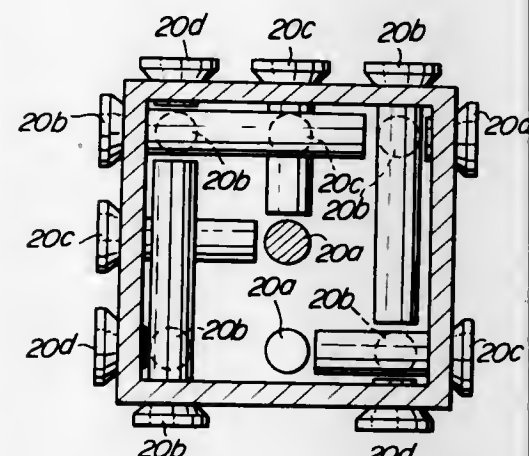
Jun Sato, Tokyo, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Aug. 1, 1969, Ser. No. 846,812

Claims priority, application Japan, Jan. 20, 1969, 44/4310
Int. Cl. A63f 9/08, 9/04

U.S. Cl. 273-156

1 Claim



A toy having in combination a hexahedral hollow body whose walls are provided with through-holes of the number beginning with one and ending with six as is in the case of a die, and rods adapted to be inserted into the through-holes, the rods being classified into four kinds in respect of their lengths, the arrangement being such that the rods are adapted to be all received in the through-holes in the walls of the body only when each of the through-holes is associated with a rod of suited length and otherwise an interference will occur between rods inserted through through-holes.

3,612,538

PISTON RING SYSTEM

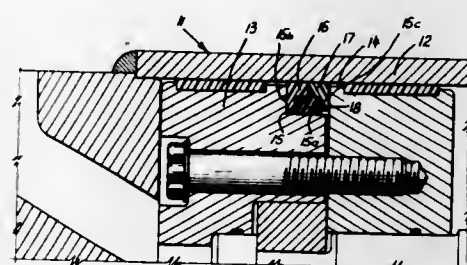
Ward Sievenpiper, Milgrove, N.Y., assignor to A-T-O Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 832,132, June 11, 1969, now abandoned. This application June 8, 1970, Ser. No. 44,171

Int. Cl. F16j 9/08, 15/32

U.S. Cl. 277-165

13 Claims



A multiple element seal ring system for pistons and the like including first and second split rings of pressure nondeformable material, preferably glass-filled nylon, adapted to be juxtaposed in a groove. A ring of resiliently yieldable, pressure deformable material, for example neoprene, has an interference fit between the groove bottom wall and a space defined by corresponding annular recesses along the inner surfaces of the nylon rings. Connecting lugs on the deformable ring received in grooves in the nylon rings and maintain the ring parts out of alignment.

3,612,539

RECORDING TAPE GUIDE APPARATUS,
PARTICULARLY ADAPTED FOR USE WITH TAPE
CASSETTES FOR EDUCATIONAL USE

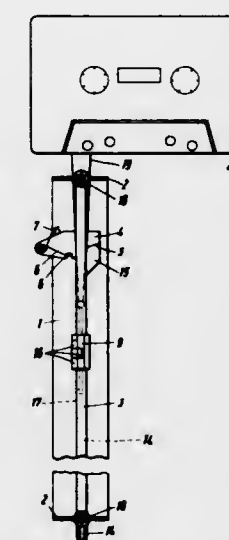
Peter Bragas, Itzsum, and Horst Rubi, Himmelsthor, both of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Jan. 21, 1970, Ser. No. 4,609

Claims priority, application Germany, Feb. 20, 1969, P 19 08 481.2

Int. Cl. G11b 5/00

U.S. Cl. 274-4 C



To provide an extended tape loop for recording of student's answers on instructional tapes, a swingable guide element is provided, movable between a pair of positions, one extending the tape out of the cassette, and the other causing the swingable guide element to swing beneath the tape in the cassette and pull out the tape towards the first position; the guide element is mounted on a guide track, swinging movement being controlled by a cam. The entire apparatus is placed with respect to the tape in the position otherwise occupied by the erase head, so that, when the tape loop is pulled out, the extending loop can be brought in operative association with recording and erase heads for educational use.

3,612,540

TAPE DECK USING ENDLESS TAPE CARTRIDGE

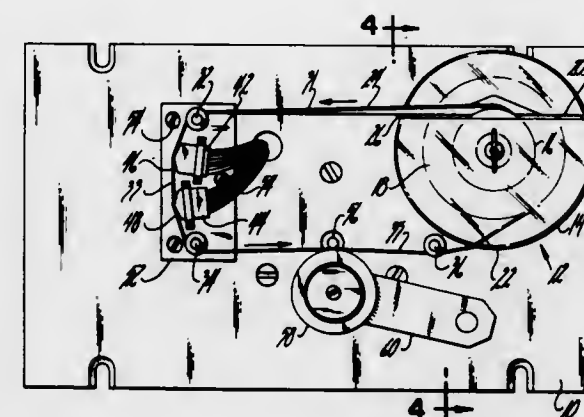
Justin L. Turner, Branford, Conn., assignor to Message Systems, Inc., New Haven, Conn.

Filed Nov. 13, 1968, Ser. No. 775,481

Int. Cl. G11b 23/06; B65h 27/00

U.S. Cl. 274-4 B

12 Claims



A tape deck for use with an endless tape cartridge comprises a means for mounting a cartridge to a deck plate and a means for guiding the external portion of the tape in a simple path parallel to the plane of the deck plate past one or more pickup heads and a driving capstan. The guide means includes two guide posts mounted on a separate mounting plate together with the pickup heads which are located

3,612,541

CARTRIDGE LOCKING MECHANISM

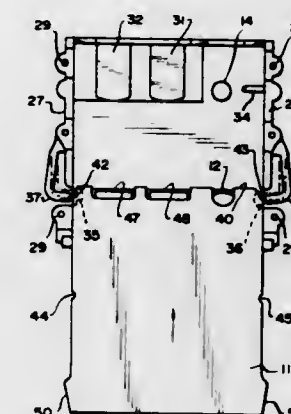
William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 12, 1969, Ser. No. 806,492

Int. Cl. G11b 5/00

U.S. Cl. 274-4 R

6 Claims



A cartridge locking mechanism for a cartridge or cassette tape player includes a pair of L-shaped spring members which are integrally molded on each side of a plastic housing providing a cavity for receiving the cartridges, with one end of each of the L-shaped spring members being formed with and attached to the housing. The other ends of the integral spring members extend into the cavity and into the path of a cartridge which is inserted therein. The spring members are cammed out of engagement with the front surface of the cartridge when a cartridge is inserted into the cavity and are shaped to fit into and engage a slot on each side of the cartridge when it is fully inserted into a tape-playing position. In this position, the spring members hold the cartridge locked into position until it is manually removed from the cavity.

3,612,542

TRACK SELECTOR SYSTEM FOR A CASSETTE
PLAYBACK DEVICE

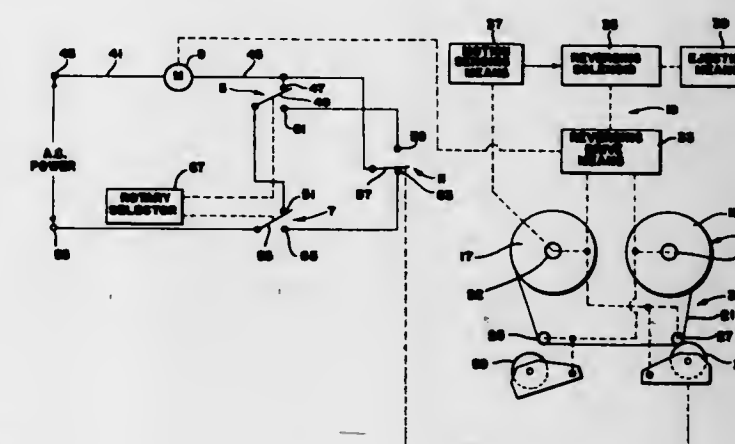
Donald W. Marcinkus, Arlington Heights, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 19, 1969, Ser. No. 877,971

Int. Cl. G11b 15/44

U.S. Cl. 274-4 D

3 Claims



A track selector system for a cassette changer of the type in which a series of cassettes carried in a magazine are

lowered in sequence into position to be played back by a playback device. The system includes a pair of switches which are actuated in different combinations of switching positions to provide a side 1 only, a side 2 only and both sides 1 and 2 switching positions. The system energizes a drive motor in the playback device if the switching position of the pair of switches corresponds with the position of a third or sensing switch which senses the direction of playback called for by the playback device. Otherwise, a control circuit is energized to either reverse the direction of playback or eject the cassette.

3,612,543

ADAPTER SPINDLE

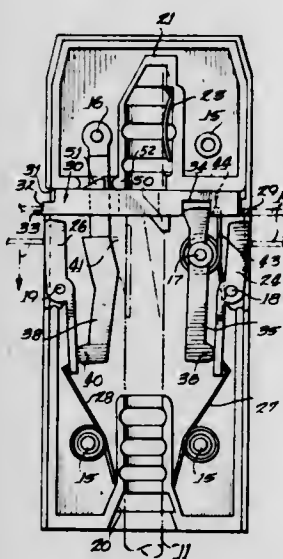
Wilbert W. Redmer, Boca Raton, Fla., assignor to Redmer Sons Company, Franklin Park, Ill.

Filed Sept. 3, 1969, Ser. No. 854,918

Int. Cl. G11b 17/04

U.S. Cl. 274—105

9 Claims



An adapter spindle for use with phonograph records having a large centerhole, which is adapted to slip over a conventional small diameter center spindle of a record changer. The adapter spindle includes a generally rectangular, flat housing, two retractable record supporting shelves, and a record separator member which controls the records supported by the spindle so only the lowermost record falls to the turntable when the record supporting shelves are retracted.

3,612,544

TORQUE RESPONSIVE FLEXIBLE SEALING RING

Peter Muller; Werner Schroder, and Rudolf Prescher, all of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany

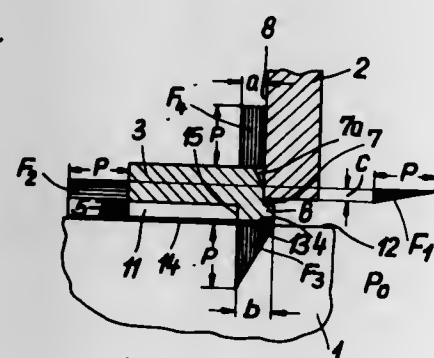
Filed Dec. 2, 1969, Ser. No. 881,514

Claims priority, application Germany, Dec. 13, 1968, P 18 14 501.2

Int. Cl. F16j 15/40

U.S. Cl. 277—25

6 Claims



A sealing structure for use between two structural members movable relative to each other and including a ring-

formed elastically twistable sealing member therebetween, in response to pressure drop being pressed into sealing contact with one of the structural members. Projecting means are provided on one structural member relative to which the sealing member is thereby prevented from relative movement in a direction transverse to pressure drop. Between the ring-formed elastically twistable sealing member and one structural member there is a first intermediate space closed against an adjoining surface and on the other hand open toward higher pressure. Between the ring-formed elastically twistable sealing member and another structural member there is a second intermediate space on the one hand joined to a narrow gap formation between the sealing member and the first structural member and on the other hand open toward higher pressure. In response to pressure built up in the gap due to dynamic impact pressure against damming means or strips while the first and second structural members move relative to each other, there occurs change of the gap so as to transform it into a wedge-shaped gap widening toward the side of higher pressure. The sealing member with narrow gap space surrounds the first structural member formed by a shaft and becomes pressed in axial direction against adjoining surface location of a second structural member by way of higher pressure prevailing in a first intermediate space.

3,612,545

RESTRAINER RING SEAL ASSEMBLY

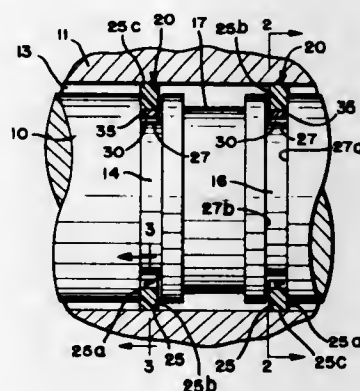
Robert S. Storms, Dayton, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio

Filed June 10, 1968, Ser. No. 735,812

Int. Cl. F16j 9/00; F02f 5/00

U.S. Cl. 277—26

10 Claims



A seal assembly for a shaft movable relative to a housing includes a filled polytetrafluoroethylene (PTFE) seal element and a split restrainer ring received in a groove on the shaft, the restrainer being received in an annular chamber formed between the base of the groove and the inner periphery of the seal element. The restrainer ring keeps the seal element in engagement with the housing as the temperature is reduced by contracting until the spaced free ends are in abutting relation preventing further contraction of the ring and the seal element.

3,612,546

RECEPTACLE WITH SHAFT SEAL

Friedrich Otto, Hameln, Weser, Germany, assignor to A. Stephan U. Sohne, Hameln, Weser, Germany

Filed Apr. 10, 1970, Ser. No. 27,265

Claims priority, application Germany, Apr. 22, 1969, 6916004

Int. Cl. F16j 15/32

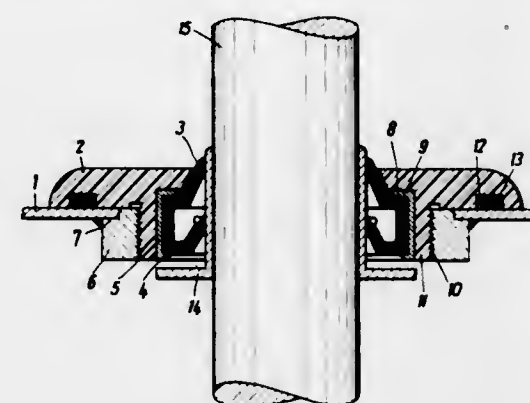
U.S. Cl. 277—58

14 Claims

In a receptacle a wall is provided with an opening which extends from the inner side to the outer side of the receptacle. An annular member is located at the inner side releasably screwed into the opening and its aperture registers with the latter. A shaft extends through the opening and the aperture from the outer to the inner side of the receptacle and a sealing unit is replaceably carried by the annular member and separable from the wall together with the same. The sealing unit includes two axially spaced elastically yield-

ble annular sealing elements each of which has an inner circumferential margin engaging the shaft means and an outer

stationary face, and including a spring holder having means whereby debris and contaminants which tend to accumulate



circumferential margin engaging the annular member, or a retaining ring located in the aperture of the annular member.

3,612,547

LUBRICANT SEAL HAVING CASING AND ITS HOLDING MEANS

Yoshiro Kan, Fujisawa-shi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

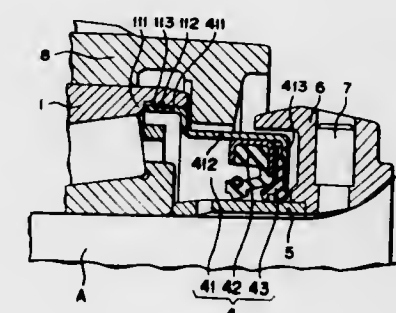
Division of Ser. No. 634,689, Apr. 28, 1967, Pat. No. 3,467,395

Filed Jan. 9, 1969, Ser. No. 810,059

Int. Cl. B65d 53/00

U.S. Cl. 277—58

2 Claims



This disclosure describes a novel press-fitting fluidtight lubricant seal housing, an interlocking mounting bore, and novel lubricant and dust seals for use therein. The seal housing has an annular peripheral groove on the exterior sidewall, and the mounting bore has an annular peripheral projection or ring extending inwardly on the interior sidewall. The annular groove and projection interlock when the seal housing is telescoped into the mounting bore. An interior, cylindrical sidewall, connected to the exterior sidewall by a radially extending flange, has provision therein for retaining a dust seal element and an oil seal element. The oil seal has at least one seal lip at its inside peripheral portion extending axially inwardly. The dust seal lip is positioned adjacent the oil seal so as to form a pocket therebetween. The seal elements are made of separate pieces of elastomeric material.

3,612,548

MECHANICAL SEAL SPRING HOLDER

Herbert E. Tracy, Alhambra, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 26, 1969, Ser. No. 880,253

Int. Cl. F16j 15/16, 15/40

U.S. Cl. 277—74

4 Claims

A mechanical seal assembly of the type having a stationary face and a rotary face forming a sealing interface therebetween, the rotary face being spring-biased toward the

therein are ejected therefrom as the holder is rotated with the rotary seal.

3,612,549

PRESSURE SEAL

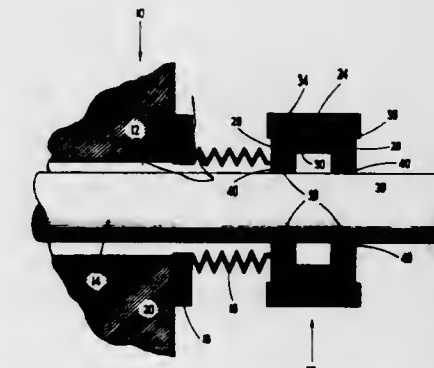
Melvin H. Berkowitz, 53 Sheldon Road, Newton, Mass.

Filed May 25, 1970, Ser. No. 40,155

Int. Cl. F16j 9/00; E21b 33/00

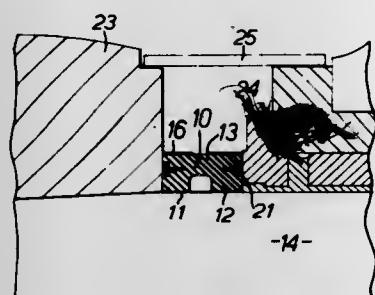
U.S. Cl. 277—80

5 Claims



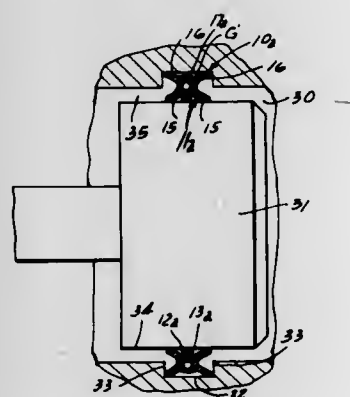
An improved hermetic seal between an enclosure and a shaft which projects and passes through the enclosure into the chamber within. The seal isolates the internal chamber from the ambient environment when the chamber and environment are at different pressure levels, as when the chamber is maintained at vacuum conditions. Additionally, the construction of the seal permits the shaft to be rotated at high speeds with a moderate amount of flexure while maintaining an effective seal. The shaft which is ferromagnetic, passes through an enlarged opening in the housing. One end of a bellows is secured to the exterior housing about the opening and surrounds a portion of the shaft. The other end of the bellows is sealed and secured to a permanent ring magnet which surrounds the shaft and which has annular pole elements spaced axially along the shaft, each pole element surrounding the shaft completely. The pressure seal is effected by a volume of magnetic fluid associated with each pole piece, each volume of fluid being disposed annularly around the shaft in the region of the pole pieces. The magnetic fluid bridges the annular gaps between the pole pieces and the shaft, the magnetic pole pieces and associated regions of the shaft being contacted intimately in sealed relation by the magnetic fluid and being maintained in this configuration by the magnetic pole pieces.

3,612,550
SHAFT SEALS
 Samuel C. W. Wilkinson, Slough, England, assignor to Crane Packing Limited, Slough, England
 Filed Feb. 26, 1970, Ser. No. 14,358
 Claims priority, application Great Britain, Mar. 5, 1969, 11,653
 Int. Cl. F16j 15/24
 U.S. Cl. 277-101 4 Claims



In a shaft seal suitable for a marine stern tube comprising a ring of resilient material of which the end faces are provided with annular thrust bearing surfaces, to facilitate assembly or replacement the ring is split by a longitudinal cut providing shaped cut faces of interengaging form that seal together on radially outward pressure, the split ring is enclosed by reinforcing bands and the thrust bearings are segmented.

3,612,551
BIDIRECTIONAL LIP SEAL
 Paul Joseph Grabill, Jr., Sterling Heights, Mich., assignor to TRW Inc., Cleveland, Ohio
 Filed Nov. 6, 1969, Ser. No. 874,628
 Int. Cl. F16j 15/32
 U.S. Cl. 277-163 6 Claims

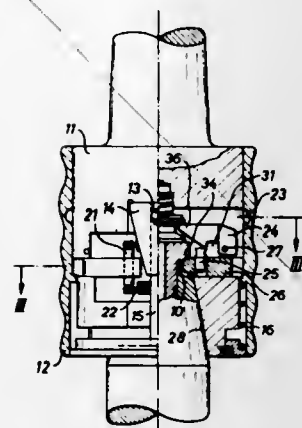


A circumferential spring-loaded plastics material packing ring particularly adapted for sealing relatively movable or stationary members, which has a generally X-shaped cross section providing a pair of diverging lips on each side thereof and a central peripheral groove receiving a circumferential spring to load the two lips on one periphery of the ring against one surface and to load the two lips on the other periphery of the ring against the other surface, thereby providing bidirectional sealing.

3,612,552
QUICK CHANGE TOOL HOLDER
 Paul Brundler, Hinterbergstrasse, Galgenen, Switzerland
 Filed Aug. 13, 1969, Ser. No. 849,670
 Claims priority, application Switzerland, Aug. 21, 1968, 12 565/68
 Int. Cl. B23b 31/12 7 Claims

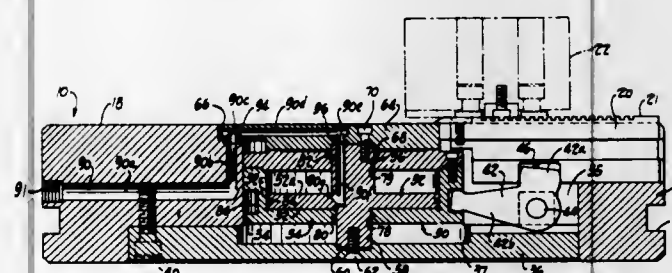
A quick change tool holder is arranged for tool change without stopping the tool spindle. The holder receives an arbor, the latter being engaged by segmental members in the holder body which are moved radially apart by wedges operated by a sliding sleeve on the outside of the holder. The

segments are held in a released position after removal of the arbor by means of pawls engaging catch pins on the segments. Nose parts of the pawls engage a grooved ring spring mounted in the holder body and displaced on insertion of the



arbor so that the segments are released. Limb portions of the segments then engage mating surfaces on the arbor which initiate acceleration of the arbor to the spindle speed after which the limbs enter slots in the arbor to give a positive drive.

3,612,553
LOW PROFILE FLUID ACTUATED CHUCK
 George J. Ovanin, Euclid, Ohio, assignor to The S-P Manufacturing Corporation
 Filed Feb. 28, 1969, Ser. No. 803,204
 Int. Cl. B23b 31/30
 U.S. Cl. 279-4 11 Claims



A chuck having a low profile, particularly suitable for use with drill presses or the like. An internal fluid motor with a fixed piston and a movable cylinder is operably connected to jaw operating linkages within the chuck which are located radially about the fluid motor.

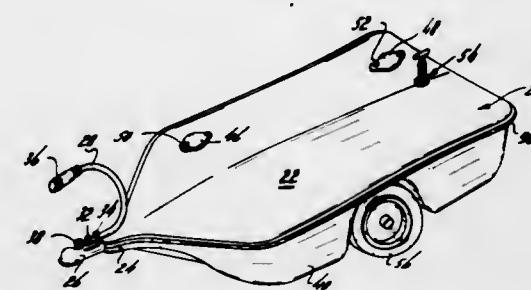
3,612,554
SCREWDRIVER WITH SUBSTITUTABLE BIT
 Katsuyuki Totsu, No. 4-7, 3-chome, oshlage, Sumida-ku, Tokyo, Japan
 Filed June 18, 1968, Ser. No. 737,871
 Claims priority, application Japan, June 24, 1967, Mar. 6, 1968, 42/40239; 43/14040
 Int. Cl. B25g 3/10; B25b 15/00
 U.S. Cl. 279-102 9 Claims



This screwdriver comprises a sleeve shank which at its end portion is provided with a slot and a center cavity bisecting

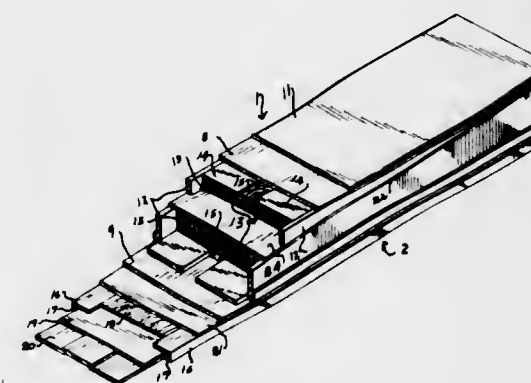
said slot into which a bit is substitutionally inserted. The sleeve shank end is covered with a sleeve adapter of plastic material which serves to hold and suspend the screw.

3,612,555
TRANSPORTABLE TANK TRAILER
 Calvin Lee Baker, Jefferson Court Apartment 3242 Winton Road South, Rochester, N.Y.
 Filed Aug. 19, 1969, Ser. No. 851,183
 Int. Cl. B60p 3/22
 U.S. Cl. 280-5 E 7 Claims



A transportable trailer of the type having an elongated liquid-holding tank, a pair of wheels supported beneath the tank, and a ball socket assembly supported in the fore portion of tank for connection to a towing vehicle. The tank includes one or more filling apertures in the top for draining of mobile camper or trailer holding tanks and a master drain in its aft portion for release of the stored contents into a park dumping station. The tank is especially adapted for dumping travel trailers at campgrounds and, thus, has a relatively low profile so as to be wheeled beneath conventional trailers.

3,612,556
SNOW SKI HAVING ANGULAR TORSION MEMBER
 Robert R. Seawell, Minneapolis, Minn., assignor to Larson Industries, Inc., Minneapolis, Minn.
 Filed Sept. 25, 1969, Ser. No. 860,924
 Int. Cl. A63c 5/12
 U.S. Cl. 280-11.13 L 6 Claims

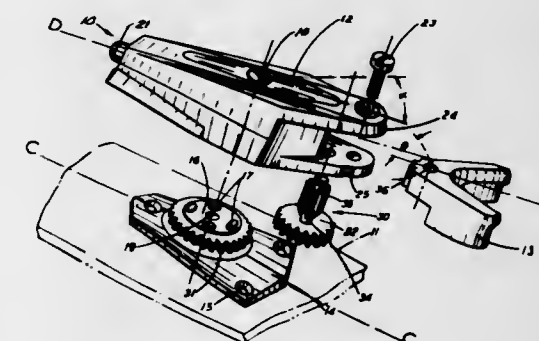


A torsion plate embedded in the midportion of a snow ski intermediate the front and rear ends of the ski, the plate having one end portion disposed adjacent the top of the ski. The torsion plate slopes angularly downwardly from said one end portion thereof toward one end of the ski and terminates at its opposite end in upwardly spaced relation to the bottom of the ski.

3,612,557
SKI BINDING HAVING IMPROVED TOE CLEAT INCLUDING ANTI-EARLY RELEASE LINKAGE
 Bernard E. Berlenbach, Mill Valley, Calif., assignor to Ski Free Company, Mill Valley, Calif.
 Filed Jan. 14, 1970, Ser. No. 2,721
 Int. Cl. A63c 9/00
 U.S. Cl. 280-11.35 T 8 Claims

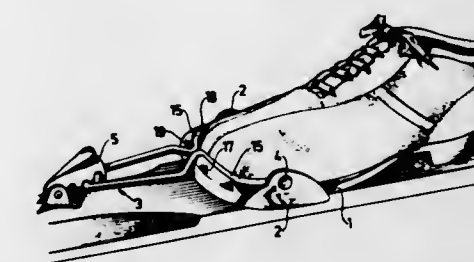
A toe cleat for a ski binding includes an anti-early release linkage for providing sufficient holding force to the sole of

the skier's boot relative to the toe cleat. Operation of the linkage is initiated by sideward excursion of the rotational part of the ski binding; incremental angular rotation of such rotary part is translated to the toe cleat through the linkage. In one form, the linkage comprises a series of gears including a stationary spur gear in fixed engagement with the hub of the fixed portion of the ski binding; a pair of axially spaced pinion gears fixed on an upright common shaft rotatably connected to the moving portion of the ski binding; one pinion gear is in contact with the stationary gear, and the other pinion gear is in tangential contact with a sector gear formed at the hub of the toe cleat. Since the toe cleat is meshed through the pinion gears to the stationary spur gear, until the binding undergoes rotation, the toe cleat is solid to the ski runner. As the binding undergoes rotation, however, the common shaft is caused to rotate, causing, in turn, corresponding and proportional rotation of the toe cleat. In another form of the invention, the linkage comprises a fixed yoke positioned about the hub of the fixed portion of the



binding and a pair of lever members (bars) pivotally attached at one end, to the yoke, and, the other end, to a support for the toe cleat. Since the pivot points of levers are not coincident with the pivot point of the toe cleat, until the binding undergoes movement due to external forces acting on the binding, say as the skier loses his upright stability and starts to fall, the toe cleat is solid to the ski runner. However, when movement of the rotating part of the binding occurs, the toe cleat, cleat support and the twin lever members, are conveyed, in tandem, therewith which causes the connection points at the toe cleat support to move along arcuate pass centered at the other connection points of the levers. In either form, the linkage is seen to control the extent of rotation of the toe cleat in a manner concomitant with the rotation of the ski binding but in an opposite angular direction; and affix centerlines of the toe cleat and the skier's boot in coincident alignment until the release angle for the ski binding is achieved.

3,612,558
HOLDING ELEMENT FOR SKI BOOT
 Alvar Eskil Petrus Kjellstrom, Sollentuna, and Ake Einar Charles Molin, Nybro, both of Sweden, assignors to AB Broderna Kjellstrom, Solna, Sweden
 Filed Feb. 17, 1970, Ser. No. 11,963
 Int. Cl. A63c 9/20
 U.S. Cl. 280-11.35 B 7 Claims



A holding element for a boot intended for skiing which boot abuts with a forward section of its sole on both sides against a side support disposed on a ski binding, which prevents the movement of the boot sideways and forwards in relation to the ski, whereby the boot can be pressed by a

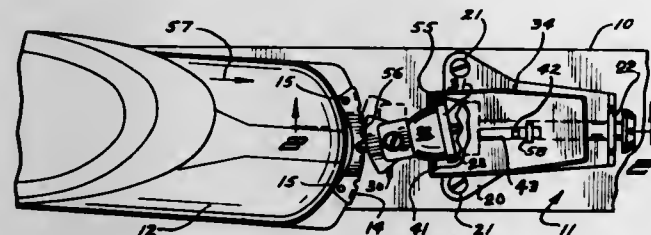
pivotably mounted shackle in the direction toward the ski in order to be held firmly in the binding, which shackle can be made to lie from above against the edge of the sole within at least a part of the said forward section, and can be locked in this position, the holding element being attached to the sole of the boot and having an upward projection which abuts against a forward portion of the shackle to retain the boot against backward movement along the ski.

3,612,559 TOE BINDING

Paul S. Petersen, Minnetonka; Roger D. Bloomfield, St. Louis Park, and Edward A. Pauls, Excelsior, all of Minn., assignors to Sports Technology, Inc., Edina, Minn.
Filed July 14, 1969, Ser. No. 841,315
Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

23 Claims

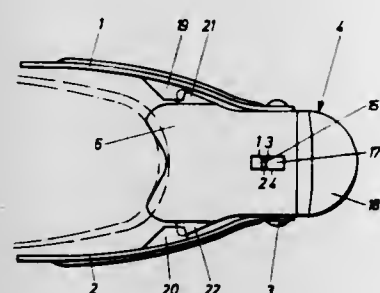


A toe binding for skis which is made to reliably release the boot of a skier laterally and also in upward direction. The binding retains the boot solely under spring force so it will absorb shocks, and will store energy to keep the boot in the binding at lower loads and will return the boot to a centered position if the boot moves but is not completely released. Because of the ability to provide a resetting force and permit some boot movement, the binding can be set at a lower ultimate release force to provide greater safety to skiers.

**3,612,560
REAR TIGHTENER FOR SAFETY SKI BINDING**
Bernd Payrhammer, Farchant, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed July 23, 1969, Ser. No. 843,989
Claims priority, application Germany, Mar. 7, 1969, May 9, 1969, G 69 09 278.0-7402; P 19 23 882.5
Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

9 Claims



A boot-pushing member is rotatably mounted on an axle which extends transversely to the longitudinal axis of the ski and parallel to the tread of the ski and forms the web of a U-shaped member having legs which serve as pull rods and have free end portions which, on an axis that is parallel to the web, are pivoted to a plate which is secured to the ski. The boot-pushing member is subjected to the action of a spring, which produces the force for holding down the heel and the contact pressure between the toe portion of the skiing boot and a toe holder and which has one end that engages the axle which carries the boot-pushing member. The boot-pushing member is mounted on the axle by means of a slot and is slidable against the force of the spring so as to reduce the spacing of the sole-holding end of the boot-pushing member from the axle. The boot-pushing member has at least one laterally outwardly directed projection close to the sole-holding end, which projection serves to cooperate with a bracket, which extends inwardly from one leg of the U-shaped member, so

that said bracket permits of a rotation of the boot-pushing member only when the sole-holding end has been displaced toward the axle. The sole-holding end lies over the straight line connecting the axle forming the web of the U-shaped member and the pivotal axis of the free end portions of the legs when the projection of the boot-pushing member engages the bracket from below.

3,612,561

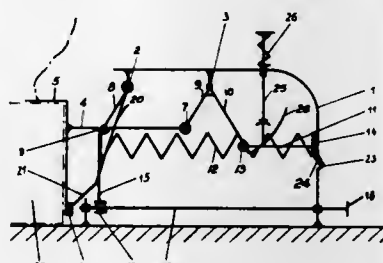
HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS
Hannes Marker, Garmisch-Partenkirchen, and Ludwig Axthammer, Schweinfurt Am Main, both of Germany, assignors to Hannes Marker, Garmisch-Partenkirchen, Germany

Claims priority, application Germany, Oct. 1, 1968, P 18 00 397.9

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

13 Claims



A carrying member for a soleholder is biased by a spring. A heel-holding device is adapted to automatically assume a locking position in response to the introduction of a skiing boot and to be opened arbitrarily, for example, by the application of a slight pressure with the ski pole on a release member, or automatically in response to an excessive tensile force acting substantially in an upward vertical direction. The carrying member forms a coupler link of a four-bar linkage, which has two cranks of equal length, to which the carrying member is pivotally connected and which are pivoted in a housing on horizontal transverse axes spaced the same distance apart as the pivotal axes of the carrying member. The transverse axes lie in the housing in an approximately horizontal plane. The spring acts on the carrying member by the crank which is remote from the soleholder. The pivot connecting the carrying member to that crank forms also the pivot for the carrying member during a second phase of movement, the second phase serves to open the device and succeeds a first phase of movement, in which the carrying member moves parallel to itself.

3,612,562

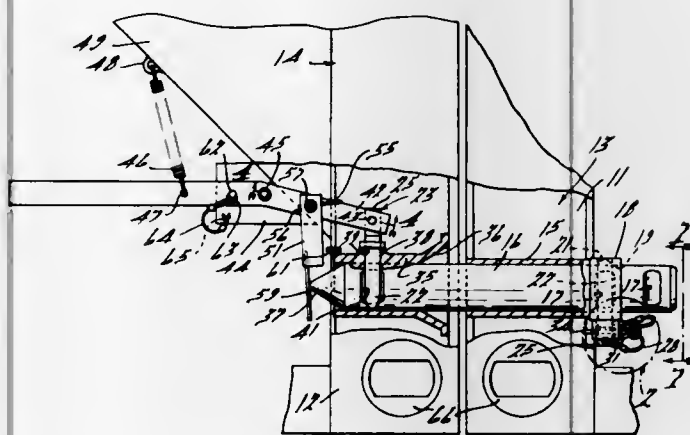
AUTOMATIC FRAME COUPLER
Adam D. Sweda, Grosse Pointe Farms, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed May 7, 1970, Ser. No. 35,525

Int. Cl. B62d 21/12

U.S. Cl. 280—34 A

7 Claims



The coupler joins two chassis frames to form an elongated unit which can be transported by a tractor. The front end of

each frame has a pin in each corner which extends outwardly from the front of the frame. The rear end of each frame has two apertures aligned with the pins for receiving the extending ends of the pins of a second frame which are automatically locked within the apertures to couple the one end of one frame to the other end of a second frame.

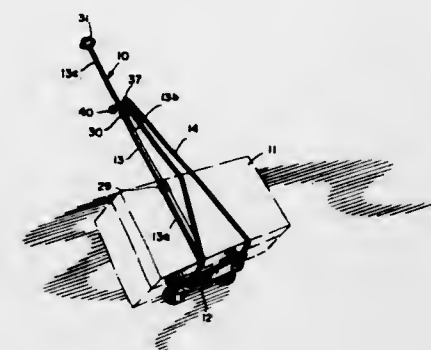
3,612,563

COLLAPSIBLE SUITCASE CARRIER
Eugene A. Kazmark, Sr., 5 Remin Lane, Joliet, Ill.
Continuation-in-part of application Ser. No. 685,072, Nov. 22, 1967, now abandoned. This application Feb. 6, 1970, Ser. No. 9,147

Int. Cl. B62b 1/12

U.S. Cl. 280—36 C

2 Claims



A collapsible suitcase carrier for transporting suitcases and the like. The carrier is provided with a dolly which includes an elongated L-shaped supporting bracket provided with a pair of wheels. An elongated handle is removably attached to the dolly, and the handle may be formed in sections which may be taken apart or telescoped to reduce the length of the handle to a compact size. The carrier also includes a strap, both ends of which are attached to the dolly. The supporting bracket is adapted to receive an edge of the suitcase to be carried, and the suitcase is further supported by the handle. The suitcase is firmly held against the supporting bracket and handle by passing the strap around the suitcase and securing the strap to the handle.

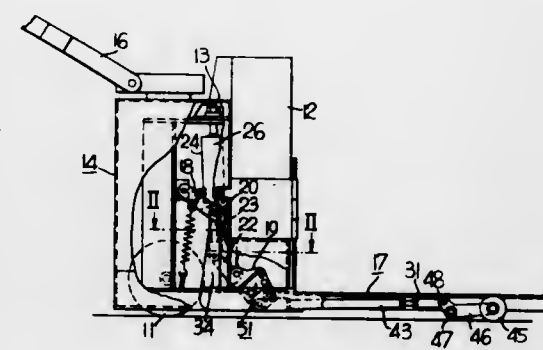
3,612,564

LIFT LINKAGE FOR WALKIE LIFT TRUCK
Dennis G. Harvey, Ancaster, Ontario, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Jan. 16, 1970, Ser. No. 3,371

Int. Cl. B62d 21/18

U.S. Cl. 280—43.12

4 Claims



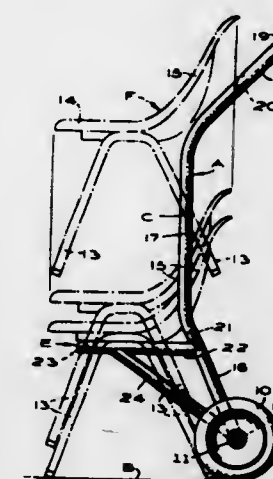
A lift linkage is provided for a low lift truck in which a pair of levers for operating the push-pull rods have extensions releasably secured thereto. The extensions are connectable to the levers in one of two laterally spaced mounting positions, thus permitting alternate attachment to load support attachments having wheel operating rods of different lateral spacing.

3,612,565

STACK-CHAIR DOLLY
Mike Zimmerman, 1279 California Drive, Burlingame, Calif.
Filed Nov. 24, 1969, Ser. No. 879,150
Int. Cl. B62b 1/18

U.S. Cl. 280—47.24

2 Claims



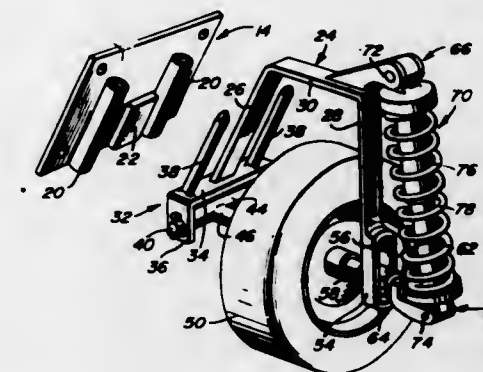
A stack-chair dolly for transporting a stack of chairs nested one above the other, and defining a main roll-about frame having a forwardly projecting support frame secured to the main frame, the support frame being located and dimensioned for being inserted between pairs of side legs on the lowermost chair and under a seat on the latter so as to lift the stack of chairs when the main frame is tilted rearwardly about wheels of the dolly, whereby the stack of chairs may be readily transported from place to place, the support frame being insertable from the rear of the stack and the main frame defining a cradle to prevent the chairs from shifting laterally during transportation.

3,612,566

REMOVABLE SUPPORT WHEEL ASSEMBLY
Cecil R. Sholl, P.O. Box 681, Kodiak, Alaska
Filed Apr. 15, 1970, Ser. No. 28,826
Int. Cl. B60g 3/02

U.S. Cl. 280—47.32

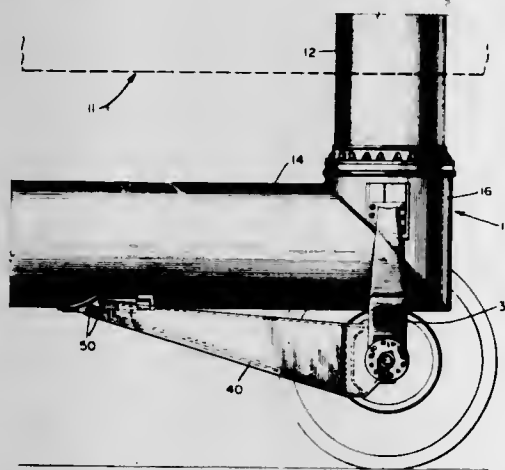
9 Claims



A wheel mount for removable support from one side of a boat and including an inverted generally U-shaped bridge projecting outwardly from the boat side. The bridge is defined by a pair of upstanding legs interconnected at their upper ends by means of a rigid bight portion and one leg of the bridge is rigidly braced relative to the corresponding boat. An axle assembly is pivotally supported at one end portion from the lower end of the inside leg of the bridge for oscillation about a horizontal axis disposed generally normal to the plane in which the bridge is disposed for vertical swinging movement of that portion of the axle disposed adjacent the lower end of the outer leg of the bridge. A wheel is journaled on that portion of the axle extending between the lower ends of the legs of the bridge and spring structure is connected between the outer end of the bight portion of the bridge and the outer end portion of the axle which projects outwardly of the lower end of the outer leg of the bridge. The spring structure yieldingly biases the outer end of the axle

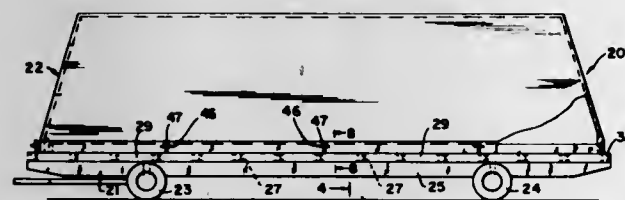
downwardly and the outer leg of the bridge and the axle include coating portions limiting vertical swinging movement of the axle and guiding the outer end of the axle against deflection out of the plane in which it is vertically swingable.

3,612,567
REAR AXLE ASSEMBLY
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Booth Airside Services, Inc.
Filed Sept. 2, 1969, Ser. No. 854,696
Int. Cl. B60g 1/02
U.S. Cl. 280-80 R 2 Claims



An unsprung rear axle assembly for a vehicle having a chassis which includes a main horizontal support beam and a vertical post upon which a passenger pod is adapted to be moved up and down. The axle assembly is in the form of a truss which includes vertical diagonal struts connected from the ends of the axle to the vertical post to resist lateral overturning moments which may be applied through the vertical post. The assembly further includes horizontal diagonal struts connected from the ends of the axle to the horizontal beam to resist braking moments and longitudinal forces when the vehicle is slowed down or stopped. Shear blocks are affixed to the chassis to permit accurate alignment of the ends of the vertical and horizontal struts thereby aiding in the assembly, disassembly and reassembly of the axle assembly from the chassis while still maintaining accurate alignment of the parts involved.

3,612,568
STEERABLY WHEELABLE TRANSPORTABLE CARGO CONTAINER
Arney C. Stensrud, c/o Transpor Trailer, Inc. 333 W. 1st St., Dayton, Ohio
Continuation-in-part of application Ser. No. 795,189, Jan. 30, 1969, now abandoned. This application Aug. 20, 1970, Ser. No. 65,419
Int. Cl. B60p 1/00
U.S. Cl. 280-103 13 Claims



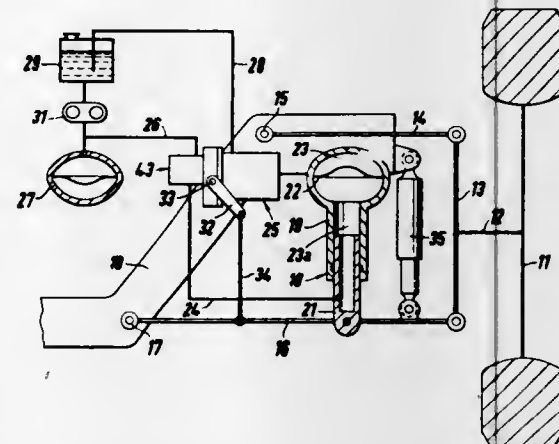
The invention comprises a cargo container for use in loading merchandise onto auto hauling railway cars and trailers and the like, said container having flat bed member with wheels mounted thereon and a tow rod for towing the container from place to place, a removable top member, said flat bed member having narrow upright flanges along its outer edge, and said removable top having channel portions along its lower edge for mounting over said flanges to mount said top member to said flat bed member.

3,612,569
TRAILER CONSTRUCTION
Joseph A. Marinelli, 14 W. Hazelcroft Ave., New Castle, Pa.
Filed Jan. 29, 1969, Ser. No. 794,944
Int. Cl. B62d 53/06
U.S. Cl. 280-106 13 Claims



A trailer construction including a plurality of longitudinally extending transversely spaced main beams each fabricated to include a longitudinal upwardly convex bow. The longitudinal beams are interconnected by means of transverse bracing members extending and secured therebetween and a central longitudinal decking structure is secured over and between the main beams while longitudinal opposite side decking structures are supported in cantilever fashion from and project outwardly of the remote sides of the main beams. Also, the forward end of the trailer includes a fabricated sheet steel fifth wheel plate keyed into and secured to and between the forward ends of the main beams.

3,612,570
SUSPENSION SYSTEMS FOR VEHICLES
Robert Hazell Pitcher, Leamington Spa; Michael W. Lewis, Solihull, and Stephen J. Crouch, Solihull, all of England, assignors to Automotive Products Company Limited, Leamington Spa, England
Filed Jan. 15, 1969, Ser. No. 791,233
Claims priority, application Great Britain, Jan. 15, 1968, 2112/68
Int. Cl. B60g 17/04
U.S. Cl. 280-124 F 6 Claims

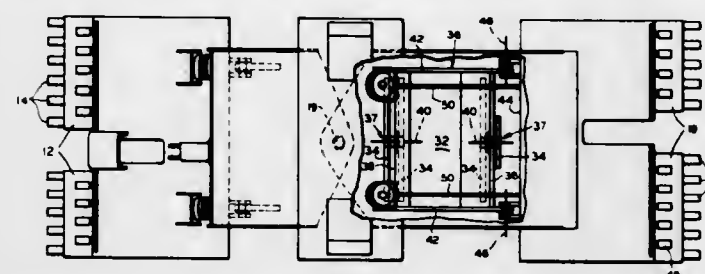


A suspension arrangement for a vehicle in which there is interposed between the sprung mass of the vehicle and a wheel or other supporting element thereof a variable-length liquid-filled strut associated with a suspension spring device, a valve controlling the flow of liquid into and out of the strut to adjust its length is acted on by an inertia mass movably mounted on the sprung mass of the vehicle and acted on by relative movements of the sprung mass and the supporting element which movements are transmitted to the inertia mass through a resilient link acting in parallel with means providing velocity feedback.

3,612,571
VEHICLE SUSPENSION MECHANISM
Gene F. Hand, Stevensville, and Robert L. Siewert, St. Joseph, both of Mich., assignors to Clark Equipment Company
Filed Oct. 27, 1969, Ser. No. 869,605
Int. Cl. B60g 9/02
U.S. Cl. 280-124 R 7 Claims

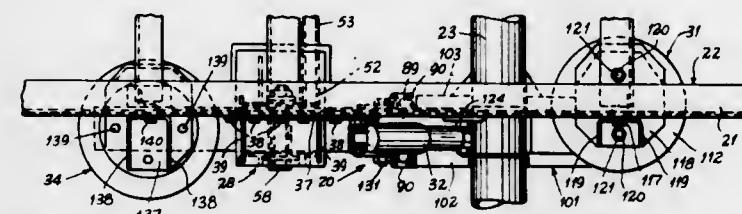
A suspension mechanism including a cradle which is pivoted on the frame of the vehicle about a longitudinal axis.

An axle support member is secured to an axle and also is pivotally mounted on the cradle about a transverse axis.



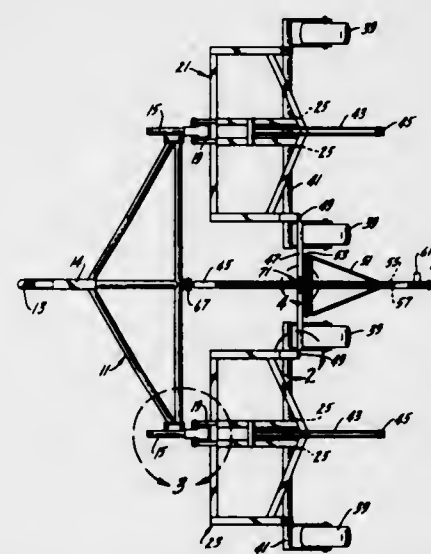
There is an additional connection between the axle support member and the cradle which restrains pivotal motion between the axle support member and the cradle.

3,612,572
AIRLIFT SUSPENSION ASSEMBLY
John E. Raidel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.
Filed Sept. 17, 1969, Ser. No. 858,732
Int. Cl. B60g 9/02
U.S. Cl. 280-124 7 Claims



A vehicle suspension assembly designed to support a vehicle axle assembly and cushion and dampen shock when the axle moves either upward or downward of its normal position, and adjustable for different positions of the vehicle axle. The damping is provided by a pair of opposed air springs. The adjustability is provided by a mount that supports one end of the suspension assembly and is slidable on a hanger assembly to adjust the position of the suspension assembly. Also certain parts of the suspension assembly are invertible for accommodating substantial variations in axle location. Adjustable eccentrics in the slidable mount permit alignment of the axle.

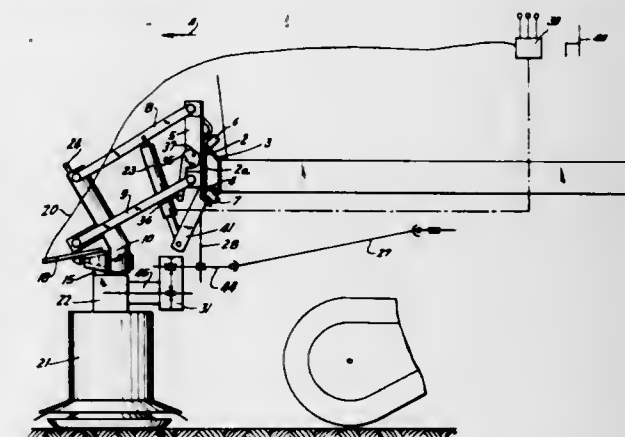
3,612,573
GANG MOWER
James E. Hoffman, Glenview, Ill., assignor to Roseman Mower Corporation, Glenview, Ill.
Filed Apr. 6, 1970, Ser. No. 26,000
Int. Cl. B62d 53/00
U.S. Cl. 280-411 C 5 Claims



A gang mower having a center frame, a right frame and a left side frame. The side frames are adapted to have mowers

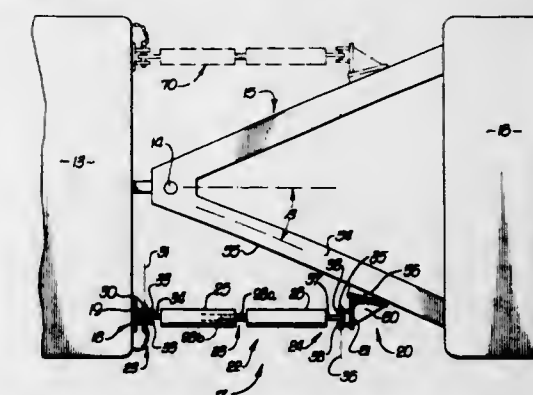
attached thereto and an additional mower is towed rearwardly of the side frames. The side frames are independently connected to the main frame to permit each side frame to pivot about both a transverse axis and a longitudinal axis while restraining the side frames against movement about vertical axes. The side frames are connected to each other by a spacer bar which is pivotally connected at its opposite ends to the side frames. A boom is supported on the spacer bar and is pivotally connected at its forward end to the main frame. The boom is mounted to move vertically relative to said spacer bar for a limited distance.

3,612,574
HITCH AND POWER-TAKEOFF ASSEMBLY FOR CONNECTING FARM IMPLEMENTS TO A VEHICLE
Emil Klopfer, Engen; Martin Stehle, Gottmadingen, and Edwin Schneble, Gallingen, all of Germany, assignors to Maschinenfabrik Fahr AG, Gottmadingen, Germany
Filed May 5, 1969, Ser. No. 821,707
Int. Cl. B60d 1/00
U.S. Cl. 280-467 10 Claims



A self-propelled farm vehicle, e.g. a crop-pickup loader or wagon, is fitted with a horizontal profiled bumper of noncircular cross section along which an implement hitch or support can ride. This support is provided with a hydraulic cylinder which operates a parallelogrammatic linkage connected to a generally upright member which can be lifted or lowered relative to the bumper or crossbar. A generally cylindrical coupling bolt having a narrow end is mounted on this vertical member and is adapted to engage in a confronting hole on a farm implement. A locking pawl catching in a groove on the bolt holds the implement in place while allowing it to swing from side to side to a limited extent. A power-takeoff shaft is journaled in a plate pivoted about a horizontal axis on the bumper and is coupled with a pivotal chain transmission on the implement.

3,612,575
TRAILER BACKING GUIDE
Jack B. Stewart, 10441 E. Bisby St., El Monte, Calif.
Filed Jan. 16, 1970, Ser. No. 3,294
Int. Cl. B62d 53/00
U.S. Cl. 280-474 8 Claims

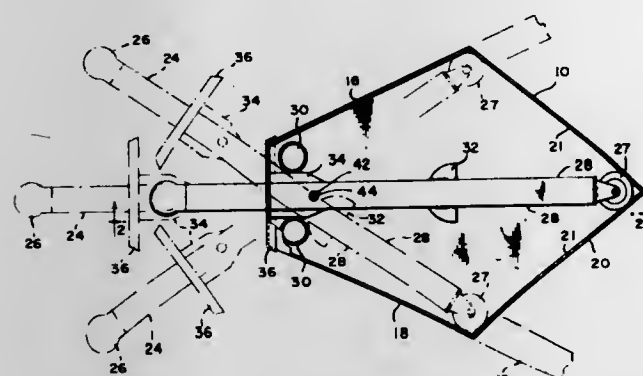


A backing guide for a trailer includes multiple brackets connectable to pulled and pulling units and an elongated

guide bar releasably connectable with the brackets, the bar being lengthwise adjustable.

3,612,576
TRAILER HITCH
Melvin L. Marler, P.O. Box 325, Bremerton, Wash.
Filed Aug. 21, 1969, Ser. No. 851,962
Int. Cl. B60d 7/00
U.S. Cl. 280-478 B

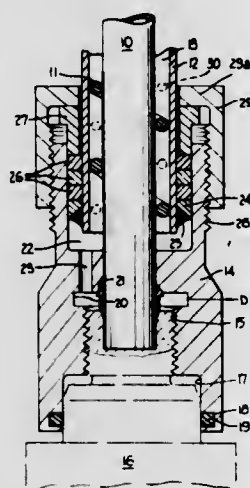
3 Claims



A trailer frame is provided with a box having horizontal upper and lower walls and rearwardly converging rear guide walls. A drawbar is telescopically mounted in said box and is provided with a caster at its rear end engageable with said converging guide walls and lateral stop members. The box is provided with a pair of laterally spaced pipes that are engageable with the drawbar to guide it during retraction and extension and also serve to limit outward movement of the drawbar. The box is also provided with lateral spacers engageable with the pipes when the drawbar is retracted to assure a tight connection.

3,612,577
CONCENTRIC PIPES WITH DRAIN MEANS
Joseph Albert Pope, Birmingham, England, and Colin William Dawson, Cooksville, Ontario, Canada, assignors to Mirrless Blackstone Limited
Filed Oct. 29, 1969, Ser. No. 872,062
Claims priority, application Great Britain, Oct. 30, 1968, 51351/68
Int. Cl. F16l 55/00
U.S. Cl. 285-14

3 Claims

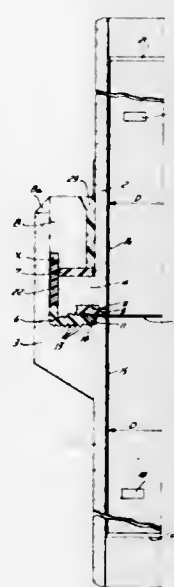


The invention provides a concentric circular pipe assembly particularly suited for the conveyance of fuel oil under pressure to engines. The inner pipe is used to convey the fuel oil and the outer pipe is provided as a leak jacket to collect and drain away safely any oil escaping from the inner pipe. Between the inner and outer pipes there is provided an expanded helical member which is close fitting about the inner pipe and close-fitting in the outer pipe so that both pipes derive support from one another over helical line contact and this permits bending of the pipes without significant loss of circularity or concentricity and also permits drainage of fluid

from the outer pipe. The pipes are terminated with concentric connectors through one of which fluid in the outer pipe can drain.

3,612,578
PREFABRICATED ELECTRICALLY INSULATING PIPE JOINT
Luigi Bagnulo, Via Volta 18, Milan, Italy
Filed Dec. 18, 1969, Ser. No. 886,105
Claims priority, application Italy, Dec. 21, 1968, 25488 68
Int. Cl. F16l 55/00
U.S. Cl. 285-50

10 Claims



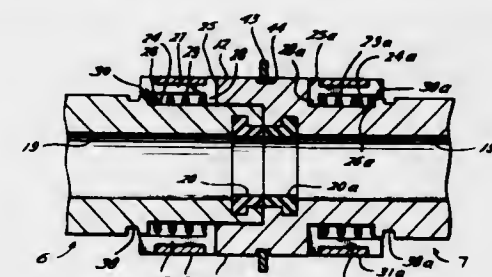
A first pipe of metallic material has a cup-shaped socket at one end, and a second pipe of metallic material has a flange at one end which is received with clearance in the socket of the first pipe. The bottom wall of the socket is juxtaposed with the axial end face of the flange. The latter is provided in this axial end face with an annular groove concentric with the pipe and having an inner diameter equal to the inner diameter of the pipe and an outer diameter smaller than the outer diameter of the flange. An annular member of rigid electrically insulating material is fixedly received in this groove, having an inner diameter at least substantially equal to the inner diameter of the first groove. A second annular groove is provided in the bottom face of the socket and has an outer diameter at least equal to the outer diameter of the flange and an inner diameter larger than the inner diameter of the first groove but smaller than the outer diameter of the same. A second annular member of elastically yieldable electrically insulating material is received in the second groove and has an inner circumferential margin in fluid-tight sealing engagement with the corresponding outer circumferential margin of the first annular member. Discrete first and second coatings of electrically insulating material are respectively provided on the inner surfaces of the respective tubular members and each extended to the juncture between the tubular members. Means is provided filling the clearance and connecting all of the members mechanically against movement and in electrically insulating relationship.

3,612,579
RETAINER MEANS FOR HOSE COUPLING
Harry L. Groves, Houston, Tex., assignor to National Coupling Company, Inc., Houston, Tex.
Filed Nov. 24, 1969, Ser. No. 879,097
Int. Cl. F16l 55/00
U.S. Cl. 285-70

4 Claims

A hose coupling of the type having interlatching retainer jaws which may be held in latched relationship by one or a pair of opposed, resiliently biased collars is provided with a secondary retainer element in the form of a wire or snap ring which is applied to the coupling in position to resist

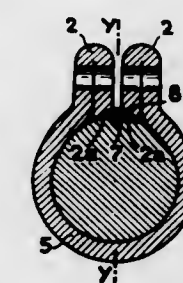
detachment of the latching jaws. This element may encompass and directly block the jaws themselves or the coupling



having an elongated opening passing therethrough. A bolt extends through the lower end portion of the canopy post for connecting same to the pedestal with the bolt passing through the elongated opening within the cushioning means. The bolt is in contact with and supported by the cushioning means and maintains the lower end of the canopy post spacedly above the tractor frame.

3,612,582
SHAFT ASSEMBLIES
Alfred Pitner, Paris, France, assignor to Nadella, Ruell-Malmanson, France
Filed Sept. 4, 1969, Ser. No. 855,116
Claims priority, application France, Mar. 20, 1969, Nov. 29, 1968, Sept. 5, 1968, 6908026; 175 966; 165 125
Int. Cl. F16b 7/00
U.S. Cl. 287-52.05

9 Claims



3,612,580
HOSE SPLICE
Lawrence R. Jones, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 20, 1970, Ser. No. 39,052
Int. Cl. F16l 31/00
U.S. Cl. 285-293

11 Claims

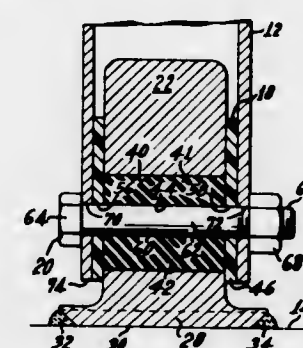


A hose splice for joining adjacent lengths or segments of reinforced hose having a tube, at least one hose reinforcing layer and a cover. The splice construction includes a tapered inner sealing ring of flexible, elastomeric material bonded to the inner surface of the hose tube which acts to distribute the stresses to which the splice is subjected, at least one splice reinforcing layer or ply surrounding and bonded to each hose segment and a splice cover of flexible material surrounding and bonded to the radially outermost splicing ply. The splice construction may also include an outer sealing ring surrounding the hose tubes and bonded to the innermost splice ply. The splice is particularly suitable for field splicing operations.

The invention concerns the mounting of a power transmission member on a shaft and relates more especially to the mounting of universal joint yokes on their associated shafts. The invention provides each yoke with a hub for fitting over the shaft and a generally cylindrical dowel pin or key is used both to secure the yoke on the shaft and to fix the two in driving relation. The pin or key is interposed between the shaft and the yoke hub in a seating formed in one or the other either by driving in the pin or key, itself acting as a punch tool for this purpose, or by using a punch of which at least the working part has a shape identical to that of the pin or key. In another feature of the invention, a die tool slidable in a die assembly for holding the shaft and the pin is used to press the pin into the shaft to form the latter with a seating for the pin.

3,612,581
CANOPY MOUNT
Edward V. Frankenberg, and Norman N. Griffith, both of Jacksonville, Fla., assignors to Fleco Corporation, Jacksonville, Fla.
Filed Nov. 18, 1969, Ser. No. 877,672
Int. Cl. F16b 9/00
U.S. Cl. 287-20

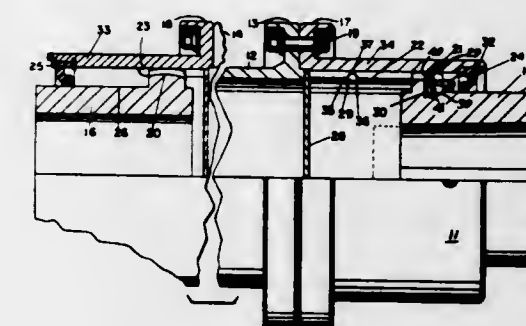
11 Claims



A mounting assembly including a canopy post having a hollow lower end portion for attachment to a tractor frame, an upright pedestal having an upper free end adapted to receive the lower end portion of the canopy post therearound and a lower end secured to the tractor frame. The upright pedestal has a horizontal passageway extending therethrough with cushioning means positioned within the passageway and

3,612,583
DETENT MECHANISM FOR DISCONNECT COUPLING
Norman J. Anderson, Erie, Pa., assignor to Zurn Industries, Inc., Erie, Pa.
Continuation-in-part of application Ser. No. 676,809, Oct. 20, 1967, now Patent No. 3,475,043. This application Aug. 11, 1969, Ser. No. 849,134
Int. Cl. F16d 1/00
U.S. Cl. 287-104

3 Claims

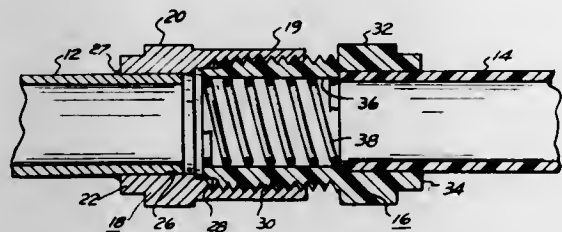


The invention disclosed is a coupling of the gear type which is constructed in such a manner that one of its hubs can be moved from a connected position where its teeth engage the teeth on a sleeve, to a position where its teeth are disengaged from the sleeve teeth. Particular shaped locking plungers which engage particularly shaped recesses in the sleeve are provided to hold the hub either in locked or unlocked position. The particular shape of the plungers and grooves resist movement of the sleeve.

3,612,584
TEMPERATURE COMPENSATED FLUID COUPLING
 Philip W. Taylor, Howell, Mich., assignor to Taylor Industries Inc.

Filed Oct. 16, 1969, Ser. No. 866,899
 Int. Cl. F16l 55/00
 U.S. Cl. 285-174

7 Claims

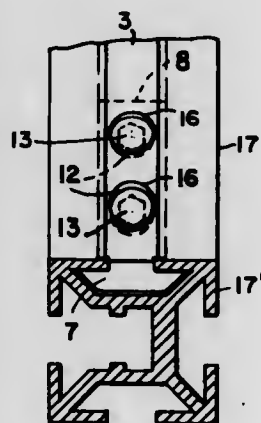


A temperature compensated fluid coupling for connecting two pipes and having a plastic male connector adapted for connection within a metallic female connector. The female connector has a longitudinal threaded bore which is engaged by a threaded peripheral surface of the male connector to form a fluidtight seal therebetween. The male connector has a longitudinal bore opening into the female bore to permit the flow of fluid between the two pipes, and is provided with a helical spring exerting a force against the surface of the male bore to urge the same outwardly, thereby expanding the outer peripheral threaded surface thereof to maintain a fluid-tight engagement with the female threads when the female and male connectors separate diametrically when subjected to temperature change.

3,612,585
READILY ASSEMBLABLE STRUCTURAL COMPONENTS
 Franz Josef Mayr, Monchaltorf, Brunacker, Switzerland
 Filed Feb. 11, 1969, Ser. No. 798,324
 Claims priority, application Switzerland, Mar. 28, 1968, June 19, 1968, 5218/68; 9464/68
 Int. Cl. F16b 5/00

U.S. Cl. 287-189.36 C

10 Claims

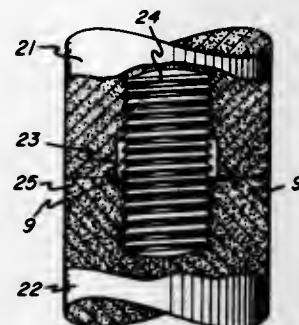


A system for readily assembling components including profile bars and T-shaped connecting members into structural units comprises a profiled bar having a uniform cross section over its length, said cross section including groove means for receiving the leg portion of a T-shaped connector member, which groove means are formed by a channel portion including a web, two legs extending from the web, and a pair of flanges extending from the legs toward each other, and slot means for receiving a crossbar portion of the T-shaped connector including branches which extend from the said channel portion towards one side of the channel, a second pair of flanges extending from the branches toward each other along a line spaced outwardly from the channel portion to points spaced from each other to define a slot on the side of the bar which is wider than the thickness of the leg portion of the T-shaped connector and less than the length of the crossbar portion.

3,612,586
ASYMMETRIC JOINT FOR CONNECTING CARBON ELECTRODES
 Harry C. Stieber, and Herman M. Belz, both of Berea, Ohio, assignors to Union Carbide Corporation, New York, N.Y.
 Filed Oct. 29, 1969, Ser. No. 873,139
 Int. Cl. F16b 21/20

U.S. Cl. 287-127 E

9 Claims

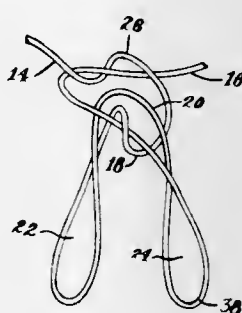


An electrode joint having female end face electrode sections coupled together by a male-threaded nipple wherein the threads adjacent the joint face in the upper electrode section are inactivated by being thinned or removed so as to relieve mechanical and thermal stresses concentrated thereat.

3,612,587
UNIVERSAL RESILIENT PACKAGE-TYING DEVICE AND METHOD FOR ITS ASSEMBLY
 Marion Sturm Rubin, 1833 E. 16th St., Brooklyn, N.Y.
 Filed Apr. 18, 1969, Ser. No. 817,531
 Int. Cl. B65h 69/04

U.S. Cl. 289-1.2

15 Claims



A universal package-tying device and the method of its assembly wherein a length of resilient material is formed into a plurality of loops, at least two of which can be mutually and simultaneously adjusted. The adjustability of at least two of the loops and the resiliency of the material used permits the tying of packages having a wide range of dimensions and configurations. The free end portions of the package-tying device are fixedly secured to insure that the device will be reliable in service.

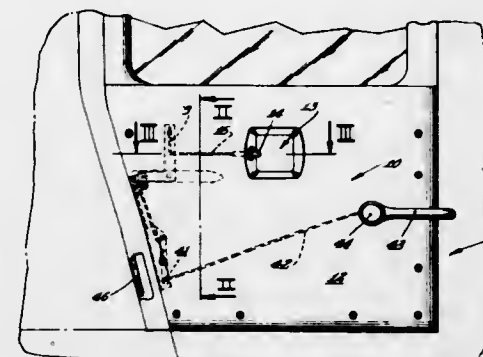
3,612,588
AUTOMOBILE DOOR LOCK
 Anthony J. Roppo, 12508 S. Throop St., Chicago, Ill., and Edmund J. Langdo, 12012 S. Michigan, Chicago, Ill.
 Filed Jan. 22, 1970, Ser. No. 4,926
 Int. Cl. E05c 19/00

U.S. Cl. 292-1

2 Claims

An automobile safety door lock which is positioned so that it cannot be reached by a wire, coat hanger or other tool from the outside through a slight opening of the window so as to prevent theft and tampering with a vehicle. The lock is mounted in a recessed well formed in the interior surface of the door which can be easily reached by an occupant within the vehicle but cannot be moved from outside the vehicle

with a wire or other tool so as to unlock the door from the outside. The recessed lock also improves the safety of the

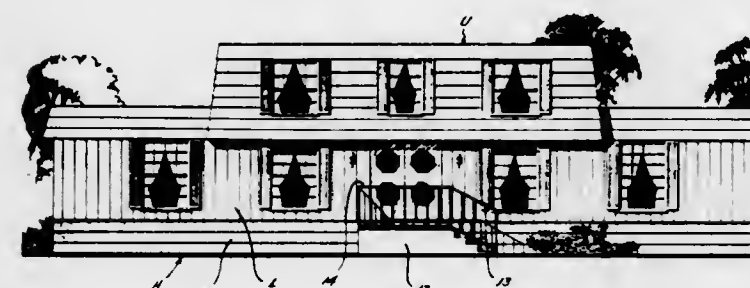


3,612,589
MULTILEVEL HOUSE TRAILER
 Harry W. Locher, Jr., Houston, Tex., assignor to Pyramid Industries, Inc.

Filed July 2, 1969, Ser. No. 838,452
 Int. Cl. B60p 3/34

U.S. Cl. 296-23

6 Claims

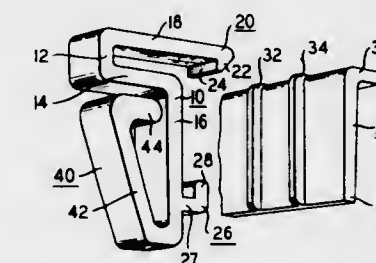


A multilevel house trailer suitable for movement along public roads or highways in which the upper level is retractable into the lower level, including means for elevating and lowering such upper level with respect to the lower level.

3,612,590
QUICK-MOUNTING HARDWARE
 John Andreini, Irvington, N.J.; Edwin Harley Borchard, Boulder; Karl-Heinz Pohl, Boulder, Colo., and Joseph Anthony Puccio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Aug. 28, 1970, Ser. No. 67,904
 Int. Cl. E05c 19/02

U.S. Cl. 292-76

11 Claims

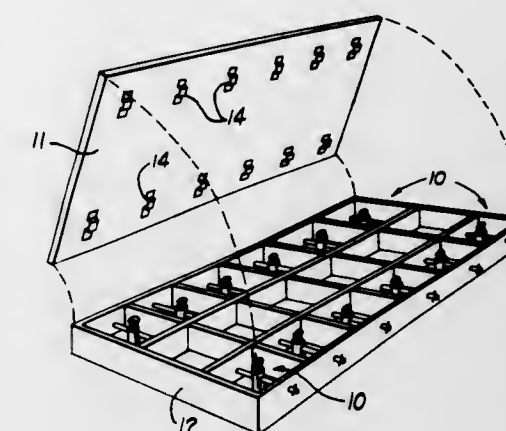


Snap-on hardware mounted on a structural component having a pair of spaced ridges extending intermediate and transverse to a pair of lips, the hardware comprising a strap for occupying the space between the ridges and an L-shaped finger at one end of the strap for extending behind one of the lips. A flexible cantilevered arm extends from the other end of the strap in the same direction as the finger and includes a catch at the free end thereof for snapping over the other lip to secure the hardware in place. A functional portion extends from the strap or the finger.

3,612,591
REMOTELY OPERATED CLAMP
 Clifford L. Barnes, Apple Creek, Ohio, assignor to Wooster Products, Inc., Wooster, Ohio
 Filed Jan. 7, 1970, Ser. No. 1,254
 Int. Cl. E05c 5/02, 19/14

U.S. Cl. 292-110

7 Claims



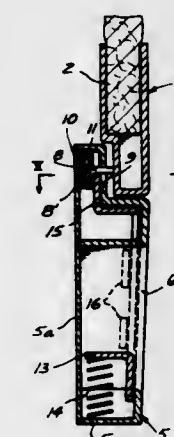
A clamp for detachably securing two structures together includes a clamp-supporting member movable on one structure and a clamp assembly carried by the supporting member. The clamp assembly includes a clamp body rigidly supporting a clamp element, and a spring for urging the body to a first position relative to the support member. The supporting member is moved to engage the clamping element with a clamp surface on the other structure and to deflect the spring whereby the clamp element and clamp surface are urged together under the force of the deflected spring. The supporting member is manually operated and readily accessible.

3,612,592
LOCK FOR A CARRYING CASE
 Georg Reitzel, Altenmittlau Kreis, Gelnhausen, Germany, assignor to Drescher & Kiefer, Gelnhausen, Germany and Randolph-Rand Corporation, New York, N.Y., part interest to each

Filed Mar. 19, 1969, Ser. No. 808,479
 Claims priority, application Germany, Apr. 17, 1968, D 38 003/68a Gbm
 Int. Cl. E05b 65/50

U.S. Cl. 292-175

4 Claims



A lock for a briefcase or similar carrying case has a catch member fastened to the closure flap of the case and a receiver fastened to the front wall of the case. The catch member when locked to the receiver is flush therewith and the release button of the lock is fitted in a recess of the casing of the receiver so that no movable part of the lock protrudes from the front wall of the receiver.

3,612,593

VEHICLE BODY DOOR LOCK

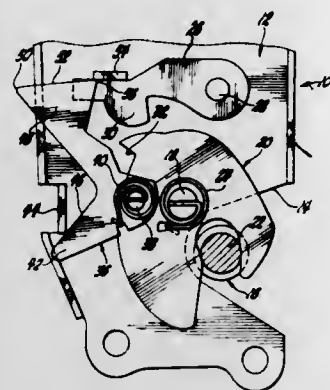
Ramon L. Bessette, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1970, Ser. No. 23,315

Int. Cl. E05c 3/26

U.S. Cl. 292—216

3 Claims



A vehicle body door lock includes a bellcrank lever pivoted to the bolt and spring biased in one direction. One leg of the bellcrank is engageable with the latch frame to control the position of the bellcrank with respect to the bolt and locate the other leg of the bellcrank in engagement with the detent to maintain the detent out of engagement with the bolt in all positions of the bolt except fully latched.

3,612,594

FASTENING DEVICE FOR DOORKNOB ASSEMBLIES

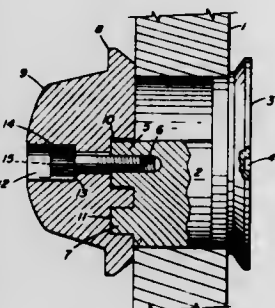
Gus Constantino Scutari, Brooklyn, N.Y., assignor to Formica Corporation, Cincinnati, Ohio

Filed Aug. 25, 1970, Ser. No. 66,819

Int. Cl. E05b 1/00

U.S. Cl. 292—347

5 Claims



Doorknob assemblies, particularly for doors to be opened primarily from one side, such as lavatory doors, are in the form of two knobs, one male and one female, fastened together in permanently aligned position by a bolt with a recessed head and shoulder extending through the center of the female knob and into a tapped hole in the male knob. This tapped hole is in a projection fitting into a recess in the female knob, and a second projection offset from the center fits into another recess in the female knob, so that the two knobs are locked to turn together. The projections seat in the recesses when the bolt is tightened. Preferably the male knob carries the customary parts for moving a latch when the knobs are turned.

3,612,595

CONTAINER HANDLE

Alfred V. Updegraff, Lakewood, and Lawrence A. Beyer, Shaker Heights, both of Ohio, assignors to The Haynes Manufacturing Company, Cleveland, Ohio

Filed Nov. 12, 1969, Ser. No. 875,945

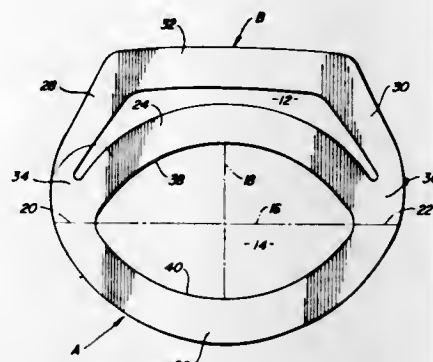
Int. Cl. A47j 45/00

U.S. Cl. 294—31.2

3 Claims

A container handle is punched or cut from a flat sheet of polyethylene so as to have a ring portion with a substantially oval opening therein. The oval opening has a major axis and

a minor axis and the arms of a bail are integrally formed with the ring portion. The arms are connected with the ring portion in areas adjacent points where the major axis of the oval opening intersects the ring portion. The ring portion is deformable to change the oval opening into a substantially circular shape. Under this deformation, the ring portion ad-



acent the intersection of the major axis curves upwardly so as to slope downwardly on opposite sides of the major axis. The arms of the bail are connected with the ring portion at one of the downward sloping areas so that the bail is biased downwardly to tightly hug a jar or bottle on which the container handle is fitted.

3,612,596

HOOK LOCK FOR TRAVELING BLOCK

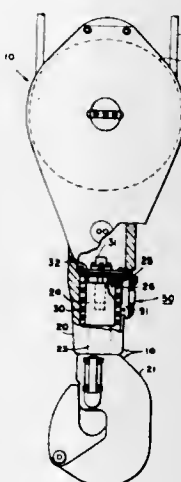
Wayne L. Brackin, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 16, 1969, Ser. No. 866,849

Int. Cl. B66c 1/34

U.S. Cl. 294—82

2 Claims



A lock is provided which fixes the hook on a traveling block with respect to the spring housing and block, at the same time allowing the hook to travel in a vertical direction the customary length of the spring within the housing. A pivoted L-shaped member engages an index ring by a downward pull and also disengages the index ring by a downward pull, thus allowing for ease of utility.

3,612,597

LOG GRAPPLE

Albert R. Wirkkala, Naselle, Wash.

Filed June 3, 1969, Ser. No. 829,889

Int. Cl. B66c 1/22, 1/44

U.S. Cl. 294—112

1 Claim

A log grapple having use in grapple-yarding and log-loading operations is characterized by a pair of crossed jaws pivotally joined about one-third of the length thereof from their upper ends, a supporting and closing line attached to

3,612,599

OVER-THE-HIGHWAY TRUCK CAB

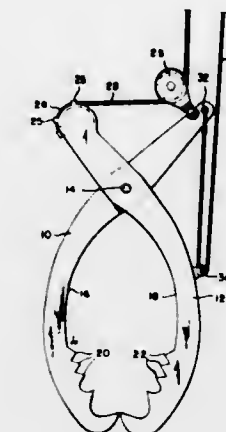
Ernest Robert Sternberg, Rocky River, Ohio, assignor to White Motor Corporation, Cleveland, Ohio

Filed July 16, 1969, Ser. No. 842,145

Int. Cl. B62d 25/00

U.S. Cl. 296—24

16 Claims



upward pull of the line, and an opening line attached to either of the jaws for opening the jaws when pulled upwardly.

3,612,598

POWER PLANT HAVING COMPRESSOR-POWERED ASPIRATING SYSTEM

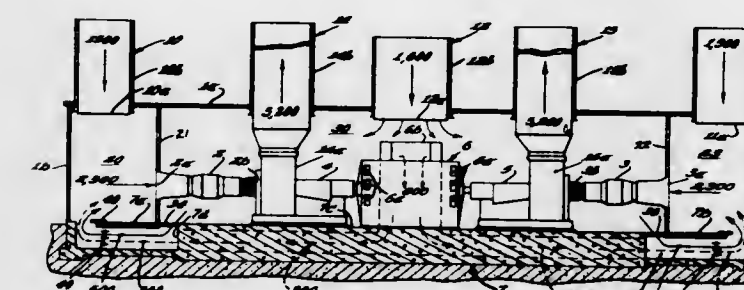
Roy P. Keslin, 1240 Prince Drive, South Holland, Ill., and Ralph W. Keslin, 1428 Stateline Ave., Calumet City, Ill.

Filed Mar. 6, 1969, Ser. No. 804,830

Int. Cl. H02k 7/18

U.S. Cl. 290—52

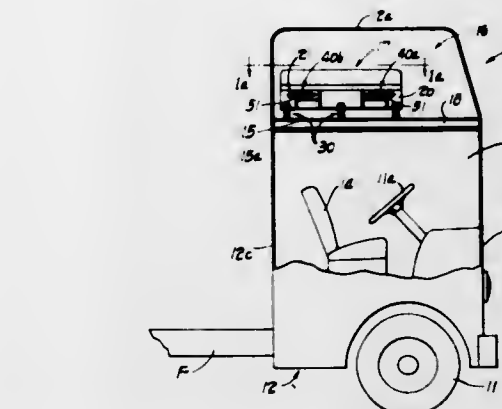
9 Claims



An enclosure for a gas turbine power plant in which the noise of the ventilating and the fuel air is at a minimum will be provided by the structure of the invention wherein the entering and exhausting air volume as well as the openings through which the air passes is kept to an absolute minimum. Three inlets and two outlets to and from the atmosphere include a primary fuel air supply opening at each end of the building generally above a gas turbine inlet, a secondary air supply opening centrally positioned in the enclosure and an exhaust vent from the outlet end of each turbine. The portion of the air supply entering through the second opening is drawn through the interior of the enclosure and through the generator itself thereby ventilating the latter before the air is burnt in the gas turbine. Careful design of the openings in accordance with the fuel air requirements of the turbine assures that while only the exact amount of air necessary to operate the turbines enters the enclosure, a portion of it provides the additional function of ventilating the enclosure and the generator.

ERRATUM

For Class 296—23 see:
Patent No. 3,612,589



3,612,600

FOLDING UTILITY TRAILER

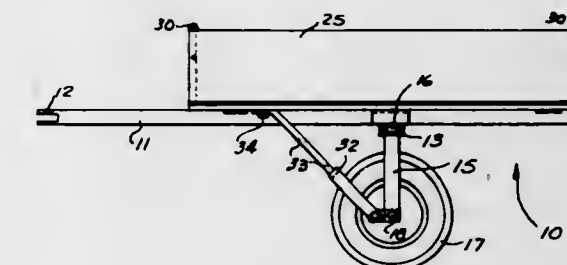
Luis G. Salichs, 44-15 25th St., Santa Rosa Bayaman, P.R.

Filed May 28, 1970, Ser. No. 41,263

Int. Cl. B60p 3/34

U.S. Cl. 296—27

6 Claims



A folding utility trailer which while retaining its full length is folded to a width slightly wider than the width of an individual wheel. The wheels are moved to a tandem position supporting the folded trailer so that it can be rolled to and from a storage position.

3,612,601

VEHICLE CLOSURE ARRANGEMENT

John Farmington Himka, and Samuel C. Pollock, both of Rochester, Minn., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,788

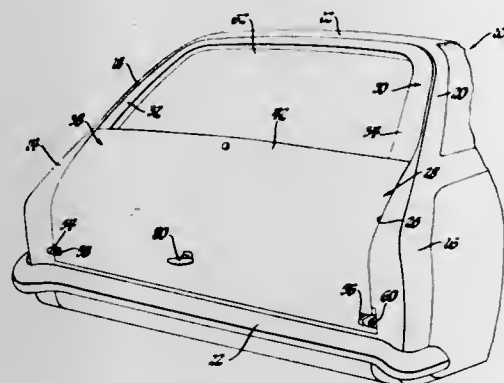
Int. Cl. B60j 5/10

U.S. Cl. 296—51

3 Claims

A tailgate assembly on the body member of a station wagon-type vehicle is moveable from a closed position closing the rear access opening to a first open position as a conventional drop-gate or to a second opened position as a lift-gate, and includes a frame member swingable about a

horizontal transverse axis at the upper margin of the rear opening and a gate member swingable relative to the frame member about an axis thereof. In one position of the frame member the aforementioned axis thereof about which the gate member swings is oriented transversely of the body

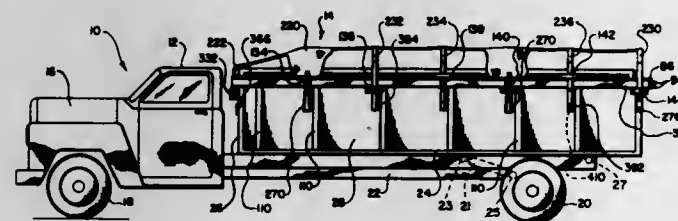


member at the lower margin of the rear opening so that the swinging movement of the gate member relative to the body member and the frame member is equivalent to conventional drop-gate operation while the gate member is swingable as a unit with the frame member as a lift-gate to completely expose the rear opening.

3,612,602
TRUCK WITH RETRACTABLE ROOF AND CLOSABLE ACCESS OPENING
Lowell G. Stepp, Syracuse, Kans.
Division of Ser. No. 658,414, Aug. 4, 1967, Pat. No. 3,481,645
Filed Nov. 26, 1969, Ser. No. 880,042
Int. Cl. B62d 25/06

U.S. Cl. 296-106

6 Claims



A truck having a tiltable bed, and a retractable roof of the flexible type wherein the forward end of the roof is fixed with the rear end of the roof (and the roof's intermediate extent) being retractable forwardly from an extended and operative position wherein the rear end of the roof is at the rear end of the truck bed. The rear end of the roof, when extended, defines in conjunction with the rear ends of the truck bed sidewalls, and the rear end of the truck bed an access opening. Closure means is provided for selectively opening and closing the access opening, with such means including a pivotally mounted wall having a free edge of a shape conformable to the shape of the rear end of the roof, whereby such free edge and the rear end of the roof mate in closing relationship on the roof being extended and the wall being pivoted to its closing position. Means is provided for releasably retaining the wall in its closing position.

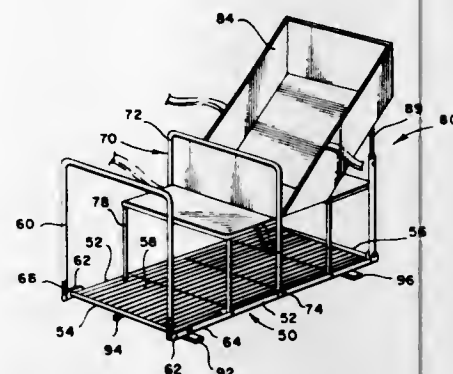
3,612,603
TANDEM STROLLER
David E. Snyder, and Joy G. Snyder, both of 5344 Pendleton St., San Diego, Calif.
Filed Jan. 21, 1969, Ser. No. 792,329
Int. Cl. A47d 1/10

U.S. Cl. 297-130

5 Claims

A horizontal stroller frame with a detachable tandem seat assembly is disclosed herein. First, second and third upstanding members laterally span a base which is anchored on a stroller frame. The first member is a bumper handhold com-

position, and the second and third upright members are seats. In a preferred embodiment of the invention, the upright members comprise U-shaped tubes hinged at op-



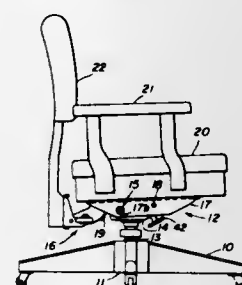
posite ends to the base, and seats are hinged medially on the second and third members, so that the entire assembly may be folded into a flat compact apparatus.

3,612,604
TORSION BAR CONTROL FOR EXECUTIVE POSTURE CHAIR
James R. Meinhardt, Park Ridge, Ill., assignor to The Seng Company

Filed Aug. 17, 1966, Ser. No. 573,089
Int. Cl. A47c 3/00

U.S. Cl. 297-303

4 Claims



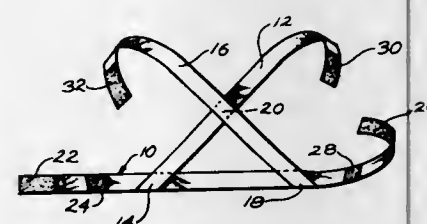
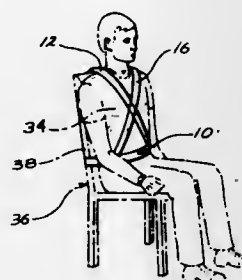
A torsion bar control for an executive posture chair wherein chair seat support structure is mounted for pivotal movement about a first horizontal axis, and chair back support structure is pivotal about a second horizontal axis defined by a torsion bar. The seat support and back support structures are connected to one another at a location spaced from the above-mentioned pivotal axes for limited movement relative to one another.

3,612,605
RESTRAINING DEVICE
John T. Posey, Jr., 1739 Meadowbrook Road, Altadena, Calif.

Filed Oct. 17, 1969, Ser. No. 867,135
Int. Cl. A47c 31/00

U.S. Cl. 297-389

2 Claims



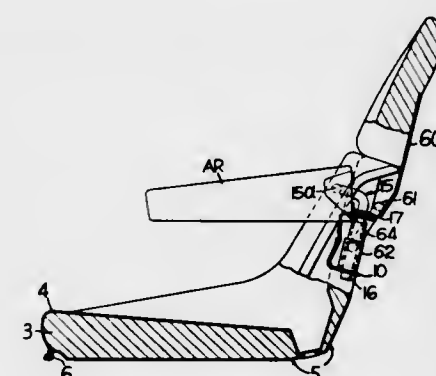
A device for restraining a patient in a chair comprising a belt adapted to be wrapped around the midriff of the patient

and releasably secured behind the back of the chair, and a pair of straps secured to the belt in front of the patient and extending diagonally upwardly across the front of the patient, over his shoulders, and down behind the back of the chair where they are releasably secured to the belt.

3,612,606
SEAT HAVING FOLDABLE ARMRESTS
Richard F. Swenson, Milwaukee, Wis., assignor to Swenson Corporation, Red Granite, Wis.
Filed Sept. 3, 1970, Ser. No. 69,367
Int. Cl. A47c 7/54

U.S. Cl. 297-417

21 Claims

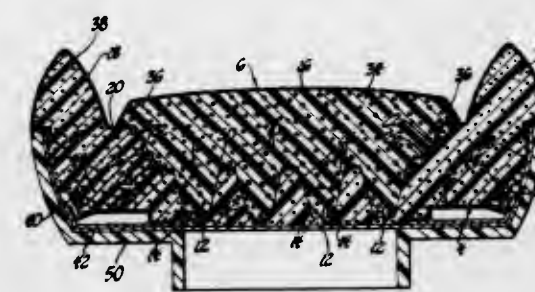


A seat for tractors or the like, which seat has foldable armrests that can be swung from a normal forwardly facing position to a rearward position behind the backrest and out of the way. Means are provided for swingably mounting the armrests so they may be first swung approximately 90° and then to a vertical storage position behind the seat. Alternatively, the armrests can be swung about 180° from the forwardly facing position and to a directly rearwardly facing position, and then can be swung laterally to an approximately horizontal position behind the backrest of the seat. Means are provided for locking the armrests in position. Means are also provided for vertically adjusting the extension of the backrest in various adjusted positions to accommodate the back of the operator.

3,612,607
PLASTIC FOAM SEAT CONSTRUCTION
Thomas E. Lohr, Warren, Mich., assignor to Allied Chemicals Corporation, New York, N.Y.
Filed July 18, 1969, Ser. No. 843,054
Int. Cl. A47c 7/02, 1/12

U.S. Cl. 297-452

7 Claims

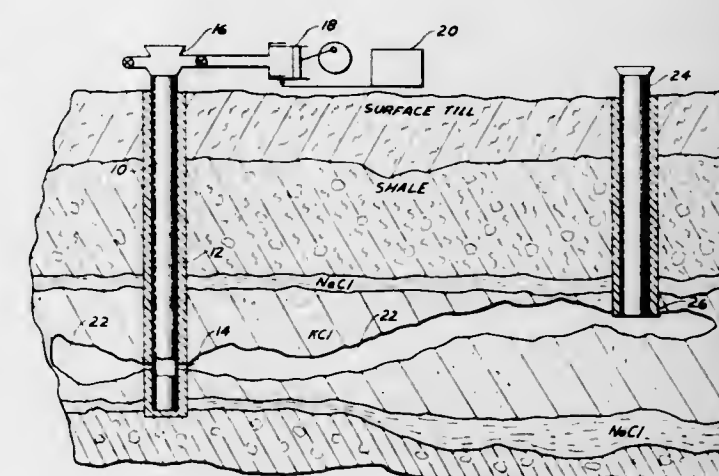


A vehicle seat made up of a supporting slab of relatively hard, high density elastomeric urethane foam and a cushion mounted on said supporting slab of relatively soft, low density elastomeric urethane foam that is softer and more compressible than the material of the supporting slab, with interlocking means between the cushion and slab for preventing relative sliding movement between the cushion and slab. The cushion and slab are detachably secured together against separation by a suitable pressure sensitive adhesive so that the cushion can be removed and replaced when damaged.

3,612,608
PROCESS TO ESTABLISH COMMUNICATION BETWEEN WELLS IN MINERAL FORMATIONS
Edgar A. Manker, Akasak Izmir, Turkey; Thomas Wachtell, Rolling Hills, Calif., and Donald E. Garrett, Claremont, Calif., assignors to Occidental Petroleum Corporation
Filed Oct. 2, 1969, Ser. No. 863,091
Int. Cl. E21b 43/28

U.S. Cl. 299-1

19 Claims

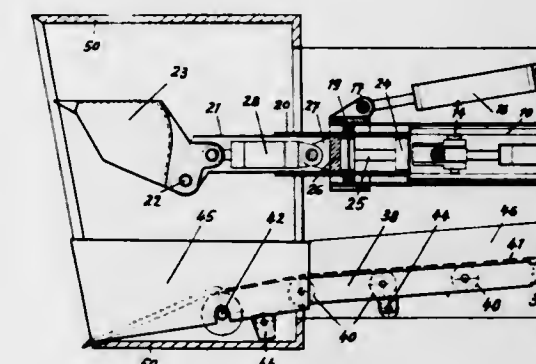


A solution mining operation is established by drilling a well into a soluble salt formation, hydraulically creating and maintaining a fracture pool, defining the area of the fracture pool by surface measurement and drilling at least one other well in the defined fracture pool area to establish communication.

3,612,609
DEVICE FOR THE DEMOLISHING AND REMOVAL OF EARTHWORK
Josef Reuls, Kt. Bern, Switzerland, assignor to Hydrel A.G. Maschinenfabrik, Romanshorn, Switzerland
Filed July 3, 1969, Ser. No. 838,810
Claims priority, application Switzerland, July 9, 1968, 10504/68
Int. Cl. E01g 31/03

U.S. Cl. 299-33

7 Claims



A soil excavator includes a framework supporting a tubular boom for universal motion, a shovel being rotatably and extendibly carried on the free end of a nest of telescoped tubes lodged in the boom. The framework may be anchored to a concrete shell introduced into the tunnel wall behind an advancing cutter shield.

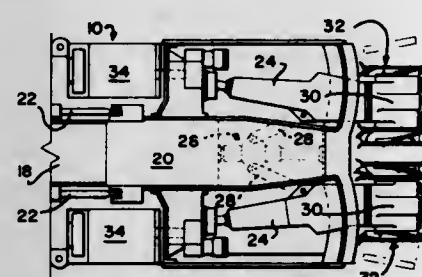
3,612,610
CONTINUOUS MINER HAVING OSCILLATING ROTARY CUTTER MEANS WITH SPIRALLY ARRANGED CUTTERS
Einar M. Arentzen, Charleroi, Pa., assignor to Lee-Norse Company, Charleroi, Pa.
Filed Jan. 13, 1970, Ser. No. 2,545
Int. Cl. E21c 27/24

U.S. Cl. 299-71

3 Claims

A continuous miner comprising a chassis which mounts a vertically movable boom supporting a pair of cutter carriers

continuously laterally oscillated towards and away from each other during the normal operation of the machine. Rotatably driven cutter means are carried by the forward end of each carrier, the cutter means each including cutters disposed in a



spiral pattern whereby, during the operation of the machine with only a single cutter means rotatably driven in engagement with a sidewall or rib, the spiral pattern of the cutters of such cutter means tends to draw the cutter means into the wall.

3,612,611
ROTARY CUTTER ASSEMBLY FOR A PAVEMENT GROOVING MACHINE
Stafford M. Ellis, Kent, England, assignor to Concut, Inc., Toledo, Ohio

Filed Apr. 16, 1970, Ser. No. 29,107
Int. Cl. E01c 23/09

U.S. Cl. 299-89

11 Claims

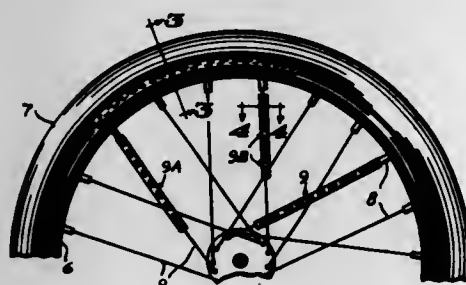


A rotary cutter head designed for use with tractionally driven pavement grooving machines. A large multiplicity of slightly spaced, radially disposed cutter disks having abrasive peripheries are clamped together by through bolts and mounted on a rotary tubular sleeve which is supported at its end on a fixed central supporting shaft by means of roller bearings. The assembly is driven by a pair of pulleys carried at the opposite ends of the sleeve and torque is applied from the pulleys to the sleeve through the medium of the through bolts which project through both pulleys, as well as through all of the cutter disks.

3,612,612
CLIPS FOR THE SPOKES OF BICYCLE WHEELS AND THE LIKE
Mathew R. Gannon, 243 Park Ave., Revere, Mass.
Filed Aug. 11, 1969, Ser. No. 849,043
Int. Cl. B60b 7/00

U.S. Cl. 301-37 SA

2 Claims



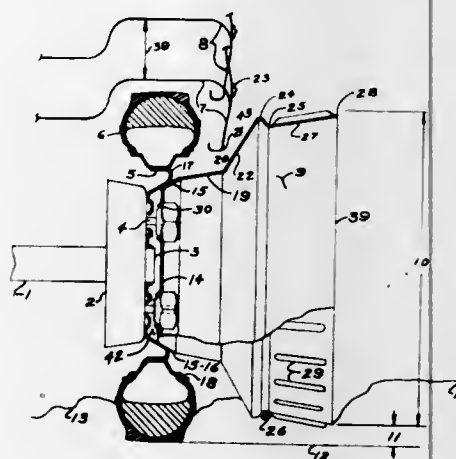
Clips for the spokes of bicycle wheels and the like are disclosed, each clip being in the form of an extruded, flexible, plastic length of a cross-sectional size and shape to receive and enclose a bicycle spoke with marginal portions extending substantially in abutment from end-to-end of the clip and

operable to permit attachment. The coloring of the plastic materials is preferably with iridescent pigments.

3,612,613
AUXILIARY SUPPORTING, TRACTIVE AND CAPSTAN WHEEL FOR VEHICLES
Alfred J. Tricon, 9654 Winsome Lane, Houston, Tex.
Continuation-in-part of Ser. No. 832,370, July 24, 1969, abandoned
Filed Apr. 23, 1970, Ser. No. 31,299
Int. Cl. B60b 15/26

U.S. Cl. 301-41

4 Claims

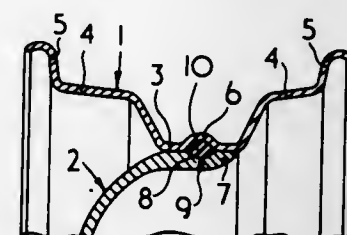


This invention is an auxiliary wheel which can be added to the standard propelling and supporting wheels of a vehicle to provide additional support, additional traction and may also be used separately or simultaneously as a capstan to provide additional propulsive force for the vehicle. The design of this invention is such that the standard propelling wheels need not be removed, the vehicle need not be elevated, and in the case of many vehicles such as standard passenger automobiles, the body or fender structure of the vehicle need not be modified.

3,612,614
VEHICLE WHEELS
Peter G. Ware, Rugby, England, assignor to Dunlop Holdings Limited, London, England
Filed Feb. 28, 1969, Ser. No. 803,198
Claims priority, application Great Britain, Mar. 15, 1968, May 1, 1968, 12585/68; 22771/68
Int. Cl. B60b 23/00

U.S. Cl. 301-63 R

24 Claims



A vehicle wheel having at least two wheel parts secured together by an injected plastic locking member contained in an annular space formed between cooperating configurations of the two wheel parts.

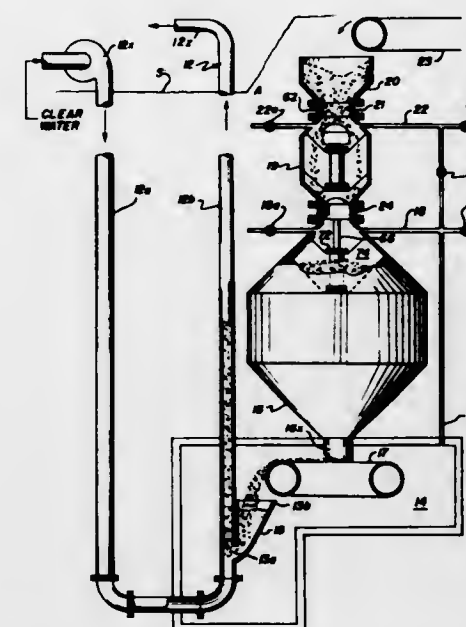
3,612,615
CONTINUOUS HYDRAULIC ORE HOISTING SYSTEM
Water R. Allen, P.O. Box 311, Durand, Mich.
Filed Sept. 30, 1969, Ser. No. 862,178
Int. Cl. B65g 53/30

U.S. Cl. 302-14

13 Claims

A continuous hydraulic ore hoisting system in which ore or other solids in transportable sizes are introduced through a free water surface into a confined cyclic flow of a transport fluid at a controlled rate by directing pneumatic pressure against the liquid interface at one or more lower points of introduction, each maintained in balanced relation to pressures

within an associated surge bin and interconnected pressurized chamber. The confined flow has a critical velocity

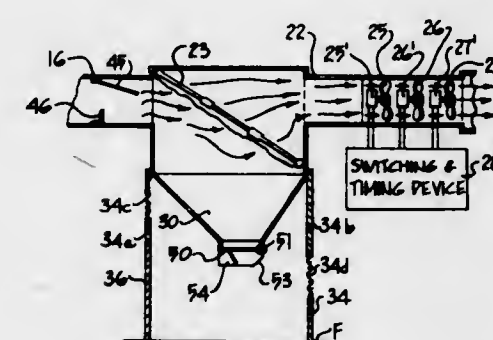


greater than the settling velocity of particles in the flow and may be hoisted and otherwise moved to desired locations including an upper outlet.

3,612,616
TEXTILE MACHINE FIBER WASTE DISPOSAL SYSTEM
Richard Gordon Stewart, Heaton Moore, Nr. Manchester, England, assignor to Parks-Cramer (Great Britain), Ltd., Oldham, Lancashire, England
Filed Apr. 4, 1969, Ser. No. 813,533
Int. Cl. B65g 53/04

U.S. Cl. 302-27

8 Claims



A pneumatic conveyor extending from a plurality of textile machines is connected to a filter separator unit in which a momentary reverse flow of air through the filter is established periodically to clean the filter. Means are provided for automatically obstructing the pneumatic conveyor against the reverse flow of air therethrough, and other means are provided for automatically opening the filter separator unit to the discharge of collected fiber waste therefrom, whenever the reverse flow of air occurs and in response thereto.

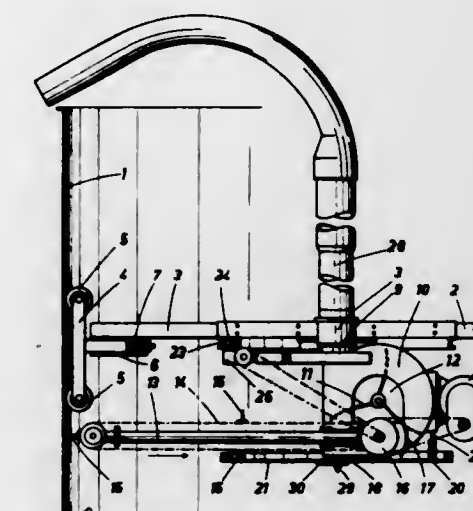
3,612,617
TOP-UNLOADED SILO
Karl Scherz, Hauptplatz 7, Deutschlandsberg, Austria
Filed July 15, 1969, Ser. No. 841,854
Claims priority, application Austria, July 19, 1968, A 6960/68
Int. Cl. B65g 53/40; A01F

U.S. Cl. 302-56

14 Claims

A silo has a sidewall which is adapted to hold silage. Top unloading apparatus comprises a plate support adapted to rest on said silage and having an aperture, a conveyor having a carrier which is connected to the top of said plate support for limited pivotal movement relative thereto in all directions

and for rotation with said plate support, and conveying means carried by said carrier and extending through said aperture to said silage, conveyor drive means operable to cause said conveying means to remove material from said silage and move said removed material toward said axis, a guide spider which is disposed above said conveyor and vertically guided on the inside surface of said sidewall and pro-

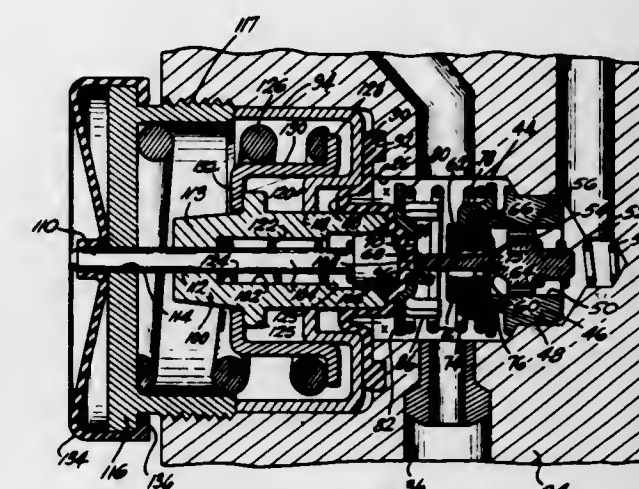


vided with means holding said spider in a horizontal orientation and with a bearing, in which said conveyor carrier is mounted for rotation about said axis, a horizontal drive ring centered on the axis of said silo, and rotating drive means operable to rotate said carrier and plate support about the axis of said silo and comprising a pinion in rolling engagement with said drive ring.

3,612,618
PRESSURE-SENSITIVE METERING VALVE
Kenneth B. Swanson, Bannister, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Nov. 6, 1969, Ser. No. 874,484
Int. Cl. B60t 8/26, 11/34

U.S. Cl. 303-6 C

10 Claims



A pressure-sensitive metering valve for use in hydraulic brake systems of automotive vehicles wherein the front wheels of the vehicle are provided with disc-type brakes and the rear wheels of the vehicle are provided with drum-type brakes, the metering valve being solely pressure sensitive and being effective to establish a fluid pressure differential between the disc brakes and the drum brakes, to withhold the application of fluid pressure to the disc brakes over a predetermined range of fluid pressure and thereafter being effective to reduce the pressure differential at a linear rate over a second range of fluid pressure independently of the rate of manual application of the brakes.

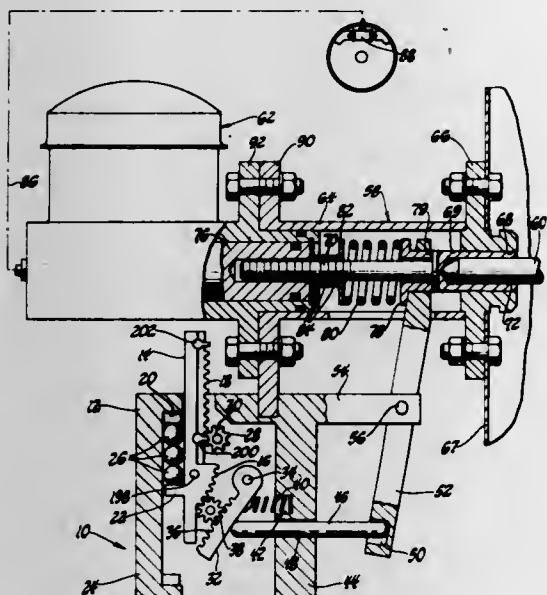
3,612,619

SAFETY BRAKE APPARATUS

Henry L. Hayes, 496 E. Baker, Clawson, Mich.
Continuation-in-part of application Ser. No. 801,618, Feb. 24, 1969, now Patent No. 3,549,207. This application Apr. 23, 1970, Ser. No. 31,113
Int. Cl. B60t 7/12

U.S. Cl. 303—18

12 Claims



Apparatus for applying the hydraulic brakes of a vehicle upon opening a door and releasing the brakes when the vehicle is conditioned for normal driving. In the illustrated embodiment the opening of a door actuates a reversible electric motor which drives a cam member through a housing, thus, rotating a pinion which meshes with a pivotally mounted rack arm. The rack arm operates through a lever to depress an output plunger which is mechanically connected between a brake actuator rod and the piston of a master cylinder. Thus, vehicle brakes may be applied either through the automatic door opening responsive system or through the normal brake pedal.

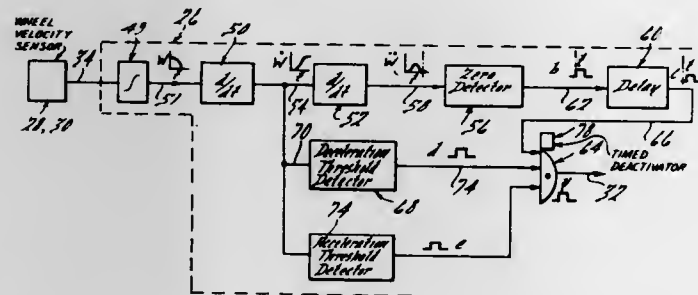
3,612,620

SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Sept. 22, 1969, Ser. No. 859,771
Int. Cl. B60t 8/12

U.S. Cl. 303—21 P

10 Claims



A skid control system for a wheeled vehicle in which the brake pressure is released at or near the point of optimum retarding force comprising a rate of change of wheel angular deceleration detecting circuit including a zero detector and delay circuit which provides a control signal indicative of optimum braking to a brake pressure modulator which releases the brakes upon receipt of the control signal and an incipient skid signal generated upon detection of wheel deceleration exceeding a predetermined level, and a timed deactivator which deactivates the brake pressure modulator at a predetermined time after pressure is released. A speed modulator and mu detector, may be optionally provided, which adjust the delay interval in accordance with vehicle speed and mu between the wheel and the road surface so that the delay is decreased at low vehicle velocities or low mu conditions.

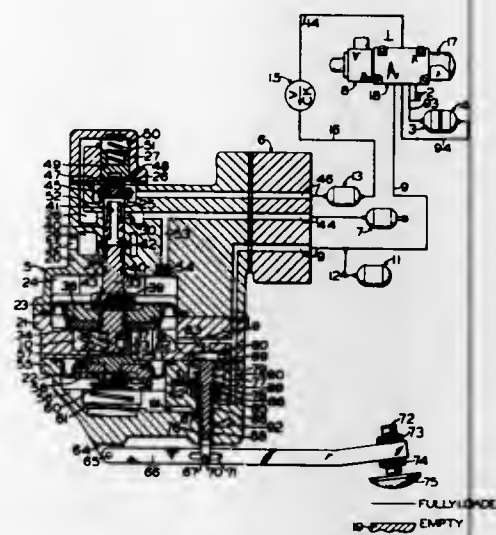
3,612,621

RELAY VALVE WITH LOAD SENSING MEANS

Daniel G. Scott, Apollo, Pa., assignor to Westinghouse Air Brake Company, Willmerding, Pa.
Filed Feb. 16, 1970, Ser. No. 11,812
Int. Cl. B60t 8/18

U.S. Cl. 303—22 R

12 Claims



This invention relates to a railway vehicle double-abutment relay valve device for interposition between a brake control pipe and a brake cylinder and includes a novel mechanism adjustable accordingly as the vehicle is empty or loaded to so condition the relay valve device that its operation by fluid under pressure from the brake control pipe always provides a supply of fluid under pressure to the brake cylinder, the value of which is in accordance with the weight of the load carried by a spring-supported (or sprung) part of the vehicle between which and an unsprung part, the relay valve device is interposed for effecting operation of the novel load-measuring or sensing mechanism thereof in accordance with changes in the load carried by the spring-supported part. The novel load-sensing mechanism includes a fluid pressure operated spool-type valve operatively connected to a load-sensing arm movable to one or another position accordingly as the vehicle is empty or loaded. The spool-type valve is provided with a pair of longitudinally spaced-apart elongated peripheral annular grooves one of which carries therein a reciprocable or sliding O-ring seal that so serves as a valve to control flow of fluid under pressure to one side of one of the abutments of the relay valve device as to accommodate substantial arcuate movement of the load-measuring arm without effecting a changeover of the relay valve device from load operation to empty operation and vice versa. The lengths and locations of these elongated grooves are such as to require that the movement of the spool valve in either direction, in response to the shocks, jolts, vertical movement and sidewise rocking experienced by the body of a railway vehicle while traveling at high speed, exceeds a chosen percentage of the total valve movement between empty and loaded positions before the O-ring seal is shifted from one end of its groove to another to thereby effect a change in the control of flow of fluid under pressure through a communication to one side of one of the abutments of the relay valve device to thereby render the one abutment effective or ineffective to cooperate with the other abutment to control operation of the relay valve device in accordance with the difference in the effective area of the pair of abutments, or in accordance with the effective area of the larger of the abutments.

3,612,622

SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Feb. 27, 1969, Ser. No. 802,991
Int. Cl. B60t 8/08

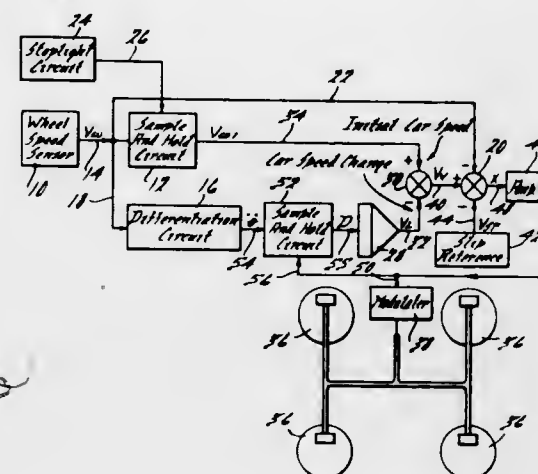
U.S. Cl. 303—21 P

12 Claims

A skid control system for a wheeled vehicle varies the braking pressure as a function of the slip, the difference between vehicle speed and wheel speed. A vehicle analogue

circuit provides a signal V_1 representative of the reduction in vehicle velocity during braking. The instantaneous vehicle velocity V_v is obtained by subtracting the loss of vehicle velocity V_1 from the initial vehicle velocity V_{w1} . The instan-

formed on the periphery thereof. An endless track assembly, completely wrapped around the tire, comprises a plurality of closely coupled ground-engaging track shoes connected together by an annular articulated link assembly positioned



taneous vehicle velocity V_v is fed to a difference circuit which produces an output signal X when the wheel velocity V_w and a slip reference signal V_{sr} exceed signal V_v . Output signal X causes actuation of a modulator to relieve brake pressure.

3,612,623

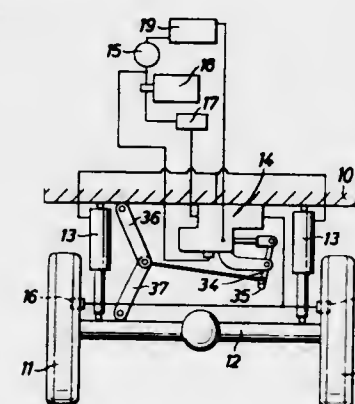
VALVE MEANS FOR LIQUID PRESSURE SYSTEMS

Leslie C. Chouhings, Leamington Spa, England, assignor to Automotive Products Company Limited, Leamington Spa, Warwickshire, England
Filed Sept. 22, 1969, Ser. No. 859,885
Claims priority, application Great Britain, Sept. 23, 1968, 45123/68

Int. Cl. B60t 8/18

U.S. Cl. 303—22 A

2 Claims



A valve device for use in a liquid pressure system on a vehicle to maintain the vehicle structure at a substantially constant level despite changes in the load carried thereby includes a valve spool activated by any tendency for the vehicle structure to rise or drop due to load changes to vary the liquid pressure in liquid filled struts supporting the said structure, the changes in liquid pressure also acting on a valve controlling the flow of liquid from a braking pressure source to brake motor cylinders, to provide a limit to the brake applying pressure acting in the motor cylinders which limit varies with the vehicle loading.

3,612,624

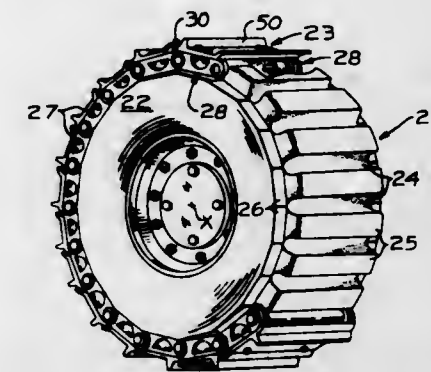
TRACK-OVER-TIRE DRIVING ARRANGEMENT

Robert N. Stedman, Peoria County, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 4, 1970, Ser. No. 8,506
Int. Cl. B62d 55/08; B60b 15/18

U.S. Cl. 305—19

21 Claims

A track-over-tire driving arrangement comprises a pneumatic tire having a plurality of equally spaced notches



on each side of the tire. A common pivot means pivotally connects laterally opposed pairs of links of the link assemblies together and is totally confined within a respective one of the notches for providing a mechanical drive connection between the tire and track assembly.

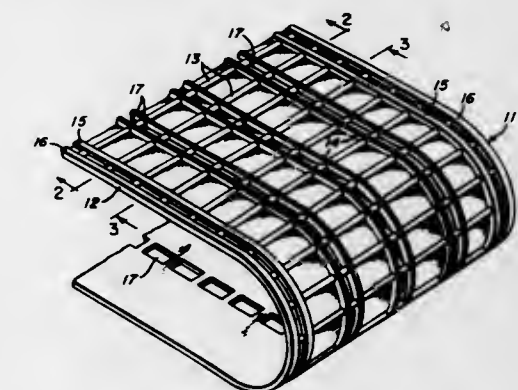
3,612,625

TRACK FOR SNOW VEHICLES

Walter E. Huber, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio
Filed Sept. 26, 1969, Ser. No. 861,377
Int. Cl. B62d 55/24

U.S. Cl. 305—35 EB

5 Claims



A track for snow vehicles formed of a flat band of elastomeric material, in which the outer ground-engaging surface has at least one pair of parallel ribs extending longitudinally of the track and outwardly of the surface to prevent lateral slip. Spaced sprocket holes extend through the track between the ribs.

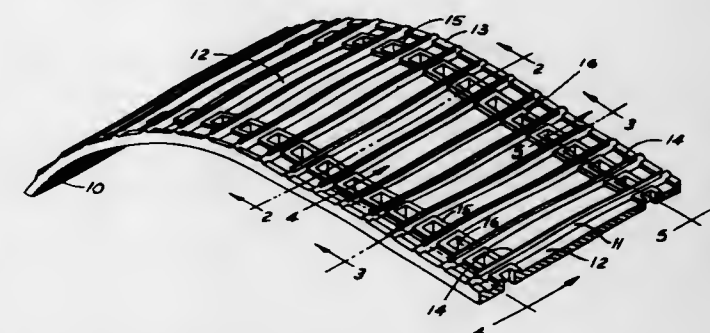
3,612,626

SNOWMOBILE TRACTION BELT

Stanley F. Fuchs, Hwy. 51, Janesville, Wis.
Filed Sept. 12, 1969, Ser. No. 857,348
Int. Cl. B62d 55/24

U.S. Cl. 305—38

4 Claims



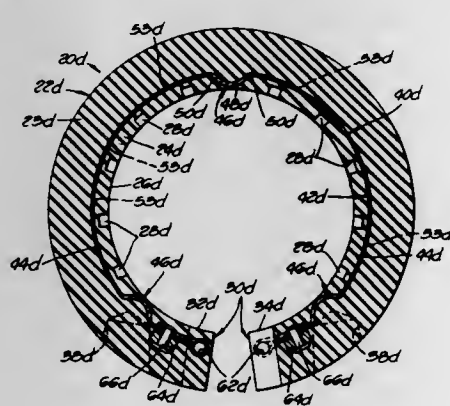
A snowmobile traction endless belt of rubber having unitary reinforcing-and-cleat members of metal transverse thereof,

connected thereto solely by mold in-bonding, and partially embedded therein projecting therefrom at the ground-engaging face only. The belt has alternate thick and thin portions transverse thereof forming a corrugated ground-engaging face. The opposite face is flat. The unitary metal members are disposed in the thick portions of the belt, with the embedded portion of the member being the major portion thereof and being perforated to enhance the mold-in securement to the belt. The unitary members have at the end of the embedded portion thereof a reduced extension for receiving chain link elements which form therewith an endless chain embedded in the belt between the faces thereof. The belt has sprocket wheel teeth receiving openings through the thin portions thereof, and the openings of the chain are in registry therewith.

3,612,627
PIPE COLLAR WITH CORRUGATED-TYPE INSERT
Lawrence E. Fuller, Whittier, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.
Filed Sept. 23, 1969, Ser. No. 860,287
Int. Cl. F16c 1/26

U.S. Cl. 308-4 A

8 Claims

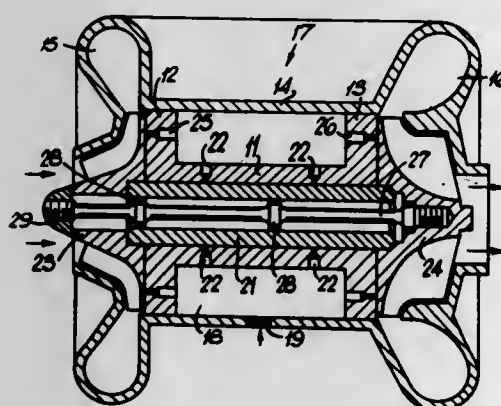


A generally cylindrical collar or protector adapted to be clamped into a drill pipe, and having adhesively bonded and embedded in the elastomeric body of the collar a generally cylindrical spring insert band with corrugated wall portions which are circumferentially distensible on application of a constrictive force to the protector to secure it around a pipe so that it is adaptive for conformity with pipe of varying diameters.

3,612,628
GAS BEARINGS
Henry Jack Steele, Moseley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 22, 1969, Ser. No. 792,919
Claims priority, application Great Britain, Jan. 22, 1968, 3213/68
Int. Cl. F16c 17/16

U.S. Cl. 308-9

1 Claim



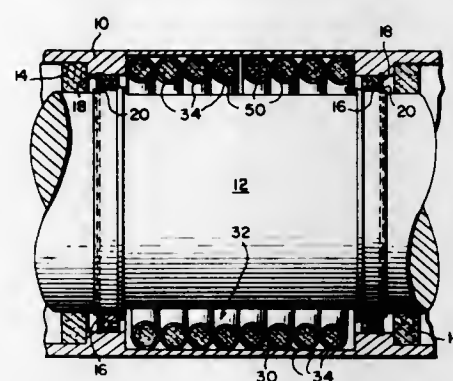
A gas bearing includes a stator assembly, a hollow ceramic shaft mounted for rotation within the stator assembly and passages in the stator assembly for the supply of gas between

the stator assembly and shaft. At least one end of the shaft is secured to a component, and extending through the shaft is a tie bolt holding the component onto the shaft. The tie bolt is tightened to compress the shaft.

3,612,629
VACUUM-TIGHT MAINTENANCE-FREE BEARING
Manfred Granzow, Meckenbeuren, and Roland Vath, Fischbach, both of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany
Filed Jan. 27, 1969, Ser. No. 800,801
Int. Cl. F16c 33/66

U.S. Cl. 308-132

1 Claim

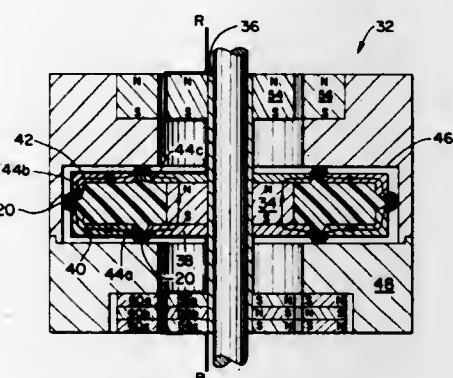


A support means has bearing means carried therein for movably supporting a movable member such as a shaft. Lubricating means is disposed within a recess in the support means in surrounding relationship to the movable member. This lubricating means defines a space therewithin having wick means and a lubricating substance disposed in such space. Outlet means is provided in the body means for dispensing the lubricating substance for lubricating the bearing means.

3,612,630
BEARING ARRANGEMENT WITH MAGNETIC FLUID DEFINING BEARING PADS
Ronald E. Rosensweig, Lexington, Mass., assignor to Ferrofluidics Corporation, Burlington, Mass.
Filed Jan. 23, 1970, Ser. No. 5,167
Int. Cl. F16c 39/06

U.S. Cl. 308-10

18 Claims

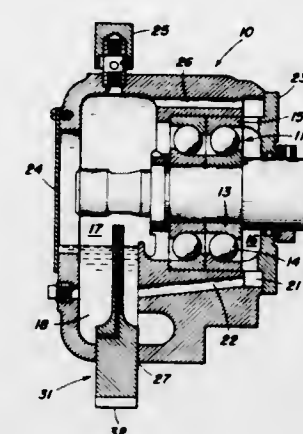


A bearing wherein a fluid bearing pad is sealed between two bearing surfaces, such as between an inner race and an outer race. A permanent magnet and permeable pole pieces define a magnetic circuit which circuit provides for the flow of magnetic flux across at least one of the bearing surfaces. A magnetic gap on the bearing surface through which the magnetic flux flows defines a predetermined continuous peripheral pattern. The magnetic flux is concentrated at the gap and a magnetic fluid is captured therein. The other bearing surface engages the magnetic fluid in sealing relationship and the fluid-bearing pad is sealed between the bearing surfaces and within the periphery defined by the magnetic fluid seal.

3,612,631
OIL MIST LUBRICATION
Ward F. O'Connor, Denville, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed May 28, 1970, Ser. No. 41,393
Int. Cl. F16c 3/14; F16c 33/66

U.S. Cl. 308-78

7 Claims

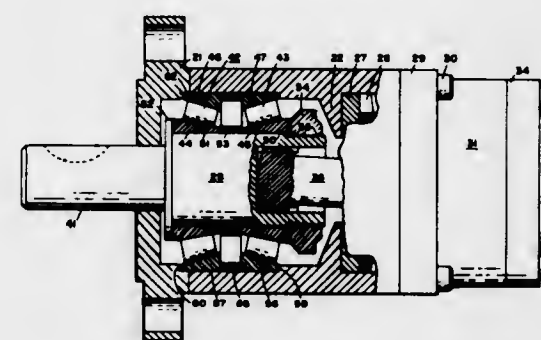


Lubrication of bearings by the placing of a sonic generator in a bearing housing to provide a continuous mist or fog of oil within the housing to lubricate the bearings.

3,612,632
SPLIT-BORE MOUNTING FOR BEARING MEANS
George V. Woodling, 22077 W. Lake Road, Rocky River, Ohio
Filed Nov., 1969, Ser. No. 878,745
Int. Cl. F16c 35/06

U.S. Cl. 308-207

8 Claims



A tapered roller bearing unit is split mounted in confronting bores provided in a pair of connected body members. The tapered roller bearing unit includes an outer cup mounted in split-bores confronting each other and adapted to make a close fitting relationship therewith. The close fitting relationship holds the split confronting bores in substantially straight axial alignment with each other, and in addition thereto, provides a fluid seal between the connected body members. Axial fixation means is provided to accommodate for the axial position of the bearing unit in the split-bores.

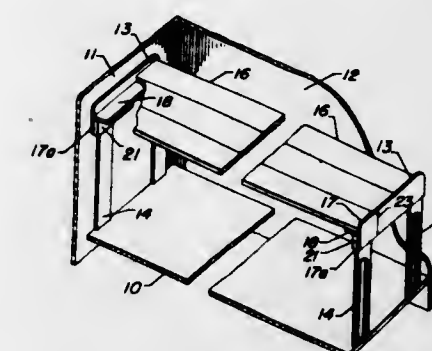
3,612,633
SHELF SUPPORT KIT
Charles C. Bloom, 919 Patten Drive, Palatine, Ill.
Filed Aug. 1, 1969, Ser. No. 846,660
Int. Cl. A47b 67/02; A47f 5/08; A47b 88/00

U.S. Cl. 312-245

2 Claims

A shelf support kit for the installation of shelves in any semienclosed area having two sidewalls and a bottom member, such as an alcove or closet. The bottom member, substantially perpendicular to both sidewalls, may be the flooring, or a previously installed shelf. Essentially an inverted "U", the shelf support provides a rigid shelf construc-

tion without requiring the use of tools and/or fasteners, and yet can be temporary if desired. The shelf and support can be

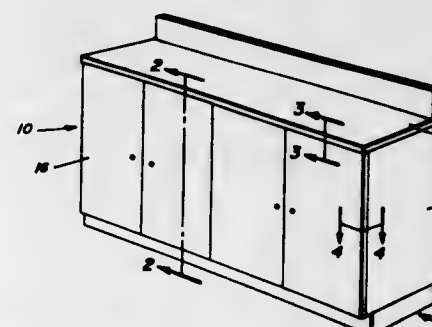


easily dismantled without danger of marring or otherwise disfiguring either the sidewalls or the bottom member.

3,612,634
CABINET CONSTRUCTION
Joseph S. Moore, Jr., Ackerman, Mass., assignor to U.S. Industries, Inc.
Filed Sept. 11, 1970, Ser. No. 71,475
Int. Cl. A47b 43/00

U.S. Cl. 312-257 SK

10 Claims

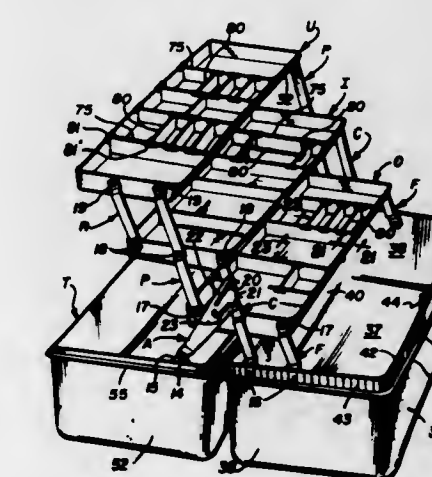


A cabinet front assembly made of plastic or wood frame sections capable of being aligned and secured to each other without dowels to accommodate different installation requirements. Forwardly projecting flanges on parallel spaced toe plate and cleat are slidably received in parallel grooves formed in the rear faces of bottom and top rails of one or more adjustably positioned frames having vertical side rails with aligned notches to receive shelf supports.

3,612,635
TACKLE BOX
Tim M. Uyeda, South San Gabriel, Calif., and Marvin M. King, Denver, Colo., assignors to Samsonite Corporation, Denver, Colo.
Filed Aug. 27, 1969, Ser. No. 853,335
Int. Cl. A47b 51/00

U.S. Cl. 312-272

18 Claims



A spring urged device automatically opens the top, when the front latch is released from a pair of depending hooks

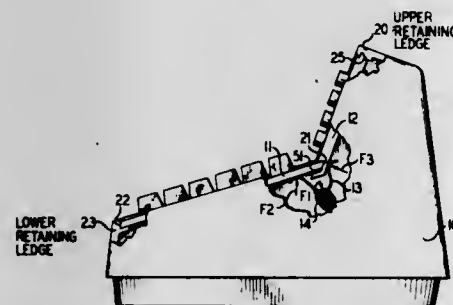
having multiple notches. The latch has slides, with a coil spring between for automatically latching, when the top is closed. A series of trays in normally stacked position are enclosed by the top, when closed. The trays are moved to a separated, elevated position by a linkage arrangement at each end which permits the top to be opened to a generally upright position, without unstacking the trays, thereby permitting access to the top tray. Upon opening the lid the remainder of the way, all three trays are automatically unstacked into an easily accessible display position. Parallel links for connecting the trays with the bottom and with each other include a connecting link having a pair of spaced pins which engage a pair of slots in an actuating link pivoted to a depending boss of the top. Both slots extend longitudinally of the actuating link, but one slot has a perpendicular portion at one end and an oppositely disposed, curved portion at the opposite end, so that the links connected to the trays will not be moved until the top is moved from upright to rear position. The top and bottom shells have lateral outside reinforcing ribs, that of the lower shell being spaced from the upper edge by an upright flange to which the latch is attached. The detent is mounted inside the front of the upper shell, while a pair of latching hooks are connected by a base embedded in the upper shell. The trays have reinforcing flanges around the upper edges, with notches on the outside engaged by an inside projection of a hook of a lateral partition, which hook is wider than the reinforcing flange which extends around the web of the partition. The top reinforcing flange is formed in a zigzag manner, to provide notches or serrations on opposite sides, for engagement by similar hooks of generally shorter and generally similar, longitudinal partitions. The handle is positioned in a well and is held in flat position, until pulled up, by a spring strip which extends through slots in the ends of the well. Clips which are attached to the strip prevent the ends of the strip from being pulled through the slots. The handle may be formed of a plastic and the ends of the handle used to seal the slots.

3,612,636 TELEPHONE CONSOLE PANEL INTERLOCKING DEVICE

Robert E. Bearse, New York, N.Y., and Richard Hollerith, Upper Montclair, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y., by said Bearse and Bell Telephone Laboratories, Inc., Murray Hill, Berkeley Heights, N.J., by said Hollerith
Filed June 9, 1969, Ser. No. 831,370
Int. Cl. A47b 81/00

U.S. Cl. 312-283

6 Claims

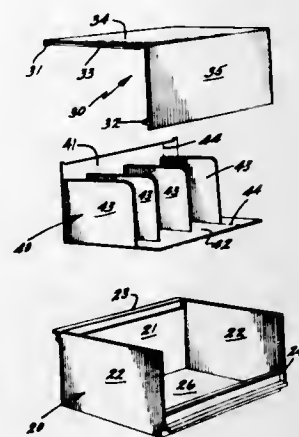


An attendant console for a telephone system having two inclined planar surfaces intersecting each other wherein, for retention purposes, the upper end of the lower surface is positioned in a slot cut into the upper surface. Pressure, sufficient to maintain the surfaces in interlocking position, is applied to each surface individually by a spring device mounted to the console housing.

3,612,637
PAPER TRAY
Paul J. Betts, Muskegon, Mich., assignor to Browne-Morse Company, Muskegon, Mich.
Filed June 6, 1969, Ser. No. 831,071
Int. Cl. A47b 81/00; B65d 25/06
U.S. Cl. 312-290 13 Claims

A filing tray for use in a file drawer, being removable therefrom, having ends, a side panel, a bottom, and having a

detachable cover which can be placed thereon for storing purposes. A paper hopper for use in said tray, being removable therefrom, having a side, a bottom, partitions, and a breakaway line; said hopper capable of being oriented in said

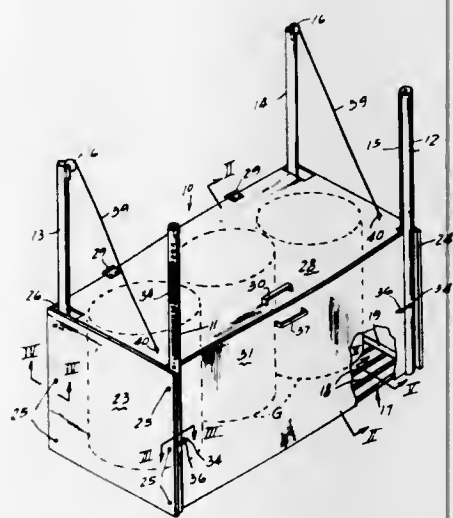


tray with its side against the side of said tray, with its side opposite the side of said tray or, with a portion thereof being broken off at said breakaway line, with its side generally parallel to the ends of said tray.

3,612,638
SANITARY GARBAGE CAN CABINET
James Francis Healy, 4925 Thomas St., Chicago, Ill.
Filed Nov. 13, 1969, Ser. No. 876,339
Int. Cl. E06b 9/14

U.S. Cl. 312-319

5 Claims



A box or cabinet for housing a plurality of garbage cans which has a counterbalanced lid giving easy access to the tops of the garbage cans and an open front closed by a balanced, vertically shiftable door for easy removal of the cans. The cabinet has four upstanding posts at the corners thereof supporting the walls and projecting above the lid to support counterweights or balancing means for the lid and door.

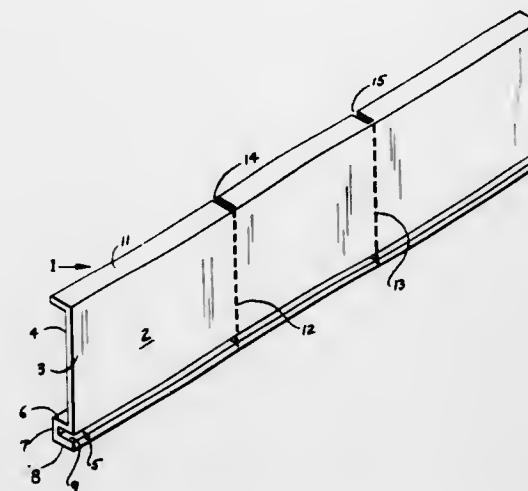
3,612,639
DRAWER
Cole C. Williams, 2408 Allanway Place, Glendale, Calif.
Filed Dec. 23, 1968, Ser. No. 785,916
Int. Cl. A47b 88/00, 43/00

U.S. Cl. 312-330

7 Claims

A drawer formed of a thermoplastic panel with a vertical wall having flexible vertical hinge portions integral with an inner surface of the wall, which panel forms a back and two sides of a drawer which are held in a rectangular shape by a rigid rectangular bottom. The sides have resilient lock means joining the sides to a wooden front panel of the drawer. The drawer can be shipped flat, assembled, used, and then disassembled for again shipping the drawer components flat.

Finally, the drawer can be reassembled and used again. Since the drawer does not require glue to hold it together, the ther-

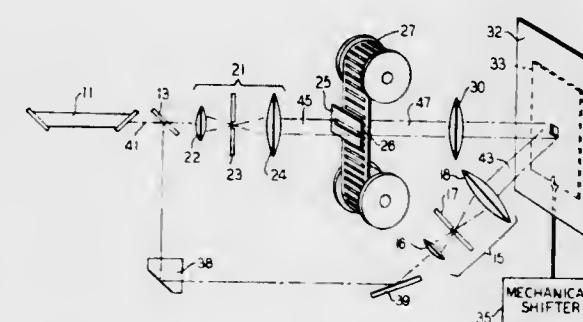


moplastic panel can be of a sturdy material, such as polypropylene, that provides a surface of high lubricity for sliding in a cabinet, but which material is not readily glueable.

3,612,640
HOLOGRAPHIC TELEPHONE DIRECTORY WITH
CINEMATOGRAPHIC ACCESSION OF INFORMATION
Herwig W. Kogelnik, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed Sept. 23, 1969, Ser. No. 860,261
Int. Cl. G02b 27/00; G03b 23/12

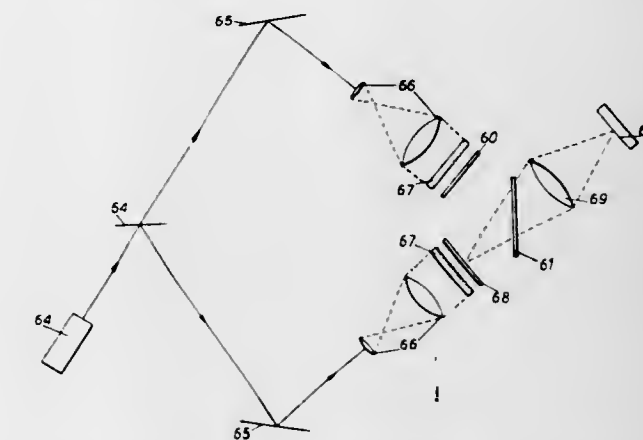
U.S. Cl. 350-3.5

3 Claims



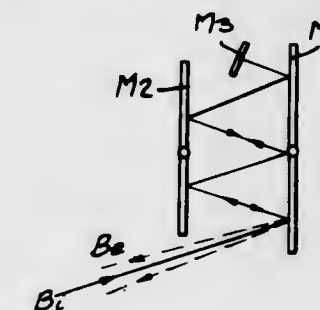
An associative memory is disclosed that relates a first item of information, such as a name, to a second item of information, such as a telephone number. First, each unit of information, which comprises two sets of symbols constituting a first item of information and its associated second item of information, is arranged in sequence according to a place, or positional, order. In such an order, all units of information that have identical symbols at a first position within each first item of information are arranged consecutively and the units within each such consecutive arrangement are similarly ordered by the symbols at a second position and so on. The Fourier transforms of each unit of information in the sequence are then formed individually; and a hologram of each transform is recorded in sequence on a photosensitive medium. When this information is viewed by illuminating a single hologram in the set of ordered Fourier transform holograms and moving a sequence of such holograms through the illuminating beam, only the identical symbols in the ordered items of information will be clearly seen. Thus, in the example above, if the names are stored in alphabetic order on the holograms, when the holograms are moved rapidly, only the first few letters of the recorded names will remain constant enough to be viewable; but when the holograms are moved slowly, most, or all, the letters of the names will be viewable. So by gradually slowing the speed of the holograms moving through the illuminating beam, it is possible to work through a large number of holograms to find the particular set of symbols, such as a telephone number, that is associated with a particular set of ordered symbols, such as a name.

3,612,641
HOLOGRAPHIC DATA STORAGE WITH AN
ORTHOGONALLY CODED REFERENCE BEAM
Charles Cecil Eaglesfield, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,261
Claims priority, application Great Britain, Jan. 23, 1969, 3812/69
Int. Cl. G02b 27/00; G11c 11/42
U.S. Cl. 350-3.5 3 Claims



A system for holographic data storage in which a large number of holograms are superimposed on a single plate by an array of electro-optic elements placed in the reference beam. The array is operated during the recording of the holograms of data 'pages' so that the array is able to reconstruct an image of any one of the pages and the component images of every other page interfere with each other so that only the desired page is reconstructed.

3,612,642
A HIGH-VELOCITY OPTICAL SCANNER INCLUDING A
TORSIONAL FORK SUPPORTING TWO REFLECTORS
Frank Dostal, Elmhurst, Long Island, N.Y., assignor to Bu-
lova Watch Company, Inc., New York, N.Y.
Filed June 27, 1969, Ser. No. 837,013
Int. Cl. G02b 17/06; H01s 3/11
U.S. Cl. 350-6 6 Claims

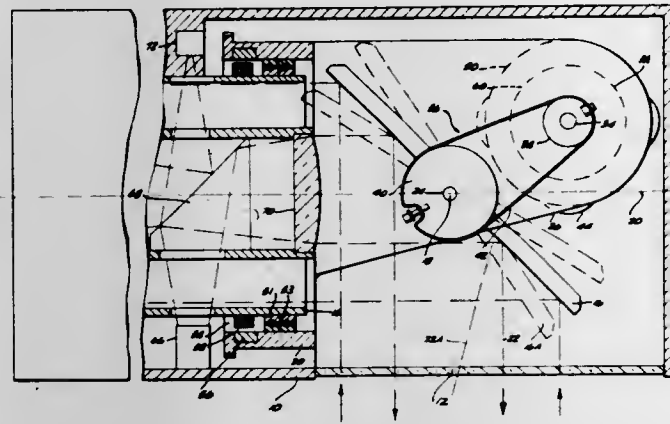


A high-velocity optical scanner for laser "Q" switching and other purposes, the scanner including first and second mirrors mounted on the tines of an electronically driven torsional tuning fork, the mirrors being oscillated thereby. An incoming beam of light or other form of radiant energy is directed toward the first mirror which reflects it onto the second mirror, the second mirror directing the beam onto a fixed third mirror. The third mirror acts to duplex the beam by directing it back to the second mirror, which returns the beam to the first mirror, whose reflection produces an exit beam having a high angular velocity.

3,612,643
TARGET LOCATING SYSTEM
Morris Weber, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed July 24, 1969, Ser. No. 844,358
Int. Cl. G02b 17/00 3 Claims

U.S. Cl. 350-6 3 Claims
A receiving system including a mirror mounted on a pair of gimbals to direct light to a stationary detector, wherein the

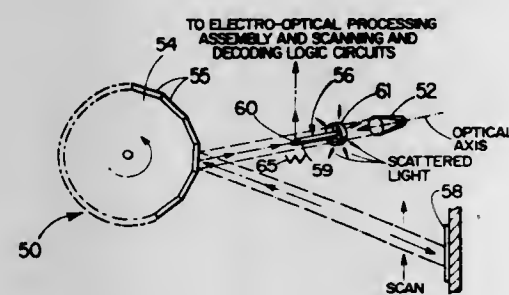
inner gimbal is driven from a drive shaft which rotates at twice the speed as the mirror and in the same direction.



Gyroscopes and position transducers are mounted on the drive shaft.

3,612,644
OPTICAL SCANNER FOR RETROREFLECTIVE LABELS
Francis H. Stites, Wayland, assignor to Robert H. Reif, Groton, both of, Mass. and Sylvania Electric Products, Inc.
Filed July 6, 1970, Ser. No. 52,302
Int. Cl. G02b 17/08

U.S. Cl. 350-7



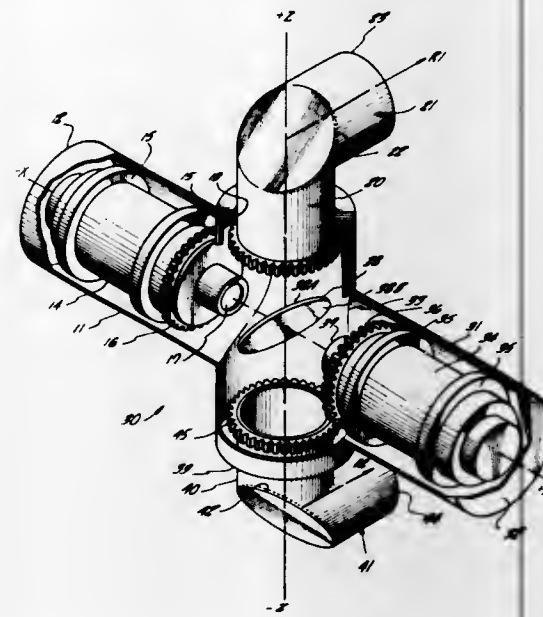
An optical scanning apparatus for scanning a retroreflective label affixed to an object such as a vehicle. An elongated cylindrical rod having a diagonally cut elliptical end region and a small elliptical mirror secured to the diagonally cut end region is positioned intermediate a high-intensity light source and a rotating wheel having a plurality of reflective mirror surfaces around its periphery. An incident light beam produced by the light source surrounds the cylindrical rod, the cross-sectional area of which is significantly less than the cross-sectional area of the incident light beam, and strikes the reflective mirror surfaces of the rotating wheel in succession. The reflective mirror surfaces reflect the incident beam onto the retroreflective label which, in turn, retroreflects the incident beam back onto the reflective mirror surfaces. The reflective mirror surfaces then reflect the retroreflected beam toward the small elliptical mirror and a portion of the beam, constituting the most intense and desirable portion of the beam, is reflected by the small elliptical mirror to an electrooptical processing arrangement for further processing.

3,612,645
OPTICAL BINOCULAR SCANNING APPARATUS
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Gary L. Parker, La Canada, Calif., and Frederick R. Chamberlain, La Canada, Calif.
Filed Sept. 9, 1969, Ser. No. 856,328
Int. Cl. G02b 23/02

U.S. Cl. 350-23

An optical scanner is disclosed comprising a linear housing having an optical instrument such as a camera rotatably mounted therein. A first mirror is fixedly mounted in the housing at the optical end of the image sensor at a 45° angle to the image plane thereof. An L-shaped housing is provided having one end rotatably mounted on the linear housing with the one end being in optical communication with the optical

instrument by reflection from the first mirror. A second mirror is mounted at the corner of the L-shaped housing for redirecting the optical path out through the other end thereof. During any rotation of the L-shaped housing, the op-

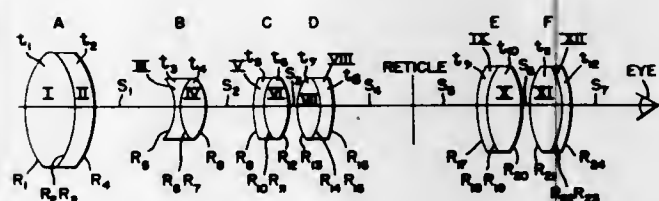


tical instrument is counterrotated to compensate for the image rotation on the first mirror so that, for example on a television monitor, the picture transmitted by the optical instrument would be always upright.

3,612,646
RIFLE TELESCOPIC GUN SIGHT
Merle H. Walker, Mohawk, and Lawrence S. Burrows, Utica, both of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Dec. 11, 1969, Ser. No. 884,136
Int. Cl. G02b 23/00

U.S. Cl. 350-54

4 Claims



The present invention relates to an optical system for telescopes and more particularly it relates to optical improvements in a rifle telescope incorporating a telephoto lens arrangement which has been used to compact the scope and provide a widened field of view. The telescope has been carefully designed to be visibly free of aberrations usually concomitant with telephoto systems. A negative power two-element component has been introduced into the scope as part of the objective lens arrangement. This insertion serves to produce the telephoto effect. The selection of the optical parameters, including lens element radii, thicknesses, air-spaces, and optical glass, has been made to insure an optical system whose performance is equal or better than existing rifle telescopes, but which has reduced size and weight.

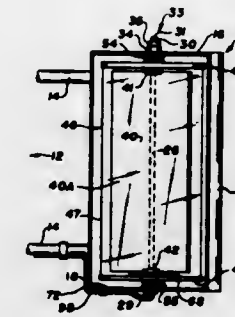
3,612,647
REAR VIEW MIRROR IN ROTATABLY WIPED ENCLOSURE
Ernest J. Laprairie, Suite 2, 4907 8th Street, S. W., Calgary, Alberta, Canada
Filed May 11, 1970, Ser. No. 36,013
Int. Cl. B60s 1/44, 1/60; G02b 7/18

U.S. Cl. 350-61

A vehicle rear vision mirror is enclosed in a protective case which is partially enclosed in a housing, the housing support-

ing the case for rotation about the mirror. The housing also supports a wiper blade in contact with a transparent window

used, the valve is at the lower end of the tube and the bulb at the upper end. A magnifying glass is mounted at the lower

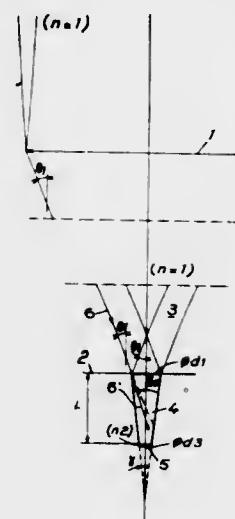


of the case and a motor is provided to rotate the case and wipe the window across the blade.

3,612,648
OPTICAL CONCENTRATOR WITH MAXIMUM ILLUMINATION
Pierre Malifaud, 95 boulevard Jourdan, Paris, 14e, France
Filed June 12, 1969, Ser. No. 832,666
Claims priority, application France, June 12, 1968, 154,663
Int. Cl. G02b 5/14

U.S. Cl. 350-96 R

2 Claims



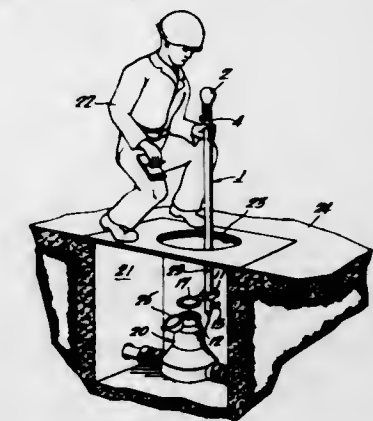
The radiation concentrator disclosed comprises a frustoconical mirror, or equivalent such as a bundle of tapered optical fibers, which concentrates flux from a frontal concentrator system onto a sensor. The dimensions of the mirror or equivalent are calculated by formulae which maximize the illumination of the sensor while accepting a preselected flux loss.

3,612,649
TOOL FOR READING UNDERGROUND METERS
Donald M. Pusey, Linwood, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Mar. 18, 1970, Ser. No. 20,523
Int. Cl. G02b 27/02

U.S. Cl. 350-115

7 Claims

A portable tool for facilitating the reading from the surface of meters located underground, such as watermeters, utilizing an elongated tube containing water. This tube has a valve at one end and a squeeze bulb at the opposite end. When being

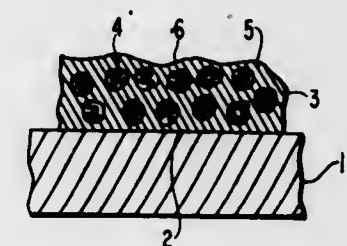


end of the tube, as is also a hook for opening the hinged covers of watermeters.

3,612,650
PROJECTION SCREEN
Shizuo Miyano, and Asaji Kondo, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sept. 4, 1969, Ser. No. 855,174
Claims priority, application Japan, Sept. 4, 1968, 43/63487
Int. Cl. G03b 21/60

U.S. Cl. 350-126

13 Claims

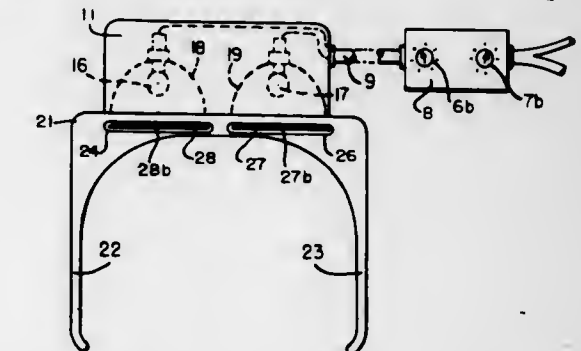


A reflection-type projection screen comprising a support, the surface of which has a metallic luster, having coated thereon a light scattering layer comprising oil-containing microcapsules and a binder.

3,612,651
SOUND SYNCHRONOUS OPTICAL VIEWER
Lawrence E. McCurdy, 224 W. 13th St., Apt. 3R, New York, N.Y.
Filed June 16, 1970, Ser. No. 46,789
Int. Cl. G02b 27/02

U.S. Cl. 350-145

7 Claims



A music-enhancing optical viewer shaped and worn like ordinary eyeglasses or goggles has a separate light source for each lens, the illumination of which is respectively controlled by the instantaneous output voltages from the respective channels of a stereo music source so that the light produced by each source varies with the associated sound channel output. Parti-colored filter means between each light source and the wearer's eye, different for each eye, cause varied color effects to be produced which are related to music produced by the stereo music source.

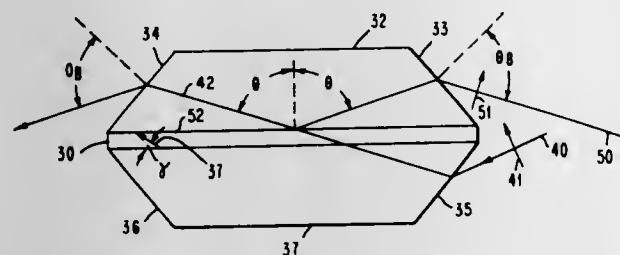
3,612,652

NONRECIPROCAL OPTICAL DEVICE

Millard A. Habegger, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,174
Int. Cl. G02f 1/24

U.S. Cl. 350-157

6 Claims



An optical device having the property that if a light beam is propagated at it in one direction the light beam is totally reflected and if the light beam is propagated at it in the reverse direction it is totally transmitted. A birefringent device has its optical axis in a predetermined direction with respect to the location of incidence of a light beam on it. The birefringent device is disposed in a suitable medium having an index of refraction which is substantially the same as the higher index of refraction of the birefringent device. When the light beam is propagated at a predetermined angle with respect to the birefringent device the nonreciprocal operation of the device occurs.

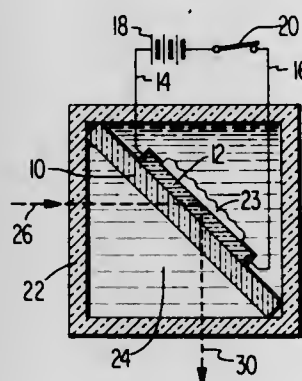
3,612,653

DIGITAL LIGHT DEFLECTOR HAVING LIQUID AND VAPOR STATES

Jan Aleksander Rajchman, Princeton, N.J., assignor to RCA Corporation
Filed Jan. 20, 1970, Ser. No. 4,304
Int. Cl. G02f 1/34

U.S. Cl. 350-160

6 Claims



A digital light deflector is disclosed which includes an electrically conductive, transparent film deposited on a transparent substrate. The transparent film is made very thin so that it has a resistance to the flow of electric current and acts as a heating element. The transparent film is immersed in a transparent liquid in a transparent container. Light is directed through the container to the film at an angle therewith. The light normally continues in a straight line through the film, the liquid and out from one side of the container. When an electric current is applied to the film, heat is generated which vaporizes the liquid at the surface of the film and causes the light to be reflected by the film-vapor interface and pass out through a different side of the container.

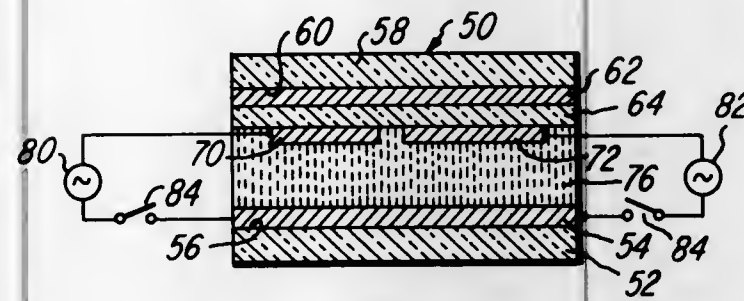
3,612,654

LIQUID CRYSTAL DISPLAY DEVICE

Richard Ira Klein, Edison, and Sander Caplan, Trenton, both of N.J., assignors to RCA Corporation
Filed May 27, 1970, Ser. No. 40,788
Int. Cl. G02f 1/28

U.S. Cl. 350-160 R

7 Claims



The device comprises a front transparent substrate having a transparent electrode on the inner surface thereof, a rear substrate, and a liquid crystal material disposed between the two substrates. The inside surface of the rear substrate is covered with a light-reflecting material, e.g., silver, covered in turn with a thin layer of dielectric material, e.g., silicon dioxide. Disposed on the dielectric layer is a patterned electrode of either a transparent material, e.g., tin oxide, or a light-reflecting material, e.g., silver.

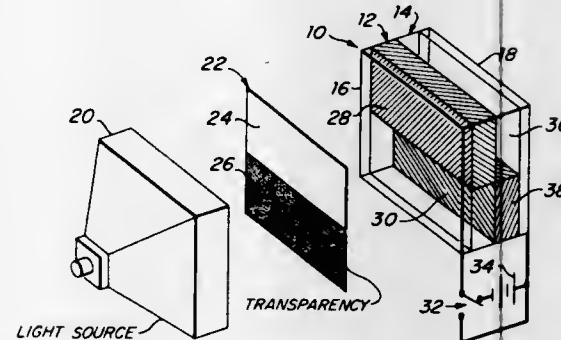
3,612,655

FABRY-PEROT FILTER CONTAINING A PHOTOCONDUCTOR AND AN ELECTRO-OPTIC MEDIUM FOR RECORDING SPATIALLY VARYING INFORMATION

William Raymond Buchan, Lincoln, and Ralph Edward Aldrich, Woburn, both of Mass., assignors to Itek Corporation, Lexington, Mass.
Filed Apr. 30, 1969, Ser. No. 820,417
Int. Cl. G02f 1/38

U.S. Cl. 350-160

15 Claims



An electro-optic filter is disclosed having a Fabry-Perot structure including an electro-optic medium whose index of refraction varies as a function of the intensity of an electric field applied to it, means for applying an electric field to the medium, and means for varying the intensity of the electric field to shift the spectral response characteristic and optimum transmissivity range of the structure.

3,612,656

FINE GRAIN POLYCRYSTALLINE FERROELECTRIC CERAMIC OPTICAL SHUTTER

Juan R. Maldonado, North Plainfield, and Allen H. Meitzler, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 23, 1969, Ser. No. 835,687
Int. Cl. G02f 3/00

U.S. Cl. 350-150

8 Claims

A fine grain polycrystalline ceramic, such as lanthanum doped lead zirconate-lead titanate, is used in a "latching"

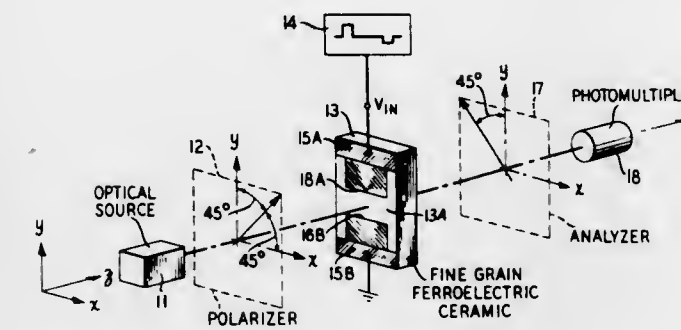
3,612,658

SIGNAL ANALYZER HAVING VARYING BANDWIDTH RESOLUTION

Frank H. Slaymaker, Rochester, N.Y., assignor to General Dynamics Corporation
Filed Feb. 16, 1970, Ser. No. 11,711
Int. Cl. G02b 27/38

U.S. Cl. 350-162 SF

12 Claims



tion by means of a single applied voltage pulse. With this type of switching, optical shutters (of the latch relay type) can easily and simply be constructed, since the birefringence of the ferroelectric ceramic depends upon the simply switchable electric polarization thereof.

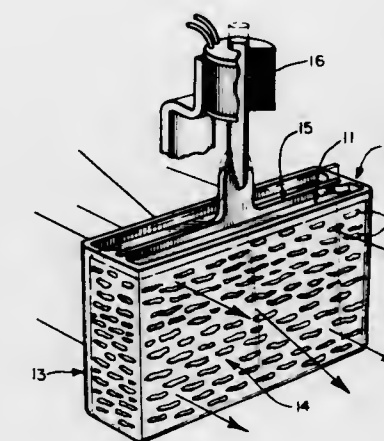
3,612,657

LIGHT-INTENSITY CONTROL DEVICE UTILIZING ORIENTED PARTICLES SUSPENDED IN A GEL

Samuel P. Sawyer, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed June 22, 1970, Ser. No. 48,238
Int. Cl. G02f 1/34, 1/36

U.S. Cl. 350-161

6 Claims



An adjustable light-intensity control device utilizes small, essentially flat particles oriented about parallel axes in the general direction of the light to be controlled and which are suspended in a clear loose gel in a suitable light-transmissive container. The light transmissivity of the device is changed by means of a "venetian blind" effect, with the container being provided with a partition which is moved in a direction transverse to the particle orientation so that the gel may be deformed to present an increasing fraction of the particle cross section to light rays which otherwise would pass through the device unobstructed. A servomechanism may be attached to the partition to make possible such applications as a window automatically adjustably to provide a constant ambient light level.

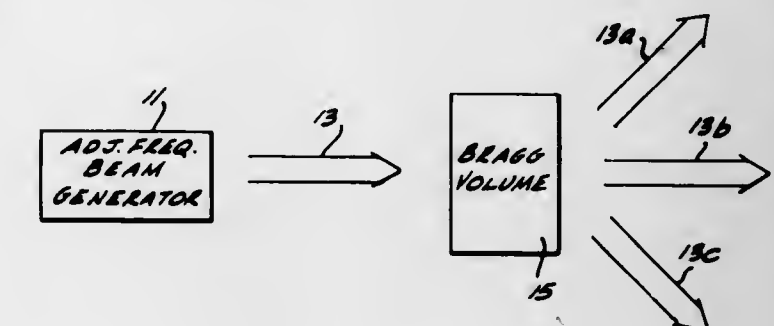
3,612,659

PASSIVE BEAM-DEFLECTING APPARATUS

Robert L. Forward, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed June 9, 1969, Ser. No. 831,533
Int. Cl. G02b 5/18

U.S. Cl. 350-162 R

14 Claims



A passive beam deflector for deflecting a beam of electromagnetic energy wherein a frequency adjustable electromagnetic beam source produces a beam of energy directed at and impinging upon a Bragg scanning volume having sets of pluralities of frequency discriminating spaced parallel scattering planes oriented orthogonally to the bisector of the incident and deflected beams, whereby the beam will be deflected in a different predetermined direction depending upon the frequency of the energy.

3,612,660

DIGITAL DATA COMPACTION

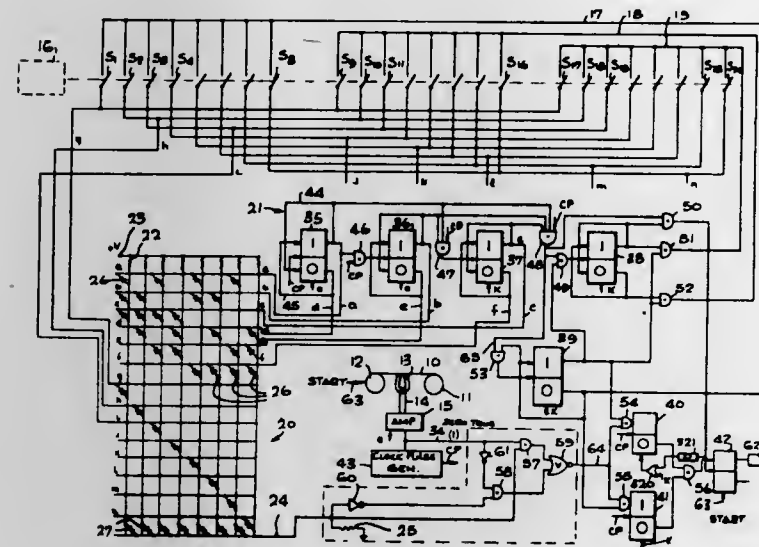
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif.
Filed Sept. 8, 1969, Ser. No. 855,973
Int. Cl. G06f 1/00

U.S. Cl. 340-172.5

30 Claims

Data-processing equipment for writing a list of digital words, and then scanning the list to determine whether it includes a predetermined particular digital word, with the list

being compacted to occupy a reduced space or time by omitting some of the digits of some of the words in the list



when those digits are identical with corresponding digits of other words in the list, or can be derived therefrom.

3,612,661
OBJECTIVE HAVING AT LEAST FOUR COMPONENTS SITUATED IN AIR AND HAVING AN APPROXIMATELY UNCHANGED HIGH IMAGE PERFORMANCE FOR LARGE CHANGES OF THE OBJECT-DISTANCES BETWEEN INFINITY AND A MAGNIFICATION OF CLOSE TO 1:1

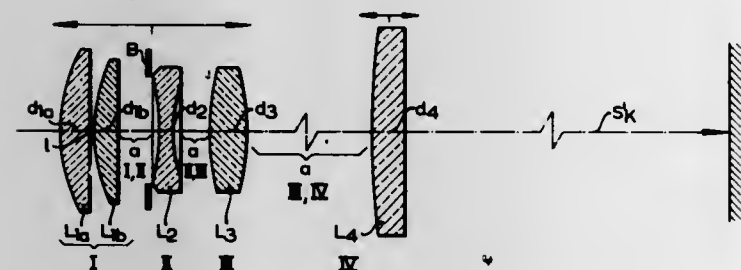
Fritz Determann, Springkamp; Friedrich Uberhagen, Braunschweig, and Paul Schuhmann, Braunschweig, all of Germany, assignors to A. G. Voigtlander
Filed Feb. 20, 1969, Ser. No. 800,942

Claims priority, application Germany, Mar. 22, 1968, P 17 71 030.8

Int. Cl. G02b 15/14

U.S. Cl. 350-184

2 Claims



An objective of the expanded triplet type for photographing relatively distant as well as relatively close objects. Subsequent to the first three components in the direction from the longer to the shorter conjugate there is a fourth component of relatively weak refractive power which is less than one-third the equivalent refractive power of the entire objective. The length of the air space between the third and fourth components can be varied and this air space forms a converging air lens having a length smaller than 1.5 times the paraxial equivalent focal length of the entire objective. The first and second components define between themselves a diverging air lens having refractive power greater than one-fourth but smaller than the refractive power of the converging air lens between the third and fourth components. The refractive power of this latter air lens is greater than one-fourth but less than the lens refractive power of the second component which is a biconcave diverging lens.

3,612,662
EYEPIECE HAVING A WIDE FIELD OF VIEW AND A LARGE EYE RELIEF

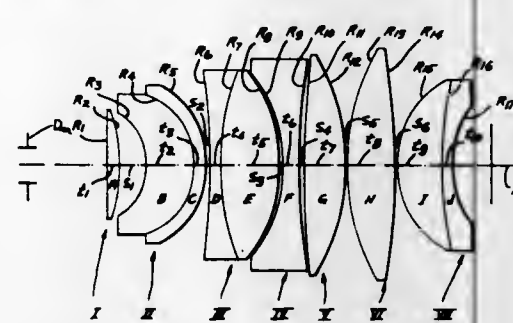
Harold N. Sissel, Glendale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed July 13, 1970, Ser. No. 54,301

Int. Cl. G02b 9/64, 25/04

U.S. Cl. 350-214

1 Claim



An eyepiece having a wide field of view and a large eye relief. The eyepiece is made up, going from the front to the rear, of a double convex singlet, a negative meniscus-shaped doublet concave to the front, a positive meniscus-shaped doublet concave to the front, a double concave singlet, two double convex singlets and a positive meniscus-shaped doublet convex to the front.

3,612,663
WIDE-APERTURE OBJECTIVE OF THE EXPANDED DOUBLE-ANASTIGMAT TYPE HAVING AN INNER BICONEX DIAPHRAGM-SPACE AND A CONCAVE FRONT SURFACE TOWARD THE DISTANT OBJECT

Albrecht W. Tronier, Göttingen; Joachim Eggert, Braunschweig, and Fritz Uberhagen, Braunschweig, all of Germany, assignors to A. G. Voigtlander

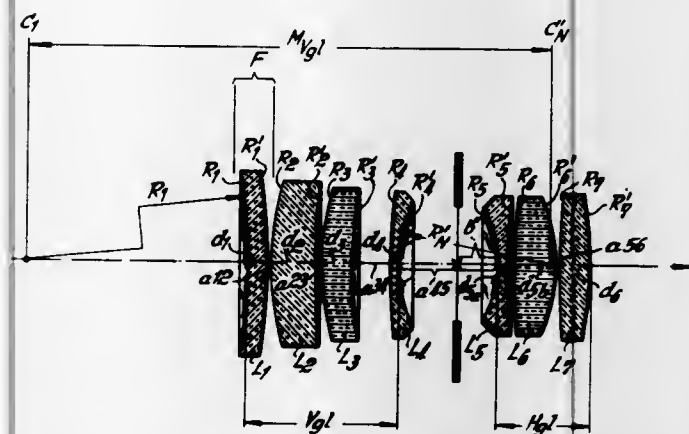
Filed June 11, 1969, Ser. No. 832,301

Claims priority, application Switzerland, June 14, 1968, 8894/68

Int. Cl. G02b 9/62, 9/64, 27/14

U.S. Cl. 350-214

6 Claims



An objective of relatively wide aperture which is of the expanded double-anastigmat type and which has an inner diaphragm. The diaphragm is situated in an air space which defines the diaphragm chamber and which is of a dispersive configuration, this air space separating a forward component situated on the longer conjugate side of the air space from a rear component situated on the smaller conjugate side of the air space. The forward component terminates in opposite end surfaces both of which are concave so as to provide the forward component in its entirety with the configuration of a biconcave lens. The curvature of the concave front end surface of the component is determined by a radius the length of which is greater than two-thirds of the focal length of the objective without exceeding ten-thirds of this focal length calculated absolutely. This forwardly directed concave front end surface of the objective not only functions in a dispersive manner but also has an overcorrective action with respect to image errors.

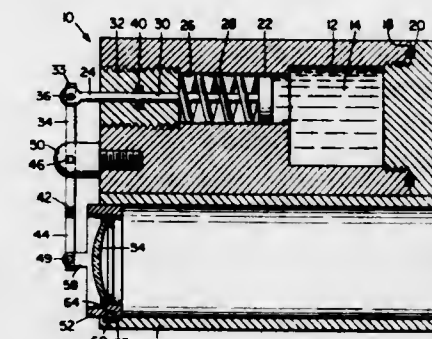
3,612,664
OPTICAL PATH COMPENSATING DEVICE
Leon J. Berman, Culver City, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 14, 1970, Ser. No. 2,758

Int. Cl. G02b 7/24

U.S. Cl. 350-253

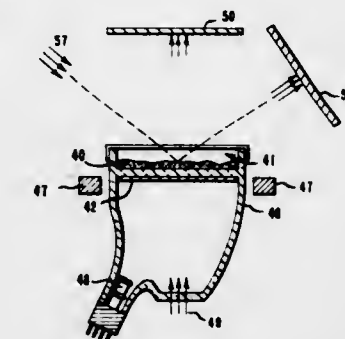
5 Claims



A device to compensate for changes in the length of an optical path due to ambient temperature variations. It employs a chamber, filled with temperature-responsive fluid, a moveable chamber wall, and linkage means connecting said wall to the lens mounts whereby changes in fluid volume adjust the length of the optical path.

3,612,665
METHOD AND APPARATUS FOR FORMING A VISUAL IMAGE OF A LATENT MAGNETIC IMAGE
Eustathios Vassiliou, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 9, 1969, Ser. No. 823,461
Int. Cl. G01r 33/02; G02f 1/30; G11b 11/10
U.S. Cl. 350-266

18 Claims



An apparatus and method for the visual observation of a latent magnetic image recorded on a magnetic member. The apparatus comprises: a nonmagnetic vessel, positioned above the magnetic member, having a broad shallow cavity containing magnetically active particles in a fluid or a vacuum; and a magnet to produce an external magnetic field. The magnetically active particles collect on the latent magnetic image to produce a visual image. If the external magnetic field is constant, the resolution of the visual image is increased. If the magnetic field is cycled between alternating polarity and is of sufficient intensity, the image reverses and the speed with which the visual image can follow changes in the latent magnetic image is increased.

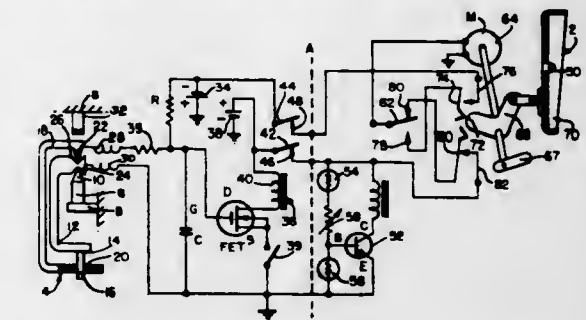
3,612,666
ELECTRICALLY CONTROLLED REARVIEW MIRROR EMPLOYING SELF-CONTAINED POWER SUPPLY AND MOTION-ACTUATED POWER SWITCH
Jacob Rabinow, Bethesda, Md., assignor to Max L. Libman, Reston, Va., a part interest
Filed July 13, 1970, Ser. No. 54,474
Int. Cl. G02b 5/08, 5/10

U.S. Cl. 350-279

8 Claims

Photoelectrically controlled rearview mirrors for automobiles are old in the art and have been energized by the elec-

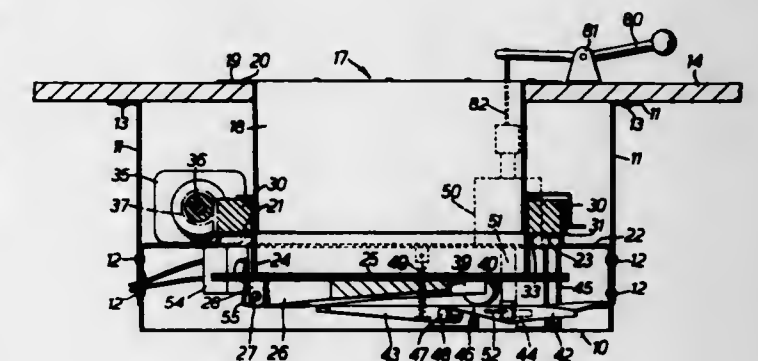
trical system of the automobile. In order to eliminate wires, a rearview mirror is operated by its own small batteries and the circuit is arranged to have a very small standby current. In



order to eliminate manual switching in one embodiment a trembler switch is employed. This switch operates whenever the car is in motion.

3,612,667
ROTATABLE AND RETRACTABLE SAFETY MIRROR FOR MOTOR VEHICLES
William John Austen Orr, Linden, The Ford, Donaghadee, County Down, Northern Ireland
Filed Apr. 7, 1970, Ser. No. 26,302
Int. Cl. G02b 5/08; B60r 1/06, 1/08
U.S. Cl. 350-289

9 Claims

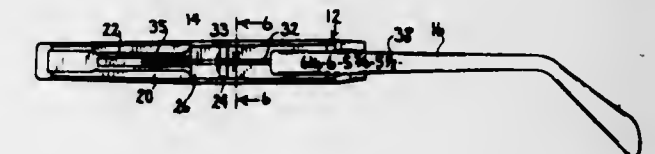


A safety mirror device for fitting underneath the body of a motor vehicle. The mirror is mounted on a support which is rotatable by an electric motor about a vertical axis and is mounted beneath an aperture in the floor of the driver's cab in a position in which the driver can look down through the aperture into the mirror. The mirror is hinged about a horizontal axis through one edge to the rotatable support, and is movable between a horizontal retracted position and a downwardly inclined operative position in which it enables the driver to view an area beneath the vehicle in successive directions through a 360° angular traverse as the mirror is rotated.

3,612,668
ADJUSTABLE TEMPLE FOR SPECTACLES
Willis T. Watkins, Hickman Mills, Mo., assignor to Farmelee Industries, Inc.
Filed May 4, 1970, Ser. No. 34,245
Int. Cl. G02c 5/20

U.S. Cl. 351-118

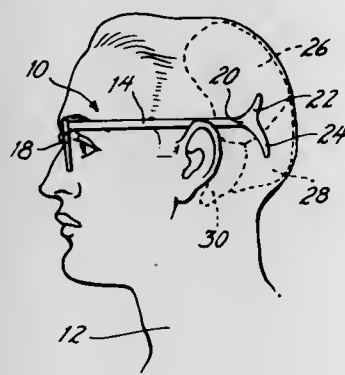
7 Claims



An extensible temple for spectacles utilizes a pair of relatively movable front and rear temple sections. The front tem-

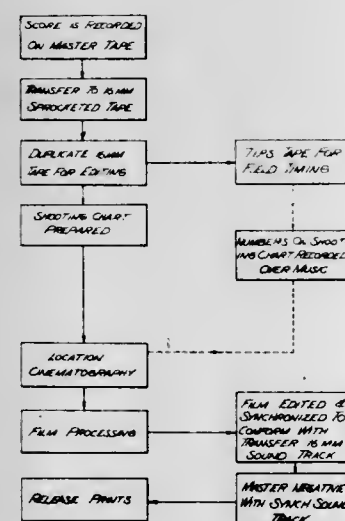
ple section receives a body of resilient material which presents an elastic mass through which an elongated connecting rod secured to the rear temple section passes. As the elongated connecting rod extends through the elastic mass it causes expansion of the surrounding material to an extent to hold the rod and the body in sufficiently tight interengagement to interlock the temple sections, except during adjustment of the temple when force is applied to shift the rod within the elastic mass.

3,612,669
SPECTACLE FRAME
William L. Vinson, 6145 Vine St., Philadelphia, Pa.
Filed July 15, 1969, Ser. No. 841,714
Int. Cl. G02c 5/14
U.S. Cl. 351-123



A spectacle frame having temples or sidepieces which are supported by the ears of a wearer and engage the head of a wearer at the occipital bone and parietal bone beyond the mastoid process. The temple ends have a Y-junction which grip the rear portion of the head of a wearer thus relieving pressures attendant with the wearing of spectacles having conventional temples. The upwardly extending leg of the Y-junction is adapted to engage the parietal bone whereas the downwardly extending leg of the Y-junction is adapted to engage the occipital bone.

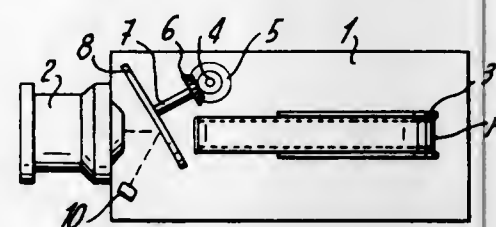
3,612,670
METHOD OF PRODUCING EDUCATIONAL MOTION PICTURES
Donald R. Phillips, 1809 Mira Vista, Santa Barbara, Calif.
Filed Jan. 13, 1969, Ser. No. 790,571
Int. Cl. G03b 31/02
U.S. Cl. 352-5



A method is described for making sound motion pictures which are to be used for musical appreciation and other musical education purposes. The film production is based on the matching of pictures to an unaltered musical composition. Various types of scene sequences are filmed and synchronized with certain sequences of bars of the music, having a certain instrumental sound. The method of the in-

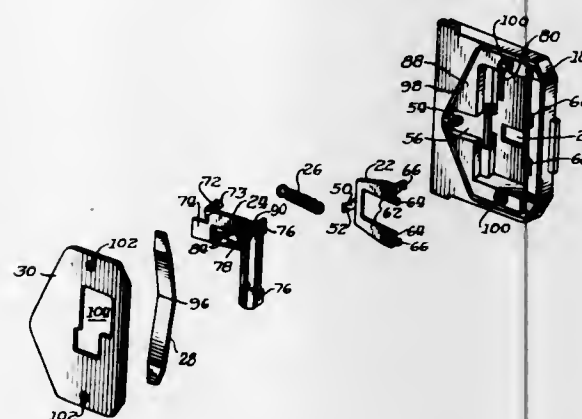
vention is aided by graphical techniques whereby the bars of the music having a (1) certain instrumental sound are keyed to a chart which lists time of music, (2) instrumental sound, (3) typical bar, and (4) typical frame.

3,612,671
CINEMATOGRAPHIC CAMERA
Henri Wermeille, Vaud, Switzerland, assignor to Paillard S. A., Sainte-Croix, Vaud, Switzerland
Filed July 1, 1969, Ser. No. 838,094
Claims priority, application Switzerland, July 9, 1968, 10222/68
Int. Cl. G03b 9/10
U.S. Cl. 352-208



In a cinematographic camera a shutter, formed by a sector with parallel faces, is interposable between an objective and a film, and is arranged to reflect rays over all its blanking zone to a photosensitive element. Means are provided for lowering the light flux transmission towards the photosensitive element in the normal rest position of the shutter.

3,612,672
APERTURE ASSEMBLY AND INTERMITTENT MECHANISM FOR A CAMERA
Richard K. Carls, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,486
Int. Cl. G03b 1/48
U.S. Cl. 352-221

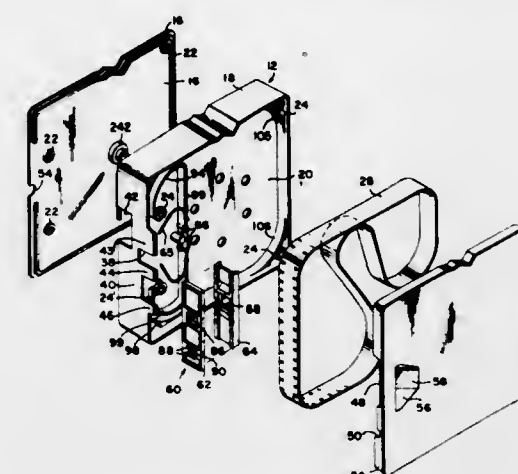


An assembly having an aperture plate as a portion of a housing enclosing spring tensioned side guides for films, a cam actuated shuttle member having an angularly shaped claw portion which advances a film frame by frame, a spring biases the claw portion into intimate contact with the film, yet permits the claw to cam out of the film perforation on its return, and a driven shutter rotated by a prime mover having a pin located eccentrically thereon for operating between lugs on the shuttle member to provide advance and return movements of the claw in proper timing sequence with an exposure sector of the shutter.

3,612,673
FILM ADVANCE MECHANISM
Ivars M. Skuja, Seattle, Wash., assignor to Audiscan, Inc., Bellevue, Wash.
Continuation of application Ser. No. 653,137, July 13, 1967, now abandoned. This application Jan. 9, 1970, Ser. No. 3,569
Int. Cl. G03b 1/48, 1/18
U.S. Cl. 352-225

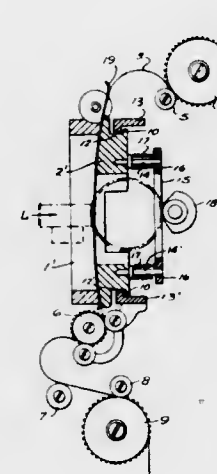
A film advance mechanism of two sections. The two sections are provided with two adjacent inner surfaces that

guidingly advance film frame by frame, gate the film during advancement and mask the images for projection. Cooperating teeth are provided on the inner surfaces to engage the



film sprocket holes of the film for advancing the film. The teeth extend into notches formed in the inner surfaces of the opposite sections.

3,612,674
IMAGE BLUR AND FILM DAMAGE PREVENTION DEVICE
Rikusaburo Sasaki, Hanno, Japan, assignor to Hiraoka Kogyo Kabushiki Kaisha, Hanno City, Saitama Prefecture, Japan
Filed June 19, 1969, Ser. No. 834,849
Claims priority, application Japan, Nov. 21, 1968, 43/84867
Int. Cl. G03b 1/48
U.S. Cl. 352-225

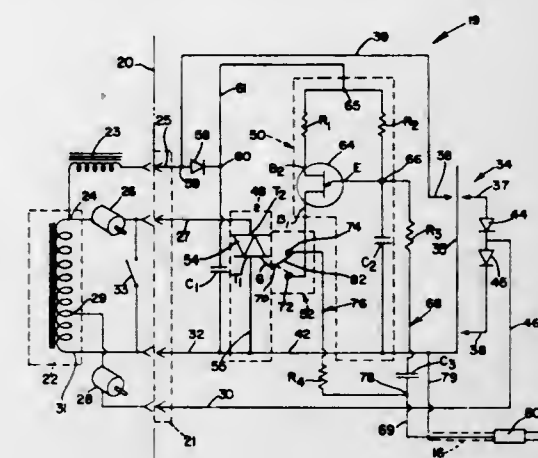


The present image blur prevention device is for use on a movie projector having a mechanism for intermittently feeding a film and has a film passage to be positioned across the light path of the projector, provided by a fixed film guide and a movable film guide with a cam operable in relation to said projector intermittent film-feeding mechanism to press said movable film guide against said fixed film guide during the intermittent pauses in the feeding of the film.

3,612,675
SYNCHRONIZING CIRCUIT
Joseph W. Ruta, Chicago, Ill., assignor to GAF Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 834,483, June 18, 1969. This application Dec. 10, 1969, Ser. No. 883,767
Int. Cl. G03b 31/00, 31/06
U.S. Cl. 353-15

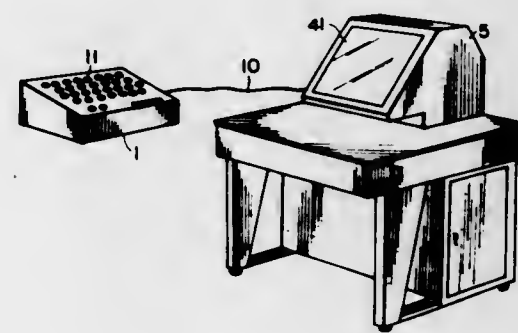
An electronic switch and a signal-producing circuit are provided in a system for synchronizing the operation of a slide projector with the operation of a tape recorder. The electronic switch and the signal-producing circuit are interconnected in such a way that when a single operating member is actuated for operating the system in a recording

mode for synchronizing the recording of intelligence on one track of a tape with the slide changer of the slide projector, the signal-producing circuit will be energized to produce a stable control signal which is recorded on the same or another track of the tape simultaneously with triggering on of



the electronic switch to energize a slide-changing device in the projector. The system also includes a normally closed circuit path between the electronic switch and the tape recorder for operating the system in a playback mode to change the slides in synchronization with the playback of intelligence from the tape.

3,612,676
DICTIONARY-READING DEVICE
Seichi Ooba; Shingo Ooue; Hiroyuki Ueda; Masakazu Hashiue; Hiroshi Endo; Makoto Murakoshi, and Masashi Yanagida, all of Asaka-shi, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 22, 1968, Ser. No. 778,079
Claims priority, application Japan, Nov. 29, 1967, 42/76657
Int. Cl. G03b 23/08
U.S. Cl. 353-27

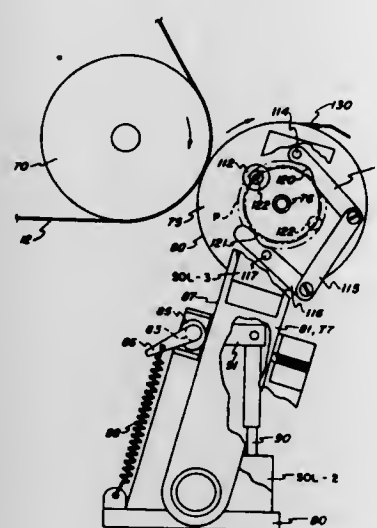


A dictionary reader coupled with a key device having a set of keys corresponding to phonetic signs of the language used in the dictionary. By striking the keys in the order of a word, the page of the dictionary bearing the word is projected on a screen of the reader. The reader employs a microfilm projector when the film is driven so as to bring the image of the desired page on the film into alignment with the optical axis of the projector.

3,612,677
ELECTROSTATIC TRANSFER APPARATUS
Michael J. Langdon, Webster, and Alan F. McCarroll, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,381
Int. Cl. G03g 15/16
U.S. Cl. 355-4

An electrically biased transfer drum for use as a transfer

mechanism in an electrostatic reproduction machine and having gripping devices for maintaining a sheet of paper on retaining member. The scanning components involved are positively driven through a single drive means and the motion

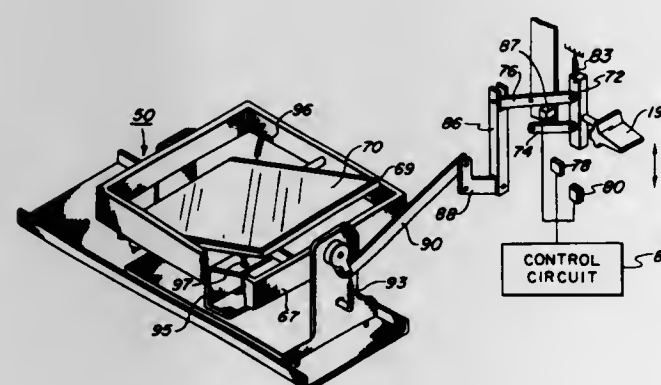


the drum during one or multiple transfer operations and other means for effecting stripout of the sheet.

3,612,678
APPARATUS FOR VIEWING AND REPRODUCING ENLARGED COPIES OF MICROFILM
Peter Haslam, Fairport; Alan G. Kendall, Rochester, and Anthony LaManna, Webster, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Feb. 3, 1969, Ser. No. 795,795
Int. Cl. G03g 15/04

U.S. Cl. 355-5

7 Claims



An improved recording system for reproducing enlarged copies from microfilm on ordinary paper which utilizes a dual imaging optical apparatus to facilitate handling and viewing of microfilm to be reproduced. The apparatus includes a projection means for projecting light rays onto different imaging planes and a mirror mechanism adapted for pivotal movement on different axes to enable viewing and recording of the image.

3,612,679
SCANNING APPARATUS
Frazer D. Punnett, Rochester, and Bion W. McClellan, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 2, 1969, Ser. No. 821,256
Int. Cl. G03g 15/04

U.S. Cl. 355-8

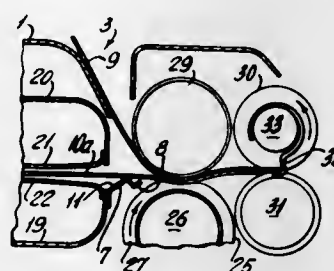
A scanning device is herein disclosed for focusing a flowing light image of a stationary original upon a moving image-

imparted thereto synchronized with the moving image-retaining member by a control means.

3,612,680
REFLEX TO DIRECT PHOTOCOPYING METHOD AND APPARATUS
F. Sutherland Macklem, New Canaan, Conn., assignor to Equipment Development Corp., New Canaan, Conn.
Filed Nov. 26, 1968, Ser. No. 779,057
Int. Cl. G03b 15/06

U.S. Cl. 355-11

6 Claims

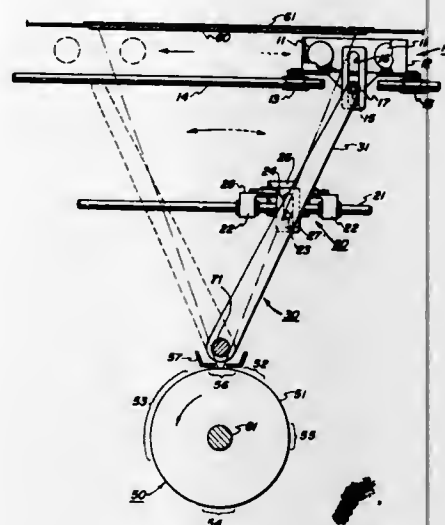


A method and device for producing electrophotographic copies of opaque documents or documents printed on both sides, through reflex exposure of commercial electrophotographic papers, films, or the like. The original document is placed face-to-face with the electrophotographic surface which has been especially preconditioned for reflex exposure by electrostatic charge limitation. The electrophotographic surface is exposed to a specially limited quantity of light directed through it to the face of the original document, the assembled pair being maintained in close contact during the exposure. Following exposure, an image is developed on the electrophotographic surface by electrostatic toning. The developed reflex image is a reversal of the original so that right-reading copies of the original are made from it by face-to-face reproduction means, such as by a direct exposure electrophotographic contact printing operation.

3,612,681
ELECTROPHOTOGRAPHIC COPYING DEVICE
Yoshio Itoh, Kokubunji-shi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1969, Ser. No. 816,568
Claims priority, application Japan, Apr. 25, 1968, 43/27916
Int. Cl. G03g 15/22

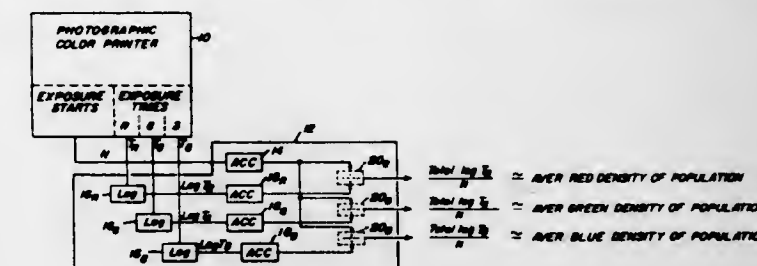
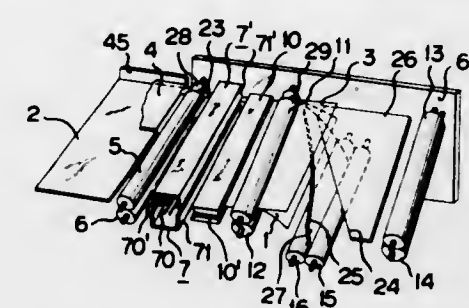
U.S. Cl. 355-12

The present invention provides an electrophotographic copying device of the type in which a copy paper is main-



tained in direct contact with an original to be copied. The device includes auxiliary separating means in the form of an elongated strip interposed between marginal portions of the

population. Based on such accumulations, the average log times of the population may be determined; and from such

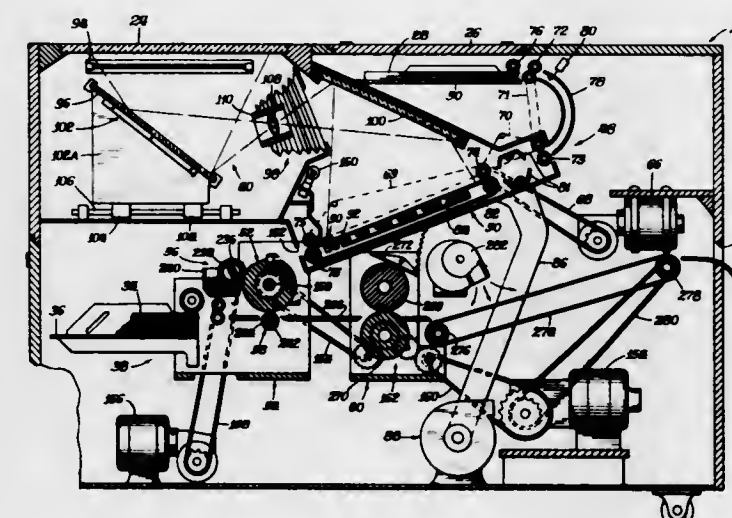


copy paper and the original along one side of the advancing passage of the copy paper and original and separating means cooperating with said auxiliary separating means to separate the copy paper from the original.

3,612,682
COPIER-DUPPLICATOR MACHINE PROVIDING FOR PHOTOELECTROSTATIC MASTER FROM WHICH COPIES ARE MADE
Loren Sheffo, Palatine, and Henry A. Mathisen, Northbrook, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed June 7, 1968, Ser. No. 735,402
Int. Cl. G03g 15/22

U.S. Cl. 355-14

8 Claims



A copier-duplicator includes a master-preparing section for uniformly charging and then exposing a photoelectrostatic master to provide a latent image on the master. An adjustable optical system permits the size of the image to be changed to provide copies of different sizes, and a controlled illumination source removes the charge from the unused area of the master to avoid spurious powder transfer to the copies. The prepared master is clamped on a rotating cylinder, and the image is developed by powder and transferred to copy sheets by a pressure roller as many times as required to produce the desired number of copies.

3,612,683
PHOTOGRAPHIC TIMING APPARATUS
Terry E. Riley, and Raymond G. Rogers, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 17, 1970, Ser. No. 47,068
Int. Cl. G03b 27/76

U.S. Cl. 355-35

8 Claims

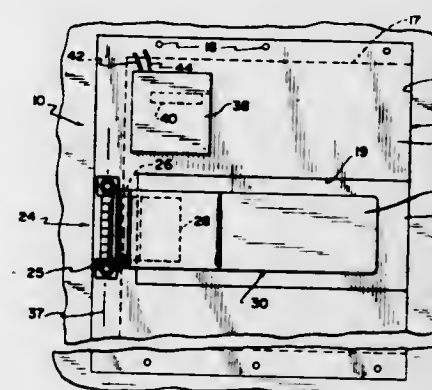
A device is disclosed for accumulating, for three primary colors, the log times required to print photographically a population of negatives, and to count the negatives in the

average log times, a setup calibration patch may be formulated for the printer. The device embodies an improved log time pulse generator.

3,612,684
ADAPTER FOR A COPYING MACHINE
William T. Jones, 4341 S. Emerald Ave., Chicago, Ill., and Joseph P. Clancy, 1155 S. Elmwood Ave., Oak Park, Ill.
Filed May 13, 1969, Ser. No. 824,109
Int. Cl. G03b 27/62

U.S. Cl. 355-40

9 Claims



An adapter for use with a copying machine of known type includes a multilayer plate receivable in a window in the machine. A lower face of the plate has first markings visible therefrom which are directed toward the copying mechanism in the machine. The plate has an opening therein for inserting into the adapter a card having second markings thereon identifying a particular subject. Preferably, the adapter includes a door for covering the opening and a counter which presents a number to the copying mechanism during operation of the machine. The counter is operatively associated with the machine in such a way that after one set of copies are made, the counter is advanced to present a succeeding number to the copying mechanism before the next set of copies are made. With this adapter, each copy of a predetermined number of copies made by the machine will have the first and second markings thereon and, if desired, a serial number presented by the counter.

3,612,685
APPARATUS AND PROCESS FOR GRAPHIC-IMAGE TRANSFER
Len A. Tyler, Evanston, Ill., assignor to Bell & Howell Company, Chicago, Ill.

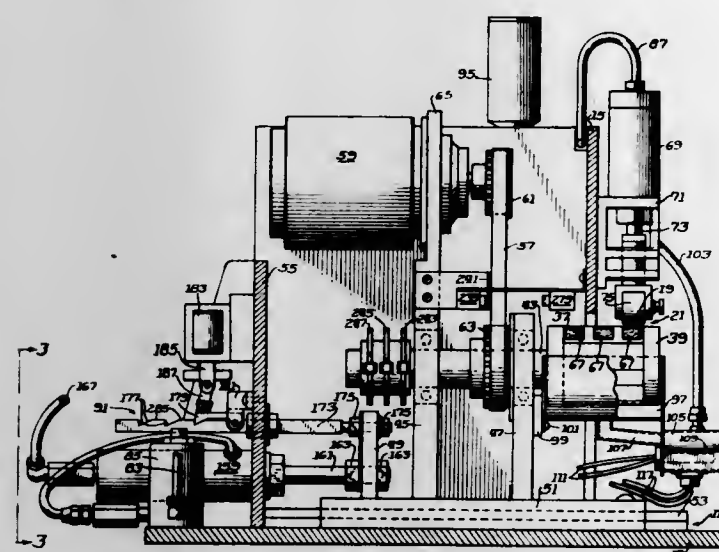
Filed Jan. 2, 1968, Ser. No. 695,228
Int. Cl. G03b 27/04

U.S. Cl. 355-95

14 Claims

A process for transferring electrophotographically developed images from a web to a final image carrier utilizing pressure contact and a preconditioning treatment of the final image carrier by a tackifying fluid. Apparatus includes a drum for releasably clamping the final carrier thereon partially enclosed in a vapor chamber in which the carrier surface is preconditioned. A web having a transferable image

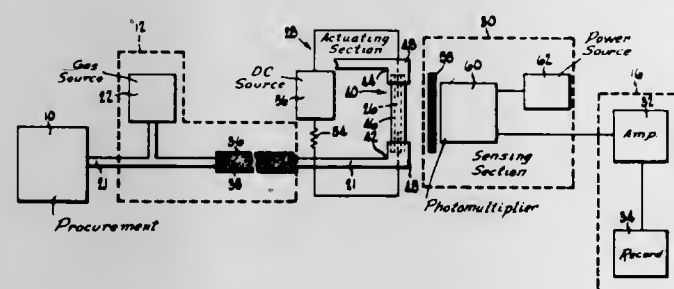
thereon is disposed in aligned contact with the drum and the web is transported and the drum is rotated by frictional driving contact with a reciprocable pressure roller thereby to transfer the images to the carrier in sequence. The drum is



also axially indexable by an air-operated piston and controlled by a rack and solenoid-operated panel. An adjustable, automatic, continuous liquid-metering device measures the amount of tackifying liquid fed to the vaporizing chamber.

3,612,686
METHOD AND APPARATUS FOR GAS ANALYSIS UTILIZING A DIRECT CURRENT DISCHARGE
Robert S. Braman, Tampa, Fla., and Alexander Dynako, Chicago, Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Jan. 3, 1968, Ser. No. 695,455
Int. Cl. G01j 3/30
U.S. Cl. 356-86 15 Claims

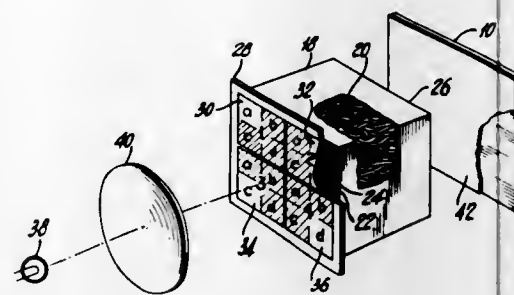


A method and apparatus for spectrochemical analysis of a gas is provided in which the subject gas is mixed with a carrier gas and introduced into an analysis space between two electrodes. A continuous direct current discharge between the electrodes is produced which sustains a plasma formed from the carrier gas so that components of the subject gas are excited to luminescence. Characteristic radiation emitted by the components is then detected. The carrier gas has a higher ionization potential than components of the subject gas and, for example, may be a noble gas. The method is operable at atmospheric pressure. The electrodes may be either solid wires or tubes through which the gas mixture enters and leaves the analysis space.

3,612,687
CREDIT CARD SYSTEM
Melvin S. Cook, Scarsdale, N.Y., and Edward M. Ulicki, East Paterson, N.J., assignors to Holobeam Inc., Paramus, N.Y.
Filed July 17, 1968, Ser. No. 745,465
Int. Cl. G06k 9/08; G02b 5/14
U.S. Cl. 356-71 11 Claims

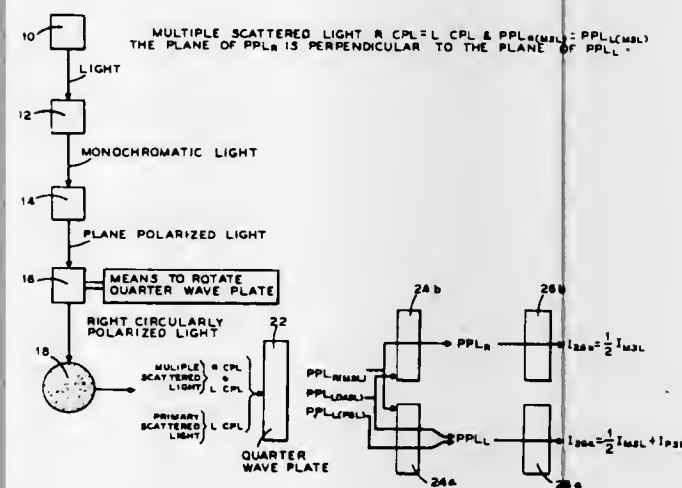
A credit card system is described wherein a credit card has an area thereof provided with a pattern representative of a code. A card pattern reader is provided wherein selected

portions of the pattern are decoded for verification of the code represented by the pattern. The credit card system as



described provides a system secure from fraudulent credit card use.

3,612,688
SUSPENDED ORGANIC PARTICLES MONITOR USING CIRCULARLY POLARIZED LIGHT
John W. Liskowitz, Belle Meade, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Nov. 13, 1968, Ser. No. 775,449
Int. Cl. G01n 15/02, 21/00, 21/40
U.S. Cl. 356-102 13 Claims

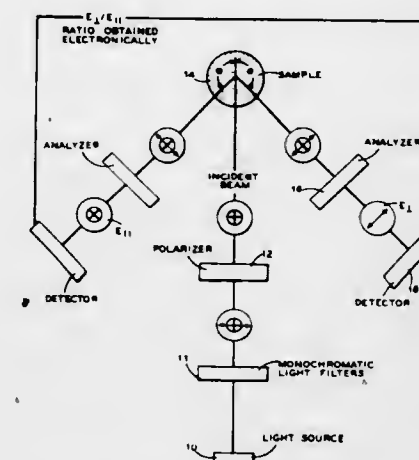


Method for detecting optically active organic particles suspended in a fluid, including water, air or a vacuum, by measuring circular dichroic absorption. The method comprising the steps of alternately transmitting right circularly polarized light and left circularly polarized light through the fluid being analyzed whereby the circularly polarized light is scattered by the particulate matter in the sample. The scattered radiation is analyzed by separating the circularly polarized components in the resulting scattered light and measuring the intensity of the resulting scattered light components. The circular dichroic absorption in the scattered light is represented by the ratio of the component intensity of when starting with right circularly polarized light to that of the intensity when starting with left circularly polarized light.

3,612,689
SUSPENDED PARTICLE CONCENTRATION DETERMINATION USING POLARIZED LIGHT
John W. Liskowitz, Belle Meade, N.J., assignor to American Standard Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 629,568, Apr. 10, 1967. This application Nov. 12, 1968, Ser. No. 775,093
Int. Cl. G01n 21/00
U.S. Cl. 356-103 20 Claims

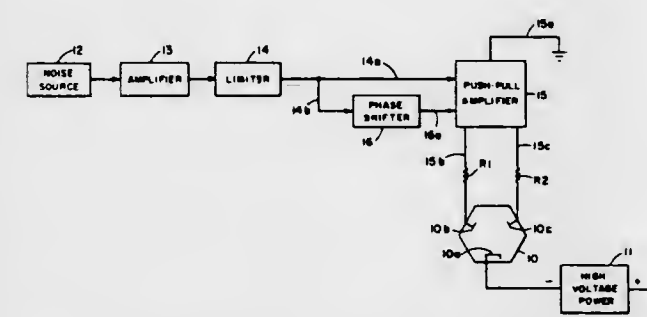
Particles suspended in a fluid are detected by directing an incident beam of polarized light at the particles and deter-

mining the relationship between the depolarized and polarized components of the light which is scattered by the



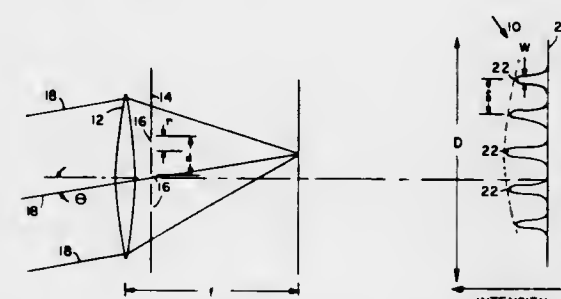
particles. The angle between the scattered light and the incident light is preferably greater than 150°.

3,612,690
LASER GYRO DITHER CIRCUIT
Robert C. Staats, Fridley, Minn.
Filed July 8, 1970, Ser. No. 53,150
Int. Cl. G01b 9/02
U.S. Cl. 356-106 LR 3 Claims



Frequency coupling of counterrotating beams in a gaseous laser gyro is prevented by varying the discharge current in the laser. The circuit is for use with a laser having a common cathode and two anodes, and includes a source of random signals, such as a noise diode generator. The signals from the generator are amplified and limited to give a variable frequency and pulse-width rectangular wave. This wave, in its original form, and in a phase-shifted form, controls a push-pull amplifier. The controlled elements (such as transistors) in the push-pull amplifier are in series with the laser anodes. Thus, a random rectangular wave is effectively applied to the discharge current through each anode.

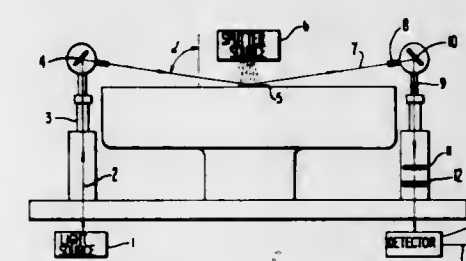
3,612,691
MONOCHROMATICITY DETECTOR
Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 7, 1969, Ser. No. 797,563
Int. Cl. G01b 9/02
U.S. Cl. 356-106 15 Claims



A monochromaticity detector is disclosed herein which comprises means for producing the diffraction or inter-

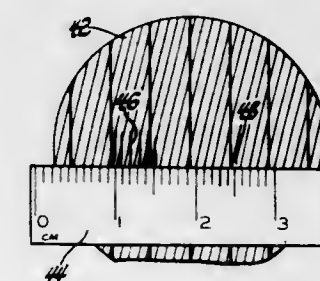
ference pattern of light received from a remote source and a reticle/detector array of a predetermined pattern. The spatial intensity pattern produced at the detectors is periodic if the incident light is monochromatic and nonperiodic for broadband light. The detector output signals are electronically processed to provide a binary indication of whether the incident energy is sufficiently periodic and thus sufficiently monochromatic to have originated in a laser as well as an indication of selected characteristics of the energy.

3,612,692
DIELECTRIC FILM THICKNESS MONITORING AND CONTROL SYSTEM AND METHOD
Robert W. Kruppa, Hopewell Junction, and Ernest S. Ward, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 21, 1968, Ser. No. 777,556
Int. Cl. G01b 9/02; G01r 21/40
U.S. Cl. 356-108 9 Claims



An automatic thickness monitoring and control system and method for monitoring the growth of a dielectric film on a reflective substrate such as a silicon wafer during an RF sputtering deposition process and for stopping the deposition process when the film reaches a predetermined thickness. The successive minima (or maxima) in the interference pattern of light reflected from the wafer are counted to determine the film thickness and the sputtering is stopped at a predetermined count. In another embodiment, sputtering is stopped by interpolation between counts.

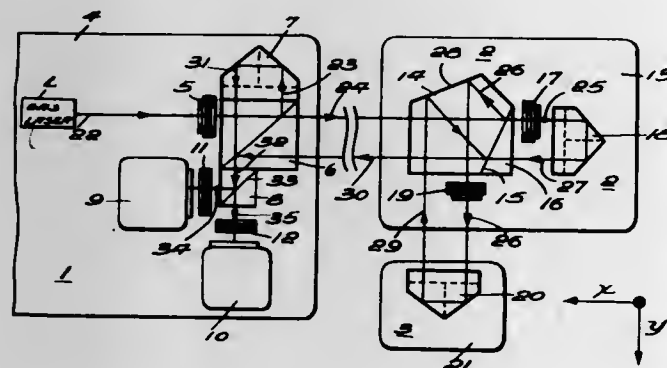
3,612,693
METHOD FOR MEASUREMENT OF SURFACE PROFILE CHANGE USING A VERNIER SCALE IN HOLOGRAM INTERFEROMETRY
Karl A. Stetson, Richmond, Surrey, England, assignor to GC Optonics, Inc., Ann Arbor, Mich.
Filed May 15, 1970, Ser. No. 37,723
Int. Cl. G01b 9/02; G02b 5/14
U.S. Cl. 356-109 5 Claims



To measure the amount of surface profile change of an object, a hologram is formed by recording on a photographic media the interference pattern between coherent light divided between a uniform, reproducible wave front and mutually coherent light reflected from the object. The virtual image of the object as seen through the hologram formed by the developed photographic media, properly illuminated, is superimposed on the same object with the object being inclined with respect to the virtual image by a predetermined amount. The positions of the object and the virtual image are adjusted to result in the formation of fringes which are spaced apart from one another by a first predetermined scale length. Changes in the profile of a section of the object will result in a shifting of those fringes associated with the unchanged portion. The fringe shift may be measured by em-

playing a second scale having divisions which differ from those of the first scale, in the manner of a vernier scale, such fringe shift being a function of the surface profile change.

3,612,694
ARRANGEMENT FOR INTERFEROMETRIC MEASUREMENT OF TWO LENGTHS
Francois Mottier, and Friedrich Karl Von Willisen, both of Zurich, Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Dec. 23, 1968, Ser. No. 786,235
Claims priority, application Switzerland, Jan. 31, 1968, 1490/68
Int. Cl. G01b 9/02
U.S. Cl. 356—110 4 Claims

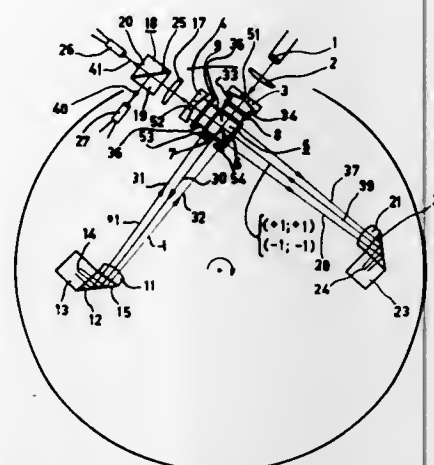


An arrangement for simultaneous interferometric measurement of a plurality of lengths utilizes a single monochromatic circularly polarized light beam which is divided up by intensity in a first optical divider into an outgoing reference beam and an outgoing primary measuring beam. This measuring beam is then divided up by intensity in a second optical divider after traversing one of the lengths to be measured into a pair of outgoing secondary measurement beams which are then polarized in mutually perpendicular planes of polarization. One of these outgoing secondary measurement beams is reversed and returned to the second optical divider and the other outgoing secondary measurement beam is also similarly reversed and returned but after it has traversed the second length to be measured. The two returning secondary measurement beams are then recombined in the second optical divider and returned to the first optical divider where they are combined with the reference beam which has been reversed and returned thus to form an outgoing light beam which is differently intensity-modulated in two mutually perpendicular planes of polarization. This outgoing light beam is then divided up in a third optical divider into a pair of modulated light beams which are then delivered respectively to photodetectors. One photodetector receives only the component of the modulated light beam which is polarized in one plane and the other photodetector receives only the component which is polarized in the other plane.

3,612,695
ARRANGEMENT FOR MEASURING THE ROTATION OF A FIRST OBJECT RELATIVE TO A SECOND OBJECT
Gijsbertus Bouwhuis, Emmasingel, Eindhoven, and Hendrik de Lang, Delft, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,208
Claims priority, application Netherlands, Sept. 26, 1968, 6813749
Int. Cl. G01b 11/00
U.S. Cl. 356—114 9 Claims

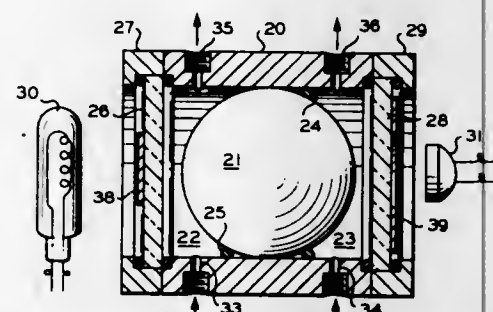
An arrangement for measuring the rotation of a first object relative to a second object is disclosed. Light from a source of radiation attached to the first object is directed to a first zone on a grating attached to the second object, is then directed via polarization modulators and concave mirrors to

a second zone on the grating and finally impinges upon a pair of photocells. The output of the photocells is processed to



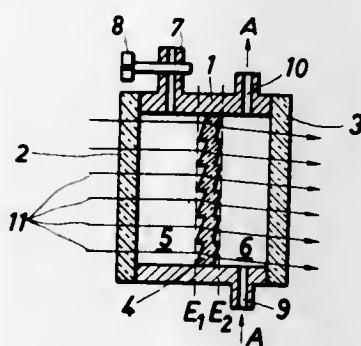
determine both the magnitude and direction of the relative rotation.

3,612,696
REFRACTOMETER
Arthur B. Broerman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 21, 1969, Ser. No. 792,554
Int. Cl. G01n 21/46
U.S. Cl. 356—128 6 Claims



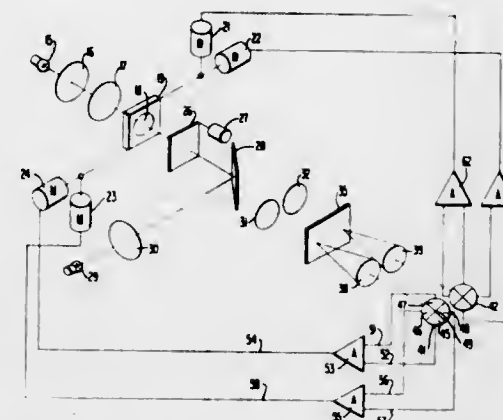
A refractometer cell comprises a housing forming a chamber through which radiation can be transmitted, said chamber being adapted to receive a test fluid. A radiation-transparent refracting means is positioned within the chamber. In one embodiment, this refractive means is a spherically shaped element. In another embodiment, the refractive means comprises two spaced elements having concave spherically shaped surfaces facing one another.

3,612,697
DIFFERENTIAL REFRACTOMETER CELL
Wolfgang Nebe, Jena, Germany, assignor to Jenoptik Jena GmbH, Jena, Germany
Filed June 6, 1969, Ser. No. 831,285
Claims priority, application Germany, Dec. 9, 1968, P 18 13 497.9
Int. Cl. G01n 21/46, 21/06, 1/10
U.S. Cl. 356—130 3 Claims



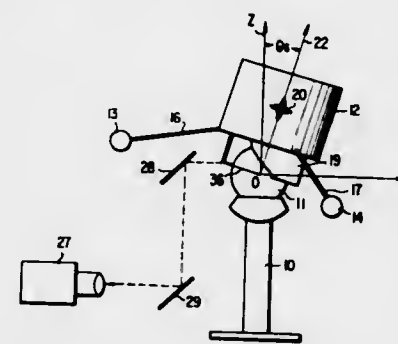
A differential cell includes at least one stepped partition. The partition wall is transparent, and the windows of the cell may be Fresnel lenses.

3,612,698
AUTOMATIC HOLOGRAPHIC WAFER POSITIONING SYSTEM AND METHOD
Einar S. Mathisen, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 1, 1969, Ser. No. 820,983
Int. Cl. G01b 11/26
U.S. Cl. 356—141 9 Claims



System and method for automatic alignment of workpieces such as semiconductor wafers and a photomask for subsequent image exposure. Alignment is based on the transparency of the wafers to infrared light and the opaqueness thereto of alignment patterns fabricated in the wafer. A holographic optical system generates a Fourier transformed image of light transmitted through the wafer and cross-correlates the transformed image with a complex spatial filter to generate recognition spots of light having spot displacements corresponding to the wafer filter nonalignment. The spot displacements generate an error signal used to control the wafer position.

3,612,699
APPARATUS FOR MEASURING THE ATTITUDE OF AN ARTIFICIAL SATELLITE ON THE GROUND
Kuniji Asano, Kawasaki, and Masamichi Shigehara, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed May 28, 1970, Ser. No. 41,448
Claims priority, application Japan, May 23, 1969, 44/41,347
Int. Cl. G01c 1/00; B64c
U.S. Cl. 356—147 8 Claims



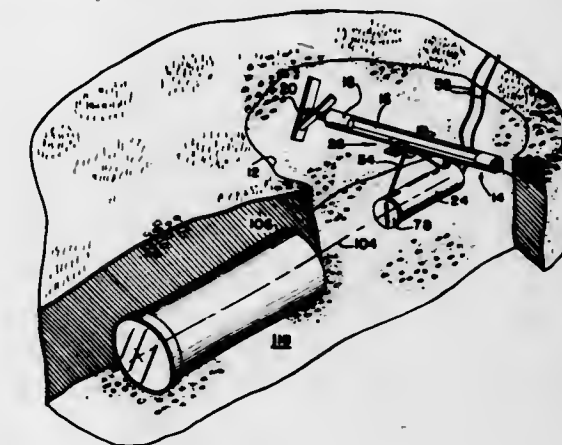
An upright stand has a sphere rotatably mounted on the top thereof. An artificial satellite is in turn mounted on the sphere such that its center of gravity coincides with the center of sphere. The center of the sphere also coincides with the origin of three axes of coordinates of the artificial satellite, the three axes being orthogonal to each other.

A pair of optical-measuring devices are provided to measure the vertical deviations of two points on a circumference of a great circle, the center of which coincides with the center of the sphere, from a horizontal reference plane which includes the center of the sphere thereon. The aforesaid two points on the circumference of the great circle are on two orthogonal diameters of the great circle.

A device is provided to calculate the attitude of the artificial satellite from the two electrical outputs of the pair of optical-measuring devices and an electrical reference input signal which represents the coordinates of the center of the great circle.

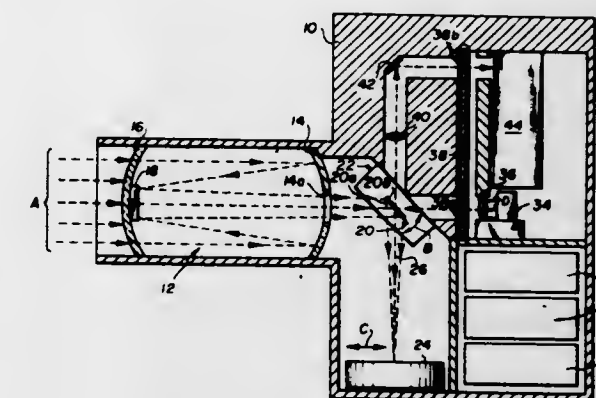
ERRATUM
For Class 356—153 see:
Patent No. 3,612,949

3,612,700
LASER BEAM REFERENCE LINE MEANS AND METHOD
Rodney L. Nelson, Box N, R.D. #1, Falls Creek, Pa.
Filed Jan. 21, 1969, Ser. No. 792,290
Int. Cl. G01b 11/24; G01c 15/00
U.S. Cl. 356—153 18 Claims



The invention comprises means and a method for establishing a reference line for construction purposes in the form of an energy beam or signal, such as a visible light beam, and preferably, a laser beam. The apparatus includes an energy beam source, adjustably mounted within a housing, pendulously suspended for movement within a vertical plane. The energy beam source and housing are stabilized with respect to a suspension point, so that the energy beam source and housing assume a stable, horizontal position. The apparatus further includes tridimensional adjustment mechanisms for the energy beam source and a stable support for the suspension point. The method of the invention includes the steps of establishing a line offset 90° to the reference line, placing the energy beam source approximately coincident to the reference line, adjusting the energy beam source vertically to coincide with the depth of the reference line, adjusting the energy beam source internally of its housing to desired grade, adjusting the energy beam source to coincide with the reference line in a horizontal plane, and interrupting the projection of the energy beam source to check true vertical plane alignment.

3,612,701
LIGHT-DETECTING SYSTEM
Irving Bleicher, Fairlawn, N.J., assignor to Singer-General Precision Inc., Little Falls, N.J.
Filed Jan. 9, 1969, Ser. No. 790,004
Int. Cl. G01b 11/26; G01j 1/20
U.S. Cl. 356—172 2 Claims



A light-detecting system in which reflecting means are disposed in the path of the light to be detected in order to reflect the light onto a fixed sensing means responsive to the

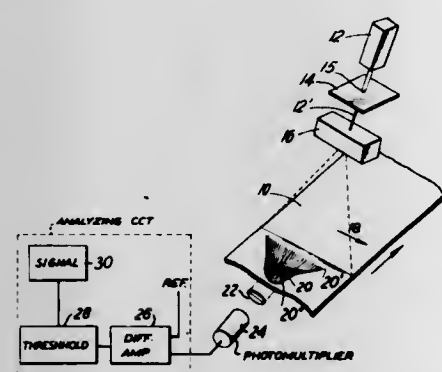
reflected light, for generating a corresponding output signal. Means are provided to impart motion to the reflecting means to move the reflected light in a fixed path across the sensing means.

3,612,702
WEB DEFECT DETERMINATION BY LASER BEAM IRRADIATION AND REFLECTED LIGHT EXAMINATION

John H. Troll, Ridgefield, Conn., assignor to Iris Corporation
Filed Sept. 9, 1969, Ser. No. 856,390
Int. Cl. G01n 21/32

U.S. Cl. 356-200

1 Claim



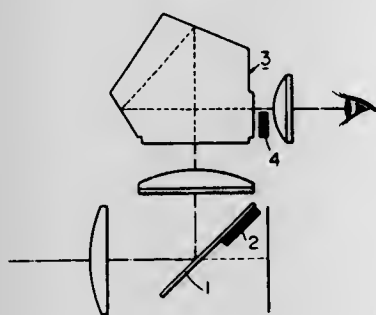
A laser beam is caused to scan a moving web transversely of the web direction of motion at a predetermined rate, and the detected light accumulated from one linear scan. The accumulated light is analyzed by a photomultiplier feeding a comparator, for example a differential amplifier, having one of its inputs at a reference potential.

3,612,703
COMBINED SPOT AND AVERAGE PHOTOMETRIC SYSTEM

Kunio Irisawa, Tokyo-to, and Kazuo Saita, Kashiwa-shi, both of Japan, assignors to Mamiya Koki Kabushiki Kaisha, Bunkyo-ku, Tokyo-to, Japan
Filed Feb. 29, 1968, Ser. No. 709,257
Claims priority, application Japan, May 29, 1967, 42/33694
Int. Cl. G01j 1/42

U.S. Cl. 356-219

1 Claim



A spot photometric device and an average photometric device are installed in a single camera and provided with a changeover device for switching one photometric device on and the other off and an indicating device for visually indicating in the finder which of the photometric devices is on.

3,612,704
CONTAINER-DISPENSER FOR MATERIAL IN STICK FORM

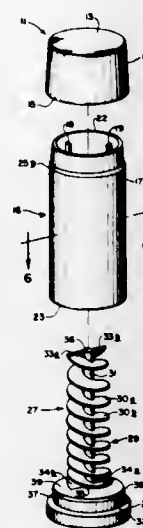
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Sept. 15, 1969, Ser. No. 857,765
Int. Cl. A45d 40/06

U.S. Cl. 401-72

10 Claims

A simplified container-dispenser for material in stick form which includes a cap, a tubular body, and a feed screw as-

sembly. The feed screw assembly comprises a knob and a screw, the screw being integrally molded with the knob and projecting into the stick. Upon rotation of the knob of the



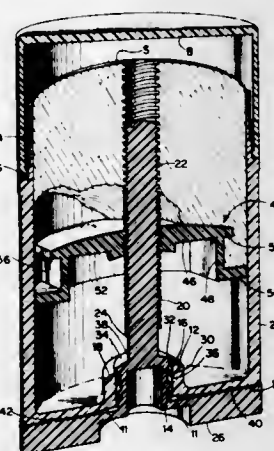
sembly. The feed screw assembly comprises a knob and a screw, the screw being integrally molded with the knob and projecting into the stick. Upon rotation of the knob of the

3,612,705
DISPENSING CONTAINER

Ernest H. Duval, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Sept. 3, 1969, Ser. No. 854,954
Int. Cl. A46d 40/06

U.S. Cl. 401-75

10 Claims



A dispensing container for cosmetics and toilet preparations of the type wherein the preparation is extruded in stick form under the influence of a screw-driven follower.

3,612,706
SELF-PROPELLED TOOTHBRUSH

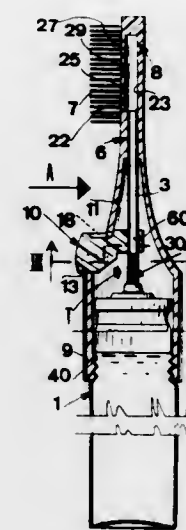
Francesco Verga, Dr. Ing. Misitano A. G. Via Padova, 217-20127, Milan, Italy
Filed Jan. 3, 1969, Ser. No. 788,878
Claims priority, application Italy, May 24, 1968, 16862 A/68
Int. Cl. A46b 11/02

U.S. Cl. 401-190

3 Claims

A toothpaste-dispensing toothbrush comprises an upper body carrying bristles and associated with a lateral pushbutton, and a lower body consisting of a container with a valve

and containing a toothpaste composition mixture. The combination is such that as soon as the pushbutton is depressed the two cover members are held together by a channel bar. In another form rivets or the like are used to hold together

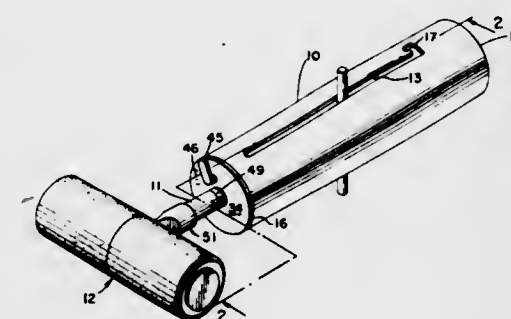


the valve is opened and an outflow of the toothpaste mixture through the bristles is allowed.

3,612,707
PAINT ROLLER FOR EDGING
Charles Herbrechter, Leetown Road, and Walter Pahlck, Hosner Mt. Road, both of Stormville, N.Y.
Filed Mar. 4, 1970, Ser. No. 16,461
Int. Cl. B44d 3/28

U.S. Cl. 401-197

10 Claims



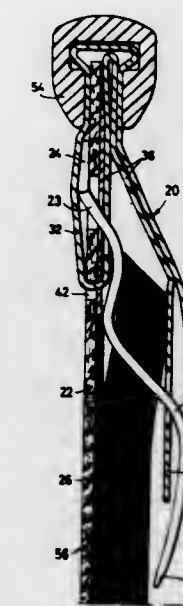
A roller for painting surfaces which are at an angle to each other wherein the roller may be rolled along one surface with one end thereof engaging the other surface and be guided thereby whereupon the surface engaged by the roller will be painted without applying any paint to the other surface. The roller may be used as a fountain roller or one to which paint is applied to the surface thereof.

3,612,708
BOOK-TYPE FILE FOR PUNCHED PAPERS
Carl Erik Grundell, Osmogatan 8, Enskede, Sweden
Filed Apr. 23, 1970, Ser. No. 31,198
Int. Cl. B42f 13/06

U.S. Cl. 402-8

7 Claims

A file for punched papers comprises a stiff back cover member and a pliant front cover member connected thereto by means of flap extensions threaded through slits in the back cover member. At least one flap extension of the front cover member also forms part of looseleaf binder inside the file in cooperation with flexible tongues onto which the punched papers to be filed are threaded. In a preferred form

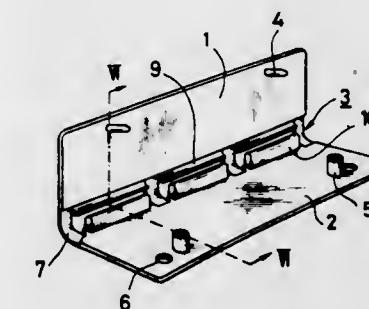


the two interconnected cover members. The file may be closed by snap fasteners.

3,612,709
LOOSELEAF BINDER
Eitaro Miyamoto, Tokyo, Japan, assignor to King Jim Co., Ltd., Tokyo, Japan
Filed June 3, 1969, Ser. No. 830,066
Claims priority, application Japan, Sept. 26, 1968, 43/69756
Int. Cl. B42f 3/02, 13/30

U.S. Cl. 402-22

3 Claims



A looseleaf binder formed integrally of synthetic resin having proper toughness and elasticity which comprises a cover plate provided in its internal surface with at least two or more posts, a base plate provided on its inner surface facing the inner surface of the cover plate with at least two or more sockets into which said posts are fitted disengageably and a flexible connecting means for joining the cover plate with the base plate symmetrically.

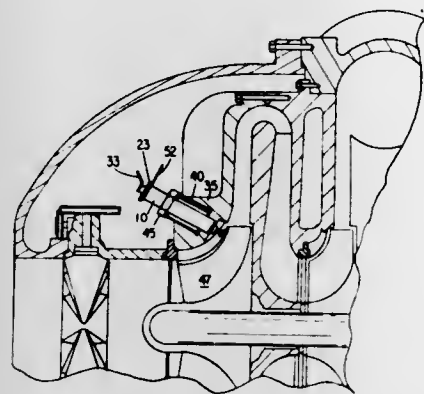
3,612,710
CENTRIFUGAL REFRIGERANT GAS COMPRESSOR
Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,242
Int. Cl. F01d 25/00

U.S. Cl. 415-14

5 Claims

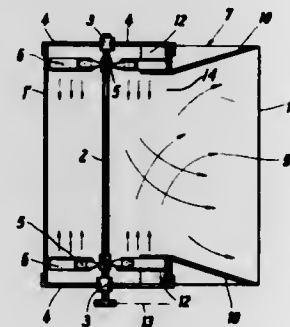
The compressor includes a member engaged by the impeller if the same moves from normal operating position. Instantaneously, upon such engagement, the member is moved

out of engagement with the impeller and effects actuation of contacts in an electrical circuit to signal the movement of the



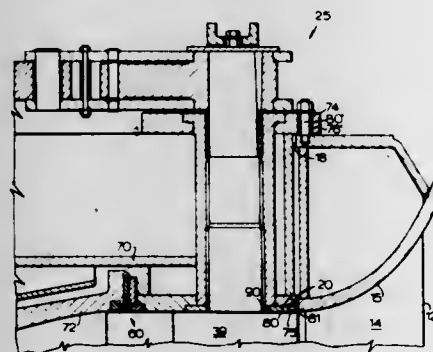
impeller and/or shut down the compressor before damage to the machine takes place.

3,612,711
WINNOWING BLOWER
Hubert Meier, Hilzingen, Germany, assignor to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany
Filed Oct. 23, 1969, Ser. No. 868,770
Claims priority, application Germany, Nov. 8, 1968, P 18 07 874.5
Int. Cl. F01d 3/02
U.S. Cl. 415-97 5 Claims



A winnowing blower for combine harvesters or the like comprises an approximately semicylindrical housing with axial fans at its two ends.

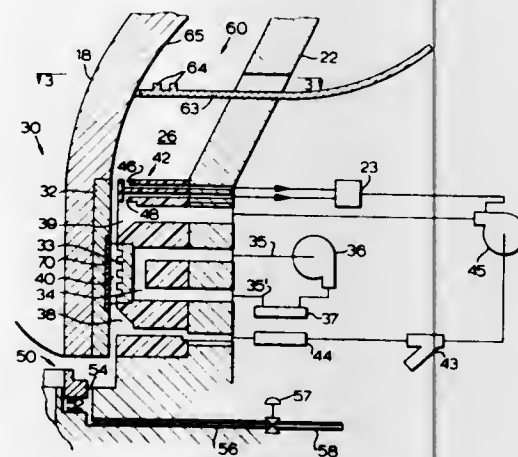
3,612,712
HYDRAULIC MACHINE STRUCTURE
Feodor Kanger, and Werner R. Strub, Montreal, Quebec, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed Dec. 11, 1969, Ser. No. 884,205
Claims priority, application Canada, Dec. 13, 1968, 37,707
Int. Cl. F01d 11/00
U.S. Cl. 415-110 7 Claims



In large turbo-hydraulic machines having a radially outer speed ring for conveying water into or from the machine and stationary structure within the speed ring to contain the machine runner, precise machining of the speed ring is

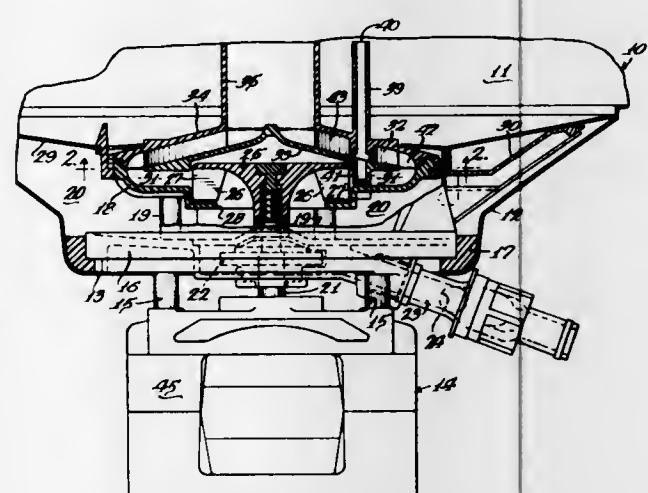
avoided by providing an annular array of spaced axially facing support pads on the speed ring, which are levelled to give a planar support datum for the inner stationary structure; and providing an auxiliary radially extending seal ring welded to the speed ring, to provide sealing engagement with the inner stationary structure.

3,612,713
TWO-PHASE SEAL FOR ROTARY FLUID MACHINES
Douglas Walter Eggins, Scarborough, Ontario; Robert Stanley Sproule, Montreal, Quebec; Feodor Kanger, Montreal, Quebec, Canada, and Peter William Runstadler, Jr., Hanover, N.H., assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed Dec. 22, 1969, Ser. No. 887,066
Claims priority, application Canada, Dec. 23, 1968, 38,485
Int. Cl. F01d 11/00
U.S. Cl. 415-110 6 Claims



A large rotary hydraulic machine such as a pump, pump-turbine, or turbine of the Francis type, having the runner provided with a skirt shroud, includes an annular ice seal surrounding the runner skirt to limit water leakage there past. A temporary seal assists in establishing stabilized operation of the ice seal.

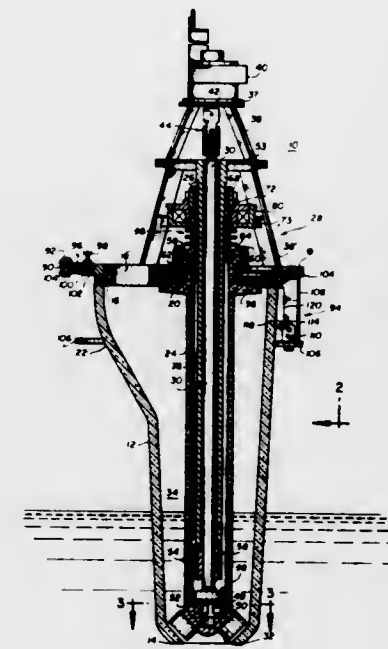
3,612,714
DISHWASHER
James G. Rusplno, St. Joseph, Mich., assignor to Whirlpool Corporation
Filed Oct. 16, 1969, Ser. No. 866,852
Int. Cl. F01d 25/00; B08b 3/00
U.S. Cl. 415-116 3 Claims



A dishwasher having a recirculation centrifugal pump impeller operated to discharge liquid at the discharge periphery of the impeller and with a discharge passage adjacent this

periphery to receive liquid therefrom and having a height substantially less than the corresponding height of the spaced blades of the impeller so that liquid will flow at a greater radial velocity when leaving the impeller than in passing through the blades of the impeller.

3,612,715
PUMP FOR MOLTEN METAL AND OTHER HIGH-TEMPERATURE CORROSIVE LIQUIDS
Shmariahu Yedidiah, West Orange, N.J., assignor to Worthington Corporation, Harrison, N.J.
Filed Nov. 19, 1969, Ser. No. 877,950
Int. Cl. F01d 5/14, 5/28
U.S. Cl. 415-131 18 Claims

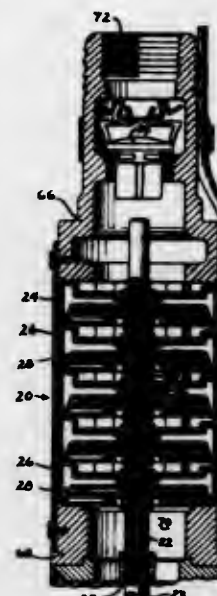


A pump for pumping molten metal and other high-temperature corrosive liquids is disclosed, which pump includes a casing constructed of refractory material and having an inlet opening at one end thereof. Pumping means are located within the casing for drawing a liquid into the casing through its inlet opening with the pumping means including: a rotatable refractory impeller; a refractory sleeve joined at one end thereof to the impeller and rotatable therewith, with the sleeve and casing defining an annular passageway through which the liquid passes; and a drive shaft located for at least a portion of its length within the sleeve, one end of the drive shaft being connected in driving relationship with the impeller. By virtue of being located within the sleeve, the drive shaft can impart rotation to the impeller and yet not be exposed to the high-temperature corrosive liquid being pumped. As an added feature, a cylindrical tube portion of the pump frame is disposed between the drive shaft and the refractory sleeve and carries a bearing for rotatably supporting the drive shaft. Since the bearing is located within the refractory sleeve, it can be positioned extremely close to the impeller, but yet never be immersed in the fluid being pumped.

3,612,716
MULTISTAGE CENTRIFUGAL PUMP
Elmer M. Deters, Muscatine, Iowa, assignor to Red Jacket Manufacturing Company, Davenport, Iowa
Filed June 15, 1970, Ser. No. 46,268
Int. Cl. F04d 1/00, 1/06
U.S. Cl. 415-140 13 Claims

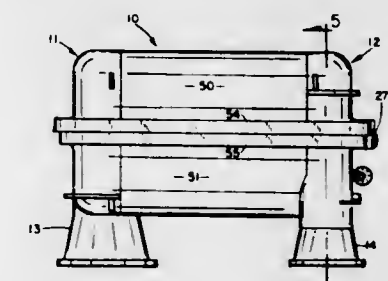
Several embodiments of pumps are shown which are advantageous in pumping liquids containing abrasives. FIGS. 1-4 show a centrifugal pump with floating stages. Each stage has a rubber journal and a stainless steel bushing which provide a radial bearing as well as a seal between the impeller chamber and diffuser passages. The other embodiments show

other forms of the bearing and journal members applied to a stacked (nonfloating) impeller type of centrifugal pump. In



FIGS. 7 and 8, one of the members is tapered to allow the motor to operate more easily in liquids containing abrasives.

3,612,717
CENTRIFUGAL GAS COMPRESSION MACHINE
Rodney C. Burns, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 9, 1969, Ser. No. 883,541
Int. Cl. F01d 25/24
U.S. Cl. 415-219 3 Claims

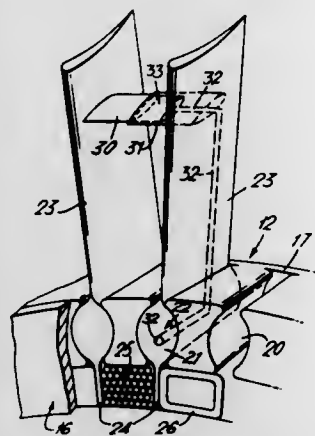


A multistage gas compressor of the horizontally split type embodying a weldment structure fabricated from metallic plate material. The outlet end structure initially includes a one-piece annular outer section having a flange abutting the end of the cylindrical barrel section of the casing housing the multistage impeller and diaphragm assembly and being welded thereto. A bearing supporting construction is fixed in the outer section. A curved plate is fixed at one end to the construction and extends in spiral configuration about the construction forming a volute gas passage. The spiral plate is supported by radially disposed web plates welded to the construction and to the spiral plate. A discharge conduit communicates with the larger end of the volute passage.

3,612,718
BLADED MEMBER FOR A FLUID FLOW MACHINE
Jack Palfreyman, and Henry Edward Middleton, both of Derby, England, assignors to Rolls-Royce Limited, Derby, England
Filed Dec. 15, 1969, Ser. No. 885,173
Claims priority, application Great Britain, Dec. 16, 1968, 59739/68
Int. Cl. F01d 5/10
U.S. Cl. 416-135 8 Claims

A bladed member for a fluid flow machine comprises a plurality of angularly spaced-apart aerofoil-shaped blades

whose root portions are pivotally mounted in a common blade support member, resilient means being provided for



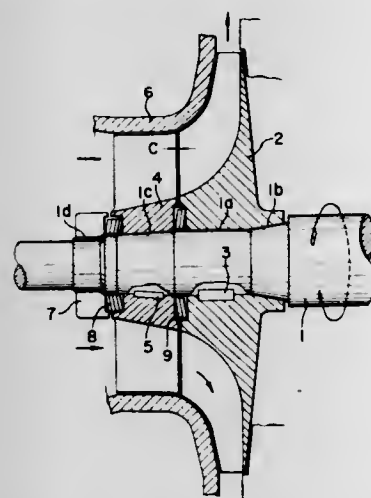
resiliently urging the blades towards predetermined relative angular positions.

3,612,719 MEANS FOR SUPPORTING AN IMPELLER OF A CENTRIFUGAL COMPRESSOR

Jiro Nomura, Nagasaki Prefecture, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed July 25, 1969, Ser. No. 844,796
Claims priority, application Japan, Aug. 20, 1968, 43/59426
Int. Cl. F01d 5/04

U.S. Cl. 416-183

5 Claims



In a centrifugal compressor, a rotatable shaft has conically tapered portions and an impeller and a front vane are mounted, as separate components, on the tapered portions of the shaft. A first buffer member or spring is interposed between a retaining member and the inlet end of the front vane assembly. A second buffer member or spring is interposed between the vane assembly and the impeller. The buffer members may be in the form of conical springs. The first buffer member is substantially stronger than the second buffer member, and both buffer members act in the same direction to bias the vane and the impeller to the respective tapered portions of the shaft to prevent radial gaps between the vane and the shaft and between the impeller and the shaft.

3,612,720 METHOD OF APPORTIONING LIQUID METAL IN AN ELECTROMAGNETIC CONVEYOR TROUGH

Axel von Starck, Remscheid-Luttringhausen, Germany, assignor to AEG-Eltherm GmbH, Remscheid-Hasten, Germany

Filed May 2, 1969, Ser. No. 821,479
Claims priority, application Germany, Oct. 1, 1968, P 18 00 124.6

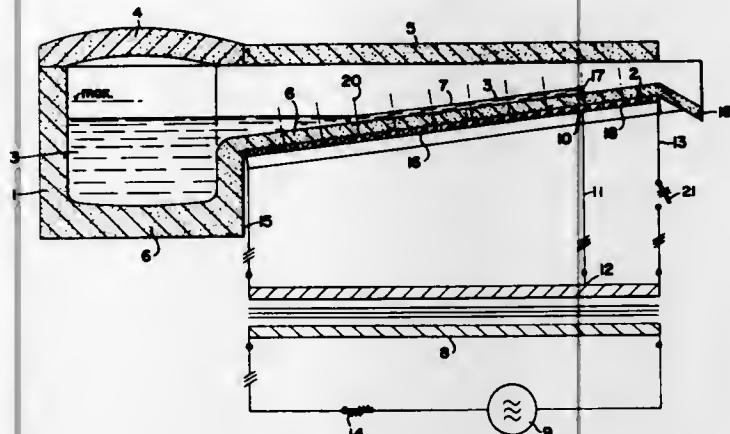
U.S. Cl. 417-50

Int. Cl. F04b 19/04

2 Claims

In the delivery of liquid metal in an electromagnetic conveyor trough from a bath, e.g., a melting vessel or a hot hold-

ing vessel, there is a difficulty in reconciling the propelling of liquid metal along the trough and the intermittent delivery of metal in predetermined quantities, and this difficulty is overcome according to the invention by controlling the energy density in that part of the coil which regulates the propelling of the liquid metal in the trough so that it is exclusively deter-



mined by the energy density in that part of the coil which regulates the delivery of the liquid density, namely that it is from 10 percent to 30 percent higher than the said delivery current density. By this means the pouring rate of the liquid becomes independent of the level of metal in the said liquid metal bath.

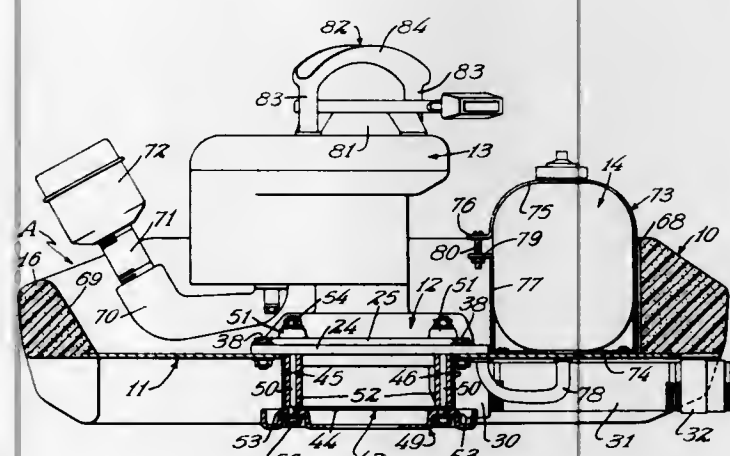
3,612,721 FLOATABLE PUMP

Louis B. Evans, Hastings, and Harold A. Berglund, Afton, both of Minn., assignors to Watrous Company, St. Paul, Minn.

Filed July 15, 1969, Ser. No. 841,953
Int. Cl. F04b 21/00, 17/00

U.S. Cl. 417-61

9 Claims



A float supports a centrifugal pump driven by an internal combustion engine. A carrier handle is provided on one side of the float, and a top supporting handle permits the device to be lowered into the water on a horizontal plane with the motor running when desired. Skids extend beneath the level of the float to protect the float if the pump is dragged along the ground.

3,612,722 HAND VACUUM PUMP

Theodore C. Neward, 2066 West 11th St., Upland, Calif.

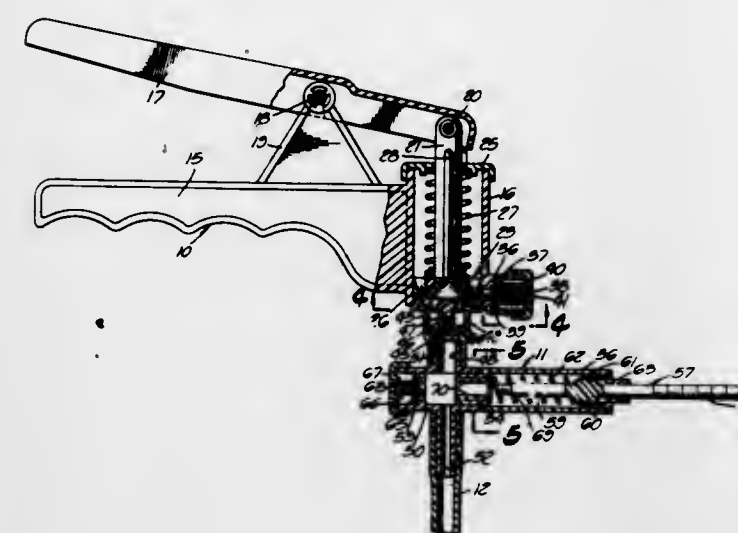
Filed Mar. 3, 1969, Ser. No. 803,854
Int. Cl. F04b 21/02, 23/00, 49/00

U.S. Cl. 417-63

11 Claims

A small and compact vacuum pump which serves as a portable vacuum source. The pump includes a cylinder coupled with one handle and a piston therein coupled with another handle, along with a wafer valve assembly for allowing a vacuum to be drawn at an outlet of the pump. An in-

dicator may be coupled with the outlet and may include a member for releasing the vacuum. The pump and indicator



assembly are particularly useful with vacuum extractors used by doctors during childbirth, or any other use that requires a simple, lightweight, compact and portable vacuum source.

3,612,723 CENTRIFUGAL FLUID VANES COMPRESSOR

Pieter van Staveren, Pijnacker, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Bahuve Van Nijverheid Handel En Verkeer, The Hague, Netherlands

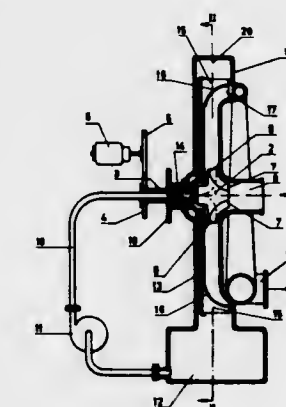
Filed Feb. 25, 1970, Ser. No. 13,932

Claims priority, application Netherlands, Feb. 25, 1969, 6902892

Int. Cl. F04f 11/00; F04d 17/18

U.S. Cl. 417-67

2 Claims



The invention relates to a centrifugal fluid vanes compressor wherein a driven rotor is provided with jet channels for supply of liquid which on rotation form liquid vanes effecting a compressive action upon a gaseous medium between two parallel walls bounding the space for the fluid vanes. It is a feature of the invention that at least one of the said parallel walls can rotate freely and concentrically with the rotor and that a ring of blades is mounted perpendicular to the surface of said wall and substantially at its periphery, the said blades being bent backward with respect to the direction of rotation of the driven rotor so as to cooperate with the fluid vanes, said blades being interconnected over their entire fronts by a wire mesh screen which bounds the discharge of the compressed gaseous medium.

3,612,724 HYDRAULIC APPARATUS

John Denis Smith, Wolverhampton, England, assignor to Boulton Paul Aircraft Limited, Wolverhampton, Stafford, England

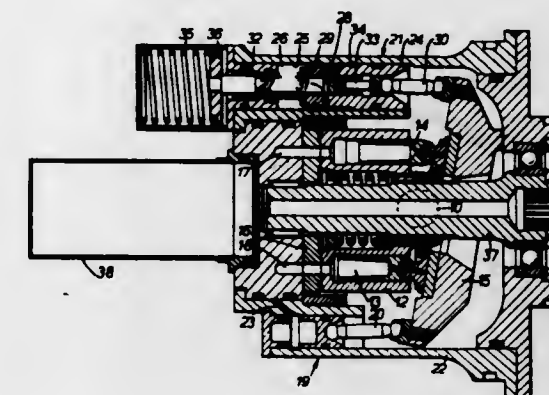
Filed Dec. 15, 1969, Ser. No. 884,998

Claims priority, application Great Britain, Dec. 14, 1968, 59575/68

Int. Cl. F04b 1/26; F15b 15/18; F16b 41/00

U.S. Cl. 417-222

10 Claims



A swash plate pump in which the swash plate is adjustable in accordance with the pump delivery pressure so that piston stroke reduces as delivery pressure increases. A pair of piston-and-cylinder servo units are provided to act oppositely on the swash plate, one of these servo units being fed with liquid at pump delivery pressure and the other servo unit being fed with liquid either at pump delivery pressure or a lower pressure depending on the position of a control valve. The control valve is contained within the said other servo unit and is subjected at one end to pump delivery pressure and at its opposite end to the load of a compression spring whereby to take up a position depending on pump delivery pressure. The pressure of liquid fed to the said other servo unit will be adjusted accordingly and the angle of the swash plate will be adjusted by the one or the other servo unit in accordance with pump delivery pressure.

3,612,725 HYDRAULIC APPARATUS

Peter Spence, Cheltenham, England, assignor to Dowty Technical Development Limited, Cheltenham, England

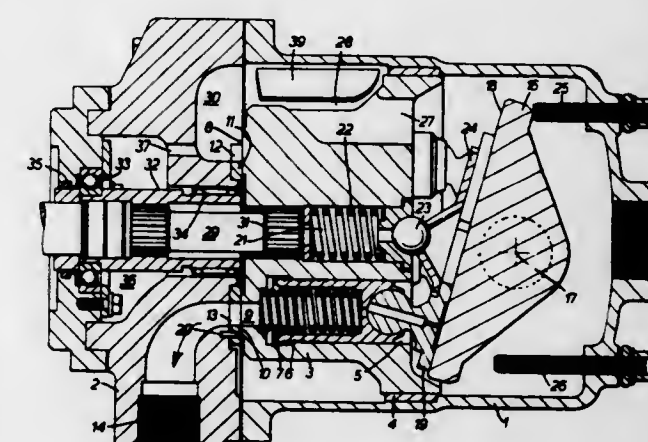
Filed Dec. 8, 1967, Ser. No. 690,369

Claims priority, application Great Britain, Dec. 14, 1966, 56097/66

Int. Cl. F04b 23/12

U.S. Cl. 417-203

6 Claims



A swashplate pump comprising a rotary cylinder block having cylinders disposed parallel or inclined to the rotation axis, valve means cooperating with the cylinder block during rotation, swashplate means located adjacent to one end of the cylinder block for causing reciprocation of pistons in the cylinders during block rotation, passages or vanes or other

hydrokinetic pumping means formed in or on the cylinder block, a casing surrounding the swashplate means and the cylinder block at least in part and a hydraulic inlet to the casing such that during rotation of the cylinder block liquid is kinetically pumped by the kinetic pumping means on the cylinder block to pass initially over the swashplate and then to and through the kinetic pumping means for delivery to the valve inlet for pumping by the pistons in the cylinder block.

3,612,726

POWER TRANSMISSION

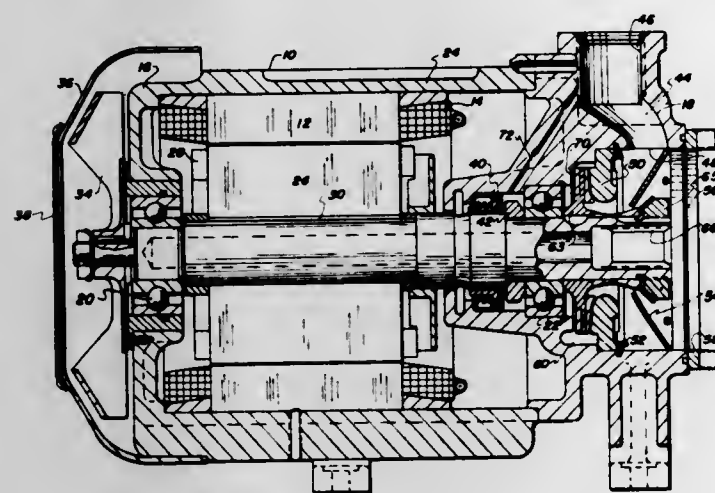
Gordon H. Yowell, North Branch, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed May 25, 1970, Ser. No. 40,177

Int. Cl. F04b 17/00

U.S. Cl. 417-370

4 Claims



An electric motor pump unit has a centrifugal pump built into one end bell with an open ball bearing inboard of the impeller and a shaft seal inboard of the bearing. From the outlet of the pump, a small bypass is provided through the ball bearing and around the shaft seal to the pumping inlet for cooling purposes. The bypass is in thermal conducting relation to the air inside the electric motor. The unit is especially suited for driving a high-pressure hydraulic pump, the inlet of which is supercharged by the centrifugal pump of the motor pump unit.

3,612,727

METERING PUMP

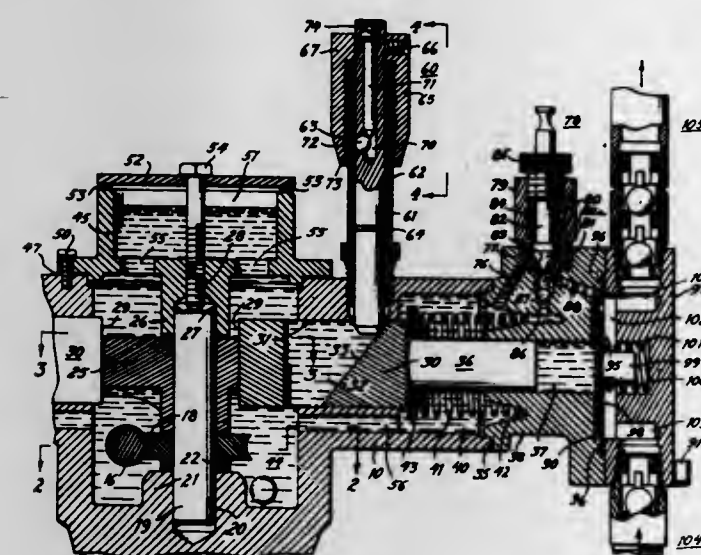
William W. Drake, Horsham, Pa., assignor to Crane Co., Warrington, Pa.

Filed Oct. 17, 1969, Ser. No. 867,172

Int. Cl. F04b 9/08, 35/02, 43/06

U.S. Cl. 417-388

8 Claims



A metering pump is provided which uses the forward movement of a plunger reciprocating in a metering chamber

to force a noncompressible fluid against one side of a flexible diaphragm, thereby moving the diaphragm forward, and which uses a spring or other resilient means on the other side of the diaphragm to move it backwards as the plunger returns, thereby providing a means to pump fluids against high differential pressures on discharge stroke but without dependence on a low pressure or vacuum in the metering chamber to return the diaphragm on the suction stroke. Structure is also provided to adjust pumping volume, to accurately make up any loss of intermediate fluid and to prevent excessive pressure buildup in the metering chamber.

3,612,728

RESILIENT ALIGNMENT BEARING

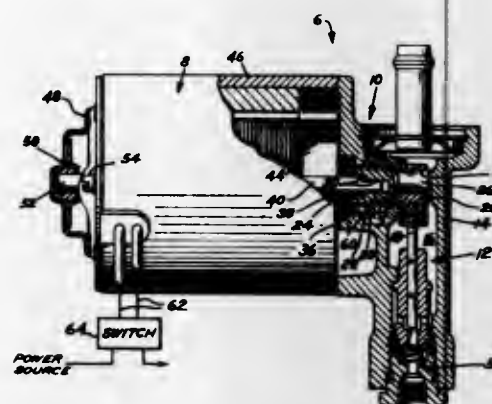
Keith H. Fulmer, South Bend, Ind., assignor to The Bendix Corporation

Filed June 3, 1970, Ser. No. 43,052

Int. Cl. F04b 17/00; F16d 3/06

U.S. Cl. 417-415

10 Claims



A pumping apparatus for use in a power braking system. A bearing in a housing retains a rotatable shaft eccentrically connected to a piston. The rotatable shaft has a slot at the bottom of a stepped internal bore. A rotor of an electric motor is surrounded by a shell. One end of the rotor shaft is retained by an end bearing cap in the shell while the other end has a flattened portion extending past the open end of the shell. A resilient alignment member is positioned in the stepped bore. The flattened end of the armature shaft is guided through the resilient alignment member into engagement with the slot of the rotatable shaft until the surrounding shell is abuttingly secured to the housing. Now, any rotation of the armature shaft will be directly transferred by the rotatable shaft to provide reciprocating movement to the pump piston supplying fluid pressure to the braking system.

3,612,729

VOLUMETRIC METERING PUMP

Roger Commarmot, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Mar. 28, 1969, Ser. No. 811,335

Claims priority, application France, Mar. 29, 1968, 146,469

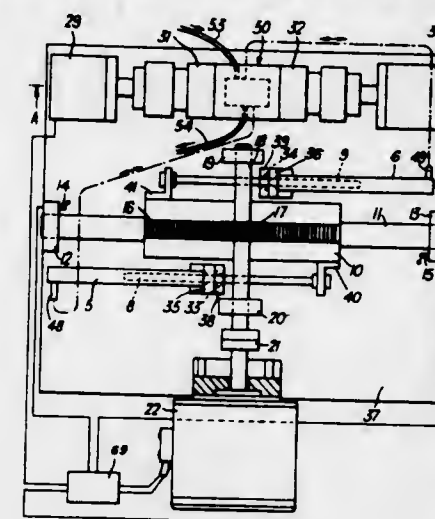
Int. Cl. F04b 35/04, 23/06, 39/08

U.S. Cl. 417-415

3 Claims

The specification describes a volumetric metering pump for accurately dosing very small quantities of liquid, in which two pistons are arranged to extend in opposite directions, and are interconnected by a crossmember. Small pulse jerks are simultaneously applied to each piston, so that one piston draws liquid into its cylinder and the other expels liquid from

its cylinder. A slide valve is provided firstly to direct liquid from an inlet duct to one cylinder and to an outlet duct from the walls of a general outline of a person's foot to permit the walls and the interior chamber to be alternately com-



3,612,730

CONCRETE PUMPING MACHINE

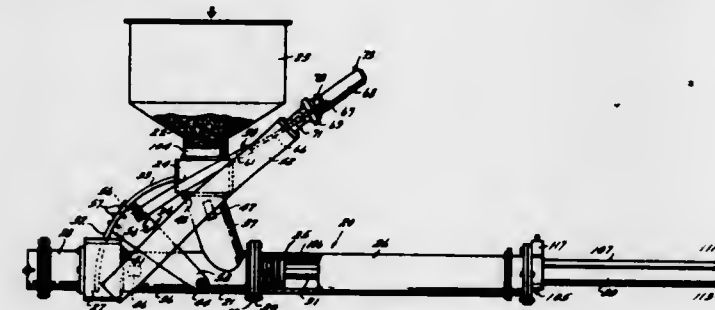
Gerald H. Reinert, Cold Spring, Ky., assignor to DESA Industries, Inc., Cockeysville, Md.

Filed Nov. 10, 1969, Ser. No. 875,439

Int. Cl. F04b 7/02, 15/02

U.S. Cl. 417-507

16 Claims



A concrete pump in which a central housing is provided with inlet and outlet valves angularly spaced about a bearing. Arcuate valve members mounted on a framework swing on the bearing between a first position in which the inlet valve is open and the outlet valve is closed and a second position in which the outlet valve is open and the inlet valve is closed. A pump cylinder communicates with the interior of the central housing and houses a piston which moves back and forth therein to draw concrete into the central housing through the inlet valve and to expel the concrete through the outlet valve.

3,612,731

TREADLE-TYPE PNEUMATIC PUMP

Keigo Tanemoto, No. 2-12-1 Aoto Katsushika-ku, Tokyo, Japan

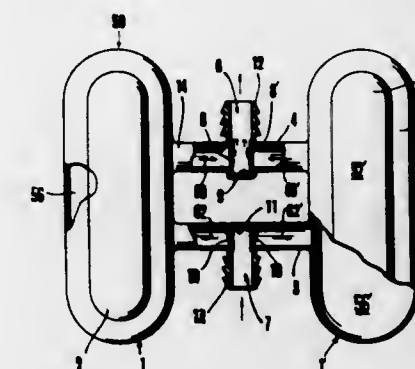
Filed Oct. 20, 1969, Ser. No. 867,577

Int. Cl. F04b 23/04, 21/02, 9/02

U.S. Cl. 417-533

4 Claims

A treadle-type pneumatic pump includes means defining two pumping chambers with compressible walls arranged in spaced relationship and interconnected by conduit means to provide for the alternate inlet and discharge of air upon the release and the collapse of the walls of the respective chambers. The device advantageously includes chambers formed of a material such as a plastic and which are provided with



3,612,732

CATALYST PUMP

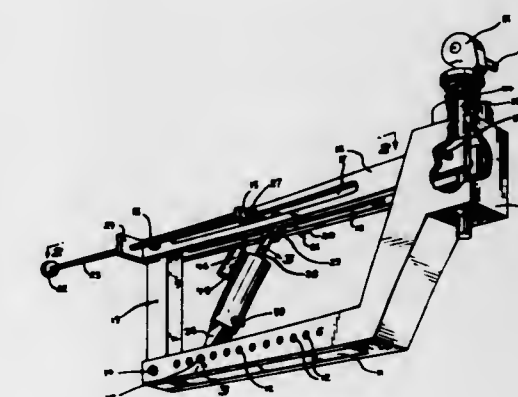
Larry C. Stephens, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 15, 1970, Ser. No. 37,762

Int. Cl. F04b 13/00

U.S. Cl. 417-554

1 Claim



A pump for pumping catalyst and the like is disclosed. The pump has a variable stroke piston. Variation in the stroke of the piston is accomplished by incrementally adjusting the attachment of the piston rod at various locations substantially along the entire length of a pumping arm. The pump piston is hollow with an outlet at the uppermost portion thereof and with means for directing flow from the inlet to the outlet thereof.

3,612,733

PORTING FOR VARIABLE DISPLACEMENT VANE PUMP WITH ROTATING END PLATES

John P. Wilcox, Columbus, Ohio, assignor to J. I. Case Company, Racine, Wis.

Filed May 25, 1970, Ser. No. 41,148

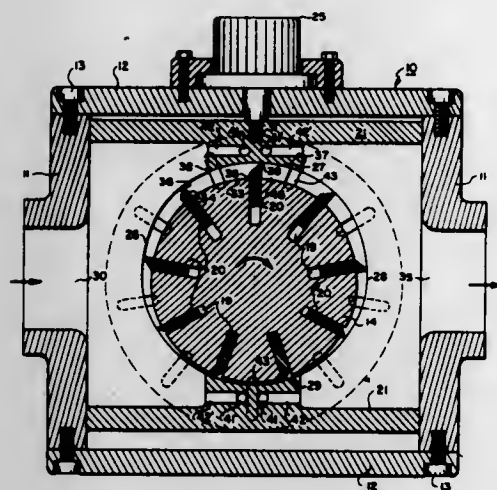
Int. Cl. F01c 21/16; F04c 15/04, 29/10

U.S. Cl. 418-16

18 Claims

A single-lobe sliding-vane rotary fluid pump in which end plates are affixed to the rotor. The cam ring is moved to adjust the displacement rate. This also varies the timing

between port spaces, in the cam ring, and the vanes. To overcome the variations, auxiliary ports in the sealing spaces of



the cam ring cooperate with grooves in the rotor end plates to provide additional fluid paths that control the timing.

3,612,734 ROTARY PUMP OR MOTOR WITH AN AXIALLY ROTATING ROTOR

Peter A. Dawson, Bromley, Kent; Hans G. Pahl, Hutton, Brentwood, Essex, and Edward J. Carpenter, Barnet, Hertfordshire, all of England, assignors to Mono Pumps Limited, London, England

Filed June 5, 1969, Ser. No. 830,733

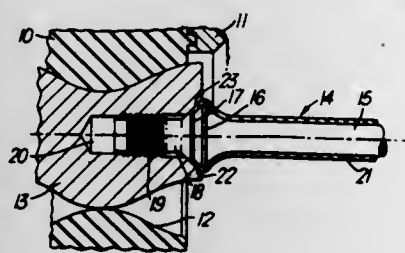
Claims priority, application Great Britain, June 5, 1968,

26743/68

Int. Cl. F01c 1/10, 5/00; F04c 1/06

U.S. Cl. 418-48

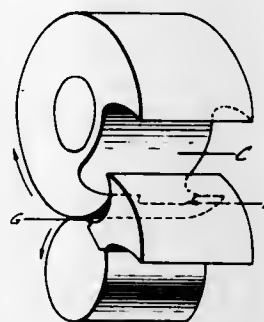
5 Claims



The specification discloses a rotary helical gear pump having a stator formed with at least one helical gear and a rotor mounted therein formed with at least one helical gear meshing therewith, the number of starts of the gear or gears and the stator differing by one from that of the rotor. A flexible drive shaft is secured to the rotor in one of a number of different ways, to drive the rotor, the drive shaft being coated with a nonpermeable and nonporous layer, which is effectively sealed to the rotor, to reduce the effects of corrosion fatigue.

3,612,735
ROTARY ENGINE
Anthony Graham, Go Home Bay, via Penetang, Ontario, Canada
Continuation-in-part of application Ser. No. 743,234, July 8, 1968, now Patent No. 3,453,992. This application July 7, 1969, Ser. No. 839,442
Int. Cl. F02b 55/16; F01c 1/08
U.S. Cl. 418-189

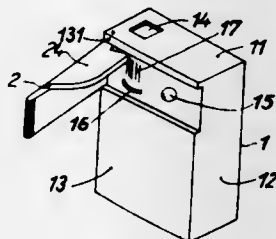
1 Claim



A rotary-type device having a piston rotor and a ceiling rotor for companionate engagement one with the other on rotation of the same and a housing for the rotors, the piston rotor having a piston with a trailing face adapted to coact cyclically with the trailing edge of a gap in the ceiling rotor into which the piston penetrates on each rotation, with the trailing face of the piston being characterized by a curve which maintains a close labyrinth-type seal as the edge of the gap sweeps across the trailing edge of the piston, the lateral profile of the piston being characterized by a curve such that, where a first circle is defined by a first point on the edge of the ceiling rotor rotating about the center of rotation of said rotor; where a second circle is defined by a second point on the outer surface of the piston rotating about the center of rotation of the piston rotor; where the line joining centers of rotation of said rotors is of such a length that the circles overlap and the circumferences cut said line; where the circles rotate at a constant ratio of rotation in opposite directions; said face curve is the path taken by said first point from its entrance into said second circle to its intersection with said line.

3,612,736
SYSTEM FOR ACTUATING CIGARETTE LIGHTERS
Gerhard Steuernagel, Darmstadt-Eberstadt; Claus C. Cobarg, Steinbach, Taunus, and Dieter Rams, Königstein, Taunus, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed July 18, 1969, Ser. No. 843,047
Claims priority, application Germany, July 20, 1968, P 17 82 114.6
Int. Cl. F23q 3/01
U.S. Cl. 431-130

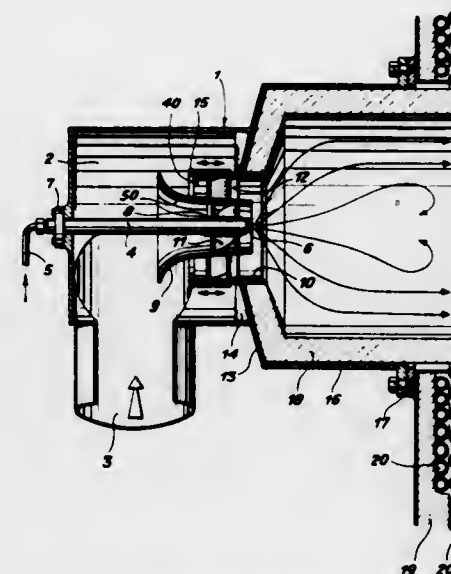
5 Claims



A system for actuating the electric ignition and the burner valve of a gas lighter has an actuating member normally at rest within the contour of the lighter casing; the actuating member can be moved to an active position outside the contour, thereby actuating the valve and ignition.

3,612,737
TURBULENCE MUFFLE BURNER
Harendra Nath Sharan, Seuzach, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Nov. 28, 1969, Ser. No. 880,683
Claims priority, application Switzerland, Nov. 27, 1968, 17646/68
Int. Cl. F23m 9/08
U.S. Cl. 431-183

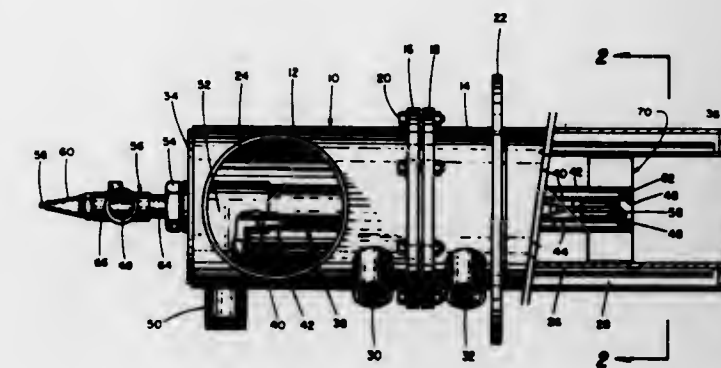
9 Claims



The turbulence muffle burner is provided with a tubular member in surrounding relation to the burner to define at least two annular ducts. Air is directed through the ducts and directed into twisting paths within the ducts so that the velocity and the tangential velocity component of the air leaving the innermost duct are greater than the velocity and the tangential velocity component of the air leaving the outermost duct.

3,612,738
METALLURGICAL BURNER
Robert D. Jones, and Keith A. Miller, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jan. 12, 1970, Ser. No. 2,114
Int. Cl. F23q 3/00
U.S. Cl. 431-265

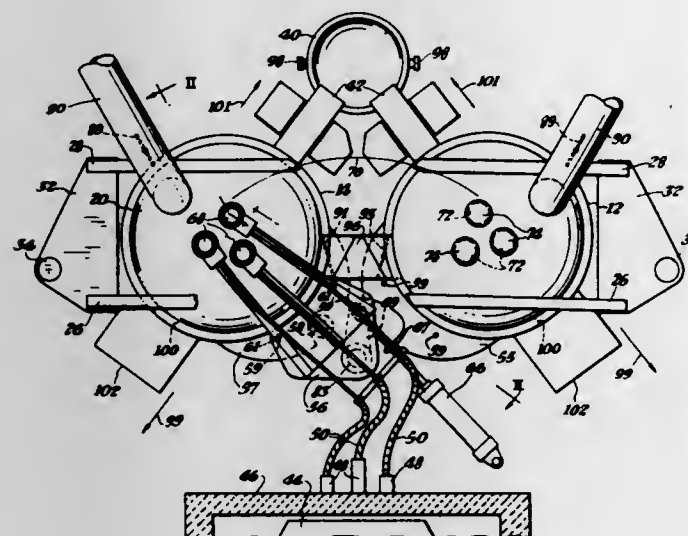
8 Claims



An industrial burner of the post mix type capable of being operated using a natural gas-air mixture or a mixture of natural gas and air that has been enriched with industrial oxygen. The burner is characterized in that a stator is used to assure post mixing thereby preventing explosion from flashback. Water cooling, self-contained ignition and an integral pilot flame are further features of the burner.

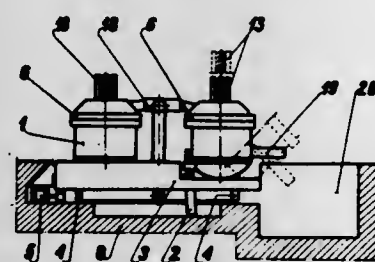
ELECTRICAL

3,612,739
DUAL ELECTRIC FURNACE FACILITY
 Simon M. Kornett, Fair Hill Road, Box 326, R.D. #4,
 Sewickley, Pa.
 Filed Feb. 5, 1970, Ser. No. 8,998
 Int. Cl. F27d 11/10
 U.S. Cl. 13—9
 17 Claims



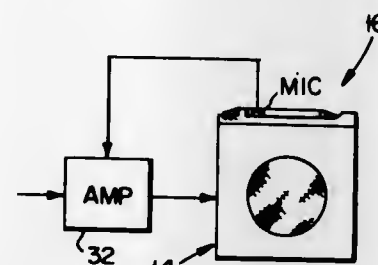
A dual electric furnace facility comprising a pair of furnace shells, each of said shells having at least one electrode opening similarly positioned therein, an electric supply system, an electrode structure including at least one electrode and capable of movement to positions of insertion through either one of said electrode openings, means for electrically connecting said electrode structure to said supply system, and means for alternately moving said electrode structure to said positions.

3,612,740
ARRANGEMENT FOR PRODUCTION OF METAL ALLOYS STEEL ALLOYS IN PARTICULAR
 Adam Glierek, Katowice; Leopold Juszczak, Katowice, and Filip Meder, Zabrze, all of Poland, assignors to Huta Zabrze, Zabrze, Poland
 Filed Jan. 7, 1969, Ser. No. 789,499
 Claims priority, application Poland, Jan. 8, 1968, P124569
 Int. Cl. F27b 3/06, 19/00
 U.S. Cl. 13—9
 4 Claims



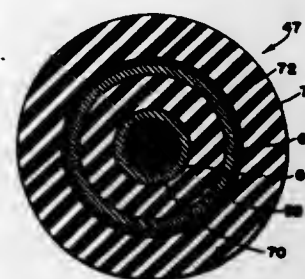
Apparatus for producing metal alloys including a plurality of furnaces mounted for movement past a series of stations, at which there are a preheating burner, electrodes for melting a charge and electrodes for refining the charge.

3,612,741
ELECTRONIC MUSICAL INSTRUMENT EMPLOYING MECHANICAL RESONATORS WITH REGENERATIVE EFFECTS
 Fred C. Marshall, 1310 Third St., Berkeley, Calif.
 Continuation-in-part of application Ser. No. 602,699, Dec. 19, 1966. This application Dec. 4, 1969, Ser. No. 881,980
 Int. Cl. G10h 3/00, 3/02
 U.S. Cl. 84—1.05
 4 Claims



A performance embellishing sound reproduction arrangement comprising an electric loudspeaker, an electric resonance device secured to the chassis of said loudspeaker in contact therewith and having a microphone and a plurality of strings tuned to selected different audiofrequencies to resonate sympathetically whenever a musical production reproduced by the loudspeaker sounds the frequencies to which the strings are tuned, and circuitry for feeding the electric signals derived from the microphone of the resonance device back to the same loudspeaker, or to a second loudspeaker located within the range of audibility of the first-mentioned loudspeaker.

3,612,742
ALTERNATING CURRENT SUPERCONDUCTIVE TRANSMISSION SYSTEM
 Donald P. Snowden, San Diego, and George P. Gamble, La Jolla, both of Calif., assignors to Gulf Oil Corporation
 Filed Feb. 19, 1969, Ser. No. 800,571
 Int. Cl. H01b 7/34
 U.S. Cl. 174—15
 10 Claims



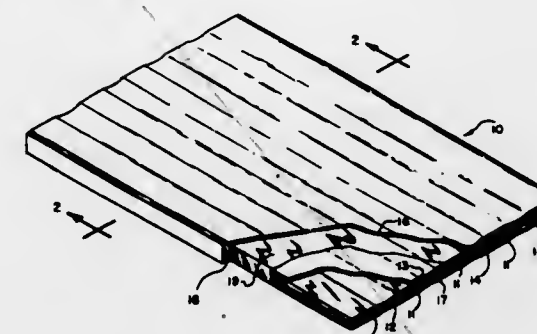
An alternating current superconductive transmission cable and system are provided in which two superconductive conductors are positioned coaxially and separated by insulation. Normally conductive layers are placed within the inner conductor and around the outer conductor to dissipate heat transients. For transmitting large currents the superconductive conductors are formed of a composite material of coaxial alternating layers wherein layers of superconductive material are positioned between layers of nonsuperconductive material.

OCTOBER 12, 1971

ELECTRICAL

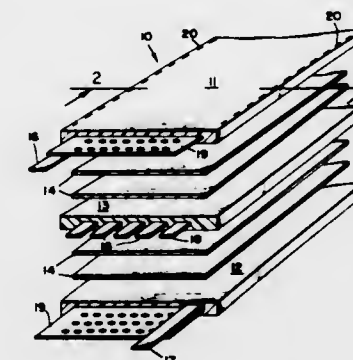
775

3,612,743
SHIELDED FLAT CABLE
 Wilhelm Angele, Huntsville, and Bobby W. Kennedy, Arab, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
 Division of Ser. No. 723,488, Apr. 23, 1968, Patent No. 3,576,723.
 Filed Oct. 13, 1970, Ser. No. 80,369
 Int. Cl. H01b 11/06
 U.S. Cl. 174—36
 9 Claims



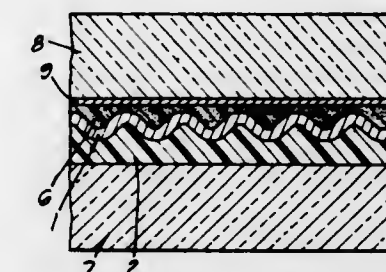
A flat conductor cable having multiple ribbonlike conductors in spaced, parallel arrangement in a flat strip of insulating material is coated with a layer of shielding metal such as copper by roughening the surface of the insulating strip, contacting the strip with an electroless plating bath and then with an electrolytic plating bath. Contact of the metal shield with a ground conductor is obtained by exposing a portion of one or more conductors along the length of the cable prior to plating. An outer layer of insulating material is applied over the shielding layer.

3,612,744
FLEXIBLE FLAT CONDUCTOR CABLE OF VARIABLE ELECTRICAL CHARACTERISTICS
 Philip J. Thomas, Fillmore, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
 Filed Feb. 27, 1969, Ser. No. 802,811
 Int. Cl. H01b 7/08
 U.S. Cl. 174—36
 14 Claims



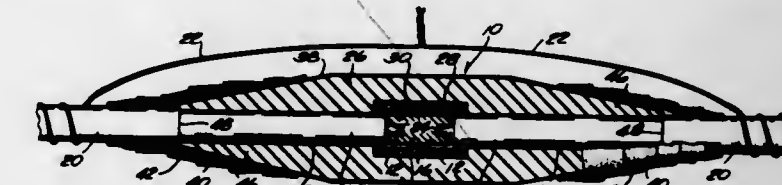
A flexible multiple flat conductor electric cable fabricatable in long lengths with variable and uniform characteristic impedance. The cable comprises a conductive layer, at least one flat dielectric layer continuous to each face of the conductive layer, and a ground plane layer contiguous to the outer face of each outermost dielectric layer. The flat conductor layer or continuous-wiring cable comprises a planar array of parallel spaced flat conductive strips preferably encapsulated in thin dielectric film. The dielectric layers are of materials, thicknesses, number, and configurations to provide a specific predetermined or a range of desired electrical characteristic values. The ground plane layer comprise conductive metal foil, optionally solid or perforated and optionally encapsulated. A flat conductor drain line may be disposed contiguously inward of the ground plane layer. The cable layers are loosely coupled by sewing or other interrupted bonding near the cable edges.

3,612,745
FLEXURAL BUS BAR ASSEMBLY
 Robert A. Warren, Sunland, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.
 Filed July 8, 1970, Ser. No. 53,143
 Int. Cl. H05b 3/06
 U.S. Cl. 174—68.5
 14 Claims



Described herein are bus bars and bus bar assemblies for, e.g., incorporation in electrically powerable laminated transparencies. Metal foil bus bars are flexurally configured or laterally corrugated to be longitudinally dimensionally responsive to thermal contraction and expansion of laminae adjacent the interlayer films in which the bus bars are partially immersed, when the bus bar-bearing interlayer film is incorporated in an electrically powerable laminated transparency. The bus bar-interlayer film assembly can be provided with a thin electrically conductive metallo-thermoplastic tape disposed over the bus bar and providing area contact with electrically conductive metallic coatings powered by the bus bar. The metallo-thermoplastic is rendered electrically conductive by the incorporation therein of finely divided conductive metal particles. The bus bar itself can be laterally plicate, rugulose, nodulose, or otherwise flexurally configured.

3,612,746
CABLE-SPLICING DEVICE FOR HIGH-VOLTAGE CABLES
 Edward L. Sankey, New Berlin, Wis., assignor to RTE Corporation, Waukesha, Wis.
 Filed Feb. 14, 1969, Ser. No. 799,365
 Int. Cl. H02q 15/08
 U.S. Cl. 174—73 R
 5 Claims

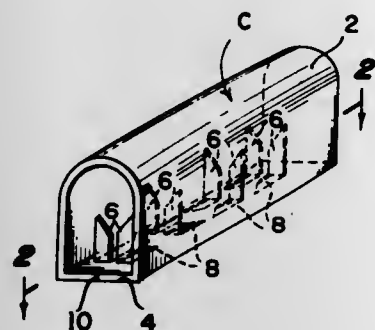


Disclosed herein is a preformed unitary self-sealing device for making an insulated high-voltage splice between two solid insulated cables having a connector connected to the electrical conductors of the cables. The preformed device comprises a conductive sleeve embedded in a sleeve of elastomeric material. The conductive sleeve electrically engages the connector and bridges the connection.

3,612,747
NONSTRIP CONNECTOR FOR INSULATED ELECTRICAL CONDUCTORS AND ELECTRICAL CONDUCTORS THEREFOR
 Bernard Edward Shlesinger, Jr., 3906 Bruce Lane, Annandale, Va.
 Filed Feb. 14, 1969, Ser. No. 799,252
 Int. Cl. H02g 15/08
 U.S. Cl. 174—84 C
 18 Claims

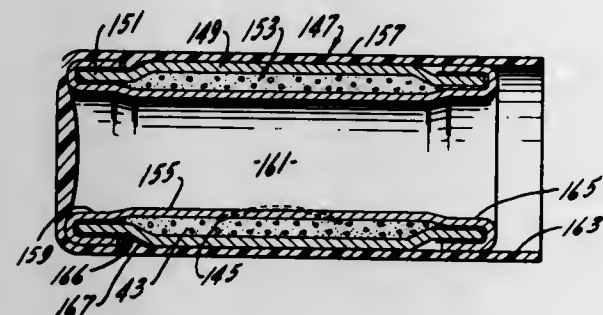
A nonstrip connector for insulated electrical conductors comprising an elongated crimpable housing including conduction means; the housing having portions having a first noncrimped configuration and subsequently a crimped configuration; the housing including an inside wall forming a

central cavity; the conduction means including insulation piercing means projecting inwardly into the central cavity at all times; the central cavity having a first area for receiving insulated conductor means and an open second area adjacent to said first area when the housing portions are in the non-crimped configuration and a third area for supporting and clamping the insulated conductor means and replacing said first and second areas when the housing portions are in the crimped configuration; the insulation piercing means lying within the open second area when the housing portions are in



the noncrimped configuration and within the third area when the housing portions are in the crimped configuration; the portions of the housing having first said noncrimped configuration having a substantially greater circumference than the portions of the housing having subsequently the crimped configuration; the inside wall of the housing including portions for receiving, clamping and supporting the insulated conductor means prior to and subsequent to crimping; whereby upon crimping, the insulation piercing means will pierce the insulation of the conductor means to electrically connect the housing to the insulated conductor means.

3,612,748
EXPLOSION CONNECTOR
David T. James, De Kalb, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Continuation of application Ser. No. 612,655, Jan. 30, 1967, now abandoned. This application May 21, 1969, Ser. No. 827,130
Int. Cl. H02g 15/08
U.S. Cl. 174-94



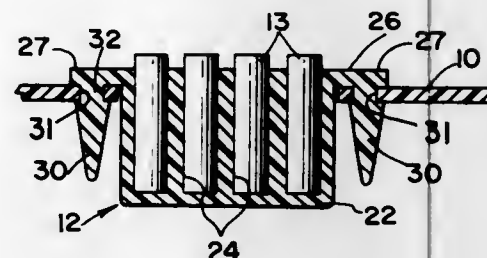
A method of connecting wires, cables and the like including the steps of placing the wires inside a deformable shell, placing an explosive on the outside of the deformable shell, confining the explosive by a generally nondeformable outer shell, and igniting the explosive to deform the deformable shell into contact with the wires and the wires into contact with one another.

A connector for joining wires, cables and the like including inner and outer shells and an explosive located between the shells, the explosive functioning, upon ignition, to deform the inner shell into crimping engagement with wires placed therein and the wires into crimping engagement with one another.

3,612,749
RESILIENT MOUNTING SUPPORT FOR PLURALITY OF ELECTRICAL DEVICES, SUCH AS PIEZOELECTRIC CRYSTALS

Franklin F. Grube, Jr., Westchester, and Michael J. McMahon, Maywood, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 25, 1969, Ser. No. 852,761
Int. Cl. H01b 3/46; H01v 7/00
U.S. Cl. 174-138 G

2 Claims



Resilient mounting support for electrical devices, such as piezoelectric crystals, for mounting the same on the chassis of electrical apparatus, such as a radio transmitter and/or receiver. The support includes a block of resilient material having cavities therein for receiving the containers for the devices, and integral mounting tabs for securing the block to the chassis.

The block may be positioned in an opening in the chassis and the mounting tabs may have projections extending in other openings with interlocking projections to hold the same in position. The support may be formed of transparent silicone rubber to protect the devices against shock and vibration and to permit inspection of identifications on the containers through the mounting support.

3,612,750
CABLE-CONNECTING ADAPTOR FOR HIGH VOLTAGE BUSHING OF A PAD-MOUNTED TRANSFORMER
Michael J. Monico, Dalton, and Louis B. Casucelli, North Adams, both of Mass., assignors to General Electric Company

Filed Jan. 26, 1970, Ser. No. 5,729
Int. Cl. H01b 17/00
U.S. Cl. 174-145

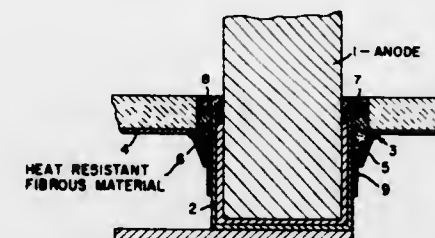
3 Claims



An adaptor for the high-voltage bushing of a pad-mounted transformer to convert such bushing to a two-cable hot line tap. The adaptor includes a first vertical slotted portion fitting the bushing cable connector and has a second vertical portion at right angles to the first vertical portion with a pair of slots on opposite ends of the second portion which will accept cable terminal connectors for securing cables to the adaptor.

3,612,751
SEALING OF CURRENT-CARRYING LEAD FOR ELECTRODE OF ELECTROLYZER
Evgeny Ivanovich Adaev, 2. Schukinsky, proezd, 10, korpus 1, kv. 56; Alexandr Vasilievich Blinov, ulitsa Gorkogo, 41, kv. 48, and Viktor Alexandrovich Novoselov, ulitsa Vavilova, 10, korpus 2, kv. 28, all of Moscow, U.S.S.R.
Filed Apr. 23, 1969, Ser. No. 818,633
Int. Cl. B01k 3/02; H05b 7/12
U.S. Cl. 174-151

4 Claims



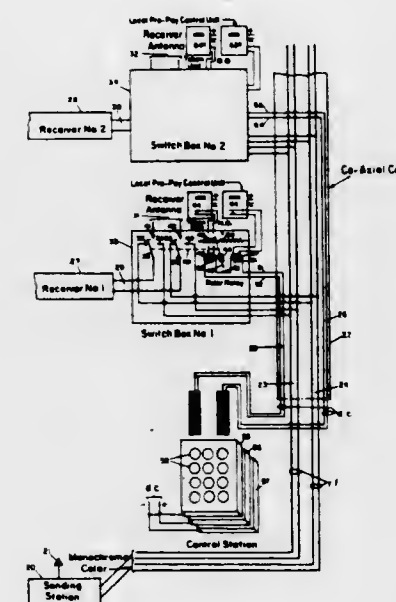
Several types of seals for current-carrying leads of electrolyzers are disclosed. A funnel-shaped member is attached to the housing of the electrolyzer in such a manner that it surrounds the lead as it emerges from the electrolyzer. The annular space between the lead and the funnel-shaped member is sealed with a thermally and chemically resistant packing which is confined therein. Suitable packing materials include slag cotton, asbestos cord and asbestos fluff and fibrous glass.

ERRATUM

For Class 178-5.4 MA see:
Patent No. 3,613,105

3,612,752
SUBSCRIPTION TELEVISION SYSTEM WHICH RECEIVES EITHER FREE BROADCAST SIGNAL OR PAY WIRED SIGNALS
Thomas A. Banning, Jr., 5500-5520 South Shore Drive, Apt. 1408, Chicago, Ill.
Continuation-in-part of application Ser. No. 459,399, May 27, 1965, now Patent No. 3,365,542, and a continuation-in-part of 490,402, Sept. 27, 1965, now Patent No. 3,478,162. This application June 22, 1966, Ser. No. 559,494
Int. Cl. H04n 1/32, 1/34
U.S. Cl. 178-5.1

14 Claims

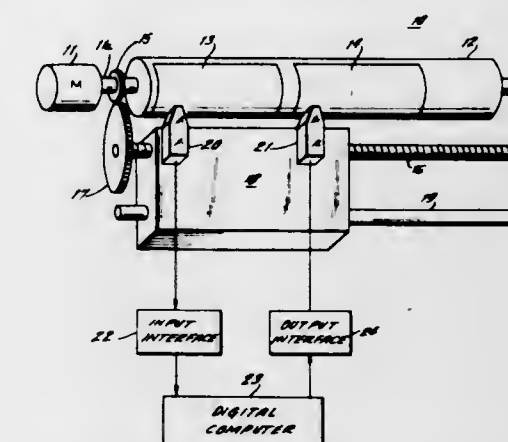


This case discloses wired forms of transmission of the television RF signals, and the audio signals of the program, under control of a control station, with provision for receiving the program either over the air (broadcast) in inferior aesthetic quality, or by the wired transmission, in the superi-

or aesthetic quality, the former, broadcast transmission being without pay or charge—the latter, wired transmission being for pay or charge. Various forms of the differentials of superior and inferior quality TV programs are disclosed.

3,612,753
SELF-ADAPTIVE SYSTEM FOR THE REPRODUCTION OF COLOR
Nathaniel I. Korman, Princeton, N.J., assignor to Ventures Research & Development Group, Princeton, N.J.
Filed Apr. 23, 1969, Ser. No. 818,489
Int. Cl. H04n 9/02
U.S. Cl. 178-5.2 A

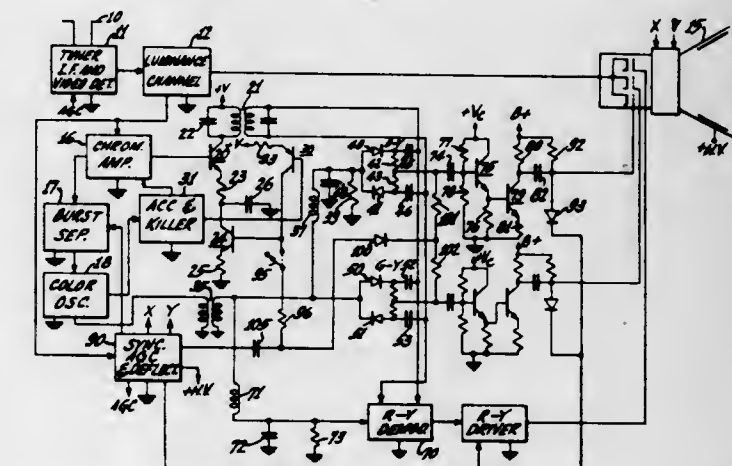
17 Claims



A method and apparatus for the production of color pictures, especially of the "half-tone" variety wherein the color fidelity of the reproduction matches that of the original picture or transparency from which the reproduction is produced. Initial printing plates are produced for printing a color standard which contains every one of a large plurality of arbitrary color patches. The same ink, paper, printing plates and printing process are used to prepare the matrix as will be used in the final production process. The printed matrix is then point-by-point scanned for correlating the original color data with the colors of the printed result so as to fully take account of the characteristics of the ink, paper, plates and printing process. The modified color information is then utilized in the reproduction process during which the picture to be reproduced is scanned point-by-point to determine its tristimulus values (red, green and blue). The color data previously developed operates on the tristimulus values and the color information to determine what excitation is needed for each tristimulus value to sensitize the corresponding points on each of the color printing plates to be used in the reproduction process.

3,612,754
COLOR TEMPERATURE CONTROL CIRCUITS
Robert Dale Altmanshofer, Indianapolis, Ind., assignor to RCA Corporation
Filed May 11, 1970, Ser. No. 36,056
Int. Cl. H04n 9/18
U.S. Cl. 178-5.4 R

10 Claims



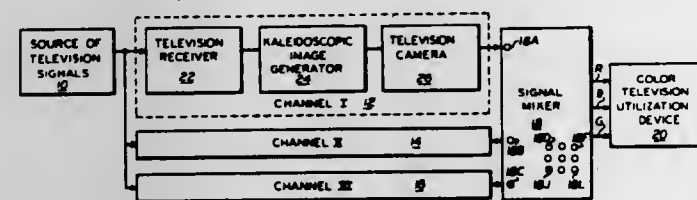
A color temperature control circuit operates between a monochrome and color transmission to alter the background

tint of the display by injecting a suitable pulse via a diode which is rendered conductive or nonconductive by means of the color killer circuit included in the receiver. The injected pulse as applied to DC restoring circuits serves to affect the level at which the control electrodes of the kinescope are biased.

3,612,755
COLOR PATTERN GENERATOR
Thomas Carter Tadlock, II, Chevy Chase, Md., assignor to Dorothea Weltzner, New York, N.Y., a part interest
Filed July 3, 1969, Ser. No. 838,928
Int. Cl. H04n 9/02

U.S. Cl. 178-5.2 R

8 Claims

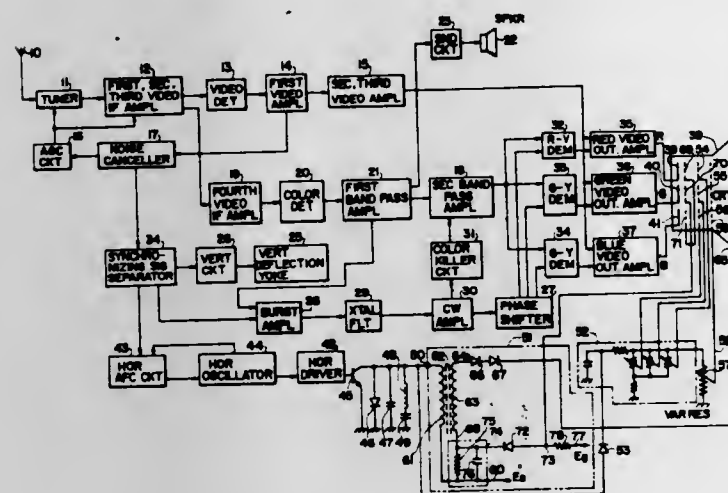


A color pattern generator includes means for generating at least three images. A portion of each image is kaleidoscopically transformed to another image. A television camera converts each image to video signals that are intermixed in varying amplitudes to provide three color video signals that are fed to a color television receiver for display.

3,612,756
BEAM CURRENT LIMITING CIRCUIT FOR A CATHODE-RAY TUBE
Mitsuharu Akatsu, Yokohama-shi; Takao Yoneyama, Yokohama-shi, and Tadahiko Iwasaki, Kamakura-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan
Filed Apr. 24, 1969, Ser. No. 818,926
Claims priority, application Japan, Apr. 24, 1968, 43/33021
Int. Cl. H04n 9/28

U.S. Cl. 178-5.4 R

6 Claims



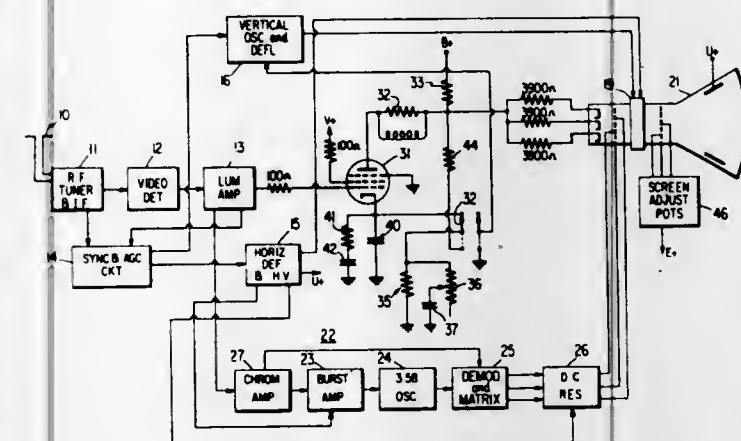
A beam current limiting circuit for a cathode-ray tube (CRT) having at least a cathode, a grid and an anode comprising an anode circuit having a fly back transformer including a primary coil and a secondary coil, a power source, a high voltage rectifier for rectifying flyback pulses generated across the secondary coil, a beam current responsive means inserted between the power source and the secondary coil, a grid bias means, and switching means. The beam current responsive means is connected to the switching means and generates a control voltage whose value is so determined to be lower than the grid bias voltage while the beam current is larger than a predetermined value.

The switching means is responsive to the control voltage and changes its conductive or nonconductive condition to supply the control voltage to the grid when the beam current exceeds the predetermined value, so that the beam current is prevented from exceeding the predetermined value.

3,612,757
COLOR TELEVISION KINESCOPE SETUP APPARATUS
George Edward Anderson, Indianapolis, Ind., assignor to RCA Corporation
Filed Aug. 20, 1969, Ser. No. 851,545
Int. Cl. H04n 5/44

U.S. Cl. 178-5.4 TE

9 Claims

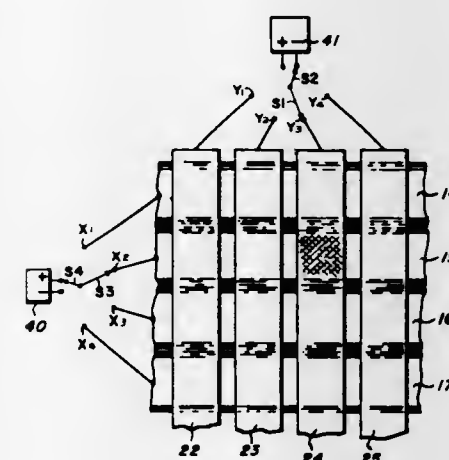


A setup control apparatus for a color kinescope uses a switch for removing operating potential from an active device, as a vacuum tube, included in a video information signal channel, while further switching in an impedance for biasing the beam control electrodes of the kinescope at a predetermined level compatible with performing setup adjustments on the kinescope.

3,612,758
COLOR DISPLAY DEVICE
Paul F. Evans, Pittsford; Harold D. Lees, Henrietta; Martin S. Maltz, Fairport, and John L. Dailey, Pittsford, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,633
Int. Cl. G02f 1/36; H04n 5/66, 9/12

U.S. Cl. 178-5.4 R

14 Claims

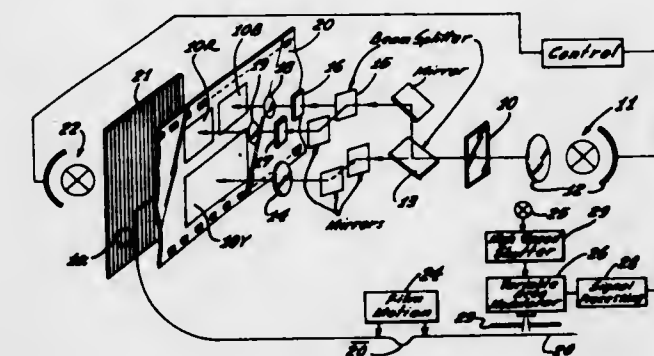


A color display device employing the electrophoretic migration of color pigment particles to form an image on a matrix addressable panel. One coordinate terminal is connected to a line reservoir containing electrophoretic ink particles of a given polarity while the other coordinate terminal is connected to a transparent conductor. The panel is viewed through the transparent conductor side in ambient illumination.

3,612,759
THERMOMAGNETIC MOTION-PICTURE-RECORDING AND MAGNETOPTIC TV-REPRODUCING METHOD AND SYSTEM
Alfred M. Nelson, Redondo Beach, and Daniel J. Marshall, Torrance, both of Calif., assignors to The Magnavox Company, Torrance, Calif.
Filed Aug. 5, 1968, Ser. No. 750,134
Int. Cl. H04n 1/28, 5/78; H04v 3/04

U.S. Cl. 178-6.6 A

32 Claims

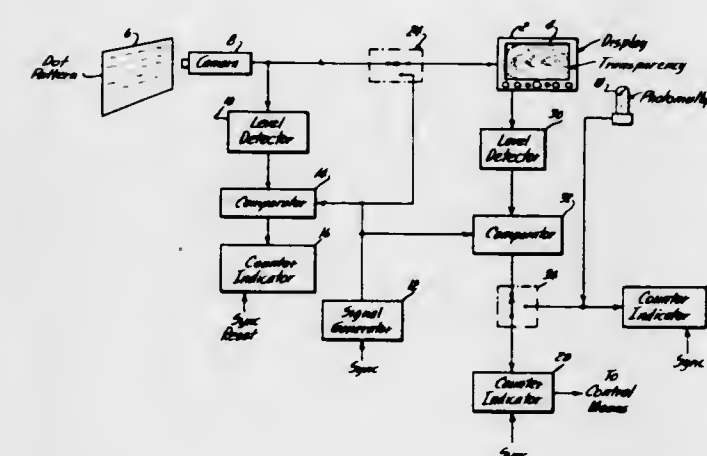


Audiovisual information such as a live scene or a motion picture film with soundtrack is converted into sequences of images each composed of incremental complementary, variable-size image areas used to provide a corresponding two-dimensional modulation of radiant energy. A black and white film is used as an intermediary and for defining the images of the sequence as variable area size, dark-light contrast patterns. The images are thermomagnetically copied on a low-Curie-point magnetic tape. The information on the tape is reproduced as by magneto-optical techniques, and the reproduced information is scanned, resulting in signals processed to control image reproduction as on the picture tube of a TV set.

3,612,760
APPARATUS FOR DETERMINING DISTORTION IN TELEVISION SYSTEMS
John C. McKechnie, 2300 Mohawk Trail, Maitland, Fla.
Filed Oct. 11, 1968, Ser. No. 766,889
Int. Cl. H04n 5/72, 5/21

U.S. Cl. 178-6.8

1 Claim

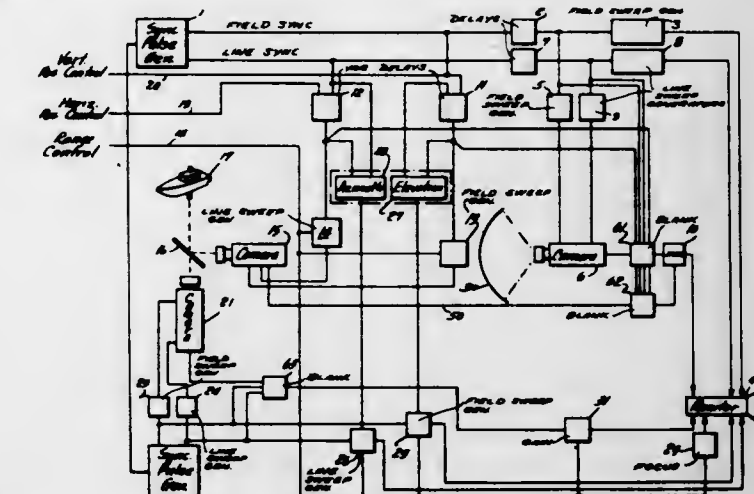


A scanning pattern or "raster" on the face of a television display tube is examined through a matching ruled grid on a transparent sheet placed over the face of the tube. Distortion in the scanning pattern will produce an observable moire fringe interference pattern which can be used to adjust the television control circuits to correct the distortion. A rectangular dot pattern on a transparency can be used in a like manner to generate patterns indicating horizontal and vertical distortion.

3,612,761
LARGE-AREA DISPLAY SYSTEM
Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 19, 1969, Ser. No. 886,615
Int. Cl. H04n 7/18

U.S. Cl. 178-6.8

7 Claims

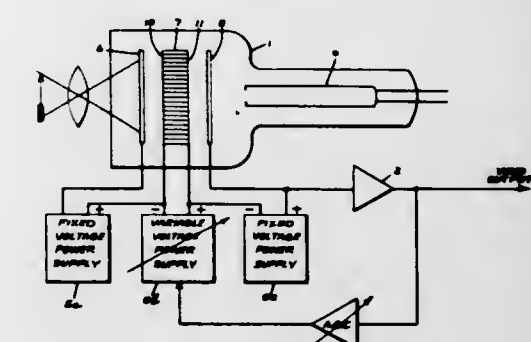


A television system presenting a picture of a large area with relatively coarse resolution in which a small area for the display of a high-resolution picture is blanked out and a high-resolution picture inserted in the blanked out area.

3,612,762
AUTOMATIC GAIN CONTROL SYSTEM FOR CAMERA TUBE
Louis E. Wuellner, Fort Wayne, and Roger C. Thieme, Hoagland, both of Ind., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Mar. 26, 1969, Ser. No. 810,714
Int. Cl. H04n 5/36

U.S. Cl. 178-7.2

7 Claims



In low-light level television systems, certain camera tubes employ multiplier-channel plates which determine the gain of the camera tube. This gain is automatically controlled in the present invention by developing a control signal representative of the amplitude of the video signal produced by the camera tube and feeding it back to the multiplier-channel plate in such polarity and magnitude as to maintain the video signal at a substantially constant level.

3,612,763
NOISE SUPPRESSION NETWORKS FOR TELEVISION RECEIVERS
Paul V. Bates, Breslau, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada
Filed Apr. 25, 1969, Ser. No. 819,279
Int. Cl. H04n 5/44

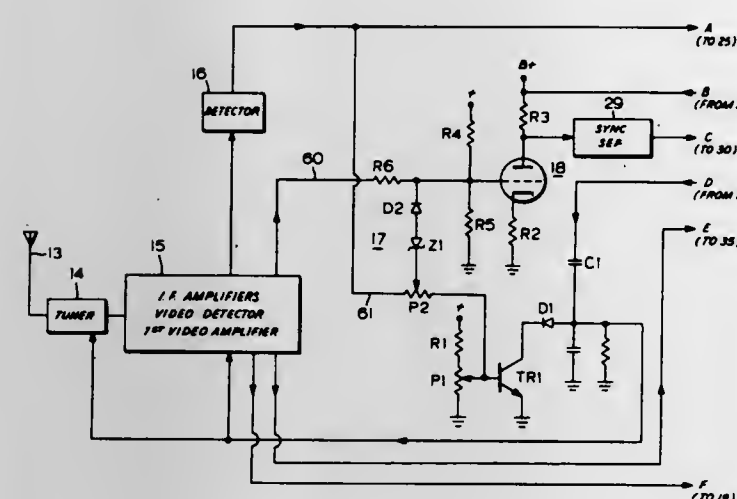
U.S. Cl. 178-7.3 R

10 Claims

Noise suppression in a television receiver is achieved by

connecting a semiconductor device in Zener diode configura-

bistable serves to lock the actuated key and release the time base. Further means are provided to release the time base at

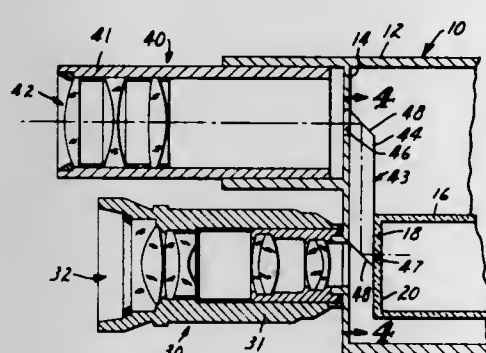


tion between two sources of video signals of opposite polarity.

3,612,764

TELEVISION SECURITY MONITOR
David C. Gilkeson, North Oaks, and Patrick R. Novak, Mounds View, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Nov. 14, 1969, Ser. No. 876,710
Int. Cl. H01J 29/89

U.S. Cl. 178-7.88



Apparatus comprising in combination a TV monitor and a closed circuit TV camera including a wide angle lens for receiving and focusing a wide angle image of a first subject matter onto a photosensitive surface of the TV camera and including a telephotens and a periscopic prism for receiving and focusing an enlarged image of a second subject matter, located substantially the same distance from the TV camera as the first subject matter, onto the photosensitive surface of the TV camera.

3,612,765

KEYBOARD LOGIC SYSTEM
Roger William Dawson, Brighton, Sussex, England, assignor to Creed & Company, Brighton, Sussex, England
Filed May 28, 1969, Ser. No. 828,502
Claims priority, application Great Britain, May 30, 1968, 25896/68
Int. Cl. H04I 15/12

U.S. Cl. 178-17 R

A keyboard logic system for controlling keyboard locking and the transmitting time base for all operating conditions which includes a trip switch, operated by the actuation of any key, and two bistables. The first bistable is set when no keys are depressed and the second bistable is set when both the first bistable is set and the trip switch is operated. The second

3 Claims

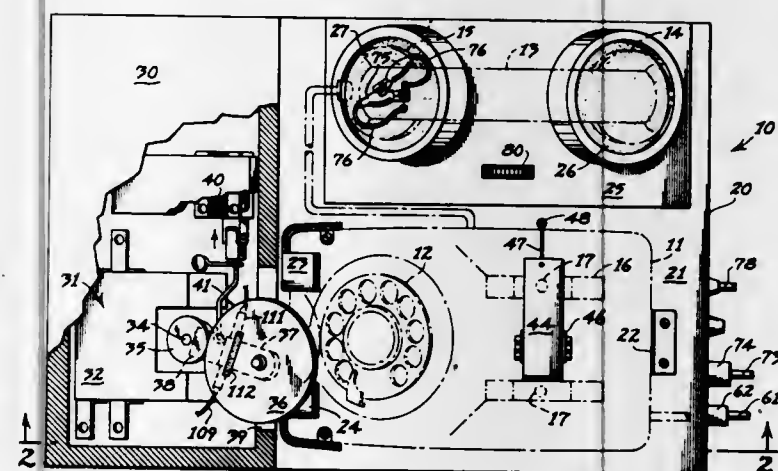
the instant when both the "runout" switch and the trip switch are actuated concurrently.

3,612,766

TELEPHONE-ACTUATING APPARATUS FOR INVALID
Billy G. Ferguson, 8129 Luree Lane, Hermitage, Tenn.
Filed Mar. 16, 1970, Ser. No. 19,796
Int. Cl. H04m 1/00

U.S. Cl. 179-1 HF

13 Claims

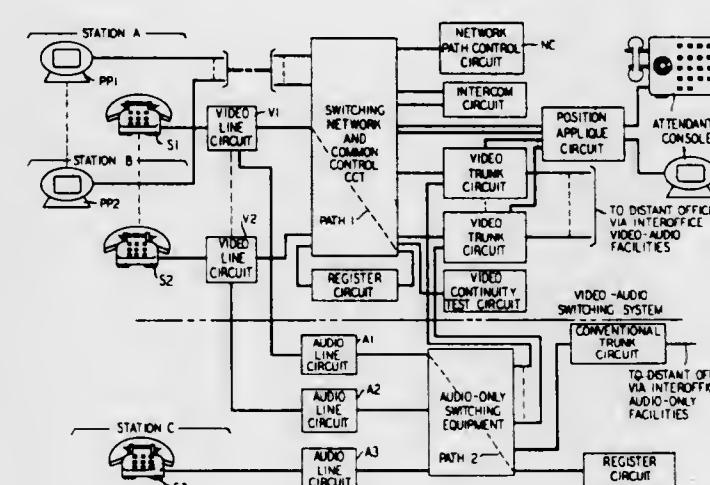


A telephone-actuating apparatus adapted to be controlled solely by the voice of a person, and particularly an invalid, including an electrical control circuit connected to the receiving and transmitting circuits of an existing telephone and adapted to actuate the telephone receiver contact switch element and the dialing mechanism. The control circuit includes gating, relay and timing elements, adapted to close the receiver contact switch element by a voice signal during an initial period and to open the switch element by another voice signal during a subsequent termination period. The control circuit also permits actuation of the dialing mechanism by another voice signal after the termination of the initial period and prior to the commencement of the termination period.

3,612,767
EQUIPMENT FOR SELECTIVELY ESTABLISHING AUDIO AND WIDEBAND COMMUNICATION PATHS THROUGH TWO AUTONOMOUS SWITCHING SYSTEMS
Harold P. Anderson, Lincroft; Floyd K. Becker, Colts Neck; Robert D. Berryman, Red Bank; Nelson Botsford, Jr., Colts Neck; Maurice A. Hoffman, Woodbridge, and Arthur P. Ryan, III, Belmar, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 11, 1969, Ser. No. 832,292
Int. Cl. H04m 1/08

U.S. Cl. 179-2 TV

28 Claims



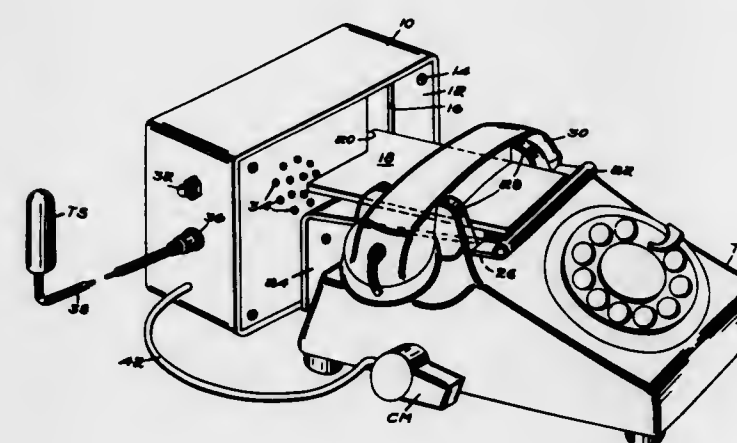
Independently operated switching systems which are actuated on every call are disclosed for establishing via one system audio-only communication paths and via the other system wideband as well as audio communication paths. Initially, both systems are connected on a call and one of them is released by the caller for determining the particular switching system and therefore the necessary switching facilities to be utilized on the call.

3,612,768

TELEPHONE ALARM SYSTEM
David Sherman, 432 Lowell Ave., and Richard L. Myerson, 14 Oak Hill St., both of Newton Centre, Mass.
Filed July 18, 1969, Ser. No. 851,128
Int. Cl. H04m 1/04

U.S. Cl. 179-5 R

14 Claims



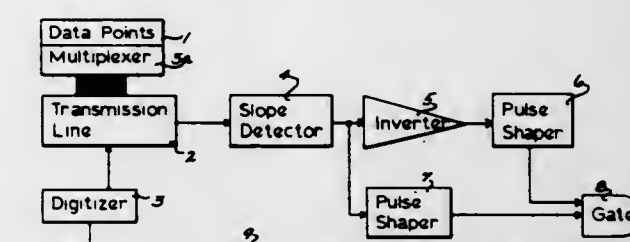
The invention concerns an alarm system for detecting abnormal or emergency conditions and reporting them in response to placement of a call to an associated telephone. The system comprises a circuit including two switch means one operable by a detector in response to an abnormal condition, and the other operable in response to a call placed to the telephone, so that no alarm signal is generated until a call is received. The system need not be incorporated into the telephone circuit, but can be a self-contained unit that transmits an alarm signal via the telephone.

3,612,769

DATA TRANSMISSION
Gary F. Oman, Greendale, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed May 4, 1970, Ser. No. 34,044
Int. Cl. H04J 3/10

U.S. Cl. 179-15 A

8 Claims



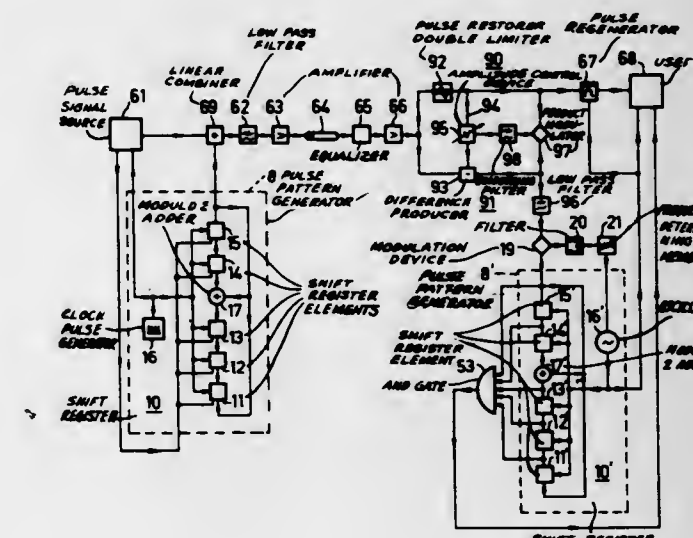
A multiplexed data system includes a multiplexing means sequentially connecting data points to a transmission line which is connected to an analog-to-digital converter. The data is transmitted by a current limit operational amplifier to establish a constant current line response between successive data points. A digitizing control includes a slope-detecting operational amplifier connected to differentiate the line voltage. An inverting pulse shaper and a noninverting pulse shaper are connected to the amplifier to establish a pair of control signals connected to a two-input NAND gate, the output of which is connected to trigger an analog-to-digital converter connected to the line and establish readout in synchronism with the settling of the line voltage.

3,612,770

TRANSMISSION SYSTEM COMPRISING A TRANSMITTER AND A RECEIVER FOR THE TRANSMISSION OF INFORMATION IN A PRESCRIBED FREQUENCY BAND AND TRANSMITTERS AND RECEIVERS TO BE USED IN SAID SYSTEM
Leo Eduard Zegers, and Wilfred Andre Maria Sijders, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed June 20, 1969, Ser. No. 834,973
Claims priority, application Netherlands, June 29, 1968, 6809257
Int. Cl. H04I 7/00

U.S. Cl. 179-15 BY

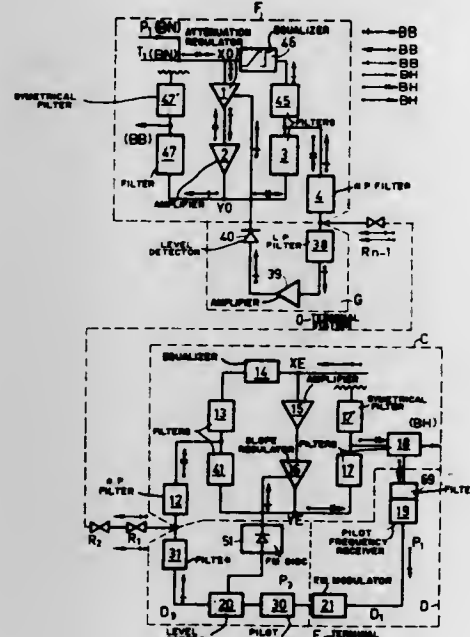
9 Claims



A circuit for separating an auxiliary signal component from a main signal component has a pulse restorer and a difference producer coupled to receive the composite signal. The output of the restorer is coupled to the other input of said difference producer through an amplitude controller so that the signals applied to the difference producer are equal. The difference producer output supplies the auxiliary signal.

3,612,771

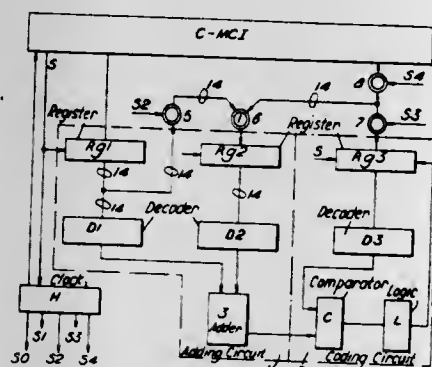
DUAL-BAND LINE TRANSMISSION SYSTEM
 Paul Victor Canquit, Essonne, France, assignor to S. A. Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France
 Filed July 29, 1969, Ser. No. 845,754
 Claims priority, application France, Aug. 9, 1968, 162505
 Int. Cl. H04j 1/14
 U.S. Cl. 179-15 BP 8 Claims



A transmission system has two terminal stations and at least one repeater station. One terminal station transmits a first pilot signal which is passed through the repeater station without effecting any amplitude control devices. The second terminal station transmits a second pilot signal, which is time modulated by the received first pilot signal, and is used to control amplitude control devices. Therefore, both frequency independent and dependent attenuators can be compensated.

3,612,772 CIRCUIT FOR ADDING CODES RESULTING FROM NONLINEAR CODING

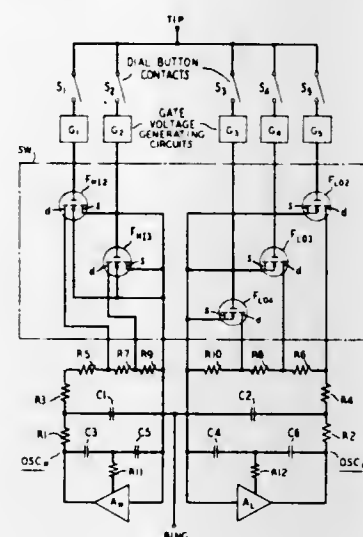
Claude Paul Henri Lerouge, Maurepas, and Jean Perrault, Port-Marly, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
 Filed Apr. 9, 1969, Ser. No. 843,875
 Claims priority, application France, Apr. 11, 1968, 147 879
 Int. Cl. H04m 3/56
 U.S. Cl. 179-18 BC 6 Claims



A PCM circuit adds the speech codes of subscribers who are participating in a conference call. A decoding circuit decodes two PCM codes, and the resulting analog voltages are added together. The sum of the analog voltages are re-encoded and sent out to the other subscribers.

3,612,773

ELECTRONIC FREQUENCY SWITCHING CIRCUIT FOR MULTIFREQUENCY SIGNAL GENERATOR
 Charles E. Richm, Jr., Indianapolis, Ind., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
 Filed July 22, 1969, Ser. No. 843,321
 Int. Cl. H04m 1/51
 U.S. Cl. 179-90 K 2 Claims

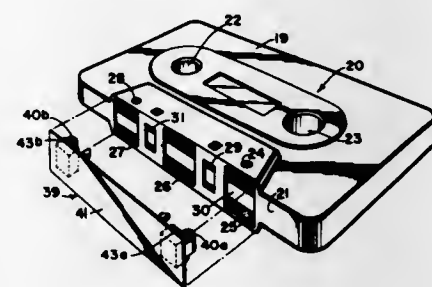


Signal frequency combinations in a multifrequency signal generator are produced selectively by establishing conductive paths through switched insulated-gate field-effect transistors (IGFETS) to connect respective frequency determining elements into the oscillator circuits.

3,612,774

SNAP-ON ERASING MEMBER FOR COMPACT CASSETTE RECORDER

Edgard R. Wiklund, Atlanta, Ga., assignor to Robert N. Fink, Decatur, Ga.
 Continuation-in-part of application Ser. No. 789,155, Jan. 6, 1969. This application Feb. 3, 1969, Ser. No. 795,931
 Int. Cl. G11b 5/02, 15/60
 U.S. Cl. 179-100.2 D 7 Claims



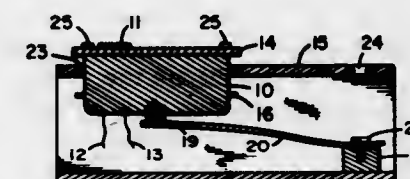
The combination with a compact cassette-type tape recorder of a snap-on readily removable permanent magnet erasing member which fits between the removable cartridge and the inside wall of the cassette cavity of the recorder for erasing the magnetic tape when the tape is rewound. The erasing member has two longitudinally spaced, transversely disposed magnets on a flat carrier and longitudinally and transversely spaced detents for projecting through windows in the cassette so that the erase member may be snapped onto the cassette.

3,612,775

MAGNETIC TRANSDUCING HEAD ASSEMBLY WITH HEAD LEVEL ADJUSTMENT
 Robert J. Miller, Salford, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
 Filed July 16, 1969, Ser. No. 842,270
 Int. Cl. G11b 21/24, 21/20, 5/60
 U.S. Cl. 179-100.2 P 5 Claims

A so-called "flying head" structure is disclosed which in-

cludes a hollow housing member into which a head block is fitted. A flexure spring contained within the housing urges the head block away from the housing toward the recording medium.

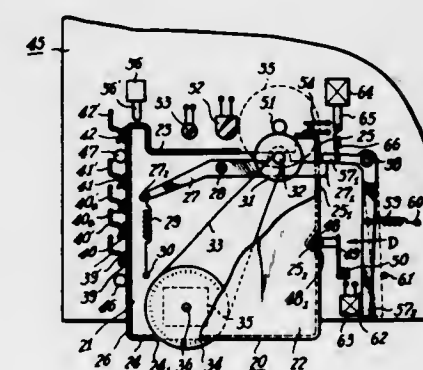


the head block away from the housing toward the recording medium.

3,612,776

RADIO CARTRIDGE WITH AUTOMATIC TUNING DEVICE FOR USE WITH MAGNETIC TAPE CARTRIDGE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
 Filed Feb. 6, 1969, Ser. No. 797,092
 Int. Cl. G11b 31/00; H04b 1/32; H03j 3/00
 U.S. Cl. 179-100.11 9 Claims



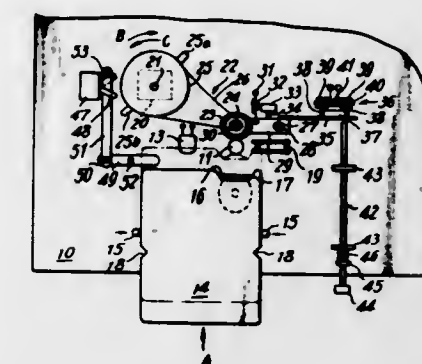
A radio cartridge with a radio receiving circuit for use with a player unit for an endless magnetic tape cartridge. The radio cartridge includes a lever rotatably mounted within a casing, and a pinch roller rotatably mounted on the lever. The pinch roller is moved by the swingable lever to abut against a capstan which is provided within the player unit, and is rotated by the capstan. Rotation of the pinch roller is imparted to an operating shaft of a tuning element in the radio receiving circuit to vary the radio receiving frequency. The lever is swung in such a direction to move the pinch roller away from the capstan when the radio is tuned to the radio wave so that rotation of the operating shaft is terminated and the radio is automatically tuned.

3,612,777

AUTOMATIC TUNING APPARATUS FOR MAGNETIC TAPE PLAYING SYSTEM HAVING A RADIO RECEIVER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
 Filed May 14, 1969, Ser. No. 824,650
 Claims priority, application Japan, May 15, 1968, Sept. 30, 1968, 43/32222; 43/84214
 Int. Cl. G11b 31/00; H04b 1/32; H03j 3/00
 U.S. Cl. 175-100.11 5 Claims

An automatic tuning apparatus in a magnetic tape playing system with radio receiver, the system having a tape driving device including a driving capstan, a tape recording-reproducing circuit including a magnetic head, a radio receiving circuit including a tuning element, such as a variable condenser. The automatic tuning apparatus comprises a transmission device for imparting rotation of a capstan to the operating shaft of the tuning element, a device for latching the transmission device in the position where the latter is coupled to the capstan, and a sensing circuit for producing an electrical signal in response to sensing that the radio

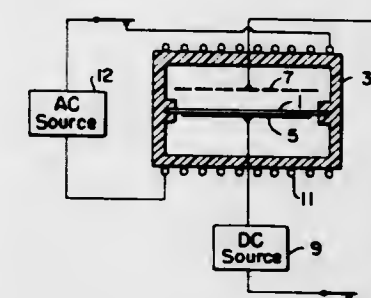


trical signal so that the tuning element is automatically set to the position tuning to the broadcasting radio wave.

3,612,778

ELECTRET ACOUSTIC TRANSDUCER AND METHOD OF MAKING

Preston V. Murphy, Weston, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
 Continuation-in-part of application Ser. No. 638,463, May 15, 1967, now abandoned. This application Apr. 3, 1970, Ser. No. 25,539
 Int. Cl. H04r 23/00
 U.S. Cl. 179-111 20 Claims



A method of making electrets, comprising the steps of (1) internal polarization of a selected thermoplastic using an ionized gas, to contact one surface and serve as one electrode while a metal film serves as a second electrode, and applying a constant electric bias while the material is heated to a softened condition and then gradually cooled, and (2) by a secondary process, applying an electrostatic charge to the exposed dielectric surface of the electret.

An electroacoustic transducer is described in which at least one of the electrodes is fixed to an electret, the electret electrode combination serving either as the diaphragm or the backplate of the transducer. The diaphragm is impermeable and the backplate is perforated. An elevated spacer on the backplate contacts the diaphragm at regular intervals to prevent sticking and to control the acoustic response and in such a way as to form a multitude of similar individual transducer cells in parallel.

3,612,779

TELEPHONE REST

Bernice Frankowski, 1939 Lucina Ave., Pittsburgh, Pa.
 Filed July 29, 1969, Ser. No. 845,777
 Int. Cl. H04m 1/05 8 Claims

A one-piece rest for a telephone handset primarily but not necessarily designed and uniquely adapted for use by a bedridden patient who is either unable or not permitted to use her hands and arms. It comprises a foam rubber or an

equivalent blocklike pad whose planar bottom side has a pair of depending shoulder straddling legs or brackets and whose



generally planar top surface has a molded recess for reception and properly poised retention of the ready-to-use handset.

3,612,780 ACTIVE FOUR-PORT

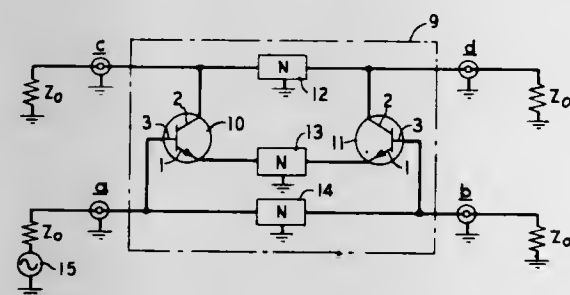
Henry R. Beurrier, Chester Township, Morris County, and Harold Seidel, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 8, 1969, Ser. No. 864,695

Int. Cl. H03f 3/62

U.S. Cl. 179-170 T

10 Claims



This application describes an active four-port having directional transmission properties. The four-port comprises two active members whose respective emitting, control and collecting electrodes are connected by means of separate networks characterized in that the symmetric mode transfer gain and the antisymmetric mode transfer gain, as measured between the control and collecting electrodes, are equal.

3,612,781 SIMULTANEOUS BIDIRECTIONAL TRANSMISSION SYSTEM

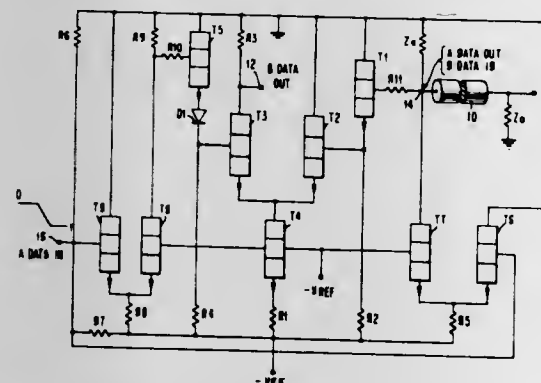
Donald J. Da Costa, Wappingers Falls, N.Y.; Robert Y. Noguchi, Framingham, Mass., and Leonard F. Winter, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 24, 1969, Ser. No. 844,528

Int. Cl. H04m 1/58

U.S. Cl. 179-170 NC

2 Claims



This specification describes a circuit which permits the simultaneous transmission of data in two directions on a

common transmission line without the use of frequency or time discrimination. The circuit includes at each location a differential amplifier with two inputs, one input receives data to be transmitted onto the line from the particular location and the other input receives both the data being transmitted onto the line from the location and the data being received on the line at the location. The two inputs are isolated from each other so that the output of the differential amplifier which goes to the location receiver is a function only of the data received on the line at the location.

3,612,782 METHOD AND APPARATUS FOR DETECTING THE LOCATION OF A FAULT BETWEEN TWO REPEATERS OF A ONE-WAY REPEATERED TRANSMISSION LINE

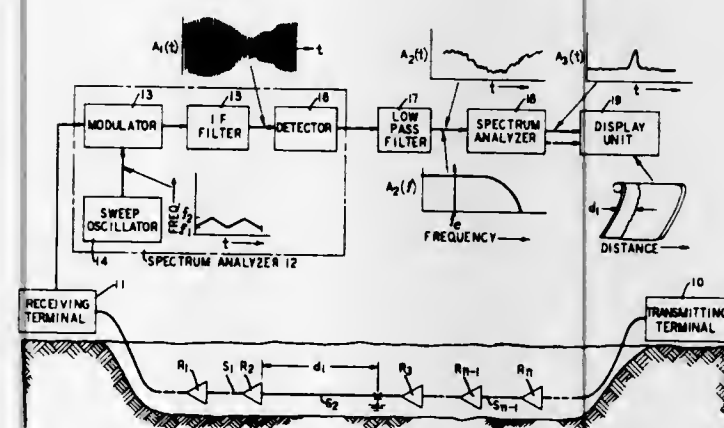
George Wilfred Gilbert, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 2, 1970, Ser. No. 15,519

Int. Cl. H04b 3/46

U.S. Cl. 179-175.3

12 Claims



Noise generated at the input of a one-way repeater is reflected by a fault in a line segment connected to the input terminals of that repeater. Double spectrum analysis of the repeater output (which is part of the output of a receiving station when the repeater and line segment are a part of a one-way repeatered transmission line) recovers information relating to the distance of the fault from the repeater.

3,612,783 FOAM DIAPHRAGM FOR LOUDSPEAKER

Kuno Schneider, Vienna, Austria, assignor to U. S. Phillips Corporation, New York, N.Y.

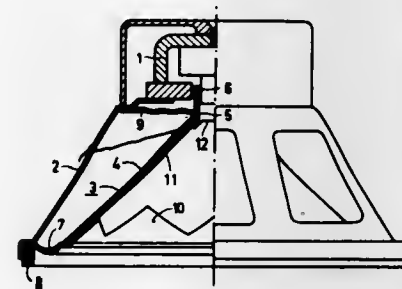
Filed July 1, 1968, Ser. No. 741,411

Claims priority, application Austria, July 5, 1967, A 6244/67

Int. Cl. H04r 7/06

U.S. Cl. 179-181 F

5 Claims



An acoustic converter formed as a foam membrane with its neck, cone, centering ring, and peripheral zone sectors made of different foam constituents with different mechanical and acoustical properties.

3,612,784 MULTIPLE CIRCUIT CONTROL SWITCH WITH IMPROVED PIVOTABLE OPERATING MEANS

Edward Cryer, Higham, near Burnley, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

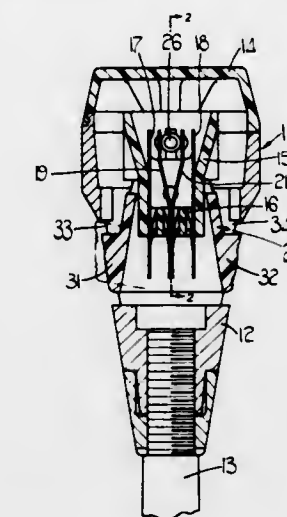
Filed Nov. 5, 1969, Ser. No. 874,254

Claims priority, application Great Britain, Nov. 18, 1968, 54549

Int. Cl. H01h 9/00, 19/00

U.S. Cl. 200-1 TK

6 Claims



An electrical switch includes a body having a hollow portion closed at one end by a cover and an operating member mounted within the body for pivotal movement relative to the body. The switch further includes two sets of electrical contacts within the body, the contacts being operable in response to pivotal movement of the operating member in opposite directions respectively from an intermediate position. The operating member has a pair of oppositely directed fingers, the fingers extending within respective apertures in the hollow portion of the body.

3,612,785 ELECTRICAL SWITCHES WITH ACTUATING AND LOCATING PARTS MOVABLE INDEPENDENTLY OR CONCURRENTLY

John Granville Baldwin, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

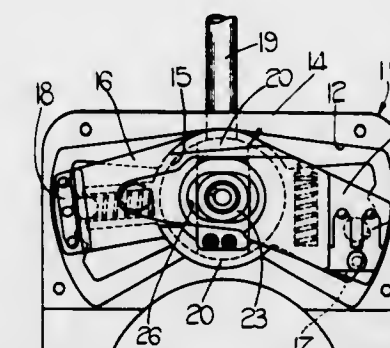
Filed Dec. 3, 1969, Ser. No. 881,940

Claims priority, application Great Britain, Dec. 6, 1968, 58157/68

Int. Cl. H01h 25/06

U.S. Cl. 200-4

1 Claim



In an electrical switch an operating member is coupled to an operating lever and is movable by the operating lever from an inoperative position to at least one operative position in which a circuit between a pair of terminals on the switch is completed. The operating lever is also movable in a different plane against the action of resilient means, from an inoperative position to a position it causes the same circuit to be completed. This is accomplished by using an operating member in two parts, one of which carries the switch contacts and the other of which locates relative to the switch housing, so that the part of the contact member carrying the contacts can be moved independently of the other part.

3,612,786 LOAD TAP CHANGING APPARATUS

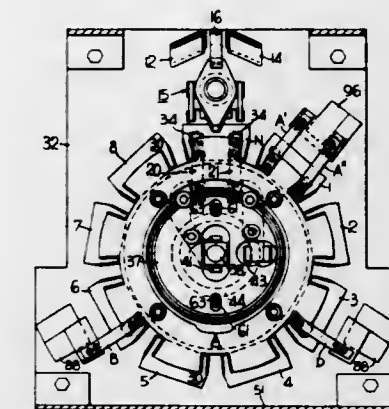
Carl G. Whitman, Mukwonago, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 9, 1970, Ser. No. 87,752

Int. Cl. H01h 21/78; G05f 1/20

U.S. Cl. 200-11 TC

23 Claims



The rotatable contact carrier of a tap changer dial switch carries both tap changer movable contacts and an odd-even switch conductive plate having a plurality of arcuately spaced radial projections which engage first and second finger contacts to form first and second normally closed pairs of contacts connected in series with the tap changer first and second movable contacts respectively. Each time the contact carrier is rotated to accomplish a tap change, one contact finger falls between adjacent radial projections on the conductive switchplate to open the pair of contacts in series with the corresponding movable tap changer contact before the movable tap changer contact disengages a stationary tap changer contact and engages a succeeding radial projection to reclose the pair of contacts after the movable tap changer contact engages the succeeding stationary tap changer contact.

3,612,787 SAFETY POWER SWITCH LOCKING DEVICE

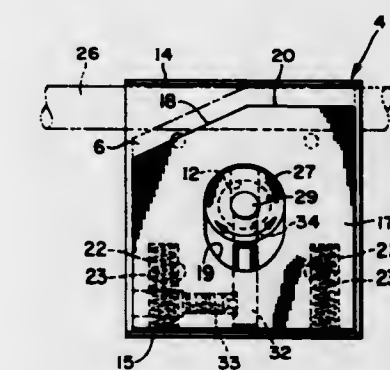
David F. Hlavsa, 17868 Ash Drive, Strongsville, Ohio, and Dennis M. Kedziora, 7382 Meadow Lane, Seven Hills, Ohio

Filed Aug. 21, 1969, Ser. No. 851,924

Int. Cl. H01h 9/28

U.S. Cl. 200-44

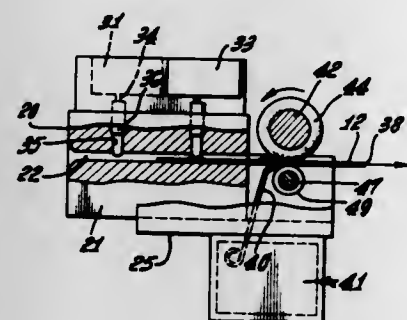
2 Claims



A safety power switch locking device for adjustable power machinery utilizing a tool for making such adjustments, such as power machinery having manually operated chucks and wrenches for manually operating such chucks; the device comprises of a housing for mounting over the power switch of the power machine, an elongated tumbler or other actuating lever for such switch extending into the housing together with a keyed spring-biased block or the like in said housing, said block biased toward a lock position, such lock position characterized in that the key portion of said block extends into a key receiving aperture in the power switch tumbler when in the power-off position and prevents movement of the tumbler to its power-on position, the keyed block movable to an unlock position in response to insertion of the chuck wrench into the housing through an aperture specially designed to accommodate the chuck wrench.

3,612,788
CARD ACTUATED SWITCH COMBINATION
 Clarence L. Ellefson, Burbank, Calif., assignor to Park-O-Matic Mfg., Inc., Burbank, Calif.
 Filed Dec. 3, 1969, Ser. No. 881,827
 Int. Cl. H01h 43/08
 U.S. Cl. 200—46

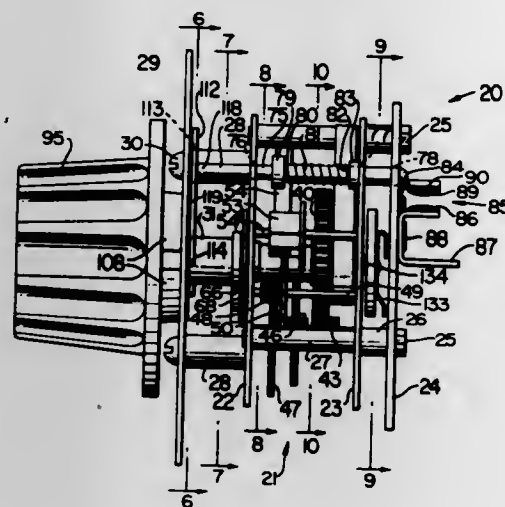
7 Claims



A card initiated actuator comprising a combination of switches preset at either closed or open position for causing operation of a selected actuator when switch positions are reversed by projections on a card acting on respective moving pin tumblers. A switch arm at the exit end of a card slot is tripped by pushing a card against it thereby to start an electric motor which rotates a pair of rollers between which the card is thereby drawn. A second pair of rollers receive the card from the first pair of rollers and mutilate it so that it cannot again be used, before passing it to a collecting box.

3,612,789
MANUAL CONTROL DEVICE FOR SWITCHES AND TIMERS
 Edgar E. Marquis, Newtown, and Emil Niemand, Waterbury, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.
 Filed Feb. 24, 1969, Ser. No. 801,559
 Int. Cl. H01h 3/00
 U.S. Cl. 200—17 R

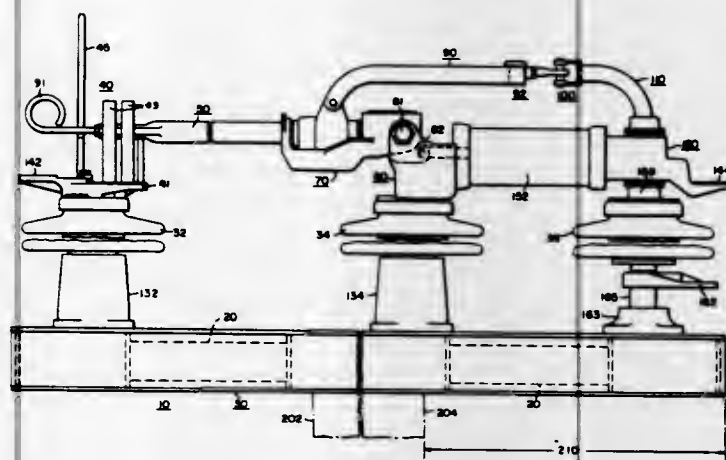
10 Claims



A control device for actuating an actuator for a predetermined period of time by the turning of a control knob to a selected time period and, thereafter, initiating the running of the time period by depressing a pushbutton member, or for providing a continuous actuation of the actuator by setting the control knob in a continuous on manual position thereof, or for providing momentary manual actuation of the actuator by manually depressing the pushbutton member when the control knob is set in its off position, the control device having a latch member which in one position thereof latches the timer motor from operating and in another position thereof unlatches the timer motor while latching a plunger operator for the actuator in its actuating position in both the time-operated condition of the control device and the continuous on condition thereof.

3,612,790
HIGH-VOLTAGE ELECTRIC SWITCH HAVING IMPROVED SUPPORTING BASE
 Edmund W. Kuhn, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Dec. 23, 1969, Ser. No. 887,498
 Int. Cl. H01h 31/00
 U.S. Cl. 200—48

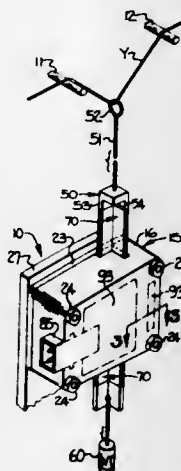
8 Claims



A high-voltage electric switch comprising a plurality of spaced insulator stacks having a switch blade movably supported thereon and a contact jaw supported on one of the other insulator stacks and disposed in the path of movement of the switch blade. The insulator stacks are mounted on a common supporting base which includes a pair of generally parallel channel members and a pair of reinforcing members disposed between said channel members and spaced from the ends of said channel members.

3,612,791
YARN TENSION AND BREAK DETECTOR APPARATUS
 William D. Porter, and Bert B. Morgan, both of Asheville, N.C., assignors to Northrop Carolina, Inc., Asheville, N.C.
 Filed Jan. 13, 1970, Ser. No. 2,456
 Int. Cl. B65h 25/14
 U.S. Cl. 200—61.18

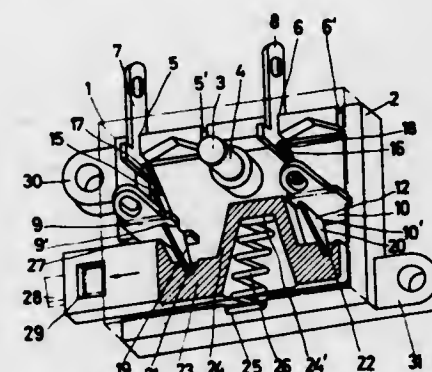
14 Claims



An apparatus for detecting variations in tension and occurrences of breaks in a yarn traveling along a predetermined path including magnetically actuatable switch means having an open position and a closed position and being biased toward an open position and magnet means for magnetically influencing and normally maintaining the switch means in a closed position against its bias. Magnetic shunt means is carried by a yarn engaging means which moves under the influence of the yarn upon variations in tension and occurrences of a break in the yarn to move the shunt means into a position for shunting the influence of the magnet means on the switch means so that the switch means will shift under its bias to an open position.

3,612,792
DOUBLE-POLE SLIDE SWITCH
 Rudolf Hinkelmann, Bad Neustadt, Germany, assignor to PREH Electro-Feldmechanische Werke, Jakob Preh Nachf., Bad Neustadt/Seale, Germany
 Filed Jan. 27, 1970, Ser. No. 6,149
 Claims priority, application Germany, Feb. 28, 1969, P 19 10 165.6
 Int. Cl. H01h 13/28
 U.S. Cl. 200—67 A

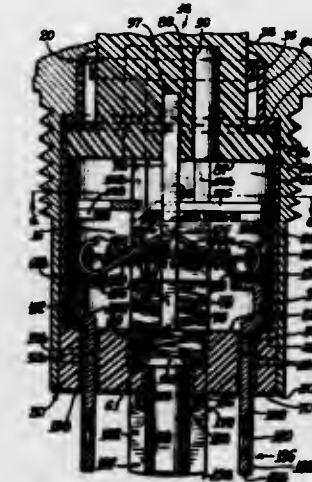
7 Claims



Double-pole slide switch of the type having a switch slide, a housing and pivotally supported contact elements which are snap-action-fashion reversible by operation of the switch slide, said switch having double-armed contact elements pivotally supported in stationary connecting elements, a first arm of each contact element cooperating with stationary counter-contacts and a second arm of each contact element engaging a recess of the switch slide, there being provided a compression spring between a pot-shaped middle portion of the slide and a stationary part of the switch housing, said spring constituting a power storage for the snap-action operation of a switch.

3,612,793
ELECTRICAL SWITCH COMPONENTS AND SWITCHES FORMED THEREBY
 John O. Roeser, Arlington Heights, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.
 Filed Nov. 25, 1968, Ser. No. 778,626
 Int. Cl. H01h 13/28
 U.S. Cl. 200—67 B

20 Claims

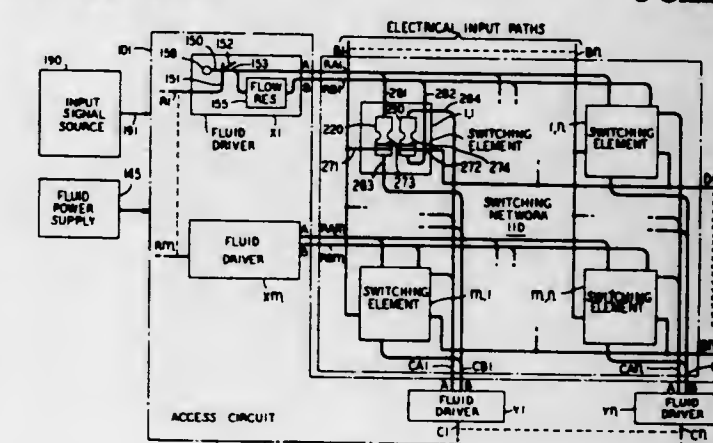


This invention relates to electrical switch components for snap action mechanisms particularly of the butterfly type and utilizes a second class lever system wherein the tension spring is attached outboard of the contact portions to an integral shear formed attachment strut to afford large movement differential, high leverage contact forces and stability. The integral attachment strut means for the one piece switchblade and contact member is reversely curved for mechanical wear properties in attachment of the end of the tension spring and is proportioned and located for maintenance of dimensional stability to the curved spaced contact portions. There is use

of the space intermediate the contacts for location and attachment of the tension member, the contacts being spaced portions of the end of the switchblade which is of a generally cylindrical form. The switches also have a "rolling sleeve" sealing means, dual use of the terminal slot for mounting and as a rotation preventing keyway and also a common terminal means is resiliently mounted in situ in a manner to form an open sided solder pot. The two pole four circuit version of the mechanism has an energy storing resilient donut mechanism for assuring simultaneity of both sets of bridging contacts.

3,612,794
FLUID CONTROLLED SWITCHING NETWORK
 Harry Winter, Granville, Ohio, assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.
 Filed Dec. 22, 1969, Ser. No. 887,106
 Int. Cl. H01h 29/28
 U.S. Cl. 200—81.6

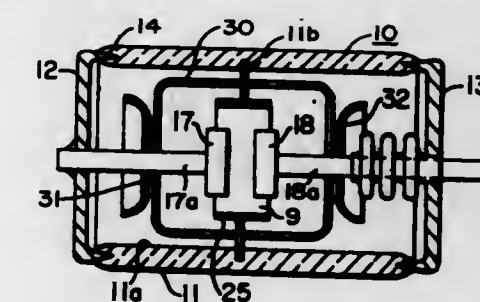
8 Claims



A coordinate array of fluid-pressure-operated, metallic-contact switching devices are interconnected to provide destructive mark switching operation. Each crosspoint of the array includes two such switching devices with the contacts thereof electrically connected in series. Two sets of row and column fluid channels are arranged such that a fluid pulse on a row or column channel of one set releases at least one switching device at each crosspoint connected to the row or column. Coincident fluid pulses on a row channel and a column channel of the other set operates both switching devices at a selected crosspoint. Destructive mark operation is achieved by timing or pressure differential between the fluid pulses on the two sets of row and column channels.

3,612,795
SHIELDING ARRANGEMENTS FOR VACUUM-TYPE CIRCUIT INTERRUPTERS OF THE TWO-CONTACT TYPE
 Werner S. Emmerich, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Jan. 9, 1969, Ser. No. 789,981
 Int. Cl. H01h 33/66
 U.S. Cl. 200—144 B

7 Claims

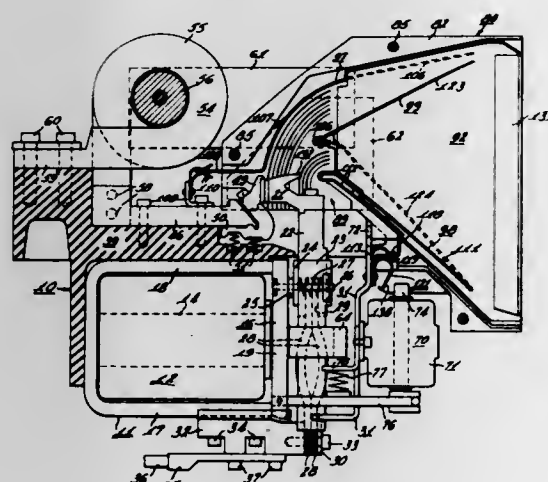


A vacuum-type circuit interrupter of the two-contact type is provided with a short shield for preventing the deposition

of metallic vapor from the arcing region upon the inner surfaces of the outer insulating casing of the vacuum-type circuit interrupter. For certain applications, the shield is made of considerable thickness to enable it to withstand the heavy arcing, which may occur thereat. In addition, for other applications, the short shield may be formed of an electrode-type material so that arcing may occur without damage to the shield.

3,612,796
INTERLOCK BETWEEN CONTACTOR AND ARC CHUTE
Gustav W. Doos, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 6, 1969, Ser. No. 847,877
Int. Cl. H01h 33/46
U.S. Cl. 200-144

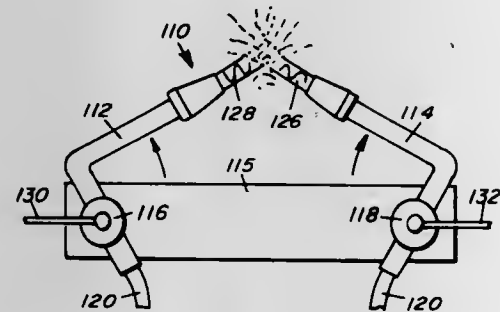
1 Claim



A circuit maker and breaker has a removable arc chute for interrupting an arc formed between the movable and stationary contacts and interlock means to prevent operation of the contacts when the arc chute is removed to thereby prevent damage to the contacts.

3,612,797
HIGH-VOLTAGE FLUIDIC CIRCUIT INTERRUPTER
Wallace L. Boling, deceased, late of Vancouver, Wash. (by Dorothea M. Boling, legal representative), and Allen L. Kinyon, Vancouver, Wash., assignors to The United States of America as represented by the Secretary of the Interior
Filed Sept. 22, 1969, Ser. No. 862,999
Int. Cl. H01h 33/75
U.S. Cl. 200-144 AP

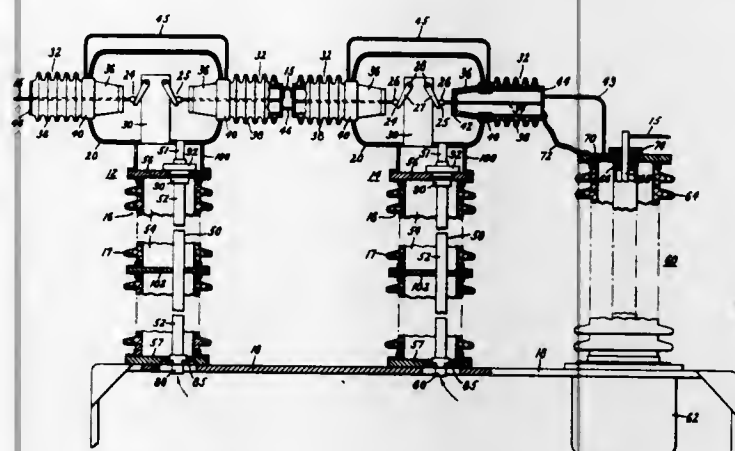
7 Claims



A semiconducting fluid stream controls arcing between the contacts of a high-voltage circuit interrupter. The fluid stream initially establishes a low-resistance conducting path between the interrupter contacts as they separate when the interrupter is activated. As the spacing between the contacts increases the resistance of the fluid stream also increases. The increased resistance reduces the load current to a low level at which circuit interruption is accomplished without significant arcing. The semiconducting fluid also extinguishes any arc which forms as the interrupter contacts separate.

3,612,798
AIRBLAST CIRCUIT BREAKER WITH IMPROVED SEALING MEANS
Robert S. Barton, Bryn Mawr, and John A. Oppel, Aldan, both of Pa., assignors to General Electric Company
Filed Mar. 2, 1970, Ser. No. 15,631
Int. Cl. H01h 33/82
U.S. Cl. 200-148 R

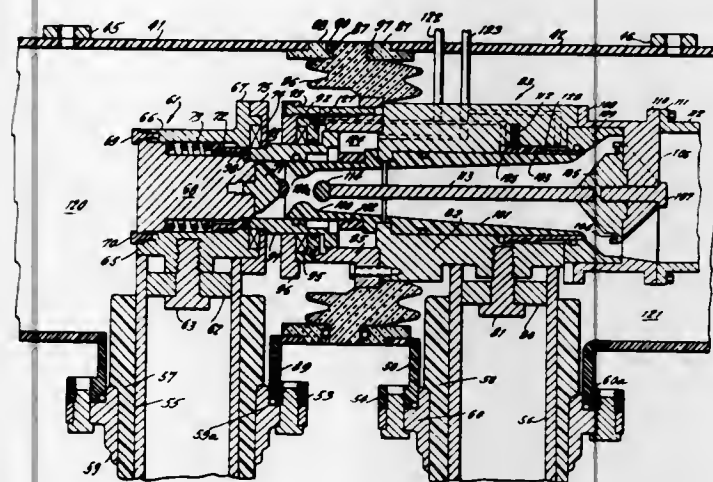
5 Claims



Discloses an airblast circuit breaker comprising interrupter tanks at high voltage filled with high-pressure air and provided with terminal bushings filled with a dielectric gas other than air. The tanks are mounted on hollow insulating columns through which air lines of insulating material extend to supply high-pressure air to the tanks. A current transformer adjacent the columns has an insulating housing that is pneumatically interconnected with the bushings in the high-voltage region and is filled with dielectric gas of the same type as the bushings to serve as a reservoir for supplying the bushings with dielectric gas. Also discloses special means for mounting and sealing the high-pressure air line with respect to its column and tank.

3,612,799
GAS BLAST CIRCUIT INTERRUPTER USING MAIN MOVABLE CONTACT AS BLAST VALVE
William A. Carter, Devon, Pa., and Hansruedi Aumayer, Sahr, Switzerland, assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed May 8, 1969, Ser. No. 823,116
Int. Cl. H01h 33/86, 33/70
U.S. Cl. 200-148 R

3 Claims

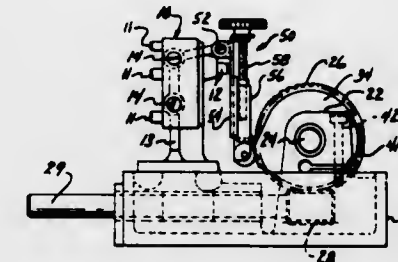


A high-speed gas blast circuit breaker in which SF₆ is used as the mechanical drive for the movable contact and as the dielectric medium for maintaining a high dielectric between the open contacts and for extinguishing arcs. Two or three movable elements are used; an annular movable contact and a cutoff valve and, in some cases, a follower contact. The two elements may be incorporated into one movable body. Each of the movable elements have radially extending surfaces defining pistons so that they may be moved by control air

pressure. The movable contact serves as an annular seal in a barrier which separates a high-pressure region from a low-pressure region when the contact is closed. The movable contact acts in the manner of a cork so that, when the seal is broken, the contact is accelerated toward its open position, and fluid from the high-pressure side flows through the annular gap formed and through the arc in its passage to the low-pressure side. The apparatus is mounted in a suitable switch gear enclosure.

3,612,800
SWITCH WITH ADJUSTABLE SWITCH ACTUATOR
Robert E. Slope, 4615 Dean St., Woodstock, Ill.
Filed Apr. 24, 1970, Ser. No. 31,504
Int. Cl. H01h 3/00
U.S. Cl. 200-153 T

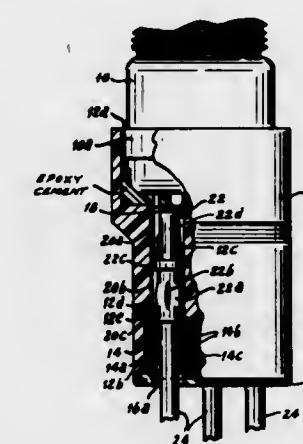
15 Claims



A plurality of rotary cams are mounted on a rotatable shaft. The position of each cam relative to the shaft is selectively adjustable to the nearest 30° by means of a positioning pin engageable with any of 12 openings in the cam. A plurality of switches are mounted on a frame structure in spaced relation to their respective cams. A three-piece switch actuator is pivotally mounted on the frame adjacent the switch. A screw element of the actuator selectively adjusts a slidable element in a direction generally tangential to the cam to provide selective adjustment of actuation of the switch throughout about 30°. The mechanism is, therefore, completely adjustable throughout 360°.

3,612,801
CONTACT PIN WIRE TERMINATION ADAPTOR ASSEMBLY FOR ELECTRIC SWITCHES
James L. Elliott, Santa Ana, Calif., and Harold W. Huitts, New Berlin, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed June 23, 1970, Ser. No. 49,121
Int. Cl. H01h 9/04
U.S. Cl. 200-168 G

4 Claims

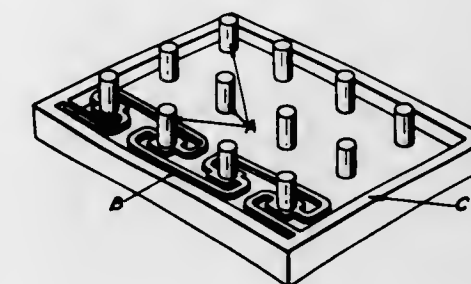


A toggle switch and assembly for effecting connection of wire leads with contact pin terminations to exterior switch terminals is disclosed. A portion of the switch housing adjacent the terminals is mounted and sealed in one end of an insulating base with the terminals engaging separate connector receptacles within individual bores with the base. The wire contact pins are held in locked electrical engagement with respective switch terminals and connector receptacles within the base, and the wires connected thereto are sealed

against moisture by a grommet member sealed within the opposite end of the base. The connector receptacles are of a design accepting several different sizes and styles of standard contact pin wire terminations.

3,612,802
PUSHBUTTON ARRAY
Anthony Crisp Beadle, New Barnet, and George Owen Foot, Hertford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,320
Claims priority, application Great Britain, Sept. 23, 1968, 45089/68
Int. Cl. H01h 3/12
U.S. Cl. 200-172 R

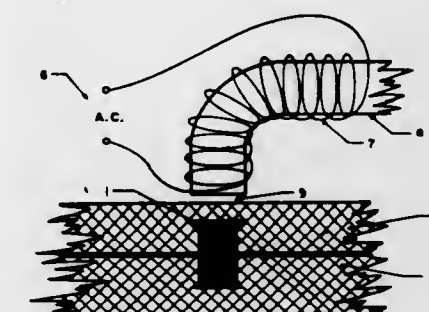
4 Claims



An array of pushbuttons is formed as a one-piece molding with interconnecting flexible strips which allow for individual movement of each pushbutton. This process results in pushbutton switch assemblies which are economical and which may be placed in subscriber telephone sets without danger of misplacement of individual pushbuttons.

3,612,803
FASTENING DEVICE
Ruth Elizabeth Barry Klaas, 10 Oriole Drive, Wyomissing, Pa.
Continuation-in-part of application Ser. No. 454,299, May 10, 1965, now abandoned. This application Feb. 29, 1968, Ser. No. 709,493
Int. Cl. H05b 13/02, 9/02
U.S. Cl. 219-10.53

19 Claims



A fastening device is disclosed comprising at least one closed electrically conductive loop at least partially embedded in heat-activatable plastic material, activation of the plastic material being effected at an appropriate time by inducing alternating electrical current, in at least one closed electrically conductive loop in the fastening device, by means of a solenoid coil energized by alternating electrical current. The fastening device optionally may contain a ferromagnetic core enclosed within at least one electrically conductive loop and insulated therefrom, and the heat-activatable plastic material optionally may contain blowing agent. A method of adhering solid objects together by use of a fastening device of this type is also disclosed.

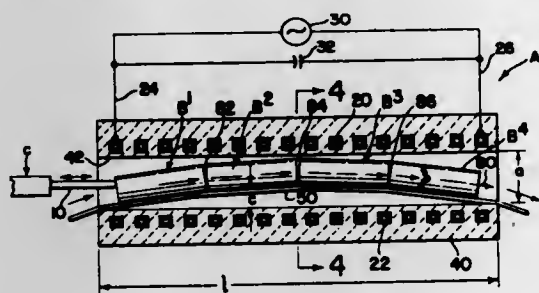
3,612,804 INDUCTION HEATING DEVICE FOR SUCCESSIVE BARLIKE MEMBERS

Norbert R. Balzer, Parma, Ohio, assignor to U.S. Atomic Energy Commission

Filed Dec. 31, 1968, Ser. No. 788,269
Int. Cl. H05b 5/00; H05b 9/02

U.S. Cl. 219-10.69

10 Claims



An improvement in an induction heating apparatus for heating a succession of abutting barlike members which apparatus includes an elongated multiturn induction heating coil with an elongated internal passageway through which the members pass, a power supply means for energizing the coil with an alternating current, and means extending between the entrance and exit of the passageway for guiding members through the passageway on a selected path. The improvement comprises forming the guide means with an elongated element with a contoured portion between the entrance and exit of the passageway which contoured portion creates a gradual offset in a selected transverse direction to the path so that the members do not pass through the coil with their abutting ends in full contact with each other.

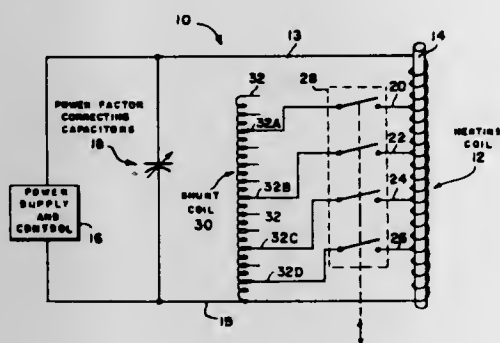
3,612,805 INDUCTIVE HEATING-COOLING APPARATUS AND METHOD

Theodore R. Kennedy, Willingboro, N.J., assignor to Inductotherm Corporation, Rancocas, N.J.

Filed Apr. 27, 1970, Ser. No. 31,919
Int. Cl. H05b 5/00, 9/06

U.S. Cl. 219-10.75

3 Claims



Sections of an induction heating coil are connected in parallel with sections of a shunt coil so that the section impedance of the unit differs. Accordingly, the amount of heat power applied to sections of a metal object by the heating coil is varied according to a predetermined pattern. Electric power applied to the entire shunt coil and heating coil unit is lowered over a period of time to cool the metal object progressively along a geometrical axis.

3,612,806 INDUCTOR FOR INTERNAL HEATING

John C. Lewis, and Wentworth Hamilton, both of Ontario, Canada, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

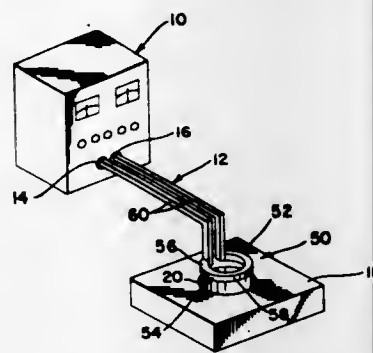
Filed Feb. 26, 1970, Ser. No. 14,544
Int. Cl. H05p 5/00, 9/02

U.S. Cl. 219-10.79

1 Claim

An inductor for internal induction heating wherein the outer working surface only is made of a high electrically con-

ductive material, and the remainder thereof defining a water-cooling passage is made of a less conductive material so that high-frequency electrical current must flow in the working surface which is closely adjacent to the surface to be heated.



A conduit having one side made of copper and all other sides made of plastic is employed so that high-frequency electrical current is concentrated in the copper side which functions as the working surface.

ERRATUM

For Class 219-105 see:
Patent Nos. 3,613,106 and 3,613,107

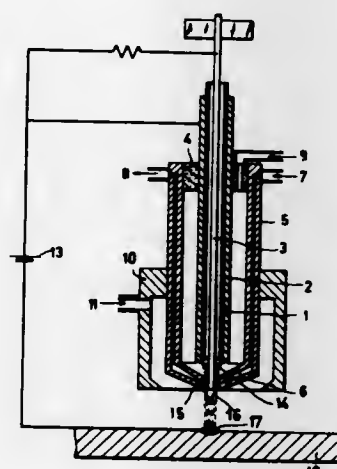
3,612,807 METHOD OF AND DEVICE FOR PLASMA ARC WELDING

Adrianus Christinus Henricus Jozef Liefkens, and Wilhelmus Gerardus Essers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,025
Claims priority, application Netherlands, Jan. 3, 1969, Apr. 4, 1969, 6900167; 6905350
Int. Cl. B23k 9/00

U.S. Cl. 219-121 P

17 Claims



A method and apparatus for plasma arc welding in which an electrically conductive or nonconductive filler wire is fed axially into the plasma arc.

3,612,808 SHIELDING GAS PRESSURE ACTUATED PIPE-WELDING DEVICE

Jerome W. Nelson, and Travis Howell, Jr., both of Houston, Tex., assignors to CRC-Croose International, Inc., Houston, Tex.

Filed June 4, 1969, Ser. No. 830,479
Int. Cl. B23k 9/02

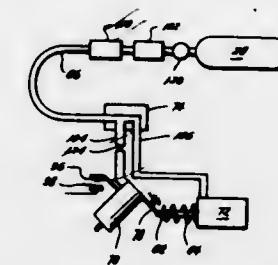
U.S. Cl. 219-60 A

13 Claims

An internal pipe-welding device having a carriage, an internal pipe clamp, a rotating welding nozzle which is pivotally mounted and biased away from its welding position, a pressure responsive means connected to the welding nozzle

and adapted to move the welding nozzle to welding position responsive to the supply of shielding gas through a single service lead supplying the welding potential, the motive power

from the storage tank through a filter back to the work tank or back to the storage tank. The dielectric system also



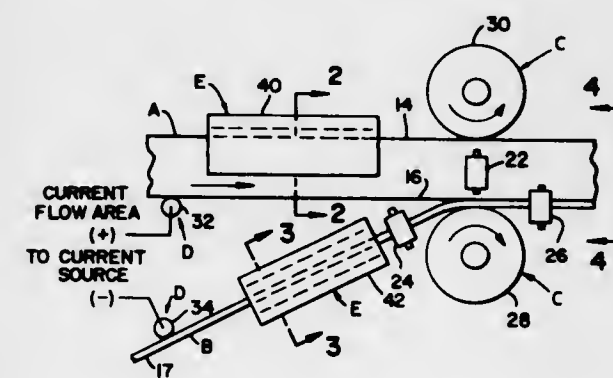
3,612,809 LOCALIZED HEATING WITH CURRENT CONCENTRATED BY EXTERNALLY APPLIED MAGNETIC FIELD

Glenn R. Mohr, P. O. Box 52, Linthicum, Md.

Filed Mar. 5, 1970, Ser. No. 16,874
Int. Cl. B23k 31/06

U.S. Cl. 219-67

9 Claims



Heating of a solid conductor is caused by passing DC or low-frequency AC current through the conductor and restricting the current flow path by an externally applied magnetic field.

3,612,810 MOVABLE DIELECTRIC TANK FOR ELECTROEROSIVE MACHINES

Thomas J. O'Connor, 100 Morgan Road, Ann Arbor, Mich. Continuation-in-part of application Ser. No. 696,195, Jan. 8, 1968, now Patent No. 3,485,991, dated Dec. 23, 1969, which is a continuation-in-part of application Ser. No. 504,971, Oct. 24, 1965, now Patent No. 3,363,083, dated Jan. 9, 1968, which is a continuation-in-part of application Ser. No. 250,321, Jan. 9, 1963, now Patent No. 3,222,494, dated Dec. 7, 1965. This application Dec. 23, 1969, Ser. No. 887,795

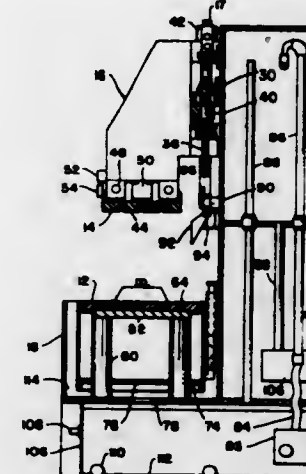
Int. Cl. B23p 1/04, 1/08

U.S. Cl. 219-69 D

8 Claims

A machine tool for electrical machining is disclosed including a ram portion for moving an electrode supported thereby transversely of a workpiece while moving the electrode toward the workpiece. The ram is moved toward the workpiece in the machine tool disclosed by a screw and nut mechanism driven by a rotary hydraulic motor.

The machine tool further includes a stationary table for supporting a workpiece and a movable dielectric work tank having an opening in the bottom thereof operable in conjunction with the table to provide a sealed tank in one position thereof and to permit rapid draining of dielectric through the bottom of the tank on downward movement of the tank relative to the table whereby the workpiece and table are exposed for inspection. A system is also disclosed for supplying clean dielectric to the work tank for pumping dielectric from the work tank to a storage tank and for pumping the dielec-



3,612,811 METHOD OF THE ELECTRIC BUTT WELDING OF WORKPIECES

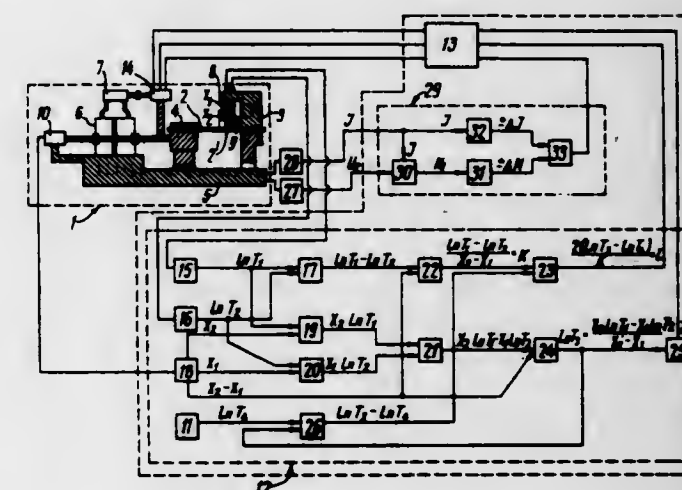
Viktor Senderovich Lifshits, Kavkazsky bulvar, 21, korpus 2, kv. 41, Moscow; Violetta Pavlovna Guseva, 13 Parkovaya, 16, korpus 4, kv. 57, Moscow; Vadim Petrovich Krivonos, ulitsa Repina, 13, kv. 1, Kiev; Nikolai Vasilievich Podols, ulitsa Pushkinskaya, 8, kv. 12, Kiev; Alexandr Semenovich Falkevich, deceased, late of Moscow; Valentina Pavlovna Falkevich, administrator, 5 Parkovaya ulitsa, 52, kv. 31, Moscow (of said Alexandr Semenovich Falkevich, deceased); Sergei Alexandrovich Falkevich, administrator, Golyanovo, korpus 46, kv. 75, Moscow (of said Alexandr Semenovich Falkevich, deceased), and Boris Alexandrovich Falkevich, administrator, 5 Parkovaya ulitsa, 52, kv. 31, Moscow, all of U.S.S.R. (of said Alexandr Semenovich Falkevich, deceased)

Filed Apr. 25, 1969, Ser. No. 821,166

Int. Cl. B23k 11/02

U.S. Cl. 219-100

1 Claim



A method of effecting electrical butt welding of workpieces by continuously flashing the ends of the workpieces to be welded to a temperature within 0.7 to 1.0 of the melting point of the workpiece material and with a variation during the welding process of the flashing rate followed by upsetting; the extremal value of the power evolving in the workpieces to be welded being maintained in the course of the flashing process, whereas upsetting is effected to a value responsive to the distance between sections of the workpieces at a predetermined heating temperature depending on the properties of the workpiece material. An apparatus for carrying into effect the said method comprises a welding machine and a device for controlling the processes of flash-

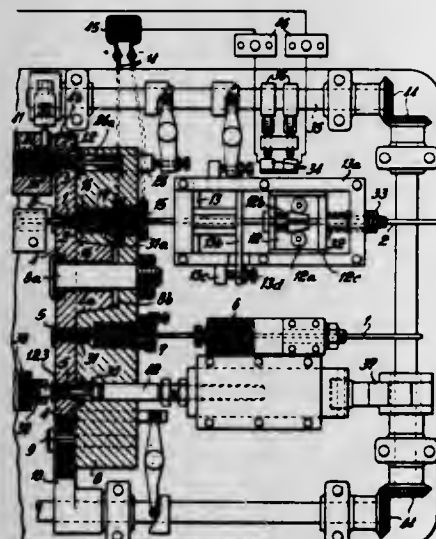
ing and upsetting, provided with two channels for controlling the welding process.

3,612,812 MACHINE FOR PRODUCING RESISTANCE WELDED TRIMETALLIC CONTACTS

Hans Wacker, Heidelberg, and Erwin Wolfinger, Oberreichenbach über Calw, both of Germany, assignors to Firma Kettenfabrik Renz, Wacker & Co., Calmbach, Germany

Filed July 27, 1970, Ser. 58,616
Claims priority, application Germany, July 25, 1969, P 19 37 915.8

Int. Cl. B23k 11/02; B21j 5/08
U.S. Cl. 219-107



A machine for making trimetal contacts having a body of relatively low cost metal, such as copper, and contact surfaces of an expensive metal such as silver, the machine including a plate rotatable in a vertical plane carrying a plurality of matrices spaced equally about its circumference, and means to position each matrix successively to a plurality of work stations, a first work station to receive the end of a copper wire to a predetermined depth in the matrix at that work station, the matrix cooperating with a first stationary guide-forming countershear means through which the copper wire is fed, to shear the end of the copper wire to form the body of a workpiece, and to carry the severed piece to a second work station when the rotatable plate is indexed to the next station where the end of the short workpiece body is contacted by the end of a silver wire in a first welding chamber where an electric welding current is passed through the contacting surfaces to weld the silver wire to the copper workpiece. The silver wire is then advanced until the weld, and a predetermined length of silver wire enters the matrix which cooperates with a second stationary guide-forming countershear means to shear the silver wire adjacent the weld as the matrix is moved to carry the workpiece to the next successive work station where the second end of the copper body of the now bimetal workpiece is contacted by a second silver wire in a welding chamber positioned on the other side of the rotatable plate from said first welding chamber and the silver wire is welded to the copper of the workpiece, the second silver wire is then advanced into the matrix a predetermined distance and the matrix, in cooperation with a third fixed guide, shears the second silver wire as the plate carries the workpiece forward to a final station where the now trimetal workpiece is simultaneously shaped by upsetting, and ejected from the matrix.

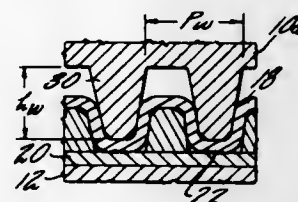
3,612,813 METHOD OF FORMING A LIGHTWEIGHT METAL SANDWICH HAVING A HONEYCOMB CORE

Francis C. Gerath, Canton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 29, 1970, Ser. No. 33,443

Int. Cl. B23k 11/06
U.S. Cl. 219-117 HD
A sheet of honeycomb sandwich structure having flat exterior surfaces and internal cooling passages is constructed

by the electric-resistance welding of outer sheets of flat metal to a center core of corrugated metal. The resistance welds are accomplished using electrically conductive shunt bars



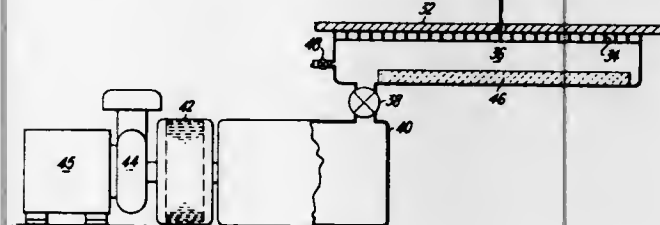
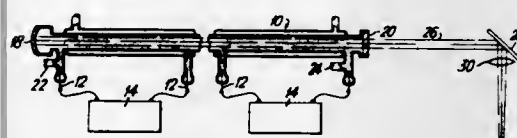
10 Claims which have a contact area proportioned to provide a current density of sufficient intensity to cause a local heating and fusion between the corrugated metal and the flat metal sheet.

3,612,814 CUTTING PROCESSES EMPLOYING A LASER

Peter T. Houldcroft, Royston, England, assignor to National Research Development Corporation, London, England

Filed Jan. 6, 1970, Ser. No. 948
Claims priority, application Great Britain, Jan. 10, 1969, 1578/69

Int. Cl. B23k 9/00
U.S. Cl. 219-121 L



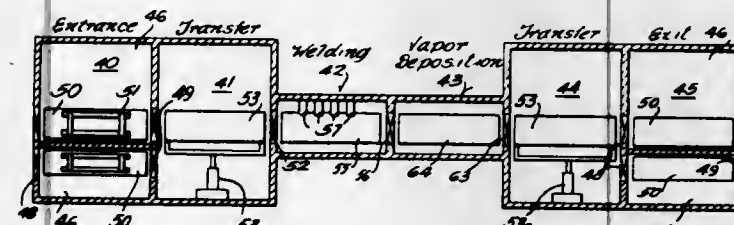
9 Claims A workpiece is cut by causing a focused spot from a laser beam to travel over its surface and a suction chamber is located on the other side of the workpiece with an opening under the cutting location so that air or other gas is drawn through the cut into the suction chamber, taking with it fumes and products of distillation. The opening in the suction chamber may be a grid supporting the workpiece. For metal workpieces a gas having an exothermic reaction with the metal can be drawn through the cut.

3,612,815 ELECTRON BEAM APPARATUS

John F. Hlarichs, Menomonee Falls, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Division of Ser. No. 726,341, May 3, 1968, Pat. No. 3,535,489. Filed Jan. 16, 1970, Ser. No. 3,268

Int. Cl. B23k 15/00
U.S. Cl. 219-121 EB



2 Claims The side member and crossmember of a vehicle frame are mounted in a fixture within a sealed welding chamber at a welding station and a plurality of electron welding guns are arranged along a weld line for simultaneous welding of the several components of the frame with the beams of the guns overlapping to provide an uninterrupted continuous weld. A

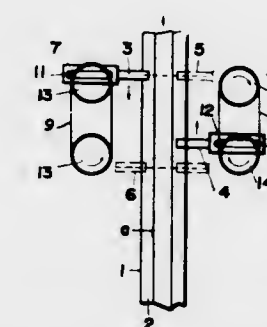
loading station and an unloading station is mounted to the opposite sides of the welding station and connected thereto by a vacuum lock transfer station. The welded frame is coated with a protective metal such as aluminum or zinc by passing the welded frame through a metal vapor-depositing chamber disposed immediately in-line following the welding chamber.

3,612,816 TACK WELDING OF SECTIONS

Masaaki Hano, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1970, Ser. No. 61,741
Claims priority, application Japan, Aug. 7, 1969, 44/62040
Int. Cl. B23k 9/12

U.S. Cl. 219-124



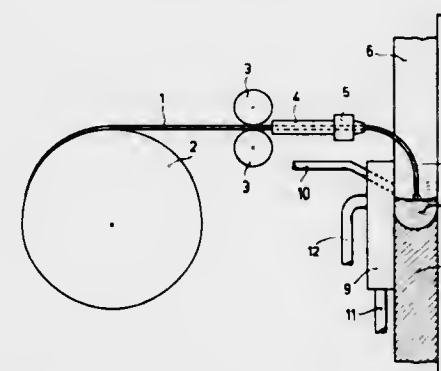
9 Claims A method and apparatus for tack-welding sections in the form of plates where at least two plates are arranged with the edge of one plate engaging a face of the other to define therewith a pair of corners situated on opposite sides of the edge of the one plate. The plates are continuously fed in the direction of the latter edge while a pair of welding units are reciprocated along paths parallel to this edge. During the time that each welding unit moves in the same direction as the plates it is rendered operable to deposit a tack weld. The structure which reciprocates the pair of welding units maintains them at all times moving in opposed directions so that while one welding unit moves in the same direction as the plates from a given starting location to a given end location the other welding unit is returning from its end location back to its starting location. The speed with which each welding means is moved at least in the same direction as the plates is different from the speed of movement of the plates.

3,612,817 VERTICAL GAP ARC WELDING

Gerrit Willem Tichelaar; Johannes Gerardus Verhagen, and Gerardus Antonius Maria Willems, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,537
Claims priority, application Netherlands, Nov. 16, 1968, 6816388

Int. Cl. B23k 9/12
U.S. Cl. 219-126



4 Claims A method and a device for vertical electric arc welding, particularly in a narrow gap. The contact member is located outside the gap, and the welding wire is curved from its

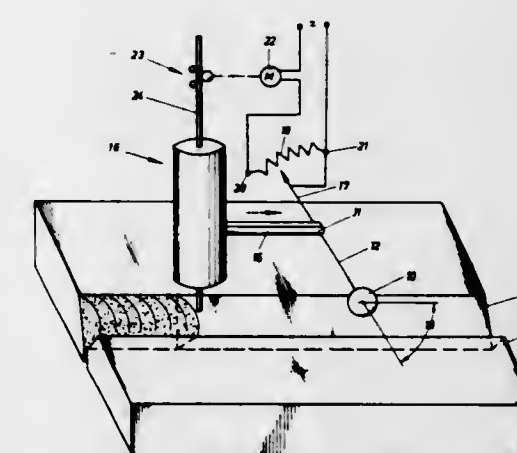
source to be directed substantially vertically into the molten pool.

3,612,818 WELDING CONTROL ARRANGEMENT

Richard Bechtle, Niederhochstadt, Taunus; Erich Bragard, Kelkheim, Taunus, and Gunther Hannappel, Frankfurt am Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed June 11, 1970, Ser. No. 45,323
Claims priority, application Germany, June 13, 1969, P 19 30 154.3

Int. Cl. B23k 9/12
U.S. Cl. 219-130



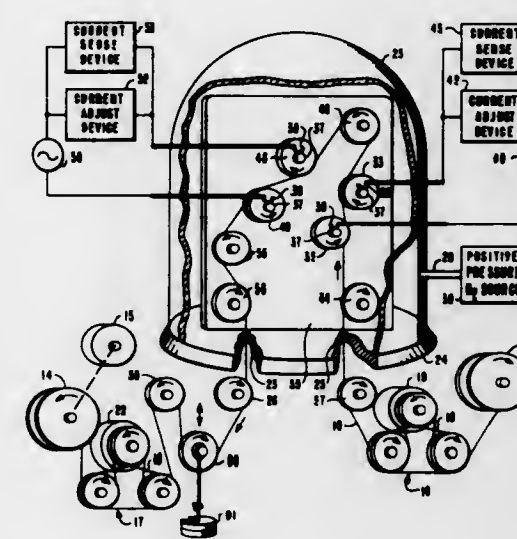
10 Claims An apparatus for controlling the application of weld metal in electric calarc welding includes a mechanical scanning device upstream from the welding torch. The scanning device penetrates into the welding groove and measures at least one physical dimension thereof which is converted into signals for controlling the welding material feed.

3,612,819 APPARATUS FOR PREPARING HIGH MODULUS CARBONACEOUS MATERIALS

David W. Gibson, Long Beach, Calif., assignor to HITCO Division of Ser. No. 617,187, Feb. 20, 1967, abandoned.

Filed Aug. 14, 1969, Ser. No. 866,781
No. 866,781

Int. Cl. C21d 9/62; H05b 1/00
U.S. Cl. 219-155



10 Claims Apparatus for strengthening carbonaceous materials comprises at least one pair of electrically conductive electrode rollers, material supply and takeup means and electrode power supply means. The apparatus may also include a pair of preheat rollers and variable speed control means coupled to material supply and takeup means.

3,612,820 HEAT-FIXING APPARATUS FOR LENGTHY FUSIBLE MATERIAL

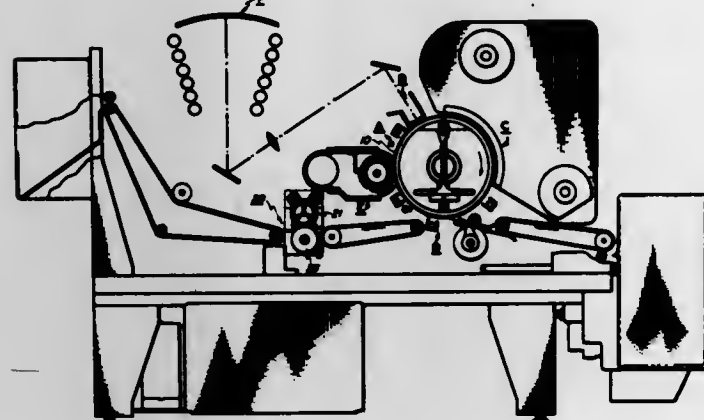
Frazier D. Punnett, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,423

Int. Cl. H05b 1/00

U.S. Cl. 219-216

1 Claim



A fixing system for fixing fusible material such as electroscopic particles upon wide support material embodying the principle of low-thermal losses for conserving heat. The system includes two rollers in pressure contact between which the support material is transported. One of the rollers is heated from an interior lamp which remains fixed so that portions of the roller along its entire length are heated continuously and conducted to the side of the support material carrying the particles. The heated roller is driven externally by a plurality of roller members positioned at the ends thereof to enable heat losses to support fixtures to be minimized.

3,612,821 DOOR FRAME CONSTRUCTION

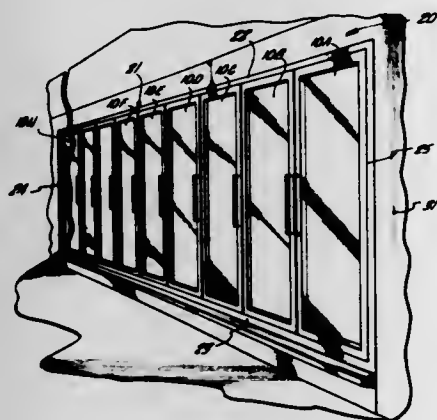
Michael E. Stromquist, Studio City, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Filed Nov. 16, 1970, Ser. No. 89,880

Int. Cl. H05b 1/00

U.S. Cl. 219-218

9 Claims



A door mounting frame structure for a refrigerated cabinet. Each elongated frame member has a longitudinal groove for receipt of a heater wire. A cover plate covers the heater wire groove and provides a surface for contact with a door-mounted gasket. One longitudinal edge of the cover plate is held in place by a longitudinal cover-plate-receiving groove formed in the frame member. The other longitudinal cover plate edge is secured by the covering head of a retainer strip. The strip has a foot portion adapted to be removably inserted in a longitudinal groove formed in the frame member.

3,612,822 EVAPORATION FILAMENT ASSEMBLY

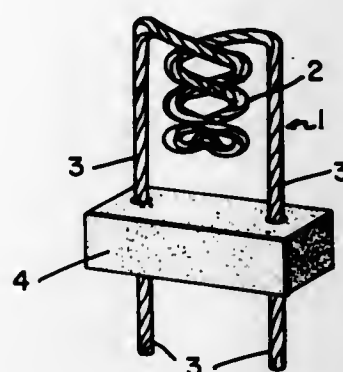
Ronald E. Edin, Stratham, N.H., assignor to Sylvania Electric Products Inc.

Filed June 25, 1969, Ser. No. 836,289

Int. Cl. C23c 13/00

U.S. Cl. 219-275

1 Claim



An evaporation filament for the vapor deposition of metallic films consists of a stabilized tungsten coil having parallel legs. A ceramic support is attached to the legs and prevents distortion of the coil during operation thereof.

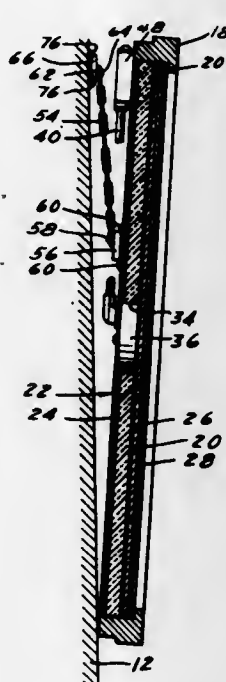
3,612,823 COMBINED DECORATIVE PICTURE AND ELECTRIC ROOM-HEATING DEVICE

Merle E. Ellison, 10337 Beach St., Belflower, Calif.
Continuation-in-part of application Ser. No. 640,874, May 24, 1967, now abandoned. This application Jan. 8, 1970, Ser. No. 1,466

Int. Cl. H05b 3/30

U.S. Cl. 219-345

2 Claims



A portable device that presents the appearance of a decorative picture which may be mounted at a desired position on the wall of a room, and when so positioned may be electrically energized to warm objects in the room by radiated heat, as well as to cause the warm air in the room to circulate slowly, with the cooler portion of the circulating air being reheated as it rises in the room adjacent the device. There are hanger elements that keep the device from tilting sidewise. A temperature control is incorporated and there is an indicator light to show when the device is operating.

3,612,824 PORTABLE HEAT GUN

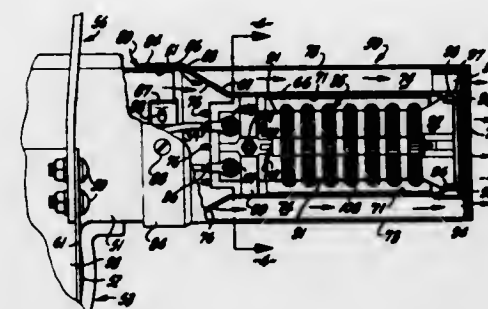
Robert C. Berryman, 785 Lyyski Street, Sparks, Nev., and Robert R. Townsend, 31 Smithridge Park, Reno, Nev.

Filed Dec. 3, 1969, Ser. No. 881,680

Int. Cl. H05b 1/00; F24h 3/04

U.S. Cl. 219-370

3 Claims



The forward end of a tubular air discharge spout of a portable air blower is encompassed by a tubular collar supported in spaced relation thereto to form an annular channel for flow of ambient cooling air between the collar and spout. A heater tube having a flared aftersection is positioned in registry with the discharge spout to receive air from the channel and spout. The flared end is secured to the forward end of the collar and has a plurality of apertures through which a portion of the air discharges into an annular air passage formed by a tubular shield encompassing the heater tube in concentric spaced relation. The remainder of the air passes through the heater tube and is heated by an electric heater in the tube. The unheated air energizing from the forward end of the annular air passage encompasses the hot air outflow from the heater tube. The volume and temperature of the air discharge is regulated by an adjustable damper on the blower inlet. A switch enables the user to deenergize the heater, thereby affording a controllable airflow at ambient temperature.

3,612,825 WINDOWED HIGH-TEMPERATURE OVENS

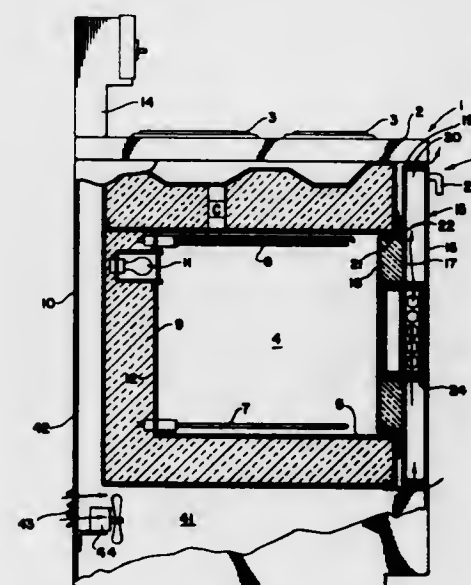
William Byer Chase, Northville; Joseph E. Jendrisak, Northville, and Harold E. McKelvey, Plymouth, all of Mich., assignors to Shatterproof Glass Corporation, Detroit, Mich.

Filed Aug. 8, 1969, Ser. No. 848,547

Int. Cl. F27d 11/02; A21b 1/22

U.S. Cl. 219-405

23 Claims



Windowed high-temperature ovens including self-cleaning ovens and the like, and windowed doors for those ovens, and window assemblies for installation in such ovens, where the window assembly has at least three spaced parallel glass window panels secured in alignment with two of such panels

near the oven cavity enclosing a dead-air or insulating space, and a third of such glass window panels separated from the oven cavity by two dead-air space enclosing glass panels, with the space between the third panel and the two dead-air enclosing panels being ventilated for replacement of heated air therein by cooler air, and a thin semitransparent see-through through metal reflector disposed in the ventilated airspace to reflect substantial proportions of radiant oven heat and to be cooled by air wash during such ventilation.

3,612,826 SURFACE TEMPERATURE INDICATOR LIGHT FOR CERAMIC TOP INFRARED RADIANT RANGE

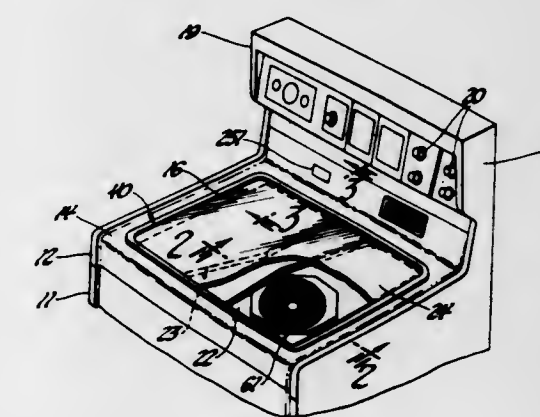
Homer W. Denton, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 17, 1970, Ser. No. 55,816

Int. Cl. H05b 3/68

U.S. Cl. 219-453

7 Claims



A control panel indicator light arrangement for an infrared cooking range surface unit having a resistance element supported on a heater block underlying an infrared transmissive, translucent cover plate. A double-throw thermostatic switch, having terminals alternatively connected to an auxiliary heater and the indicator light, is supported in heat transfer relation with the heater block by a heat-conducting bracket embedded in the block such that the auxiliary heater is energized with the resistance element to actuate the thermostatic switch at a predetermined temperature allowing the auxiliary heater to initially hold the indicator light circuit closed. After a time interval the thermostatic switch continues to hold the indicator light circuit closed by means of the conductive flow of heat from the heater block to the switch via the bracket such that the arrangement provides visual indication on the control panel of the cover plate temperature condition.

3,612,827 FLAT PLATE SURFACE HEATING UNIT

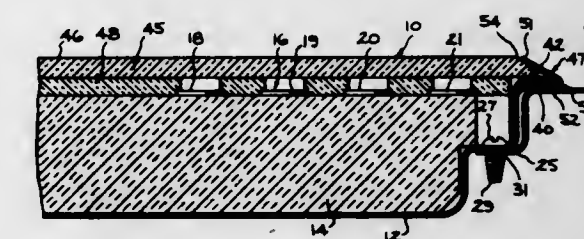
Raymond L. Dills, Louisville, Ky., assignor to General Electric Company

Filed Jan. 12, 1970, Ser. No. 2,261

Int. Cl. H05b 3/68

U.S. Cl. 219-463

7 Claims



A flat plate surface heating unit with a recessed pan filled with thermal and electrical insulation. A closely wound, sinusoidal, electrical resistance heater wire of flattened cross section is arranged in a spiral formation and supported by the insulation. A glass-ceramic disk covers the pan. An insulating spacer is sandwiched between the disk and the heater wire in the interstices between adjacent turns of the spiral, and the spacer slightly overties the spiral edges of the heater wire. A

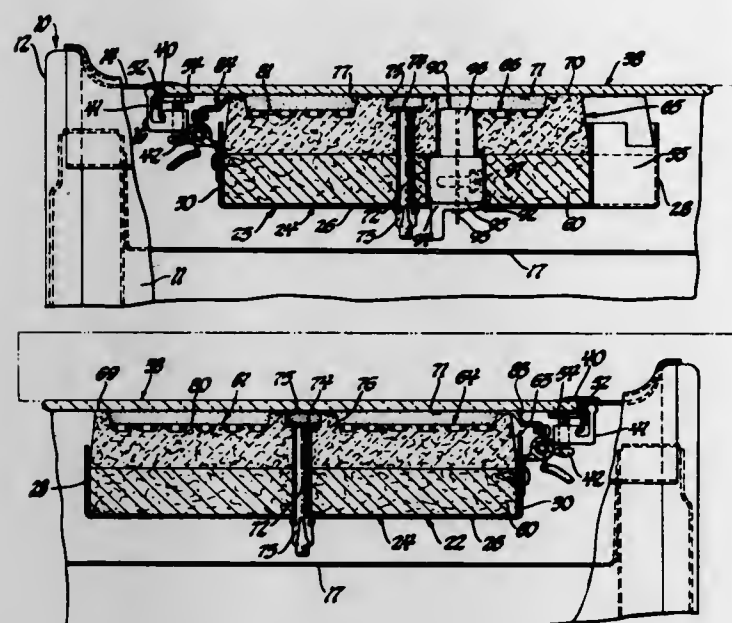
removable trim ring is capable of being fastened to a peripheral flange of the unit pan with a turning action of the ring for locking the ring in place and applying a clamping force on the peripheral edge of the disk.

3,612,828
INFRARED RADIANT OPEN COIL HEATING UNIT WITH REFLECTIVE FIBROUS-CERAMIC HEATER BLOCK
Donald C. Siegle, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 22, 1970, Ser. No. 48,390
Int. Cl. H05b 3/68

U.S. Cl. 219-464

10 Claims



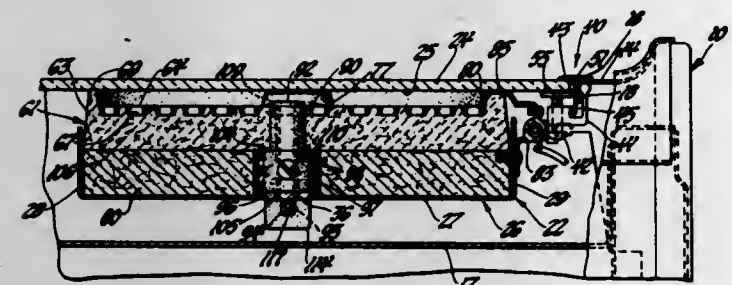
An infrared radiant-type heating unit including a utensil support cover plate of infrared transmissive material, an underlying infrared reflective heater support block having a low thermal mass, and an open coil resistance element directly and continuously supported on the heater block in spaced relation to the cover plate. The heater block is a low density, homogeneous fibrous-ceramic rigid block rendered infrared reflective within a selected wavelength range of approximately 2 to 5 microns by having dispersed throughout the block a defined amount of finely divided pacifiers selected from a group consisting of titanium oxide, zirconium oxide, tin oxide and potassium titanate. The rigid low-density block has tie members extending therein which retain the deeply undulating patterned resistance element within a continuous spiral groove formed in the block permitting controlled accordion-like thermal expansion and contraction of the element.

3,612,829
CERAMIC TOP INFRARED COOKING ASSEMBLY
Jesse L. Evans, Tipp City, and James W. Vannorsdall, Jeffersonville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 17, 1970, Ser. No. 55,815
Int. Cl. H05b 3/68

U.S. Cl. 219-464

7 Claims



An infrared radiant cooking assembly supported in a range top opening including a frangible glass-ceramic cover plate

and an underlying housing for supporting resistance-element heated blocks of inorganic refractor-fiber material in heat-sealed cushioned contact with the undersurface of the cover plate. Resistance element terminal members are provided with the assembly for achieving ready electrical connection with a power source without exceeding the load-bearing capacity of the heater blocks.

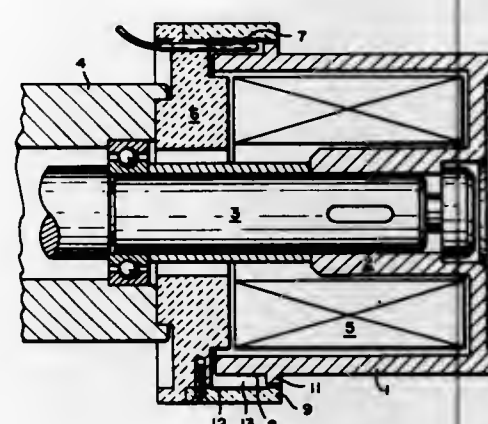
3,612,830
HEATED ROLLER AND APPARATUS FOR SENSING ROLLER TEMPERATURE
Fritz Dienes, Muehlheim am Main, Germany, assignor to Dienes-Honeywell Holding GmbH, Muehlheim am Main, Germany

Filed Feb. 16, 1970, Ser. No. 11,651
Claims priority, application Germany, Mar. 20, 1969, G 69 11 276

Int. Cl. H05b 1/02

U.S. Cl. 219-471

10 Claims



A heated roller includes a cylindrical surface having an annular projecting edge near one end thereof. A stationary annular cover ring encloses a space including the one end of the roller surface and the projecting edge. A stationary temperature sensor is mounted to project into the space.

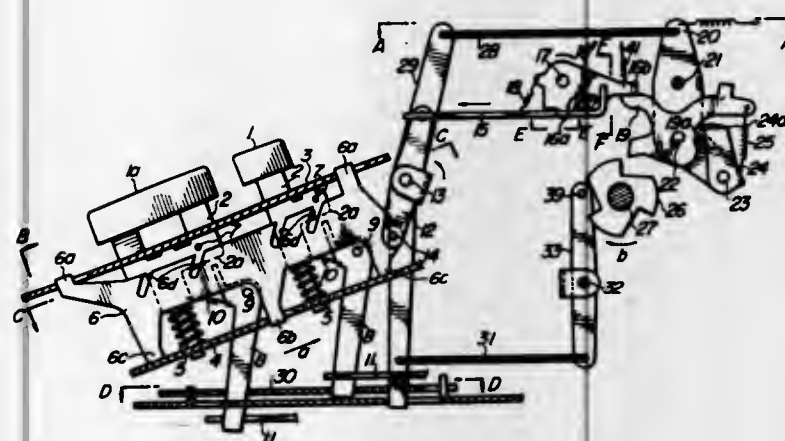
3,612,831
FUNCTION KEY MECHANISM IN CALCULATING MACHINE OR THE LIKE
Kenji Miyake, Kunitachi-shi, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1969, Ser. No. 889,098

Claims priority, application Japan, May 27, 1969, 44/41088

Int. Cl. G06c 23/00

2 Claims



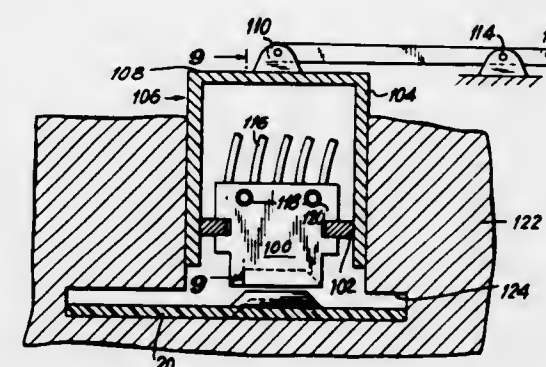
A function key mechanism in a calculating machine or the like, wherein the selection of a lever, a shaft, etc. is effected by the drive of a motor, whereby the force required for operating a function key is remarkably reduced.

3,612,832
EMBOSSMENT READERS FOR IDENTIFICATION CARDS AND THE LIKE
Amnon Goldstein, Forest Hills, and Fred M. Pintus, White Plains, both of N.Y., assignors to Decitron Communication Systems, Inc., Brooklyn, N.Y.

Filed Mar. 11, 1970, Ser. No. 18,434
Int. Cl. G06k 7/10

U.S. Cl. 235-61.11 E

13 Claims



A device capable of "reading" embossments on an identification card or the like. The device includes a scanning unit capable of scanning the embossments, for example, in an optical manner, so as to transmit signals corresponding to the configurations of the embossments. A positioning structure is provided for precisely positioning the embossments with respect to the scanner by directly engaging the embossments which are to be scanned. Thus, it is the embossments themselves which are engaged for determining the location of the embossments with respect to the structure which scans them.

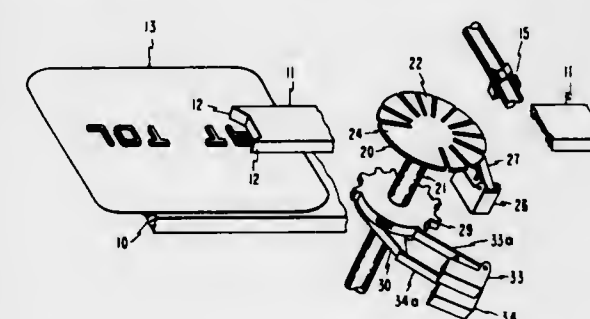
3,612,833
EMBOSSSED CARD READING DEVICE
Wilbur M. Davis, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,730

Int. Cl. B41f 3/04; G06k 7/04

U.S. Cl. 235-61.11 C

5 Claims



The disclosure pertains to a reader for an embossed print element which senses the recessed surface portion of the embossed characters by scanning the characters with a series of sensing indicia which each create a yes or no condition. The sensed signals are superimposed upon a series of timing signals which permit a counter and decoder to identify the character or code element which has been scanned.

3,612,834
SIGNAL READOUT METHOD AND APPARATUS
Masakazu Arikawa, Ashiya, and Yasuhiko Nohara, Yokohama, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nihon Doro Kodan, Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 857,808

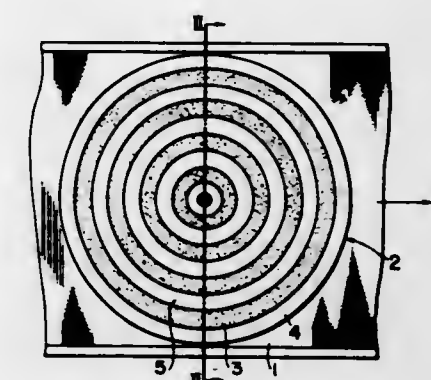
Claims priority, application Japan, Oct. 14, 1968, 43/74512

Int. Cl. G06k 7/08

8 Claims

A code carrier is in the form of a circular plate comprising concentric metal rings alternating radially with nonmetallic rings. All the rings have substantially the same radial width

and preferably substantially the same axial thickness. In accordance with the particular code, certain of the rings are of magnetic metal and certain of the rings are of nonmagnetic metal. The code carrier is passed along a detection path, such as being slid along an aluminum channel. A pair of detectors are positioned along the detection path in alignment with the locus of movement of the center of the code carrier, and are spaced apart longitudinally of the path a distance



equal to the radial width of the rings. One of these detectors detects magnetic metal and the other detector detects nonmagnetic metal. The outputs of the two detectors are connected through respective shaping circuits to the two inputs of an AND circuit which provides an output pulse responsive to simultaneous detection of both a magnetic ring and a nonmagnetic metal ring. The nonmagnetic metal detector has an output branched therefrom, beyond the respective shaping circuit, and this output provides clock or timing pulses.

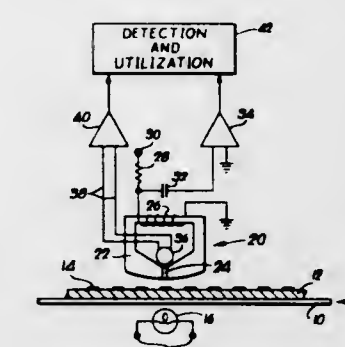
3,612,835
COMBINED OPTICAL AND MAGNETIC TRANSDUCER
Boley A. Andrews, Shawnee Mission, Kans., and James F. Placek, Kansas City, Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 19, 1969, Ser. No. 886,530

Int. Cl. G06k 7/01

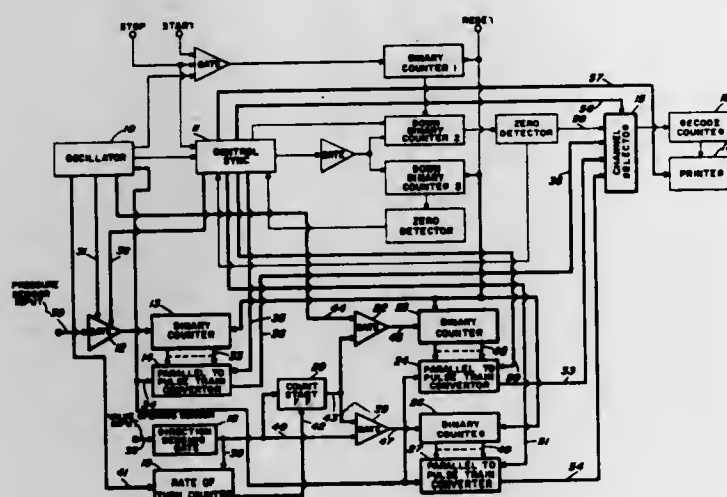
U.S. Cl. 235-61.11 D

11 Claims



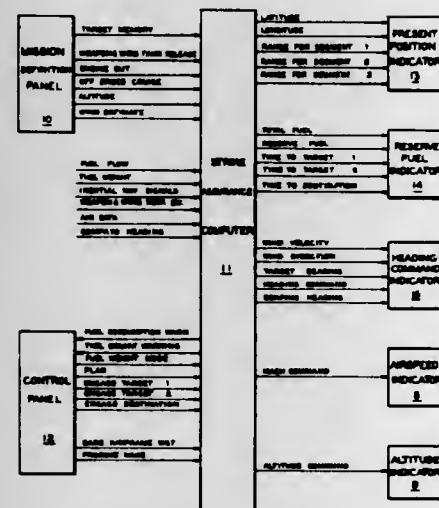
A combined optical and magnetic transducer for sensing both optical and magnetic properties of an article, for example, a piece of paper currency or other document having both visible and magnetic markings to be tested or read, an information-bearing medium such as a data-recording tape to be read, or the like. The transducer comprises a magnetic-sensing head having a transparent gap separating the poles of the magnetic core of the head, a photoelectric element being disposed in the head in alignment with the gap. Outside the head, one side of the article contacts or is in close proximity to the poles at the gap, and the article is illuminated by a light source, so that both magnetic properties and optical properties of the article may be detected simultaneously during relative movement of the article and the transducer.

3,612,836
DIGITAL END SPEED INDICATOR
 Robert J. Jordan, Lexington Park; William P. Russell, Leonardtown, and Robert R. Shatzer, Lexington Park, all of Md., assignors to The United States of America as represented by the Secretary of the Navy
 Filed Feb. 24, 1970, Ser. No. 13,636
 Int. Cl. G06f 7/38; G06g 7/00
 U.S. Cl. 235—92 FQ



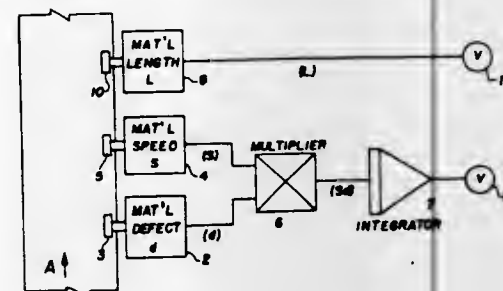
An aircraft catapult launch monitoring system that combines the functions of digitally determining the end speed of the aircraft, determining catapult accumulator pressure and valve opening time and distance. The accumulator pressure is measured by a digital pressure transducer. Valve-opening time is measured by a device that determines the time an angle encoder takes to register the count analogous to the distance opened. Valve-opening length is measured by counting the pulses generated by the angle encoder and translating them to an analogous length.

3,612,837
AIRCRAFT STRIKE ASSURANCE SYSTEM
 William E. Brandau, Westwood, N.J., assignor to The Bendix Corporation
 Filed Apr. 30, 1969, Ser. No. 820,428
 Int. Cl. G06g 7/10, 7/22
 U.S. Cl. 235—150.2



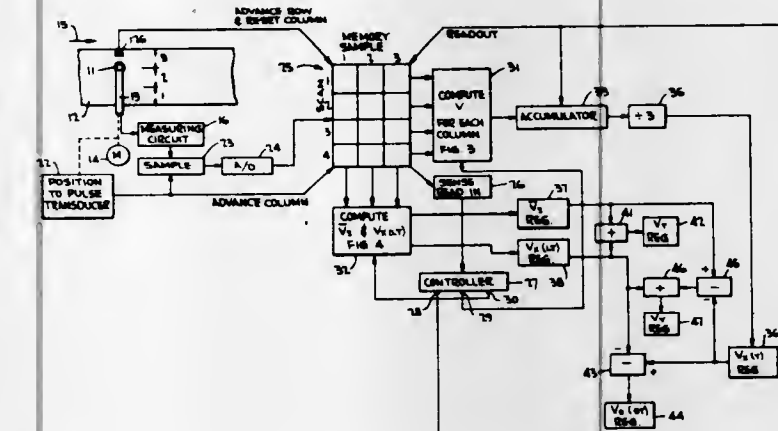
A system for computing all necessary flight commands for successfully completing a mission, including a forecast of fuel reserves and time to each target from planned parameters by combining fuel management data and inertial navigation data. The system provides for primary and alternate targets and is adaptable to inflight mission alterations and unforeseen events such as weather changes and engine failure.

3,612,838
MEANS AND METHOD FOR THE CONTINUOUS NONDESTRUCTIVE TESTING OF METALLIC STRIP AND THE LIKE
 Don L. Conn, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
 Filed July 16, 1969, Ser. No. 842,264
 Int. Cl. G01b 19/32; G01n 19/08
 U.S. Cl. 235—151.3



Apparatus and procedures for accurately determining the quality of metallic strip or other essentially homogenous materials by multiplying direct current voltages which are the functions of (a) the magnitude of defect indications and (b) strip speed, accumulating the multiplied voltages, and dividing the accumulated voltages by a proportional figure representing the total length of material tested.

3,612,839
VARIANCE PARTITIONING
 John E. DeWitt, Lake Oswego, Oreg., and David A. Spitz, Columbus, Ohio, assignors to Industrial Nucleonics Corporation
 Filed Nov. 13, 1967, Ser. No. 682,402
 Int. Cl. G01n 25/56; G06f 7/38
 U.S. Cl. 235—151.35

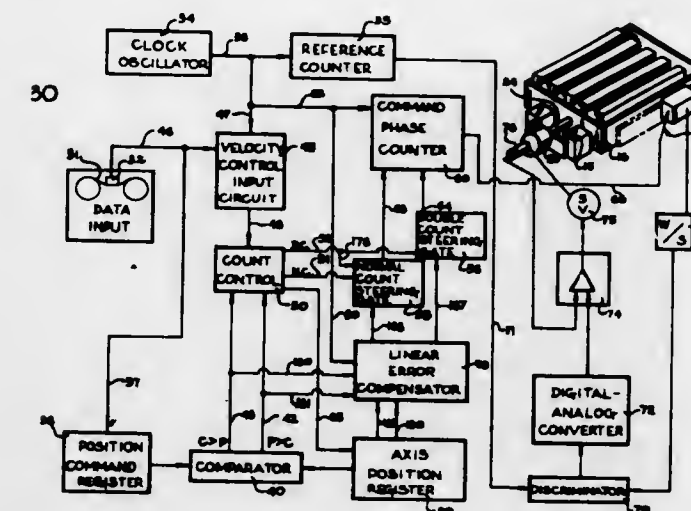


Disclosed are a system for and method of dividing or partitioning the total variance properties of a moving sheet into the components of: cross direction; long-term machine direction; short-term machine direction; total machine direction; cross direction; and profile. A single detector for the property is scanned at right angles to the sheet edges a plurality of times. During each scan the property is sampled a plurality of times to derive a profile contour. A computer responds to the sampled values to derive the variance components.

3,612,840
LINEAR ERROR COMPENSATOR FOR NUMERICALLY CONTROLLED MACHINE TOOLS
 Richard E. Stobbe, Greenfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
 Filed Sept. 8, 1969, Ser. No. 856,042
 Int. Cl. H02p 1/54; G06f 15/46
 U.S. Cl. 235—151.11

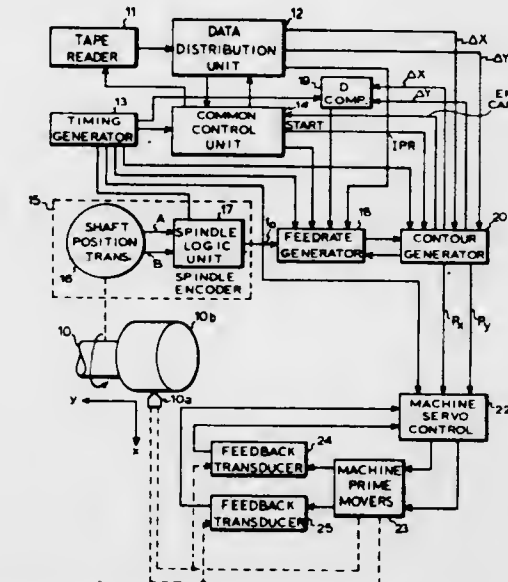
Within a pulse-counting numerical control system for a machine tool, a signal modifier is connected to effect the ad-

dition or subtraction of a predetermined number of pulses to modify. The electronic means utilizing a patterned strip for producing a pulse train with the pulse train being arranged to



the control system to compensate for repeatable linear errors that may appear in the machine's slidable members.

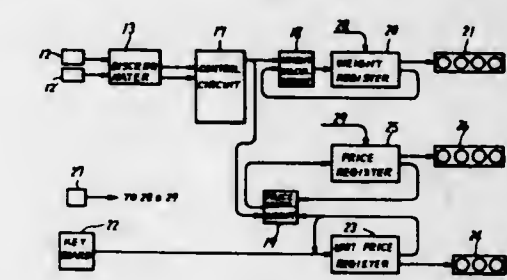
3,612,841
METHOD AND APPARATUS FOR FEEDRATE CONTROL OF SPINDLE-RELATED NUMERICAL CONTROL SYSTEMS
 Marion Kosem, Willoughby Hills, and Clive P. Hohberger, Shaker Heights, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.
 Filed July 10, 1969, Ser. No. 840,778
 Int. Cl. G05b 19/18
 U.S. Cl. 235—151.11



In a numerical control system, a method and apparatus for controlling the feedrate of a machine tool as a function of spindle speed (angular velocity). A spindle encoder provides basic feedpulses at a frequency f_s as a function of spindle speed. A feedrate generator multiplies the frequency f_s by a factor derived from a programmed model velocity in inches per revolution (IPR) and the vectorial departure (D), or its reciprocal, derived from programmed departures along two axes. Thus vectorial velocity is maintained as a function of spindle speed.

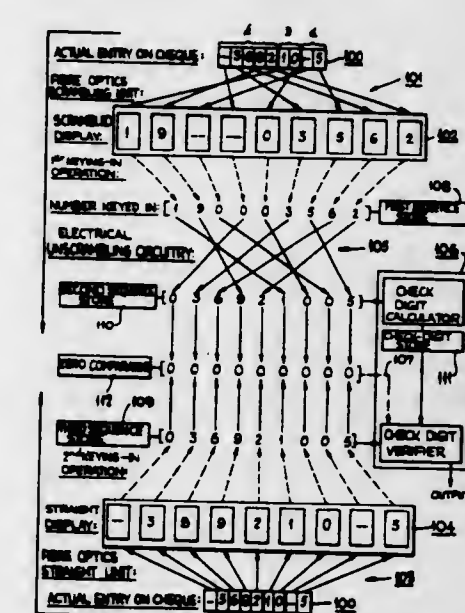
3,612,842
PRICE COUNTING BALANCE
 Takashi Aga, and Masami Yamanaka, both of Hyogo-ken, Japan, assignors to Yamato Scale Company, Limited, Hyogo-ken, Japan
 Filed Mar. 26, 1969, Ser. No. 810,629
 Claims priority, application Japan, Sept. 5, 1968, 43-63909
 Int. Cl. G01g 9/00; G06f 15/20
 U.S. Cl. 235—151.33

A price counting balance utilizing electronic means for producing an indication of total weight or price of a com-



provide a pulse corresponding to the price for each unit weight.

3,612,843
CHECKING THE FEED-IN OF DATA TO DATA-PROCESSING APPARATUS
 Bernard Aptroot-Soloway, London, England, assignor to Seval Limited, London, England
 Filed Aug. 4, 1969, Ser. No. 847,320
 Claims priority, application Great Britain, Aug. 6, 1968, Oct. 2, 1968, 37,356/68; 46,858/68
 Int. Cl. G06k 5/02; G06f 11/04
 U.S. Cl. 235—153

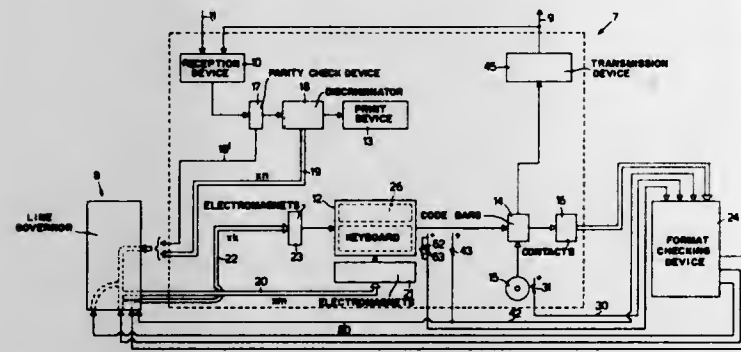


For transferring a sequence of data characters from a source document into a data-processing system, an operator is caused in one operation to read and feed-in the characters in a first predetermined order, for example as they appear on the document. In another operation the operator is caused to read and feed-in the same characters rearranged in a second predetermined order. Logical circuitry rearranges the characters fed-in in one of these operations, so as to formulate electronically a sequence which should be identical with the sequence fed-in in the other of these operations, and compares these last two sequences with one another. If these last two sequences are identical, the data characters can be read out electronically from the circuitry in their original order.

3,612,844
DATA TRANSMISSION SYSTEM
 Giovanni Zaffignani, and Bruno Brunialti, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
 Filed July 2, 1969, Ser. No. 838,608
 Claims priority, application Italy, July 2, 1968, 52266-A/68
 Int. Cl. G06f 11/00
 U.S. Cl. 235—153

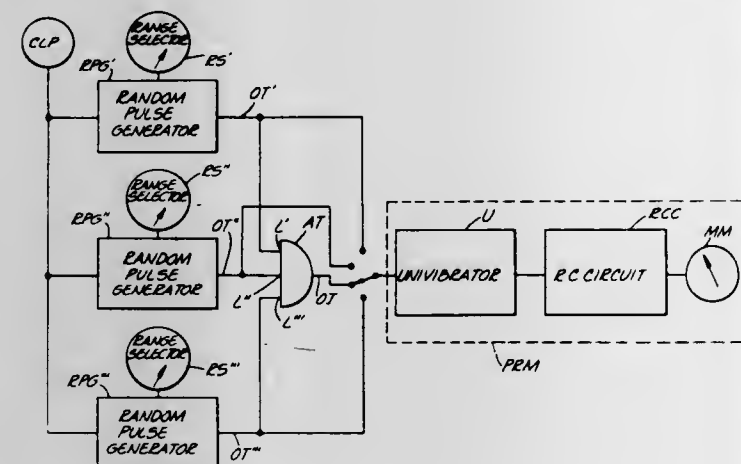
A terminal apparatus is described for a data transmission system which transmits messages constituted by a series of characters. The terminal apparatus includes means for checking the entering of messages for determining when er-

rors occur in the manual entry of information. The terminal apparatus includes a manually operated means for entering characters, and a presettable means for indicating the position within the series of characters of a predetermined character which is to appear in a particular message format.



A given message format may be selected from a number of message formats. A checking means is provided to determine if the predetermined character is entered in the proper position within a series of characters, and if not, an error signal is generated which indicates the absence of the predetermined character from the position in question.

3,612,845
COMPUTER UTILIZING RANDOM PULSE TRAINS
Reed C. Lawlor, 412 West Sixth St., Los Angeles, Calif.
Filed July 5, 1968, Ser. No. 742,619
Int. Cl. G06f 7/50, 7/52
U.S. Cl. 235-156

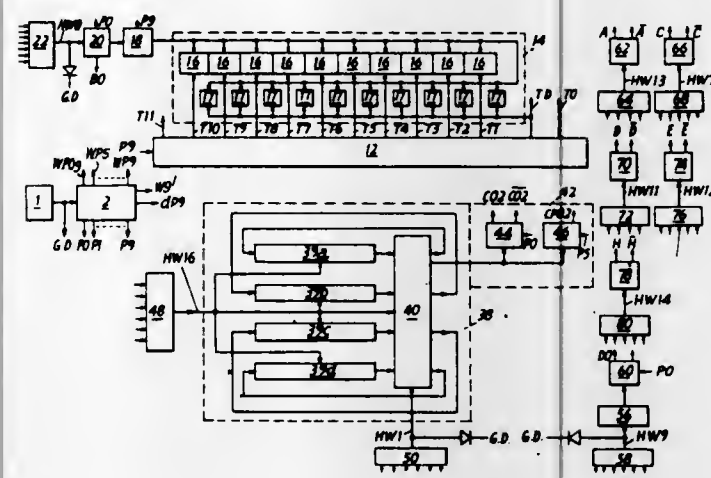


Noise signals from a diode and clock pulses from a clock pulse source are fed to input legs of a logic circuit such as an AND gate, causing pulses of variable amplitude to appear in the output of the circuit. A threshold circuit suppresses pulses having amplitudes below a predetermined level. The remaining pulses trigger a univibrator thus causing pulses to be generated at random times in synchronism with clock pulses thereby forming a train of synchronous random pulses. Trains of random pulses from several such random pulse generators are fed to logic circuits to perform arithmetic operations, such as multiplication.

3,612,846
CALCULATING MACHINES WITH CONTROL CIRCUITS TO ENTER FIRST NUMBER
James John Drage, and Norbert Kitz, both of Middlesex, England, assignors to Bell Punch Company Limited, London, England
Filed July 25, 1969, Ser. No. 844,931
Claims priority, application Great Britain, Feb. 17, 1969, 8579/69
Int. Cl. G06f 7/385
U.S. Cl. 235-168

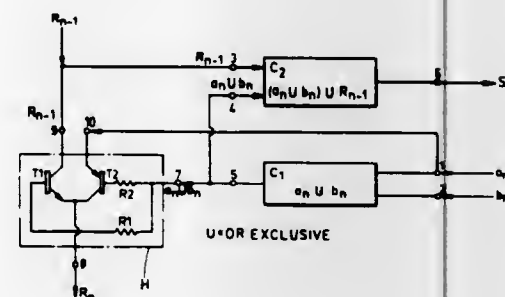
An electronic calculating machine having a plurality of registers for containing numbers is disclosed, having an input

register and an enter key for entering a first number into the input register and initiating an operation of corresponding control circuits, including the clearing of a register defined



by a previous program adding this number in an accumulator register and entering the sum to both the input register and accumulator register.

3,612,847
ELECTRICAL APPARATUS AND METHOD FOR ADDING BINARY NUMBERS
Pierre Jorgensen, L'Hay-Les-Roses, Seine, France, assignor to Compagnie De Saint-Gobain, Neuilly-sur-Seine, France
Continuation-in-part of application Ser. No. 444,642, Apr. 1, 1965, now Patent No. 3,348,199, which is a division of application Ser. No. 660,112, Aug. 11, 1967, now abandoned. This application Oct. 30, 1968, Ser. No. 771,737
Int. Cl. G06f 7/56, 7/50, 7/48
U.S. Cl. 235-176



An electronic binary adder having a plurality of stages, each comprising in combination two logical circuits adapted to perform "COMPARATOR" and "OR EXCLUSIVE" functions and a logical commutator or "IF" switch circuit interconnected to compute the sum of digits of corresponding rank in two binary numbers and the carryover from the summation of the digits of next lower rank in said numbers, and to simultaneously compute also the carryover, if any, to be added to the sum of the digits of next higher rank. Any or each of said logical circuits may comprise a radiation-emitting means controlled by signal input and radiation-controlled signal output means.

3,612,848
REFRIGERATOR LIGHT STRUCTURE
Alan J. Koch, and Robert Edward Lindenschmidt, both of Evansville, Ind., assignors to Whirlpool Corporation
Filed Apr. 15, 1970, Ser. No. 28,878
Int. Cl. A47b 97/00
U.S. Cl. 240-4

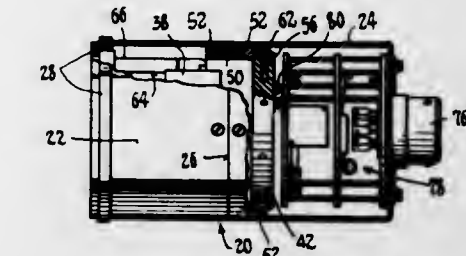
A refrigerating apparatus such as a combined refrigerator and freezer having a pair of compartments that are side-by-side and separated by a wall having an edge in which an electric light is located at this edge and exposed to both compart-

ments for lighting them simultaneously. This light is preferably an elongated fluorescent bulb extending substan-

3,612,851
ROTATABLY ADJUSTABLE INDICATOR INSTRUMENT
Howard R. Fowler, Prospect, Conn., assignor to Lewis Engineering Company, Naugatuck, Conn.
Filed Apr. 17, 1970, Ser. No. 29,457
Int. Cl. G01d 1/28

U.S. Cl. 240-2.1

9 Claims



tially the full length of this edge which is positioned adjacent a normally closed access door.

3,612,849
MULTILAMP FLASH UNIT
David E. Beach, Rochester, N.Y., assignor to Sylvania Electric Products, Inc., Danvers, Mass.
Filed Oct. 8, 1968, Ser. No. 765,930
Int. Cl. G03b 15/02
U.S. Cl. 240-1.3

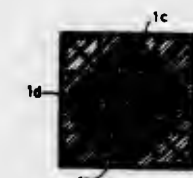
1 Claim



A multilamp unit of flashlamps of the type which are percussion-firable by striking an ignition tube of individual lamps. The unit includes a novel base which is adapted to be received in appropriate structure on photographic apparatus and which will rigidly support the ignition tubes of the flash unit for percussion yet maintains a large striking zone in which firing mechanism can contact the firing tube.

3,612,850
PHOTOFLASHLAMP HOLDER
Louis Marius Nijland, and Willem Westerveld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 7, 1969, Ser. No. 822,679
Claims priority, application Netherlands, May 11, 1968, 6806733
Int. Cl. G03b 15/02
U.S. Cl. 240-1.3

9 Claims

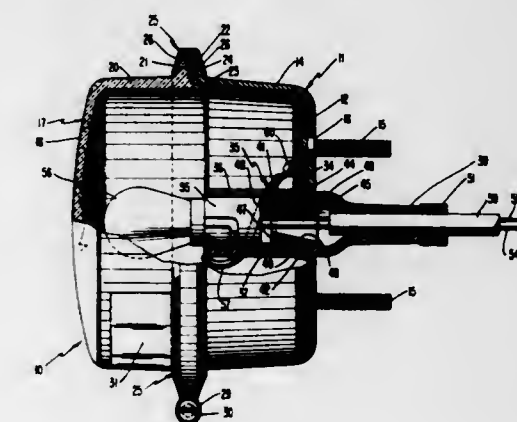


A flashcube having a plurality of flashlamps, a reflector secured adjacent each lamp, and a transparent mass such as

An indicating instrument having a tubular casing with a viewing window at one end. Within the casing there is an instrument movement including a dial which is carried at the front of the movement, facing outward at the casing window. A thick mounting or base ring at the rear of the instrument movement carries the latter and has a rotary bearing in an adapter ring which latter is rigidly secured to the casing between the front and rear ends thereof. The adapter ring has slots through which there extend screws threaded into the base ring. By such arrangement the base ring and instrument movement carried thereby may be secured in any of a number of different rotative positions with respect to the adapter ring and casing. The casing comprises front and rear tubular parts which abut each other, and the adapter ring is disposed within and secured to the abutting portions of the casing parts, thereby to fasten these together. Removal of the rear casing part reveals the fastening screws which are threaded into the base ring, whereby these may be readily loosened and retightened in order to change the rotative position or attitude of the instrument movement and dial in the front casing part while these remain supported therein.

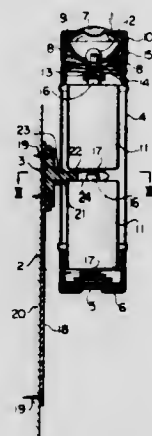
3,612,852
LEAK-PROOF LIGHT
Armen Bogossian, 584 Cumberland Ave., Teaneck, N.J.
Filed May 23, 1969, Ser. No. 827,391
Int. Cl. B60q 1/26, 1/44
U.S. Cl. 240-8.3

11 Claims



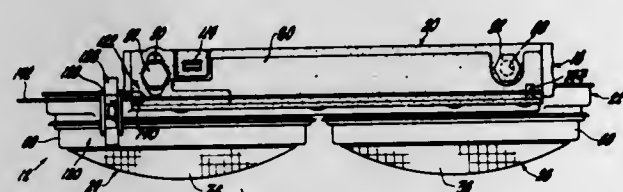
A leak-proof light adapted to use, for example, on a vehicle. A gasket between the mating flanged surfaces of the lens and the casing and an elastomeric tube for the electrical conduit in an aperture in the rear of the casing keep the light sealed against the intrusion of water despite its submersion in water to a considerable depth. The elastomeric tube is expanded by an internal sleeve member seating the tube against the aperture of the casing. The light incorporates a vibration-cushioning mount for the electric lamp mounting means that is part of the elastomeric tube which seals the electric cable to the housing of the light.

3,612,853
FLASHLIGHT DEVICE
 Sakaki Aoki, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Dec. 30, 1968, Ser. No. 787,864
 Claims priority, application Japan, Nov. 12, 1968, 43/100179
 Int. Cl. F21H 7/00
 U.S. Cl. 240—10.6 R 12 Claims



A flashlight device particularly advantageous in using for emergency purposes. The device comprises a combination of a flashlight body including a normally closed electric circuit for lighting a bulb therein, and a flashlight hanger member to be installed at a fixed position and including a means for blocking said electric closed circuit only when the flashlight body is hung or mounted to the hanger member.

3,612,854
HEADLAMP WITH INTEGRAL AIMING AND INSPECTION GAGES
 Harold E. Todd, and George W. Onksen, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
 Filed Nov. 29, 1968, Ser. No. 779,880
 Int. Cl. F21V 7/00, 19/02, 21/16
 U.S. Cl. 240—41.6 5 Claims

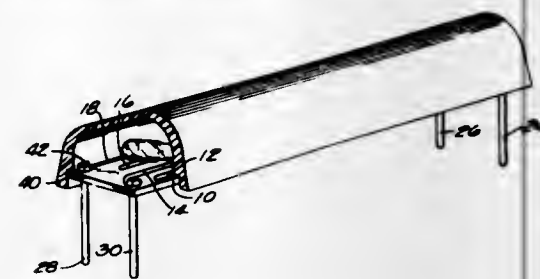


A motor vehicle headlamp wherein a projection lamp, universally adjustably connected to a motor vehicle by a unitary hinge, has a rearward aiming and seating plane which, when positioned in a known plane relative to the vehicle, will project a light beam in a desired horizontal and vertical illumination pattern. An aiming block formed on the hinge and referenced to the aiming plane cooperates with an aiming string connected between headlamps on opposite sides of the vehicle to visually indicate when the lamp is properly horizontally oriented. A liquid level referenced to the aiming plane visually indicates when the lamp is properly vertically oriented.

3,612,855
ILLUMINATED BUS
 Paul B. Juhnke, Route 2, Box 228, East Troy, Wis.
 Filed Oct. 17, 1969, Ser. No. 867,284
 Int. Cl. G09F 9/14; F21V 21/08
 U.S. Cl. 240—52.1 6 Claims

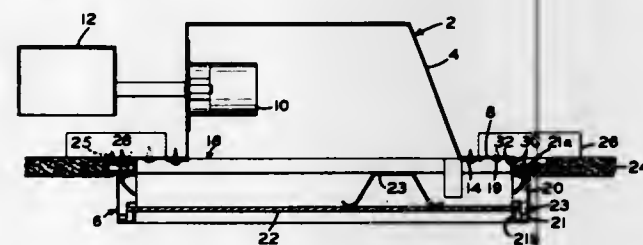
An insulating base has a plurality of conductors on one side. A plurality of mounting prongs extend through the base and project from the other side. These prongs have bent-over

ends connected to the conductors. A number of small lamps are connected to the conductors. A translucent cover is seated on the base and houses the lamps. This cover has portions overlying and engaging the bent-over ends of the prongs



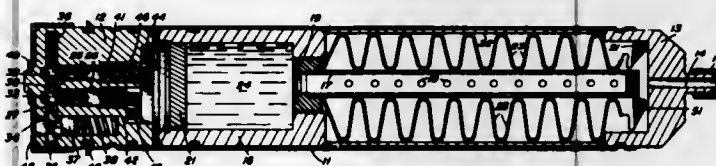
so that pressure needed to install the unit on a panel of a dispatching board is transmitted directly to the mounting prongs. The bent-over ends also prevent the prongs from becoming detached when the unit is removed from the panel.

3,612,856
LIGHTING FIXTURE FOR A TILE CEILING
 James E. Hazeley, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
 Continuation of application Ser. No. 692,850, Dec. 22, 1967, now abandoned. This application Apr. 22, 1970, Ser. No. 28,285
 Int. Cl. F21S 1/06
 U.S. Cl. 240—78 CF 1 Claim



A ceiling fixture for use with a tongue and groove joint ceiling tile system. An adapter plate which functions as the support for the diffuser lens and the light box is fastened to the ceiling support system as an integral part of the ceiling tile arrangement. The adapter plate has the necessary edge configuration to permit it to be placed within the ceiling tile arrangement as a substitute for one individual ceiling tile.

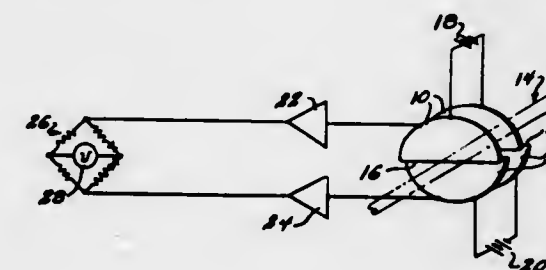
3,612,857
LOCATION MARKER FOR PRODUCING LUMINOUS DISPLAY
 Dave P. Beatty, Worthington, and James O. Reinhart, Bloomfield, both of Ind.
 Filed Mar. 16, 1970, Ser. No. 19,896
 Int. Cl. F21V 9/16
 U.S. Cl. 240—2.25 5 Claims



A location marker having a first compartment containing at least one cloth streamer saturated with a chemiluminescent material and having a second compartment containing an activator composition for activating the chemiluminescent material, said first and second compartments being separated by a frangible barrier. A fuze section is provided having first and second triggering means whereby said first triggering means activates a gas-generating component

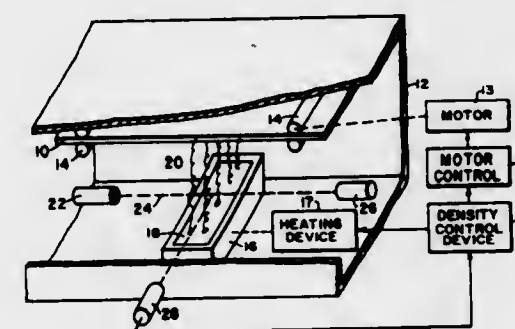
to cause said activator composition to rupture said frangible barrier and saturate said at least one cloth streamer, and whereby said second triggering means actuates a pyrotechnic delay train which, in turn, ignites an explosive composition to eject said at least one cloth streamer from its compartment.

3,612,858
DEVICE FOR MEASURING THE POSITION, SIZE AND INTENSITY OF HIGH-ENERGY PARTICLES
 Theodore De Parry, Elmhurst, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
 Filed Feb. 10, 1970, Ser. No. 10,174
 U.S. Cl. 250—41.95 R 6 Claims



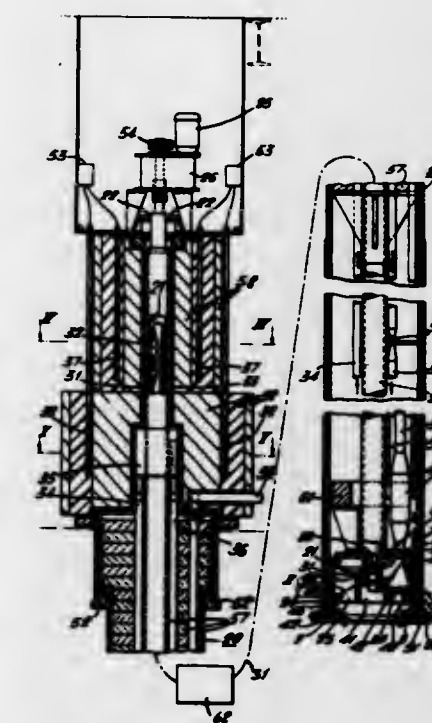
A particle beam position monitor includes first and second pairs of plates mounted normal with respect to the longitudinal axis of the particle beam on opposite sides thereof. The associated plates of each of the first and second pairs are fixedly spatially mounted with respect to each other and each have one edge positioned to lie in a single plane parallel to the longitudinal axis of the particle beam. A pair of voltage sources are connected to produce potentials between the associated plates of the first and second pairs respectively and a pair of electrometers measure secondary electron emission from the pairs of plates in the presence of the particle beam. A bridge circuit differentially combines the measured secondary electron emission to provide a relative measure of the position of the particle beam.

3,612,859
METHOD FOR MEASURING AND CONTROLLING THE DENSITY OF A METALLIC VAPOR
 Wilhelm W. B. Schumacher, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Jan. 31, 1968, Ser. No. 701,965
 Int. Cl. G01N 9/24
 U.S. Cl. 250—43.5 D 2 Claims



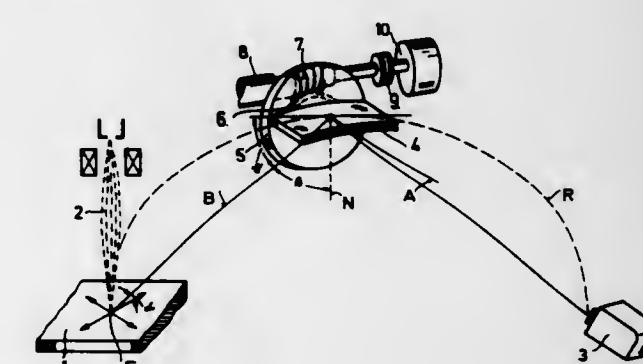
Method for measuring the density of vapors by the use of electromagnetic radiation such as X-rays or by corpuscular beams such as electrons. A beam of electromagnetic radiation is directed through a metallic vapor to be measured. The density is determined by measuring either scattered electrons, the emission of visible light, or the emission or absorption of X-rays.

3,612,860
EQUIPMENT FOR MONITORING THE RADIOACTIVITY OF COOLANT IN A NUCLEAR REACTOR
 Stanley Hackney, Appleton Park, near Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England
 Filed Aug. 5, 1968, Ser. No. 750,052
 Claims priority, application Great Britain, Aug. 14, 1967, 37329/67
 Int. Cl. G01T 3/00; G21C 17/02
 U.S. Cl. 250—43.5 8 Claims



Equipment for testing for failed nuclear reactor fuel elements has means for presenting samples of coolant from individual fuel elements or groups thereof sequentially to a first detector for detecting such radiation as would be associated with a coolant sample from a failed element, means for presenting the bulked remaining samples to a second separate detector for the said radiation and means to cause the sequentially selected sample to join the bulked samples after passing the first detector. The described equipment is particularly suitable for employment with a liquid metal cooled fast nuclear reactor.

3,612,861
METHOD OF AND APPARATUS FOR THE AUTOMATIC REFocusing OF X-RAY SPECTROMETERS
 Gerhard Dorfner, Treustrasse 52/1/8 A-1200, Vienna, Austria
 Filed Oct. 22, 1968, Ser. No. 769,511
 Claims priority, application Austria, Oct. 24, 1967, A9583
 Int. Cl. G01N 23/22
 U.S. Cl. 250—49.5 13 Claims

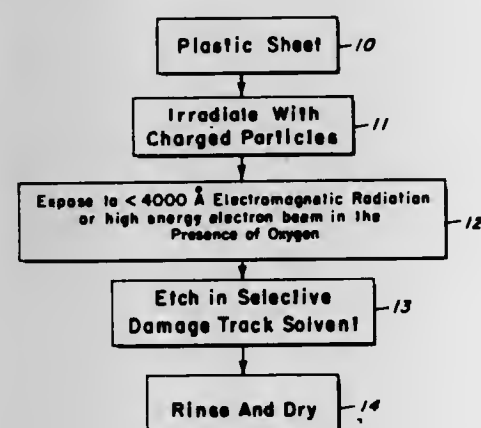


In fully focusing X-ray spectrometers, in order to correct the measuring error caused by a change of the Bragg-angle due to the excursions of the electron beam that scans the sample, the diffracting crystal is rotated synchronously to cancel said change. The rotation of the crystal is effected by

3,612,871
METHOD FOR MAKING VISIBLE RADIATION DAMAGE TRACKS IN TRACK REGISTRATION MATERIALS
 Wayne T. Crawford, Livermore, Calif.; James S. Humphrey, Jr., Schenectady, N.Y., and Warren De Sorbo, deceased, late of Ballston Lake, N.Y. (by Muriel J. De Sorbo, administratrix), assignors to General Electric Company
 Continuation-in-part of application Ser. No. 741,190, June 28, 1968, now abandoned. This application Apr. 1, 1969, Ser. No. 812,463
 Int. Cl. G01t 5/00, 5/02
 U.S. Cl. 250-83.1

U.S. Cl. 250-83

17 Claims

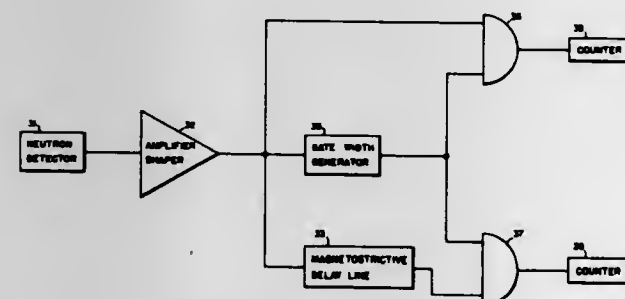


An improved method for treating a plastic film by charged particle irradiation to make tracks formed in the film visible. The film is subjected to irradiation with charged particles, then is exposed to radiation selected from the group consisting of electromagnetic radiation having wavelengths less than about 4,000 angstroms and electrons having energy levels above about 1.5×10^6 electron volts in the presence of oxygen. When treated with a solvent which preferentially attacks the material along the particle tracks, the tracks dissolve away rapidly, leaving substantially cylindrical holes in the film, with little degradation of the body of the film. This preetching treatment results in more rapid etching of the damage tracks, in tracks of more uniform cross section, in smaller initial pore sizes and in greater thermal stability of the tracks.

3,612,872
SELECTIVE DETECTOR FOR FISSION NEUTRONS
 Robert J. Omohundro, Washington, D.C., and Frank A. Marchetti, Hillcrest Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy
 Filed May 26, 1969, Ser. No. 827,699
 Int. Cl. G01t 3/00
 U.S. Cl. 250-83.1

U.S. Cl. 250-83.1

5 Claims

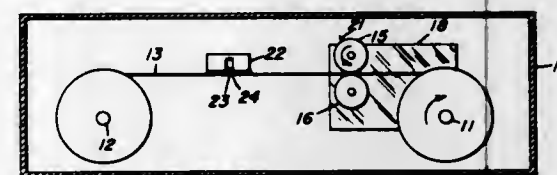


The invention distinguishes fissionable neutron sources from nonfissionable sources by utilizing the principle that only a fissionable source emits simultaneously a plurality of neutrons during a single fission event. The simultaneously emitted neutrons are counted in a first coincidence circuit together with random pulses from neutrons emitted by α, n reactions. A second coincidence circuit counts only those neutrons which were emitted separately at spaced intervals of time by α, n reactions and does so by including a delay device in one leg of the coincidence circuit to throw out of coincidence the pulses from the simultaneously emitted neutrons.

3,612,873
NEUTRON FLUX RECORDER UTILIZING A CONTINUOUS WEB OF TRACK-REGISTRATION MATERIAL
 Henry Ward Alter, Danville, Calif., assignor to General Electric Company
 Filed Dec. 23, 1968, Ser. No. 786,168
 Int. Cl. G01t 3/00, 5/00
 U.S. Cl. 250-83.1

U.S. Cl. 250-83.1

16 Claims

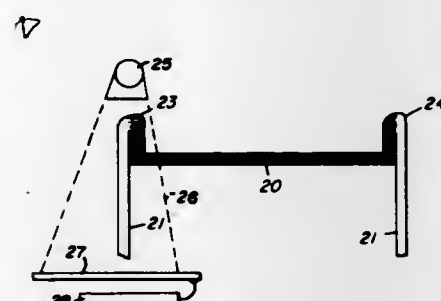


A neutron flux recorder is disclosed which is capable of continuously monitoring the neutron flux level of a nuclear reactor over an extended period of time. This recorder utilizes a continuous web of track-registration material which is slowly passed adjacent a slit containing a source material which emits charged particles such as fission fragments or alpha particles when irradiated with neutrons. The rate of charged particle emission by the source material is directly proportional to the neutron flux. The charged particles which strike the track-registration material form damage tracks therein. These tracks may be etched by treatment with a suitable etchant. The resulting etched tracks are visible and may be counted or otherwise measured. This produces a permanent record of the neutron flux level adjacent the recorder. These recorders can be made tamperproof and are capable of recording flux levels for periods on the order of a year.

3,612,874
NEUTRON RADIOGRAPHY OF WELD JOINTS
 Charles R. Porter, Corvallis, Oreg., assignor to General Electric Company
 Filed July 16, 1968, Ser. No. 745,210
 Int. Cl. G01t 3/00
 U.S. Cl. 250-83.1

U.S. Cl. 250-83.1

4 Claims



A nondestructive neutron radiographic technique capable of producing improved radiographs of weld joints is disclosed. Lack of contrast in neutron radiographs of two pieces which have been welded together makes resolving fine gaps in the weld difficult. In the disclosed system, one of the two pieces to be welded is doped with a small amount of a material having a high neutron absorption cross section. This provides the desired radiographic contrast and permits the inspection of an entire weld in one radiograph.

3,612,875
MOSSBAUER SPECTROMETER
 Richard Neil Ord, Richland, Wash. assignor to the United States of America, as represented by the United States Atomic Energy Commission
 Filed Oct. 15, 1970, Ser. No. 82,380
 Int. Cl. G01t 1/16
 U.S. Cl. 250-83.3 R

U.S. Cl. 250-83.3 R

5 Claims

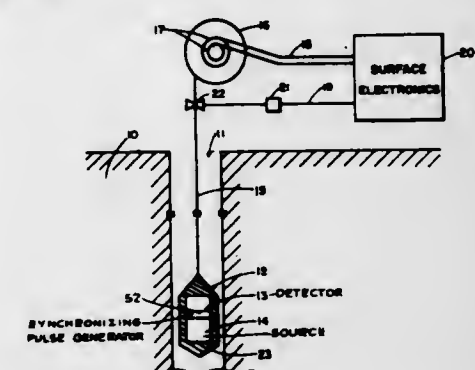
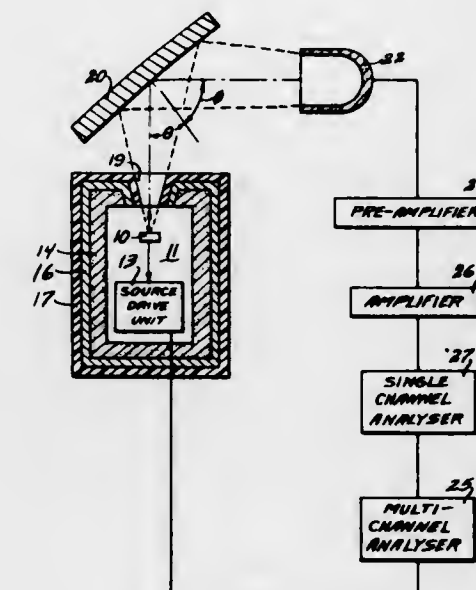
A Mossbauer spectrometer includes a source shielded by a layer of depleted uranium covered with a layer of graded shielding material. A detector is placed so that it is shielded

from the gamma radiation from the source. The sample being examined is inclined at an angle to the beam of gamma rays

3,612,877
VISUAL DISPLAY OF THE DECLINE OF THE THERMAL NEUTRON POPULATION IN A WELL BOREHOLE
 Eric C. Hopkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
 Filed Jan. 23, 1968, Ser. No. 699,853
 Int. Cl. G01v 5/00
 U.S. Cl. 250-83.3

U.S. Cl. 250-83.3

7 Claims

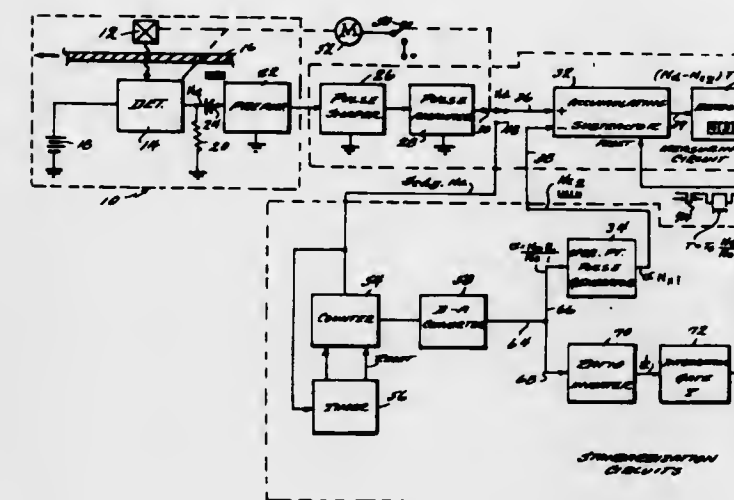


A well logging instrument having a pulsed neutron source and a radiation detector is adapted for travel through an earth borehole. The signal pulses from the detector are sent to the surface electronics, along with the neutron source synchronization pulses. In the surface electronics, the signal pulses are separated from the synchronization pulses. The synchronization pulses then drive a sawtooth generator, the duration of the ramp function being equal to the separation between the synchronization pulses. The signal pulses are coupled through a variable gain amplifier to a multichannel pulse height analyzer, the gain of the amplifier being a function of the slope of the ramp function. The multichannel pulse height analyzer drives an oscilloscope, thus providing a visual display of the declining curve representative of the signal pulses from the borehole instrument.

3,612,876
STANDARDIZATION SYSTEM FOR A DIGITAL RADIATION GAUGE
 Michael P. Grant, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
 Filed May 21, 1968, Ser. No. 730,708
 Int. Cl. G01n 23/16
 U.S. Cl. 250-83.3

U.S. Cl. 250-83.3

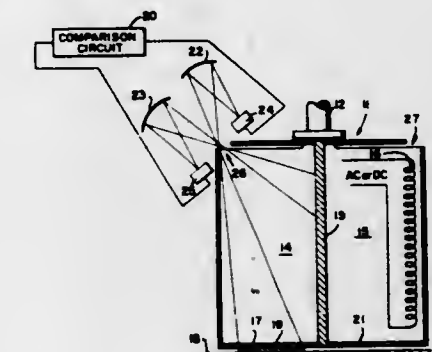
17 Claims



3,612,878
METHOD AND APPARATUS FOR MEASURING THE RADIANT ENERGY REFLECTANCE OF MATERIALS
 Keith E. Nelson, Rolling Hills Estates, Calif., assignor to TRW Inc.
 Continuation of application Ser. No. 385,227, July 27, 1964, now abandoned. This application Nov. 15, 1968, Ser. No. 776,282
 Int. Cl. G01n 21/22, 21/48
 U.S. Cl. 250-83.3 H

U.S. Cl. 250-83.3 H

10 Claims



A system for measuring weight per unit area using a nucleonic gauge with simplified standardization circuits. In one embodiment the standardization circuitry is all digital, and in another embodiment, is partially digital. In those two embodiments and a third embodiment the standardization circuitry is operated in accordance with the count of detector output pulses occurring during a predetermined interval during a standardization time. In the latter embodiment, this digital count signal is converted to an analog signal to vary the operating point pulse rate directly and the counting time inversely. In the other two embodiments, the digital count signal is employed to set a down counter to the corresponding count, and then the counter counts down for an interval of time. In one embodiment the analog of the digital count signal is employed to determine the count down time, while another embodiment utilizes the digital count signal itself to establish that count down interval.

To provide a method and apparatus for measuring reflectances independent of the sample temperature, the sample is alternately irradiated by hot and cold radiation which is picked up by one or more detectors.

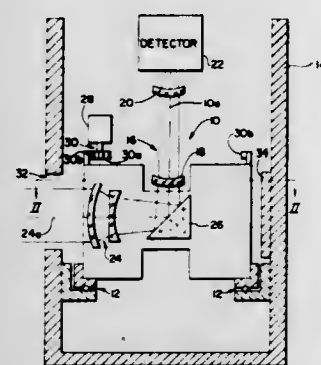
3,612,879
INFRARED SCANNER WITH REFERENCE HEAT SOURCE MOUNTED PERIPHERALLY OF ROTATIONAL OPTICAL SYSTEM
 Claes Thomas Ohman, Tabby, Sweden, assignor to AGA Aktiebolag, Lidings, Sweden
 Filed Dec. 1, 1969, Ser. No. 881,128
 Claims priority, application Sweden, Nov. 29, 1968, 16281/68
 Int. Cl. H01j 3/00
 U.S. Cl. 250-83.3 H

U.S. Cl. 250-83.3 H

5 Claims

A line scanner for infrared radiation includes a rotatable unit including an optical system which transmits received

radiation to an infrared detector during a scanning period determined by an aperture in the wall of a housing for the unit. A reference heat source in the form of a metallic plate



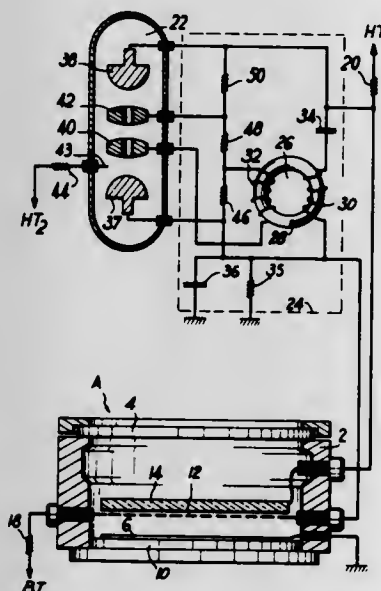
is mounted on the interior wall of the housing peripherally of the rotatable unit so that the radiation produced thereby passes through the entire optical system during scanning by the system.

3,612,880 METHOD OF SPARK CONTROL AND SYSTEMS FOR THE UTILIZATION OF SAID METHOD IN SPARK CHAMBERS

Alain Lansart, 34, avenue Saint-Laurent-91, Orsay; Jean Leloup, 4, rue du Clos-91, Gif-sur-Yvette; Jean-Pierre Morucci, 5, Residence de Villebon-91, Villebon-sur-Yvette, and Georges Roux, 95, avenue Foch-78, Chatou, all of France
Continuation-in-part of application Ser. No. 592,828, Nov. 8, 1966, now abandoned. This application Dec. 23, 1968, Ser. No. 786,339
Int. Cl. G01t 1/205

U.S. Cl. 250—83.6 R

12 Claims



A spark quenching device for a three-electrode spark chamber in which a discharge device is associated in parallel with the intermediate-electrode/anode space of the spark chamber and a trigger device is controlled by the spark chamber current.

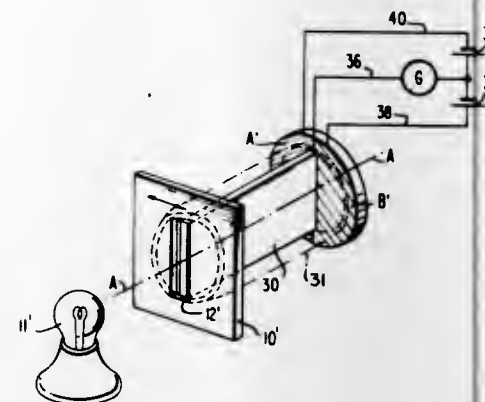
3,612,881 RELATIVE MOVEMENT DETECTOR

Paul B. King, Mountain Lakes, N.J., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Apr. 14, 1969, Ser. No. 815,886
Int. Cl. G01b 15/00; G01j 1/36

U.S. Cl. 250—204

Relative movement is detected by directing light through an apertured baffle to form a beam which strikes a pair of adjacent photosensitive devices. Transverse relative movement of the baffle moves the beam to change the relative amount

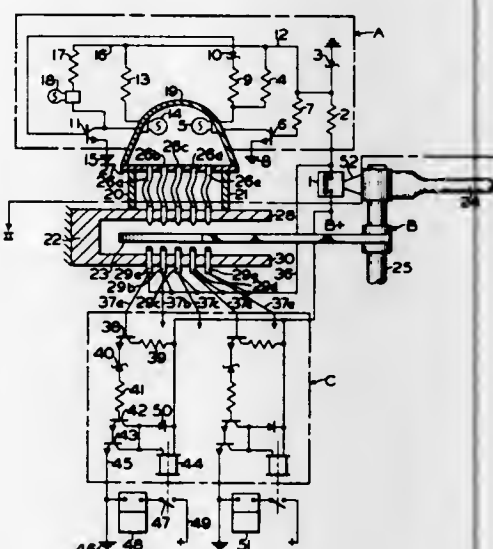
of light striking the photosensitive elements to generate a signal indicative of the displacement of the baffle. A beam-



3,612,882 CONTROL APPARATUS USING FIBER OPTICS AND HAVING DEENERGIZED LIGHT SOURCE WHEN HANDLE IS IN A NEUTRAL POSITION

Charles W. Sheppard, Trafford, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Sept. 2, 1969, Ser. No. 854,685
Int. Cl. G02b 5/14; H01h 47/24; H01j 39/12
U.S. Cl. 250—208

3 Claims



A photoresponsive control for use as a vehicle brake and propulsion control means whereby a light from a source is transmitted by fiber optic tubes to a manually operated control plate having variously located slotted openings to permit the light to selectively beam on or be shielded from various photoresponsive sensors which in turn control variations in the resistance of different control circuits and effect selection and functioning of various brake and propulsion controls of said vehicle.

3,612,883 RESONANT CAVITY PHOTON SENSOR COMPRISING SEMICONDUCTOR MATERIAL SANDWICHED BETWEEN TWO LAYERS OF DIELECTRIC

Norman E. Pedersen, Wilmington, Mass., assignor to Avco Corporation, Cincinnati, Ohio
Filed Feb. 28, 1969, Ser. No. 803,347
Int. Cl. H01j 39/12; H01p 7/06; H03c

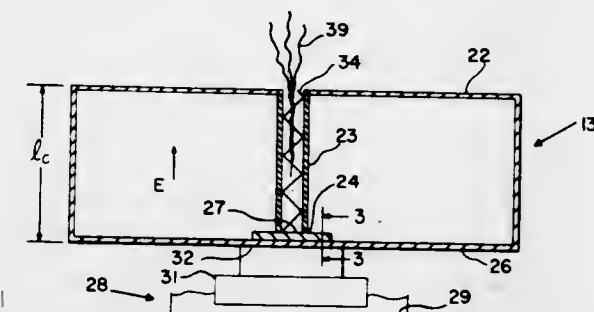
U.S. Cl. 250—211

The invention relates to a sensor which uses a semiconductor material which responds to photons to produce electron-hole pairs. The semiconductor operates in combination with a microwave cavity. The presence of an electron and/or hole

10 Claims

in the semiconductor is sensed by a change in capacitance of the resonant cavity. The result is a signal output from the

the pulsed signals and the corresponding differentiated signals. The beam-waist radius is proportional to the product of the differentiator time constant and the ratio of the peak amplitude of the pulsed signals to the peak amplitude of the differentiated signals.



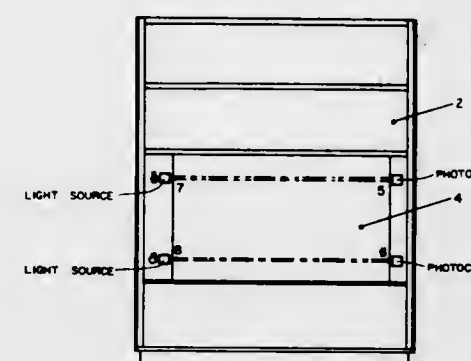
resonant cavity. A novel approach to bringing a photon to the semiconductor is described and optimum sensor parameters cited.

3,612,884 FAIL-SAFE PHOTOELECTRIC CONTROL SYSTEM

Stathis G. Linardos, Clearwater; Richard F. Elmhurst, Largo, and William A. Elmhurst, Largo, all of Fla., assignors to The Eastern Company, Portland, Maine
Filed Feb. 28, 1969, Ser. No. 803,249
Int. Cl. G02f 1/28

U.S. Cl. 250—214

8 Claims



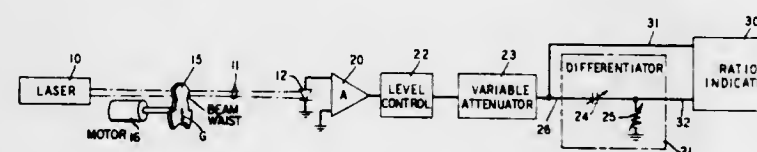
A fail-safe photoelectric control system for disconnecting a load whenever an object is sensed by one of two or more photocells. A transistorized gating circuit is connected to the photocells and to a square-wave output signal of a signal generator. Under normal conditions, the gating circuit passes the signal which is then amplified and rectified before energizing a relay which connects the load. When an object is in the light path of either photocell, or if any active component in the system fails, the signal is blocked whereupon the relay is deenergized and the load disconnected.

3,612,885 GAUSSIAN LASER BEAM-WAIST RADIUS MEASURING APPARATUS

Jacques A. Arnaud, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 10, 1969, Ser. No. 883,696
Int. Cl. G02f 1/28

U.S. Cl. 250—217

9 Claims



The beam-waist radius of a Gaussian laser beam is measured electronically. This is accomplished by periodically interrupting the laser beam to generate pulsed signals representative of its total power, differentiating the pulsed signals and then taking the ratio of the peak amplitudes of

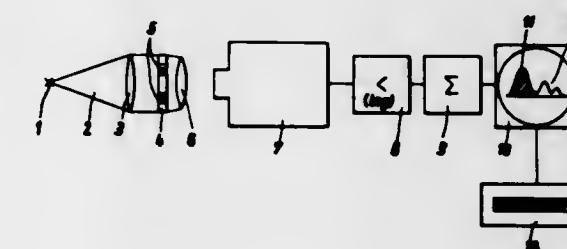
The invention covers a technique and apparatus for continuously monitoring a small amount of an effluent to immediately detect contaminants so that appropriate corrective measures may be promptly taken. A small, continuous sample of an aqueous effluent flows onto a moving tape of lipophilic fabric wherein any contaminant, such as oil, is adsorbed. The tape passes over a light source wherein the degree of light reflection is a function of the amount of any oil contaminant present.

3,612,886 PROCESS FOR THE QUANTITATIVE DETERMINATION OF LIGHT-ABSORBING OR LIGHT-REFLECTING SUBSTANCES DISTRIBUTED ON A CARRIER

Kurt Hannig, Schillerstrasse 46, Munich, 15, Germany
Continuation of application Ser. No. 681,271, Nov. 7, 1967, now abandoned. This application Feb. 4, 1970, Ser. No. 12,886
Int. Cl. G01n 21/22

U.S. Cl. 250—219 QA

9 Claims



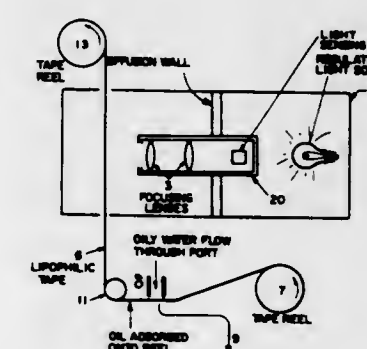
This invention relates to a process for the quantitative determination of light-absorbing or light-reflecting substances distributed on a carrier which comprises the steps of scanning line by line the distribution pattern of a substance selected from the group consisting of light-absorbing substances and light-reflecting substances distributed in a predetermined manner on a carrier, transforming the individual scanning points into current impulses corresponding with the optical densities of said substances, and integrating said current impulses belonging to a specific scanning line, whereby the optical densities of said substances are quantitatively determined.

3,612,887 RADIATION SENSITIVE OIL-IN-WATER DETECTOR

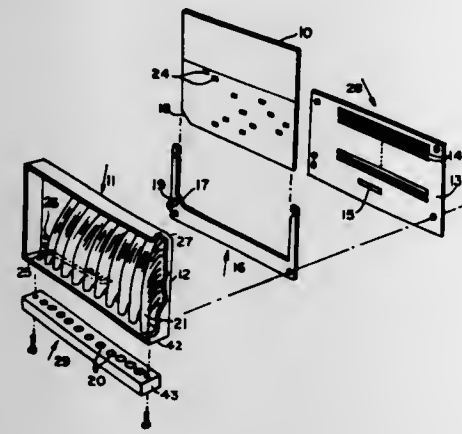
Gerard P. Canevari, Cranford, and William M. Bustin, Summit, both of N.J., assignors to Esso Research and Engineering Company
Filed May 16, 1967, Ser. No. 638,849
Int. Cl. G01n 5/02

U.S. Cl. 250—219 Q

2 Claims

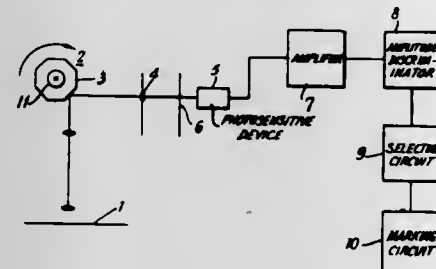


3,612,888
INFORMATION MEDIA READING APPARATUS
 Gerald Boucher, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
 Filed July 10, 1968, Ser. No. 743,792
 Int. Cl. G08c 9/06
 U.S. Cl. 250—219 D 16 Claims



Data indications arranged in rows and columns on a card or other information media are read by use of an arrangement of a plurality of light sources, fiber optic conductors, and light sensors. The light sources are energized to sequentially read one card row at a time activating a selected photocell through unmasked fiber optic conductors. The light sources and conductor ends are aligned such that an aperture in the card will be read as a continuous light beam by a photocell for that position. Means are also provided to insure that the card is properly inserted into the card chamber.

3,612,889
APPARATUS FOR MARKING THE LOCATION OF INDICIA ON A FILM
 Robert Andrew Diamond, Oxford, England, assignor to Vickers Limited, London, England
 Filed July 31, 1968, Ser. No. 749,014
 Int. Cl. G01n 21/30
 U.S. Cl. 250—219 R 7 Claims

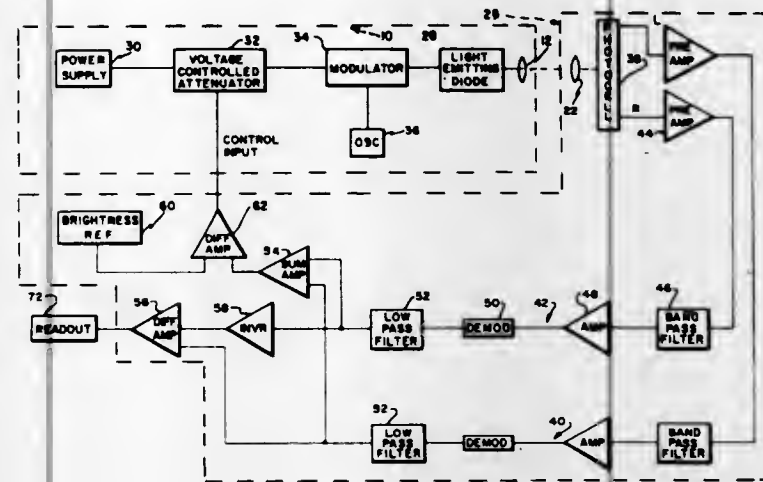


Apparatus for scanning a trace, containing a number of indicia of varying characteristics, deposited on a tape as the tape moves through the apparatus, for producing photoelectrically a series of pulses representing the scanned indicia and for electronically selecting certain of these pulses corresponding to indicia having certain predetermined characteristics and feeding these pulses to a marking device which marks the positions of these indicia on the tape.

3,612,890
RADIATION SENSITIVE OPTICAL GAGING SYSTEM
 William S. Cornyn, Jr., Palo Verdes Peninsula; William Pennington, Jr., Los Angeles; Antone Potocnik, Palo Verdes Peninsula, and Wallace M. Porter, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.
 Filed Oct. 13, 1969, Ser. No. 865,668
 Int. Cl. G01b 7/04
 U.S. Cl. 250—222 17 Claims

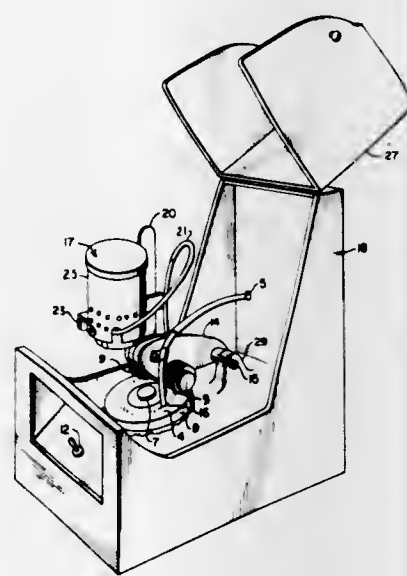
An optical gaging system wherein a light beam is projected onto the surface of an object to illuminate the surface with a

small light spot, and light rays emanating from the illuminated surface area by diffuse reflection are collected and focused at an observation station to produce at the station a light-spot image whose position is related to the position of the illuminated surface area along the beam axis. The image



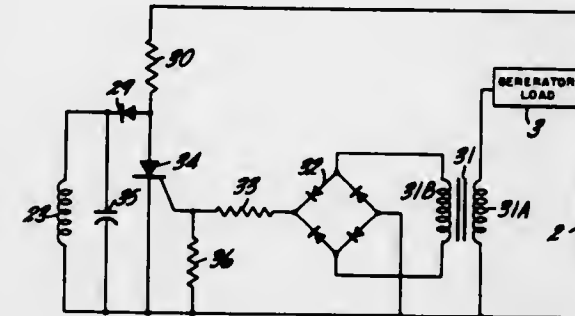
position is sensed electrically and converted to a corresponding electrical position signal. The gaging system is capable of a variety of useful applications including automatic control of machining operations, dimensional measurement, and surface contour or profile gaging.

3,612,891
DEVICE FOR TESTING FOR "FROSTING" IN FABRICS
 Truman L. Ward, New Orleans; Ralph J. Berni, Metairie; Julius R. Jung, Jr., New Orleans, and Ruth R. Benerito, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture
 Filed Dec. 22, 1969, Ser. No. 886,922
 Int. Cl. G01n 3/56
 U.S. Cl. 250—222 3 Claims



"Frosting" on dyed fabrics, which indicates abrasive wear, is measured by abrading a rotating sample of fabric in a closed chamber, illuminating the abraded area, and scanning the illuminated area with a photoelectric sensing device. The signal generated by the latter is fed into recording means. Graphic evaluation of a plurality of fabrics compares favorably with subjective evaluation of the same fabrics by accepted methods. Reproducibility of measurement is excellent.

3,612,892
MOTOR GENERATOR WITH AUTOMATIC SPEED AND IDLING CONTROL
 Robert Noble, Tarreyton, N.Y., and Joseph B. Gag, Stamford, Conn., assignors to Textron, Inc., Providence, R.I.
 Filed July 30, 1970, Ser. No. 59,447
 Int. Cl. H02p 9/04
 U.S. Cl. 290—40 8 Claims

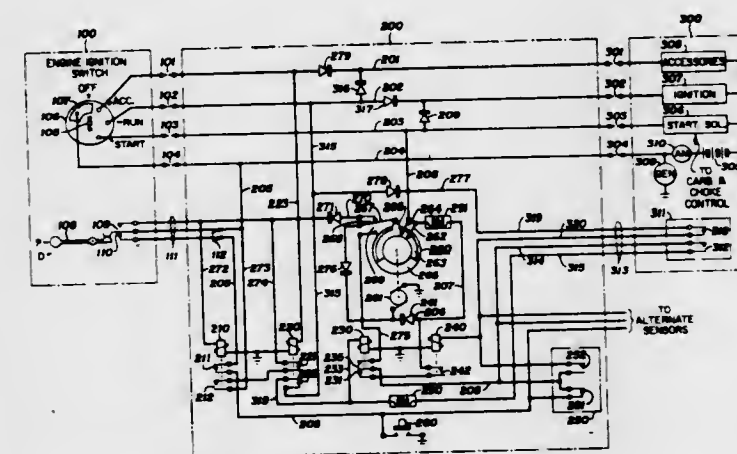


An automatic control for an internal combustion engine driving an alternating current electric generator supplying a variable and intermittent load comprises a speed responsive governor controlling the throttle of the engine to maintain it at a constant operating speed as long as there is load on the generator regardless of the amount of load and an automatic override which reduces the engine speed to a selected idling speed when there is no load on the generator. The override is effected by an electromagnetic device controlled by a circuit comprising a current transformer having a primary winding in series with the generator load and a silicon-controlled rectifier controlled by the rectifier output of the transformer secondary and connected to switch the electromagnetic device on or off.

ERRATUM

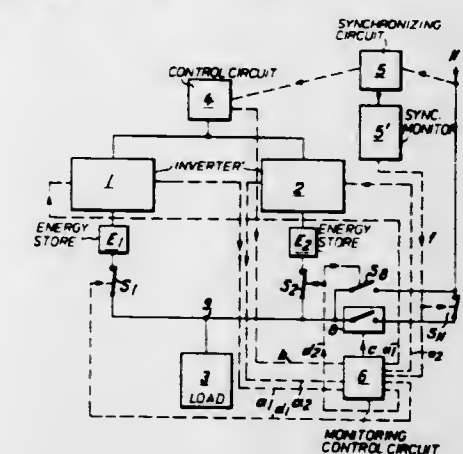
For Class 290—52 see:
 Patent No. 3,612,598

3,612,893
AUTOMATIC START CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES
 James G. Gallagher, 8313 West Blvd. Drive, Alexandria, Va.
 Filed Mar. 18, 1970, Ser. No. 20,629
 Int. Cl. F02n 11/00
 U.S. Cl. 290—37 16 Claims



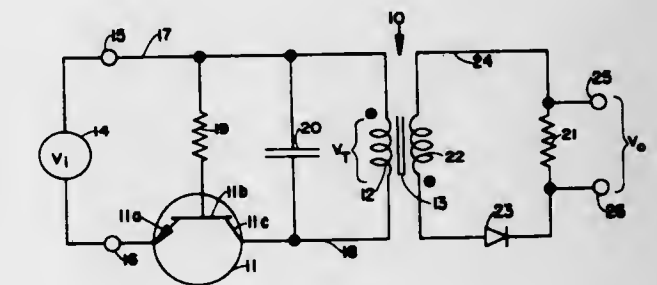
Self-contained automatic starting control apparatus for internal combustion and other engines operable responsive to predetermined environmental conditions such as temperature, precipitation, light, time and the like, and to external influences such as a radio signal. The apparatus provides for the control of all equipment accessory to the engine, its automatic turnoff responsive to other environmental predetermined conditions and external conditions, and for the prevention of the unauthorized use of the engine or its vehicle after an automatic engine start.

3,612,894
AC SUPPLY SYSTEM
 Jurgen Schmidt, Bebeck, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
 Filed July 13, 1970, Ser. No. 54,547
 Claims priority, application Germany, July 11, 1969, P 19 35 206.8
 Int. Cl. H02j 9/06
 U.S. Cl. 307—60 9 Claims



The voltage stability of an AC supply system having a plurality of AC current supply assemblies connected in parallel to a common load is improved when a malfunction is detected in one of the current supply assemblies by first connecting the load to a standby AC main with which the current supply assemblies are synchronized, disconnecting the malfunctioning current supply assembly from the load, and after adjusting the properly functioning current supply assemblies to supply the total power output prior to the malfunction, disconnecting the load from the standby AC main.

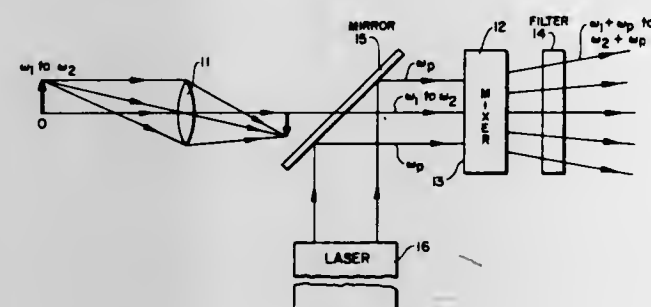
3,612,895
PULSE COUPLING CIRCUIT
 Janis M. Niedra, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
 Filed Aug. 11, 1969, Ser. No. 849,106
 Int. Cl. H03k 17/80
 U.S. Cl. 307—88 MP 12 Claims



A switch, such as a transistor, is interposed between a pulse generator and a winding of an inductor, a load being coupled to the inductor. The switch isolates the inductor from the pulse generator at the end of each pulse causing a partial cycle L-C oscillation in the inductor to reset its core. A capacitor may be connected across the inductor winding. To dissipate some energy, a resistor may be connected in series with the capacitor. The voltage across the inductor winding may be limited by a diode and a zener diode serially connected across the winding. Critical damping of the L-C oscillation is obtained by connecting the resistor and the capacitor in parallel with the zener diode. Two such circuits may be doubled up in back-to-back relationship to energize two individual loads or one single load.

3,612,896
ACHROMATIC OPTICAL UPCONVERTER
 Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

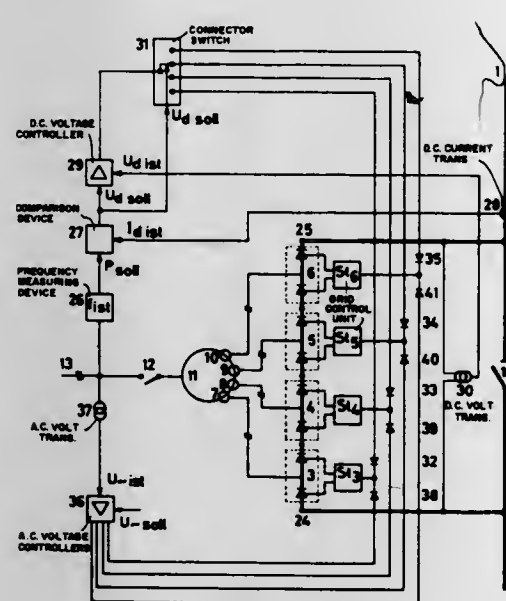
Filed May 15, 1970, Ser. No. 37,645
 Int. Cl. H03f 7/04
 U.S. Cl. 307-88.3



An achromatic optical upconverter having a pump source, an object source, a nonlinear optical material, and a filter for passing the sum of the pump and object frequencies. A lens, which forms a real image of the object, directs the object rays toward the entrance face of the nonlinear material. A dichroic mirror or beam splitter mounted in the path of the object rays pass the object rays and reflect the pump rays toward the entrance face of the nonlinear material. The lens and the nonlinear material are spaced along the optical axis a distance such that chromatic aberrations caused by the lens are eliminated by the nonlinear material which produces an equal and opposite effect and vice versa.

3,612,897
ARRANGEMENT FOR TAPPING THE DC LINK OF A HIGH-VOLTAGE DIRECT CURRENT TRANSMISSION SYSTEM
 Karl-Werner Kanngiesser, Viernheim, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 1, 1969, Ser. No. 881,162
 Claims priority, application Germany, Dec. 11, 1968, P 18 13 853.9
 Int. Cl. H02j 1/00
 U.S. Cl. 307-87

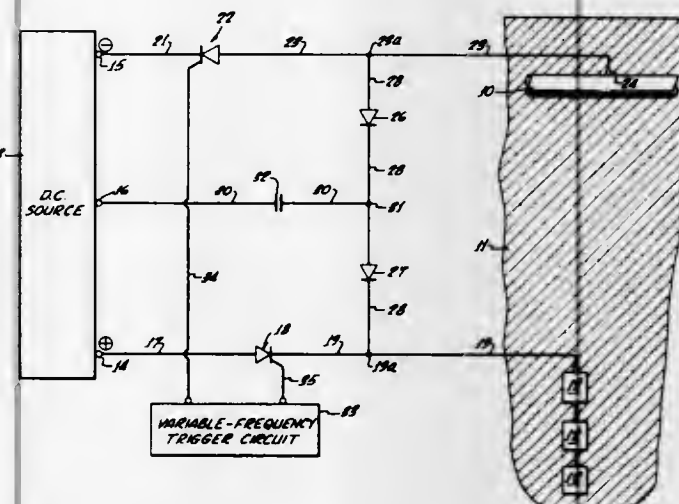


An arrangement for tapping the DC link of a high-voltage direct-current transmission system which comprises at least two series-connected auxiliary converters and power transformer means, wherein each auxiliary converter is controlled by a grid control unit. The grid control units are either controlled by the outputs of an AC-voltage controller and a DC-voltage controller or by the output of the DC-voltage controller only. The output of the AC-voltage controller is simul-

taneously applied to the input terminals of the grid control units and the output of the DC-voltage controller is successively applied to the input terminals of the grid control units by means of a controlled connector switch.

3,612,898
PULSED CATHODIC PROTECTION APPARATUS AND METHOD
 Thaddeus M. Donigulan, Laguna Beach, and Harry J. Kipps, South Laguna Beach, both of Calif., assignors to Signal Oil and Gas Company, Los Angeles, Calif.

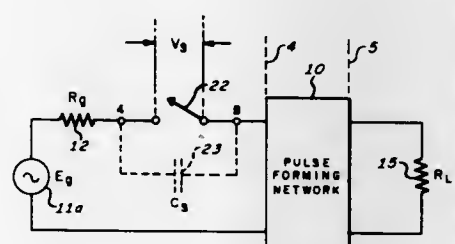
Filed June 24, 1969, Ser. No. 835,946
 Int. Cl. B01d 13/02
 U.S. Cl. 307-95



A pulsed cathodic protection apparatus and method in which charging of the capacitor means is through the earth between an anode bed and the pipe or other element to be protected, thereby eliminating the need for any resistor in the charging circuit. The apparatus and method effect voltage doubling, and are capable of achieving relatively high-frequency operation. In one embodiment, a circuit is provided for a center-tapped voltage source, whereas a second embodiment relates to a circuit for a voltage source which is not center-tapped.

3,612,899
GENERATOR FOR SHORT-DURATION HIGH-FREQUENCY PULSE SIGNALS
 Gerald F. Ross, Lexington, and Joseph D. De Lorenzo, Sudbury, both of Mass., assignors to Sperry Rand Corporation

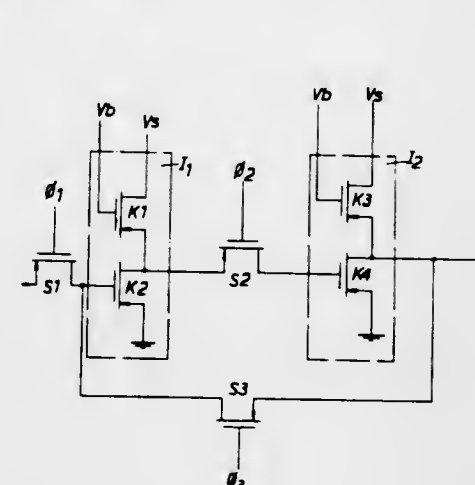
Filed Aug. 20, 1970, Ser. No. 65,551
 Int. Cl. H03k 3/64
 U.S. Cl. 307-106



Very narrow pulses of high-frequency sine wave electromagnetic energy are formed by use of a gated or pulse modulated continuous-wave source feeding a transmission line network having a time-limited impulse response and adjusted to provide a series resonance with the leakage capacity of the source gating or modulating switch for the purpose of assuring that a maximum of the available energy is employed to form the output and that the output level is nulled before and after the generation of the high-frequency pulse.

3,612,900
SHIFT REGISTER CIRCUIT
 Richard Davies, Timperley, England, assignor to Ferranti, Limited, Hollinwood, England

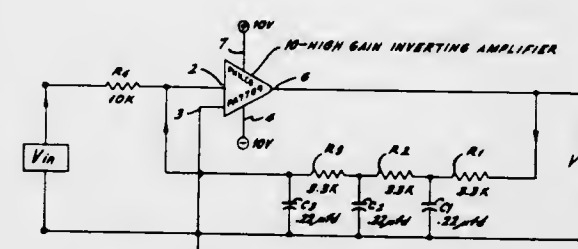
Filed Oct. 20, 1969, Ser. No. 867,834
 Claims priority, application Great Britain, Nov. 8, 1968, 53,001/68
 Int. Cl. G11c 19/00
 U.S. Cl. 307-221



A shift register circuit is connected so that it operates as a three-phase static shift register at low frequencies and as a two-phase dynamic shift register at high frequencies. The transition is achieved by producing a train of switching pulses having an amplitude dependent upon the pulse repetition rate of the two pulse trains from which they are derived, and using these variable-amplitude pulses to allow or prevent the operation of the shift register as a three-phase static circuit.

3,612,901
PULSE GENERATOR HAVING CONTROLLABLE DUTY CYCLE
 James M. Loe, Willow Grove, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Dec. 29, 1969, Ser. No. 888,430
 Int. Cl. H03k 3/64
 U.S. Cl. 307-106

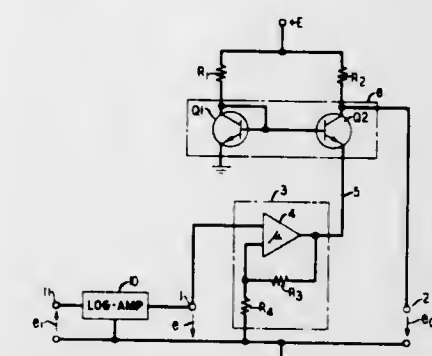


PULSE GENERATOR HAVING CONTROLLABLE DUTY CYCLE

A pulse generator responsive to a single input signal for producing a fixed frequency pulse output signal, the duty cycle (pulse width) of which is proportional, at any instant, to the amplitude of said input (modulating) signal. The generator comprises a high gain inverting amplifier whose output is connected to its input via three phase shifting stages, each comprising a series resistor and a shunt capacitor. The modulating signal is applied to the input of the amplifier via an isolating resistor. In absence of a modulating signal, the generator oscillates at a fixed frequency, producing an output pulse train having a 50 percent duty cycle. The modulating signal changes this duty cycle by (1) opposing the discharge of the shunt capacitor of the third delay stage when said capacitor is charged in one direction, and (2) aiding its discharge when it is charged in the opposite direction.

3,612,902
TEMPERATURE-INDEPENDENT ANTILOGARITHM CIRCUIT
 Richard L. Moose, Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

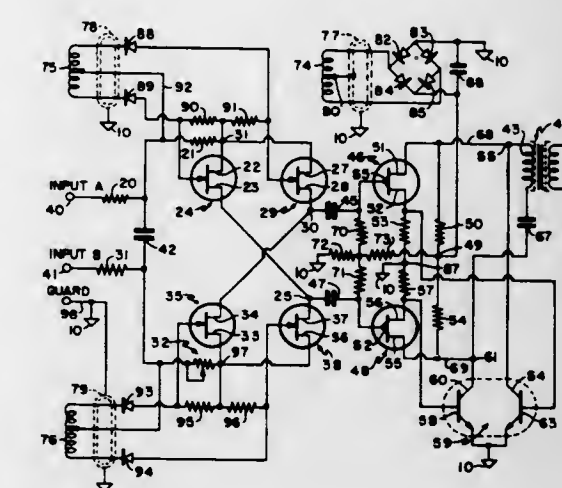
Filed Oct. 16, 1968, Ser. No. 767,979
 Int. Cl. G06g 7/24
 U.S. Cl. 307-229



A circuit for obtaining an output voltage proportional to the antilogarithm of an input voltage. The circuit is made insensitive to temperature variations by constructing its two transistors as an integrated structure on the same substrate so that they are made of the same materials, by the same process and with a very close thermal coupling. This construction insures that all the critical parameters of the transistors, particularly the ratio of the reverse saturation currents of the base-emitter junctions, are stabilized against temperature changes.

3,612,903
FLOATING DIFFERENTIAL ELECTRONIC CHOPPER
 James D. Lynn, and Marion J. Langan, both of Huntsville, Ala., assignors to Avco Corporation, Huntsville, Ala.

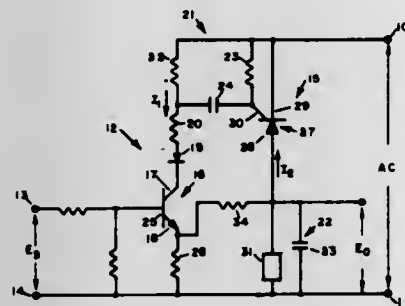
Filed Feb. 9, 1970, Ser. No. 9,491
 Int. Cl. H03k 17/60
 U.S. Cl. 307-251



Herein described is a floating chopper comprising a pair of normally conductive N channel-junction field effect transistors, gated off in phase and a second pair of normally conductive N channel-junction transistors likewise gated off in phase, but with a phase delay of 180°, these four transistors being employed as switching devices alternately to present to a pair of output terminals the potentials existing at a pair of input terminals. There being a polarity reversal at these output terminals during each transition in the gating waveform, there appears at such output terminals a square waveform double in voltage magnitude to the potential differential between the input terminals. An impedance transformation network converts the derived square wave signals to low-impedance signals utilized to drive an output transformer. The chopper circuit is floating with respect to the system output ground and means is provided to balance the

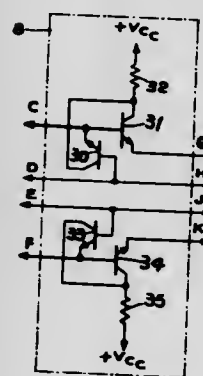
chopper circuit without creating a leakage path between the differential signal and the output ground.

3,612,904
SWITCHING CIRCUIT
John L. Moe, Winona, Minn., assignor to Waynco, Inc., Winona, Minn.
Filed Feb. 20, 1969, Ser. No. 800,958
Int. Cl. H03k 17/00
U.S. Cl. 307-252 N 13 Claims



A controllable hysteresis is introduced into a switching circuit to provide a differential between the signal level required to turn the circuit "on" and "off."

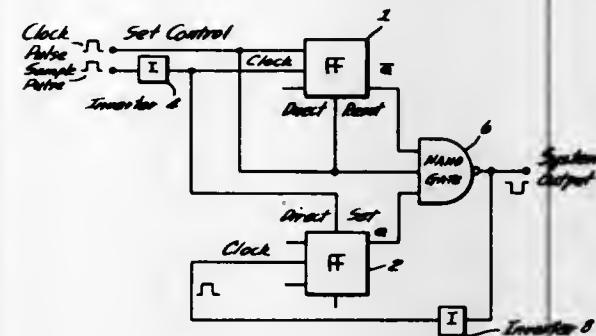
3,612,905
SOLID-STATE BIDIRECTIONAL SWITCHING CIRCUIT
Charles R. Cook, Jr., North Palm Beach, Fla., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Dec. 13, 1968, Ser. No. 783,480
Int. Cl. H03k 17/00
U.S. Cl. 307-254 9 Claims



This is a bidirectional solid-state switching circuit having DC ground isolation between the activating signal and the output. The activating signal powers an oscillator which generates an RF signal. The RF signal is coupled to two detectors by two very small capacitors which establishes the DC ground isolation. When an RF signal is present, the detectors provide the proper biasing to turn on two transistors which are connected in parallel wherein the emitter and collector of the first transistor is connected to the collector and emitter of the second transistor respectively, the output being taken across the parallel combination.

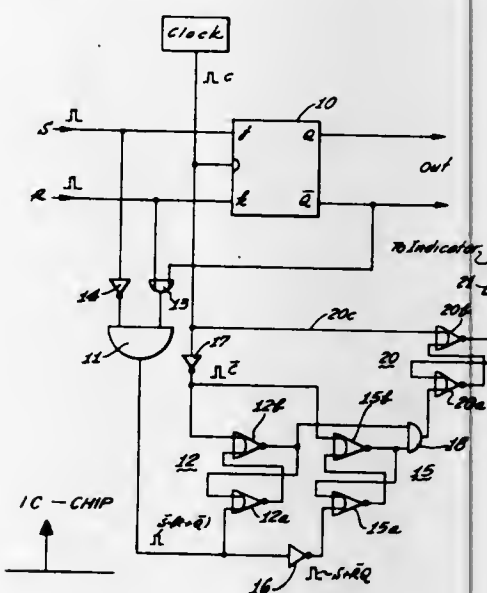
3,612,906
PULSE SYNCHRONIZER
Peter D. Kennedy, Casselberry, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 28, 1970, Ser. No. 76,142
Int. Cl. H03k 17/26
U.S. Cl. 307-269 3 Claims
A pulse synchronizer employing two bistable flip-flops and

a NAND gate is used to pass the first complete clock pulse



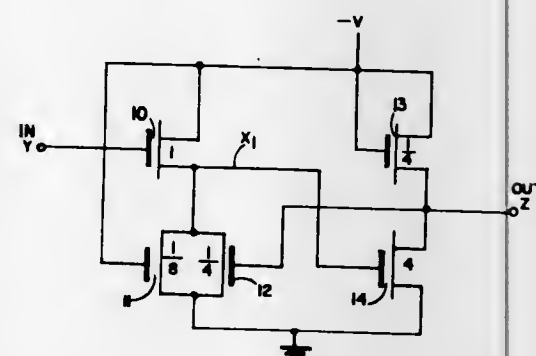
which arrives after the incidence of a sample pulse.

3,612,907
SELF-CHECKING FLIP-FLOP
Theodore Gustav Brauholtz, 1304 Marinette Road, Pacific, Palisades, Calif.
Filed June 20, 1969, Ser. No. 835,046
Int. Cl. H03k 5/20; G06f 11/00; G08b 29/00
U.S. Cl. 307-272 8 Claims



A supervisory circuit is disclosed for use in conjunction with a clocked flip-flop to determine whether inputs thereof change during the period required for settling of signals for proper response of the flip-flop.

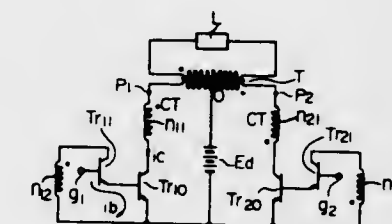
3,612,908
METAL OXIDE SEMICONDUCTOR (MOS) HYSTERESIS CIRCUITS
Gary L. Heimbligner, Anaheim, Calif., assignor to North American Rockwell Corporation
Filed Nov. 20, 1969, Ser. No. 878,478
Int. Cl. H03k 11/12
U.S. Cl. 307-279 8 Claims



The invention is directed to circuits which have positive feedback operation to shift the input trigger point of the cir-

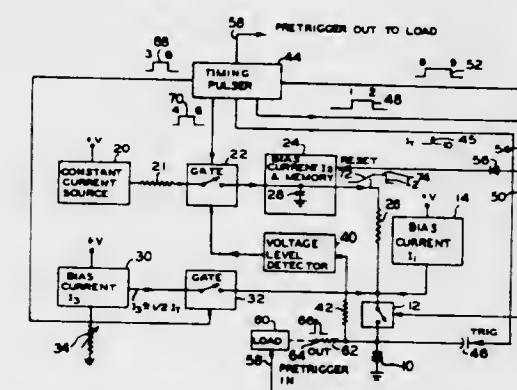
cuit to a new value, depending upon what the last bonafide input logic level was. The spread between the two trigger levels is set by the initial design with some adjustment of the spread being achieved by an external control input. The circuits are applicable to N or P channel MOS devices.

3,612,909
TRANSISTORIZED SWITCHING CIRCUIT
Hirosuke Imabayashi, Ise, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan
Filed June 8, 1970, Ser. No. 44,027
Claims priority, application Japan, June 23, 1969, 44/49778
U.S. Cl. 307-282 3 Claims



A transistorized circuit for providing switching action includes main switching transistors and prestage transistors. The circuit also includes a multiwinding current transformer, the primary windings of which are connected in the main switching circuit so that the secondary outputs of the current transformer may be used to obtain driving sources for the prestage transistors. In a preferred embodiment, driving currents sufficient to cause the main switching transistors to full-saturate are always supplied to the prestage transistors by back-to-back diode circuits.

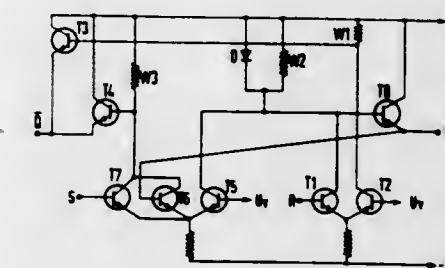
3,612,910
TRIGGERED PULSE GENERATOR HAVING AUTOMATIC BIAS ADJUSTMENT
Clarence E. Cowan, Newberg, and George J. Frye, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed July 28, 1970, Ser. No. 58,884
Int. Cl. H03k 3/315
U.S. Cl. 307-286 9 Claims



A triggered pulse generator circuit is described including a tunnel diode or other negative resistance device connected as a bistable switching circuit whose forward bias is automatically adjusted to the proper arming level between trigger pulses. A ramp bias current is applied to the tunnel diode along with a fixed bias current until it switches to a high-voltage state and actuates a voltage level detector. The detector output stops the ramp and causes a memory capacitor to store the maximum ramp current which is added to the fixed bias current to provide an arming current corresponding to the peak current of such tunnel diode minus a predetermined bias current related to the amplitude of the trigger pulse. After the device is reset, the stored arming current is again applied thereto to enable a subsequent trigger pulse to trigger the device and produce an output pulse.

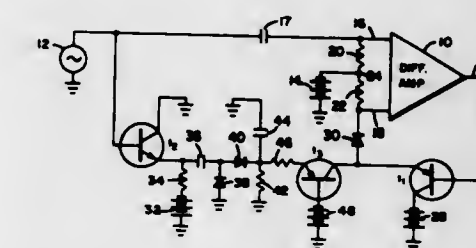
3,612,911
ASYNCHRONOUS RS SWEEP STAGE IN ECL TECHNIQUE

Friedrich-Karl Kroos, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 6, 1970, Ser. No. 61,768
Int. Cl. H03k 3/26 3 Claims



An asynchronous RS sweep stage in emitter-coupled technique utilizes emitter follower output circuits and a retroactive path to decrease pulse application and pulse duration time.

3,612,912
SCHMITT TRIGGER CIRCUIT WITH SELF-REGULATED ARM VOLTAGE
John B. Schwartz, Abington, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 14, 1970, Ser. No. 2,701
Int. Cl. H03k 5/20, 3/26
U.S. Cl. 307-290 6 Claims

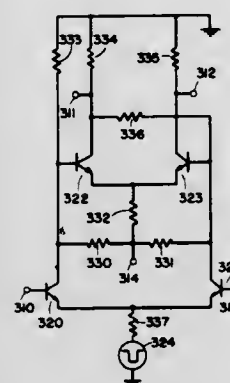


A Schmitt trigger circuit having an arm voltage which automatically increases in amplitude from a fixed minimum value in accordance with the amplitude of the input signal to the circuit. The input signal is applied directly to an inverting input terminal of a differential amplifier and the arm voltage, which comprises a component having a fixed value and a component having a value proportional to the amplitude of the input signal, is applied to a noninverting terminal of the differential amplifier. The output signal of the differential amplifier removes the arm voltage when the instantaneous value of the input signal is greater than that of the arm voltage and thereby causes the voltage at the noninverting terminal to decrease to a value corresponding to the base line value of the input signal.

3,612,913
DIGITAL CIRCUIT
Rikio Maruta, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Feb. 17, 1969, Ser. No. 799,745
Claims priority, application Japan, Feb. 17, 1968, 43/9889
Int. Cl. H03k 3/295 5 Claims

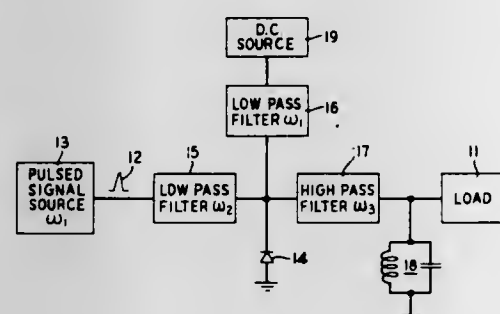
A digital circuit is described for operation with transistors in the unsaturated state. A first pair of transistors are connected in differential relationship and provided with a single resistive positive feedback circuit. A second pair of transistors also connected in differential relationship have their collectors respectively coupled to the bases of the first pair of transistors. A source of clock pulses is coupled to the common emitters of the second pair to render the transistors

in the first and second pair selectively conductive in correspondence with signals applied to the input bases of the



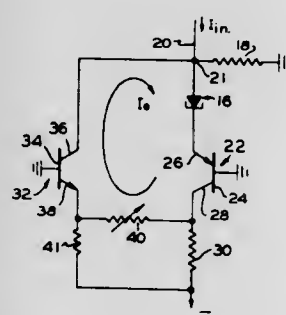
second pair of transistors. Several embodiments and applications are described.

3,612,914
AVALANCHE DIODE CIRCUITS
William Joshua Evans, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 25, 1970, Ser. No. 66,823
Int. Cl. H03k 335
U.S. Cl. 307—285
6 Claims



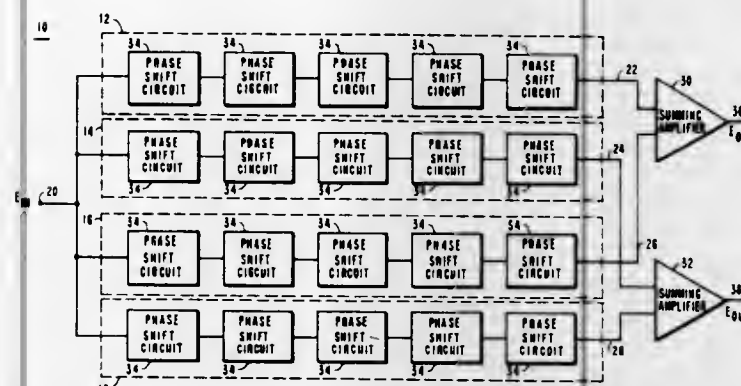
An avalanche diode of the type capable of generating Trapatt mode oscillations is used for generating extremely sharp output voltage spikes. An externally applied input pulse has a current density of $J_r > qv_s N$, where v_s is the saturated drift velocity and N is the impurity concentration of majority carriers in the high-resistance layer of the diode. The output spikes can be used for high speed gating, pulse regeneration, or harmonic generation.

3,612,915
TRIGGERABLE APPARATUS
George J. Frye, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed May 26, 1969, Ser. No. 827,568
Int. Cl. H03k 17/00, 3/26
U.S. Cl. 307—290
13 Claims



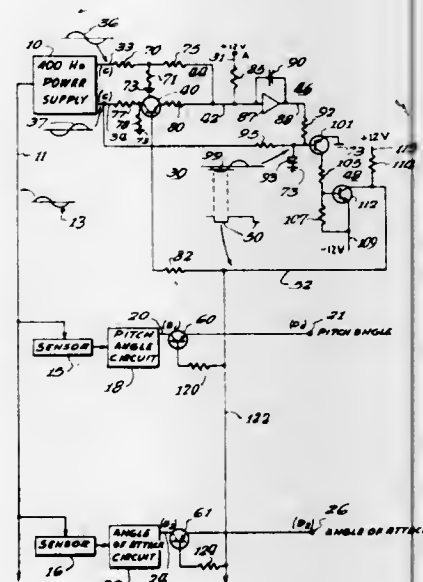
A Schmitt trigger circuit comprises a tunnel diode in series with a transistor amplifier, with a load resistor shunted across the series combination. The output of the transistor amplifier is coupled in positive feedback relation to the tunnel diode.

3,612,916
DIFFERENTIAL PHASE SHIFTER
Daniel R. O'Neill, 28019 Hazelridge Drive, Palos Verdes Peninsula, Calif.
Filed July 29, 1970, Ser. No. 59,070
Int. Cl. H03k 1/16
U.S. Cl. 307—295
10 Claims



A differential phase shifter comprises four phase shift networks connected in parallel to a single input. Each phase shift network includes five series connected phase shift circuits comprising a bipolar transistor with a resistor and capacitor connected in series between the collector and emitter. The transistor base provides a high impedance input and the common junction between the resistor and capacitor provides an output of each phase shift circuit. Different pairs of phase shift networks are connected to each of two summing amplifiers which provide the differential outputs. When the components of each phase shift circuit are chosen to form a proper relationship the differential phase shift between the two outputs is maintained very nearly constant over a very broad frequency range.

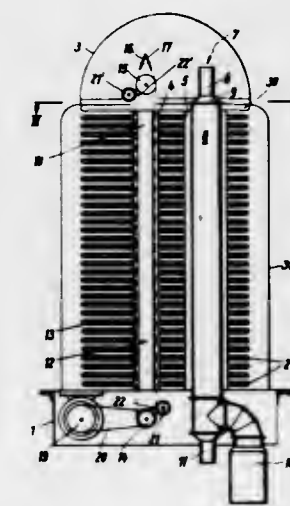
3,612,917
CONTROL CIRCUIT FOR COMPENSATING FOR POWER VARIATIONS UTILIZING CONTROLLED MULTIPLIERS OR DIVIDERS
James A. Sutcliffe, Redmond, and Robert K. Kirschner, Bellevue, both of Wash., assignors to Sundstrand Data Control, Inc.
Filed June 26, 1969, Ser. No. 836,743
Int. Cl. G05d 3/00
U.S. Cl. 307—297
12 Claims



An AC power supply powers several transducer circuits, in which input voltage variations cause variations in the output signals from the transducer circuits. A time division multiplier has an input connected to the AC power supply and a second input connected to a fixed DC voltage source. Variation in AC amplitude change the duty cycle of pulses generated by the multiplier. Semiconductor detector gates are driven by the multiplier pulses in order to demodulate

and divide the output signals of the transducer circuits by a factor proportional to the duty cycle, thereby compensating for variations from the AC power supply.

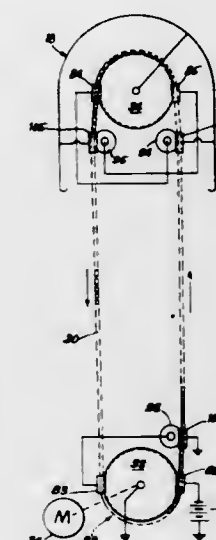
3,612,918
ELECTROSTATIC HIGH-TENSION BELT GENERATOR
Kurt Willutzki, Tübingen, Germany, assignor to ITF Induktive Technische Forschung GmbH, Düsseldorf, Germany
Filed Jan. 15, 1969, Ser. No. 791,374
Claims priority, application Germany, Jan. 19, 1968, P 16 38 220.0
Int. Cl. H02n 1/12
U.S. Cl. 310—6
24 Claims



An endless running belt or insulating thread of an electrostatic high-tension belt generator forms a belt or insulating thread wall of plural parallel coils over a path between guide rollers and diverting rollers with respect to which opposite charging roller means and diffusion electrodes are provided. An insulating wall interconnects the guide rollers in an exchangeable construction unit and potential rings are formed of hard foam material having a metallic conductive cover particularly of a wrapping of aluminum foil. Annular plate-formed supports are engaged centrally by sparking distance spacer means and peripherally engage the potential rings like a clamp to avoid damage of potential ring surface in case of disturbance. A particle accelerator exemplified by a discharge tube is provided in passages with the generator and a tubular insulating lining means is provided in said passages to form rigid machine frame connecting elements between the generator socket and a removable high-tension electrode on opposite ends of an airtight liner having beaded edges and filled with pressurized gaseous medium of high dielectric strength.

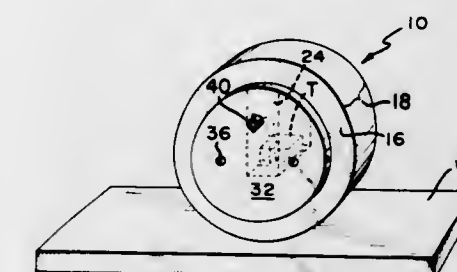
3,612,919
HIGH-VOLTAGE ELECTROSTATIC GENERATOR
Raymond G. Herb, Madison, and James A. Ferry, Middleton, both of Wis., assignors to National Electrostatics Corp., Middleton, Wis.
Filed May 29, 1969, Ser. No. 829,066
Int. Cl. H02n 1/00
U.S. Cl. 310—6
24 Claims

A high voltage is developed by conveying electrostatic charges to a high-voltage electrode, by means of an endless conveyor chain comprising conductive links alternating with insulating links. The conductive links comprise cylindrical pellets with cylindrical openings extending axially therein. The insulating links have enlarged spherically rounded end portions swingably received in the cylindrical openings. Pivot pins extend between the enlarged end portions and the cylindrical pellets. The conveyor is trained around wheels having spring contactors thereon for transferring charges to and from the pellets. Channel-shaped induction electrodes are positioned opposite the conveyor where it makes and breaks contact with the wheels. Operating voltages for some of the



spring contactors thereon for engaging the pellets. Additional induction electrodes are preferably provided opposite the idler pulleys.

3,612,920
WHEEL-TYPE TRANSDUCER PROBE
Walter J. Bantz, and Chan-Koo Chung, both of Stamford, Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.
Filed Oct. 5, 1970, Ser. No. 77,877
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1
9 Claims

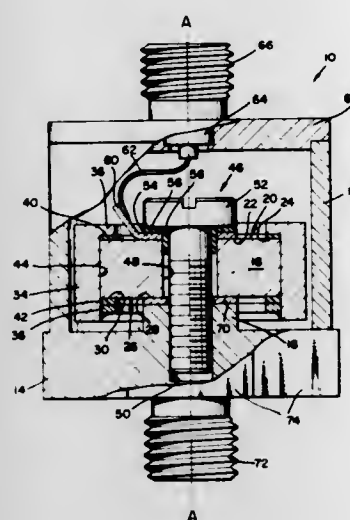


A wheel-type ultrasonic transducer probe comprises a hub portion and a rotatable rim portion, both made of substantially rigid thermoplastic material. The probe is dimensioned to be useful for thickness gauging and to this end is constructed to cause the ultrasonic signal to transverse equal distances in the hub portion and rim portion.

3,612,921
ANNULAR SHEAR ACCELEROMETER
Dan L. Springate, Temple City, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Mar. 27, 1969, Ser. No. 811,120
Int. Cl. H04r 17/00
U.S. Cl. 310—8.4
10 Claims

A shear accelerometer characterized by its clamping

means securing an annular piezoelectric element to both the



accelerometer's base and inertial members, thereby avoiding the utilization of interfacial bonding media.

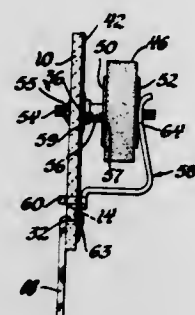
3,612,922

METHOD OF MOUNTING A PIEZOELECTRIC DEVICE
Thomas J. Furnival, Logansport, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1970, Ser. No. 88,455
Int. Cl. H01v 7/00

U.S. Cl. 310-9.1

3 Claims



A thick film hybrid integrated circuit including an integrally mounted ceramic filter. A circular ceramic resonator disk having a central aperture therein is seated on a pedestal contact upstanding on a circuit board. The disk is supported on a shoulder of the pedestal so that it is free to resonate in the radial mode. A spring contact secured to the board contacts the exposed face of the disk to retain the disk against the pedestal shoulder.

3,612,923

ELECTROGASDYNAMIC CONVERTER WITH RESISTIVE CHANNEL

Edward L. Collier, Morris Plains; Meredith C. Gourline, West Orange, and Harold W. McCrae, Upper Montclair, all of N.J., assignors to Gourline Systems, Inc., Livingston, N.J.

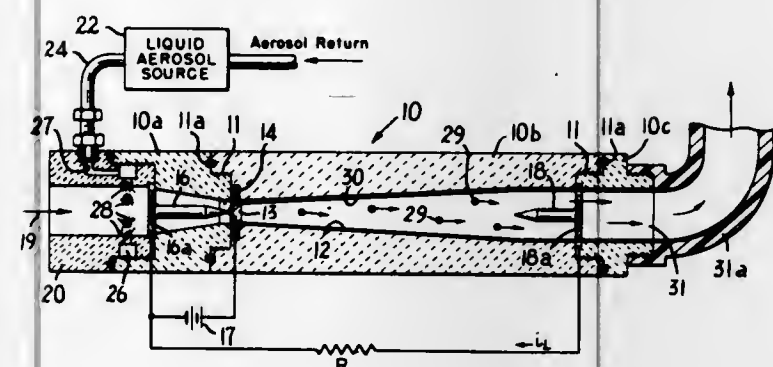
Filed Oct. 5, 1967, Ser. No. 673,078
Int. Cl. H02n 3/00

U.S. Cl. 310-10

21 Claims

An electrogasdynamic converter operating on a gaseous stream of the type including a flow channel having ionizing electrode means in an upstream portion to produce charges in the stream, and collector electrode means spaced downstream from the ionizing electrode means to neutralize the charges carried in the downstream direction by the flow.

The converter is operated to establish in the intermediate section of the flow channel between the ionizing electrode means and the collector electrode a high resistance path at the boundary of the flow path for charges carried in the stream. The high resistance may be formed by a thin liquid or solid film at the flow path boundary, or by spaced conductive



elements extending through a dielectric channel to be flush with the flow boundary and exposed to the stream. In the latter event, a thin resistive film may be deposited on the outside of the channel to have successive sections thereof connected between the conductive elements. A third alternative utilizes a flow channel constructed of a highly resistive conducting material.

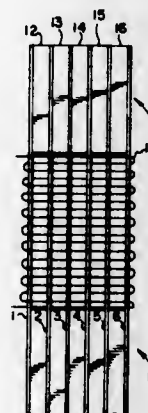
3,612,924

MASS LOADED MAGNETOSTRICTIVE TRANSDUCER
Adelbert Semmelink, Riverside, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 26, 1969, Ser. No. 861,376
Int. Cl. H01v 9/00

U.S. Cl. 310-26

3 Claims



This device is a magnetostrictive transducer having several magnetostrictive elements spaced one from the other and having two end bodies, one mounted at each end of the magnetostrictive elements and attached to each magnetostrictive element so as to be moved by the contraction and expansion of the magnetostrictive elements. The mass of the end bodies is large compared to that of the magnetostrictive elements. A series of coils are wound around the magnetostrictive elements in such a way that when pulsating current is conducted through the coils, the magnetostrictive elements contract and expand in accordance with the strength of the pulsating current and move the end bodies. The magnetostrictive elements and end bodies resonate at a predetermined frequency and the pulsating current actuates the transducer at the frequency to give a greater power and efficiency to the transducer output.

3,612,925

INDUCTION MOTOR ROTOR AND METHOD OF MAKING SAME

Roy L. Swanke, Newington, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,341
Int. Cl. H02k 3/06

U.S. Cl. 310-42

11 Claims



An induction motor rotor in which conducting bars and end rings are preformed ladderlike for insertion in the slots and the bars have the same circumferential widths as the lands of the laminated core between them and substantially the same radial thickness as the radial depth of the slots in which they rest. The bars are stamped without waste of material from heavy strip stock to provide interdigitating fingers whose length is at least 50 percent of the slot length and provide identical half-ladder units which are then shaped to the rotor slot pattern and inserted in the rotor slots where they are induction soldered for circuit continuity and conductivity.

3,612,926

PICKOFF DEVICE FOR ROTARY MACHINES

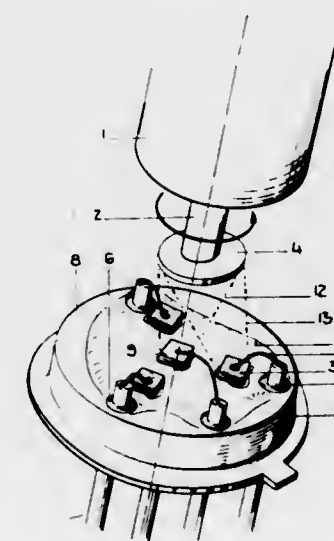
Walter Zizelmann, Alpirsbach, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Jan. 26, 1970, Ser. No. 5,499
Claims priority, application Germany, Jan. 31, 1969, P 19 04 791.7

Int. Cl. H02k 37/00

U.S. Cl. 310-46

9 Claims



A pickoff device for a rotary machine in which radiation from a stationary radiation source is variably reflected by a reflector rotating with the rotor on to a stationary radiation sensor. A plurality of sensors may be provided and the radiation may be reflected successively on them. The outputs of the sensors may be used to control field windings where the machine is a direct current machine.

3,612,927

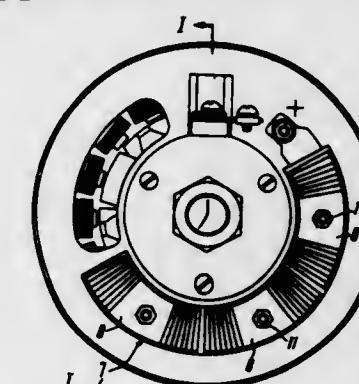
SEMICONDUCTOR RECTIFIER UNIT OF ELECTRIC GENERATOR

Pavel Mikhailovich Anisimov, Tkatskaya ulitsa, 46, kv. 9, Moscow; Ivan Grigorievich Barannik, ulitsa Krasnostonnitskaya, 8, kv. 16, Kherson; Pavel Gdanilevich Berman, ulitsa Ushakova, 58, kv. 44, Kherson; Boris Ivanovich Evgrafov, ulitsa Chisty prudy, 9, kv. 8, Moscow; Jury Alexandrovich Kupeev, ulitsa 9 Rota, 15, kv. 11, Moscow; Alexandr Vasilievich Kurbatov, ulitsa Pecherakay, 27, kv. 7, Kuibyshev; Boris Davydovich Rafaelevich, ulitsa Gagarina, 60, kv. 43, Kuibyshev; Rem Vladimirovich Stepanykh, ulitsa Gagarina, 84, kv. 8, Kuibyshev; Vsevolod Ilch Shakhovtsev, Scherbakovskaya ulitsa 16/18, kv. 10, Moscow; Viktor Konstantinovich Judashkin, Samarskaya ulitsa, 148, kv. 23, Kuibyshev; Mikhail Stepanovich Reschuk, ulitsa Mira, 14, kv. 4, Kherson; Oleg Andreevich Guschenko, ulitsa Krasnokazarmennaya, 10, Kherson; Evgeny Ivanovich Kharchenko, ulitsa Otkrytskoi revoljutsii, 6a, Kherson; Alexei Mikhailovich Ljubimov, Kamyskany, ulitsa Sovetskaya, 60, Kherson, and Pavel Grigorievich Kitsa, Zalaegerseg, 23-a, kv. 25, Kherson, all of U.S.S.R.

Filed Dec. 18, 1969, Ser. No. 886,197
Claims priority, application U.S.S.R., Dec. 19, 1968, 1291942
Int. Cl. H02k 29/02

U.S. Cl. 310-68 D

1 Claim



A semiconductor rectifier unit for an electric generator arranged in a three-phase full-wave rectification circuit, whose semiconductor rectifying elements are secured within metallic housings serving as heat transfer elements and located at the neutral point of PN circuits so that one of the PN junctions contacts the common housing with its P-region, while the other, with its N-region. The like leads of the PN junctions are connected to the current collecting bus bars arranged in two layers and interspaced by an insulating member, one of the bus bars directly adjoining the generator cover in electrical contact therewith. The common metallic housings containing the semiconductor PN circuits have openings through which mounting bolts are adapted to pass, which at the same time serve as generator phase leads applying AC voltage to the metallic common housings serving as the neutral point of the rectifier arms and to the external AC consumers.

3,612,928

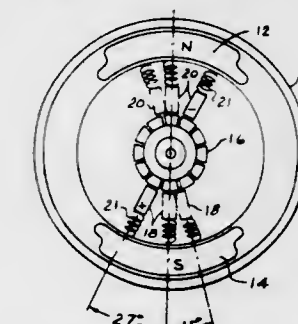
SUBMERGED DC MOTOR

Charles B. Small, 213 Ohio St., Elyria, Ohio; Stephen G. Hokky, 5057 Evergreen Drive, North Olmstead, Ohio; Arthur G. Branch, 346 Columbia Road, Elyria, Ohio

Filed Mar. 19, 1970, Ser. No. 21,151
Int. Cl. H02k 13/10

U.S. Cl. 310-87

4 Claims



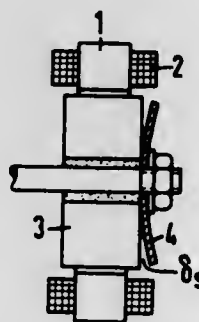
A submerged DC Motor is provided wherein the centerline of the flux field of the armature and the stator are so

selected, and the thickness of the fluid film between the brushes and commutator is so selected to provide maximum brush life.

3,612,929
DEVICE FOR TEMPERATURE COMPENSATION IN ELECTRICAL MACHINES EXCITED BY PERMANENT MAGNETS

Wolfgang Volkrodt, Muhlbach, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 19, 1969, Ser. No. 859,284
Claims priority, application Germany, Sept. 26, 1968, P 17 88 066.9

Int. Cl. H02k 1/04
U.S. Cl. 310—190 4 Claims

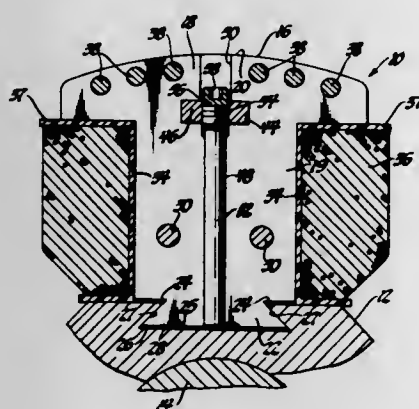


An electrical machine, with a stator and a rotor of which one has permanent-magnet means for exciting the machine, is provided with a device for temperature compensation of the magnetic stray flux. The device comprises bimetal structure subject to the operational heat of the machine and adapted to temperature-responsively control the stray flux. Preferably, the bimetal structure consists of one or more flat bimetal members disposed in the region of the magnetic stray flux so that temperature increase causes being of the bimetal member which then increases the width of an airgap to reduce the stray flux.

3,612,930
SALIENT FIELD POLE PIECE FOR DYNAMOELECTRIC MACHINES

Virgil W. Raby, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1970, Ser. No. 55,667
Int. Cl. H02k 1/28

U.S. Cl. 310—218 2 Claims

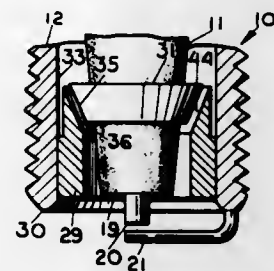


A salient field pole piece for a dynamoelectric machine is fastened in an interlocking joint to a magnetic core member by a series of removable pins which are clamped between an elongated bar and the magnetic core member. The elongated bar extends through a longitudinal slot provided in the pole piece and screws mounted in the elongated bar force the pins inwardly. The pole piece is pressed outward from the core member so that it is clamped along the interlocking joint.

3,612,931
MULTIPLE HEAT RANGE SPARK PLUG

William P. Strumbos, 85 Middleville Road, Northport, N.Y.
Filed Mar. 11, 1970, Ser. No. 18,615
Int. Cl. H01t 13/16

U.S. Cl. 313—11.5 11 Claims



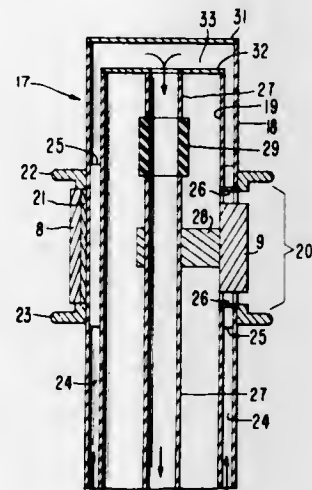
A spark plug incorporating a heat shunt on the plug insulator nose arranged such that the characteristics of a "hot" plug are provided at lower operating temperatures and of a "cold" plug at higher operating temperatures. The heat shunt is a thermally conductive ring bonded on the insulator nose. A thermal gap between the heat shunt and the shell of the plug prevents heat transfer through the shunt at lower operating temperatures—there is thus a relatively long heat path into the cooling system and the firing end of the plug stays relatively hot to prevent fouling. At higher operating temperatures, the heat shunt expands thermally to bridge the gap to thereby shorten the heat path into the cooling system so that the relatively rapid heat conduction "cools" the firing end of the plug to prevent its overheating under high speeds and loads. A method for fabricating the spark plug is given in which the plug insulator with the shunt bonded thereon is installed in the shell at the temperature at which the shunt is designed to have expanded into good thermal contact with the shell whereby the heat shunt gap is set substantially automatically. A method is also provided for monitoring the setting of the shunt gap during the manufacturing of the plug whereby a correlation is made between an energy level and thermal conduction in the shunting means.

3,612,932
CROSSED-FIELD MICROWAVE TUBE HAVING A FLUID COOLED CATHODE AND CONTROL ELECTRODE

Andrew S. Wilczek, Old Bridge, and Charles Gill, Newark, both of N.J., assignors to Varian Associates, Palo Alto, Calif.

Filed June 13, 1969, Ser. No. 832,901
Int. Cl. H01j 1/02, 23/04

U.S. Cl. 313—32 5 Claims



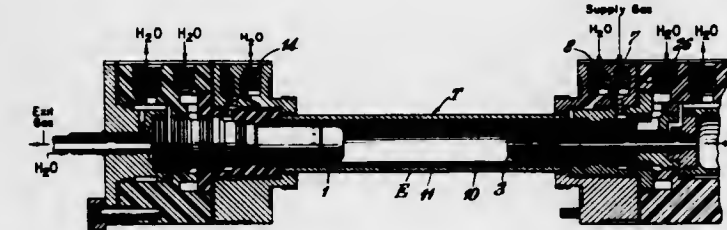
A crossed-field microwave tube includes a generally cylindrical central electrode structure having an arcuate cathode emitter portion and a sector-shaped control electrode portion. The cathode emitter is carried in heat exchanging relation upon the outside of a double walled cathode support tube. The annular space between the double walls defines a cathode fluid coolant passageway. The control electrode is

carried from a tubular support member centrally disposed of the cathode support tube. Fluid coolant passes in series through the control electrode support tube and the outer annular cathode coolant passageway. The control electrode support tube includes a tubular insulator defining a portion of control electrode coolant passageway.

3,612,933
METHOD AND APPARATUS FOR STABILIZING AN ARC

Harden Henry Troue, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,775
Int. Cl. H01j 7/24, 17/26

U.S. Cl. 313—32 5 Claims

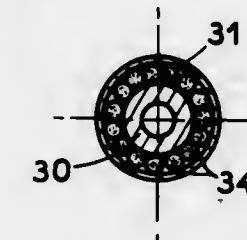


A method and apparatus for stabilizing an arc established in an arc device having two axially spaced electrodes, at least one being a hollow electrode wherein a cooling fluid is passed along the outside surface of the hollow electrode at varying speeds to create a hot surface on the inside surface of said electrode which will form a zone from which the arc will not wander.

3,612,934
COLLECTOR FOR ELECTRON TUBES

Dominique Henry, Paris, France, assignor to Thomson-CSF
Filed Mar. 17, 1970, Ser. No. 20,208
Claims priority, application France, Mar. 28, 1969, 69/09365

Int. Cl. H01j 25/34 4 Claims

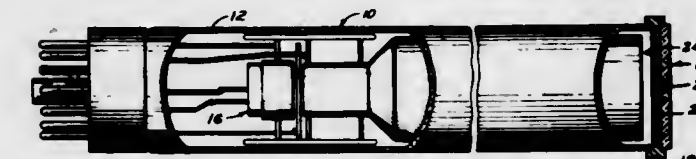


In order to improve the cooling of the collector of a traveling-wave tube, the latter is surrounded by an outer sleeve and insulating rods are inserted between the collector 30, and the sleeve. The sleeve is fixed on one side of an intermediate insulating member, on the opposite side of which the remainder of the tube is mounted.

3,612,935
SELENIUM-SULFUR PHOTOCONDUCTIVE TARGET

Stanley A. Bynum, Dallas, Tex., assignor to General Electrodynamics Corporation, Garland, Dallas County, Tex.
Division of Ser. No. 718,012, Apr. 1, 1968, abandoned, which is a continuation of application Ser. No. 467,268, June 28, 1965, now abandoned.

Filed Mar. 17, 1969, Ser. No. 807,536
Int. Cl. H01j 31/28 3 Claims



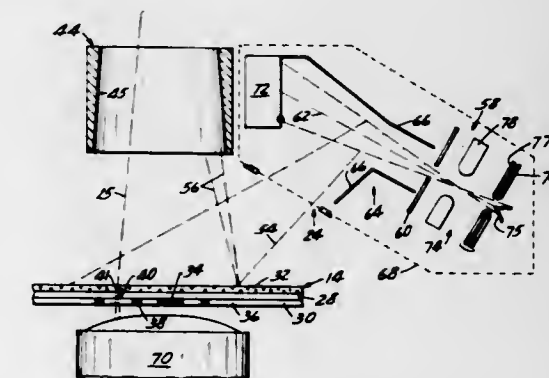
A photoconductive device made of a mixture of sulfur and selenium in two amorphous forms one less transparent than

the other comprising a mass of small particles of one form deposited in the interstices of the other.

3,612,936
APPARATUS CONTROLLING ACCUMULATED ELECTRON CHARGING OF A NONCONDUCTIVE MEDIUM

Robert S. Berglund, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jan. 2, 1970, Ser. No. 142

Int. Cl. G11b 7/04; G11c 27/00; H01j 29/74
U.S. Cl. 313—68 5 Claims

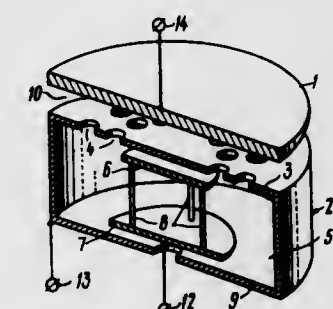


Apparatus comprising in combination a first electron generator including focusing and scanning means for deflecting a primary electron beam to produce a bombarded scan pattern on a nonconductive medium, and control means including a second electron generator for generating a second electron beam of low energy electrons directed along an electron axis that is nonintersecting with the medium. The control means also including deflecting means to afford electron flooding of the medium by the low energy electrons and thereby cause secondary emission of electron from the medium, collecting means for collecting the secondary emission electrons to afford control of the accumulated charge on the medium, and light shield and trapping means to prevent illumination of the medium by the second electron generator. In the first embodiment, the medium is photon emissive and the apparatus includes a photomultiplier. In the second embodiment, the medium is sensitive to the bombarding electrons for producing a pattern thereon.

3,612,937
LOW-PRESSURE CONTROLLED DISCHARGE DEVICE WITH TRIGGER ELECTRODE WITHIN HOLLOW CATHODE

Sergei Alexandrovich Smirnov, ulitsa Pavilika Morozova 1, kv. 15; Ivan Ivanovich Aksenov, prospekt Kurchatova 13, kv. 18, and Vladimir Konstantinovich Bocharov, proezd Evpatorijsky 1, kv. 18, all of Kharkov, U.S.S.R.
Filed Oct. 8, 1969, Ser. No. 864,579

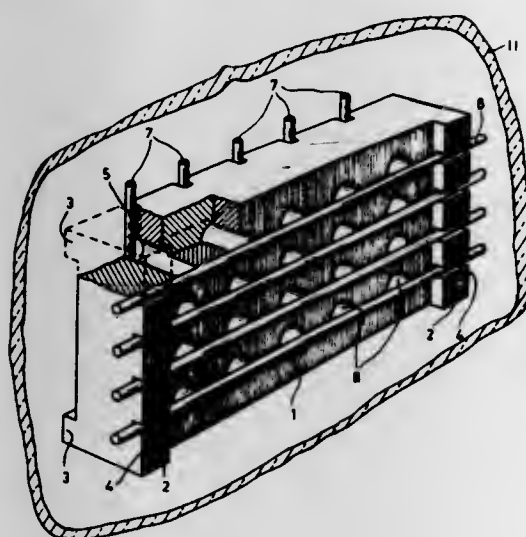
Int. Cl. H01j 17/00 3 Claims



A discharge device comprises an anode, a hollow cathode with apertures on a side facing the anode and a trigger electrode disposed within the hollow cathode. The trigger electrode is constituted as two plates with interconnecting conductive posts one of the plates being disposed at the side of the cathode with the apertures, the other plate being disposed at the opposite side of the cathode. The hollow cathode has a linear dimension between sidewalls at least several times greater than the size of the main discharge gap between the anode and the cathode. The plate of the trigger

electrode which is disposed at the side of the cathode with the apertures may be placed in one of such apertures so as to lie in a common plane with the side of the cathode.

3,612,938
GAS DISCHARGE TUBE HAVING TWO SYSTEMS OF INTERSECTING ELECTRODES
 Thijs Johannes De Boer; Johannes Hendricus Maria Johannis; Zeger Van Gelder, and Hendrikus Johan Lodewijk Trap, all of Emmasingel, Elsthoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.
 Filed May 13, 1969, Ser. No. 824,175
 Claims priority, application Netherlands, May 18, 1968, 6807093
 Int. Cl. H01j 61/66
 U.S. Cl. 313—109.5

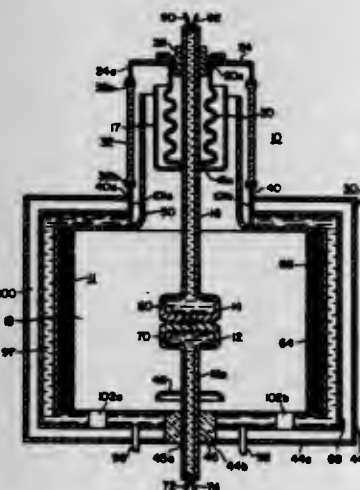


In a gas discharge tube having two intersecting systems of electrodes the anode wire is provided with a resistance layer. As a result of this more discharges can cooperate with one and the same anode. Therefore, it is possible to supply a pattern of discharges which nearly burn until an extinguishing signal is given. The memory is now built in the tube.

ERRATUM

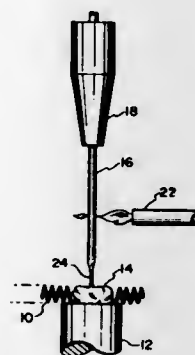
For Class 313—105 see:
 Patent No. 3,612,946

3,612,939
MOLECULAR SIEVE FOR VACUUM CIRCUIT INTERRUPTER
 Mario Rabinowitz, Menlo Park, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Mar. 13, 1968, Ser. No. 712,790
 Int. Cl. H01j 19/70
 U.S. Cl. 313—146



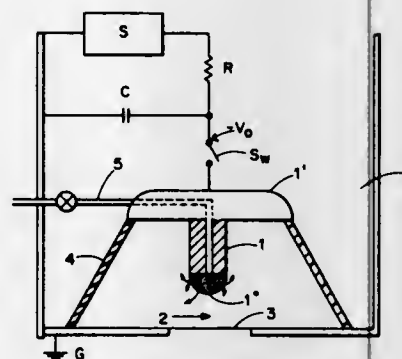
A vacuum-type circuit interrupter has a molecular-sieve shielding structure surrounding the arc gap to sorb vapors

3,612,940
LAMP FILAMENT STRUCTURE
 Richard E. Sims, Des Plaines, Ill., assignor to Chicago Miniature Lamp Works, Chicago, Ill.
 Filed July 20, 1970, Ser. No. 56,317
 Int. Cl. H01j 1/88, 19/42
 U.S. Cl. 313—271



A lamp filament is reliably and firmly connected both electrically and mechanically to a lead wire or mounting post by a body of metallic material intimately entrapping the filament and metallurgically bonded to the lead wire.

3,612,941
PULSED FIELD EMISSION COLD CATHODE WITH MEANS FOR REPLACING STRIPPED ADSORBED GAS LAYER
 Samuel V. Nablo, Lexington, and A. Stuart Denholm, Lincoln, both of Mass., assignors to Energy Sciences, Inc., Lexington, Mass.
 Filed Apr. 24, 1970, Ser. No. 31,530
 Int. Cl. H01j
 U.S. Cl. 313—310



The present disclosure involves methods and apparatus for continually replacing the adsorbed gas layer stripped from high-current field-emission cold cathodes by the effects of high-voltage pulsing the cathode.

3,612,942
EMITTING ASSEMBLY OF AN ELECTRONIC BOMBARDMENT GUN
 Jean-Pierre Peyrot, 8 domaine du Bel-Abord, Chilly-Mazarin, Essonne, France
 Filed Nov. 28, 1969, Ser. No. 880,715
 Claims priority, application France, Nov. 29, 1968, 176,086
 Int. Cl. H01j 1/15
 U.S. Cl. 313—341

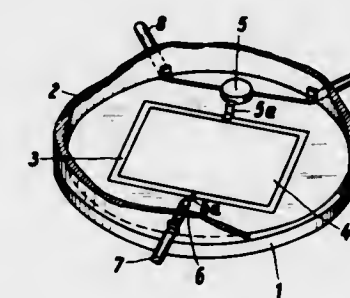
An electronic bombardment gun comprising the emitting assembly of a goffered washer, an insulating spacer, a central

electrode, a conical perforated filament, said filament being provided with a flange at its widest portion and with an



emitting annular end portion pierced with an orifice at its narrowest part.

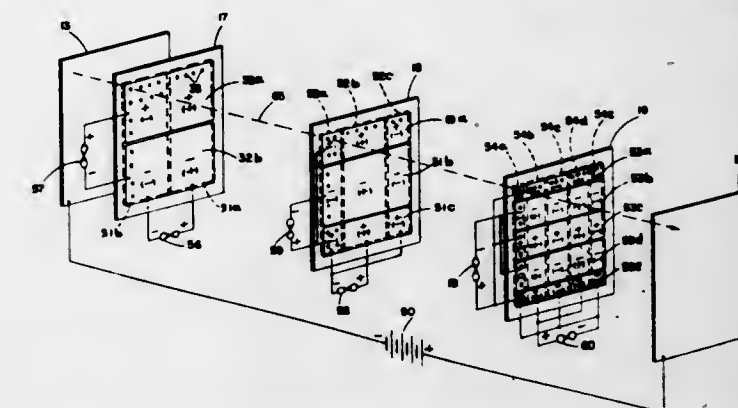
3,612,943
TELEVISION CAMERA TUBE WITH BUILT-IN AMPLIFIER
 Klaus Lehmann, Nieder-Ramstadt, and Rainer Bauer, Darmstadt, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany
 Filed Sept. 15, 1969, Ser. No. 858,037
 Claims priority, application Germany, Oct. 4, 1968, P 18 01 247.0
 Int. Cl. H04n 5/26; H01j 31/08, 23/16
 U.S. Cl. 315—3



A television camera tube including semiconductor preamplifier means located adjacent to the target area and directly connected to the signal electrode around the target area. The usual ringlike contact is avoided, thereby reducing the input capacitance of the preamplifier and improving the signal-to-noise ratio.

3,612,944
ELECTRON BEAM SCANNER HAVING PLURAL CODED DYNODE ELECTRODES
 Stanley C. Requa, Northridge, and Farrell A. McCann, Hawthorne, both of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
 Filed June 30, 1969, Ser. No. 837,831
 Int. Cl. H01j 29/41
 U.S. Cl. 315—12

An electron beam scanner includes a flat electron emitting cathode and a flat target plate, between which are sandwiched a plurality of dynode members for controlling an electron beam between these two members. This electron beam is controlled by means of a digital addressing signal fed to the dynode members in accordance with information to be displayed. Each flat dynode member has a first set of electrodes arranged on one broad surface thereof in accordance with a first predetermined coded finger pattern and a second set of electrodes arranged on the opposite broad surface thereof in accordance with a second predetermined finger

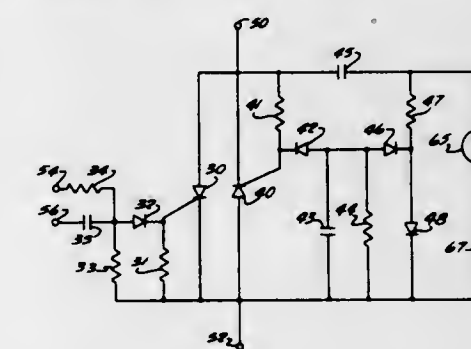


address the electron beam to a single portion of the target plate at a time.

ERRATUM

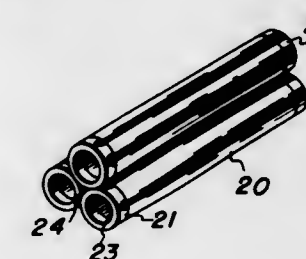
For Class 315—13 C see:
 Patent Nos. 3,613,108 and 3,613,109

3,612,945
DELAYED TURN-ON SOLID STATE RELAY
 Carlile R. Stevens, 1000 Ironwood Place, Alamo, Calif.
 Filed Nov. 2, 1967, Ser. No. 680,176
 Int. Cl. H05b 37/00
 U.S. Cl. 315—200



A solid state relay is described which exhibits gradual turn-on characteristics. This relay is useful, for example, for turning ON and OFF traffic control signal lights, wherein the gradual turn-on characteristics of the relay significantly reduce the current surge normally associated with the turn-on of incandescent lamps.

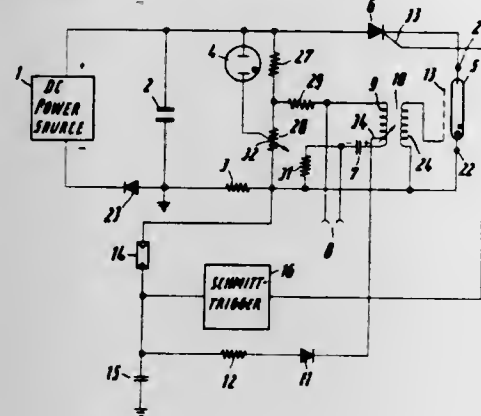
3,612,946
ELECTRON MULTIPLIER DEVICE USING SEMICONDUCTOR CERAMIC
 Minoru Toyoda, Takatsuki-shi, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan
 Filed Aug. 1, 1968, Ser. No. 749,387
 Claims priority, application Japan, Aug. 1, 1967, Mar. 29, 1968, 42/49459; 43/20599
 Int. Cl. H01j 43/00
 U.S. Cl. 313—105



An electron multiplier device. A solid body of barium titanate semiconducting ceramic is formed into a tube or plu-

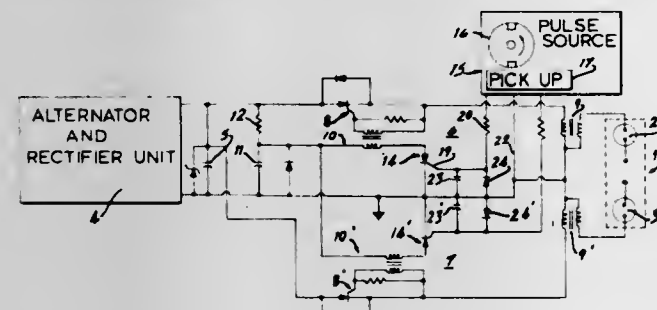
rality of tubes and at least two electrodes are positioned at spaced points on the tube. The ceramic has a resistance-temperature characteristic which is other than negative, i.e. zero or positive. The device can be used in form of a single tube, or a plurality of such tubes can be bundled together. Electrons fed into the tube or tubes impact with the semiconducting ceramic causing secondary electron emission and a greater number of electrons are emitted than are fed to the device.

3,612,947
ELECTRONIC TIMING APPARATUS FOR CONTROLLING THE DURATION OF LIGHT EMISSION OF A FLASH UNIT
Rolf Dieter Dennewitz, Berlin, Germany, assignor to Loewe Opta G.m.b.H., Berlin, Germany
Filed Nov. 7, 1969, Ser. No. 874,935
Claims priority, application Germany, Jan. 28, 1969, P 19005 223.4
Int. Cl. H05b 41/32
U.S. Cl. 315-151 7 Claims



An improved arrangement for adjusting the operating duration of a flash tube includes an interruptible thyristor gate in series with the main electrodes of the flash tube for selectively coupling operating voltage from the flash capacitor to the tube. When an ignition pulse is applied to the trigger electrode of the flash tube, a selectable reference voltage derived from the ignition pulse is applied to a Schmitt trigger circuit to generate a voltage of a first polarity. This voltage opens the thyristor gate to energize the main electrodes of the flash tube, thereby causing the tube to emit a flash of light. A portion of the corresponding light reflected from an object illuminated by the flash tube is detected by a photosensitive element and integrated to form a control signal. The control signal is applied to the input of the Schmitt trigger for a duration sufficient to overcome the reference input voltage and thereby reverse the polarity of the output voltage. This latter voltage disables the thyristor gate and terminates the flash.

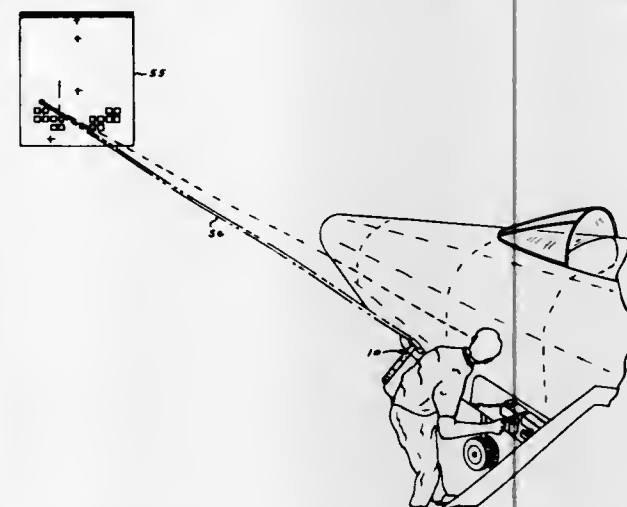
3,612,948
ELECTRICAL PULSE TRIGGERED SYSTEMS
Floyd M. Minks, Kissimmee, Fla., assignor to Brunswick Corporation
Continuation-in-part of application Ser. No. 772,127, Oct. 31, 1968. This application Oct. 9, 1969, Ser. No. 865,050
Int. Cl. H05b 37/02
U.S. Cl. 315-209 R 23 Claims



This disclosure relates to a capacitor discharge ignition system for an internal combustion engine employing al-

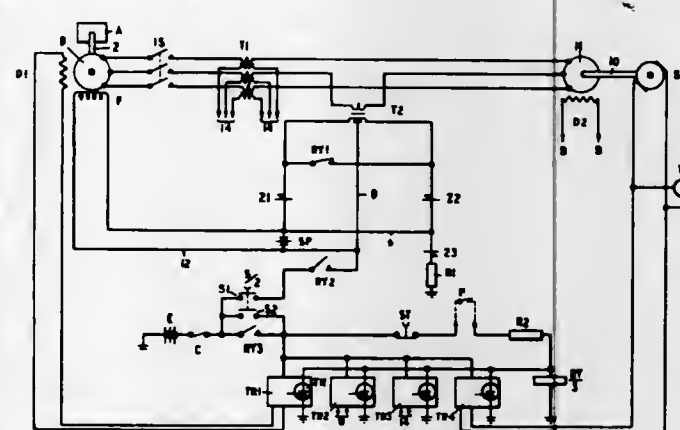
ternately fired controlled rectifiers for discharging of a capacitor to the engine sparkplugs. The opposite ends of a single winding are connected respectively to the gates of the controlled rectifiers. A pair of permanent magnets are sequentially coupled to the winding with successive magnets being oppositely polarized to generate time-spaced alternating current signals in the winding. The signals are alternately of opposite polarity sequence and automatically apply the proper polarity signal to the gates in alternate sequence.

3,612,949
LASER BORESIGHT DEVICE
Arday M. Becraft, Dayton, and Clifford E. Hammer, Trotwood, both of Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force
Filed Sept. 26, 1969, Ser. No. 861,386
Int. Cl. G01b 11/26
U.S. Cl. 356-153 2 Claims



A boresight alignment instrument having a helium-neon gas laser mounted on an alignment mandrel which fits into the gun barrel. A 45° mirror directs the laser beam along a line concentric with the axis of the bore of the barrel. The mandrel has an expanding collet to insure positive locking of the mandrel in the barrel. The laser beam is aligned with the desired output axis, of the adapter assembly, by securing the adapter assembly and laser to an alignment fixture which permits rotation of the laser and adapter assembly. The mirror position is adjusted to stop all motion of the light spot when the assembly is rotated 360°. The device is used with a highly reflective target to make the device useful under all lighting conditions.

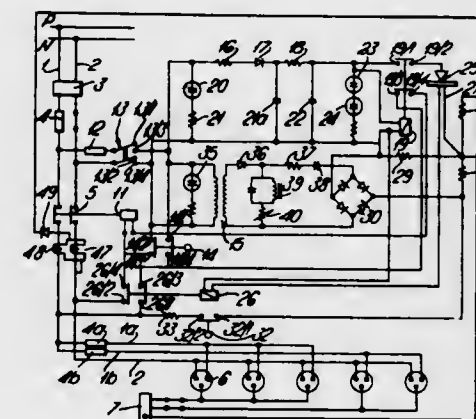
3,612,950
MOTOR CONTROL SYSTEM
Thomas A. Knott, 136 Lambton Road, Wimbledon, London S W 20, England
Filed Sept. 17, 1969, Ser. No. 858,823
Claims priority, application Great Britain, Sept. 18, 1968, 44301/68
Int. Cl. H01j 9/38
U.S. Cl. 317-13 B 11 Claims



Disclosed is a motor control system for energizing a motor which in turn drives a pump for pumping liquefied gases. A

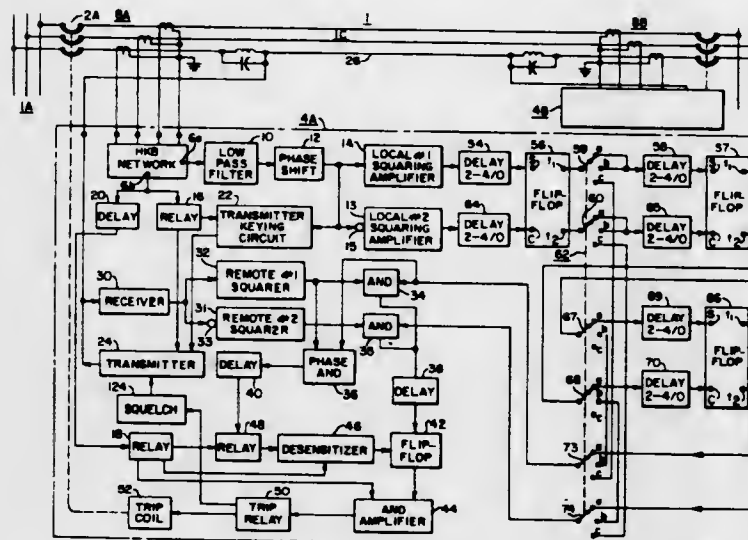
3- Φ alternator (alt.) supplies current to the motor. The alternator field winding is supplied with a first current by a low voltage circuit and with a second current by a current sensing circuit connected to sense the load current passing from the alternator to the motor and to generate a current which is a function of the load current. A single cutout relay having a first pair of contacts connected in the low-voltage circuit and a second pair of contacts connected in the current sensing circuit operates to disconnect both the low-voltage circuit and the current sensing circuit from the alternator field winding, and, thereby stop the motor and pump, whenever any one of several monitored parameters exceeds a chosen threshold value.

3,612,951
SAFETY DEVICE FOR USE WITH ELECTRIC INSTALLATIONS
Leo Wajl, Tel Aviv, Israel, assignor to Samuel Cohen Johananoff, Monte Carlo, Monaco
Filed Mar. 17, 1969, Ser. No. 807,656
Claims priority, application Israel, Mar. 26, 1968, 29,699
Int. Cl. H02h 1/02
U.S. Cl. 317-18 D 5 Claims



A safety device for use with an electric installation wherein an automatic circuit breaker is provided associated with a silicon controlled rectifier whose gate electrode is connected to one or more metallic parts of outer casings of appliances to be fed by the installation such that when a potential of predetermined magnitude appears on these metallic parts the silicon controlled rectifier conducts and results in the immediate opening of the circuit breaker.

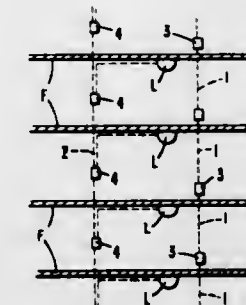
3,612,952
TIME DELAY SIGNAL DEVICE ESPECIALLY FOR PHASE COMPARISON PROTECTIVE RELAYING SYSTEM
John E. Hagberg, Mountain Lakes, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 30, 1970, Ser. No. 51,097
Int. Cl. H02h 3/28, 7/26
U.S. Cl. 317-27 R 4 Claims



A phase comparison relaying network which permits the delaying of the local signal which responds to the alternating current at the local terminal of the alternating current trans-

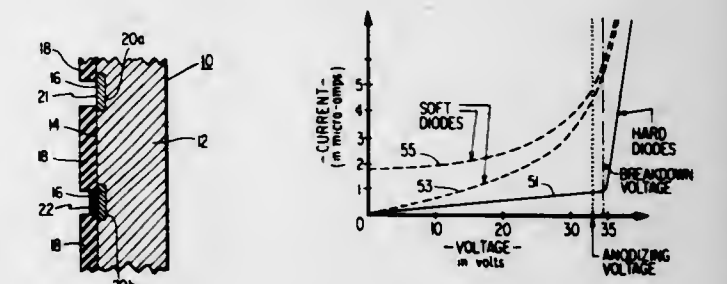
mission line for an interval which may be greater than the time interval of 180° of the alternating current whereby to compensate for time delay in the transmission from the remote terminal of the alternating current transmission line to the local terminal a signal responsive to the alternating current at the remote terminal when the time of transmission is greater than the 180° interval.

3,612,953
ELECTRICAL WIRING SYSTEM AND EJECTABLE DEVICES THEREIN
Alvin S. Gittin, 11717 Larry Road, Fairfax, Va., and Ralph E. McDonald, Washington, D.C.
Filed Oct. 16, 1969, Ser. No. 867,024
Int. Cl. H02h 5/04
U.S. Cl. 317-40 A 6 Claims



An electrical wiring system for multistory buildings, embodying feed-wires extending vertically through the several stories of the buildings with electrical devices, such as outlet receptacles, switches, etc., in housings connected in circuit with said feed wires in substantial vertical alignment, and each of said devices incorporating a protective safety-fuse element therein, which upon rupture is ejected from its housing to render it easily discernible for replacement. Thereby the need for conventional panel boards with circuit-breakers or fuses therein, at different levels of the buildings, and in individual apartments, may be eliminated.

3,612,954
SEMICONDUCTOR DIODE ARRAY VIDICON TARGET HAVING SELECTIVELY INSULATED DEFECTIVE DIODES
Robert Steven Silver, Kendall Park, N.J., and John Jaklik, Jr., Bristol, Pa., assignors to RCA Corporation
Filed Nov. 12, 1969, Ser. No. 876,013
Int. Cl. H01l 17/00, 15/00
U.S. Cl. 317-235 R 3 Claims



The target comprises a semiconductor substrate wafer and an array of semiconductor diodes formed in a wafer with contact surfaces exposed at a surface thereof. At least one "soft" diode of the diodes passes a greater current when back-biased at a given operating voltage than other "hard" diodes of the diodes pass at the operating voltage. An electrically insulating layer, selectively deposited to be thicker on the contact surfaces of the soft diodes than on the contact surfaces of the hard diodes, reduces the current through the soft diodes relative to the hard diodes at the operating voltage. The target may be prepared by the method which comprises the steps of:

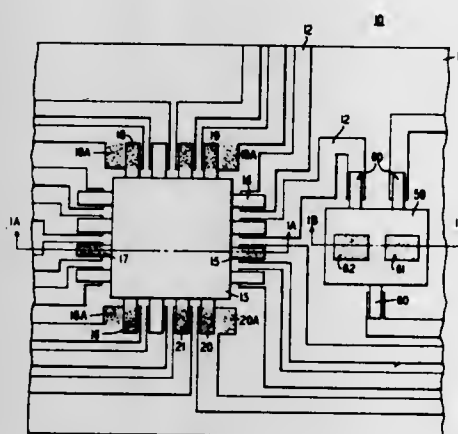
Covering all of the wafer but for the contact surfaces with a masking layer;
contacting the contact surfaces of the wafer with an oxidizing electrolyte solution, and

applying an anodizing voltage across the wafer and the solution and permitting electrical current to pass through the diode array and the solution, whereby a thicker insulating layer selectively forms anodically on the contact surfaces of the soft diodes.

3,612,955
CIRCUIT BOARD CONTAINING MAGNETIC MEANS FOR POSITIONING DEVICES
Alexander D. Butherus, Murray Hill; Miles C. Huffstutler, Jr., Watchung, and Jack A. Morton, South Branch, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 21, 1969, Ser. No. 792,487
Int. Cl. H01h 3/14

U.S. Cl. 317-101 A

1 Claim

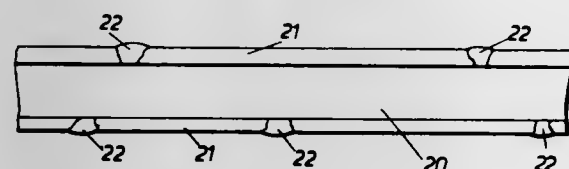


Ferromagnetic materials are incorporated into circuit boards in accordance with predetermined patterns to enable by magnetic attraction substantially automatic positioning on the boards of semiconductor devices containing ferromagnetic material distributed therein in configurations to match the material in the circuit boards.

3,612,956
COMPOSITE DIELECTRIC ELECTROLYTIC CAPACITOR
Henley Frank Sterling, Hudson, Ware; John Henry Alexander, Bishop's Stortford, and Denis William John Hazelden, Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,408
Claims priority, application Great Britain, May 29, 1969, 27163/69
Int. Cl. H01g 9/00

U.S. Cl. 317-230

10 Claims

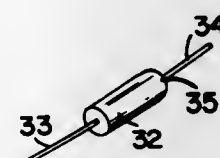


An electrolytic capacitor structure and a method for making such a capacitor wherein a composite dielectric is utilized so as to obtain the benefits of a high dielectric constant and the "self-healing" properties of an electrolytic capacitor. An aluminum anode is coated with a dielectric layer of titanium dioxide. The coated aluminum anode is then inserted into an electrolyte so as to anodize any portions of the aluminum remaining exposed after coating with the titanium dioxide due to defects in the coating.

3,612,957
MOLDED CAPACITOR AND METHOD
David J. Steigerwald, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,752
Int. Cl. H01g 9/00

U.S. Cl. 317-230

10 Claims

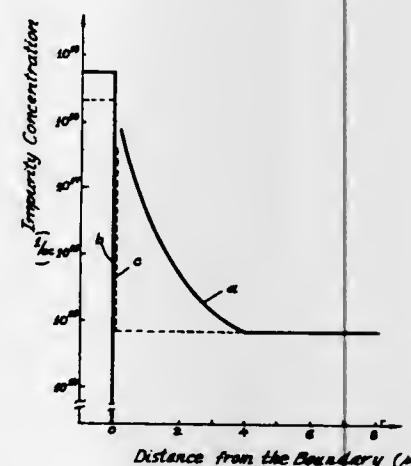


Molded solid electrolytic capacitors are produced from capacitor bodies having anode lead wires spaced apart from and electrically connected to the anode riser wire by an intervening deformably arranged connecting wire.

3,612,958
GALLIUM ARSENIDE SEMICONDUCTOR DEVICE
Takeshi Saito, and Fumio, Hasegawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Sept. 12, 1969, Ser. No. 857,411
Claims priority, application Japan, Sept. 14, 1968, 43/65915
Int. Cl. H01l 3/00

U.S. Cl. 317-234 R

2 Claims

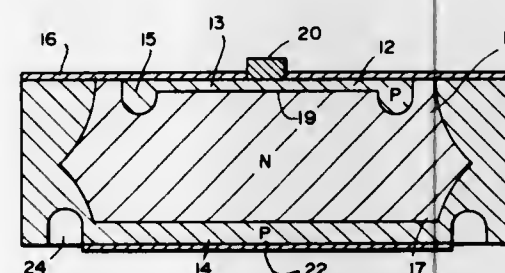


A gallium arsenide semiconductor device comprises a low resistivity substrate having a high impurity concentration. A first high impurity concentration layer is grown on the substrate and a second, low impurity layer is grown on the first grown layer. The introduction of impurities from the substrate into the grown semiconductor layer is significantly decreased.

3,612,959
PLANAR ZENER DIODES HAVING UNIFORM JUNCTION BREAKDOWN CHARACTERISTICS
Edward Simon, Manchester, Mass., assignor to Unitrode Corporation, Watertown, Mass.
Filed Jan. 31, 1969, Ser. No. 795,605
Int. Cl. H01l 9/00

U.S. Cl. 317-235 R

4 Claims



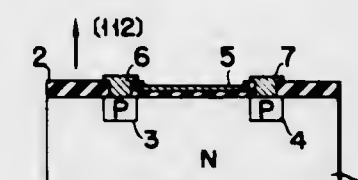
A high-voltage planar Zener diode in which enhanced switching performance is provided by a unique junction con-

figuration. The junction is configured to provide low-series resistance and uniform conduction across a controlled region of the junction thereby to achieve uniform and sharp voltage breakdown characteristics.

3,612,960
SEMICONDUCTOR DEVICE
Yoshiyuki Takeishi, Tokyo; Tai Sato, Yokohama-shi; Hisashi Hara, Kamakura-shi; Yoshihiko Okamoto, Yokohama-shi, and Hajime Maeda, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 14, 1969, Ser. No. 866,192
Claims priority, application Japan, Oct. 15, 1968, Dec. 3, 1968, Dec. 18, 1968, 43/74653; 43/88214; 43/92354
Int. Cl. H01l 1/14

U.S. Cl. 317-235

5 Claims

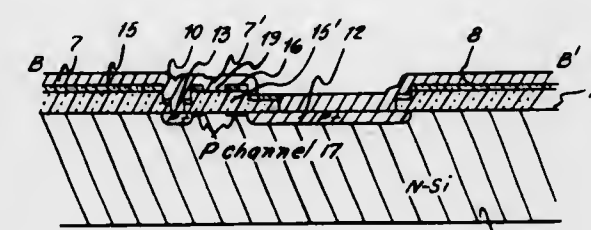


A semiconductor device in which a semiconductor of diamond-type structure or a compound semiconductor of zinc blende-type structure is used to utilize the flow of a hole current in an intense electric field, and has a construction such that when its crystal face is in [110] zone, and the angle θ of a normal direction of said specified crystal face with respect to the [110] axis is $0^\circ-30^\circ$, 0° exclusive, then the direction of flow of the hole current is parallel to said [110]; if $\theta=40^\circ-90^\circ$, 90° exclusive, the direction of flow of the hole current is in the direction perpendicular to the [110] axis; if said crystal face is in the [001] zone and said normal direction makes an angle $\theta=0^\circ-45^\circ$, both 0° and 45° exclusive, with the [110] axis, the direction of flow of the hole current is in the direction perpendicular to said [001] axis.

3,612,961
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Keiichi Shimakura; Hirohiko Yamamoto, and Masamichi Shiraiishi, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,273
Claims priority, application Japan, July 6, 1968, 43-47302
Int. Cl. H01l 19/00

U.S. Cl. 317-235 R

3 Claims

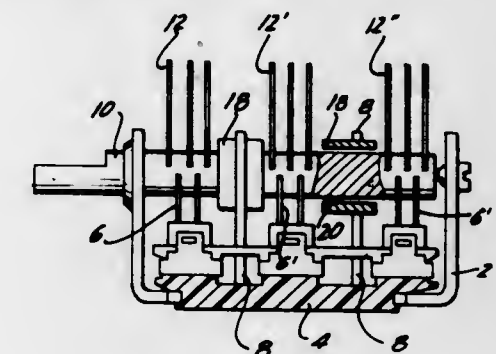


An integrated circuit device in which a semiconductor substrate contains a plurality of active or passive elements with an insulation layer interposed between the substrate and a metallic layer for wiring connections. The insulation at gate regions comprises phosphorous coated silicon oxide or an aluminum oxide or other suitable materials to stabilize the elements at a desired relatively low threshold voltage. The insulation at regions between the elements comprises silicon oxide (without a phosphorus coating) or a silicon nitride or other suitable material which provides a relatively high threshold voltage and high surface density in order to prevent the formation of conducting channels between the elements.

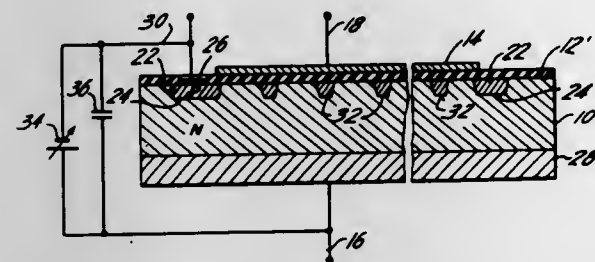
3,612,962
VARIABLE CONDENSER
Yasuhiko Takeda, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 21, 1970, Ser. No. 66,011
Claims priority, application Japan, Sept. 4, 1969, 44/69679
Int. Cl. H01g 5/06

U.S. Cl. 317-254

14 Claims



both the one face of the substrate and the P-region, except for a predetermined portion of the P-region, and a metallic layer is disposed on the film to extend over the P-N junction.



A DC voltage across the substrate and P-region is controlled to change the capacitance between the substrate and film of the resulting MIS-type structure.

3,612,965 DRIVING ARRANGEMENT FOR A TEXTILE DRAWTWISTING MACHINE

Joseph France, Harwood, nr. Bolton, England, assignor to T.M.M. (Research) Limited, Hartford Works, Oldham, Lancashire, England

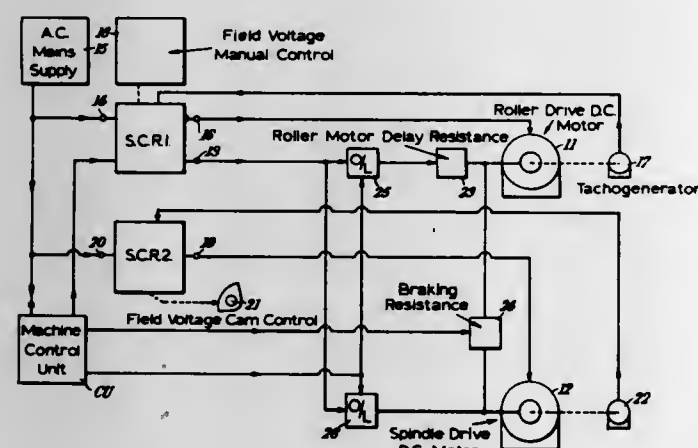
Filed Jan. 14, 1969, Ser. No. 791,017

Claims priority, application Great Britain, Jan. 17, 1968, 2541/68

Int. Cl. H02p 5/46

U.S. Cl. 318-7

13 Claims



A driving arrangement for a drawtwisting machine for drawtwisting continuous filament yarn, comprising a draw zone including draw rolls for drawing the yarn, a takeup and twisting zone including a rotary spindle and a ring and traveler by means of which the drawn yarn is wound onto a package carried by the spindle, a DC electric draw roll motor for driving the draw rolls, a DC electric spindle motor for driving the spindle, common armature voltage control means to control the armature voltages applied to the motors to provide for a variation of the armature voltages from values giving rise to crawl speeds for the two motors for starting up purposes to values giving rise to normal running speeds for the two motors, and yield voltage control means to control the field voltages to be applied to the motors and including automatic means for adjusting the field voltage of the spindle motor thereby to control the speed thereof independently of the speed of the draw roll motor.

3,612,966 PIEZOELECTRIC TRANSDUCER WITH IMPROVED SENSING CIRCUIT

Frank R. Dybel, 512 Mackinaw, Calumet City, Ill.

Filed Nov. 3, 1969, Ser. No. 873,207

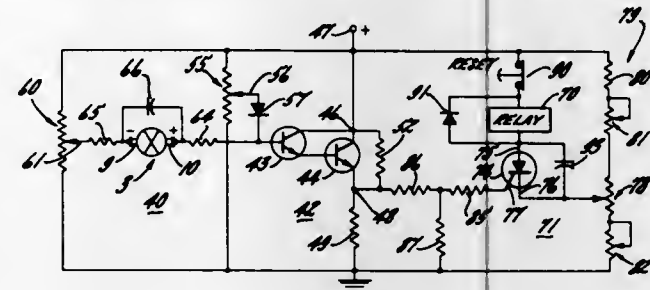
Int. Cl. H01h 47/00, 47/32

U.S. Cl. 317-123

13 Claims

An improved sensing circuit particularly adapted for use with a piezoelectric transducer or the like, which transducer is characterized by its extremely high internal impedance.

The transducer is disposed in a normally balanced input circuit so that there is effectively zero current flowing through the transducer when it is not activated. A unity-voltage-gain, high-current-gain amplifier is biased to its linear conduction



3,612,967 TWO-PHASE VIBRATING DEVICE

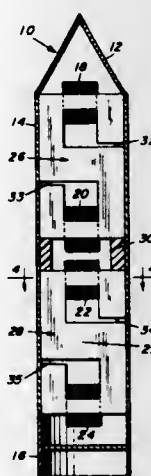
Marlin D. Lee, 5416 East Lee, Tucson, Ariz.

Filed Aug. 31, 1970, Ser. No. 68,211

Int. Cl. H02k 33/00

U.S. Cl. 318-123

7 Claims



A high-frequency vibrator for pushing pipe underground and plowing in underground cable is disclosed. An alternating electromagnetic field is established in a generally S-shaped magnetic core by connecting each of two opposing coils of the vibrator to a corresponding phase of a two phase AC electrical system, whereby one coil experiences zero current while the other coil generates a maximum magnetic field. The coils are wound on opposite ends of the S-shaped core and affect their respective ends of the core at complementary intervals. Air gaps are constructed in the core to interrupt the normal flow of flux within the core, the gaps being located on opposite sides of the core to provide the S shape. The alternate energization of the coils at complementary intervals causes first one coil and then the other to produce a magnetic flux which tends to close its corresponding airgap since these airgaps are on opposite sides of the core, first one side, then the other side of the core tends to shorten, creating a side-to-side bending motion.

3,612,968 SIMPLIFIED ELECTROMECHANICAL OSCILLATOR

Frank H. Marz, Delavan, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of application Ser. No. 831,046, June 6, 1969, now abandoned. This application Aug. 31, 1970, Ser. No. 18,678

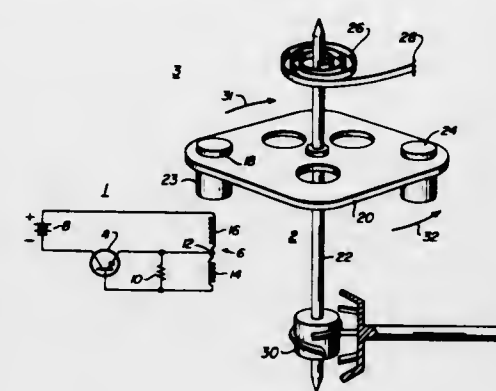
Int. Cl. H02k 33/00

U.S. Cl. 318-128

6 Claims

Permanent magnet mounted on an oscillatory arm controlled by a hairspring swings past a stationary coil having op-

positely wound sensing and driving portions. Voltage induced in the sense coil by movement of the magnet triggers a transistor; pulses of current caused thereby to flow in the collector-emitter circuit of the transistor pass through the driv-



ing portion of the coil. With the coil connections shown the action is regenerative, running the transistor to saturation. The field of the drive coil imparts a mechanical force to the magnet, and maintains it in oscillatory movement.

3,612,969 AUTOMATIC BLENDER

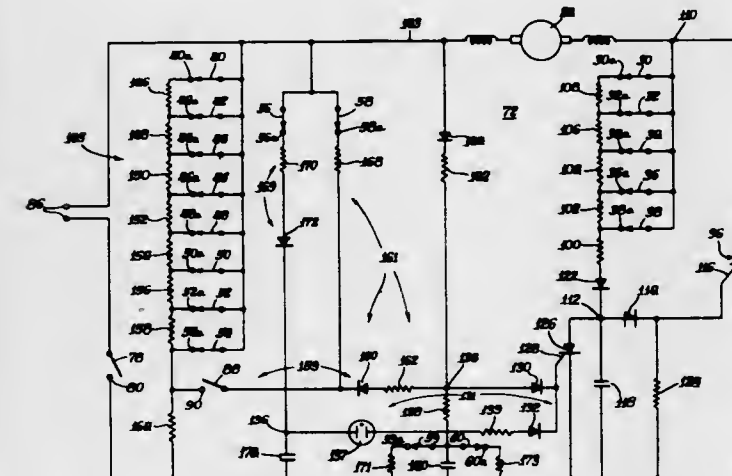
James B. Cockroft, Wauwatosa, Wis., assignor to John Oster Manufacturing Co., Milwaukee, Wis.

Filed June 30, 1969, Ser. No. 837,759

Int. Cl. H02p 7/18

U.S. Cl. 318-163

15 Claims



An automatic blender than can be programmed to perform a variety of tasks with perforated recipe cards is provided. The card bearing the desired recipe is inserted between a printed circuit control board and an assembly of spring brushes so that the perforations allow only selected brushes to make electrical contact with the printed circuit board. The blender START pushbutton and power switch are also actuated by the recipe card, so the blender has no external controls.

3,612,970 AUTOMATIC-CONTROL SYSTEM FOR THE ANGULAR SPEED OF A SYNCHRONOUS MOTOR

Eugen Ladislav Sofan, Bucharest, Romania, assignor to Ministerul Industriei Constructiilor de Masini, Bucuresti, Romania

Continuation-in-part of application Ser. No. 704,941, Feb. 12, 1968, now abandoned. This application Aug. 31, 1970, Ser. No. 68,155

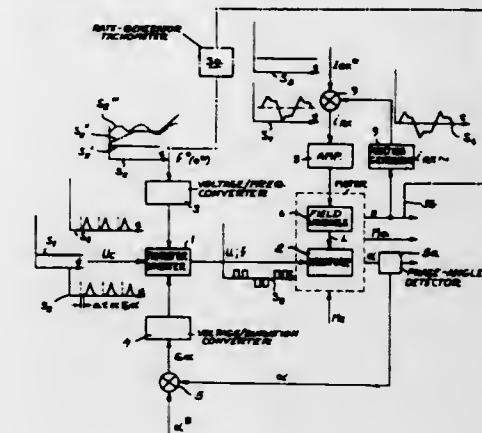
Int. Cl. H02p 5/28

U.S. Cl. 318-175

10 Claims

A synchronous motor is driven from a forced-commutation thyatron-type inverter whose control inputs are pro-

vided by a voltage/frequency converter and a voltage/duration converter responsive to the motor speed and phase rela-



tionships for establishing the ignition and cutoff of the power pulses.

3,612,971 STATIC CONVERTER WITH DC INTERMEDIATE CIRCUIT FOR CONTROLLING THE SPEED OF A THREE PHASE MOTOR

Felix Blaschke, and Herbert Ripperger, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

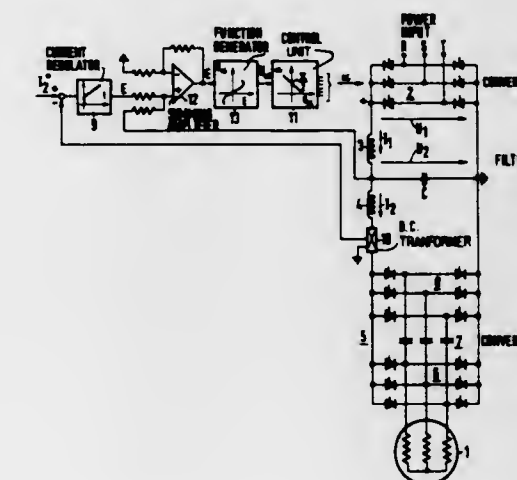
Filed Aug. 27, 1969, Ser. No. 853,356

Claims priority, application Switzerland, Sept. 2, 1968, 13151/68

Int. Cl. H02d 5/40

U.S. Cl. 318-227

4 Claims



A first controllable converter is connected to an electrical power supply source. A second controllable converter is connected to a three-phase electric motor having stator windings impressed by preenergizing current. At least one smoothing choke for controlling the speed of the motor is connected at one end to the first converter and at the other end to the second converter. A control circuit causes the voltage at the one end of the choke to follow the voltage at the other end of the choke.

3,612,972 ADJUSTING DRIVE

Ferdinand Konig, Seuzach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Jan. 28, 1970, Ser. No. 6,524

Claims priority, application Switzerland, Feb. 6, 1969, 1815/69

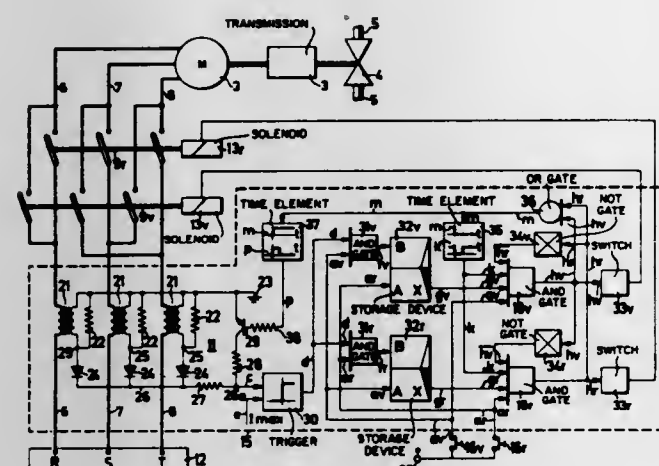
Int. Cl. H02p 1/40

U.S. Cl. 318-227

3 Claims

The adjusting drive is controlled in dependence on the excess current of the motor and acts on either of the switching means in the conductor lines between the motor and current source to switch off the motor. A blocking arrangement is

also used so as to prevent further movement of the motor

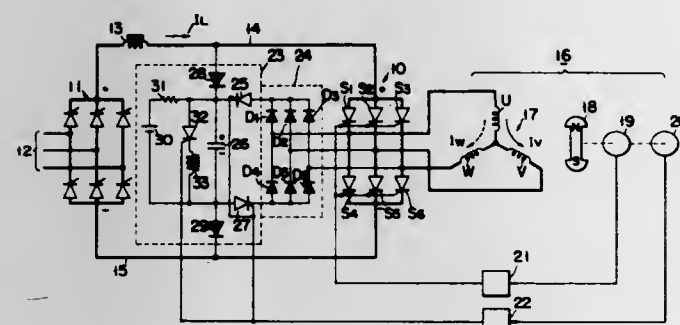


after a shutdown which arrangement becomes unblocked upon reversing of the motor.

3,612,973
A BRUSHLESS DC MOTOR SYSTEM COMBINED WITH A THYRISTOR BRIDGE INVERTER
 Masateru Kuniyoshi, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
 Filed Dec. 16, 1969, Ser. No. 885,636
 Claims priority, application Japan, Dec. 20, 1968, Feb. 24, 1969, 43-93114;44-13166
 Int. Cl. H02k 29/00

U.S. Cl. 318-254

7 Claims



A polyphase thyristor bridge inverter wherein, to energize the polyphase armature winding of an electric motor, the thyristor bridge is subjected to either natural or forced commutation, the latter being effected more reliably than the former, the thyristor is safely operated under a rated load or a heavier load required, for example, in starting the motor, and the forced commutation is preferably used for such heavier load to eliminate the wasteful motion of the inverter.

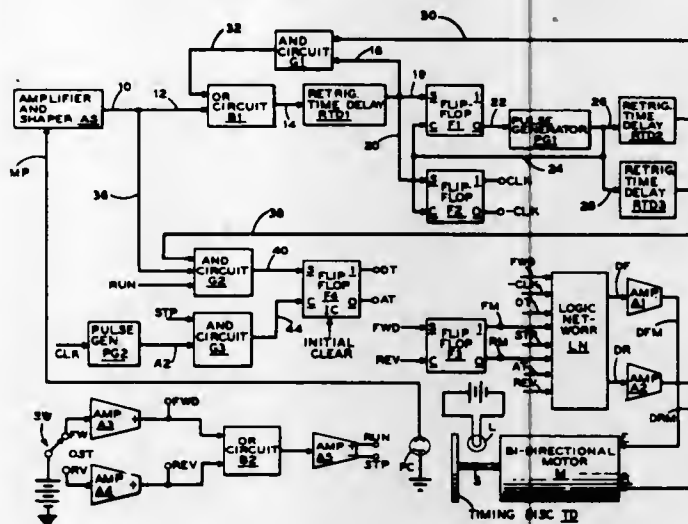
3,612,974
DIGITAL MOTOR SPEED CONTROL
 Edgar Wolf, New Hyde Park, and Edward Henry Lau, Old Westbury, all of N.Y., assignors to Digitronics Corporation, Nassau County, N.Y.
 Filed May 21, 1969, Ser. No. 826,383
 Int. Cl. H02p 5/06

U.S. Cl. 318-314

9 Claims

A motor generates first pulses having a frequency related to the speed of rotation of the motor. Second pulses having durations at least greater than a minimum time duration are

generated in response to the first pulses. Third pulses having durations related to the time differences between the ter-

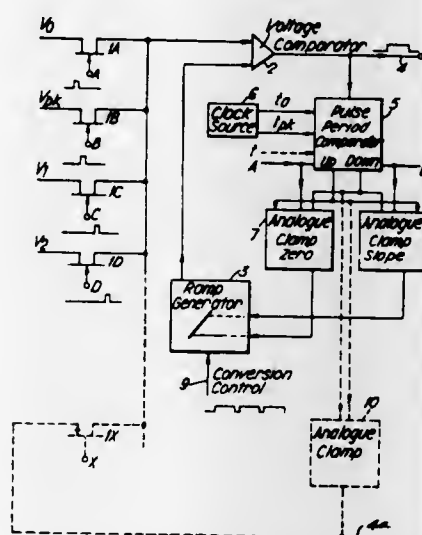


minations of the second pulses and the initiations of the first pulses are generated and used to pulse drive the motor.

3,612,975
ELECTRONIC DATA-PROCESSING APPARATUS
 Arthur T. Keefe, Little Bookham, England, assignor to Ian Young (Electronic Designs) Limited, London, England
 Filed Aug. 5, 1969, Ser. No. 847,654
 Claims priority, application Great Britain, Aug. 7, 1968, 37634/68
 Int. Cl. G05b 11/28

U.S. Cl. 318-599

10 Claims



In a circuit for converting a signal representing by its amplitude an item of data into a signal representing the item of data by its pulse duration, or vice versa, by comparison of an input signal with a ramp signal, a calibrating signal is applied to the amplitude-to-duration converter and the resulting pulse duration is compared with a calibrating pulse having a duration corresponding, at the required conversion scale, to the amplitude of the calibrating signal; any error signal from the comparator is used to adjust the ramp slope or ramp base line in a sense such as to reduce the error.

3,612,976
POSITION CONTROL SYSTEM
 Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Carson City, Nev.
 Continuation-in-part of application Ser. No. 729,018, May 14, 1968, now abandoned. This application Apr. 9, 1969, Ser. No. 814,670
 Int. Cl. G05b 19/18

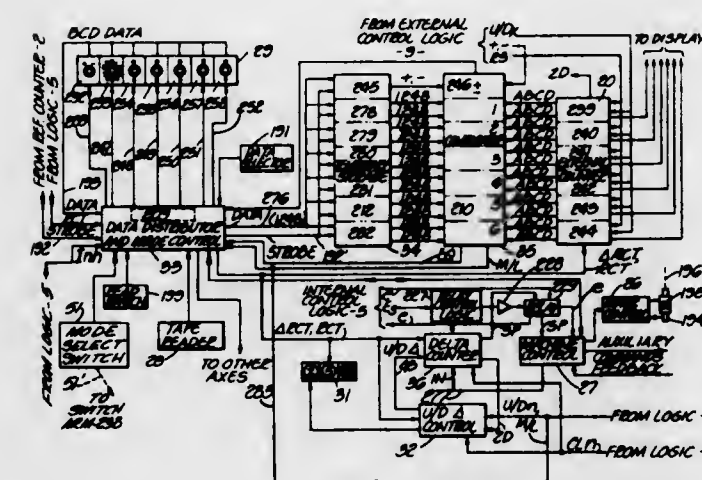
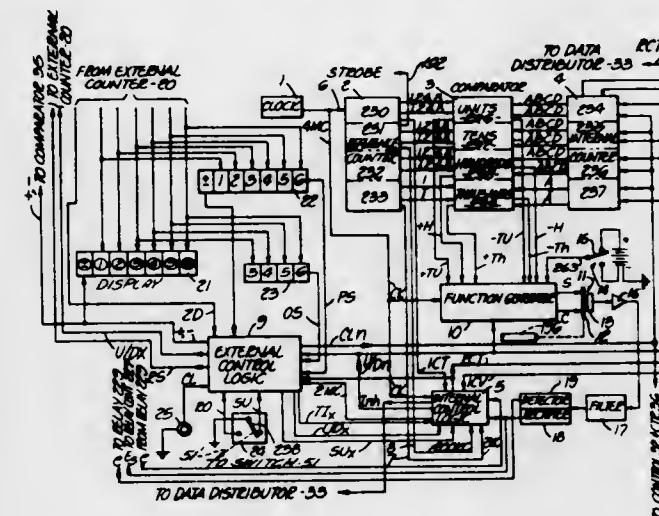
U.S. Cl. 318-603

14 Claims

A control system for positioning a machine member from an initial position to a new command position. The member

is moved by appropriate motor and control means in cooperation with a delta counter the contents of which continuously represent distance remaining to travel.

Initially, data representing the command position are read into temporary storage and compared with data, representing the initial position of the machine member, contained in another (external) counter. A series of pulses, herein designated ΔRCT , increment or decrement the other



counter, depending on whether the data in temporary storage is greater than or less than the data in the other counter. Simultaneously, the ΔRCT pulses increment the delta counter away from zero. When the contents of the other counter and temporary storage become equal, generation of the ΔRCT pulses is inhibited; the delta counter then contains how far the machine member must travel to get to the command position.

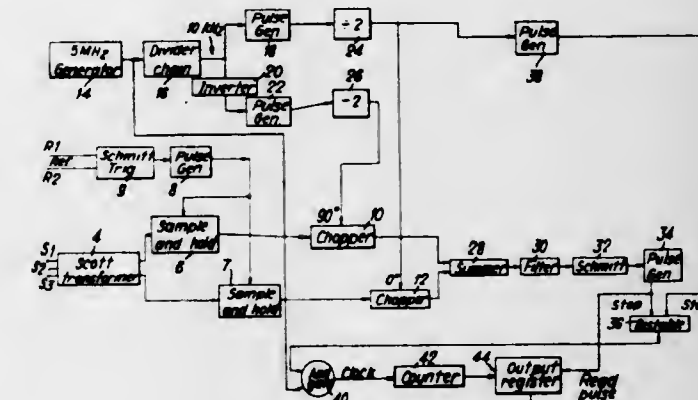
As the machine member moves toward the command position, a second series of pulses (herein designated RCT), each representing motion through an incremental distance, decrement the delta counter toward zero. As the delta counter contents decrease, indicating less distance to go, appropriate speed control signals are provided to slow down the motor. When the delta counter decrements to a predetermined value corresponding to a selected distance from the command position, the motor may be deenergized and the machine member coasts to a halt. Alternatively, when the delta counter reaches the predetermined value, a servosystem may be actuated which drives the member to the command position.

Should the member stop at other than the command position, the residual contents of the delta counter will represent the positioning error. The delta counter then is decremented to zero, and the contents of the other counter thereby correspondingly altered so as to represent the actual stop position. Additionally, the system includes storage of zero offset data. This feature has the advantage of resuming operation after an interruption, automatically, without extensive setting up operation or computation.

3,612,977
APPARATUS FOR SIGNALLING AN ANGULAR DISPLACEMENT OF A BODY ABOUT AN AXIS
 Brian Raymond Perrett, Radstock, England, assignor to British Aircraft Corporation Limited, London, England
 Filed Nov. 3, 1970, Ser. No. 86,476
 Claims priority, application Great Britain, Nov. 5, 1969, 54304/69
 Int. Cl. G05b 1/06

U.S. Cl. 318-654

8 Claims

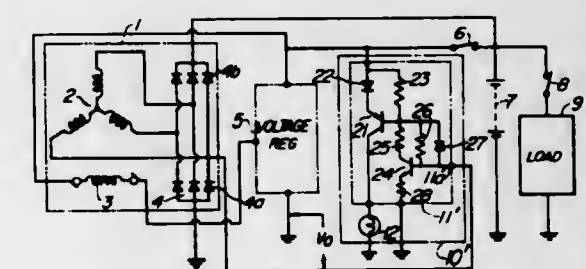


To provide an indication of the angular displacement Φ of the rotor of a synchro transmitter or resolver, two cyclically varying signals having amplitudes representing the sine and cosine respectively of the rotor shaft angle are derived and are used with two further cyclic signals, having a higher frequency n and in phase quadrature, to derive two trains of pulses at the higher frequency in phase quadrature; the two pulse trains having amplitudes representing respectively the sine and cosine of the shaft angle. These pulse trains are combined and processed to provide a signal which is a function of $(\sin n + \Phi)$, which is then compared with a reference signal at frequency n to obtain an indication of the rotor shaft angle Φ .

3,612,978
BATTERY CHARGE INDICATION MEANS
 Kazumasa Mori, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan
 Filed Aug. 12, 1970, Ser. No. 63,223
 Claims priority, application Japan, Aug. 23, 1969, 41/66,599
 Int. Cl. H02j 7/00

U.S. Cl. 320-48

3 Claims

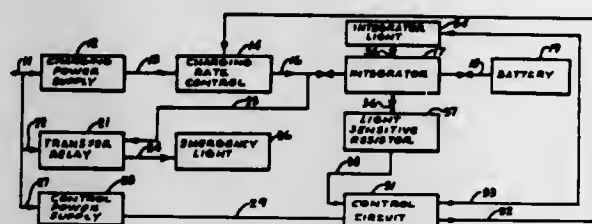


A battery charge indication means, whose input is the half-wave rectification of a single-phase voltage from an alternator or a battery charger, and in which the positive and negative portions of the single-phase half-wave-rectified voltage are alternately impressed on two transistors to maintain one of the transistors "off" during the charge of a battery, its circuit components including diodes and resistors as well as the aforementioned two transistors, so that it is free from a capacitive component, which would give rise to various problems.

3,612,979
SYSTEM FOR MEASURING TRANSFER OF ELECTRIC CHARGE
 Wilfred Roth, Burlington, Vt., assignor to Dual-Lite Company, Newton, Conn.
 Filed Dec. 10, 1968, Ser. No. 782,913
 Int. Cl. H02j 7/04

U.S. Cl. 320-39

12 Claims

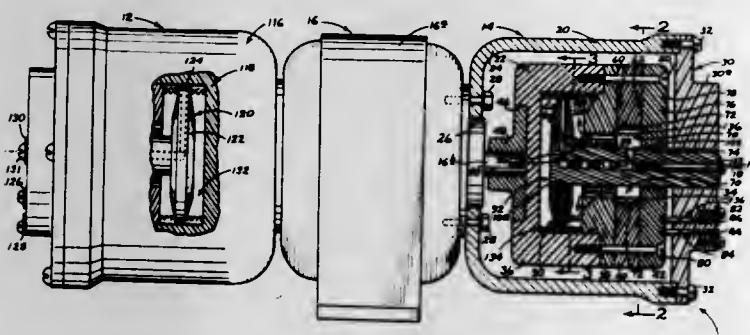


A movable piston, or float, including a permanent magnet is driven from one end of a closed, liquid-filled tube to the other by the magnetic field of a coil wound around the tube and energized by current flowing in one direction or the other according to the transfer of an electric charge into or out of a charge-accumulating or charge-producing element, such as a storage battery. A light bulb adjacent the tube directs light through the tube to a photocell. The transfer of a predetermined quantity of charge in one direction causes the piston to move to one end of the tube and interfere with passage of light through the tube. Transfer or charge in the opposite direction causes the piston to move out of the light path. The photocell may be used to control a circuit connected to maintain a charge on a storage battery by replenishing any dissipated charge at a relatively high rate and thereafter maintain the battery in a fully charged condition by a trickle charge. Establishment of the high charge rate in the system occurs when the piston has been moved out of the light path by transfer of charge away from the fully charged battery. The charge rate drops to a trickle charge value when the piston moves back to interrupt the light path, indicating that the battery is substantially fully charged.

3,612,980
LIQUID JET ELECTRICAL INVERTER
 William L. King, Springfield, Oreg., assignor to Nathan E. Knecht, Springfield, Oreg.
 Filed Aug. 21, 1970, Ser. No. 65,929
 Int. Cl. H02m 7/90

U.S. Cl. 321-50

15 Claims



An electrical inverter employing for switching purposes a pair of stationary jets of electroconductive liquid which intermittently impinge pools of such liquid contained in recesses in a turning rotor. Different pools are connected electrically to the plus and minus terminals of a source of DC. Each jet is connected electrically to one of the two AC output terminals in the inverter.

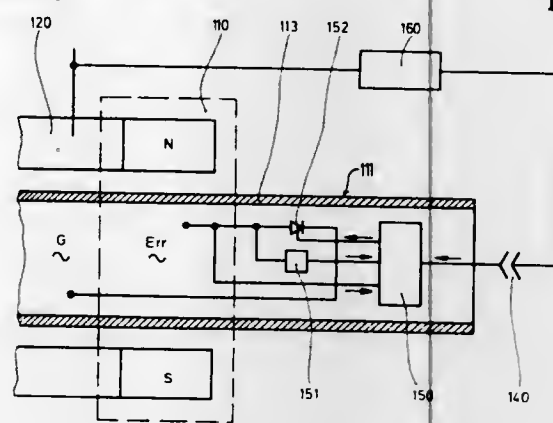
3,612,981
CONTROL SYSTEM FOR GENERATOR HAVING RADIO TRANSMISSION FEEDBACK MEANS
 Horst Anton Heller, and Walter Erich Mehnert, both of Munich, Germany, assignors to Entwicklungsring Sud GmbH, Munich, Germany

Filed July 9, 1969, Ser. No. 840,301
 Claims priority, application Germany, July 19, 1968, P 17 63 697.4

Int. Cl. H02p 9/30

U.S. Cl. 322-27

1 Claim



An electric generator system which includes a thyristor mounted within the generator rotor for controlling the field current, and a voltage regulator the output of which is coupled by means of a radio frequency transmitting unit to the generator rotor and fed into a combining unit. The combining unit additionally receives a signal from a measuring unit. The measuring unit serves to continuously measure the current fluctuations in the exciter circuit. The output of the combining unit is fed to the gate of the control rectifier thereby regulating the current flow through the generator winding.

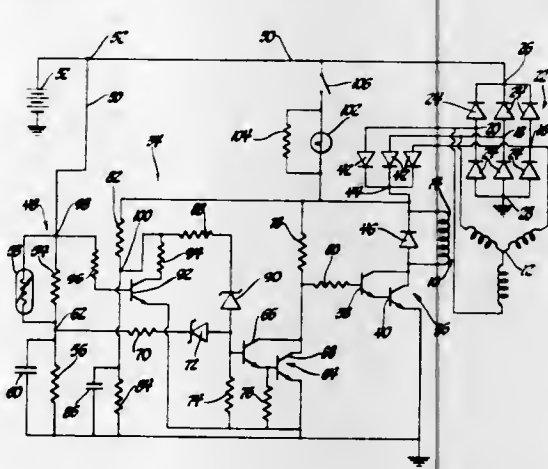
3,612,982
VOLTAGE PROTECTION CIRCUIT FOR TRANSISTOR VOLTAGE REGULATOR
 Billy R. Jones; Richard L. Konopa, and Robert N. Green, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1970, Ser. No. 66,500

Int. Cl. H02p 9/30

U.S. Cl. 322-28

5 Claims



The voltage regulator of this invention is used to regulate the output voltage of an alternating-current generator connected with a bridge rectifier to supply the electrical loads on a motor vehicle and to charge the vehicle's battery. The generator's field winding is supplied with current by a plurality of auxiliary diodes through a transistor-switching device controlled by one of two voltage-sensing circuits. The first or primary voltage-sensing circuit provides control of the transistor-switching device during normal operation. However, if this first voltage-sensing circuit becomes disconnected or is otherwise incapable of providing control, the second voltage-sensing circuit provides the requisite control to regulate the alternating-current generator's output voltage. In this manner, the output voltage of the alternating-current generator is maintained substantially constant even if the first voltage-sensing circuit is disconnected. The regulator in-

cludes a second transistor switching device coupling the two voltage-sensing circuits and operative to enable or disable the second voltage-sensing circuit depending on whether or not the first voltage-sensing circuit is connected and providing a control signal.

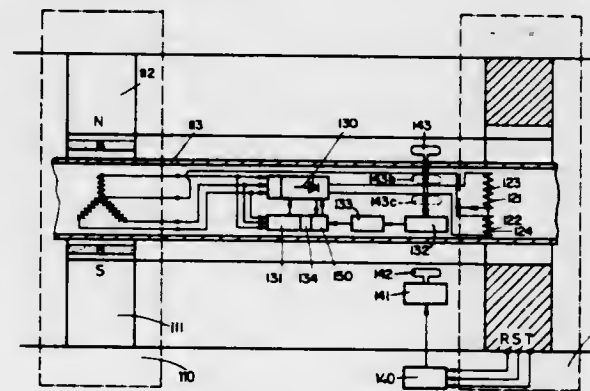
3,612,983
CONTROL SYSTEM FOR GENERATING WITH MAIN AND REVERSE FIELD WINDINGS AND RADIO TRANSMISSION FEEDBACK MEANS

Walter Erich Mehnert, Munich, and Horst Anton Heller, Munich-Allach, both of Germany, assignors to Entwicklungsring Sud GmbH, Munich, Germany
 Continuation-in-part of application Ser. No. 724,478, Apr. 26, 1968, now abandoned. This application Sept. 9, 1968, Ser. No. 758,506

Int. Cl. H02p 9/30

U.S. Cl. 322-28

6 Claims



The illustrated embodiments of this invention include an exciting generator and a power generator. Each of the generators is provided with a common tubular rotor. The armature of the exciting generator is maintained within the rotor and is fed through a controlled rectifier to the field of the power generator, which is also maintained within the rotor. The field of the power generator includes two windings, the fields of which are opposing. The output voltage of the power generator is sampled for modulation of a radio transmitter which in turn delivers power to a transmitting antenna. A receiving means is maintained within the tubular rotor and receives and demodulates the transmitted signal. The demodulated signal, together with the output of the field generator armature is applied to the control elements of the control rectifier and thereby determines the intensity of the power supplied to the power generator field windings and, correspondingly, the output of the power generator.

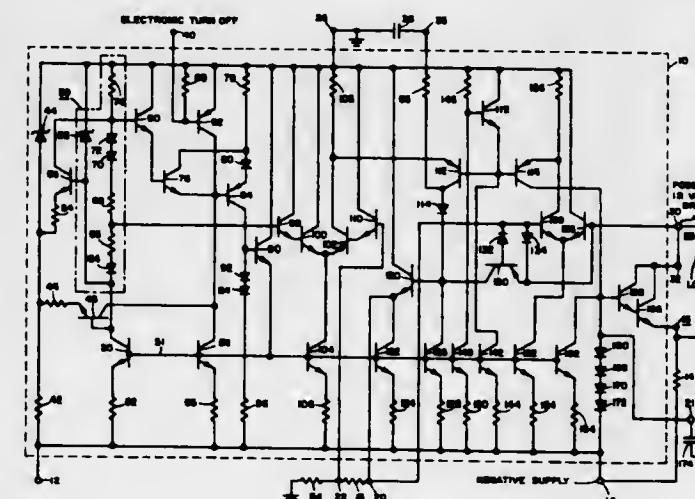
3,612,984
NEGATIVE VOLTAGE REGULATOR ADAPTED TO BE CONSTRUCTED AS AN INTEGRATED CIRCUIT
 William F. Davis, Tempe, and Thomas M. Fredericksen, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 8, 1970, Ser. No. 35,612

Int. Cl. G05f 1/58

U.S. Cl. 323-9

13 Claims



A temperature-compensated, ripple-reducing negative voltage regulator which is adapted to be constructed as an integrated circuit in that no inductors and a minimum number

of capacitors are used and any PNP transistors that are used need not have good current amplification factors. The regulator includes protection against excessive current and momentary excessive voltages.

ERRATUM
 For Class 323 43.5 R see:
 Patent No. 3,612,988

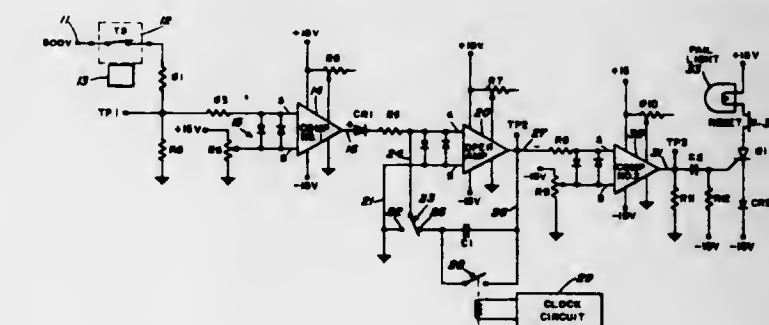
3,612,985
SWITCH BOUNCE TESTER
 Arthur F. Rockett, Indianapolis, Ind., assignor to The United States of America as represented by The Secretary of the Navy

Filed Jan. 30, 1970, Ser. No. 7,277

Int. Cl. G01r 31/02

U.S. Cl. 324-28 R

4 Claims



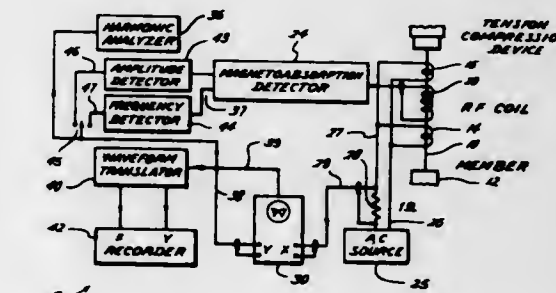
A switch bounce tester to measure the cumulative bounce time having an input signal level comparator, an integrating operational amplifier, and an output voltage limit comparator with a clock-operated discharging switch in parallel with the operational amplifier to discharge same of signals from a tested switch for intervals of time of clock pulses and to sum the signals from the tested switch during intervals between clock pulses to produce voltage proportional to time of the bounce accumulation of the tested switch.

3,612,986
SENSING APPARATUS FOR USE WITH MAGNETOABSORPTION APPARATUS USING SEMICYLINDRICAL COILS
 William L. Rollwitz, San Antonio; John P. Claassen, San Antonio, and John Arambula, Austin, all of Tex., assignors to Southwest Research Institute
 Continuation of application Ser. No. 654,801, July 20, 1967, now abandoned. This application Mar. 16, 1970, Ser. No. 18,799

U.S. Cl. 324-34 R

Int. Cl. G01r 33/12

3 Claims

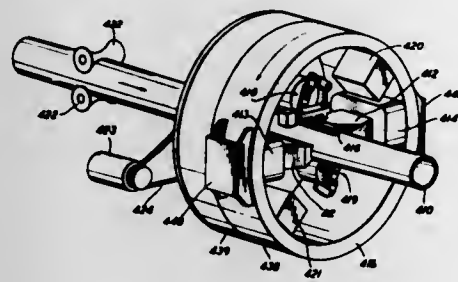


In magnetoabsorption apparatus, sensing apparatus having the preferred form of a radio frequency probe coil movable relative to a specimen having stress therein sensitive to stress magnitude and direction. The coil is connected to a sensing device. The coil includes a sufficient number of turns to form a signal of adequate strength to the magnetoabsorption apparatus to indicate the stress at various points on or about the specimen. The coil is connected through tuned circuits, transformer coupling circuits and other coupling circuits which improve the quality of operation by actually changing operation of the sensing device.

3,612,987
INSPECTION APPARATUS FOR MOVING ELONGATED ARTICLES INCLUDING MEANS FOR EXTENDING AND RETRACTING A SENSOR RELATIVE TO THE ARTICLE
 Eugene A. Placke, and Claude D. Stegall, both of Houston, Tex., assignors to AMF Incorporated
 Filed Apr. 13, 1970, Ser. No. 27,943
 Int. Cl. G01r 33/12

U.S. Cl. 324-37

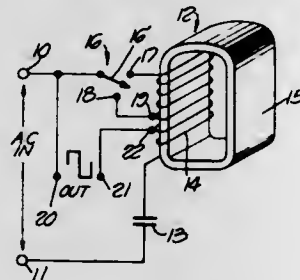
8 Claims



This application discloses apparatus for inspecting pipe or like tubular articles, particularly magnetic flux leakage type inspection of ferromagnetic pipe. The pipe is moved axially through rotating inspection apparatus which includes a magnetizer having diametrically opposed pole pieces to produce rotating circumferential flux. Shoe assemblies bearing upon the pipe contain transducers responsive to flux leakage caused by flaws in the pipe. Rotary solenoid and linkage mechanisms are disclosed for suspending the shoes and to provide retracted or engaged positions. The magnetizer pole pieces are adjustable to accommodate pipe of varying sizes.

3,612,988
FLUX-GATED VOLTAGE REGULATOR
 Cravens L. Wanlass, 9871 Overhill Drive, Santa Ana, Calif.
 Filed Sept. 15, 1969, Ser. No. 857,906
 Int. Cl. G05f 1/14, 3/04
 U.S. Cl. 323-43.5 R

19 Claims



A voltage regulator in which an inductor having a saturable core is connected in series with a capacitor, the output being taken from across the inductor. After startup, the combined effect of the input voltage and the capacitor cause the core of the inductor to periodically switch from a nonsaturated to a saturated condition and vice versa so that the impedance of the inductance switches correspondingly from a high to a low value. The result is a square wave voltage developed across the inductor that has a constant amplitude regardless of input voltage variations if the input frequency remains constant.

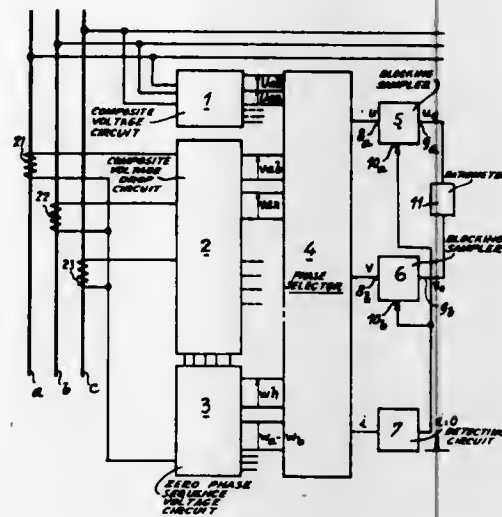
3,612,989
ARRANGEMENT FOR ESTABLISHING THE LOCATION OF PHASE-TO-PHASE OR PHASE-TO-EARTH FAULTS ON A LOOP OF A POLYPHASE ELECTRICAL POWERLINE UTILIZING ONLY VOLTAGE AND CURRENT MAGNITUDES AVAILABLE AT A MEASURING POINT ON THE LOOP
 Michel Henry Pierre Souillard, Fontenay-aux-Roses, and Michel Louis Fontenay, Vert-le-Petit, both of France, assignors to Compagnie Des Compteurs, Paris, France
 Filed Feb. 20, 1969, Ser. No. 801,058
 Claims priority, application France, Feb. 27, 1968, 141,338
 Int. Cl. G01r 31/08

U.S. Cl. 324-52

5 Claims

A process for measuring the distance of a fault between phases and the earth of an electric power transport line

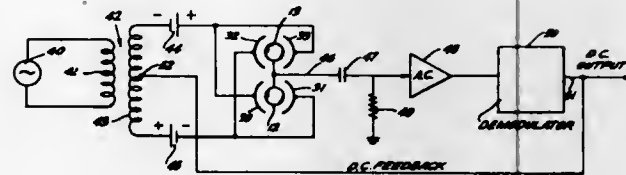
where one effects, at the moment when the faulty current takes a zero value, the ratio between the voltage of the faulty loop at the measuring point and a reference voltage representing the voltage drop equivalent to a faulty current in a given length of the loop in question. A device for measuring the distance of a fault between phases or the earth



comprising means for elaborating a reference voltage representing a voltage drop equivalent to a faulty current in a given length of the faulty loop at the measuring point means for detecting the moment when the faulty current passes by a zero value, means for remembering the value at this moment of the voltage of said loop and the reference voltage, and means for effecting the ratio of these two voltages.

3,612,990
PARAMAGNETIC GAS SENSOR EMPLOYING AC POSITION SENSING AND ELECTROSTATIC DC NULL BALANCING
 Anthony Del Duca, Santa Barbara, Calif., assignor to Beckman Instruments, Inc.
 Filed Oct. 24, 1969, Ser. No. 869,235
 Int. Cl. G01r 33/12, 29/22
 U.S. Cl. 324-36

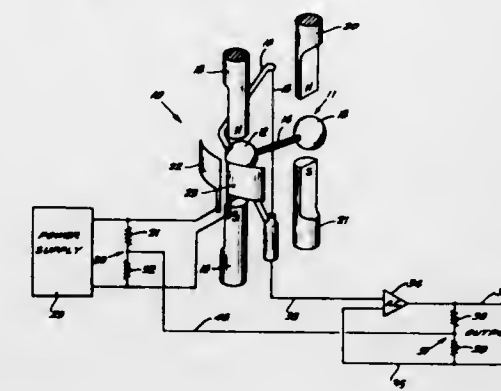
8 Claims



Apparatus for determining the partial pressure of a paramagnetic gas in a gas mixture wherein a pivotally mounted test body, in the form of two hollow spheres in a dumbbell configuration, is supported in an inhomogeneous magnetic field, the test body being deflected from a null position when the paramagnetic gas is present and being restored to the null position by an electrostatic force, the magnitude of the restoring force being a function of the partial pressure of the paramagnetic gas, the improvement wherein mechanical constraints are provided to prevent excessive rotation or linear deflection of the test body. The mechanical constraint consists of at least two, and preferably four, electrostatic pole pieces positioned very close to the dumbbells on opposite sides thereof for limiting the deflection of the test body. In addition, the four pole pieces may be electrically cross-connected to form a capacitance bridge whereby deflection of the test body from its null position unbalances the bridge providing an output signal which may be fed back to the pole pieces to restore the test body to the null position.

3,612,991
PARAMAGNETIC GAS SENSOR HAVING CAPACITIVE POSITION SENSING AND AC NULL BALANCING FEEDBACK
 Malbone W. Greene, Covina, Calif., assignor to Beckman Instruments, Inc.
 Filed Oct. 24, 1969, Ser. No. 869,237
 Int. Cl. G01r 33/12, 17/06
 U.S. Cl. 324-36

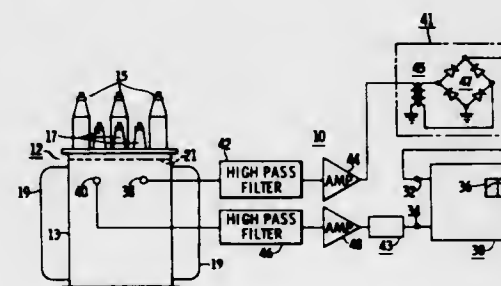
13 Claims



Apparatus for determining the partial pressure of a paramagnetic gas in a gas mixture wherein a pivotally mounted test body is supported in an inhomogeneous magnetic field, the test body being deflected from a null position when the paramagnetic gas is present, the improvement wherein an AC bridge circuit is utilized, in response to deflection of the test body from the null position, to generate an AC signal indicative of the partial pressure of the paramagnetic gas. The bridge circuit comprises a pair of electrostatic vanes which, in conjunction with the test body, form capacitive elements of the bridge circuit. The AC signal is either measured to determine the test body position, or demodulated to provide a DC signal. The DC signal may be fed back to the bridge circuit to return the test body to the null position for improved linearity and stability. Apparatus is further provided to vary the fraction of the DC signal fed back to the bridge circuit with changes in temperature of the test body to compensate the apparatus for temperature variations.

3,612,992
CORONA TESTING APPARATUS INCLUDING ENERGY STORAGE MEANS FOR INDICATING TIME DIFFERENCE BETWEEN CORONA SIGNALS
 John C. Cronin, Horsham, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Sept. 30, 1969, Ser. No. 862,431
 Int. Cl. G01r 31/08
 U.S. Cl. 324-52

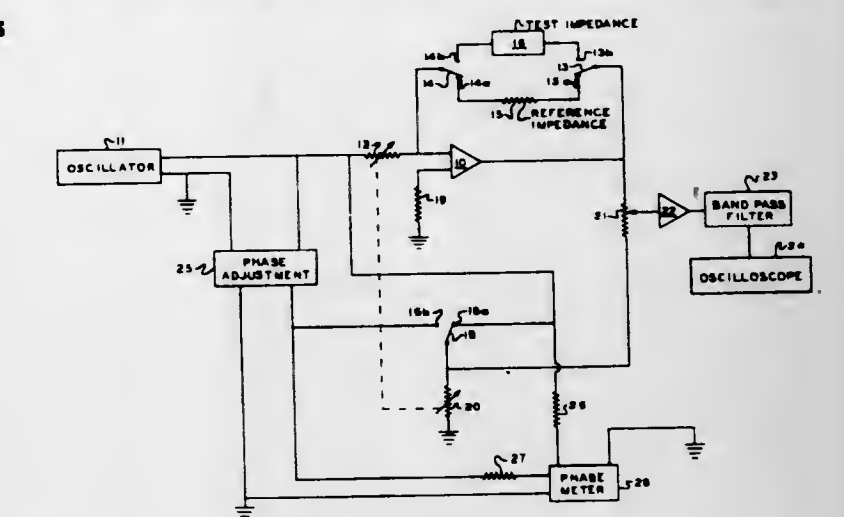
2 Claims



Apparatus for the detection and location of corona within the casing of fluid-filled electrical apparatus. First and second mechanical to electrical transducers are disposed to pickup corona initiated mechanical vibrations in the apparatus under test. When a corona discharge occurs, the electrical signal from the first transducer to receive the mechanical vibrations is used to initiate the charging of a capacitor. Then, the signal provided by the other transducer, in response to the same corona discharge, is used to terminate the charging of the capacitor. The magnitude of the charge or voltage across the capacitor is a direct indication of the difference between the distances separating each transducer from the source of the corona.

3,612,993
IMPEDANCE MEASURING APPARATUS
 Harold A. Tims, Bartlesville, Okla., and Joe P. Lindsey, Stafford, Tex., assignors to Phillips Petroleum Company
 Filed June 11, 1970, Ser. No. 45,505
 Int. Cl. G01r 27/02
 U.S. Cl. 324-57 R

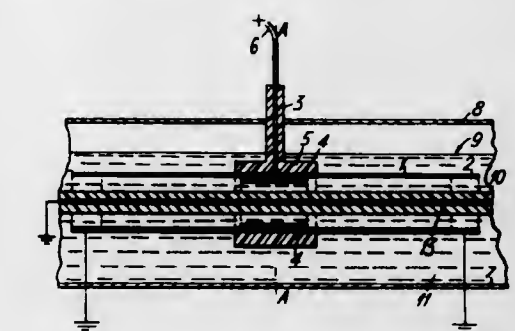
5 Claims



An unknown impedance is measured by means of an operational amplifier in which the unknown impedance and a reference impedance are connected in the feedback path selectively. A first calibrated resistance element is connected in the amplifier input circuit. A function generator having two outputs is connected to the amplifier and a second calibrated resistance element. The potential across the second resistance element is compared with the amplifier output.

3,612,994
CABLE INSULATION TESTER HAVING A LIQUID IMMERSIBLE ANNULAR ELECTRODE
 Lennard Hooper, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.
 Filed Sept. 19, 1969, Ser. No. 859,422
 Claims priority, application Great Britain, Sept. 20, 1968, 447,27/68
 Int. Cl. G01r 31/12
 U.S. Cl. 324-54

6 Claims



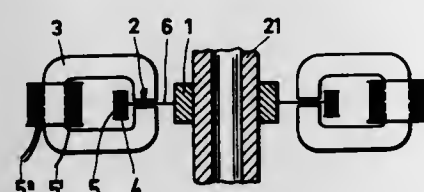
Faults in cable insulation are detected by passing the cable through an annular electrode immersed in water. Relatively low voltage is applied between the electrode and the grounded core conductor of the cable. A fault in the insulation completes a discharge path through the water to ground to trigger an indicating circuit.

3,612,995
APPARATUS FOR ELECTRICALLY MEASURING A CONDITION OF A ROTATING MEMBER
 Axel Leufgen, Muhlheim/Main, Germany, assignor to Siemens-Honeywell-Holding GmbH, Frankfurt am Main, Germany
 Continuation of application Ser. No. 757,336, Sept. 4, 1968, now abandoned. This application May 4, 1970, Ser. No. 31,878
 Int. Cl. G01r 27/00, 15/00
 U.S. Cl. 324-57 R

10 Claims

The condition, such as the temperature, of a rotating member is electrically measured in an apparatus which com-

prises a condition responsive impedance rotating with the member and a stationary measuring circuit. A first coil is mounted on the rotating member and is electrically connected to the impedance and a second coil is electrically connected to the circuit. A nonrotating magnetic core for the coils bears the second coil and provides two poles defining a



gap therebetween and a closed magnetic circuit surrounding a free air space adjacent the gap. A nonmagnetic annular disc support for the first coil is mounted on the rotating member and extends through the gap so as to place the first coil within the free air space whereby the coils are permanently inductively coupled.

3,612,996 INDICATING BY MICROWAVE ENERGY THE CONSTITUENT PROPORTIONS OF A FLOWING SUBSTANCE

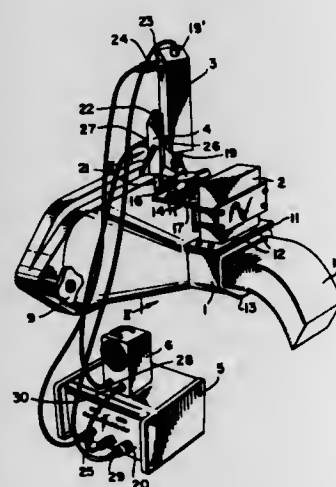
William J. Bleackley, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Aug. 11, 1969, Ser. No. 848,874

Int. Cl. G01n 27/04

U.S. Cl. 324-58.5 A

7 Claims



A method and apparatus for indicating the proportions of the constituents of a flowing substance of the type wherein the effective dielectric constant depends upon the constituents, for example, butter, containing water wherein the butter flows along a main section waveguide, whilst microwave energy is propagated along a branch section waveguide through a window and into the main section waveguide. The whole waveguide configuration with the butter in the main section is a resonant microwave structure, and the ratio of the water in the butter is determined from the resonant frequency of the structure.

3,612,997 CAPACITOR APPARATUS INCLUDING A REFERENCE CAPACITOR FOR CONTROLLING THE CURRENT FLOW THROUGH A CAPACITANCE BEING MEASURED

John Paulovich, 6001 Harland St., Lanham, Md.

Filed Feb. 18, 1970, Ser. No. 12,048

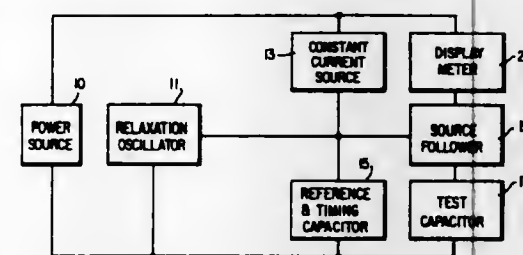
Int. Cl. G01r 27/26

U.S. Cl. 324-60 C

16 Claims

An apparatus for testing an item, such as a capacitor, to determine its capacitance value is described. A timing and reference capacitor is charged at a constant rate from a constant current source. The test capacitor charges at a related rate through a source follower transistor circuit which in-

cludes a current meter. The timing and reference, and the test capacitors are both discharged by a unijunction



transistor when a predetermined potential level is reached. Thereafter, the charging cycle reoccurs.

3,612,998 ELECTROKINETIC CORROSION MEASURING APPARATUS AND METHOD

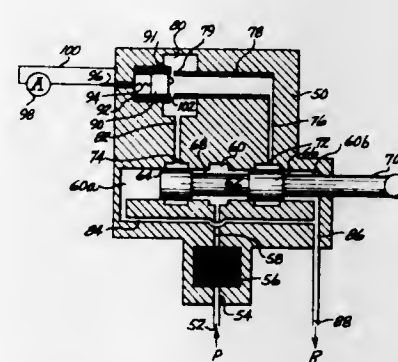
Bernus G. Turner, Kent; John H. Olsen, Vashon; Theodore R. Beck, Seattle, and Derek W. Mahaffey, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed June 1, 1970, Ser. No. 42,167

Int. Cl. G01r 27/00

U.S. Cl. 324-71 C

7 Claims



Hydraulic fluid having the characteristic of forming an electrical double layer in a hydraulic system and a resulting streaming current is subjected to a severe shear variation in the vicinity of an electrode surface in contact with the fluid whereby the charged species of the diffuse layer of the electrical double layer that are swept away by the shear variation are replaced by charged species flowing from the electrode into the fluid thereby inducing an electrical current in the electrode which is measured as a determination of the electrokinetic corrosion characteristics of the fluid.

3,612,999 VOLTAGE-MEASURING DEVICE HAVING INSULATED SEPARABLE PROBE CASING

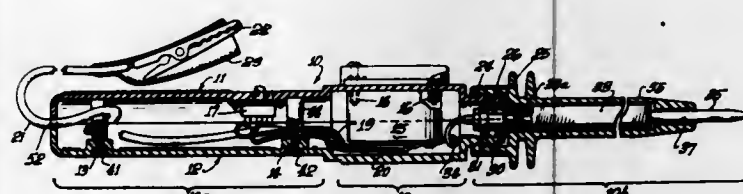
Ramon Bergero, Rosario, Argentina, assignor to Alva M. Henderson, Los Angeles, Calif., a part interest

Filed Apr. 29, 1970, Ser. No. 32,981

Int. Cl. G01r 1/06, 1/14

U.S. Cl. 324-149

4 Claims



A hand-held apparatus for measuring high applied voltages in electrical circuits, having an elongate nonconductive casing longitudinally separable into two casing sections. A voltmeter is mounted to an enlarged intermediate portion of the casing, one tubular end portion providing a handle, an opposing tubular end portion being externally threaded for mounting of an insulating sheath enclosing an elongate resistor having one end extending into the casing and connected to one

terminal of the voltmeter and the other end connected to a test probe which projects from the insulating sheath. A ground wire is connected to the other meter terminal and projects from the handle end and terminated in a ground clip. A switch mounted in the handle portion enables short circuiting of the meter to damp the meter movement when not in use to protect it from physical shock. The two casing sections are held in assemblage by a transversely extending screw in the handle end portion and the insulating sheath threaded onto the other casing end portion.

3,613,000 DEVICE FOR THE DETECTION OF THE ROTATIONAL MOTION OF A SHAFT

Robert James Weir, and Anthony David Hewitt, both of Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 2, 1968, Ser. No. 780,517

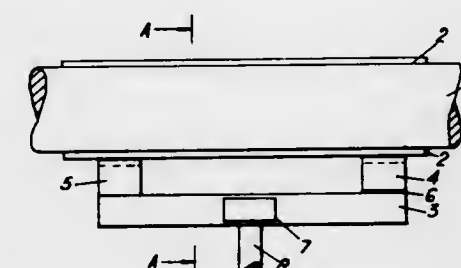
Claims priority, application Great Britain, Dec. 7, 1967,

55766/67

Int. Cl. G01p 3/48

U.S. Cl. 324-174

1 Claim



The rotational motion of a shaft having a magnetically detectable portion is detected using a device comprising a magnet, a magnetoresistor fixed relative to the magnet, and detection means to detect changes in the resistance of the magnetoresistor brought about by alterations in the field strength through the magnetoresistor as the shaft rotates.

3,613,001 PROBE ASSEMBLY

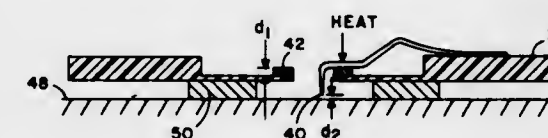
John L. Hostetter, Santa Ana, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Dec. 5, 1969, Ser. No. 882,580

Int. Cl. G01r

U.S. Cl. 324-158 P

8 Claims



A probe assembly for testing integrated circuits and the like including a support member and preloaded probe members mounted on said support member and extending through an opening in said support member. A thermoplastic member encircling said opening supports intermediate portions of said probes and facilitates thermal planarizing of the probe contacts.

3,613,002 COULOMETER AND TIMING APPARATUS

George Trenkler, East Providence, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1969, Ser. No. 885,786

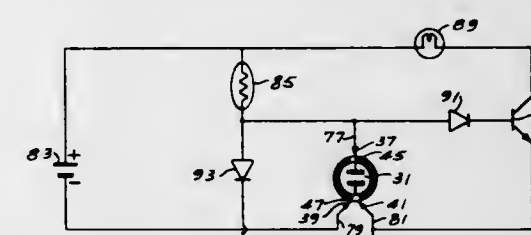
Int. Cl. G04f 9/00

U.S. Cl. 324-182

18 Claims

A reversible coulometer includes a pair of electrodes wherein each electrode alternates between functioning as an anode and as a cathode on alternate cycles. The coulometer includes a container and a liquid alkaline electrolyte in the

container. A first electrode is in contact with the electrolyte and comprises an inert support and a solid active cadmium-containing material. A second control electrode comprises a liquid cadmium amalgam containing not more than about 1 percent cadmium by weight, the second electrode having an electrochemical energy storing capacity corresponding to about 1 percent of the capacity of the first electrode. A layer of dielectric material, permeable by the electrolyte and impermeable by the amalgam is in contact with the electrolyte and the amalgam to separate the electrodes. Means are provided for reversibly connecting the two electrodes in alternate sequence in a circuit which is connected to a source of current. During operation of the coulometer, the second electrode is alternately converted to substantially fully charged (reduced) and discharged (oxidized) conditions. The liquid amalgam maintains a supply of available, electrochemically active cadmium material at the liquid surface of the electrode on each anodic and cathodic cycle for the second electrode. The relatively small capacity of the second



electrode relative to the first electrode then cooperates with the liquid surface characteristic of the second electrode so that the relative surface areas of the electrodes and the current density therebetween are maintained substantially constant from cycle to cycle. Also disclosed is electrical timing apparatus comprising the source of current, a resistor having a resistance which is a function of its temperature, and a current-integrating device, such as the coulometer. Means are connected to the coulometer for signalling when the second electrode has reached a preselected charge or discharge level. Means are provided for interconnecting the current source and the resistor in a circuit with the reversible coulometer. Shunt connected across the coulometer electrodes is a voltage limiter which limits the rise of voltage across the coulometer to a level below that at which hydrogen evolution will take place in the coulometer. The length of time for the signalling device to indicate the coulometer has reached a preselected charge or discharge level after reversing the sequence of connection of the electrodes with respect to the current source is a function of both time and temperature.

3,613,003 TRANSCIVERS WITH CALLING DEVICES

Mutsuo Kubo, and Takeshi Kinoshita, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

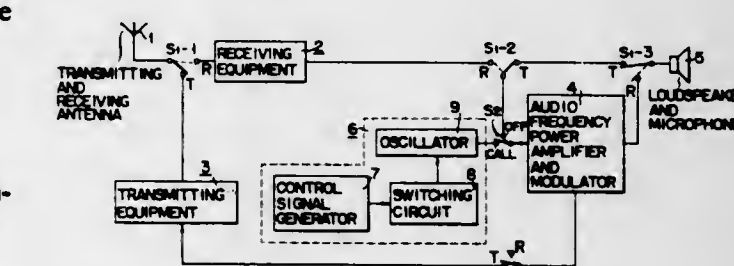
Filed July 30, 1969, Ser. No. 846,170

Claims priority, application Japan, Aug. 5, 1968, 54914

Int. Cl. H04b 1/40

U.S. Cl. 325-18

10 Claims

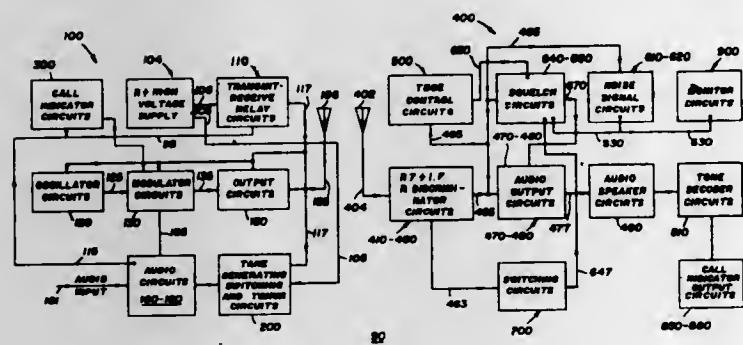


In a transceiver provided with a calling device, the circuit constant of an oscillator is varied by means of a switching circuit to generate a call signal of multiple frequencies and the switching circuit is controlled by a control circuit.

3,613,004 SEQUENTIAL TONE SELECTIVE CALLING COMMUNICATION SYSTEM AND COMPONENTS THEREOF

Keith H. Wycoff, P. O. Box 308, Lexington, Nebr.
Filed Mar. 9, 1964, Ser. No. 350,163
Int. Cl. H04q 7/02; H04b 5/04
U.S. Cl. 325—55

16 Claims



1. In a communication system for selectively transmitting carrier signals carrying a control tone and a call-indicator tone and intelligence from a transmitter to at least one selected receiver, the combination comprising a transmitter including a tone-generating circuit for generating a preselected control tone, means for generating a call-indicator tone, a modulating circuit for modulating the carrier signals in accordance with the control tone and the control-indicator tone and the intelligence to be transmitted, a transmitter output circuit coupled to said modulating circuit for transmitting the carrier signals including the control tone and the call-indicator tone and the intelligence to be transmitted, a receiver including an input circuit for receiving the signals from said transmitter, a detecting circuit coupled to said input circuit for detecting the control tone and the call-indicator tone and the intelligence in the signals, an audio circuit for converting the intelligence into sound waves, a coupling circuit coupling said detecting circuit to said audio circuit for coupling the intelligence and the control tone thereto, a squelch circuit coupled to said coupling circuit and operative in a first condition thereof to render said coupling circuit inoperative and operative in a second condition thereof to render said coupling circuit operative, a first control circuit coupled to said squelch circuit and responsive to the application of the carrier signals to said receiver for generating a first control signal, a second tone control circuit coupled to said squelch circuit and responsive to the application of the control tone to said receiver for generating a second control signal, and squelch circuit being responsive to the application thereto of said first and second control signals for actuating said squelch circuit from the first condition thereof into the second condition thereof to render said coupling circuit operative to pass the call-indicator tone therethrough, means for maintaining said squelch circuit in the second condition thereof until the removal of said first control signal therefrom, a third tone control circuit coupled to said coupling circuit and responsive to the application thereto of the call-indicator tone from said coupling circuit for producing an output from said third tone control circuit, and a call-indicator annunciator coupled to said third control circuit and actuated by the output therefrom, whereby said receiver is operative to operate said call-indicator annunciator upon the application thereto of both the control tone and the call-indicator tone from said transmitter, the removal of said first control signal from said squelch circuit changing said squelch circuit from the second condition thereof to the first condition thereof to render said coupling circuit inoperative.

16. A communication system comprising:
transmitter for transmitting a signal including a radio frequency carrier,
modulating means for modulating said carrier,
control means for initiating the operation of said modulation means for first causing said modulation means to modulate said carrier with a different frequency signal for a time period of predetermined limited duration and for immediately thereafter causing said modulation means to modulate said

carrier with a different frequency signal to thereby cause said transmitter means to first transmit said carrier modulated by a burst of said first frequency signal and then transmit said carrier modulated by a second frequency signal,

a receiver including means for receiving and demodulating the signal transmitted from said transmitter to provide an output including said burst of said first frequency signal followed by said second frequency signal,
a normally operative first decoding circuit means and a normally inoperative second decoding circuit means each connected to be supplied with said output and a utilization circuit means controlled by said second decoding circuit means,

said first decoding circuit means having means responsive to said burst of said first frequency signal in the output from said receiver for rendering said second decoding circuit operative for a time period of predetermined limited duration overlapping the time during which said output includes said second frequency signal,

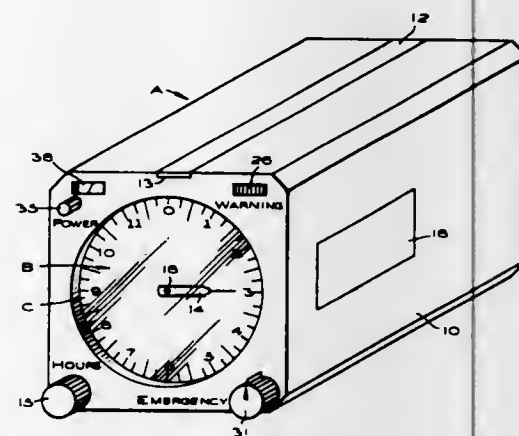
said second decoding circuit means having means responsive to said second frequency signal in the output of said receiver for causing energization of said utilization circuit means.

3,613,005 EMERGENCY BEACON WITH AUTOMATIC TIMER FOR STARTING TRANSMISSION OF DISTRESS SIGNALS

Friedrich K. Oschbach, 3603 Repose Way, Belmont, Calif.,
and Donald D. Kroeck, 806 Sunset Drive, San Carlos, Calif.
Filed Apr. 8, 1969, Ser. No. 814,299
Int. Cl. H04b 1/02

U.S. Cl. 325—166

4 Claims



An emergency beacon with automatic timer for starting transmission of distress signals, wherein a presettable automatic timer is coupled to the emergency beacon so as to start the signals after elapse of the preset time without requiring further action by a pilot, or other individual. Thus the timer may be preset for a time greater than the anticipated time called for in a flight plan, and upon expiration of that time the distress signals will be automatically transmitted. A warning device is provided that will give a warning signal prior to elapse of the preset time, whereby the time that the beacon will start transmission may be delayed. Moreover, manually actuated means are provided that may be actuated in an emergency for starting transmission of the distress signals.

3,613,006 STABLE SUPERCONDUCTING MAGNET

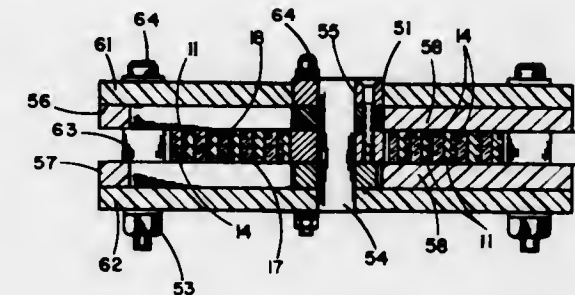
Arthur R. Kantrowitz, Arlington, and Zdenek J. J. Stekly, Topsfield, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 367,814, May 15, 1964, now abandoned. This application Nov. 23, 1966, Ser. No. 600,346
Int. Cl. H01f 7/22

U.S. Cl. 335—216

15 Claims

Superconductive coils formed from and a superconductive conductor comprised of superconductive material combined

with a substantial amount of normal metal in such a manner

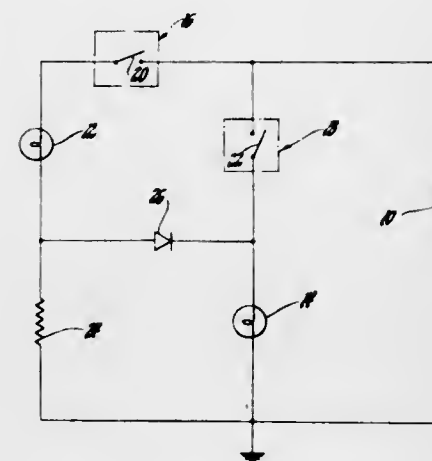


as to prevent propagation of normal regions in the superconductive material when exposed to a cryogenic environment.

3,613,007 TWO INTENSITY INDICATOR LAMP CONTROL SYSTEM

Thomas E. Endres, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 15, 1969, Ser. No. 850,538
Int. Cl. H04b 1/16; H01j 7/42; H03j 1/02
U.S. Cl. 325—364

4 Claims



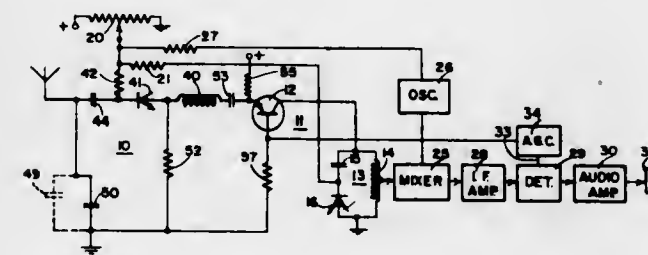
A first lamp is alternately illuminated at high and low intensities by variably regulating the bias of a rectifier so as to selectively energize the first lamp through either a second lamp or a resistor. As applied to a stereo radio receiver, the first lamp is a stereo reception indicator lamp and the second lamp is a tuning dial illumination lamp.

3,613,008 OVERLOAD COMPENSATION CIRCUIT FOR ANTENNA TUNING SYSTEM

Kamil Y. Jabbar, River Grove, Ill., assignor to Motorola Inc., Franklin Park, Ill.
Filed May 15, 1969, Ser. No. 824,864
Int. Cl. H04b 1/18

U.S. Cl. 325—319

3 Claims



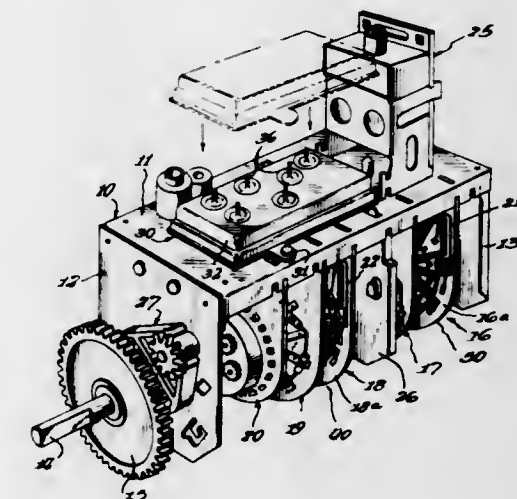
A radio receiver is supplied with signals from a high impedance capacitive antenna coupled in series with a low im-

pedance resistive load in the form of the emitter-base circuit of a common-base RF transistor amplifier through a series-tuned circuit, including a varactor diode connected in series with an inductor. A source of DC biasing potential is provided to vary the biasing voltage on the diode in order to change its capacitance to tune the circuit over a predetermined band of frequencies. Overload compensation for the varactor diode is provided by utilizing the automatic gain control (AGC) voltage of the receiver, with the AGC voltage being applied to the base of the RF amplifier transistor to vary the biasing potential thereon. This in turn causes a corresponding variation in the impedance of the emitter-base path of the transistor with an increasing impedance being caused by increased signal levels. As a result, increasing amounts of the signal supplied by the antenna are dropped across the emitter-base path of the transistor at high signal levels, thereby limiting the RF signal level across the varactor diode to prevent rectification of high level signals thereby.

3,613,009 TUNER WITH SEPARABLE PASSIVE CIRCUIT ASSEMBLY AND ACTIVE CIRCUIT MODULE

Walter Meyer, McHenry, Ill., assignor to Oak Electro/Netics Corp.
Filed Mar. 11, 1969, Ser. No. 806,142
Int. Cl. H04b 1/08; H03j 5/00
U.S. Cl. 325—356

4 Claims



A VHF television tuner having a passive tuning circuit assembly and active circuits in a single, plug-in module. The tuning circuits are mounted on switch sections carried on a frame and provided with female clips which receive connector pins on the module. Circuits in the module are covered by a case and the connector pins mounted on the base of the module extend on one side thereof for connection with the female clips and on the other side through the case for connection with other circuits. The connector pins provide both electrical connection and mechanical stability for the circuit module.

3,613,010 CONTINUOUS WAVE PRESENCE DETECTION CIRCUIT

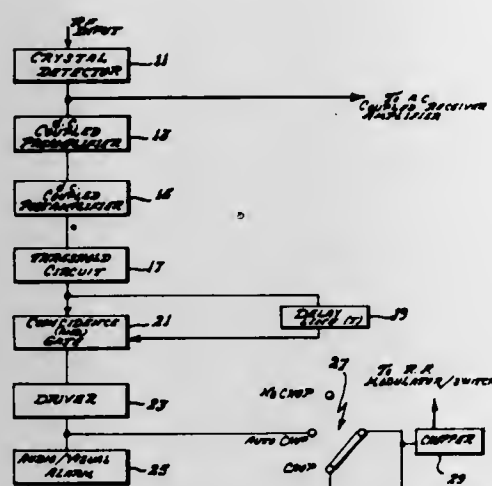
Gerald A. Podolski, Levittown, Pa.; Harold Balsheim, North Plainfield, N.J., and Stanley Victor, Lansdale, Pa., assignors to The United States of America as represented by the Secretary of the Air Force

U.S. Cl. 325—364

2 Claims

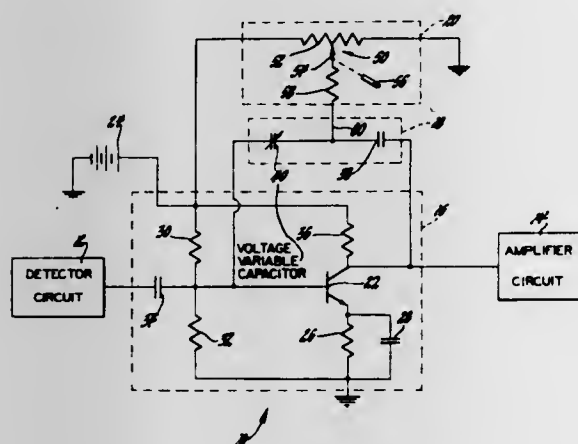
A continuous wave presence detection system having a crystal detector DC coupled to a threshold circuit. The output of the

threshold circuit is fed directly to a coincidence circuit and also via a delay of one frequency period. The driven gated amplifier, a bipolar threshold detector and a duty cycle comparator for adjusting the incoming signal when it exceeds a



output from the coincidence circuit representing the continuous wave signal can be selected for chopping.

3,613,011
VARACTOR TONE CONTROL APPARATUS
Paul W. Wood, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 8, 1969, Ser. No. 789,823
Int. Cl. H04b 1/16
U.S. Cl. 325-424 1 Claim



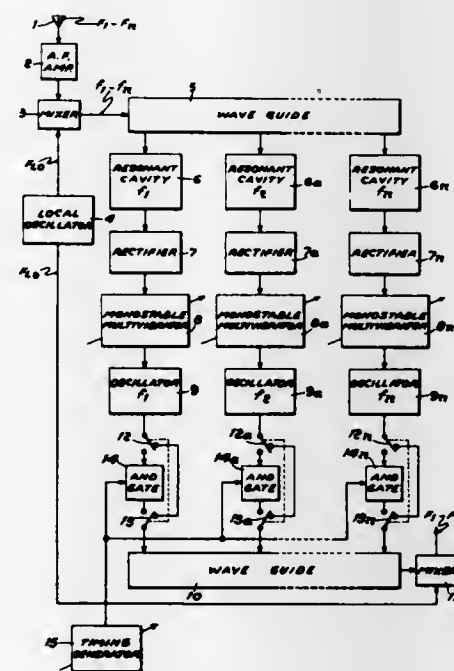
A remotely located potentiometer is manually adjustable so as to vary the capacitance of a varactor which defines a degenerative feedback for regulating the frequency response of an audio amplifier in a radio receiver thereby to exercise tone control over the audio output of the radio receiver. Preferably, the varactor has a metal-insulator-semiconductor structure including an insulating layer of tantalum oxide and a semiconductor layer of N-type silicon sandwiched between a pair of metal electrodes.

3,613,012
ADAPTIVE BLANKING APPARATUS
Claude H. Feistel, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.
Filed Oct. 13, 1969, Ser. No. 865,652
Int. Cl. H04b 1/10
U.S. Cl. 325-474 6 Claims

An adaptive blanking circuit includes a blanking switch operable by a threshold detector network, in turn controlled by an AGC network, the AGC network including a variable

reference level for a predetermined percentage of time and for discriminating against high-impulse noise.

3,613,013
MEMORY SYSTEM
Lucio M. Vallese, Glen Ridge, N.J., assignor to International Telephone and Telegraph Corporation
Filed Dec. 7, 1966, Ser. No. 600,694
Int. Cl. G11c 13/00
U.S. Cl. 328-34 10 Claims



charge circuit and a discharge circuit, a memory cell controlling the capacitor discharge circuit, a circuit for comparison of the pulsating voltage with the capacitor charge voltage connected to one input of the memory cell, and a source of gate pulses recurring at the pulsation frequency connected to the second input of the memory cell.

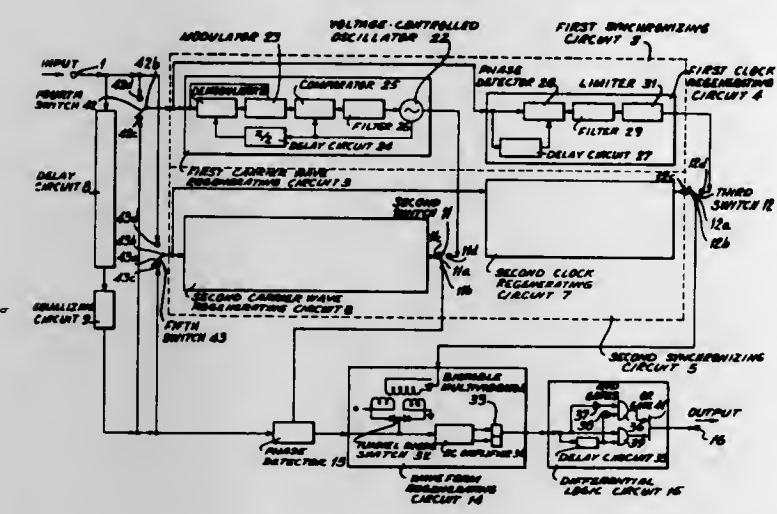
3,613,019 BURST-SIGNAL-DEMODULATING CIRCUIT ARRANGEMENT

Takuo Muratani, Tokyo; Masaka Ogi, Tokyo; Takeshi Shoji, Yokohama, and Etsuji Kanamori, Ohno, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan and Fujitsu Limited, Kawasaki, Japan

Filed Apr. 1, 1970, Ser. No. 24,550
Claims priority, application Japan, Apr. 8, 1969, 44-27071
Int. Cl. H03k 9/00

U.S. Cl. 329-104

5 Claims



A connector between a delay circuit and first and second synchronizing circuits supplies the output burst signal of the delay circuit instead of the input burst signal to one of the synchronizing circuits when such synchronizing circuit establishes synchronism. The input burst signals are supplied to the delay circuit and alternately to the first and second synchronizing circuits. The delay circuit has a delay time which is at least equal to the synchronizing time of the first synchronizing circuit, which in turn is equal to the synchronizing time of the second synchronizing circuit.

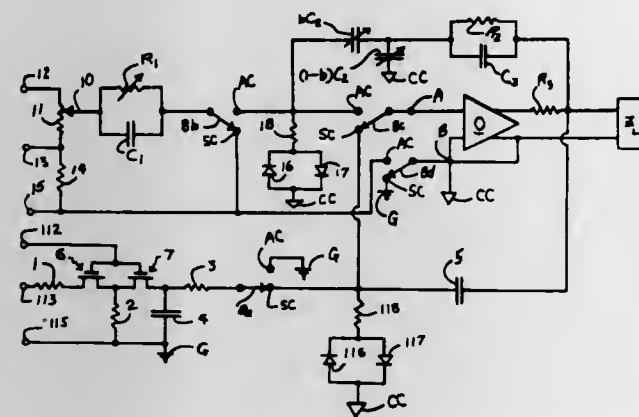
3,613,020 PROCESS CONTROL SYSTEM

Kevin P. McBride, Chilli, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,202
Int. Cl. H03f 1/00

U.S. Cl. 330-1 A

11 Claims



A sampling control system having a sampling capacitor the charge on which determines the control effect of a process control element. A MOSFET switch periodically connects

the capacitor to a source of control voltage. When the MOSFET switch disconnects the capacitor from the control voltage the capacitor transfers its charge to an integrating holding circuit including an amplifier. The amplifier is part of an analog controller which can be connected to the control element to determine its control effect. The control element controls a variable in a process. In sampling control, this variable and other factors determine the control voltage, and hence the control effect. The analog controller, however, causes the control effect to be a function of the deviation of the variable from a given value.

3,613,021 HALL-EFFECT AMPLIFYING DEVICE WITH TEMPERATURE COMPENSATED CHARACTERISTIC

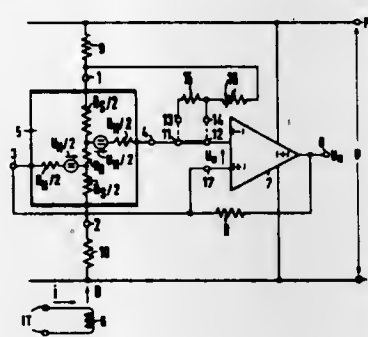
Christian Scheidt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Feb. 7, 1969, Ser. No. 797,582
Claims priority, application Switzerland, Feb. 20, 1968, 2477/68

Int. Cl. H03f 15/00

U.S. Cl. 330-6

7 Claims



A Hall-effect amplifying device comprising a Hall generator and an electronic amplifier is provided with a feedback resistor circuit which connects the amplifier output directly with one of the two Hall-voltage electrodes of the Hall generator. The amplifier in this device is an electronic direct-current amplifier of high-ohmic input resistance and high no-load gain. The resistance of the feedback connection is two or more orders of magnitude higher than the internal resistance between the Hall-voltage electrodes of the Hall generator.

3,613,022 BRANCHING CIRCUIT FOR COMPOSITE ELECTRICAL SIGNALS

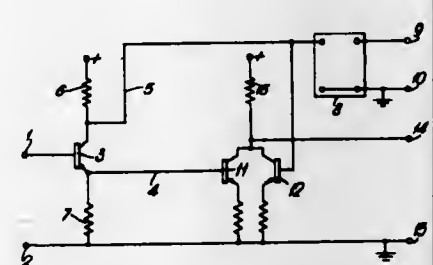
Lionel J. White, Kent, and Anthony Drake, Essex, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 795,835
Claims priority, application Great Britain, Feb. 22, 1968, 8745/68

Int. Cl. H03f 3/68

U.S. Cl. 330-30 R

4 Claims



Branching networks comprise two filters having complementary characteristics e.g. a LP and a HP network. Only one filter network is used in the proposed arrangement. The complementary network is replaced by an active circuit using a unilateral phase splitter and a differential amplifier at the output of which only those signals appear which are blocked by the filter network. The main object of the invention is to

reduce the number of coils and capacitors required. These are expensive and are not suited to printed circuit technique.

3,613,023 STEP FUNCTION STC GAIN FUNCTION UTILIZING TUNNEL DIODE AMPLIFIER CIRCUITS

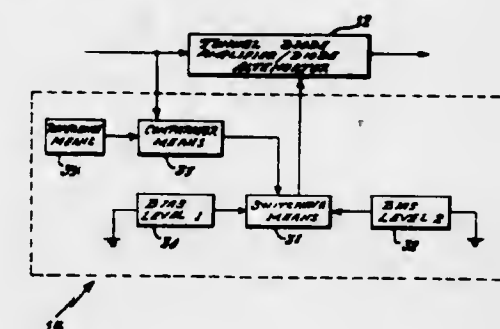
Carl R. Barrett, Jr., and Ernest R. Roehl, both of Anaheim, Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 16, 1969, Ser. No. 816,700

Int. Cl. H03f 21/00

U.S. Cl. 330-61 A

2 Claims



A radar receiver gain control apparatus utilizing tunnel diode amplifier circuits to provide a step-sensitivity time-control gain function to control the gain of the receiver.

3,613,024 CONTINUOUSLY PUMPED Q-SWITCHED ARRANGEMENT INCLUDING AN N:YAIG LASER ELEMENT

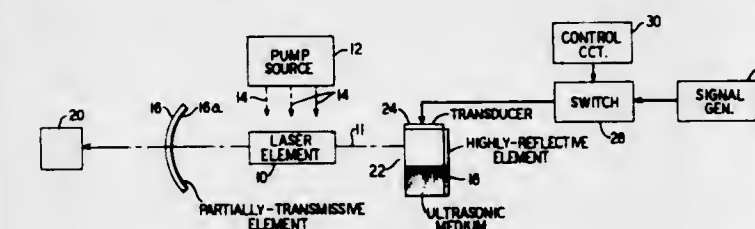
Joseph E. Geusic, Berkeley Heights, and Michael A. Karr, III, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 7, 1969, Ser. No. 805,202

Int. Cl. H01s 3/11

U.S. Cl. 331-94.5

1 Claim



Q-switching of a laser is accomplished by controlling the state of an intracavity acousto-optic switch that comprises a piezoelectric transducer bonded to a low-optical-loss ultrasonic propagation medium. Energization of the transducer causes a traveling acoustic diffraction grating to propagate through the medium. Illustratively, the direction of propagation of the grating is perpendicular to the direction in which light travels in the laser. The interaction between the light and the acoustic grating gives rise to diffraction losses that prevent the laser from oscillating. In response to a momentary deenergization of the transducer, the laser cavity is restored to a high-Q oscillatory condition during which energy stored in the system during the nonoscillatory state is suddenly released. During each such deenergization period, a high-amplitude output pulse of coherent radiation is obtained.

3,613,025 LOW PASS ASTABLE MULTIVIBRATOR

Wesley L. Joosten, Jr., El Paso, Tex., assignor to Globe Universal Sciences, Inc., Midland, Tex.

Filed Nov. 5, 1969, Ser. No. 874,279

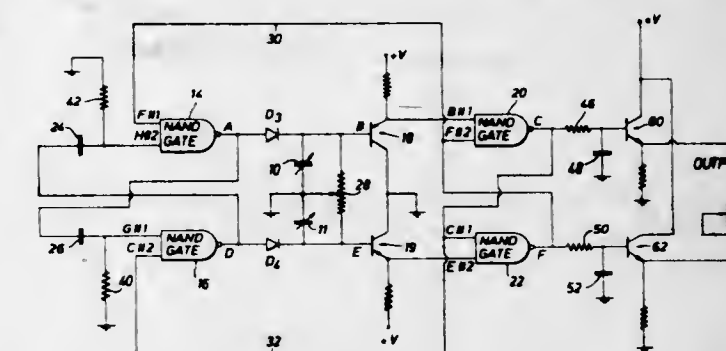
Int. Cl. H03k 3/282, 3/286

U.S. Cl. 331-47

3 Claims

A free-running multivibrator circuit adapted to change oscillation frequency in response to the change in capacitance of at least one of a pair of capacitors which are

not necessarily electrically isolated. The circuit comprises a free-running astable multivibrator of the common type which is controlled and synchronized by a set-reset bistable multivibrator. The outputs of the astable multivibrator provide the driving waveforms for the capacitors, but the waveforms are modified by the time constant of the capacitors which in



turn control the bistable multivibrator that synchronizes the astable multivibrator.

The low-pass astable multivibrator has application for measuring capacitance as in a microphone circuit having dual capacitor elements or any type of pressure sensor such as a rate-of-climb indicator for aircraft.

3,613,026 PLASMA TUBE IMPEDANCE VARIATION FREQUENCY STABILIZED GAS LASER

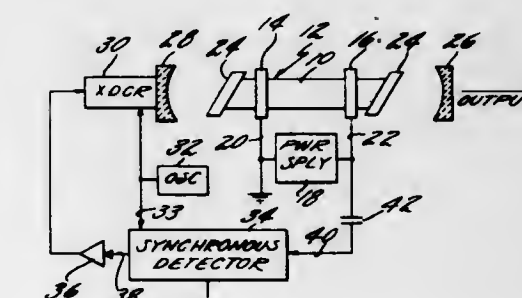
Michael L. Skolnick, Monroe, Conn., and United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1970, Ser. No. 21,263

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

4 Claims



A gas laser employing a synchronous detector and modulated cavity length in a well-known hill-climbing servo frequency stabilization apparatus is improved by utilizing a voltage indicative of plasma tube impedance variations as the feedback input to the synchronous detector.

The invention herein described was made in the course of or under a contract or subcontract thereunder with The Department of the Air Force.

3,613,027 GAS LASER WITH COLD-CATHODE DISCHARGE

Heinz Westermeyer, Neubiberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 29, 1970, Ser. No. 50,678

Claims priority, application Germany, July 7, 1969, P 19 34 414.0

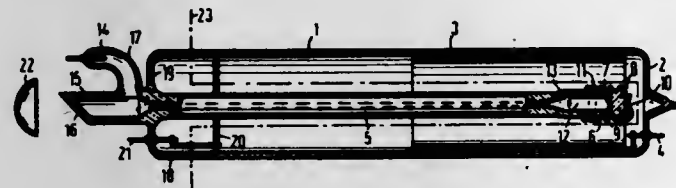
Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

6 Claims

A gas laser utilizing a coaxial cold-cathode discharge tube having a large-surface cylindrical cold cathode disposed in a discharge vessel enclosing one end section of a relatively thin laser capillary tube which communicates with the interior of the discharge vessel and has its opposite end extending exteriorly of such vessel and provided with an enlargement for accommodating an anode, in which the closure member for the inner end of said capillary tube is closed by a closure member, preferably in the form of a platelike member provided with a reflecting surface on the inner face thereof with the closure member being secured to the adjacent end of the

capillary tube, preferably by spring means engaging both the tube and the closure member, which spring may be applied



to the capillary tube prior to the insertion of the latter within the discharge vessel.

3,613,028

MODE-LOCKED LASER

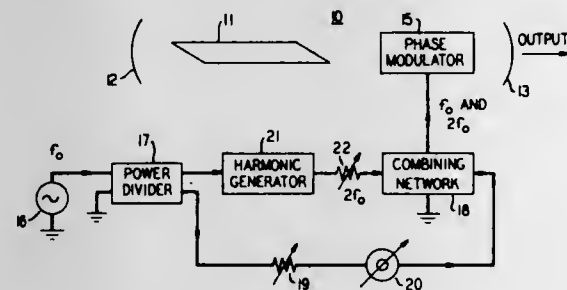
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,149

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

5 Claims



A laser, mode locked by an intracavity phase modulator, can support either of two separate pulse trains and, typically, will switch erratically between the two. To avoid the resulting instability in the laser output, it is proposed to phase modulate the laser at the synchronous frequency, as is done in the prior art and, simultaneously, to phase modulate it at the second harmonic of the synchronous frequency. So modulated, the two pulse trains are phase locked to produce a single, stabilized output pulse train.

3,613,029

CRYSTAL-CONTROLLED CROSS-COUPLED NAND GATE SQUARE-WAVE GENERATOR

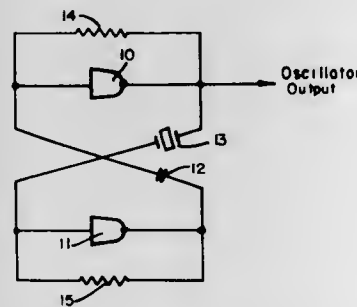
Peter G. Bartlett, Davenport, Iowa, assignor to Struthers-Dunn, Inc., Pitman, N.J.

Filed June 8, 1970, Ser. No. 44,261

Int. Cl. H03b 5/36; H03k 3/282

U.S. Cl. 331-113 R

7 Claims



An integrated-circuit, crystal-controlled square wave pulse generator employing a pair of cross-coupled NAND gates. The output of one NAND gate is coupled to the other through a piezoelectric crystal, and the output of said other NAND gate is coupled to the input of said one NAND gate through a capacitor. Inverse feedback is provided for each NAND gate to maintain its operation in a linear portion of its operation.

3,613,030

FILTER WITH A PERIODIC TRANSFER CHARACTERISTIC

Tore Torstensson Fjallbrant, Goteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

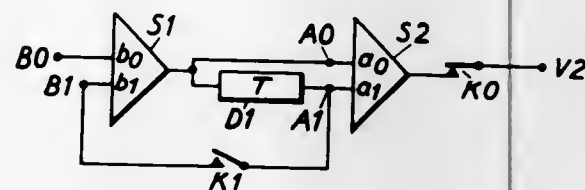
Filed Feb. 24, 1970, Ser. No. 13,600

Claims priority, application Sweden, Mar. 12, 1969, 3402/69

Int. Cl. H03h 7/04

U.S. Cl. 333-70 A

3 Claims



A filter with a periodic frequency characteristic for filtering sampled signals comprises two addition circuits and p delay circuits serially between the two addition circuits. Each addition circuit is so constructed that at the outlet side there is obtained the sum of the input signals multiplied by factors associated with the input terminals of the circuit. The delay of each of the delay circuits is equal to the sampling period T of the sampled signals. The outlets of the delay circuits are connectable, via contacts, to the inlet of the addition circuit at the inlet side of the filter. These contacts are closed during a number of K sampling periods and then open during p sampling periods.

3,613,031

CRYSTAL LADDER NETWORK HAVING IMPROVED PASSBAND ATTENUATION CHARACTERISTIC

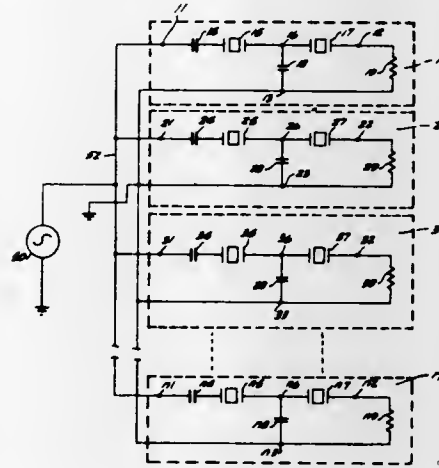
Charles W. Pond, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 15, 1969, Ser. No. 884,929

Int. Cl. H04j 1/02; H03h 9/32

U.S. Cl. 333-72

4 Claims



The disclosed contiguous crystal filter comb includes a plurality of crystal ladder networks connected to receive a common input signal and having respective frequency passbands covering substantially contiguous predetermined frequency ranges. Each ladder network includes a first capacitor and first and second crystal resonators connected in series between an input terminal and an output terminal. A second capacitor is connected between a reference terminal and a terminal intermediate the crystal resonators. The two crystal resonators in each network provide essentially the same equivalent series inductance, and essentially the same equivalent parallel capacitance. The first capacitor provides a capacitance of at least five times the equivalent parallel capacitance and compensates for inherent slight differences in equivalent circuit values due to nonideal resonators.

3,613,032

COMPOSITE CRYSTAL FILTER CIRCUIT

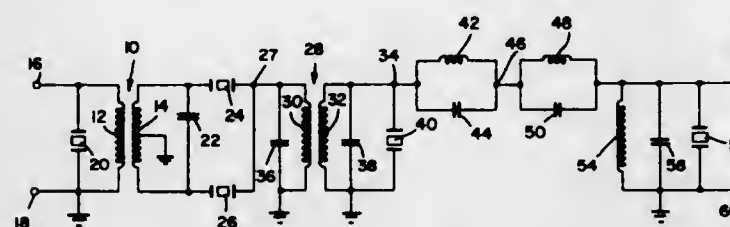
Charles W. Pond, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 19, 1970, Ser. No. 20,950

Int. Cl. H03h 9/00

U.S. Cl. 333-72

4 Claims



A single composite crystal filter circuit provides an attenuation versus frequency characteristic which heretofore required a separate band-pass crystal filter, an LC filter, and a band reject crystal filter. The attenuation versus frequency characteristic provides stopband attenuation over a wide frequency range, a passband over a narrow frequency range, and high attenuation at one or more specific frequencies very near an edge of the passband.

3,613,033

BROAD-BAND HIGH-FREQUENCY LOW-PASS FILTERS

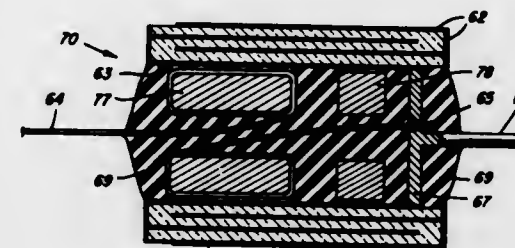
Peter A. Denes, 9101 Crestwood NE, Albuquerque, N. Mex.

Filed May 20, 1968, Ser. No. 730,352

Int. Cl. H03h 7/14

U.S. Cl. 333-79

18 Claims



Broad-band high-frequency low-pass filters formed with capacitors which have structures including multilayer and ceramic types and monolayer capacitors. A passive element such as magnetic cores are contained wholly or partially within the capacitor structure. The filter units which may themselves form complete PI filters or L filters may also be combined as the inside portion of a tubular multilayer ceramic capacitor. Rolled capacitors may be used for distributed inductance and magnetic cores in combination with wound inductors or individually may be formed as portions of the filters.

3,613,034

WAVEGUIDE STRUCTURE WITH PSEUDOCAVITY REGION FOR CONSTRAINING PUMP AND IDLER ENERGIES

James N. Lind, Costa Mesa, and William E. Meyer, Buena Park, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 617,231, Feb. 20, 1967, Pat. No. 3,501,706.

Filed Aug. 14, 1969, Ser. No. 870,903

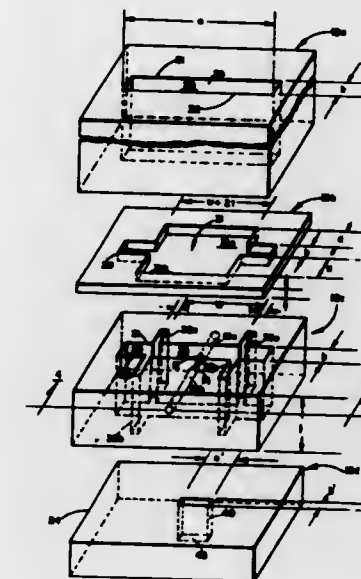
Int. Cl. H01p 7/06

U.S. Cl. 333-83 R

8 Claims

A noel waveguide structure usable in a broadband microwave parametric amplifier is described which comprises a rectangular waveguide with a pair of substantially U-shaped channels extending oppositely from the top and bottom of the waveguide to a depth of $\frac{1}{4}$ guide wavelength at the lower idler frequency. The channels define a pseudocavity region in the waveguide, within which region the idler and pump energy is constrained and parametric interaction oc-

curs. The waveguide is of sufficient width to allow propagation of a signal in the lowest order transverse electric mode



3,613,035

TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE IN A HERMETICALLY SEALED PACKAGE

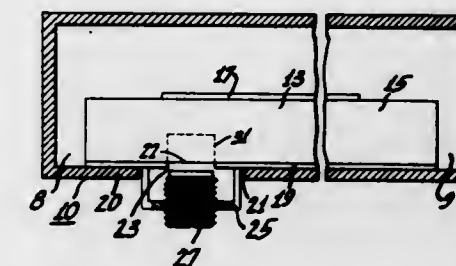
Robert Emerson Askew, Berkeley Heights, N.J., assignor to RCA Corporation

Filed Nov. 13, 1969, Ser. No. 876,380

Int. Cl. H01p 1/00, 3/08

U.S. Cl. 333-84 M

6 Claims



A tuning arrangement for a hermetically sealed strip transmission line is provided. A portion of the ground plane of the strip transmission line is removed leaving a portion of the dielectric substrate exposed. An enclosure surrounds the entire transmission line except for the area thereof where the ground plane is removed and the dielectric is exposed. A tuning stub is supported with respect to the removed area of the ground plane so as to enable tuning of the transmission line by the stub. Since the dielectric substrate remains between the inner area of the enclosure and the outside atmosphere, a seal can be maintained between the inner area of the enclosure and the outside atmosphere.

3,613,036

ELECTRICAL CONTACTS

John O. Kurtz, P.O. Box 79, Smithville Flats, N.Y.

Filed July 2, 1970, Ser. No. 51,932

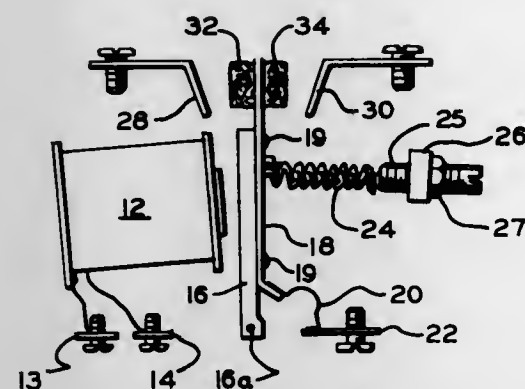
Int. Cl. H01h 1/24

U.S. Cl. 335-196

2 Claims

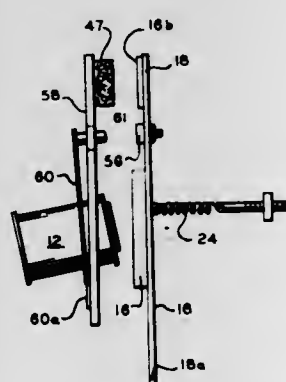
An electromagnet relay carries a resilient conductive wire pad which is compressed when the pair of contacts mate to

minimize contact bounce and attendant mechanical shock, porting the reed-type switch and conductively connecting selectively the sealed contacts to exposed switch terminals.



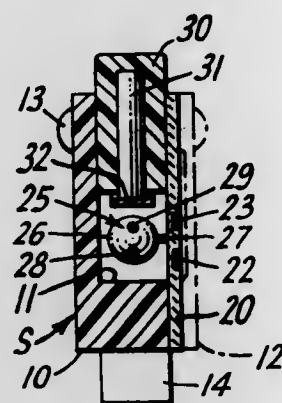
and which provides contact wiping to provide reliable electrical contact.

3,613,037
ELECTRICAL CONTACTS
John O. Kurtz, P.O. Box 79, Smithville Flats, N.Y.
Continuation-in-part of application Ser. No. 51,932, July 2, 1970. This application Aug. 27, 1970, Ser. No. 67,468
Int. Cl. H01h 1/24
U.S. Cl. 335-196 3 Claims



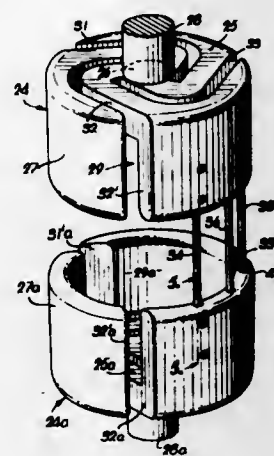
In relays using conductive resilient contact pads formed of fine wire to decrease contact bounce and provide contact surface wiping, damage to the fine wires by contact arcing is obviated by provision of rigid auxiliary contact surfaces which open after the fine wire surfaces open in order to diverge any arcing to the rigid auxiliary contact surfaces. Several spring-operated and several magnetically operated auxiliary contact arrangements are shown.

3,613,038
MINIATURE PUSHBUTTON DRY REED SWITCH
Richard E. Bell, Princeton, Ind., assignor to American Machine & Foundry Company
Filed Mar. 2, 1970, Ser. No. 15,668
Int. Cl. H01h 5/18
U.S. Cl. 335-205 10 Claims



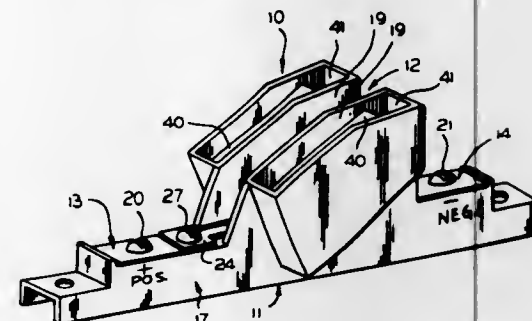
A precision-type snap switch embodying a reed-type switch providing sealed contacts, and a printed circuit board sup-

3,613,039
HIGH-VOLTAGE POWER VACUUM FUSE
Thomas E. Curtis; Charles A. Popeck, and Lloyd R. Beard, all of Centralia, Mo., assignors to A.B. Chance Company, Centralia, Mo.
Filed July 28, 1970, Ser. No. 58,922
Int. Cl. H01h 85/38
U.S. Cl. 337-278 23 Claims



A power vacuum fuse for interrupting high-voltage alternating currents. The fuse has one or more fusible, current-responsive elements spanning a pair of spaced, cup-shaped electrodes located with the cavities thereof in facing relationship. The fusible elements extend between and electrically interconnect adjacent edge sections of the sidewalls of the electrodes. Leads to a high-voltage line extend from the central regions of the electrodes, with the base segment as well as the sidewall portions of each being provided with slot means therein extending from the central region to the periphery of the base segment and thence upwardly through the sidewall portion to define a current path to each element which extends both radially outwardly and tangentially with respect to a central axis of the electrodes. The effect of the slotted electrodes is to apply a force to each element which expels it from between the electrodes upon melting and disintegration of all elements, such force having a tangential component which spins the arc established when all the elements are severed. The cup-shaped configuration of the electrodes in conjunction with the slots therein prevents sufficient residue from the elements to be retained between the electrodes in an arc-conducting location and precludes the arc from dwelling at any one point which could cause extreme volatilization of the electrodes so that the circuit will be interrupted at the first natural current zero following severance of the elements.

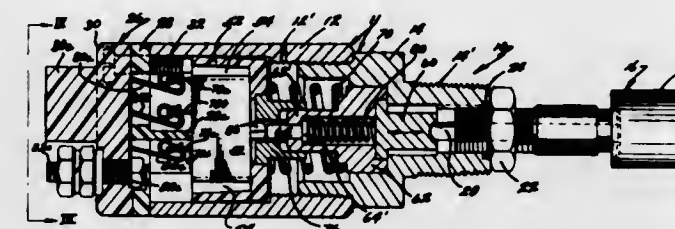
3,613,040
HIGH-VOLTAGE TEMPERATURE SWITCH
Chester H. Fluder, Wheeling, and Carl Krieco, Oak Park, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed Feb. 9, 1970, Ser. No. 9,633
Int. Cl. H01h 9/44, 85/38, 85/44
U.S. Cl. 337-282 5 Claims



A high-voltage temperature switch for a direct current circuit including a body formed of insulating material and defin-

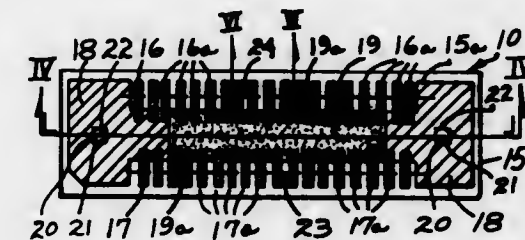
ing an arc chute within which a fusible conductor or link is positioned, wherein the link establishes a circuit and opens upon being subjected to a given temperature to interrupt the circuit, and means for generating a magnetic field across the arc chute about the fusible link to blow out the arc in the event the link opens.

3,613,041
THERMAL-RESPONSIVE SWITCH
Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.
Filed Dec. 15, 1969, Ser. No. 885,026
Int. Cl. H01h 3/00, 9/02, 37/04
U.S. Cl. 337-315 11 Claims



A thermal-responsive switch assembly of the type employing a temperature-responsive expansion means to shift electrical switch means. The switch means has terminal projections held in compressive engagement with cooperative terminal spring clips, such compression being by compressed biasing means that also functions as a return shifter for the temperature-responsive expansion means. The terminal spring clips are on the inner end of a special end cap removably secured to the switch assembly housing, such clips being separated by insulating fence means, and being electrically connected to external connector posts also separated by insulating fence means.

3,613,042
VARIABLE RESISTANCE ELEMENT WITH SPACED ROWS OF PARALLEL TABS
Herbert H. Leerkamp, Berne, and Daniel C. Kinsey, Decatur, both of Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed July 8, 1970, Ser. No. 53,226
Int. Cl. H01c 9/04
U.S. Cl. 338-194 11 Claims



A resistance element for a variable resistance control having a plurality of spaced commutator bars disposed on opposite sides of a resistance film, each of the commutator bars in one row being in straddled relationship to the bars in the other row and at least the ends of the commutator bars being in overlapping relationship with a resistance film. A movable contactor mounted for movement along a predetermined path transversely of the commutator bars engages the commutator bars for altering the resistance of the variable resistance control.

3,613,043
PRINTED CIRCUIT BOARD CONNECTOR
Wilfred Richard Scheller, New Cumberland, and Winfield Warren Loose, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 30, 1969, Ser. No. 820,427
Int. Cl. H01r 9/08; H05k 1/00
U.S. Cl. 339-17 C 9 Claims

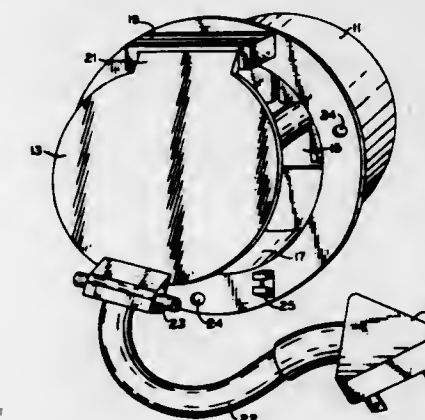
A female U-shaped electrical connector for staking to printed circuit boards capable of forming disconnect ter-

minations between printed circuitry and a male tab (or blade) connector where the sides of the "U" are bowed inwardly to form a spring wipe-contact with any tab connector inserted therebetween and where the female connector ex-



tends through the board and is clinched in position thereon without piercing the printed circuitry so as to bring the free ends of the "U" into positive electrical contact with the printed circuitry.

3,613,044
POWER SUPPLY CORD HATCH
Willis G. Rarick, New Paris, Ind., assignor to Lyall Electric, Inc., Albion, Ind.
Filed Dec. 11, 1969, Ser. No. 884,300
Int. Cl. H01r 13/44
U.S. Cl. 339-44 R 4 Claims

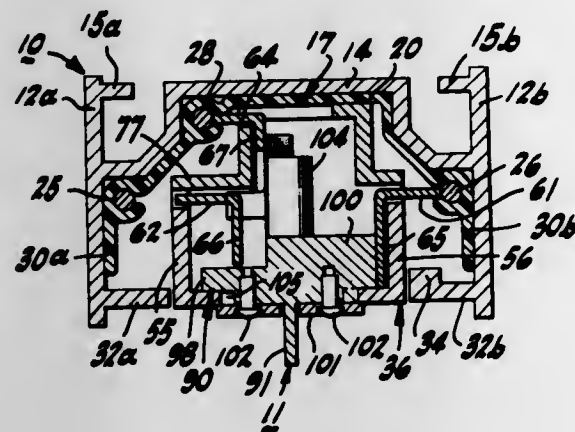


An improved hatch for a power supply cord to be used on travel trailers and similar structures wherein it is desired to store within the structure a power supply cord and, from time to time, extract that cord and connect it to a source of electrical current is disclosed. The hatch is fabricated in two pieces from nylon or other thermoplastic material and designed to be moisture resistant. A novel configured rear portion of the hatch is designed to flexibly pass an electrical plug during assembly and to pass (without flexing) the power cord during use.

3,613,045
ADAPTER FOR A POWER DISTRIBUTION SYSTEM
Larry L. Routh, Castro Valley, and James Contratto, Livermore, both of Calif., assignors to U.S. Industries, Inc., New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,335
Int. Cl. H01r 9/00
U.S. Cl. 339-21 R 21 Claims

A male adapter or plug for connecting an electric fixture to a power distribution system of the type providing a substantially continuous convenience outlet enabling adapters to be connected thereto at substantially any selected location along the system. The system includes one or more track components that provide such convenience outlet each of which is equipped with a conductor assembly having a plu-

ality of pairs of conductors extending therealong in insulated relation one from the others. The adapter is operative to mechanically secure an electric fixture to the track component and to electrically connect such fixture selectively to one or another of the pairs of conductors. For this purpose, the adapter comprises support structure releasably interconnectable with the track component, a plurality of pairs of contacts selectively moveable between an inner retracted neutral position and outer extended positions for respective



engagement with the pairs of conductors, selector structure movable from a neutral position into one or another of a plurality of operative positions to displace one or another of the pairs of contacts selectively into their outer extended positions, and polarization means for enforcing a predetermined relative orientation upon the track component and adapter so as to relate the operative positions of the selector structure to the respective pairs of conductors provided by the track component.

3,613,046
BIASING ELECTRICAL COUPLING HOLDER
Ivan E. Kirk, Emerald, Wis., assignor to Lawrence C. Kirk, St. Paul, Minn., a part interest
Filed Aug. 24, 1970, Ser. No. 66,378
Int. Cl. H01r 13/54
U.S. Cl. 339-75 P
10 Claims

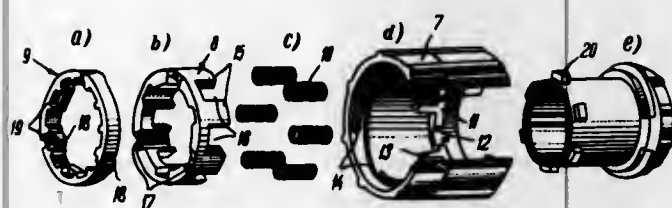


The holder retains in-line slidably disengageable electric plug members coupled together for continuous electrical connection between the cables extending from the plug members at each end of the coupling.

The holder includes a clamp member or means which is mounted upon the base portion of a first plug member at one end of the coupling. The holder also includes a bifurcated means comprising an adjustable yoke and two arms extending from the yoke in substantially parallel aligned spaced relationship. The terminal ends of these arms are turned laterally to form a bifurcated lock-receiving hook recess. This bifurcated means is fitted over the base portion of the second plug member at the other end of the coupling in such a manner that one arm of the bifurcated means extends on each side of the cable connection to that second plug member. Also, the terminal ends of the arms of the bifurcated member are so positioned that they project in a direction away from the coupling. A biasing resilient connection (such as a coil spring) extends between the clamp means at the base portion of the first plug member and the bifurcated means at the base portion of the second plug member.

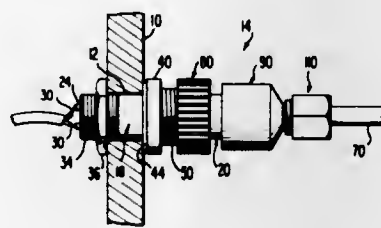
Lock bar means is removably nested in the bifurcated lock-receiving hook recess formed by the outwardly turned terminal ends of the arms of the bifurcated means. A further or second biasing resilient connection extends between the lock bar and the clamp. The resilient connections between the bifurcated means and the clamp means, and between the lock bar means and the clamp means, serve to place a constant compressive force upon the coupling; and this constant compressive force biases the first and second plug members of the coupling toward each other.

3,613,047
PLUG-AND-SOCKET CONNECTOR
Jury Grigorovich Kron, ulitsa Mira, 324 A, kv. 4; Vyacheslav Nikolaevich Solovtsov, proezd Bratsky, 7, kv. 7, and Viktor Vasilievich Rodoman, ulitsa Mira, 463, kv. 68, all of Stavropol, U.S.S.R.
Filed Oct. 20, 1969, Ser. No. 867,684
Claims priority, application U.S.S.R., Oct. 18, 1968, 1273751
Int. Cl. H01r 13/54
U.S. Cl. 339-89 R
4 Claims



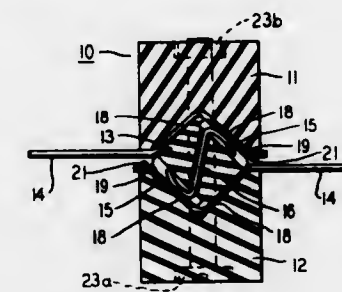
A plug-and-socket connector for connecting two lengths e.g. two lengths of an electric cable, particularly, under adverse operation conditions (i.e. when the connection is acted upon by dust, mud, water, vibrations, jogging, impacts, etc.), comprising a male plug member, a female receptacle member and a coupling and locking assembly mounted, preferably, on the body of said male plug member, this coupling and locking assembly including an external nut and two rings received internally of said external nut and extending about the body of the male plug member; the herein disclosed plug-and-socket connector features a dependable and comparatively simple structure of its coupling and locking assembly; the main parts of this plug-and-socket connector may be made of a strong plastic material.

3,613,048
WATERPROOF ELECTRICAL CONNECTOR
Paul Brundza, 662 97th St., Marathon, Fla.
Filed Jan. 18, 1968, Ser. No. 698,780
Int. Cl. H01r 13/54
U.S. Cl. 339-89 R
5 Claims



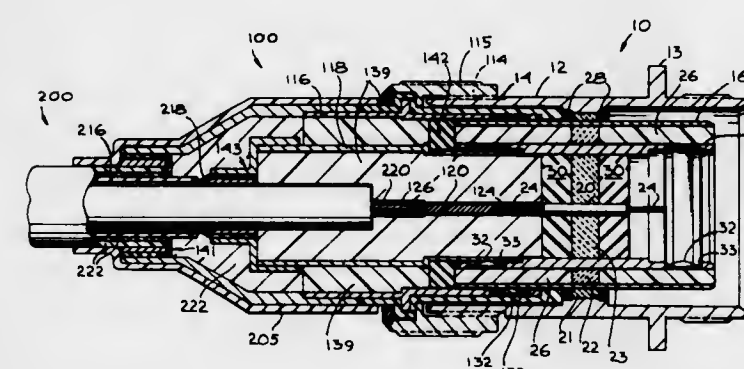
The connector includes a male and female member adapted to be interconnected with one another, and a fastening member draws the male and female members together to form a waterproof seal therebetween by means of a suitable sealing means. A clamping member is mounted on the male member for clamping the male member in place within a hole in a suitable support means and for providing a waterproof seal therewith. Adapter means and compressing means are also supported on the female connector member to provide an effective waterproof seal between the female connector member and an electrical lead means associated therewith.

3,613,049
CONNECTOR FOR FLAT MULTICONDUCTOR CABLES
Joseph M. Niedzwiecki, Brick Town, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 1, 1969, Ser. No. 881,064
Int. Cl. H01r 13/54
U.S. Cl. 339-92 M
8 Claims



A connector for use with multiple conductor flat cables is disclosed which contains two clamp blocks, a center block and a number of contact members. The clamp blocks are positioned on either side of the center block and the contact members are located within the body of the center block.

3,613,050
HERMETICALLY SEALED COAXIAL CONNECTING MEANS
Robert L. Andrews, Simi, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed June 11, 1969, Ser. No. 832,177
Int. Cl. H01r 17/08; H05k 5/06
U.S. Cl. 339-177 R
6 Claims

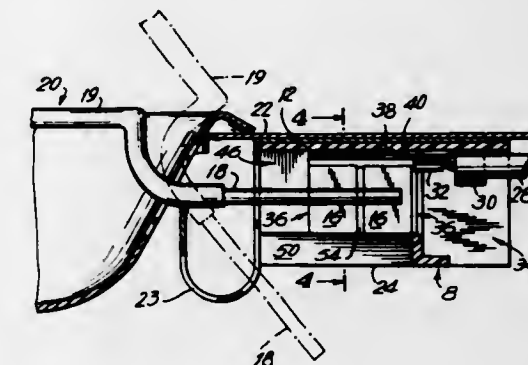


A hermetically sealed coaxial four-conductor feedthrough connecting device having glass insulating rings heat-bonded between the conductors. The outer conductor is chosen to have a thermal coefficient of expansion sufficiently greater than that of the glass rings and inner conductors so as to cause a resultant compressive force to be exerted thereon which is sufficient to achieve reliable hermetic sealing of the device despite any mismatching between the thermal coefficients of expansion of the glass and the conductors.

3,613,051
ELECTRICAL CONNECTOR AND ASSEMBLY
Earl Earnest Folkenroth, Harrisburg, Pa.; Harry John Dell, Norman, Okla., and William Joseph Garver, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 7, 1969, Ser. No. 813,927
Int. Cl. H01r 13/10
U.S. Cl. 339-191 A
13 Claims

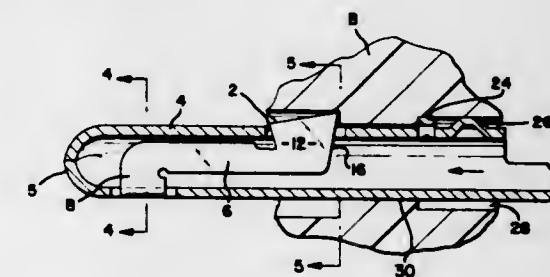
A heating element connector and assembly, particularly useful for electric cooking ranges, formed as a U-shaped female connector with folded-over internal wings for making spring contact with a terminal pin of the heating element laid therein. Said connector being captured in a dielectric housing

ing which is slotted longitudinally and vertically to permit access of the terminal pin to the U-shaped connector and which



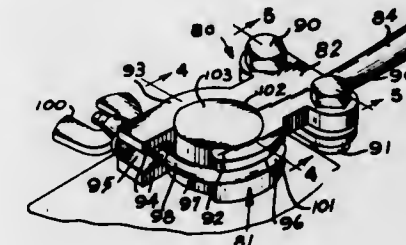
housing is dimensioned to prevent over-stressing of the material of the connector.

3,613,052
ELECTRICAL LOCKING PIN TERMINAL
Frederick Jean Maltais, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 27, 1970, Ser. No. 6,104
Int. Cl. H01r 9/12
U.S. Cl. 339-217 S
7 Claims



A hollow tubular locking pin terminal for securement in a sphinctered opening is provided with a resilient lance means extending axially within the terminal and having a locking member extending through an opening in the wall of the terminal to lock behind the constriction in the sphinctered opening. The tubular pin terminal including the resilient lance and locking member are all made from a unitary blank.

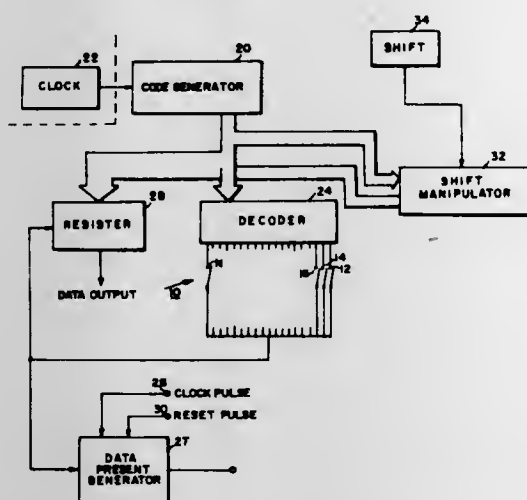
3,613,053
BATTERY TERMINAL CONNECTOR
Orrin H. Thomas, 2120 W. 4th St., Williamsport, Pa.
Filed Oct. 8, 1969, Ser. No. 864,746
Int. Cl. H01r 11/26
U.S. Cl. 339-231
4 Claims



A battery terminal connector for connecting a power cable to a battery post, wherein there is provided a member that is adapted to be actuated to effectively clamp the device onto the post of a battery.

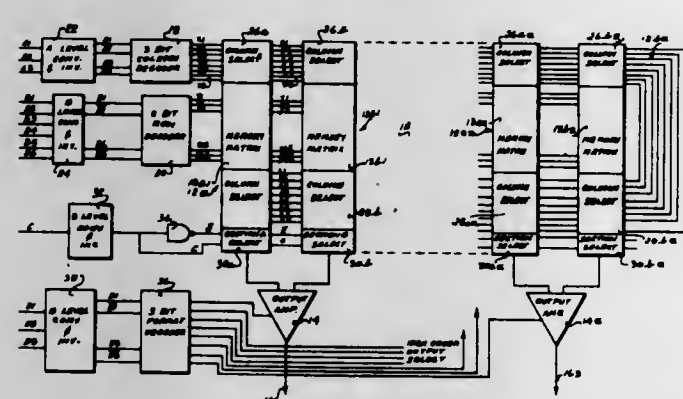
ERRATUM
For Class 290-52 see:
Patent No. 3,612,598

3,613,054
SCANNING ENCODER
 Carl A. Ricard, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
 Filed Dec. 4, 1969, Ser. No. 882,249
 Int. Cl. H03k 13/00
 U.S. Cl. 340—172.5 10 Claims



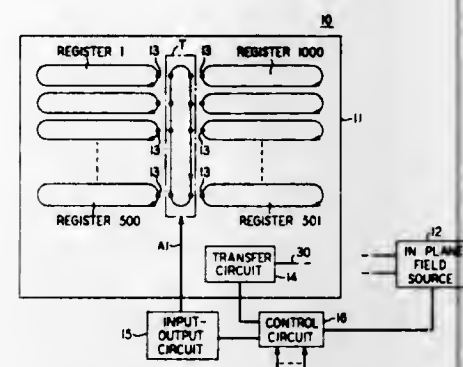
A scanning encoder comprises a code-generating means such as a binary counter which directly outputs a desired code to a decoder which produces a pulsed output which is unique to each of a sequence of asynchronous events. The decoder output signals are coupled to an event indicator which indicates the happening of any given event in the sequence. In an application to a data input keyboard the closure of a given key provides a conducting path whereby the decoder pulse for the corresponding code is directed as an enable signal to a register. Application of the enable signal to the register permits entry of the corresponding code from the counter through the register to a data output terminal. A shift means is provided to manipulate selected data bits to obtain for example upper and lower case characters or the like.

3,613,055
READ-ONLY MEMORY UTILIZING SERVICE COLUMN SWITCHING TECHNIQUES
 Andrew G. Varadi, 85-15 Main St., Jamaica, N.Y., and Richard B. Rubinstein, 245 E. 19th St., New York, N.Y.
 Filed Dec. 23, 1969, Ser. No. 887,496
 Int. Cl. G11c 17/00
 U.S. Cl. 340—173 SP 6 Claims



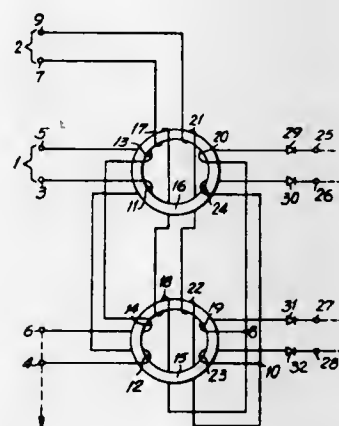
A read-only memory comprises first and second sections each of which contains a data-storing matrix. For each data readout operation each matrix is simultaneously addressed and one of the sections is selected. The output line of the unselected section is unconditionally charged to a reference potential. That potential is selectively transferred to an output circuit through a first switch controlled by a data signal derived at the output line of the selected memory section, and that reference potential simultaneously actuates a second switch to transfer the data signal from the selected column output line to the output circuit, thereby to achieve a more rapid retrieval of data from the memory.

3,613,056
MAGNETIC DEVICES UTILIZING GARNET COMPOSITIONS
 Andrew Henry Bobeck, Chatham; Paul Herman Schmidt, Chatham; Edward Guerrant Spencer, Murray Hill; Le Grand Gerard Van Utert, Morris Township, Morris County, and Edward Martin Walters, Somerset, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
 Filed Apr. 20, 1970, Ser. No. 30,072
 Int. Cl. G11c 11/14, 19/00
 U.S. Cl. 340—174 TF 7 Claims



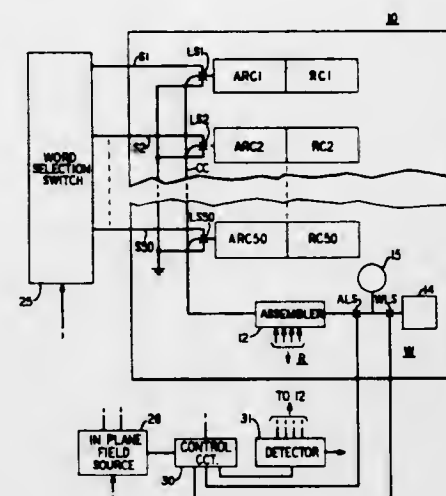
Uniaxial magnetic anisotropy in supposedly isotropic garnet compositions is found to be related to growth direction of the crystal. Wafers cut from crystalline sections, selected such that growth direction is consistent with formation of but a single 211 face, are usefully incorporated in bubble domain devices—a class of magnetic devices in which information is represented by enclosed single domain regions of polarity opposite to that of immediately surrounding material.

3,613,057
MAGNETIC ELEMENT PARTICULARLY FOR PERFORMING LOGICAL FUNCTIONS
 Galina Ivanovna Dmitrakova, Zvezday Bulvar 22, kv. 63, Moscow, U.S.S.R.
 Filed Aug. 29, 1969, Ser. No. 854,192
 Int. Cl. G11c 7/00, 11/06
 U.S. Cl. 340—174 R 3 Claims



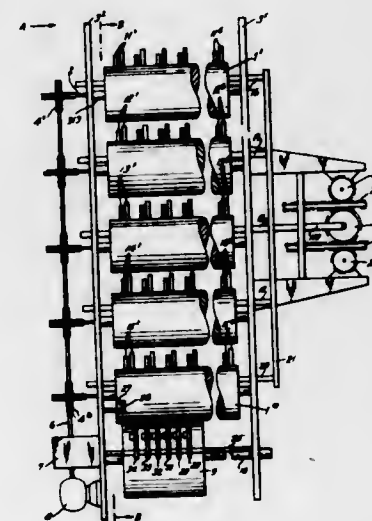
A magnetic logical element, particularly, for performing logical operations, comprising cores having wound thereabout input windings, output windings and readout windings, each one of the cores having at least one additional winding wound thereabout and connected to the output windings similarly to the readout windings, this additional winding making up together with said readout windings an additional input, with one of the input signals being supplied to this additional input during each one of the successive readout cycles.

3,613,058
MAGNETIC DOMAIN PROPAGATION ARRANGEMENT
 Peter I. Bouyard, Newark; Donald E. Kish, North Plainfield, and James L. Smith, Somerset, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
 Filed Nov. 20, 1969, Ser. No. 878,366
 Int. Cl. G11c 21/00, 11/14
 U.S. Cl. 340—174 TF 10 Claims



Single wall domain propagation circuits include herein both magnetically soft overlays which define propagation paths along which domains move in response to reorienting in-plane fields and electrical conductors which act on magnetically hard regions in the overlay, when pulsed, to modify locally pole patterns generated by the in-plane fields. An organization in which domains are moved in a manner to eliminate unwanted effects of current pulses in those conductors on stored domain patterns is described.

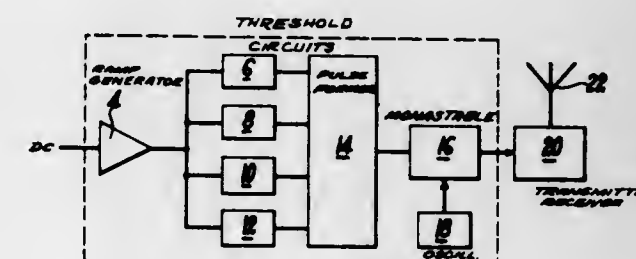
3,613,059
SIGNAL STORAGE APPARATUS WITH A PLURALITY OF MAGNETIC READ-WRITE HEADS MOVABLE TOGETHER FOR COOPERATION WITH SELECTED TRACKS ON A SIGNAL-STORING SURFACE
 Gerhard H. Dirks, Los Altos Hills, Calif., assignor to Dirks Electronics Corporation, Los Altos Hills, Calif.
 Division of Ser. No. 788,670, Oct. 28, 1968, abandoned, which is a continuation of application Ser. No. 402,135, Oct. 7, 1964, now abandoned, which is a division of application Ser. No. 173,908, Feb. 19, 1962, now abandoned, which is a division of application Ser. No. 617,742, Oct. 23, 1956, now Patent No. 3,049,694. Filed Feb. 24, 1970, Ser. No. 13,730
 Claims priority, application Great Britain, Oct. 25, 1955, Oct. 28, 1955 and Nov. 23, 1955 30,413/55; 30,860/55; 3,350/55
 Int. Cl. G11b 5/54, 21/08
 U.S. Cl. 340—174.1 C 10 Claims



A signal storage apparatus which includes at least one storage drum rotatable about its axis and having a cylindrical

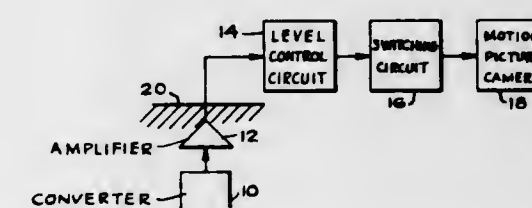
signal-storing surface provided with circumferentially extending tracks, and a plurality of magnetic read-write heads disposed in a row parallel to the drum axis and located opposite the signal-storing surface so as to respectively cooperate with the tracks during rotation of the drum. The heads are together movable in direction of the drum axis between a plurality of positions so as to cooperate with selected different tracks and electric switch means are connected to the heads for controlling the storage of signals in the tracks and the reading out of stored signals from the tracks.

3,613,060
SYSTEM FOR REMOTE TRANSMISSION OF DATA AND COMPENSATION OF DRIFTS
 Bernard Legrand, Manosque, France, assignor to Commissariat A L'Energie Atomique, Paris, France
 Filed Oct. 10, 1969, Ser. No. 865,347
 Claims priority, application France, Oct. 22, 1968, 170821
 Int. Cl. G08c 19/22
 U.S. Cl. 340—177 4 Claims



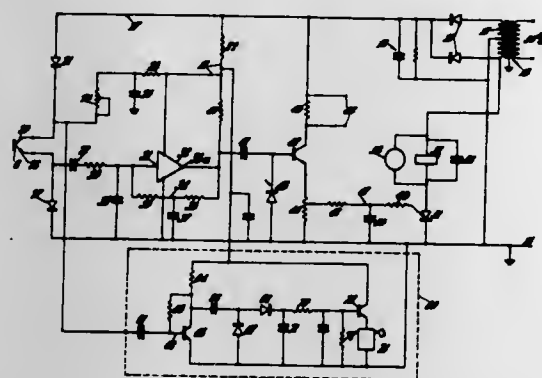
The telemetering system comprises a fixed interrogator-receiver station and at least one moving transponder station. Each transponder has a ramp generator for producing a linearly rising voltage and threshold discriminators for forming $2n$ pulses which define in pairs n time intervals representing respectively a reference quantity and $n-1$ measured quantities. A direct current voltage linear integrator in the interrogator-receiver station comes into operation during said n time intervals. At the end of the first time interval a voltage comparator measures the difference between the voltage corresponding to the reference quantity and a local standard reference voltage. During the other $n-1$ time intervals the integrator is controlled by the comparator for the correction of the integrations during said $n-1$ intervals.

3,613,061
PRESSURE-RESPONSIVE, TIMED, ELECTRONIC CONTROL APPARATUS AND METHODS
 Bryant D. Lund, 1955 Hollywood Ave., Salt Lake City, Utah
 Filed Aug. 29, 1968, Ser. No. 756,201
 Int. Cl. G08b 1/00
 U.S. Cl. 340—221 1 Claim



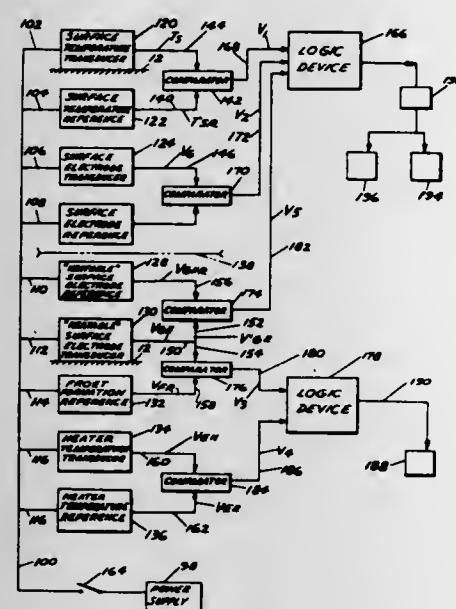
A control apparatus which includes a piezoelectric converter embedded in a pressure-carrying medium, which is electrically connected to an electronic amplifier for amplifying the voltage output of the converter. A switching circuit is electrically connected to the amplifier for activating a switch which controls the operation of a motion-picture camera when the output voltage of the converter is at a predetermined level. A second circuit is electrically connected to the switching circuit for maintaining the switch closed and opened for predetermined times.

3,613,062
FLAME QUALITY AND PRESENCE MONITOR FOR MULTIBURNER FURNACES
 John A. Bloice, London, England, assignor to Memco Limited, Isleworth, Middlesex, England
 Filed Feb. 10, 1969, Ser. No. 797,896
 Claims priority, application Great Britain, Feb. 22, 1968, 8634/68
 Int. Cl. G01j 1/42, 5/32; G08b 17/06
 U.S. Cl. 340—228.2 10 Claims



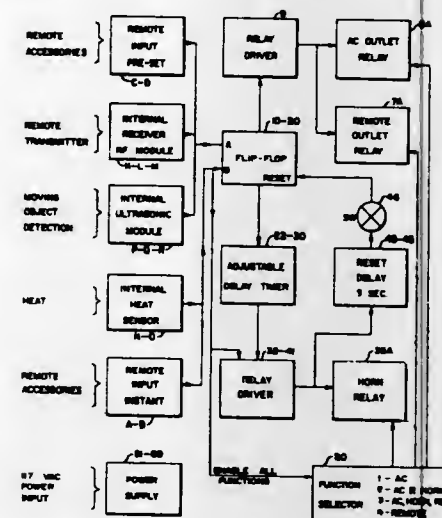
Flame-monitoring equipment for indicating the state of a burner flame in the presence of other burner flames is arranged to respond to a range of frequencies higher than those normally utilized in flame-monitoring equipment and which are confined to the root portion of the burner flame. The equipment provides a measure of the flame quality and has a light sensitive element which is arranged to view the root portion of the burner flame and to feed signals to the associated electrical circuitry which determines the flame quality from the number, rather than the amplitude, of the high frequencies present in the electrical output of the element and lying within said range.

3,613,063
SNOW DETECTING DEVICE
 Michael F. Ciernochowski, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
 Filed Sept. 23, 1968, Ser. No. 761,557
 Int. Cl. G08b 21/00
 U.S. Cl. 340—234 11 Claims



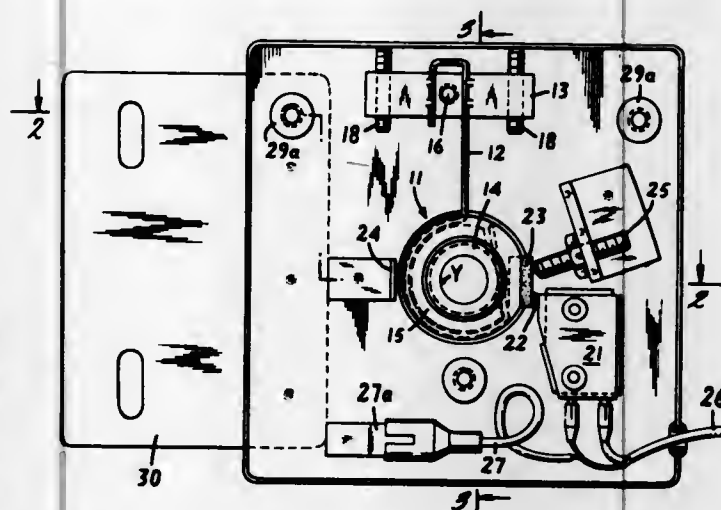
A device for detecting the formation and presence of frost, ice or snow on a surface employs signal-producing sensing means to sense the temperature of the surface, as well as the presence of either free water, frost, ice or snow. The signals produced in response thereto are compared to certain established reference values indicative of freezing temperature as well as relative electrical conductivity of free water, frost, ice or snow in order to logically determine whether it is merely free water which is being sensed or if it is actually frost, ice or snow and in accordance with such determination create an appropriate output response.

3,613,064
ALARM CONTROL
 Charles H. Peterson, and Curtis C. Krueger, both of San Diego, Calif., assignors to Defensive Instruments, Inc., Pittsburgh, Pa.
 Filed Apr. 9, 1969, Ser. No. 814,537
 Int. Cl. G08b 7/00, 13/00
 U.S. Cl. 340—258 18 Claims



An alarm control system has an internal receiver module and an internal ultrasonic intruder detector module connected to one input channel of a bistable flip-flop. An internal heat sensor fire detector is connected to another input channel. Remote inputs are connectable to either input channel. Inputs in the first channel cause the flip-flop to change to the alarm state and to operate a relay driver which partially completes AC outlet relays and remote output relays and which starts an adjustable delay timer to operate a second relay driver for partially completing a horn relay and for partially completing a circuit to a reset delay device. A function selector selectively grounds one or more of the output relays preparatory to operation of the flip-flop and relay drivers so that the circuits are ready to operate the appropriate output when the flip-flop is biased into an alarm state. The second channel is connected directly to the second relay driver and to the function selector for overriding the function selector for grounding all relay coils so that all signals operate when an extremely hazardous condition such as fire is sensed by second channel sensors.

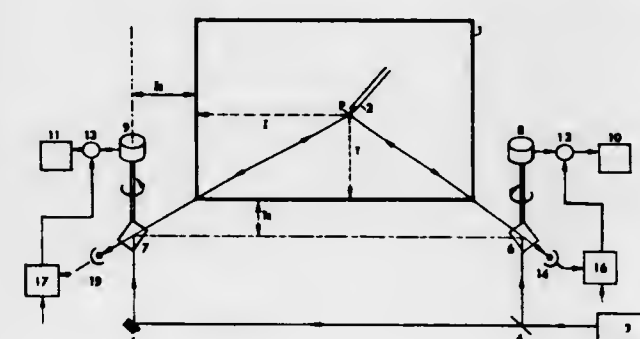
3,613,065
APPARATUS UTILIZING A VIBRATABLE MEMBER FOR DETECTING SUSTAINED TENSION IN A RUNNING LENGTH OR STRAND
 Howard C. Lindemann, Syosset; Vladimir A. Mateyka, New Hyde Park; John P. Strack, Bohemia, and Willie A. Busch, New Rochelle, all of N.Y., assignors to Lindly & Company, Inc., Mineola, N.Y.
 Filed Mar. 3, 1970, Ser. No. 16,168
 Int. Cl. G08b 21/00
 U.S. Cl. 340—259 16 Claims



Yarn running through a guide carried by a vibratable member induces vibration of the vibratable member at its

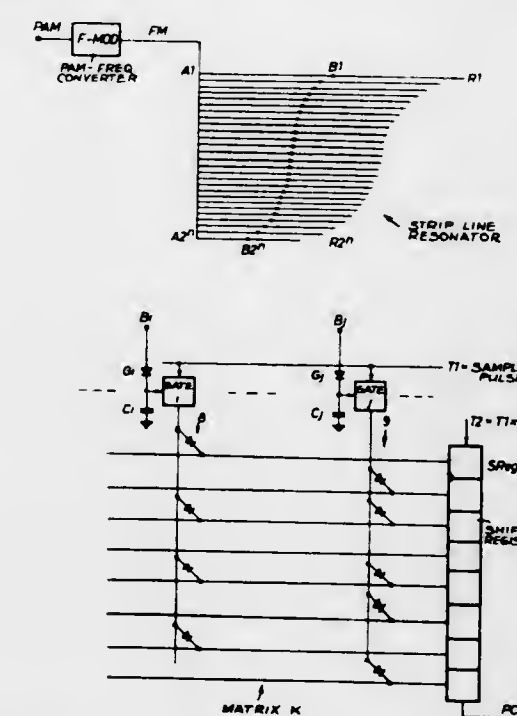
natural frequency. A transducer converts this vibration into an electrical signal which is fed to a circuit for detecting interruption of the signal in the event the yarn breaks. In some applications excessive tension in the yarn which may lead to breakage is detected before a break occurs either by detecting abnormal deflection of the vibratable member or by detecting abnormally high amplitude of vibration.

3,613,066
COMPUTER INPUT EQUIPMENT
 Charles R. Cooreman, Columbus, France, assignor to Compagnie Internationale Pour L'Informatique, Les Clayes-sous-Bois, France
 Continuation-in-part of application Ser. No. 540,996, Apr. 7, 1966. This application Oct. 22, 1968, Ser. No. 769,520
 Int. Cl. G08c 9/06
 U.S. Cl. 340—347 7 Claims



In a computer input equipment comprising a display panel and means responsive to the positions and moves of a pointer on said panel for generating information signals for the computer, thin coherent light beams parallel to the surface of said panel are systematically and repetitively displaces in crossing relation to scan part at least of said surface.

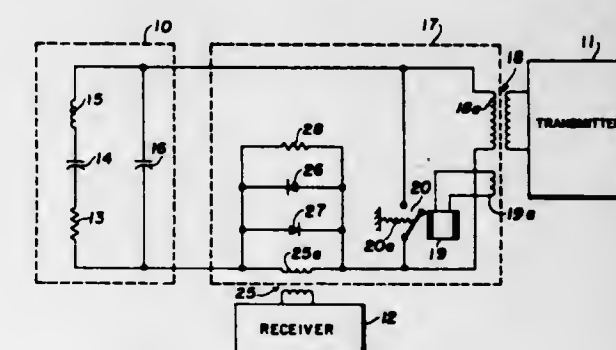
3,613,067
ANALOG-TO-DIGITAL CONVERTER WITH INTERMEDIATE FREQUENCY SIGNAL GENERATED BY ANALOG INPUT
 Heinz Haberle, Stuttgart-Bad Cannstatt, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
 Filed July 15, 1969, Ser. No. 841,692
 Claims priority, application Germany, Sept. 14, 1968, P 17 62 877.2
 Int. Cl. H03k 13/175; G01r 23/02
 U.S. Cl. 340—347 AD 8 Claims



PAM samples are converted to a frequency proportional to the PAM amplitude. The resultant frequencies are applied to

2ⁿ resonators each resonant at a different frequency and representing one of 2ⁿ code groups. 2ⁿ gates, timed by the sampling signal, are each coupled to a voltage node of an associated one of the resonators and logic circuitry coupled to the gates provide the output code group for each sample dependent on the resonator excited. The resonators may be of printed strip line configuration arranged to provide linear or compression coding characteristics. A binary averaging arrangement can be provided to handle situations where the converted frequency excites two or more resonators. A gray-type code is employed to reduce coding errors when two or more resonators are excited.

3,613,068
DEVICE FOR COUPLING A TRANSDUCER TO A TRANSMITTER AND RECEIVER (U)
 John H. Thompson, Pittsburgh, Pa.; Charles B. Durgin, Rochester, N.Y., and Dale D. Skinner, Turtle Creek, Pa., assignors to The United States of America as represented by the Secretary of the Navy
 Filed June 30, 1969, Ser. No. 839,796
 Int. Cl. G01s 9/66
 U.S. Cl. 340—3 R 4 Claims

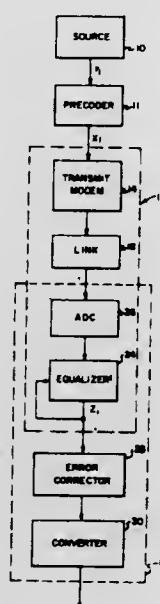


The large capacitive reactance of piezoelectric materials such as, barium titanate, Rochelle salt, or quartz, that are used as the driving elements in transducers has required large inductances to bring the power factor to unity to ensure efficient power transfer between a transducer and a transceiver. A transmitter-transformer couples a transmitter to the transducer, at high-energy output levels, and a series connected receiver-transformer, tuned to pass signals with an identical frequency characteristic at significantly lower levels of energy, eliminates a problem arising when one transformer is used. When employing a single transformer having a high permeability core, its inductance varies when the transformer transfer energy separated levels of energy thus changing the tuning of associated circuits at these different levels of operation. Shunting switches across the transmitter-transformer winding and the receiver-transformer winding, enable the selective disconnection of either of the transformers from a common coupling circuit when the other mode of operation is proceeding. A pair of back-to-back diodes forming the shunting circuit across the primary of the receiver-transformer, have a forward voltage drop greater than the magnitude of the received signal to ensure the transfer of received signals when they appear across the primary winding. These same diodes have a forward voltage drop far below the level of the high-power output appearing across the secondary winding of the transmitter-transformer to ensure that this signal is shorted around the primary of the receiver-transformer to eliminate the possibility of damaging the inherently more delicate receiver-transformer.

3,613,069
SONAR SYSTEM
 Boyd B. Cary, Jr., Pittsford, and Francis H. Fenlon, Rochester, both of N.Y., assignors to General Dynamics Corporation
 Filed Sept. 22, 1969, Ser. No. 859,675
 Int. Cl. G01s 9/68
 U.S. Cl. 340—3 R 16 Claims

A sonar system is described which operates by parametrically interacting two ultrasonic waves of different frequency,

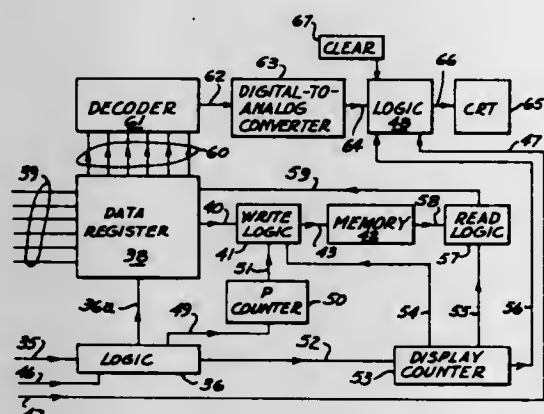
circuit with integer-valued impulse response when the integer-valued input sequence is subject to predetermined constraints. Integer-valued tentative decisions and reliability information are formed and stored. A correction is made upon detection, on the basis of the constraints, of an error in the tentative decisions. Shown also are: an inverse linear circuit for detecting decision errors according to whether its outputs satisfy the constraints, with means to combat propagation of the error in the inverse circuit; reliability information in the



form of magnitude and sign of apparent errors, especially storing only the extreme values of apparent errors in the sequence under review; constraints in form of predetermined finite range of integers and detection with an inverse circuit on basis of values falling outside of the finite range, also combating propagation by replacement of erroneous value with closest substitute satisfying the constraints; and impulse responses of the form $1 \pm D^n$, where n = integer, and division of tentative decisions and memory into related groups.

3,613,078 APPARATUS FOR MONITORING BINARY CODED COMMUNICATIONS

Richard A. Manning, Torrance, and Frank H. Waver, Culver City, both of Calif., assignors to Computer Sciences Corporation, Los Angeles, Calif.
Filed Sept. 23, 1969, Ser. No. 866,788
Int. Cl. H04j 3/14; H04n 1/32; G07h 5/08
U.S. Cl. 340—146.1 24 Claims

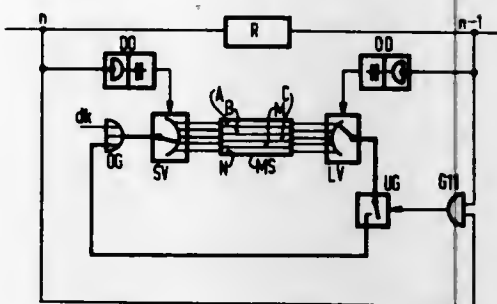


Monitoring apparatus according to the present disclosure is capable of monitoring binary coded communications between a plurality of stations. The apparatus includes receiver means for receiving binary signal and register means for sampling received binary signals in such a manner that they may be stored into memory means. Display means is provided for retrieving and displaying alpha-numeric

representations of the binary signals so that the individual characters of the binary coded communications may be displayed on the display read-out. One feature of the monitoring apparatus resides in a parity check apparatus wherein the parity of the binary coded characters may be verified.

3,613,079 CHARACTER RECOGNITION METHOD AND APPARATUS

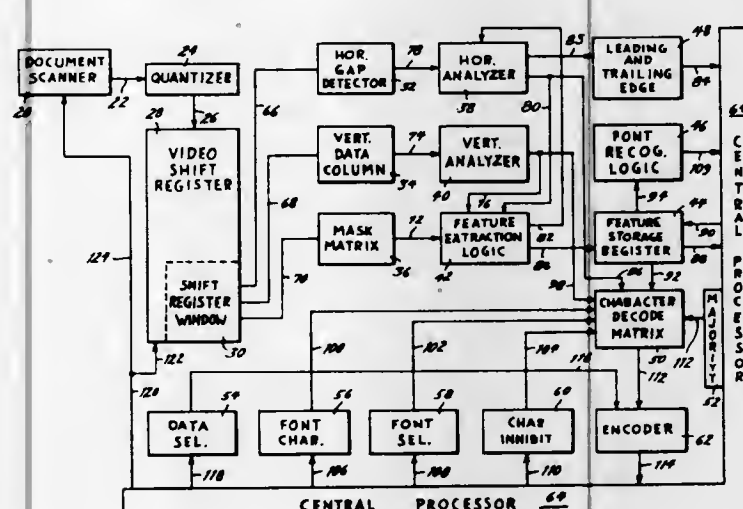
Rolf Jurk, and Wolfgang Killinger, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed June 14, 1966, Ser. No. 557,462
Claims priority, application Germany, June 18, 1965, S 97685
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3AE 32 Claims



This invention relates to a method of, and apparatus for, effecting character recognition and, more particularly, to such a method and apparatus providing for the recognition and identification of the structure or configuration of scanned characters. The character recognition method and apparatus of the invention has particular applicability to recognition methods and apparatus wherein character structures are defined by one, or a composite of more than one, form elements, each form element being of a predetermined, recognizable configuration. Upon the detection and recognition of one or more form elements in scanning a given character, the detected form elements are analyzed and combined to identify the character thus scanned.

3,613,080 CHARACTER RECOGNITION SYSTEM UTILIZING FEATURE EXTRACTION

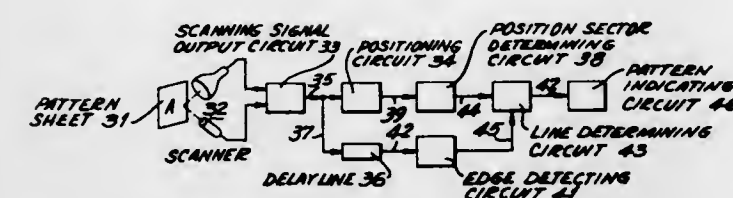
John A. Angeloni, Sr., Norristown; John McIntyre, Ardley, and Ronald L. Baracka, Ambler, all of Pa., assignors to Scan-Data Corporation, Norristown, Pa.
Filed Nov. 8, 1968, Ser. No. 774,280
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3AC 5 Claims



A character recognition system having a shift register including a plurality of stages for serially storing and shifting a binary quantization of a character pattern sampled within a field on a document. Means are provided for recognizing a

character in the register. The means comprise a plurality of subfeature masks each of which is responsive to a different combination of stages of the shift register. The feature masks are connected only to selected ones of the stages of the shift register which correspond to an area of the field. The selected stages of the register form a window through which each of the features in a character pass, a plurality of feature detectors each responsive to a different combination of subfeature masks are provided to detect the features present in a character pattern as they pass through the window.

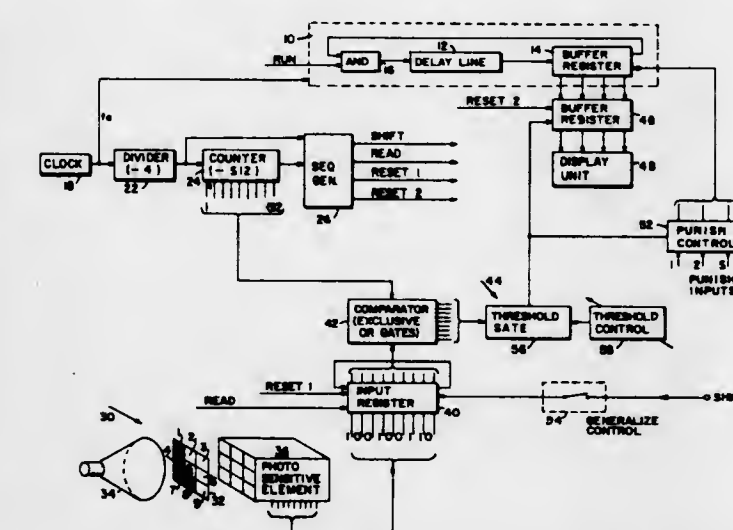
3,613,081
PATTERN RECOGNIZING CIRCUIT
Naoki Morimoto, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jan. 16, 1969, Ser. No. 791,739
Claims priority, application Japan, Jan. 18, 1968, 43-2744
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H 1 Claim



A position sector determining circuit of a pattern recognizing circuit is connected to pattern scanning apparatus and determines the distance between a side of a polygon forming a polygonal area enclosing the pattern and an edge of a line segment of the pattern closest the side.

3,613,082 LOGIC EVALUATOR AND ADAPTIVE RECOGNITION NETWORK

Richard J. Bouchard, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed June 30, 1969, Ser. No. 837,576
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 H 18 Claims



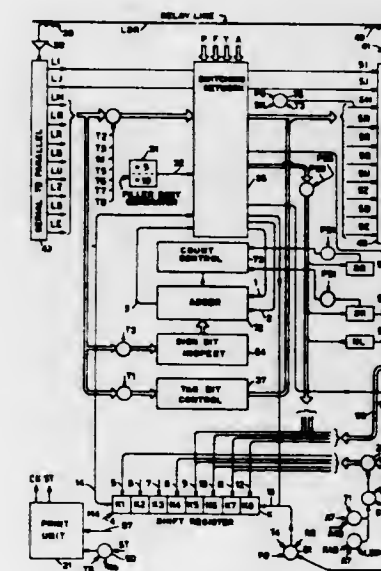
A pattern recognition system employs an addressable memory which stores response data concerning patterns. Each input pattern is presented to the system as a binary number and each such number addresses the memory so that response data is read out of the correspondingly numbered memory address. If the data read out of the memory in response to a particular input pattern is not correct, the data in the memory is changed so that the next time that particular pattern is presented to the system, the correct response data is read out of the memory.

Binary numbers corresponding to variants to an input pattern can be shifted around in an input register until they correspond to the input pattern number so that the system will respond to these variants as though they were the original input pattern.

An adjustable threshold control enables an input pattern to address the memory so that the desired response data is read out of the memory even though there is a discrepancy between the input pattern number and the memory address containing that data. This provides noise immunity as well as further generalization capability.

The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Navy.

3,613,083
TABULATING AND PRINTING OPERATIONS IN A PRINTING DEVICE FOR PROGRAM CONTROLLED ELECTRONIC COMPUTERS
Giovanni De Sandre, Sacile (Udine), Italy, assignor to Ing. C. Olivetti C.S.p.A., Ivrea, Italy
Filed Apr. 9, 1968, Ser. No. 719,936
Claims priority, application Italy, Apr. 14, 1967, 51328/67
Int. Cl. G06f 3/10 10 Claims

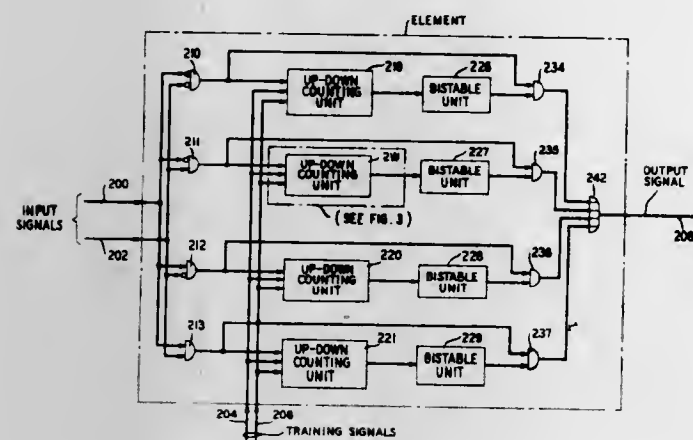


A digital data processor controls an output printer, e.g. a typewriter, having selectively settable tabulation stops. These stops are set in accordance with instructions contained in the processor program preferably as a subprogram written in from a card. A plurality of such cards can be used to set up readily any desired tabulation format. The transmission of characters to the printer is controlled by a tag bit identifying the character to be printed. The invention further concerns means controlling the initial insertion of the tag bit, the shift of the tag bit from character to character and use of the tag bit to control carriage return and resumption of printing when the number of characters in a register exceeds the length of the printing line.

3,613,084
TRAINABLE DIGITAL APPARATUS
William W. Armstrong, St. Laurent, Quebec, Canada, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 24, 1968, Ser. No. 761,936
Int. Cl. G06f 15/18 2 Claims

A plurality of all-digital elements are interconnected to form an n -input single-output network that can be structurally organized during a training or learning period to implement specified logical functions of n variables. Actually, for up to about 10 input variables, any desired Boolean function may be implemented by training a single element. For larger numbers of input variables, a wide class of functions may be implemented by training a multielement network. During training (for an array that contains either a single element or a plurality of interconnected elements) the response of the array is monitored and compared with the desired response for each of a set of input signals. As a result of each comparison operation, identical binary training signals are

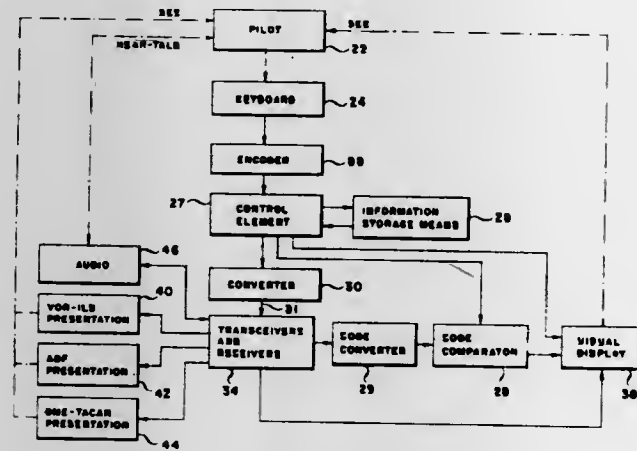
simultaneously applied to every element of the array. These signals may cause the internal states of the element(s) to change. By systematically changing these individual states in



accordance with prescribed training strategies, the overall array is ultimately configured to give correct responses to at least specified portion of subsequently-applied input signals.

3,613,085
DIGITALLY CONTROLLED RADIO COMMUNICATION SYSTEM
Paul L. Winskell, North Hollywood, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 4, 1968, Ser. No. 765,070
Int. Cl. G06f 1/00; G11b 31/00
U.S. Cl. 340—172.5

14 Claims

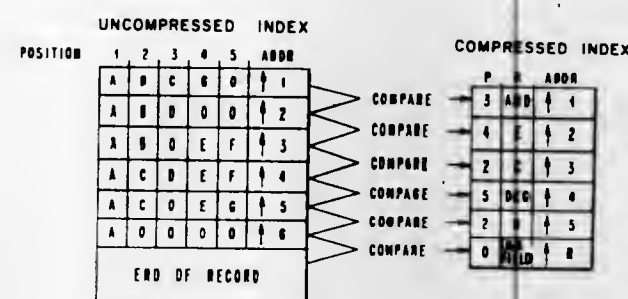


A communication and radio-navigation information storage, retrieval, control and verification system for storing in coded form all assigned communication and navigation frequencies and the identifying Morse code for various information source locations. It further includes a keyboard for selecting a source location and a particular communication or navigation function. An encoder coupled to the keyboard selectively locates and removes the coded information from storage which is representative of the source location and the function. The system responds to the selected coded information to tune a radio receiver to the frequency corresponding to the selected coded information. The coded source-location identifying signal, received by the radio receiver, is supplied to a code recognition circuit. A code comparator compares the output of the code recognition circuit and the portion of the manually selected coded information (indicative of the desired source location) to produce a visual or other output signal to the operator when parity exists.

3,613,086
COMPRESSED INDEX METHOD AND MEANS WITH SINGLE CONTROL FIELD
Edward Loizides, and John R. Lyon, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 3, 1969, Ser. No. 788,476
Int. Cl. G06f 7/22

U.S. Cl. 340—172.5

42 Claims



Generating and searching a compressed key index (CK index) from a source index. The source index is a sorted sequence of uncompressed key's (UK's) in which a UK is a record key, as the term is ordinarily understood. The CK index comprises a plurality of compressed keys (CK's). Each CK is a shortened representation of a UK. After its generation, the CK index can be searched for any search argument (SA).

The format of a CK is generated by this invention to include a single control field (P), and at least one key (K) byte which is a byte taken from a UK. Each CK is generated from a pair of adjacent UK's taken in their sorted sequence from the source index. The pair of UK's are compared at corresponding byte positions from their highest-order bytes. The order of a byte position in a UK is determined by its significance in sorting the UK's. The control field (P) in the CK format is generated to represent the highest-order unequal byte position in the pair of compared UK's. Field (P) represents the lowest-order byte position in the CK. One key byte (K) is generated by copying a byte from the second UK in the pair at its byte location represented by the field (P). Additional key bytes are copied only when the current P (i.e. P_i) is greater than the prior generated P (i.e. P_{i-1}), in which case K bytes are copied from the UK byte positions (P_{i-1}+1) through (P_i). Also a pointer (i.e. address) is provided represented by the first UK in the pair from which the CK was generated.

The CK index can be searched for any search argument (SA). The search uses one byte (A) at a time from the SA beginning with its highest-order byte. The setting of an equal-counter (EQU) indicates the position of the current byte A in the SA.

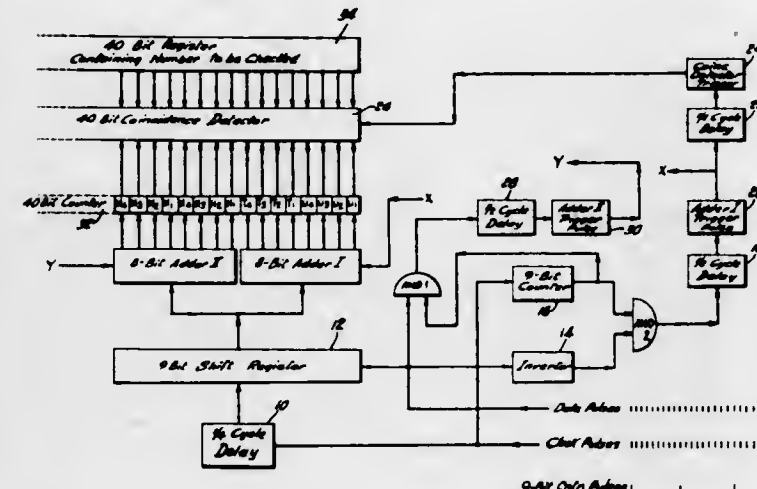
While serially searching a CK index for the byte A, the control field (P) of each encountered CK is read. Then a factor value and the number of K bytes are derived for the current CK after determining if its P_i is greater than P_{i-1}. The factor value indicates the amount of high-order compression for the UK being represented. If P_i is greater than P_{i-1}, the prior control field (P_{i-1}) is the current factor value, and the current number of key bytes (K) is P_i less P_{i-1}. But if P_i is equal to or less than P_{i-1}, the current factor value is P_{i-1}, and only one K byte exists in the current CK.

The current factor value is then compared to the current equal counter setting (EQU). If the factor value is greater than the search argument, the search continues by going to the next CK. But if they are equal, the highest-order K byte in the CK is compared with the current A byte. If A and K are equal, the next A byte and the next K byte (if any) are fetched, and they are compared. Whenever all K bytes in a CK compares equal with A bytes, or whenever any K byte is less than the A byte, the search passes to the next CK. Whenever any P_i is less than the current setting of the equal counter (EQU), or whenever any K byte compares high with the A byte, the search is completed after reading the pointer with the current CK, retrieving the pointer's record, and comparing the SA to the UK in the record for verification that the correct record has been obtained. The search is then ended in an index having an ascending sequence.

3,613,087
METHOD FOR THE CONTRACTION OF DATA
William F. Brown, Wappingers Falls, and Jerry L. Nolting, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed May 21, 1969, Ser. No. 826,310
Int. Cl. G06f 5/00

U.S. Cl. 340—172.5

3 Claims

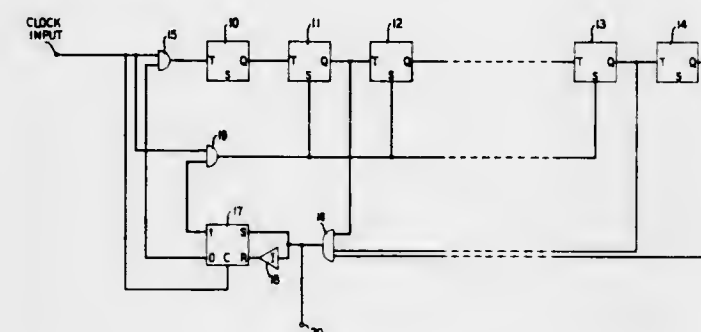


Methodology and apparatus for representing many numbers in an ordered sequence of numbers by substitute numbers where each such substitute number consists of fewer digits than the number for which it has been substituted and storing and processing signals representative of all the numbers in the ordered sequence, including the substitute numbers.

3,613,088
RIPPLE-THROUGH COUNTERS HAVING MINIMUM OUTPUT PROPAGATION DELAY TIMES
Henry T. Brendzel, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 26, 1969, Ser. No. 861,433
Int. Cl. G06f 9/06

U.S. Cl. 340—172.5

4 Claims



A process of constructing ripple-through binary counters having minimum output propagation delay times. The process utilizes the desired values of loop length, clock frequency and single-stage delay time to specify the number of stages in the counter, the terminal state of the counter, and the logic gate configuration required to reset the counter from its terminal state to its initial state. A counter constructed in accordance with this process has a minimum propagation delay before producing an output.

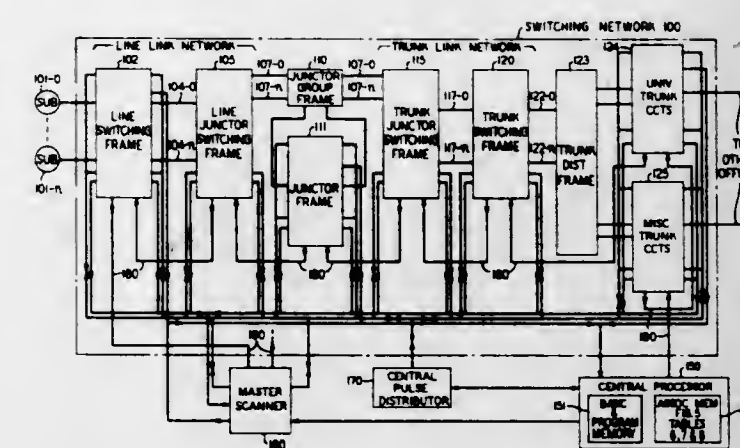
3,613,089
ASSOCIATIVE MEMORY CONTROL FOR A SWITCHING NETWORK
Stephen S. Karp, Gaithersburg, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 28, 1969, Ser. No. 871,841
Int. Cl. G06f 7/00; H04m 7/00

U.S. Cl. 340—172.5

5 Claims

A communication system is disclosed in which paths through a multistage switching network are located by

reference to information stored in associative memory.

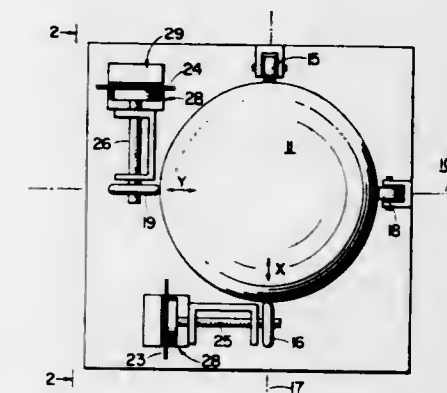


Specific methods control the acquisition of the stored information for establishment and termination of the network paths.

ERRATA
For Classes 340—174 SR and 340—347 AD see:
Patent Nos. 3,613,110 thru 3,613,112

3,613,090
CURSOR CONTROL SYSTEM
Charles F. Mason, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed July 30, 1969, Ser. No. 846,143
Int. Cl. H03k 13/02; G08c 9/08
U.S. Cl. 340—347 AD

29 Claims



A position indicating control system includes a member mounted for selective movement in forward and reverse directions, an actuating element mounted thereon, and first, second and third sensing means respectively sensing passage of the actuating elements, the first sensing means being intermediate the second and third means. The sensing means are spaced so that the second means senses passage of the actuating element when the member is moved in one direction after the first means senses the passage and the third means senses passage of the actuating element when the member is moved in the other direction after the first means senses the passage. First and second bistable means respectively generate a first signal responsive to sensing passage in one direction of an actuating element by one of the second and third means and a second signal responsive to sensing passage in the other direction of an actuating element by the other of the second and third means to indicate the direction of movement of the member. Means are included for inhibiting the generation of signals by the bistable means except upon a predetermined sequence of sensing of the movement of the member in a particular direction by two of the three sensing means.

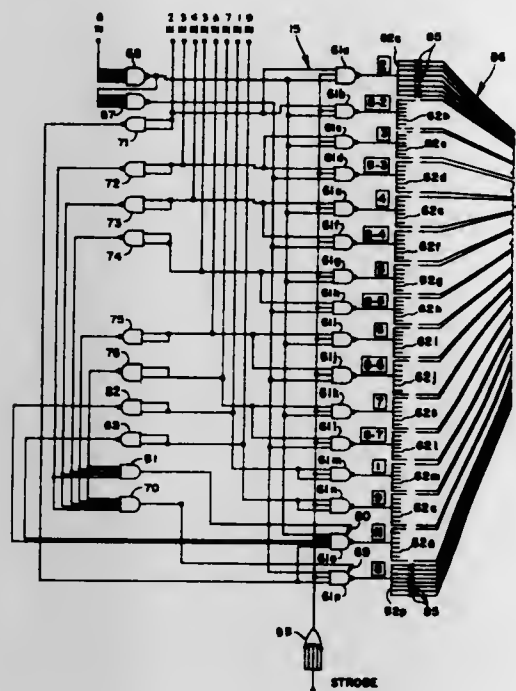
3,613,091

CODE TRANSLATOR

Ralph H. Thomas, Northfield, and Ronald S. Perloff, Warrensville, both of Ohio, assignors to Electron-Ohio, Inc.
Filed Oct. 6, 1969, Ser. No. 863,889
Int. Cl. H04L 3/00

U.S. Cl. 340—347 DD

8 Claims



A device for translating a multibit input code into a desired multibit output code including a double-ended decoding circuit which converts the signals representing an input character into a single signal and apparatus which encodes this single signal into the signals representing a corresponding output character.

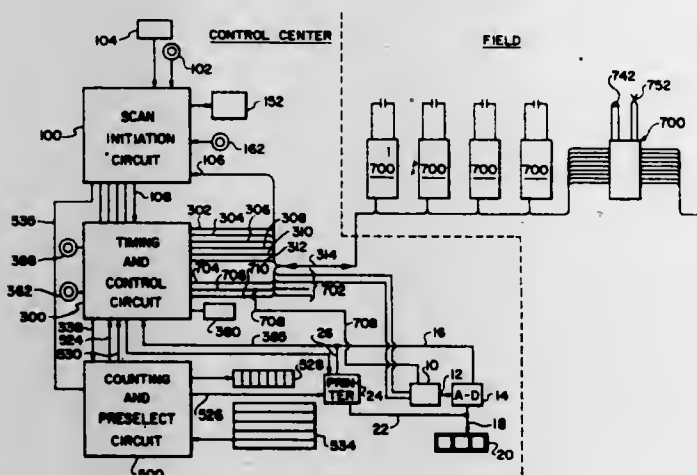
3,613,092

SEQUENCE COUNTING ENCODER MONITOR

Paul A. Schumann, Lindell P. Cruise, and Alan F. McCrea, all of Richmond, Va., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 23, 1969, Ser. No. 818,571
Int. Cl. H04Q 9/00

U.S. Cl. 340—413

23 Claims



A sequence counting encoder monitoring system including a control center having a timing and control circuit for generating scanning pulses, a priority and interrupt circuit for providing scan initiation pulses and synthetic end-of-scan pulses to the timing and control circuit, and a preselect and counting circuit for indicating the encoder being monitored, for stopping a scan at a preselected encoder and for indicating the end of a scan; and a plurality of field encoders interconnected in series with the control center by a cable having a plurality of wires the number of which is determined by the

number of pulses generated at the control center and the number of conditions to be sensed at the field encoders and not by the number of field encoders, each of the field encoders including a stage of a shift register to provide selective monitoring of the field encoders and pulse generators for providing acknowledge and alarm pulses.

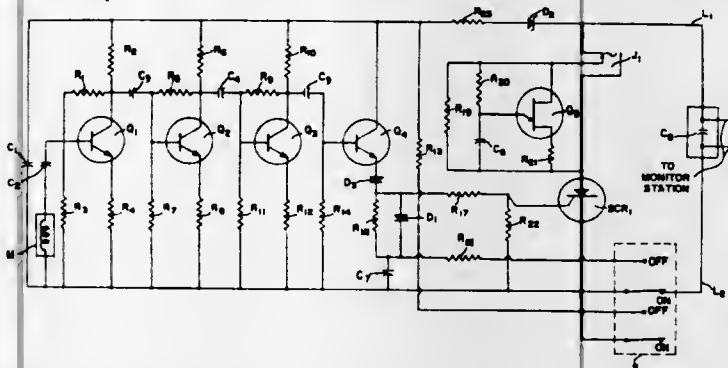
3,613,093

SURVEILLANCE SYSTEM WITH IMPROVED DETECTING NETWORK

David Woodward Reynolds, Relay, and Donald George Haag, Silver Spring, both of Md., assignors to The United States of America as represented by the Postmaster General
Filed Sept. 29, 1969, Ser. No. 861,959
Int. Cl. G08B 13/00

U.S. Cl. 340—416

3 Claims



This invention relates to a surveillance system utilizing a telephone line not only for transmitting an alarm signal between an area under surveillance and a central monitoring station but also for supplying the power necessary for the operation of the system. In the operation of one embodiment of this system, electrical signals are generated by a pickup transducer in response to the detection of an intrusion into the area under surveillance, are amplified, and are supplied to a detecting network. After insuring that the signals received are the result of an actual intrusion and not the result of some extraneous noise, the detecting network is operative to trigger an alarm circuit whereby an alarm signal is transmitted via a telephone line to a central monitoring station.

3,613,094

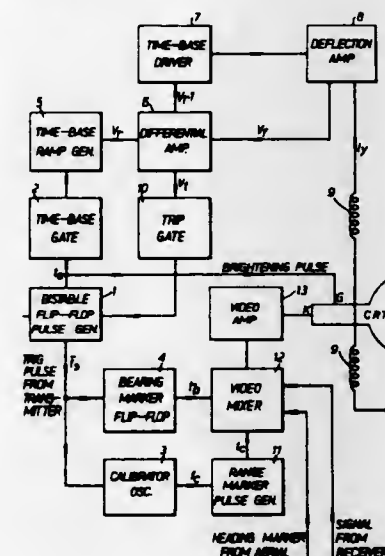
RADAR DISPLAY SYSTEM

Henry Giles, Ilford, England, assignor to The Plessey Company Limited, Ilford, England
Filed May 12, 1969, Ser. No. 823,748
Claims priority, application Great Britain, May 15, 1968, 23189/68

U.S. Cl. 343—13 R

Int. Cl. G01S 7/06

3 Claims



A radar system including a digital timing system comprising division stages and gating means arranged such that all

control pulses required are derived from a master oscillator or clock pulse generator.

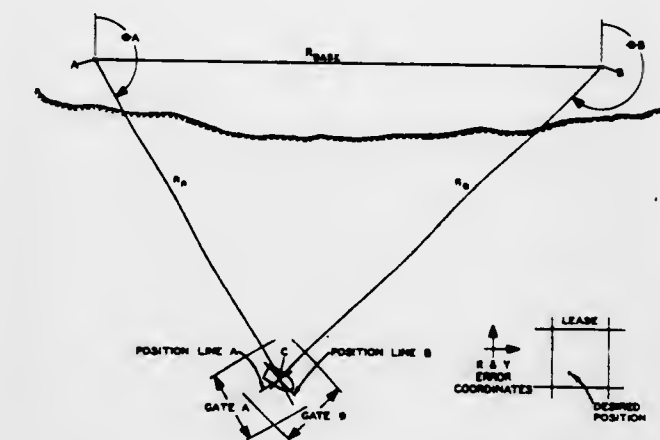
3,613,095

METHOD OF AND APPARATUS FOR LOCATING A POSITION

Albert A. Elwood, 151 West 27th St., Riviera Beach, Fla.
Filed June 16, 1969, Ser. No. 833,638
Int. Cl. G01S 5/14

U.S. Cl. 343—112 D

12 Claims



A method of an apparatus for locating a position in which a plurality of frequency standard devices based on the action of the natural frequencies associated with transitions between energy states in atoms and/or molecules are synchronized or phase compared at the same initial location, two of the devices are placed at transmitting stations on a known base line, with the third device at a third station which receives the signals from the two transmitting stations and compares the received frequencies with its own device, then converts said phase differential into distance so as to determine the exact location of the third station.

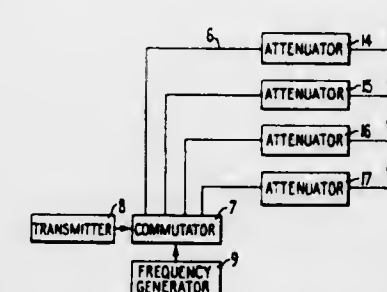
3,613,096

RADIO BEACON

Charles William Earp, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 27, 1969, Ser. No. 869,527
Claims priority, application Great Britain, Dec. 13, 1968, 59338/68

U.S. Cl. 343—113 DE

3 Claims

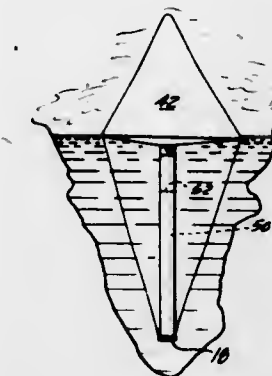


A radio beacon of the type comprising a linear array of equally spaced aeriels, with a radio frequency source commutated successively to each aerial to simulate constant velocity motion of a single radiator in which the amplitude of the radiated signal is tapered from minimum amplitude at the ends of the array to maximum amplitude at the center of the array in order to eliminate the effect of phase discontinuity between successive sweeps. In a preferred embodiment, said tapering is achieved by connecting the commutator to each of the aeriels via fixed attenuators. In another preferred embodiment, said tapering is achieved by modulating the radio frequency signal coupled to the commutator at the commutator rate.

3,613,097
AUTOINFLATING SEA TARGET
Raymond S. Daughenbaugh, 860 South LaLuna, Ojai, Calif.
Filed Feb. 24, 1969, Ser. No. 801,524
Int. Cl. F41J 9/12

U.S. Cl. 343—18 B

1 Claim



A sea target formed of a bag of thin, flexible, reflective material. The bag is provided with a centrally depending sleeve having a weighted air scoop at its lower end. It may be airdropped and during descent the scoop inflates the bag through the sleeve and upon water landing a column of water within the sleeve prevents loss of air. The weighted scoop and sleeve also provide a sea anchor.

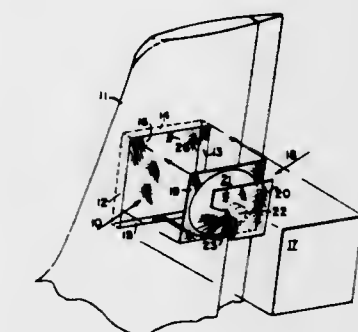
3,613,098

ELECTRICALLY SMALL CAVITY ANTENNA

John Joseph Blasko, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed May 12, 1969, Ser. No. 823,566
Int. Cl. H01Q 1/28

U.S. Cl. 343—708

4 Claims



An electrically small cavity antenna especially adapted for flush mounting in an aircraft vertical stabilizer. A cavity is formed in the vertical stabilizer so as to have a pair of radiation windows or apertures on opposite sides of the stabilizer. An energy coupling device is placed substantially in the center of the cavity to couple energy from a feeding network to the cavity. The energy coupling device includes a pair of spaced-apart plates with a tapered portion disposed between the plates. Energy is coupled from the feed network to one of the plates and the narrow end or apex of the tapered portion.

3,613,099

VOR ANTENNA SYSTEM

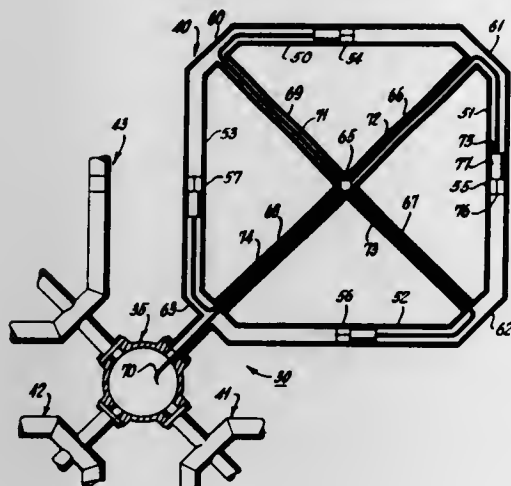
Clinton G. Hollins, Springfield, Va., assignor to Scanwell Laboratories, Inc., Springfield, Va.
Filed July 11, 1969, Ser. No. 841,023
Int. Cl. H01Q 1/12

U.S. Cl. 343—742

4 Claims

An antenna system for radiating VOR signals wherein metal to metal contact between a central supporting mast

and loop radiating elements is used without producing most two types of shielding: negative shielding wherein the tape is shielded at all places except where the data is to be recorded;



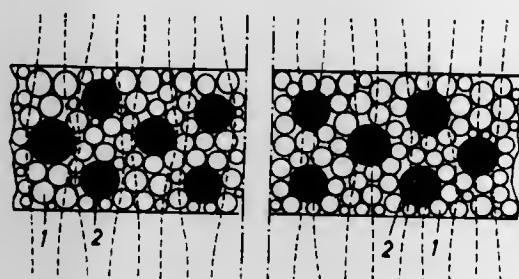
excitation, thus providing feasible means for constructing a vertical array of VOR antenna elements.

3,613,100 METHOD AND DEVICE FOR MAGNETIC IMAGE FORMATION

Helmut Kaufer, Metzhausen über Mettmann; Erich Berger, Unterhaching Munich, and Hans Peter Huber, Munich, all of Germany, assignors to Agfa Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 1, 1965, Ser. No. 444,875
Claims priority, application Germany, Apr. 4, 1964, A 45665 IXG/21 A

Int. Cl. G11b 5/02
U.S. Cl. 346—1



Recording means for magnetic data recording which include at least two magnetic materials of different temperature dependency with respect to at least one magnetic characteristic of the same, and a method of operating a device of such type for storing magnetic recording which includes subjecting the recording means, particularly the two magnetic materials of different temperature dependency to the influence of a magnetizing or demagnetizing field.

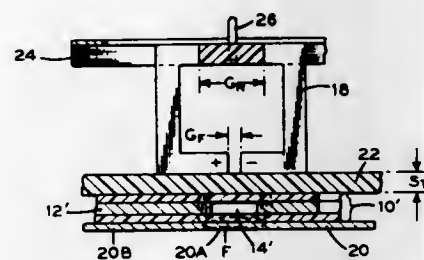
3,613,101 MAGNETIC RECORDING UTILIZING A SELECTIVE MAGNETIC SHIELDING STRUCTURE

Eugene Leonard, Sands Point; Edgar Wolf, New Hyde Park; Francis C. Marino, Huntington, and Wolfgang F. Heine, Huntington Station, all of N.Y., assignors to Digtronics Corporation, Albertson, N.Y.

Continuation of application Ser. No. 674,788, Oct. 12, 1967, now abandoned, which is a continuation of application Ser. No. 350,346, Mar. 9, 1964, now abandoned. This application Jan. 21, 1970, Ser. No. 4,457

Int. Cl. G11b 5/86, 5/70; G01d 15/12; G06k 19/00
U.S. Cl. 346—74 M

A method and apparatus for recording digital data on a magnetic tape magnetically shields discrete areas of the tape. The shielded tape is then exposed to a magnetic field to change the magnetic state of the unshielded areas. There are



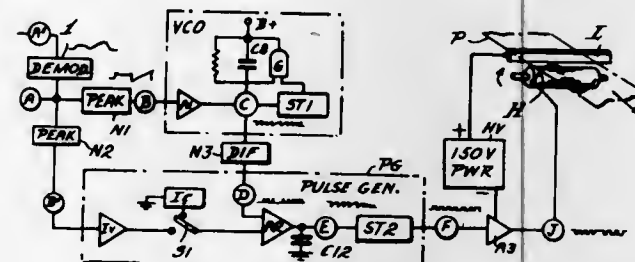
and positive shielding where only those places of the tape where the data is to be recorded are shielded.

3,613,102 COPYING MAGNETIC SIGNALS BY THERMOREMANENT TRANSFER

Nelson B. Daly, deceased, late of Wilmington, Del. (by Evelyn Silvers Daly, executrix); Walter W. Gilbert, Hockessin, and George R. Nacci, Fairfax, Wilmington, Del., assignors to E. I. de Pont de Nemours and Company, Wilmington, Del. Continuation-in-part of application Ser. No. 464,811, June 17, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 454,767, Apr. 26, 1965, now abandoned. This application Nov. 6, 1969, Ser. No. 773,974

Int. Cl. H01v 3/04
U.S. Cl. 346—74 MT
Signals on magnetic recording members, such as signals recorded on magnetic tape, can be copied by placing the recording in contact with a copying member and transiently heating the magnetic material of the copy member in the vicinity of or above the Curie transition with a pulse of radiant energy, particularly visible or infrared energy.

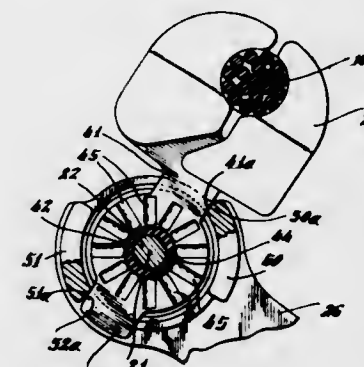
6 Claims
3,613,103
ANALOG SIGNAL MODIFYING APPARATUS
Charles H. Harris, Shrewsbury, Mass., assignor to Alden Research Foundation, Westboro, Mass.
Filed July 25, 1969, Ser. No. 844,919
Int. Cl. G01d 15/06; G03g 15/00; H04n 1/22
U.S. Cl. 346—74 R



In an electrolytic paper recorder of electric signals, an analog signal is converted by a voltage controlled oscillator to a series of pulses with rises spaced in inverse proportion to the analog signal amplitude. The spaced rises trigger a pulse generator whose output is a corresponding series of constant amplitude marking pulses with a spatial density proportional to the original signal amplitude. The marking pulses are applied to the blade and helical electrodes of the recorder through a current starved amplifier which adjusts the pulse amplitude to compensate for random variations in the resistance of the electrolytic recording paper between the marking electrodes. The width of the marking pulses may be varied by a variable current source for the pulse generator so as to compensate for the nonlinear gamma characteristic of the paper.

3,613,104
SPACER DAMPER
Edward F. Bradshaw, Agincourt, Ontario, Canada, assignor to Burndy Corporation
Filed June 5, 1970, Ser. No. 43,694
Int. Cl. H02g 7/14, 7/12
U.S. Cl. 174—42

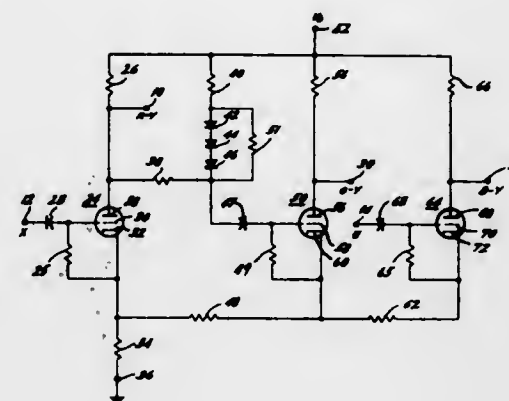
3 Claims



In a spacer damper, each wire is pivoted to the spacer damper body with a relatively delicate current conducting sleeve in the pivot axis in addition to one or more torsion devices resisting pivotal movement. Limit means for limiting pivotal movement prevent the application of radial compressive forces to said sleeve.

3,613,105
COLOR MATRIX CIRCUIT
Ernest C. Freeland, Huntingdon Valley, Pa., assignor to Philco Ford Corporation, Philadelphia, Pa.
Filed May 8, 1970, Ser. No. 35,730
Int. Cl. H04n 9/52
U.S. Cl. 178—5.4 MA

6 Claims

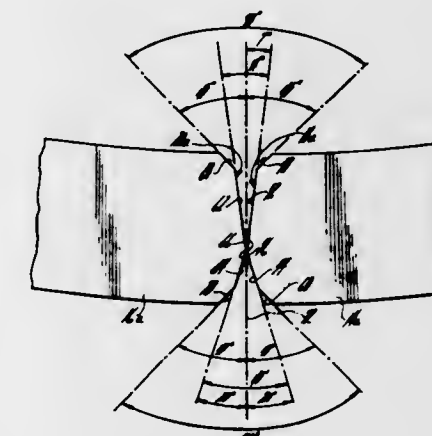


A matrix circuit for supplying drive signals to each of the three color guns in the picture tube of a color television receiver.

The circuit comprises three amplifying stages for supplying R-Y, G-Y, and B-Y picture tube drive signals. A portion of the R-Y output signal is supplied from the plate of the R-Y amplifier to the grid of the G-Y amplifier by a nonlinear voltage divider. Portions of each of the R-Y, G-Y, and B-Y output signals are supplied to each of the other amplifiers by means of a cathode degenerating resistor common to all three amplifiers. Additional resistance is provided in the cathode circuit of the B-Y amplifier and in the circuit common to the cathodes of the B-Y and G-Y amplifiers to adjust the relative gains of the three amplifiers and the relative portions of the R-Y, G-Y, and B-Y signals coupled to each of the amplifiers.

3,613,106
PREHEATING AND SURFACE PREPARATION FOR WELDING
Erman V. Cavagnero, Torrington, Conn., assignor to Torin Corporation, Torrington, Conn.
Division of Ser. No. 706,217, Feb. 12, 1968, Pat. No. 3,522,644, continuation-in-part of Ser. No. 473,948, July 22, 1965, abandoned.
Filed Dec. 18, 1969, Ser. No. 886,081
Int. Cl. B23k 11/02
U.S. Cl. 219—105

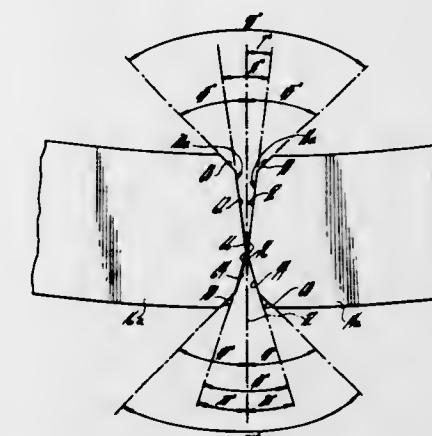
7 Claims



A resistance upset butt welding method wherein surfaces are V-shaped and freshly exposed within seconds of welding.

3,613,107
PREHEATING AND SURFACE PREPARATION FOR WELDING
Erman V. Cavagnero, Torrington, Conn., assignor to Torin Corporation, Torrington, Conn.
Division of Ser. No. 706,217, Feb. 12, 1968, Pat. No. 3,522,644, continuation-in-part of Ser. No. 473,948, July 22, 1965, abandoned.
Filed Dec. 18, 1969, Ser. No. 886,216
Int. Cl. B23k 11/02
U.S. Cl. 219—105

3 Claims



A welding method including a preparation step in the form of a scraping operation carried out in quick sequence with welding. Preheating is also accomplished with cold ends for minimal oxidation.

3,613,108
CIRCUIT FOR GENERATING CONVERGENCE COIL CURRENTS
Dieter Spannhake, Darmstadt, Germany, assignor to Fernsch G.m.b.H., Darmstadt, Germany
Continuation of application Ser. No. 702,647, Feb. 2, 1968. This application Aug. 8, 1969, Ser. No. 849,604
Int. Cl. H01j 29/50
U.S. Cl. 315—13 C

4 Claims

The horizontal frequency sawtooth currents modulated by vertical frequency sawtooth currents which are desirable for

DESIGNS

OCTOBER 12, 1971

222,223
EXPANDED CEREAL FOOD PRODUCT
Stylianios A. Topalis, Mount Prospect, Ill., assignor to
The Quaker Oats Company
Filed July 23, 1970, Ser. No. 24,088
Term of patent 14 years
Int. Cl. D1—01

U.S. Cl. D1—1



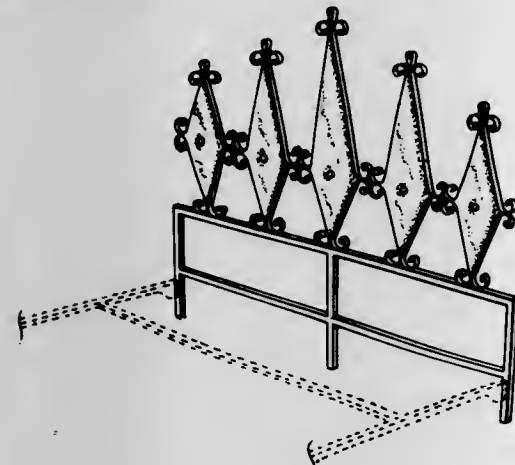
222,224
LEGGING OR SIMILAR ARTICLE
Joseph Alfred Mickens, 184—14 104th Ave.,
Hollis, N.Y. 11412
Filed Sept. 14, 1970, Ser. No. 24,964
Term of patent 3½ years
Int. Cl. D2—04

U.S. Cl. D2—267



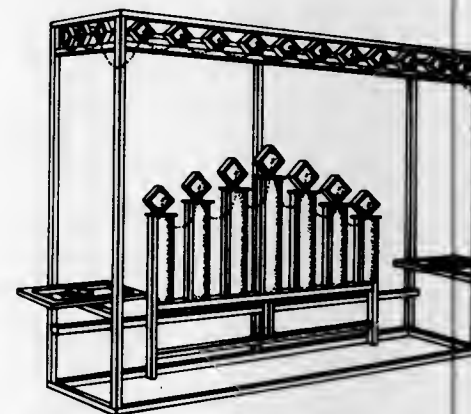
222,225
HEADBOARD OF A BED
Raul Z. Zamora, 562 University Ave.,
San Jose, Calif. 95110
Filed June 3, 1970, Ser. No. 23,265
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D5—4



222,226
**HEADBOARD FOR A BEDSTEAD OR
SIMILAR ARTICLE**
Raul Z. Zamora, 562 University Ave.,
San Jose, Calif. 95110
Filed June 19, 1970, Ser. No. 23,571
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D5—4



222,227
GRIPPING TOOL
John W. Rusztowicz, P.O. Box 116,
Utica, Mich. 48087
Filed May 15, 1970, Ser. No. 22,997
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—51



222,228
CORNICE LIFTING AND APPLYING APPARATUS
William Kreps, 15 Walnut Lane,
College Park, Md. 20740
Filed June 12, 1970, Ser. No. 23,445
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—51



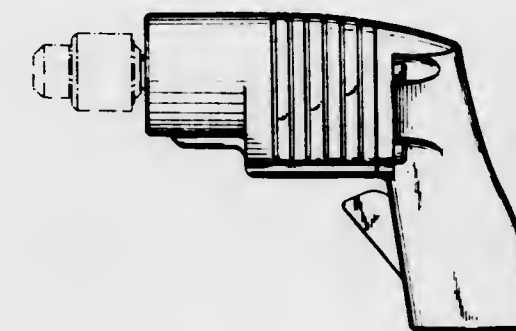
OCTOBER 12, 1971

U. S. PATENT OFFICE

867

222,229
POWER OPERATED TOOL
Raymond J. Schaedler, Utica, N.Y., assignor to
Chicago Pneumatic Tool Company, New York, N.Y.
Filed July 8, 1970, Ser. No. 23,863
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—68



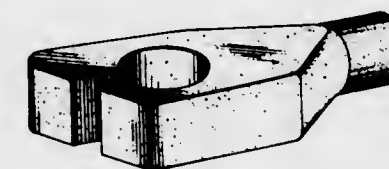
222,232
HANDLE
William J. Horgan, Jr., Pittsburgh, Pa., assignor to
Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Oct. 8, 1969, Ser. No. 19,455
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—166



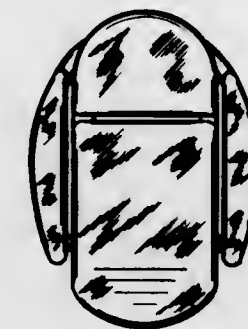
222,230
ABRASIVE TYPE HAND TOOL
Robert W. Martin, 1057 Pennington Road,
Trenton, N.J. 08618
Original design application Apr. 1, 1969, Ser. No. 16,541,
now Patent No. 217,952, dated July 7, 1970. Divided
and this application Apr. 27, 1970, Ser. No. 22,659
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—90



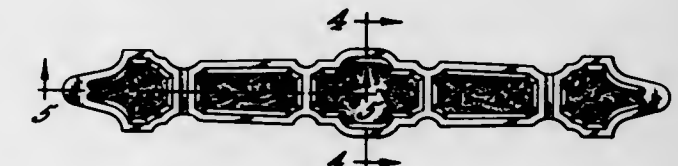
222,231
DRAW BOLT OR SIMILAR ARTICLE
Samuel J. Holtzman, 8201 Symphony Drive,
Baltimore, Md. 21208
Filed Aug. 7, 1970, Ser. No. 24,364
Term of patent 14 years
Int. Cl. D8—06

U.S. Cl. D8—129



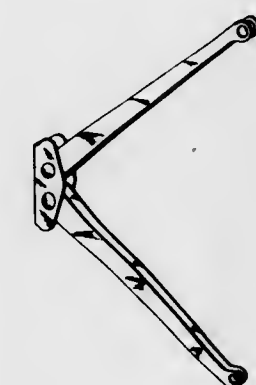
222,233
PULL
La Verne E. Clayton, Rockford, Ill., assignor to
Amerock Corporation, Rockford, Ill.
Filed Aug. 12, 1970, Ser. No. 24,455
Term of patent 14 years
Int. Cl. D8—07

U.S. Cl. D8—166

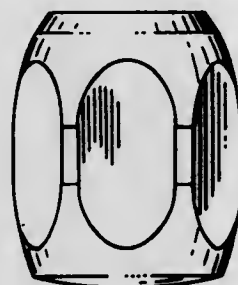


222,234
**STAY FOR MAINTAINING BABY CARRIAGE
HOODS AND THE LIKE IN ERECTED
CONDITION**
Alfred Gregory Imber, Shilton Hall, England, assignor
to Geo. H. Hughes Limited, Birmingham, England
Filed Sept. 2, 1969, Ser. No. 18,947
Claims priority, application Great Britain Aug. 2, 1969
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—190



222,235
NUT
Phillip G. Holiday, Lombard, Ill., assignor to
Standard Screw Company, Hartford, Conn.
Filed Apr. 7, 1970, Ser. No. 22,306
Term of patent 14 years
Int. Cl. D8—04
U.S. Cl. D8—273



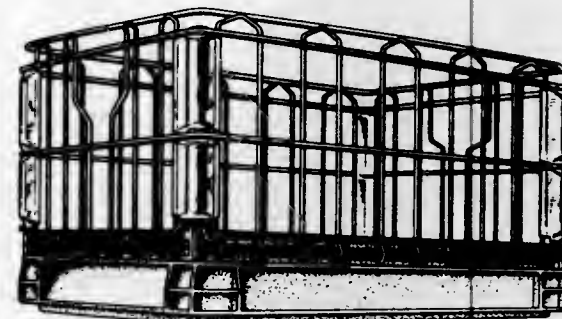
222,236
BLISTER PACKAGE DISPENSER
William M. Peragine, Wantagh, N.Y., assignor to
American Sugar Company, New York, N.Y.
Filed Apr. 16, 1970, Ser. No. 22,475
Term of patent 14 years
Int. Cl. D9—03
U.S. Cl. D9—192



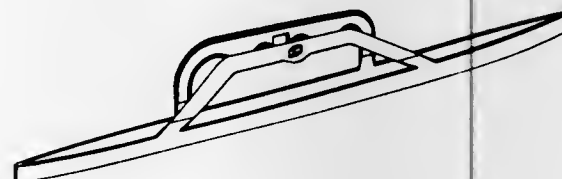
222,237
STANDABLE FLEXIBLE CONTAINER WITH
STRAW
Justin M. Schmit, 3801 NE. 28th Ave.,
Pompano Beach, Fla. 33064
Filed Apr. 29, 1970, Ser. No. 22,709
Term of patent 14 years
Int. Cl. D9—99
U.S. Cl. D9—194



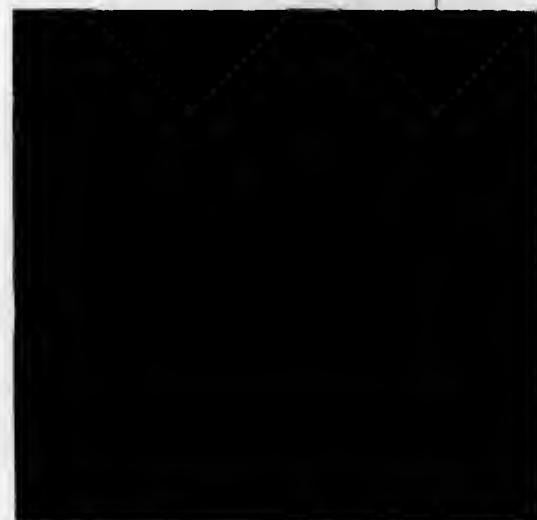
222,238
CRATE
Houston Rehrig, 3730 E. 26th St.,
Los Angeles, Calif. 90023
Filed Jan. 13, 1970, Ser. No. 20,903
Term of patent 14 years
Int. Cl. D9—04
U.S. Cl. D9—247



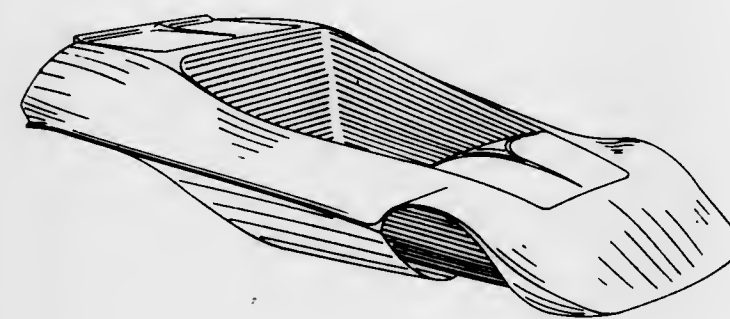
222,239
BAG CARRYING HANDLE
Joseph Yuen Man Chan, Hong Kong,
assignor to Polson Industries Co.
Filed July 27, 1970, Ser. No. 24,156
Claims priority, application Great Britain Jan. 29, 1970
Term of patent 14 years
Int. Cl. D9—02
U.S. Cl. D9—292



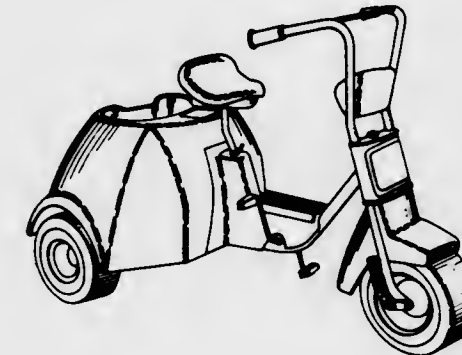
222,240
WALL PANEL
Lester V. Ottinger, Danbury, Conn., and Donald F. Luebs,
Vienna, Va., assignors to U.S. Plywood-Champion
Papers Inc., New York, N.Y.
Filed June 17, 1970, Ser. No. 23,545
Term of patent 14 years
Int. Cl. D25—01
U.S. Cl. D13—1



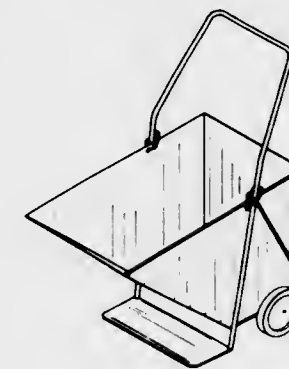
222,241
AUTOMOBILE BODY
Frederick M. Does, 4205 Wedgmont Circle S.,
Fort Worth, Tex. 76133
Filed May 18, 1970, Ser. No. 23,039
Term of patent 14 years
Int. Cl. D12—08
U.S. Cl. D14—3



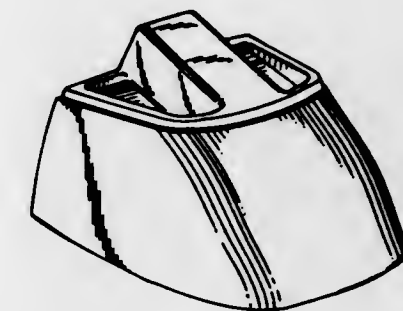
222,242
GOLF CART
John J. Delaney, West Pittston, and Henry O. Gervais,
Mountaintop, Pa., assignors to Northeastern Pennsylv-
ania Research and Development Company, Inc.
Filed May 20, 1970, Ser. No. 23,067
Term of patent 14 years
Int. Cl. D12—14
U.S. Cl. D14—3



222,243
GARDEN CART AND TRUCK COMBINATION
Evert H. Young, 12075 Medford Drive,
Los Altos, Calif. 94022
Filed Aug. 28, 1970, Ser. No. 24,758
Term of patent 14 years
Int. Cl. D12—02
U.S. Cl. D14—3



222,244
SNOWMOBILE COWL
Anthony MacKeen, Valcourt, Quebec, Canada, assignor
to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,423
Term of patent 14 years
Int. Cl. D12—13
U.S. Cl. D14—24



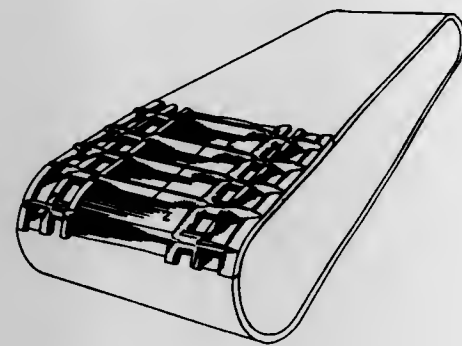
222,245
SNOWMOBILE
Anthony MacKeen and Yves Anselme Lapointe, Valcourt,
Quebec, Canada, assignors to Bombardier Limited,
Valcourt, Quebec, Canada
Filed Oct. 6, 1969, Ser. No. 19,428
Term of patent 14 years
Int. Cl. D12—13
U.S. Cl. D14—24



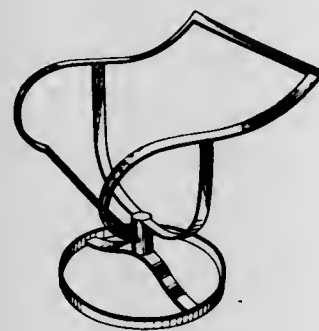
222,246
SNOWMOBILE
Anthony MacKeen and Yves Anselme Lapointe, Valcourt,
Quebec, Canada, assignors to Bombardier Limited,
Valcourt, Quebec, Canada
Filed Oct. 7, 1969, Ser. No. 19,449
Term of patent 14 years
Int. Cl. D12—13
U.S. Cl. D14—24



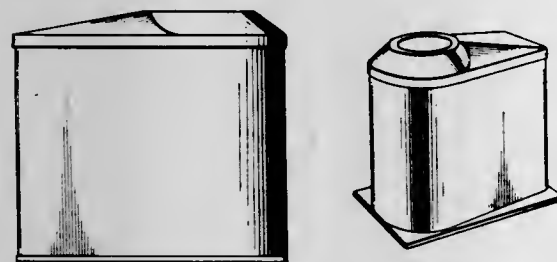
222,247
SNOWMOBILE TRACK
 Jules Perreault, Sherbrooke, Quebec, Canada, assignor to
 Bombardier Limited, Valcourt, Quebec, Canada
 Filed Jan. 27, 1970, Ser. No. 21,112
 Term of patent 14 years
 Int. Cl. D12-13
 U.S. Cl. D14-24



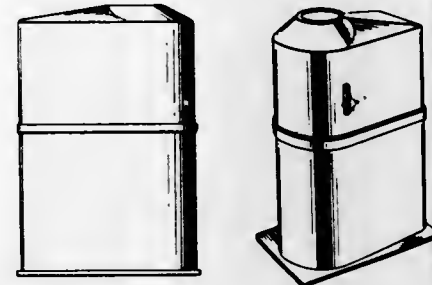
222,248
CHAIR FRAME
 Gardner Leaver, New York, N.Y., assignor to
 Steelcase Inc., Grand Rapids, Mich.
 Original design application Mar. 20, 1969, Ser. No. 16,351.
 Divided and this application May 7, 1970, Ser. No.
 22,873
 Term of patent 14 years
 Int. Cl. D6-06
 U.S. Cl. D15-1



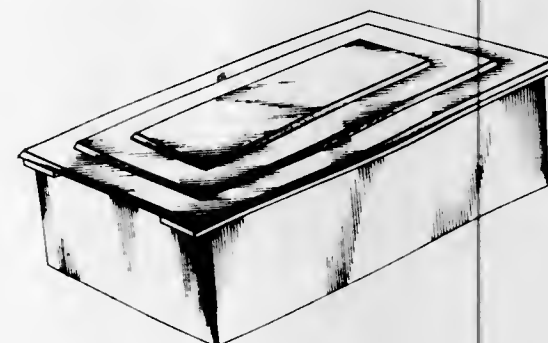
222,249
CHLORINATOR
 Robert S. Lucas, Harbor City, Calif., assignor to
 Purex Corporation, Ltd., Lakewood, Calif.
 Filed June 29, 1970, Ser. No. 23,722
 Term of patent 14 years
 Int. Cl. D24-02; D23-01
 U.S. Cl. D16-2



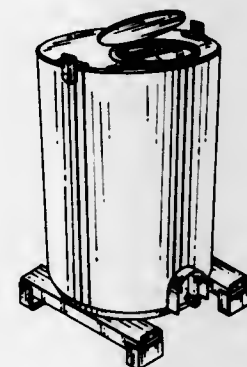
222,250
CHLORINATOR
 Robert S. Lucas, Harbor City, Calif., assignor to
 Purex Corporation, Ltd., Lakewood, Calif.
 Filed June 29, 1970, Ser. No. 23,723
 Term of patent 14 years
 Int. Cl. D24-02; D23-01
 U.S. Cl. D16-2



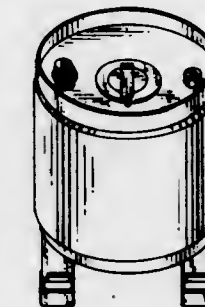
222,251
PET COFFIN
 John W. Carson, Grand Rapids, Mich., assignor to
 Carson and Rogers Company, Springlake, Mich.
 Filed July 13, 1970, Ser. No. 23,915
 Term of patent 14 years
 Int. Cl. D31
 U.S. Cl. D19-1



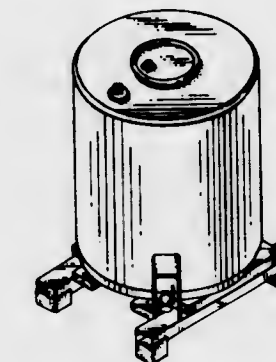
222,252
PORTABLE STORAGE BIN
 Clarence B. Coleman and Harry R. Kattelmann, Oakland,
 Calif.; said Kattelmann assignor to Fabricated Metals
 Filed May 21, 1970, Ser. No. 23,886
 Term of patent 14 years
 Int. Cl. D23-01
 U.S. Cl. D23-2



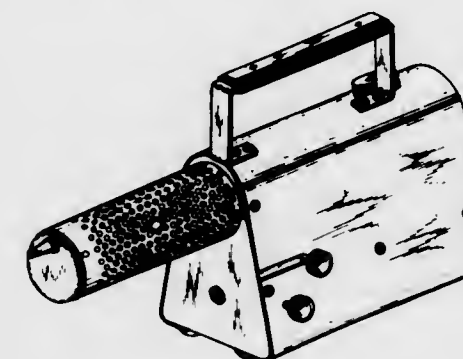
222,253
STORAGE BIN
 Clarence B. Coleman and Harry R. Kattelmann, Oakland,
 Calif., assignors to Fabricated Metals, Inc.
 Filed June 8, 1970, Ser. No. 23,372
 Term of patent 14 years
 Int. Cl. D23-01
 U.S. Cl. D23-2



222,254
STORAGE CONTAINER
 Harry R. Kattelmann, Oakland, and Guntis Lange, San
 Leandro, Calif., assignors to Fabricated Metals, Inc.
 Filed Sept. 23, 1970, Ser. No. 25,160
 Term of patent 14 years
 Int. Cl. D23-01
 U.S. Cl. D23-2



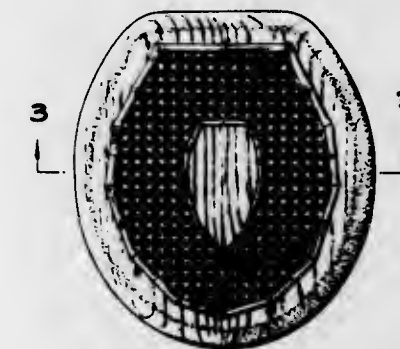
222,255
INSECTICIDAL JET FOGGING UNIT
 Robert Schmedes, Rochester, and John M. Nelson,
 Webster, N.Y., assignors to Bernzomatic Corporation
 Filed Sept. 12, 1969, Ser. No. 19,125
 Term of patent 14 years
 Int. Cl. D23-01
 U.S. Cl. D23-18



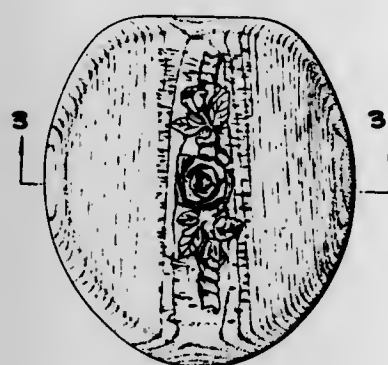
222,256
SILENCER FOR FLUSHING CISTERNS
 Herbert J. Moffatt, 16 Cary St., Manly,
 New South Wales, Australia
 Filed May 14, 1969, Ser. No. 17,152
 Claims priority, application Australia Dec. 18, 1968
 Term of patent 14 years
 Int. Cl. D23-02
 U.S. Cl. D23-69



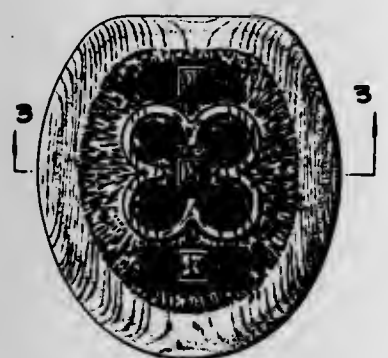
222,257
TOILET BOWL COVER
 David E. Harrison, Columbus, Miss., assignor to Beneke
 Division, Benrice Foods Co., Columbus, Miss.
 Filed July 27, 1970, Ser. No. 24,163
 Term of patent 3 1/2 years
 Int. Cl. D23-02
 U.S. Cl. D23-71



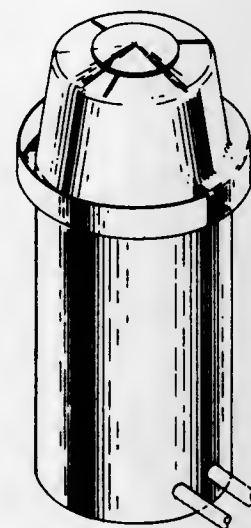
222,258
TOILET BOWL COVER
 David E. Harrison, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.
 Filed July 27, 1970, Ser. No. 24,164
 Term of patent $3\frac{1}{2}$ years
 Int. Cl. D23—02
 U.S. Cl. D23—71



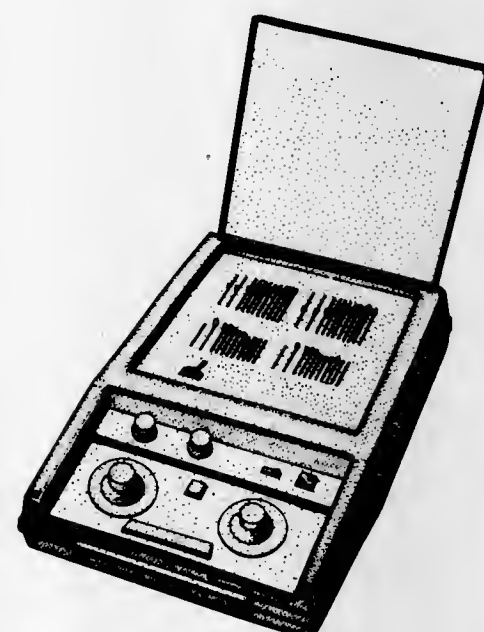
222,259
TOILET BOWL COVER
 David E. Harrison, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.
 Filed July 27, 1970, Ser. No. 24,165
 Term of patent $3\frac{1}{2}$ years
 Int. Cl. D23—02
 U.S. Cl. D23—71



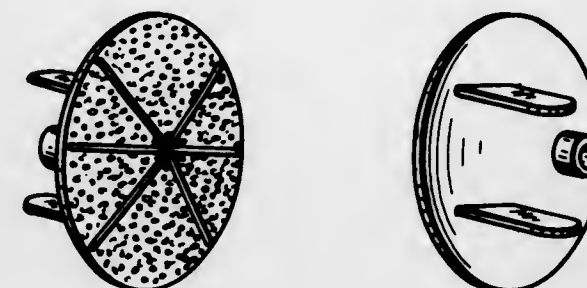
222,260
SWIMMING POOL HEATER OR THE LIKE
 Richard H. Read and Alan H. Brown, San Diego, Calif., assignors to Hydronic Systems, Inc., San Diego, Calif.
 Filed Jan. 8, 1970, Ser. No. 20,835
 Term of patent 14 years
 Int. Cl. D23—03
 U.S. Cl. D23—88



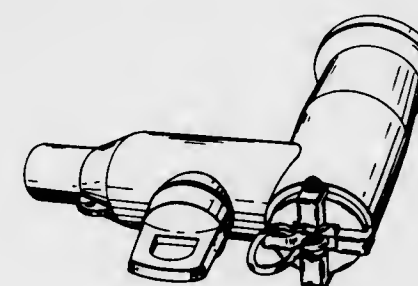
222,261
AUDIOMETER TEACHING DEVICE
 Herbert N. Hartman, New York, and Samuel I. Berger, Brooklyn, N.Y., assignors to Biocoustics, Inc., Rockville, Md.
 Filed June 29, 1970, Ser. No. 23,703
 Term of patent 14 years
 Int. Cl. D19—08; D14—02
 U.S. Cl. D25—1



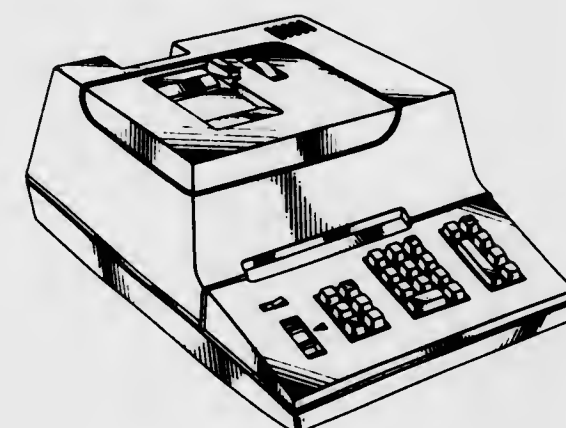
222,262
ELECTRICAL OUTLET SAFETY CAP
 Elliot H. Hartford, 1048 Ramapo Valley Road, Mahwah, N.J. 07430
 Filed July 27, 1970, Ser. No. 24,155
 Term of patent 14 years
 Int. Cl. D6—99; D13—99
 U.S. Cl. D26—1



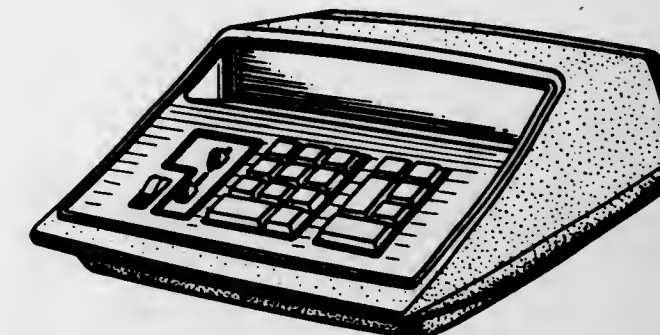
222,263
LOADBREAK CONNECTOR WITH PULLING EYE
 Frederick Carl De Sio, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
 Filed Aug. 11, 1970, Ser. No. 24,646
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—1



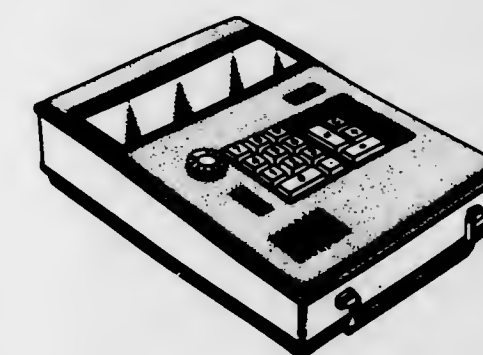
222,264
ELECTRONIC CALCULATOR
 Hideki Ishii, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
 Filed June 15, 1970, Ser. No. 23,505
 Term of patent 7 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



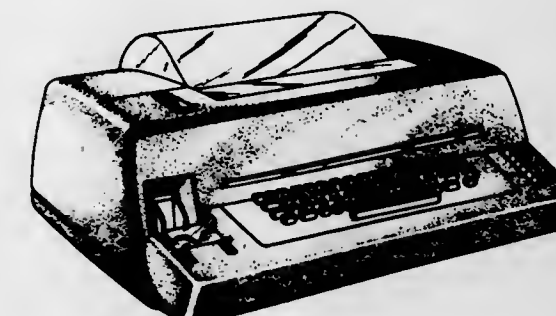
222,265
ELECTRONIC CALCULATING MACHINE
 Katsuhiko Ishida and Yoshimuro Yoshida, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
 Filed July 1, 1970, Ser. No. 23,778
 Claims priority, application Japan Jan. 21, 1970
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



222,266
ELECTRONIC CALCULATOR
 Takashi Morita, Sagami-hara, Japan, assignor to Takachiho Koki Kabushiki Kaisha, Osaka-shi, Japan
 Filed July 13, 1970, Ser. No. 23,934
 Claims priority, application Japan Jan. 14, 1970
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D26—5

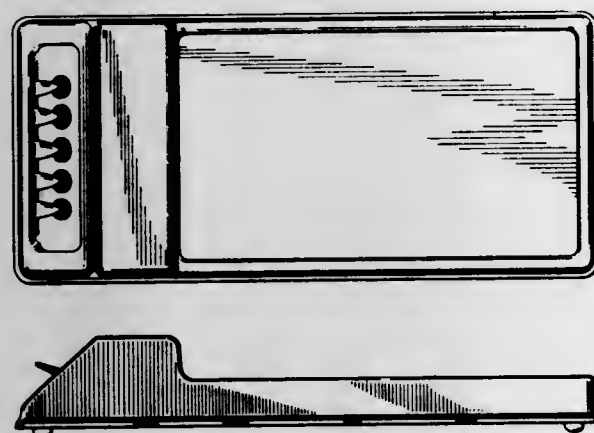


222,267
TELEPRINTER OR THE LIKE
 Robert J. Ramig, Jr., Niles, Ill., assignor to Teletype Corporation, Skokie, Ill.
 Filed Aug. 19, 1970, Ser. No. 24,585
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



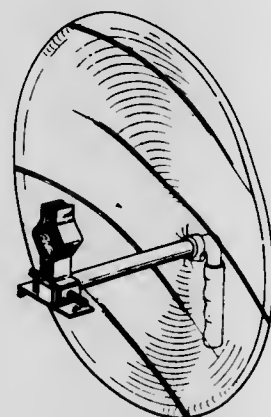
222,268
TELEPHONE CALL TRANSFERRING DEVICE
 Lewis Fetzner, Dallas, Tex., assignor to David Wade Industries, Inc., Dallas, Tex.
 Filed June 8, 1970, Ser. No. 23,349
 Term of patent 14 years
 Int. Cl. D14-03

U.S. Cl. D26-14



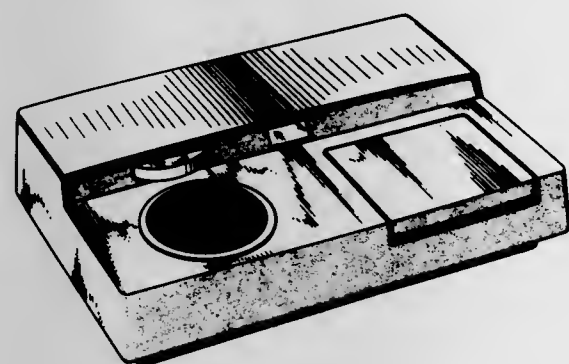
222,269
PARABOLIC SOUND REFLECTING MICROPHONE HOLDER
 Daniel Armstrong Gibson, Toronto, Ontario, Canada, assignor to Dan Gibson Productions Ltd., Toronto, Ontario, Canada
 Filed June 12, 1970, Ser. No. 23,458
 Claims priority, application Canada Apr. 9, 1970
 Term of patent 7 years
 Int. Cl. D14-01

U.S. Cl. D26-14



222,270
COMMUNICATION APPARATUS
 Donald Michael Genaro, Haworth, N.J., and Carl Paul McFadden, Federal Heights, Colo., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
 Filed July 16, 1970, Ser. No. 23,983
 Term of patent 14 years
 Int. Cl. D14-03

U.S. Cl. D26-14



222,271
NIPPLE FOR VALVE DRINKING DEVICES FOR ANIMALS
 Helmut Rader, 16 Bahnhofstrasse, 6079 Buchschlag, Germany
 Filed Jan. 12, 1970, Ser. No. 20,869
 Claims priority, application Germany Aug. 22, 1969
 Term of patent 14 years
 Int. Cl. D30-03

U.S. Cl. D30-13



222,272
NIPPLE FOR VALVE DRINKING DEVICES FOR ANIMALS
 Helmut Rader, 16 Bahnhofstrasse, 6079 Buchschlag, Germany
 Filed Jan. 12, 1970, Ser. No. 20,870
 Claims priority, application Germany Aug. 22, 1969
 Term of patent 14 years
 Int. Cl. D30-03

U.S. Cl. D30-13



222,273
NIPPLE FOR VALVE DRINKING DEVICES FOR ANIMALS
 Helmut Rader, 16 Bahnhofstrasse, 6079 Buchschlag, Germany
 Filed Feb. 3, 1970, Ser. No. 21,243
 Claims priority, application Germany Oct. 8, 1969
 Term of patent 14 years
 Int. Cl. D30-03

U.S. Cl. D30-13



222,274
NIPPLE FOR VALVE DRINKING DEVICES FOR ANIMALS
 Helmut Rader, 16 Bahnhofstrasse, 6079 Buchschlag, Germany
 Filed Feb. 3, 1970, Ser. No. 21,245
 Claims priority, application Germany Oct. 8, 1969
 Term of patent 14 years
 Int. Cl. D30-03

U.S. Cl. D30-13



222,275
NIPPLE FOR VALVE DRINKING DEVICES FOR ANIMALS
 Helmut Rader, 16 Bahnhofstrasse, D 6079 Buchschlag, Germany
 Filed Feb. 3, 1970, Ser. No. 21,246
 Claims priority, application Germany Oct. 8, 1967
 Term of patent 14 years
 Int. Cl. D30-03

U.S. Cl. D30-13



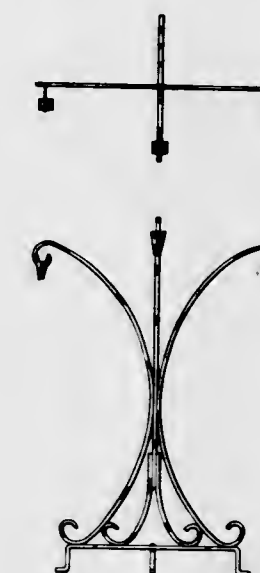
222,276
CAT LADDER
 Alyn S. Hughes, Jr., 2524 Minnesota Ave., Metairie, La. 70003
 Filed Sept. 11, 1970, Ser. No. 24,947
 Term of patent 14 years
 Int. Cl. D30-99

U.S. Cl. D30-42



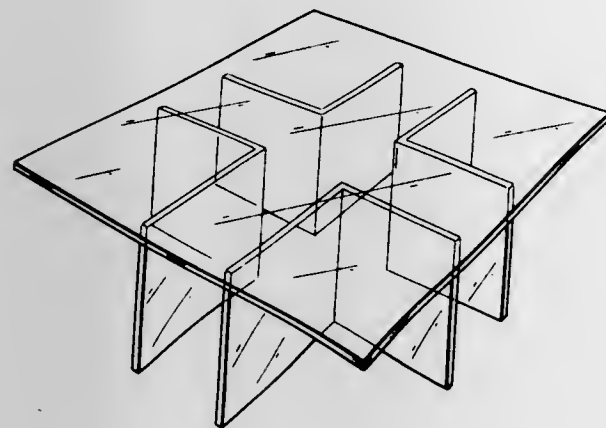
222,277
BOOT RACK
 Ralph Kraus, 262 Central Park W., New York, N.Y. 10024
 Filed May 8, 1970, Ser. No. 22,887
 Term of patent 14 years
 Int. Cl. D6-01

U.S. Cl. D33-3



222,278
GLASS TABLE
 Maria V. Thornhill, 11705 Longleaf,
 Houston, Tex. 77024
 Filed Mar. 25, 1970, Ser. No. 22,058
 Term of patent 14 years
 Int. Cl. D6—03

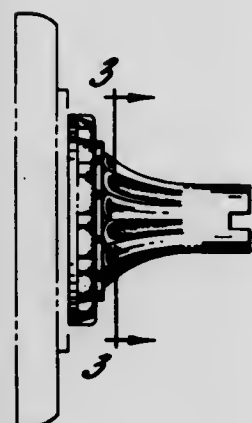
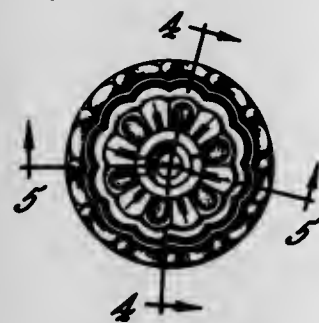
U.S. Cl. D33—14



222,279
**POST FOR SUPPORTING TOWEL RACKS, TOILET
 PAPER HOLDERS, AND OTHER HOUSEHOLD
 HARDWARE**

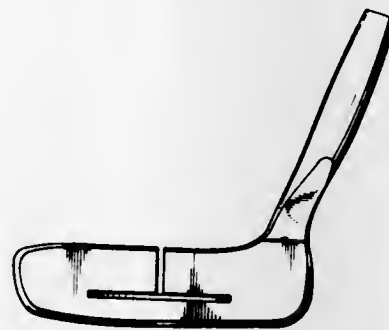
La Verne E. Clayton, Rockford, Ill., assignor to
 Amerock Corporation, Rockford, Ill.
 Filed May 25, 1970, Ser. No. 23,116
 Term of patent 14 years
 Int. Cl. D6—06

U.S. Cl. D33—32



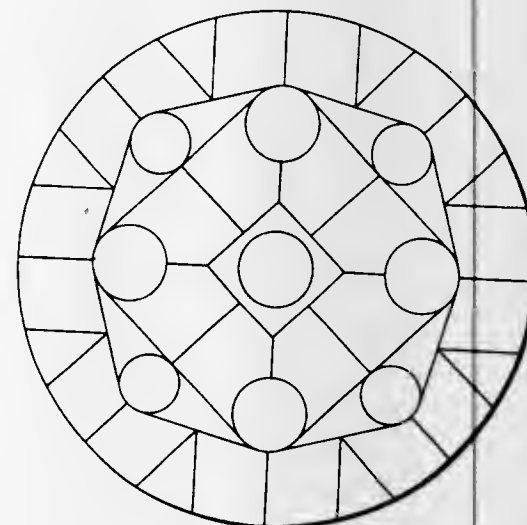
222,280
GOLF PUTTER HEAD
 Raymon W. Cook, 1026 Mount Eden,
 San Antonio, Tex. 78213
 Filed Feb. 3, 1970, Ser. No. 21,432
 Term of patent 14 years
 Int. Cl. D21—02

U.S. Cl. D34—5



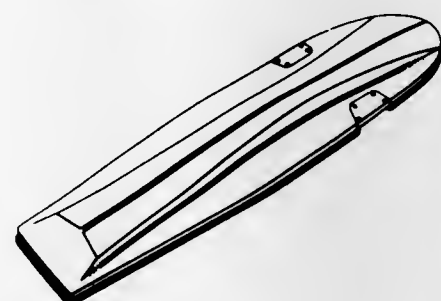
222,281
BOARD FOR A DART-TYPE GAME
 John J. Feagans and Leo J. Jehle, both of
 9431 Theodosia, St. Louis, Mo. 63114
 Filed Mar. 27, 1970, Ser. No. 22,076
 Term of patent 14 years
 Int. Cl. D21—01

U.S. Cl. D34—5



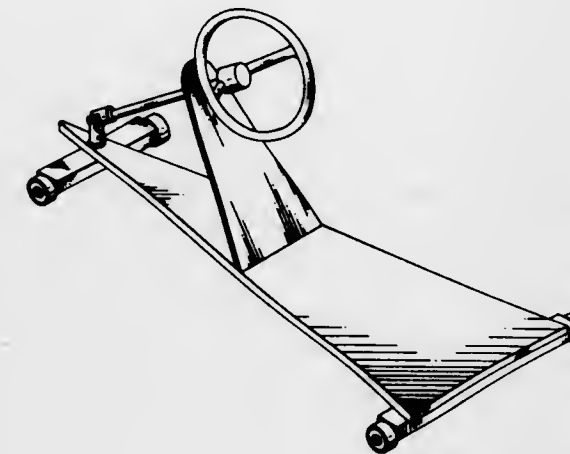
222,282
SNOW BOARD
 Loran R. Hill, Olney, Ill., assignor to
 AMF Incorporated
 Filed May 7, 1970, Ser. No. 22,870
 Term of patent 14 years
 Int. Cl. D21—03

U.S. Cl. D34—15



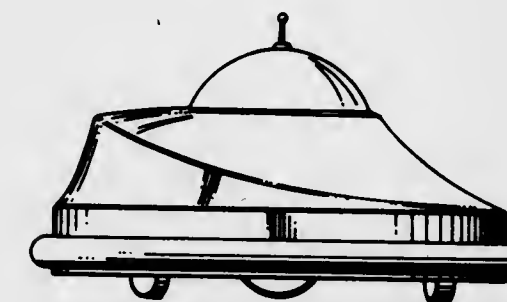
222,283
CHILD'S COASTER VEHICLE
 Robert G. Reeves, 106 Kinderway Ave.,
 Charlotte, N.C. 28214
 Filed July 15, 1970, Ser. No. 23,965
 Term of patent 14 years
 Int. Cl. D21—01

U.S. Cl. D34—15

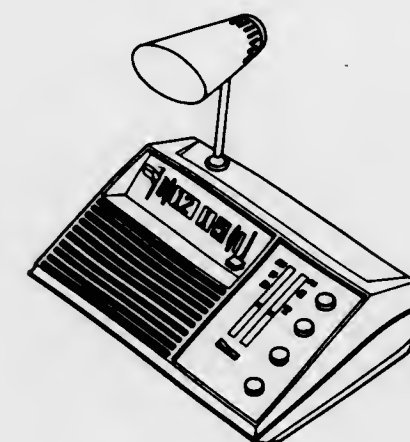


222,284
VEHICLE TOY
 John Edward Walker, 7637 White Oak Ave.,
 Reseda, Calif. 91335
 Filed Aug. 28, 1970, Ser. No. 24,744
 Term of patent 14 years
 Int. Cl. D21—01

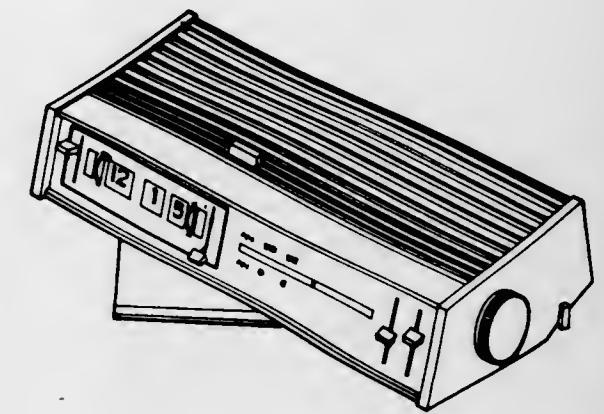
U.S. Cl. D34—15



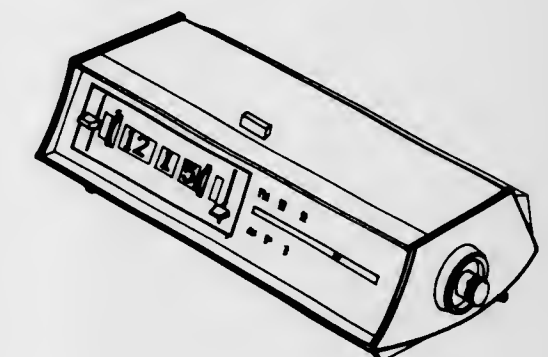
222,285
COMBINED CLOCK RADIO AND LAMP
 Hachiro Masuda, Lodi, and Morris J. Feldman, North
 Caldwell, N.J., assignors to York Radio Corp., South
 Hackensack, N.J.
 Filed Aug. 6, 1970, Ser. No. 24,342
 Term of patent 14 years
 Int. Cl. D26—05; D14—03; D10—01
 U.S. Cl. D42—7



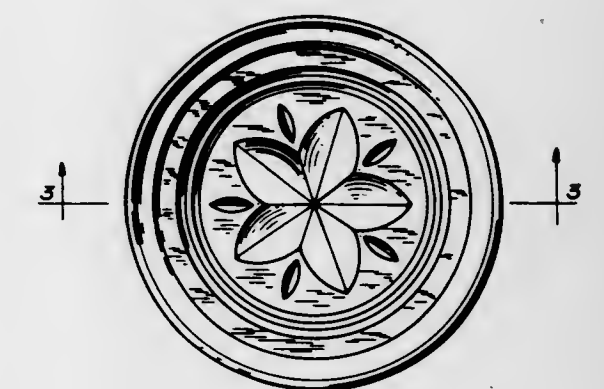
222,286
**COMBINED CLOCK RADIO AND SWIVEL
 BASE THEREFOR**
 Hachiro Masuda, Lodi, and Morris J. Feldman, North
 Caldwell, N.J., assignors to York Radio Corp., South
 Hackensack, N.J.
 Filed Aug. 6, 1970, Ser. No. 24,345
 Term of patent 14 years
 Int. Cl. D14—03; D10—01
 U.S. Cl. D42—7



222,287
CLOCK RADIO
 Hachiro Masuda, Lodi, and Morris J. Feldman, North
 Caldwell, N.J., assignors to York Radio Corp., South
 Hackensack, N.J.
 Filed Aug. 6, 1970, Ser. No. 24,346
 Term of patent 14 years
 Int. Cl. D10—01; D14—03
 U.S. Cl. D42—7



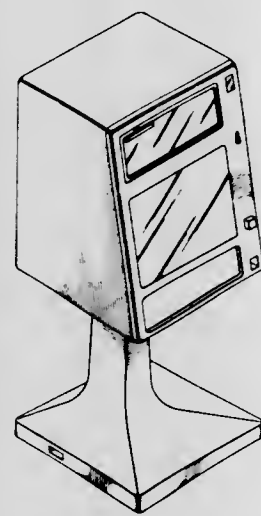
222,288
COASTER
 Homer Gilliam, Jr., Box 937, Leesburg, Va. 22075
 Filed July 24, 1970, Ser. No. 24,104
 Term of patent 14 years
 Int. Cl. D7—01
 U.S. Cl. D44—10



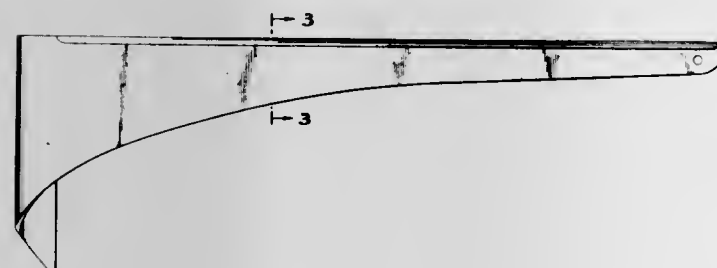
222,289
LIGHT FOR BICYCLES AND THE LIKE
 Leon M. Banter, 12470 W. 31st Ave., Wheatridge, Colo. 80215; Neal P. Kempf, 6919 S. Bemis, Littleton, Colo. 80120; and Russell R. Randall, 410 Colorado Blvd., Denver, Colo. 80206
 Filed Dec. 8, 1969, Ser. No. 20,412
 Term of patent 14 years
 Int. Cl. D26-06; D29-02
 U.S. Cl. D48-24



222,290
VENDING MACHINE FOR NEWSPAPERS OR THE LIKE
 Rune Pearson, Los Angeles County, Calif. (11645 McBean Drive, El Monte, Calif. 91732)
 Filed Mar. 12, 1970, Ser. No. 21,870
 Term of patent 14 years
 Int. Cl. D20-01
 U.S. Cl. D52-3



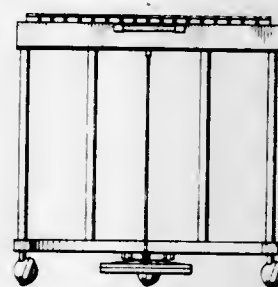
222,291
RULE
 Palle Winston Seiersen, 158 Leibnitz, Mexico City, Mexico
 Filed Apr. 22, 1970, Ser. No. 22,564
 Term of patent 14 years
 Int. Cl. D10-04
 U.S. Cl. D52-6



222,292
SPOON OR THE LIKE
 Raymond T. Cleeland, Freehold, N.J., assignor to American Home Products Corporation, New York, N.Y.
 Filed Sept. 25, 1970, Ser. No. 25,191
 Term of patent 14 years
 Int. Cl. D7-03
 U.S. Cl. D54-12



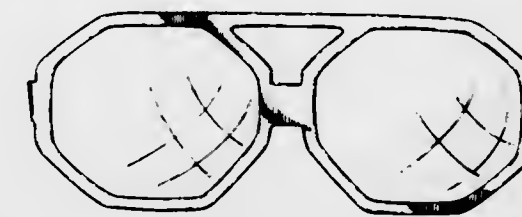
222,293
PORTABLE SET OF ORCHESTRA BELLS OR SIMILAR ARTICLE
 Clair O. Musser, Studio City, Calif., assignor to CBS Musical Instruments, a division of Columbia Broadcasting Systems, Inc.
 Filed Apr. 10, 1970, Ser. No. 22,372
 Term of patent 14 years
 Int. Cl. D17-04
 U.S. Cl. D56-1



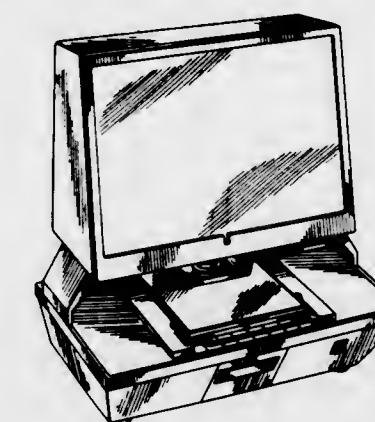
222,294
STRINGED MUSICAL INSTRUMENT
 Walter J. Pelensky, 19C Manheim Gardens, Philadelphia, Pa. 19144
 Filed Aug. 31, 1970, Ser. No. 24,778
 Term of patent 14 years
 Int. Cl. D17-03
 U.S. Cl. D56-1



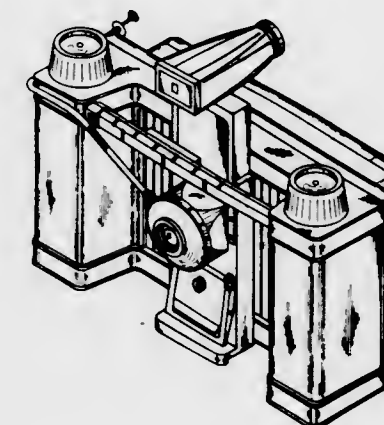
222,295
SUNGLASS FRAME FRONT
 Roger L. McCracken, Chill, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
 Filed Mar. 30, 1970, Ser. No. 22,111
 Term of patent 14 years
 Int. Cl. D16-06
 U.S. Cl. D57-1



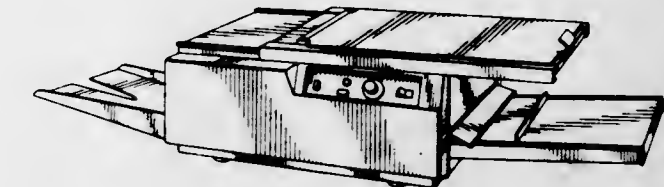
222,296
MICROFICHE READER
 Louis A. Smitzer, San Diego, and Ulf R. Helgesson, Woodland Hills, Calif.; said Smitzer assignor to Micro Image Corporation, San Diego, Calif.
 Filed Apr. 17, 1970, Ser. No. 22,476
 Term of patent 14 years
 Int. Cl. D16-0
 U.S. Cl. D61-1



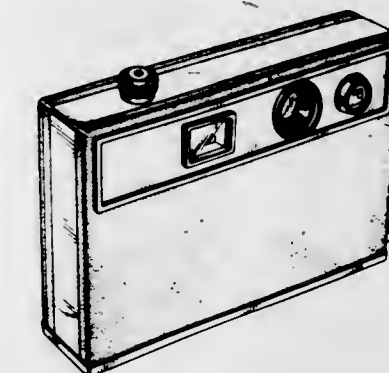
222,297
MULTIIMAGE CAMERA
 Leslie R. Walstrom, Excelsior, Minn., assignor to Multi Photo Camera Corporation
 Filed Apr. 24, 1970, Ser. No. 22,638
 Term of patent 14 years
 Int. Cl. D16-01
 U.S. Cl. D61-1



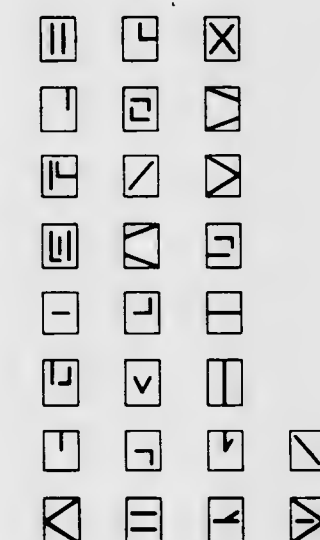
222,298
ELECTROSTATIC COPIER
 Hideki Ishii, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
 Filed June 15, 1970, Ser. No. 23,504
 Claims priority, application Japan, Dec. 27, 1969
 Term of patent 14 years
 Int. Cl. D16-05
 U.S. Cl. D61-1



222,299
MOVIE CAMERA
 Yoh Tanaka, Tokyo, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan
 Filed July 2, 1970, Ser. No. 23,818
 Claims priority, application Japan Feb. 3, 1970
 Term of patent 14 years
 Int. Cl. D16-02
 U.S. Cl. D61-1



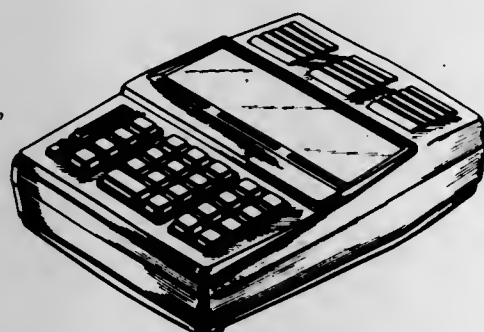
222,300
FONT OF TYPE
 Kent Melvin Graves, % Moorhead State College, Moorhead, Minn. 56560
 Filed Feb. 6, 1970, Ser. No. 21,306
 Term of patent 7 years
 Int. Cl. D18-04
 U.S. Cl. D64-12



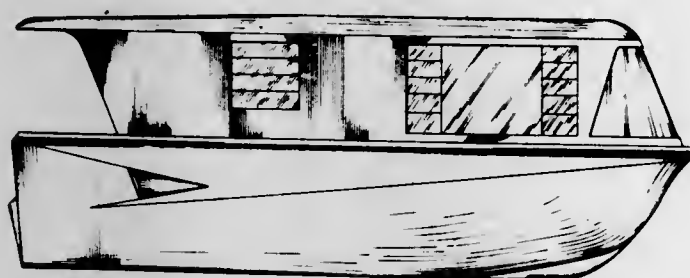
222,301
CALCULATING MACHINE
 Mititaka Yamamoto, Kyoto-fu, Japan, assignor to Omron
 Tateisi Electronics Co., Kyoto-fu, Japan
 Filed June 29, 1970, Ser. No. 23,698
 Claims priority, application Japan Dec. 29, 1969
 Term of patent 14 years
 Int. Cl. D18-01
 U.S. Cl. D64-11



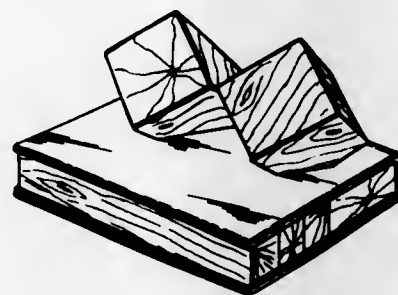
222,302
CALCULATING MACHINE
 Mititaka Yamamoto, Kyoto-fu, Japan, assignor to Omron
 Tateisi Electronics Co., Ukyo-ku, Japan
 Original design application Mar. 27, 1969, Ser. No.
 16,478. Divided and this application July 8, 1970,
 Ser. No. 23,855
 Claims priority, application Japan Sept. 29, 1968
 Term of patent 14 years
 Int. Cl. D18-02
 U.S. Cl. D64-11



222,303
BOAT
 Jay A. Lankheet, Holland, Mich., assignor to
 Glamour Pools Company, Holland, Mich.
 Filed June 29, 1970, Ser. No. 23,740
 Term of patent 14 years
 Int. Cl. D12-06
 U.S. Cl. D71-1



222,304
CHANGEABLE CALENDAR
 Michael J. Smith, % Arrow Art Finishes, Inc.,
 1201 Evergreen Ave., Bronx, N.Y. 10468
 Filed June 15, 1970, Ser. No. 23,484
 Term of patent 14 years
 Int. Cl. D19-03
 U.S. Cl. D74-5



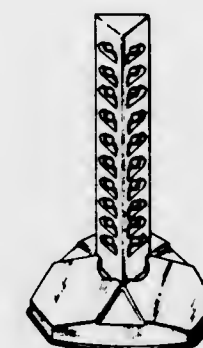
222,305
PENCIL
 Perry Feuer, Roslyn, N.Y., assignor to Creative
 Creations, Inc., New York, N.Y.
 Filed Sept. 23, 1970, Ser. No. 25,161
 Term of patent 14 years
 Int. Cl. D19-06
 U.S. Cl. D74-24



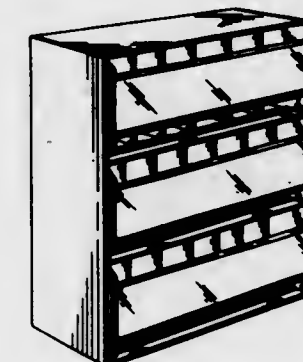
222,306
PENCIL
 Perry Feuer, Roslyn, N.Y., assignor to Creative
 Creations, Inc., New York, N.Y.
 Filed Sept. 23, 1970, Ser. No. 25,164
 Term of patent 14 years
 Int. Cl. D19-06
 U.S. Cl. D74-24



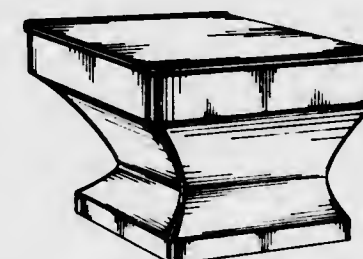
222,307
**DISPLAY STAND FOR SUPPORTING
 STACKED CANDY BOXES**
 Amilcare Dogliotti, Neive (Cuneo), Italy, assignor to
 P. Ferrero & C. S.p.A., Alba (Cuneo), Italy
 Filed Oct. 1, 1969, Ser. No. 19,360
 Claims priority, application Germany Apr. 19, 1969
 Term of patent 14 years
 Int. Cl. D6-07
 U.S. Cl. D80-9



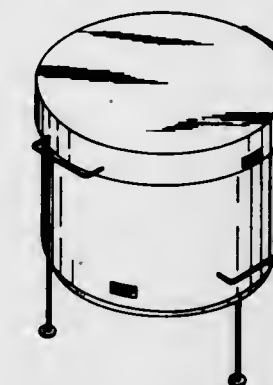
222,308
**MERCHANDISE DISPLAY AND
 STORAGE STAND**
 Carl E. Lindgren, Rockford, John J. Racila, Chicago,
 and William Brunner, Wilmette, Ill., assignors to
 Amerock Corporation, Rockford, Ill.
 Filed Mar. 11, 1970, Ser. No. 21,853
 Term of patent 14 years
 Int. Cl. D6-04
 U.S. Cl. D80-9



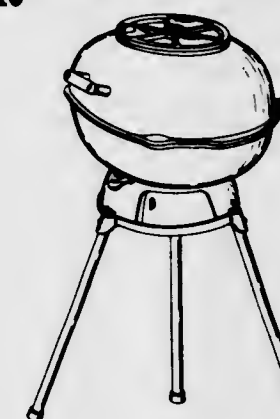
222,309
DISPLAY STAND
 Donald H. Ellingson and Herbert L. Reynolds, Seattle,
 Wash., assignors to Reynolds Display-Fixtures Inc.,
 Seattle, Wash.
 Filed June 4, 1970, Ser. No. 23,319
 Term of patent 14 years
 Int. Cl. D6-06
 U.S. Cl. D80-9



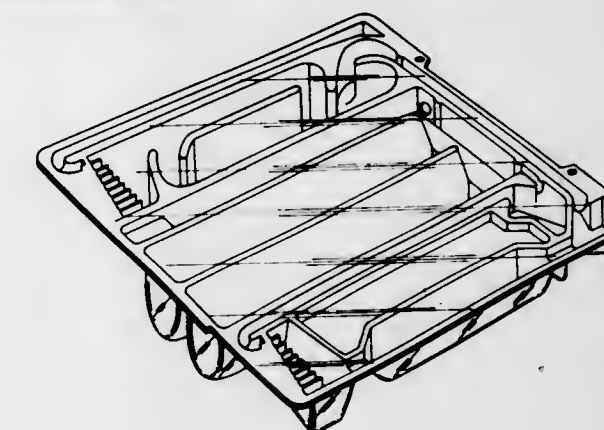
222,310
**COMBINATION BARBECUE PIT, GRILL,
 BOILER AND OVEN**
 Malcolm A. Zaunbrecher, 1007 W. Texas Ave.,
 Rayne, La. 76578
 Filed Aug. 11, 1970, Ser. No. 24,428
 Term of patent 14 years
 Int. Cl. D7-02
 U.S. Cl. D81-10



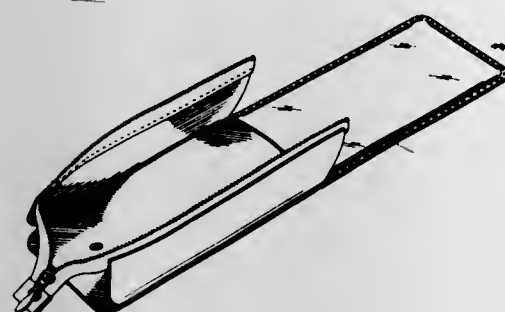
222,311
OUTDOOR COOKER
 Judkins E. Wilkinson and Clarence R. Smith, Birming-
 ham, Ala., assignors to Atlanta Stove Works, Inc.,
 Filed Dec. 4, 1970, Ser. No. 26,288
 Term of patent 14 years
 Int. Cl. D7-02
 U.S. Cl. D81-10



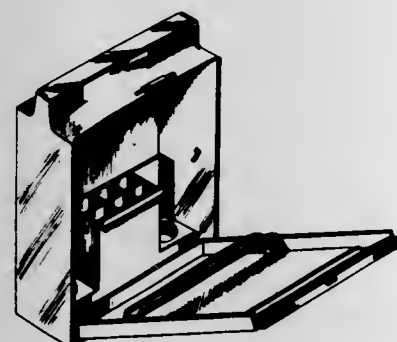
222,312
DRAINAGE CONTAINER
 Leonard D. Kurtz, Woodmere, Robert E. Bidwell, Mel-
 ville, Sidney Mishkin, Great Neck, and Edward J. Hall-
 stein, Smithtown, N.Y., assignors to Deknatel, Inc.,
 Queens Village, N.Y.
 Filed Mar. 19, 1970, Ser. No. 21,965
 Term of patent 14 years
 Int. Cl. D24-02
 U.S. Cl. D83-1



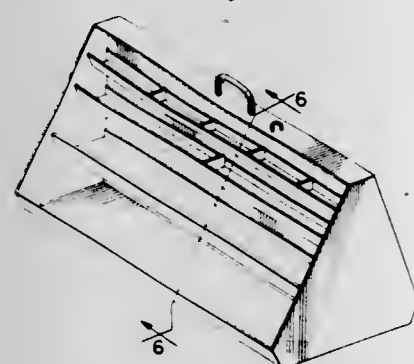
222,313
UMBRELLA CASING
 Harry Mengel, Solingen, Germany, assignor to Kortenschach & Rauh Kommanditgesellschaft, Solingen-Weyer, Germany.
 Filed Aug. 12, 1969, Ser. No. 18,652
 Term of patent 14 years
 Int. Cl. D3—99
 U.S. Cl. D87—1



222,314
TOTE CASE FOR TABLEWARE OR THE LIKE
 Martin A. Jaffe, Bronx, George S. Northrop, Wantagh, and Samuel Braun, Rye, N.Y., assignors to Cellu-Craft Inc., Lake Success, N.Y.
 Filed Aug. 12, 1970, Ser. No. 24,442
 Term of patent 14 years
 Int. Cl. D3—99
 U.S. Cl. D87—1



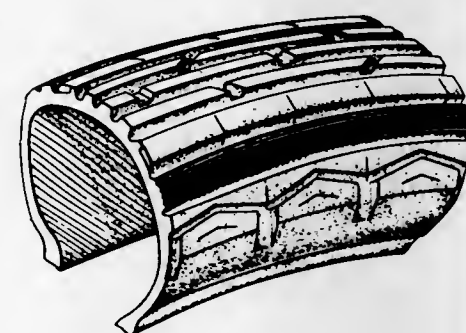
222,315
TOOL KIT
 Adolph Abraham, 1357 Barry Ave., Chicago, Ill. 40657
 Filed Aug. 20, 1970, Ser. No. 24,595
 Term of patent 14 years
 Int. Cl. D3—99
 U.S. Cl. D87—1



222,316
BICYCLE SEAT
 Samuel Wilkens, 4 Leonard Drive, East Rockaway, N.Y. 11518
 Filed Nov. 7, 1969, Ser. No. 19,984
 Term of patent 14 years
 Int. Cl. D12—16
 U.S. Cl. D90—16



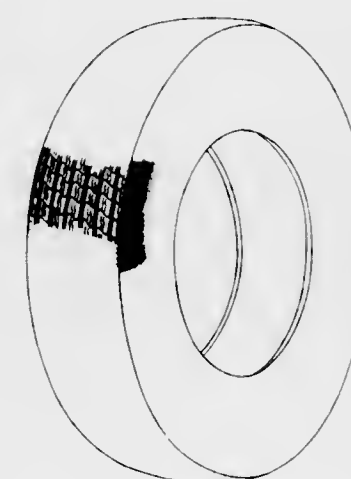
222,317
TIRE
 Yoshio Oita, Tatakabayashi, Japan, assignor to Dunlop Holdings Limited, Birmingham, England
 Filed Sept. 22, 1969, Ser. No. 19,233
 Claims priority, application Japan Mar. 20, 1969
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



222,318
TIRE
 Hamilton Carter Jamison, 14202 Burtchell, Houston, Tex. 77037
 Filed Feb. 6, 1970, Ser. No. 21,304
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



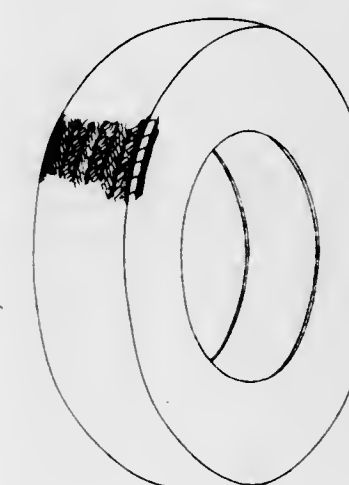
222,319
PNEUMATIC TIRE
 Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
 Filed Feb. 20, 1970, Ser. No. 21,537
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



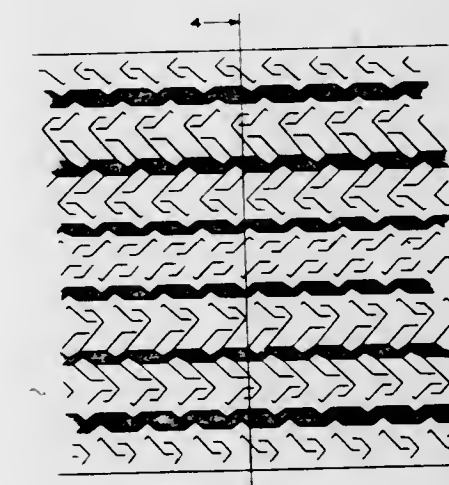
222,320
PNEUMATIC TIRE
 Dale J. Beaudoin, Opelika, Ala., and William K. Pope, Mount Clemens, Mich., assignors to Uniroyal, Inc., New York, N.Y.
 Filed May 18, 1970, Ser. No. 23,030
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



222,321
PNEUMATIC TIRE
 Dale J. Beaudoin, Opelika, Ala., and William K. Pope, Mount Clemens, Mich., assignors to Uniroyal, Inc., New York, N.Y.
 Filed July 2, 1970, Ser. No. 23,808
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



222,322
PNEUMATIC TIRE
 William K. Pope, Mount Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
 Filed July 20, 1970, Ser. No. 24,022
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



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CLASSIFICATION OF PATENTS

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390 : 3.612.036	6 : 3.612.142	50 : 3.612.249	160 : 3.612.308	172 : 3.612.869	239 : 3.612.909
414 : 3.612.037	16 : 3.612.143	51 : 3.612.250	161 : 3.612.309	173 : 3.612.870	240 : 3.612.910
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06 : 3.612.041	160-67 : 3.612.145	53 : 3.612.252	163 : 3.612.311	175 : 3.612.872	242 : 3.612.912
07 : 3.612.039	273 : 3.612.146	54 : 3.612.253	164 : 3.612.312	176 : 3.612.873	243 : 3.612.913
08 : 3.612.040	164-45 : 3.612.147	55 : 3.612.254	165 : 3.612.313	177 : 3.612.874	244 : 3.612.914
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66 : 3.612.045	89 : 3.612.151	59 : 3.612.258	169 : 3.612.317	181 : 3.612.878	248 : 3.612.918
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79 : 3.612.047	113 : 3.612.153	61 : 3.612.260	171 : 3.612.319	183 : 3.612.880	250 : 3.612.920
188 : 3.612.048	114 : 3.612.154	62 : 3.612.261	172 : 3.612.320	184 : 3.612.881	251 : 3.612.921
195 : 3.612.049	123 : 3.612.155	63 : 3.612.262	173 : 3.612.321	185 : 3.612.882	252 : 3.612.922
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215 : 3.612.051	283 : 3.612.157	65 : 3.612.264	175 : 3.612.323	187 : 3.612.884	254 : 3.612.924
260 : 3.612.052	324 : 3.612.158	66 : 3.612.265	176 : 3.612.324	188 : 3.612.885	255 : 3.612.925
283 : 3.612.053	385 : 3.612.159	67 : 3.612.266	177 : 3.612.325	189 : 3.612.886	256 : 3.612.926
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3.612.055	397 : 3.612.161	69 : 3.612.268	179 : 3.612.327	191 : 3.612.888	258 : 3.612.928
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418 : 3.612.061	39 : 3.612.166	74 : 3.612.273	184 : 3.612.332	196 : 3.612.893	263 : 3.612.933
422 : 3.612.060	50 : 3.612.167	75 : 3.612.274	185 : 3.612.333	197 : 3.612.894	264 : 3.612.934
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143 : 3.612.066	111 : 3.612.172	80 : 3.612.279	190 : 3.612.338	202 : 3.612.899	269 : 3.612.939
147 : 3.612.067	122 : 3.612.173	81 : 3.612.280	191 : 3.612.339	203 : 3.612.900	270 : 3.612.940
175 : 3.612.068	156 : 3.612.174	82 : 3.612.281	192 : 3.612.340	204 : 3.612.901	271 : 3.612.941
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53 : 3.612.071	6 : 3.612.177	85 : 3.612.284	195 : 3.612.343	207 : 3.612.904	274 : 3.612.944
88.7 : 3.612.072	267 : 3.612.178	86 : 3.612.285	196 : 3.612.344	208 : 3.612.905	275 : 3.612.945
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3,612,129	3,611,951	3,612,447	3,613,023	3,613,107	3,612,948
3,612,258	3,611,966	3,612,454	3,613,031	3,611,698	3,613,048
3,612,443	3,611,996	3,612,503	3,613,032	3,611,737	3,613,095
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3,612,903	3,612,028	3,612,520	3,613,045	3,611,787	3,612,714
3,612,967	3,612,043	3,612,548	3,613,050	3,611,958	3,612,672
3,612,967	3,612,044	3,612,557	3,613,059	3,612,675	3,612,047
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3,611,439	3,612,068	3,612,627	3,613,097	3,612,732	3,612,309
3,611,441	3,612,070	3,612,635	3,611,476	3,612,748	3,613,073
3,611,444	3,612,073	3,612,639	3,611,736	3,612,749	3,612,132
3,611,509	3,612,074	3,612,643	3,611,994	3,612,752	3,612,132
3,611,515	3,612,078	3,612,659	3,612,024	3,612,793	3,612,800
3,611,516	3,612,098	3,612,660	3,613,111	3,612,800	3,611,450
3,611,548	3,612,105	3,612,662	3,612,182	3,612,858	3,611,464
3,611,561	3,612,116	3,612,662	3,612,185	3,612,858	3,611,466
3,611,569	3,612,122	3,612,664	3,612,185	3,612,858	3,611,466
3,611,573	3,612,124	3,612,670	3,612,185	3,612,858	3,611,466
3,611,605	3,612,163	3,612,722	3,612,185	3,612,858	3,611,466
3,611,606	3,612,176	3,612,741	3,612,185	3,612,858	3,611,466
3,611,613	3,612,177	3,612,742	3,612,185	3,612,858	3,611,466
3,611,618	3,612,186	3,612,744	3,612,185	3,612,858	3,611,466
3,611,619	3,612,196	3,612,745	3,612,185	3,612,858	3,611,466
3,611,621	3,612,196	3,612,745	3,612,185	3,612,858	3,611,466
3,611,625	3,612,201	3,612,759	3,612,185	3,612,858	3,611,466
3,611,631	3,612,212	3,612,788	3,612,185	3,612,858	3,611,466
3,611,644	3,612,232	3,612,801	3,612,185	3,612,858	3,611,466
3,611,709	3,612,260	3,612,819	3,612,185	3,612,858	3,611,466
3,611,726	3,612,269	3,612,821	3,612,185	3,612,858	3,611,466
3,611,742	3,612,299	3,612,823	3,612,185	3,612,858	3,611,466
3,611,763	3,612,316	3,612,845	3,612,185	3,612,858	3,611,466
3,611,785	3,612,319	3,612,869	3,612,185	3,612,858	3,611,466
3,611,813	3,612,322	3,612,871	3,612,185	3,612,858	3,611,466
3,611,814	3,612,323	3,612,873	3,612,185	3,612,858	3,611,466
3,611,822	3,612,324	3,612,878	3,612,185	3,612,858	3,611,466
3,611,826	3,612,333	3,612,890	3,612,185	3,612,858	3,611,466
3,611,831	3,612,337	3,612,898	3,612,185	3,612,858	3,611,466
3,611,859	3,612,355	3,612,907	3,612,185	3,612,858	3,611,466
3,611,864	3,612,389	3,612,908	3,612,185	3,612,858	3,611,466
3,611,885	3,612,391	3,612,916	3,612,185	3,612,858	3,611,466
3,611,891	3,612,396	3,612,921	3,612,185	3,612,858	3,611,466
3,611,914	3,612,397	3,612,939	3,612,185	3,612,858	3,611,466
	3,612,398	3,612,944	3,612,185	3,612,858	3,611,466
	3,612,401	3,612,945	3,612,185	3,612,858	3,611,466
	3,612,402	3,612,988	3,612,185	3,612,858	3,611,466
	3,612,409	3,612,990	3,612,185	3,612,858	3,611,466
	3,612,427	3,612,991	3,612,185	3,612,858	3,611,466
	3,612,442	3,613,001	3,612,185	3,612,858	3,611,466

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3,612,036	3,612,762	3,613,103	3,612,010	3,613,035	3,612,931
3,612,055	3,612,773	26 : Rm.27,183	3,612,079	3,613,049	3,612,974
3,612,069	3,612,774	3,611,445	3,612,128	3,613,056	3,613,074
3,612,071	3,612,848	3,611,451	3,612,412	3,613,058	3,613,080
3,612,093	3,612,854	3,611,462	3,612,455	3,613,088	3,613,086
3,612,095	3,612,857	3,611,486	3,612,572	3,613,112	3,613,087
3,612,121	3,612,922	3,611,500	3,612,625	35 : 3,612,092	3,613,055
3,612,127	3,612,933	3,611,528	3,612,668	3,612,183	3,613,069
3,612,131	3,612,982	3,611,535	3,612,704	3,612,473	3,613,086
3,612,140	3,612,985	3,611,546	3,613,039	3,613,083	3,613,087
3,612,167	3,613,007	3,611,583	3,611,967	36 : Rm.27,185	3,613,101
3,612,202	3,613,038	3,611,636	3,611,477	Rm.27,189	3,611,549
3,612,241	3,613,042	3,611,645	3,611,827	3,611,440	3,611,623
3,612,247	3,613,044	3,611,653	3,612,487	3,611,472	3,611,442
3,612,248	3,611,584	3,611,689	3,613,004	3,611,479	3,612,046
3,612,281	3,611,686	3,611,759	3,612,479	3,611,513	3,612,064
3,612,287	3,611,821	3,611,792	3,612,824	3,611,538	3,612,066
3,612,290	3,611,881	3,611,812	3,611,497	3,611,545	3,612,068
3,612,313	3,612,159	3,611,823	3,611,599	3,611,551	3,612,406
3,612,330	3,612,243	3,611,833	3,611,755	3,611,557	3,612,460
3,612,332	3,612,279	3,611,835	3,612,372	3,611,560	3,612,782
3,612,343	3,612,334	3,611,904	3,612,373	3,611,560	3,612,791
3,612,348	3,612,359	3,611,941	3,612,388	3,611,570	3,612,902
3,612,349	3,612,490	3,611,949	3,612,504	3,611,577	3,611,455
3,612,350	3,612,716	3,611,955	3,612,822	3,611,590	3,611,590
3,612,361	3,613,029	3,612,014	3,612,888	3,611,597	3,611,468
3,612,376	3,611,465	3,612,099	3,613,054	3,611,603	3,611,468
3,612,378	3,611,651	3,612,104	3,613,082	3,611,604	3,611,496
3,612,379	3,611,879	3,612,107	3,613,098	3,611,626	3,611,506
3,612,380	3,611,911	3,612,173	3,611,504	3,611,634	3,611,510
3,612,383	3,612,329	3,612,214	3,611,512	3,611,654	3,611,525
3,612,384	3,612,482	3,612,215	3,611,537	3,611,655	3,611,530
3,612,404	3,612,602	3,612,217	3,611,547	3,611,664	3,611,593
3,612,423	3,612,835	3,612,225	3,611,547	3,611,674	3,611,600
3,612,456	3,612,074	3,612,238	3,611,562	3,611,679	3,611,601
3,612,461	3,612,229	3,612,250	3,611,563	3,611,718	3,611,608
3,612,462	3,612,242	3,612,285	3,611,574	3,611,738	3,611,658
3,612,472	3,612,381	3,612,305	3,611,602	3,611,744	3,611,661
3,612,474	3,612,382	3,612,318	3,611,622	3,611,757	3,611,666
3,612,478	3,612,707	3,612,425	3,611,627	3,611,767	3,611,697
3,612,511	3,612,730	3,612,436	3,611,628	3,611,795	3,611,711
3,612,513	3,612,827	3,612,470	3,611,660	3,611,800	3,611,724
3,612,526	3,611,594	3,612,500	3,611,669	3,611,811	3,611,732
3,612,528	3,611,734	3,612,508	3,611,672	3,611,818	3,611,735
3,612,529	3,612,211	3,612,522	3,611,673	3,611,835	3,611,756
3,612,530	3,612,266	3,612,551	3,611,750	3,611,907	3,611,780
3,612,531	3,612,347	3,612,562	3,611,782	3,611,910	3,611,804
3,612,533	3,612,353	3,612,571	3,611,810	3,611,946	3,611,832
3,612,541	3,612,541	3,612,593	3,611,882	3,611,959	3,611,848
3,612,542	3,611,720	3,612,584	3,611,916	3,611,973	3,611,906
3,612,563	3,611,791	3,612,593	3,611,925	3,611,982	3,611,952
3,612,573	3,611,461	3,612,607	3,611,950	3,611,991	3,611,986
3,612,588	3,611,617	3,612,615	3,611,963	3,611,992	3,611,987
3,612,598	3,611,652	3,612,618	3,611,983	3,611,993	3,612,006
3,612,598	3,611,748	3,612,619	3,612,005	3,611,998	3,612,015
3,612,604	3,611,776	3,612,620	3,612,038	3,612,020	3,612,016
3,612,624	3,611,784	3,612,622	3,612,056	3,612,026	3,612,025
3,612,633	3,611,815	3,612,637	3,612,058	3,612,026	3,612,029
3,612,638	3,611,873	3,612,714	3,612,075	3,612,037	3,612,033
3,612,657	3,611,915	3,612,726	3,612,125	3,612,037	3,612,083
3,612,672	3,611,931	3,612,810	3,612,149	3,612,039	3,612,096
3,612,675	3,612,041	3,612,825	3,612,150	3,612,050	3,612,143
3,612,682	3,612,112	3,612,828	3,612,158	3,612,084	3,612,143
3,612,684	3,612,345	3,612,870	3,612,234	3,612,090	3,612,145
3,612,685	3,612,363	3,613,011	3,612,252	3,612,100	3,612,153
3,612,732	3,612,429	3,613,041	3,612,253	3,612,103	3,612,161
3,612,748	3,612,524	3,613,063	3,612,256	3,612,111	3,612,166
3,612,749	3,612,666	27 : 3,611,457	3,612,256	3,612,208	3,612,169
3,612,752	3,612,755	3,611,473	3,612,326	3,612,221	3,612,194
3,612,793	3,612,809	3,611,478	3,612,331	3,612,233	3,612,195
3,612,800	3,612,836	3,611,629	3,612,336	3,612,261	3,612,209
3,612,858	3,612,997	3,611,630	3,612,339	3,612,262	3,612,218
3,612,924	3,613,089	3,611,665	3,612,357	3,612,271	3,612,220
3,612,940	3,613,093	3,611,714	3,612,417	3,612,272	3,612,254
3,612,966	3,611,552	3,611,843	3,612,418	3,612,293	3,612,264
3,613,008	3,611,568	3,611,851	3,612,458	3,612,295	3,612,278
3,613,009	3,611,719	3,611,897	3,612,590	3,612,358	3,612,292
3,613,040	3,611,743	3,611,930	3,612,631	3,612,365	3,612,296
3,613,074	3,611,797	3,611,933	3,612,640	3,612,431	3,612,304
3,613,090	3,611,867	3,611,938	3,612,653	3,612,435	3,612,325
3,613,109	3,611,886	3,612,059	3,612,654	3,612,441	3,612,342
3,611,526	3,611,918	3,612,089	3,612,656	3,612,449	3,612,367
3,611,527	3,611,922	3,612,168	3,612,687	3,612,453	3,612,419
3,611,589	3,611,969	3,612,265	3,612,688	3,612,468	3,612,426
3,611,725	3,612,030	3,612,274	3,612,689	3,612,501	3,612,464
3,611,741	3,612,160	3,612,306	3,612,701	3,612,532	3,612,469
3,611,745	3,612,270	3,612,344	3,612,715	3,612,538	3,612,477
3,611,802	3,612,276	3,612,410	3,612,753	3,612,555	3,612,495
3,611,834	3,612,413	3,612,496	3,612,767	3,612,587	3,612,545
3,611,838	3,612,534	3,612,514	3,612,780	3,612,594	3,612,553
3,611,852	3,612,549	3,612,515	3,612,805	3,612,636	3,612,568
3,611,858	3,612,559	3,612,556	3,612,837	3,612,642	3,612,580
3,611,905	3,612,612	3,612,559	3,612,852	3,612,646	3,612,586
3,611,935	3,612,630	3,612,601	3,612,865	3,612,651	3,612,591
3,611,947	3,612,634	3,612,690	3,612,881	3,612,652	3,612,595
3,611,995	3,612,644	3,612,724	3,612,885	3,612,658	3,612,599
3,612,013	3,612,655	3,612,764	3,612,887	3,612,677	3,612,632
3,612,226	3,612,691	3,612,833	3,612,896	3,612,678	3,612,733
3,612,230	3,612,705	3,612,904	3,612,914	3,612,679	3,612,787
3,612,291	3,612,750	28 : 3,611,448	3,612,923	3,612,683	3,612,794
3,612,299	3,612,768	29 : 3,611,454	3,612,932	3,612,692	3,612,806
3,612,400	3,612,778	3,611,536	3,612,952	3,612,698	3,612,826
3,612,403	3,612,883	3,611,565	3,612,954	3,612,710	3,612,829
3,612,438	3,612,899	3,611,614	3,612,955	3,612,758	3,612,838
3,612,459	3,612,941	3,611,685	3,613,013	3,612,781	3,612,841
3,612,728	3,612,959	3,611,855	3,613,017	3,612,820	3,612,876

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

39 : 3,612,895 3,612,928 3,612,930 3,612,949 3,612,976 3,613,075 3,613,091 40 : 3,611,733 3,611,856 3,612,088 3,612,097 3,612,144 3,612,192 3,612,294 3,612,377 3,612,696 3,612,993 41 : 3,611,579 3,611,596 3,611,710 3,611,840 3,611,909 3,612,187 3,612,314 3,612,839 3,612,910 3,612,945 3,612,980 42 : 3,611,487 3,611,541 3,611,550 3,611,641 3,611,656 3,611,747 3,611,775 3,611,786 3,611,796 3,611,808 3,611,828 3,611,844 3,611,849	42 : 3,611,857 3,611,862 3,611,962 3,611,970 3,612,002 3,612,065 3,612,148 3,612,206 3,612,228 3,612,289 3,612,327 3,612,328 3,612,353 3,612,360 3,612,369 3,612,448 3,612,471 3,612,475 3,612,480 3,612,481 3,612,483 3,612,484 3,612,535 3,612,567 3,612,569 3,612,583 3,612,610 3,612,621 3,612,649 3,612,669 3,612,700 3,612,717 3,612,727 3,612,738 3,612,739 3,612,775 3,612,779 3,612,790 3,612,795 3,612,798	42 : 3,612,803 3,612,856 3,612,859 3,612,874 3,612,882 3,612,901 3,612,912 3,612,992 3,613,010 3,613,015 3,613,043 3,613,051 3,613,052 3,613,053 3,613,068 3,613,080 3,613,105 43 : 3,611,470 3,612,600 44 : 3,612,139 3,613,002 45 : 3,611,695 3,612,957 3,612,963 46 : 3,612,311 3,612,356 3,613,025 47 : 3,611,637 3,611,681 3,611,699 3,611,878 3,612,219 3,612,523 3,612,766 3,612,868 48 : 3,611,446 3,611,447 3,611,478 3,611,511 3,611,648	48 : 3,611,667 3,611,739 3,611,799 3,611,880 3,611,889 3,611,913 3,611,924 3,611,957 3,611,961 3,611,975 3,611,981 3,612,021 3,612,081 3,612,082 3,612,102 3,612,178 3,612,179 3,612,180 3,612,181 3,612,189 3,612,191 3,612,210 3,612,263 3,612,280 3,612,286 3,612,390 3,612,432 3,612,433 3,612,434 3,612,507 3,612,509 3,612,521 3,612,579 3,612,589 3,612,596 3,612,613 3,612,808 3,612,877 3,612,935 3,612,986	48 : 3,612,987 3,613,012 3,613,070 3,613,071 3,612,221 3,611,866 3,611,871 3,612,034 3,612,085 3,612,255 3,612,364 3,612,893 3,612,979 3,613,061 51 : 3,611,520 3,611,612 3,611,678 3,611,727 3,611,761 3,611,798 3,611,860 3,611,932 3,612,154 3,612,222 3,612,277 3,612,747 3,613,092 3,613,099 52 : 3,611,839 53 : 3,611,647 3,611,974 3,612,042 3,612,151 3,612,485 3,612,519 3,612,576 3,612,597 3,612,673 3,612,797 3,612,875	53 : 3,612,917 3,612,998 54 : 3,611,491 3,611,611 55 : 3,611,449 3,611,452 3,611,453 3,611,481 3,611,567 3,611,571 3,611,638 3,611,684 3,611,705 3,611,829 3,611,874 3,611,890 3,611,919 3,611,985 3,612,049 3,612,053 3,612,164 3,612,203 3,612,366 3,612,374 3,612,491 3,612,606 3,612,626 3,612,746 3,612,769 3,612,786 3,612,796 3,612,815 3,612,840 3,612,855 3,612,919 3,612,936 3,612,968 3,612,969 3,613,046 56 : 3,613,076
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Design Patents

1 : 222,311 222,320 222,321 6 : 222,225 222,226 222,238 222,243 222,249 222,250 222,252 222,253 222,254 222,260	6 : 222,284 222,290 222,293 222,296 8 : 222,289 10 : 222,269 12 : 222,237 17 : 222,223 222,233 222,235 222,267 222,279 222,282	17 : 222,308 222,315 22 : 222,276 222,310 24 : 222,228 222,231 26 : 222,227 222,251 222,303 222,304 222,319 222,322 27 : 222,297	27 : 222,298 222,300 222,315 28 : 222,257 222,258 222,259 29 : 222,281 34 : 222,230 222,262 222,270 222,285 222,286 222,287 222,292	36 : 222,224 222,229 222,236 222,248 222,255 222,261 222,277 222,295 222,305 222,306 222,312 222,314 222,316	37 : 222,283 42 : 222,232 222,242 222,263 222,294 48 : 222,241 222,268 222,278 222,280 222,318 51 : 222,240 222,288 53 : 222,309
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U. S. GOVERNMENT PRINTING OFFICE: O—1971

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 19, 1971

Volume 891

Number 3

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PATENT OFFICE NOTICES

Recognition of Firms of Attorneys and Agents

The notice of August 5, 1971, appearing in the *OFFICIAL GAZETTE* September 7, 1971 (890 O.G. 2) is revised as follows. The originally announced period terminating October 1, 1971, relating to appointments of firms of attorneys or agents, filed in the Patent Office after July 2, 1971, is hereby extended. Accordingly, until further notice, any power of attorney or authorization of agent naming a firm, received in the Patent Office after July 2, 1971, will be construed as a direction to consider the firm name and address as the correspondence address of the application.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.
Sept. 27, 1971.

Machine Search Service

The Mechanized Search Service presently used by the Patent Office in making examiner searches in the field of Data Processing is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of \$40.00 each. The instruction manual "Search System Manual for the Field of Data Processing-ICIREPAT System DP" is included as part of the "package." A renewal fee of \$35.00 per year entitles the subscriber to receive a set of cards for new issues.

This file which presently exists for mechanized searching consists of:

Field	Class	Subclass	File content ¹
Data processing.....	235	157	2,965 U.S. Patents.
	340	172.5	622 Literature articles.

¹ Approximate number of documents in the files as of June 30, 1971.

The scope and organization of this file is described in the publication "Search System Manual for the Field of Data Processing-ICIREPAT System DP."

A substantial portion of this publication is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforescribed publication. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of Data Processing may be directed to the Supervisory Primary Examiner of Group Art Unit 237.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is \$5.00. Copies of all U.S. patent and non-patent literature references will be supplied, if requested as part of the search service, for additional cost at established

rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address request to the Patent Office, Office of Search Systems and Documentation, Washington, D.C., 20231.

After any necessary consultation with the Examiner in preparing the search query, address search requests together with the completed code sheet and fee to the Commissioner of Patents, Washington, D.C., 20231. Attention should be directed to the Office of Search Systems and Documentation, Office of the Administrator.

Patent Suits

-Notices under 35 U.S.C. 290; Patent Act of 1952

2,662,814, J. R. Swihart, METHOD AND COMPOSITION FOR CHEMICALLY POLISHING METALS; 3,072,515, Von Smolinski, Berst and Alt, same; 3,536,017, Mickelson, Roberts and Lancy, PROCESS FOR SURFACE TREATMENT OF METAL EXPANSION ALLOYS, filed Oct. 3, 1969, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-1312, *The Diversy Corporation v. Panther Chemical Company*. Consent judgment, plaintiff is owner of patents in suit and defendant is permanently enjoined, May 6, 1971.

2,906,626, J. H. Sassano, OUTSIDE SLIDING WINDOW SHUTTER; 3,452,477, same, EXTERIOR SLIDING WINDOW SHUTTERS, filed Aug. 28, 1970, D.C., S.D. Fla. (Miami), Doc. 70-1257, *Weather Control Shutters v. Bernardo Aluminum Fabricators, Inc.* Order, by stipulation, plaintiffs claim dismissed with prejudice; defendants' counterclaim dismissed without prejudice, May 11, 1971.

2,962,764, Trojanowski and Brandt, PROCESS FOR THE MANUFACTURE OF MOLDED ARTICLES; 2,962,767, same, MOLDING PROCESS; 3,216,000, same, APPARATUS FOR THE MANUFACTURE OF MOLDED ARTICLES; 3,556,833, M. Nirenberg, APPARATUS FOR THE MANUFACTURE OF MULTICOLORED AND IRIDESCENT MOLDINGS, filed Feb. 23, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-65, *Oceana International, Inc. v. Seymour I. Richman*. Same, filed Apr. 23, 1971, D.C., S.D.N.Y., Doc. 71-C-1812, *Oceana International Inc. v. Seymour I. Richman*.

2,962,767. (See 2,962,764.)

3,072,515. (See 2,662,814.)

3,216,000. (See 2,962,764.)

3,500,700. (See 3,317,320.)

3,317,320, R. L. Reber, DUO RESIST PROCESS; 3,401,306, Bolvin and Bolan, REVERSE BIAS SECOND BREAKDOWN PROTECTOR; 3,300,700, Reznick and Nussear, ATTACHING LEADS TO SEMICONDUCTORS; 3,347,771, Reznick and Nodding, LEAD-TIN ALLOY PLATING FIXTURE FOR SILICON; 3,401,338, R. W. Bolvin, TESTER FOR SEMICONDUCTOR DEVICES HAVING A ZENER DIODE CONTROLLED BIAS REMOVAL PROTECTION CIRCUIT, filed May 18, 1971, D.C.N.J. (Trenton), Doc. 728-71, *Soltron Devices, Inc. v. Power Physics Corporation et al.*

3,347,771. (See 3,317,320.)

3,358,068, R. A. Gault, ELECTROMECHANICAL TRANSDUCER, filed May 5, 1971, D.C., S.D.N.Y., Doc. 71-C-1991, *GTS Corporation v. Becker Electronics Mfg. Corp.*

3,401,306. (See 3,317,320.)

3,401,338. (See 3,317,320.)

3,401,594, G. R. Peterson, Jr., CHORD BAR FOR MULTISTRINGED INSTRUMENT, filed Apr. 30, 1969, D.C., N.D. Tex. (Dallas), Doc. CA 3-3142-C, *Oscar Schmidt International, Inc. v. Rhythm Band, Inc.* Consent judgment, patent valid; defendant has infringed and permanently enjoined, June 7, 1971.

3,404,334, C. L. Marshall, COLOR TELEVISION TEST APPARATUS, filed Jan. 11, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71-C-21, *Cecil L. Marshall v. Radio Corporation of America*.

OCTOBER 19, 1971

U. S. PATENT OFFICE

887

3,406,572, F. C. Marino, CONTROLLED AMPLITUDE FREQUENCY SHIFT SIGNAL GENERATOR; 3,472,448, Wolf, Marino, Simon and Kummer, RECORDING SYSTEM FOR BUSINESS MACHINES, filed May 21, 1971, D.C., N.D. Ill. (Chicago), Doc. 71-1249, *Digtronics Corporation v. Jewel Companies*.

3,400,916, Billig and Schleeweiss, OVAL SWIMMING POOL, filed June 3, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-677, *Bitor Corporation v. Atero Manufacturing Co., Inc.*

3,415,068, Hohbach and Davis, MAKING CHROMATED BLOOD PRODUCTS FOR USE IN ALKALINE BLOOD GLUES OF HIGH VISCOSITY, filed June 3, 1971, D.C. Oreg. (Portland), Doc. C-71-388, *Pacific Adhesives Company, Inc. v. The Rath Packing Company*.

3,419,876, Edwards and Winterstein, STREAMLINED ANTENNA AND METHOD OF MAKING THE SAME, filed May 18, 1971, D. C. Conn. (New Haven), Doc. 14410, *Tenatronics, Ltd., Inc. v. Yankee Metal Products Corporation*.

3,452,477. (See 2,906,626.)

3,472,488. (See 3,406,572.)

3,478,875, J. H. Roberts, METHOD AND APPARATUS FOR SEPARATING NUT MEATS FROM SHELLS, filed May 18, 1970, D.C., M.D. Ala. (Montgomery), Doc. 3080-N, *James H. Roberts, and Meyer Machine Company, Div. RAMO v. Sheldon Martin and Montgomery Pecan Company*. Order of dismissal upon parties' compromise settlement, Apr. 15, 1971.

3,479,919, J. Lidsky, PRONGED FASTENERS FOR STRUCTURAL MEMBERS, filed Apr. 5, 1971, D.C., S.D. Fla. (Miami), Doc. 71-535-C-TC, *Ronel Corp., etc. v. Carroll Sidney Guyon*.

3,482,324, J. K. Samhat, COMBINED OPTICAL SIGHT AND CENTER PUNCH, filed Nov. 12, 1970, D.C., C.D. Calif. (Los Angeles) Doc. 70-2545-EC, *Jack K. Samhat v. Barton Tool &*

Engineering Co. and David L. Sawyer. Final judgment, patent is valid, defendant's have infringed and are permanently enjoined, Apr. 23, 1971.

3,482,490, A. V. Thomas, STRIPPER FOR INTERMITTENT SPIRAL TUBE WINDER, filed Dec. 12, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2575, *Precision Paper Tube Company v. Chester Patulski et al.* Voluntary dismissal by plaintiff under Rule 41 (a) (1), Apr. 27, 1971.

3,502,127, Nathanson and Thompson, MEAT CUTTING MACHINE, filed May 20, 1971, D.C. Mass. (Boston), Doc. 71-1041-M, *Doro-Mayo Equipment Company, Inc. v. National Packing Machinery Company*.

3,511,464, B. L. Doll, CORNER PAD AND BLANK, filed June 14, 1971, D.C., M.D.N.C. (Greensboro), Doc. C-129-G-71, *Cellu Products Company v. Jiffy Manufacturing Co.*

3,521,675, J. A. Dussich, CONTAINER CONSTRUCTION AND USE, filed May 18, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-589, *Joseph A. Dussich v. Lefrak Organization, Inc.*

3,523,607, Gillemot and Thompson, SERVICE WIRE ENCAPSULATING KIT, filed Apr. 13, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-885-DWW, *Communications Technology Corp., George W. Gillemot, John T. Thompson v. The Dester Corp.*

3,523,679, R. A. Clay, AEROSOL ACTUATED JACK, filed Apr. 21, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-965-JWC, *Robert A. Clay v. The B. F. Goodrich Company*.

3,530,017. (See 2,662,814.)

3,556,833. (See 2,962,764.)

D. 184,739, E. L. Kanter, TOOTHBRUSH AND TOOTH-PASTE HOLDER, filed July 28, 1970, D.C., E.D. Va. (Norfolk), Doc. 542-70-N, *Eugene L. Kanter v. Colgate-Palmolive Company*. Stipulation, dismissed with prejudice, Apr. 22, 1971.

Certificates of Correction for the Week of Oct. 19, 1971

Re. 27,042	3,558,498	3,573,344	3,577,330
Re. 27,141	3,560,257	3,573,453	3,577,422
D. 220,881	3,560,491	3,573,461	3,577,841
D. 220,533	3,560,734	3,573,813	3,577,997
3,428,994	3,561,436	3,573,910	3,578,032
3,435,120	3,562,422	3,573,931	3,578,301
3,436,276	3,562,633	3,574,055	3,578,793
3,463,730	3,563,110	3,574,183	3,578,888
3,472,038	3,564,107	3,574,316	3,578,956
3,510,448	3,564,120	3,574,360	3,579,184
3,527,665	3,564,314	3,574,622	3,580,138
3,528,834	3,565,495	3,574,627	3,581,011
3,533,817	3,565,841	3,574,841	3,581,125
3,540,977	3,568,704	3,574,986	3,581,142
3,542,874	3,569,603	3,575,215	3,581,486
3,543,089	3,569,743	3,575,422	3,581,610
3,553,172	3,570,243	3,575,934	3,581,990
3,555,513	3,571,778	3,575,959	3,582,377
3,556,455	3,572,035	3,576,489	3,582,654
3,556,694	3,572,153	3,576,643	3,582,797
3,557,154	3,572,698	3,576,983	3,584,090
3,557,405	3,572,700	3,577,266	3,584,536

Dedications

3,545,718.—*Kenneth A. Shale*, Garrettsville, Ohio. REMOVABLE MOLD CORE. Patent dated Dec. 8, 1970. Dedication filed Aug. 18, 1971, by the assignee, *Continental Oil Company*.

Hereby dedicates to the Public the entire remaining term of all claims of said patent.

3,552,863.—*Douglas H. Smith*, San Carlos, Calif. METHOD AND APPARATUS FOR COMPARING THE TRANSMITTANCE OF A SAMPLE AND A STANDARD. Patent dated Jan. 5, 1971. Dedication filed Aug. 23, 1971, by the assignee, *Beckman Instruments, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,558,232.—*Victor J. MacCosham*, Menlo Park, Calif. HEATING APPARATUS FOR REACTION KINETICS INVESTIGATIONS. Patent dated Jan. 26, 1971. Dedication filed Aug. 23, 1971, by the assignee, *Beckman Instruments, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,319,127.—*Stanley E. Zocholl*, Philadelphia, Pa., and *James W. Lipnitz*, Cherry Hill, N.J. STATIC OVERCURRENT RELAY. Patent dated May 9, 1967. Disclaimer filed June 7, 1971, by the assignee, *I-T-E Circuit Breaker Company*.

Hereby enters this disclaimer to claims 1, 2, 6 and 7 of said patent.

3,460,362.—*Gilbert Innes Kilgour*, Gartocharn, and *George Edward Ziegler*, Balloch, Alexandria, Scotland. SPIRAL APPARATUS FOR THE FLUID TREATMENT OF FIBRICS IN ROPED FORM. Patent dated Aug. 12, 1969. Disclaimer filed June 3, 1971, by the assignee, *United Merchants & Manufacturers, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4 and 13 of said patent.

3,508,911.—*John Y. Riedel*, Bethlehem, Pa. LOW CARBON STEEL WITH TITANIUM ALUMINUM AND BORON. Patent dated Apr. 28, 1970. Disclaimer filed Aug. 24, 1971, by the assignee, *Bethlehem Steel Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 20, 1987.

Patents Available for Licensing or Sale

3,477,446. HAIR-TREATING METHOD AND APPARATUS. G. J. Terrenzio et al. Correspondence to: Robert K. Youtie, Suite 2338, P.S.F.S. Bldg., 12 S. 12th St., Philadelphia, Pa., 19107.

3,541,362. ELECTROMAGNETIC GENERATORS. Robert Prouitt. Correspondence to: Southwest International, Inc., P.O. Box 374, Albuquerque, N. Mex., 87103.

3,549,441. METHOD OF PRODUCING A HOLLOW ARTICLE HAVING A DECORATIVE APPEARANCE. William J. and Robert H. Mesinger, Durant Ave., Bethel, Conn., 06801.

3,585,992. TRACTION APPARATUS. Elmer L. Vessels, 8021 Stevenson Ave., Sacramento, Calif., 95828.

3,596,077. ROTARY SUPPORT. Matilda M. Miazga. Correspondence to: Sherman Levy, Washington Bldg., 15th St. and New York Ave. NW, Washington, D.C., 20005.

3,598,272. SELF OPENING BOTTLE CAP. Jose A. Bustamante. Correspondence to: Sheldon I. Cohen, Pennsylvania Bldg., Washington, D.C., 20004.

3,598,404. EXERCISING APPARATUS INCLUDING PIVOTALLY CONNECTED WEIGHT SUPPORTING UNITS. George E. Bowman. Correspondence to: Dressler, Goldsmith, Clement & Gordon, 1825 Prudential Plaza, Chicago, Ill., 60601.

The following patent is available for licensing by the Department of Health, Education, and Welfare as provided by Title 45 C.F.R. Section 6.3.

Inquiries should be addressed to: Mr. Norman J. Latker, Chief, Patent Branch, % National Institutes of Health, Room 5A03, Westwood Bldg., Bethesda, Md., 20014.

3,588,512. APPARATUS USING RADIATION SENSITIVE SWITCH FOR SIGNALLING AND RECORDING DATA.

General Electric Company is prepared to grant non-exclusive licenses under the following 76 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 4 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,549,847. GRAPHITE SUSCEPTOR.

3,585,441. SHOCK IONIZATION GAS ACCELERATOR.

3,591,466. COMPOSITE STRUCTURE PRODUCTION.

3,578,520. THERMAL INSULATION AND BOND FOR SOLID FUEL MOTORS AND METHOD OF MAKING SAME.

Applications for license under the following 13 patents may be addressed to: Patent Counsel, LSQT-I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,099,607. VAPOR RECIRCULATION DISTILLATION PROCESS AND APPARATUS.

3,175,962. FALLING FILM EVAPORATOR.

3,190,817. COMPRESSION DISTILLATION APPARATUS.

3,270,780. COMPOSITE HEAT EXCHANGER TUBE STRUCTURE.

3,293,153. METHOD AND APPARATUS FOR DIFFUSION DISTILLATION.

3,334,023. MULTI-STAGE EVAPORATING APPARATUS.

3,397,730. LIQUID FEED DISTRIBUTOR.

3,452,814. BELL-END CONDENSER TUBES.

3,489,034. EVACUATED GEAR CASING.

3,563,850. ELECTRICAL INSULATION CONTAINING EPOXY RESIN, BIS(2,3-EPOXY-CYCLOPENTYL) ETHER AND RESORCINOL FORMALDEHYDE RESIN.

3,566,010. HEAVY DUTY INSULATING SUPPORT CONDUCTOR.

3,577,733. RAPID LOADING OF STEAM TURBINES.

3,579,006. LIQUID COOLED COLLECTOR RINGS FOR DYNAMOELECTRIC MACHINE.

Applications for license under the following 16 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,353,368. COMBINATION EVAPORATOR AND RADIANT HEATER DEFROST MEANS.

3,394,559. REFRIGERATOR INCLUDING DEFROST MEANS.

3,436,931. COMBINATION EVAPORATOR AND RADIANT HEATER DEFROST MEANS.

3,457,756. FINNED HEAT EXCHANGER TUBING AND METHOD OF MANUFACTURE THEREOF.

3,532,331. GAS VALVE CONTROL.

3,536,308. IMPROVED CONDITION RESPONSIVE FLUID CONTROL ARRANGEMENT FOR A CLOTHES DRYER.

3,541,814. EXTRACTION SYSTEM FOR WASHING MACHINE.

3,550,405. POSITIVE FILL CONTROL AND WEIGHT DISTRIBUTION SYSTEM FOR AN AUTOMATIC WASHER.

3,556,446. SELF-STABILIZING SUSPENSION SYSTEM.

3,559,426. COVER FOR WASHING MACHINE TUB.

3,570,274. INFINITE SPEED CONTROL FOR AUTOMATIC WASHER.

3,574,254. TOOL FOR INSTALLING FEMALE ELECTRICAL TERMINALS.

3,575,021. DISPENSING CUP HAVING SIDES WHICH UNFOLD UNDER CENTRIFUGAL FORCE.

3,578,016. ANTISIPHON FLUID INLET MEANS.

3,582,697. COMBINATION MOTOR-CLUTCH APPARATUS.

3,585,822. PROPULSION SYSTEM FOR AUTOMATIC WASHER.

3,383,977. METHOD AND APPARATUS FOR INDICATING THE AIM OF PROJECTION-TYPE LAMPS.

3,384,770. ELECTROLUMINESCENT DISPLAY DEVICE HAVING FOLDED ELEMENTS.

3,384,781. SELF-CONTAINED BATTERY-POWERED ELECTRIC INCANDESCENT LAMP.

3,390,311. SELENO-TELLURIDE P-N JUNCTION DEVICE UTILIZING DEEP TRAPPING STATES.

3,409,402. STABILIZATION OF CUBIC SILICON CARBIDE.

3,420,646. LAMP BRIDGE MAKING METHOD AND APPARATUS.

3,430,088. WIRE TERMINAL ELECTROLUMINESCENT DEVICE AND MANUFACTURE.

3,435,270. ELECTROLUMINESCENT DISPLAY DEVICE WITH INDICIA ELECTRODES AND CIRCUIT LEADS OF METAL FOIL.

3,441,771. LIGHT PROJECTION DEVICE AND LIGHT SOURCE SUPPORT MEANS THEREFOR.

3,454,053. COILED FILAMENT FORMING APPARATUS.

3,458,756. INCANDESCENT FLASHER LAMP HAVING A CUTOFF MEMBER CONNECTED IN PARALLEL WITH THE FILAMENT.

3,458,779. SiC P-N JUNCTION ELECTROLUMINESCENT DIODE WITH A DONOR CONCENTRATION DIMINISHING FROM THE JUNCTION TO ONE SURFACE AND AN ACCEPTOR CONCENTRATION INCREASING IN THE SAME REGION.

3,461,522. METHOD OF MANUFACTURING ELECTROLUMINESCENT DISPLAY DEVICES.

3,461,921. MANUFACTURE OF COILED LAMP FILAMENTS.

3,462,209. METHOD OF MAKING VACUUM TYPE ELECTRIC INCANDESCENT LAMPS.

3,462,605. SEMICONDUCTOR LIGHT-EMITTER AND COMBINATION LIGHT-EMITTER-PHOTOCELL WHEREIN THE REFLECTOR OF THE LIGHT EMITTER IS COMPRISED OF A MATERIAL DIFFERENT FROM THAT OF THE LIGHT EMITTER.

3,475,641. ELECTRIC INCANDESCENT LAMP AND MOUNT STRUCTURE WITH LEADING-IN WIRES HAVING INTURNED OFFSET INNER ENDS.

3,484,716. HIGH DUTY CYCLE LASER DEVICE.

3,503,812. ELECTROLUMINESCENT CELL AND METHOD OF MAKING THE SAME.

3,510,717. ELECTRIC GLOW DISCHARGE DEVICE WITH TELESOPED ELECTRODES.

3,510,732. SOLID STATE LAMP HAVING A LENS WITH RHODAMINE OR FLUORESCENT MATERIAL DISPERSED THEREIN.

3,510,733. SEMICONDUCTIVE CRYSTALS OF SILICON CARBIDE WITH IMPROVED CHROMIUM-CONTAINING ELECTRICAL CONTACTS.

3,514,825. METHOD OF MANUFACTURING ELECTROLUMINESCENT DISPLAY DEVICES.

3,520,740. METHOD OF EPITAXIAL GROWTH OF ALPHA SILICON CARBIDE BY PYROLYTIC DECOMPOSITION OF A MIXTURE OF SILANE, PROPANE AND HYDROGEN AT ATMOSPHERIC PRESSURE.

3,529,200. LIGHT-EMITTING PHOSPHOR-DIODE COMBINATION.

3,534,354. DISCHARGE INDICATOR FOR RECHARGEABLE BATTERIES.

3,541,375. BARRIER LAYER ELECTROLUMINESCENT DEVICES.

3,549,434. LOW RESISTIVITY GROUP IIb-VIb COMPOUNDS AND METHOD OF FORMATION.

3,550,227. LAMP MOUNT MAKING APPARATUS.

Applications for license under the following 46 patents may be addressed to: Patent Counsel, Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio, 44112.

3,290,175. SEMICONDUCTOR PHOTOVOLTAIC DEVICES.

3,300,671. SURFACE-ADJACENT JUNCTION ELECTROLUMINESCENT DEVICE.

3,302,051. SEMICONDUCTIVE ALLOY LIGHT SOURCE HAVING IMPROVED OPTICAL TRANSMISSIVITY.

3,303,432. HIGH POWER SEMICONDUCTOR LASER DEVICE.

3,305,486. SEMICONDUCTOR MATERIAL AND METHOD OF MAKING THE SAME.

3,315,111. FLEXIBLE ELECTROLUMINESCENT DEVICE AND LIGHT TRANSMISSIVE ELECTRICALY CONDUCTIVE ELECTRODE MATERIAL THEREFOR.

3,320,466. DOUBLE-ENDED ELECTRIC LAMP AND ASSOCIATED U-SHAPED METAL CLIP.

3,330,983. HETEROJUNCTION ELECTROLUMINESCENT DEVICES.

3,333,135. SEMICONDUCTIVE DISPLAY DEVICE.

3,335,311. GLOW DISCHARGE DEVICE HAVING PARALLEL PERMANENT MAGNETIC ROD ELECTRODES.

3,341,916. METHOD OF MANUFACTURING ELECTROLUMINESCENT DISPLAY DEVICES.

3,342,848. N,N'-DIALKYL - N,N'-DICIANOALKYL-OPHTHALAMIDES.

3,346,757. ELECTROLUMINESCENT LAMP HAVING AN ALUMINUM ELECTRODE, A LAYER OF DIELECTRIC MATERIAL AND AN ALUMINUM OXIDE LAYER DISPOSED BETWEEN THE ALUMINUM ELECTRODE AND THE DIELECTRIC LAYER.

3,346,758. ELECTROLUMINESCENT LAMP HAVING AN ALUMINUM ELECTRODE WITH AN ALUMINUM OXIDE LAYER DISPOSED BETWEEN THE ALUMINUM ELECTRODE AND THE ELECTROLUMINESCENT MATERIAL.

3,346,761. INCANDESCENT LAMP WITH A TUNGSTEN FILAMENT WITH TANTALUM IMBEDDED IN THE SURFACE TO ACT AS A GETTERING AGENT.

3,364,378. ELECTRIC INCANDESCENT LAMP UNIT BUILT-IN FUSE.

3,379,174. APPARATUS FOR APPLYING A COATING ON TO A LOCALIZED REGION OF THE INSIDE OF A HOLLOW ARTICLE.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 5, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-01-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—J. MARCUS, Director..... Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oro and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-20-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-14-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-07-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	1-28-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-10-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-21-70
PHYSICS, GROUP 260—R. L. EVANS, Director..... Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-03-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts; Household, Personal and Fine Arts.	10-02-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-13-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	7-06-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director..... Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	10-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-10-70

Expiration of patents: The patents within the range of numbers indicated below expire during October 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 22, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

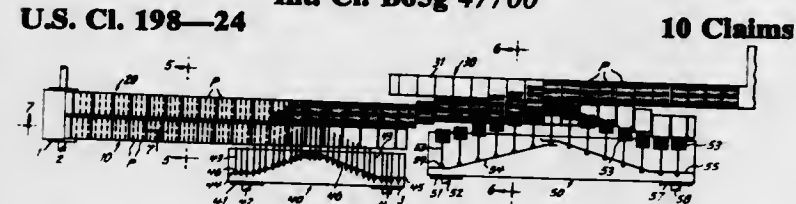
Patents..... Numbers 2,690,560 to 2,692,986, inclusive
Plant Patents..... Numbers 1,312 to 1,327, inclusive

REISSUES

OCTOBER 19, 1971

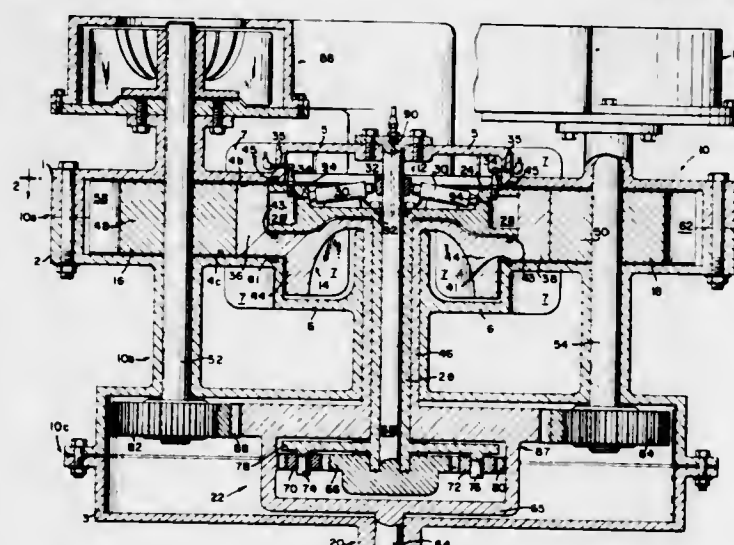
Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,190
METHOD AND APPARATUS FOR ORIENTING PAD-LIKE ARTICLES
Louis F. Porcaro, Chicago, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Original No. 3,409,115, dated Nov. 5, 1968, Ser. No. 634,540, Apr. 28, 1967. Application for reissue Mar. 3, 1969, Ser. No. 807,463
Int. Cl. B65g 47/00
U.S. Cl. 198—24



A machine and method for unscrambling a continuous stream of pad-like articles and orienting these articles into two columns of spaced rows moving at the same speed by the use of a pair of flanking conveyers which extend parallel to one another. The individual articles in these rows are upstanding and laterally aligned in their smallest dimension due to transverse open receptacles separated by closed receptacles in said conveyers, the conveyers being sufficiently offset so that the rows in each column are in lateral alignment with the spaces between the rows in the other column. The closed receptacles are then opened to form empty receptacles and the spaced rows from one column are moved laterally into the spaces in the remaining column as the conveyers move at constant speed.

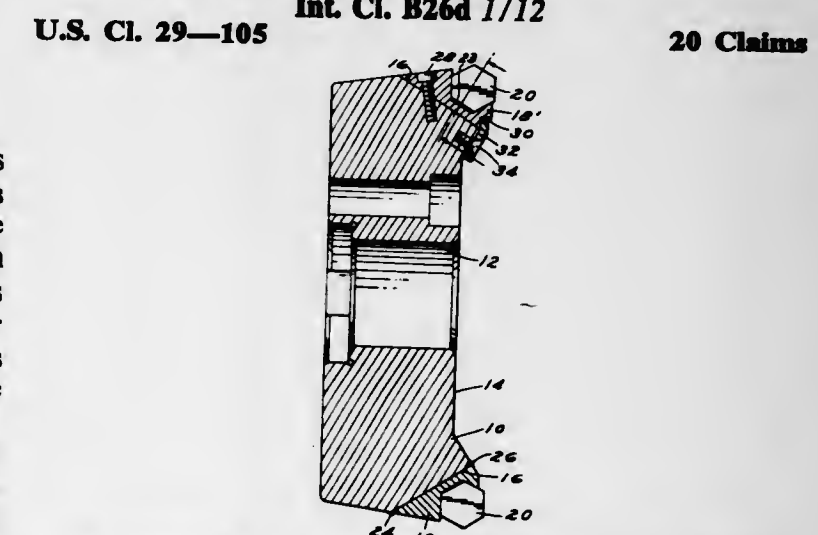
27,191
ROTARY PISTON DEVICE
Frank J. Skrob, deceased, late of Twisp, Wash., by George M. Gibson, executor, assignor to Skrob, Incorporated, Seattle, Wash.
Original No. 3,354,871, dated Nov. 28, 1967, Ser. No. 511,142, Dec. 2, 1965. Application for reissue Nov. 4, 1969, Ser. No. 872,478
Int. Cl. F02b 53/00
U.S. Cl. 123—8.07



A rotary piston device having a housing with inlet and exhaust ports, central rotary means with a plurality of chambers communicating with an annular chamber, planetary piston means having piston members revolvable around said central rotary means, rotary cut-off means extending into said annular chamber and having recesses for

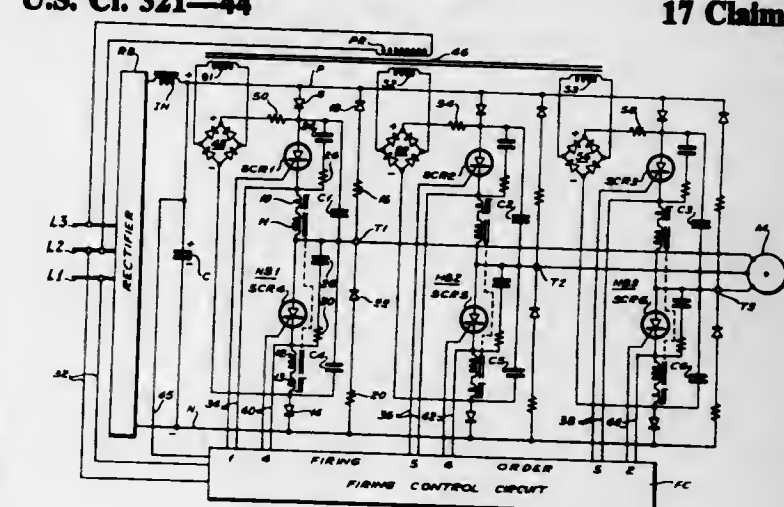
receiving said piston members, a shaft secured to said planetary piston means, and means to rotate said rotary cut-off means.

27,192
FINE PITCH MILLING CUTTER IMPROVEMENT
Victor Milewski, Troy, Mich., assignor to The Valeron Corporation
Original No. 3,391,438, dated July 9, 1968, Ser. No. 568,035, July 26, 1966. Application for reissue Nov. 10, 1969, Ser. No. 871,493
Int. Cl. B26d 1/12
U.S. Cl. 29—105



The present invention relates to a face milling cutter having an annular body with a plurality of closely spaced seating slots which extend through an annular rim portion at an oblique angle wherein the said slots receive seating anvils that are retained by a permanent fixing means and wherein the said anvils seat and locate cutting insert in proper cutting registry.

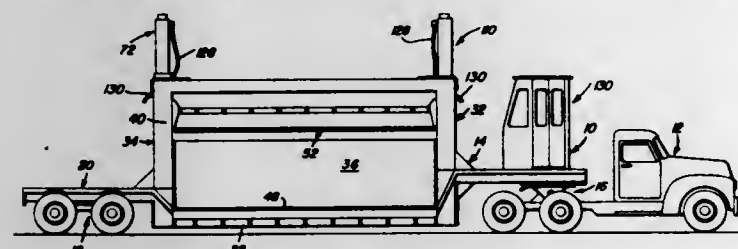
27,193
ELECTRONIC INVERTERS WITH SEPARATE SOURCE FOR PRECHARGING COMMUTATING CAPACITORS
Robert L. Risberg, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Original No. 3,355,654, dated Nov. 28, 1968, Ser. No. 381,969, July 13, 1964. Application for reissue Nov. 12, 1969, Ser. No. 871,501
Int. Cl. H02m 7/48
U.S. Cl. 321—44



A three-phase solid state inverter having semi-conductor controlled rectifiers for switching and inductance-

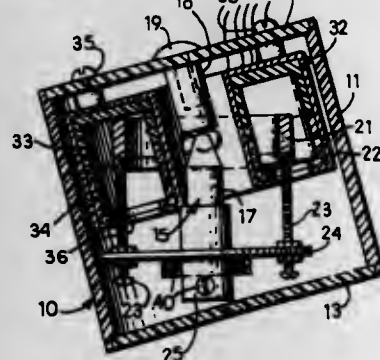
capacitance circuits for commutation of the SCR's including a separate and electrically isolated supply for each phase for precharging the commutating capacitors thereof.

27,194
MOBILE VEHICLE PRESS
Robert L. Flanagan, Dallas, Tex., assignor to WDS, Inc., Oklahoma City, Okla.
Original No. 3,404,622, dated Oct. 8, 1968, Ser. No. 608,621, Jan. 11, 1967. Application for reissue Sept. 30, 1970, Ser. No. 76,746
Int. Cl. B30b 15/00
U.S. Cl. 100—100 9 Claims



A mobile vehicle crushing press including a horizontal base adapted to support a vehicle to be crushed and a vertically movable pressure head which may be forced toward the base for crushing a vehicle between the base and the pressure head.

27,195
MAGNETICALLY COUPLED CORE AND COIL HAVING RELATIVE MOVEMENT
Herbert H. Klug, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.
Original No. 3,425,015, dated Jan. 28, 1969, Ser. No. 539,475, Apr. 1, 1966. Application for reissue May 19, 1969, Ser. No. 830,900
Int. Cl. H01f 21/06
U.S. Cl. 336—130 4 Claims

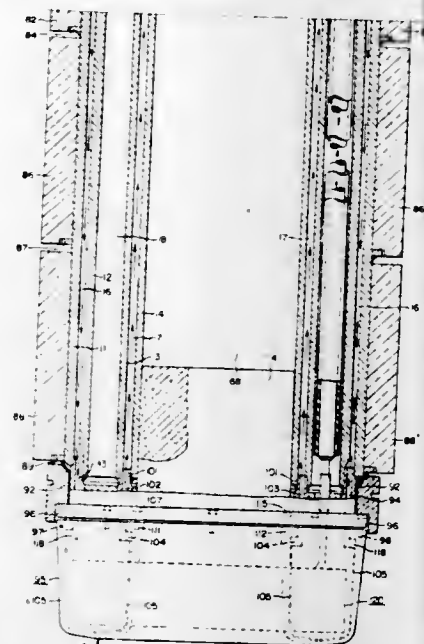


This invention pertains to a magnetic device in which the two magnetic components comprised of a core and inductive coil are mounted so that one can move relatively to the other on a gimbal so that one of the parts remains in a given plane while still being uniformly coupled to the other part.

27,196
NONCONSUMABLE ELECTRODE
Serafino M. De Corso, Media, and Charles B. Wolf, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original No. 3,368,019, dated Feb. 6, 1968, Ser. No. 458,240, May 24, 1965. Application for reissue July 9, 1969, Ser. No. 846,987
Int. Cl. H05b 7/08
U.S. Cl. 13—18 30 Claims

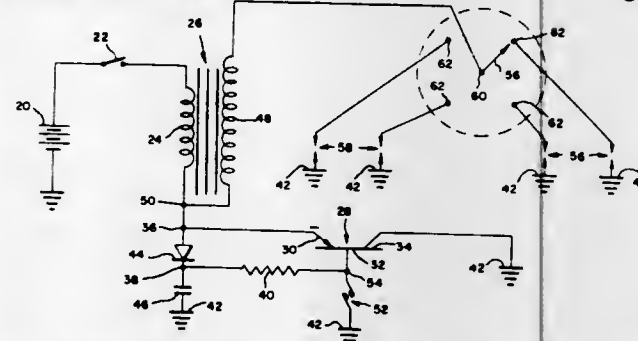
An electrode has a body or stem portion carrying an electrode head or electrode tip. The body or stem portion is protected by heat shield means external thereto and includes fluid channeling means for conducting a cooling fluid from the upper end thereof toward the electrode head, the fluid channeling means also conducting the fluid after it has performed its cooling function toward the up-

per end of the body or stem portion. An axially extending passageway open at the upper end thereof, or which may



be opened at the upper end, extends through the body or stem portion at least to a position near the electrode head.

27,197
IGNITION SYSTEM
James L. Shields, Linton, Ind., assignor to Luvals, Inc., Linton, Ind.
Original No. 3,406,671, dated Oct. 22, 1968, Ser. No. 555,852, June 7, 1966. Application for reissue Feb. 20, 1970, Ser. No. 13,213
Int. Cl. F02p 3/02
U.S. Cl. 123—148 E 5 Claims



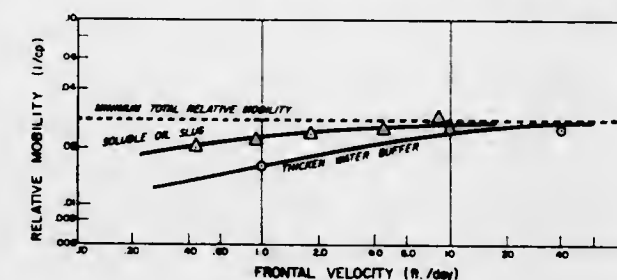
An ignition system for internal combustion engines which provides a hotter spark of shorter duration than that provided by standard ignition systems is disclosed. The self-induced (flyback) voltage of the primary winding of the ignition coil is utilized to drive the base electrode of a transistor positive with respect to the emitter electrode when the breaker points of the system open. The base electrode and the collector electrode of the transistor are both connected to ground potential when the ignition breaker points are closed, causing full conduction of the transistor and minimizing transistor junction temperature rise.

27,198
PROCESSES FOR THE SIMULTANEOUS DISPLACEMENT OF PETROLEUM AND WATER IN FORMATIONS
William B. Gogarty, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Original No. 3,443,636, dated May 13, 1969, Ser. No. 665,845, Sept. 6, 1967. Application for reissue May 15, 1970, Ser. No. 37,497
Int. Cl. E21b 43/22, 47/00
U.S. Cl. 166—252 15 Claims

The present invention comprises a process for the simultaneous displacement of petroleum and water in a formation by injecting therein a displacing fluid having a relative mobility [not greater than] selected in accordance with the minimum total relative mobility of the oil and water phases reasonably likely to be encountered in

the formation under prevailing formation conditions. The total relative mobility corresponding to the water saturation caused by an appropriate slug of displacement fluid flowing in at least one rock sample reasonably representative of said formation is determined by flowing a repre-

sentative slug of the actual displacement fluid to be used through said rock sample for a distance sufficient to achieve an equilibrium water saturation representative of the water saturation which will be caused by the slug flowing through the actual reservoir.



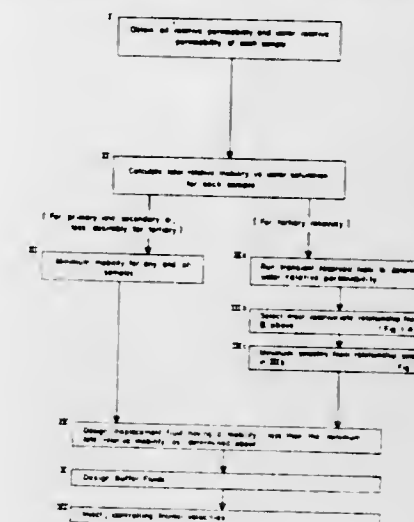
sentative slug of the actual displacement fluid to be used through said rock sample for a distance sufficient to achieve an equilibrium water saturation representative of the water saturation which will be caused by the slug flowing through the actual reservoir.

27,199
PROCESSES FOR THE SIMULTANEOUS DISPLACEMENT OF PETROLEUM AND WATER IN FORMATIONS

William B. Gogarty, Littleton, Colo., and Harold P. Meabon, Houston, Tex., assignors to Marathon Oil Company, Findlay, Ohio
Original No. 3,443,635, dated May 13, 1969, Ser. No. 665,763, Sept. 6, 1967. Application for reissue May 18, 1970, Ser. No. 48,757
Int. Cl. E21b 43/22, 47/00

U.S. Cl. 166—252 32 Claims
Petroleum and water can be simultaneously displaced in formations by determining the oil relative permeability

the minimum total relative mobility can then be injected into the formation to simultaneously displace, at controlled rate, water and petroleum present in the formation. In tertiary operations transient testing may be utilized in the determination of the minimum total relative mobility. Petroleum is obviously used for lubricating oils, gasolines, coke, etc.

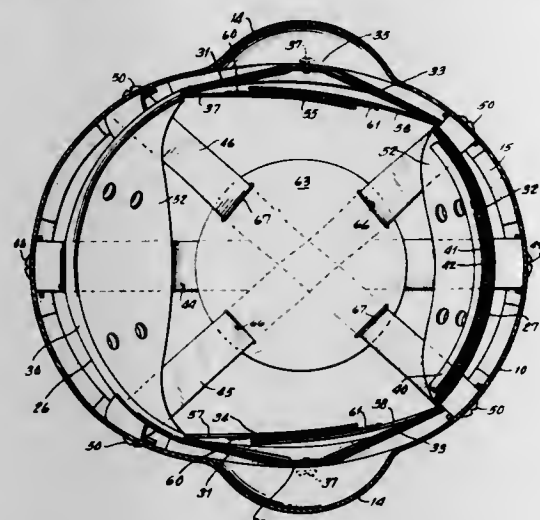


PATENTS

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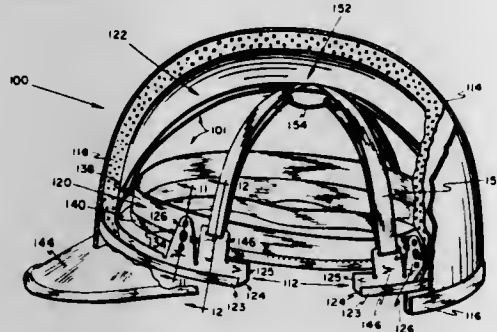
GENERAL AND MECHANICAL

3,613,113
PROTECTIVE HELMET
Jackson Anthony Alleo, Carbondale, Pa., assignor to
Gentex Corporation, Carbondale, Pa.
Filed July 24, 1969, Ser. No. 844,273
Int. Cl. A42b 3/00
U.S. Cl. 2—3 12 Claims



A rigid shell helmet having a pair of earcups mounted within the shell and an internal rigging for supporting the shell in spaced relation to a wearer's head. The rigging includes front and rear headbands each anchored at its ends to the shell and of fixed length shorter than the distance between its anchorage points as measured along the shell circumference; one or more pads detachably secured to the rear headband for adjusting the head size of the rigging; and a plurality of headstraps crossing each other above the crown of the head within the helmet. A pair of side headbands respectively extend along opposite sides of the shell interior above the earcups, each side headband being fixedly secured at its opposite ends to the front and rear headbands. The side headbands may each comprise overlapping front and rear pieces, detachably secured together, so as to be adjustable in length. A crown pad is adjustably suspended on the headstraps for cushioning the crown of the wearer's head.

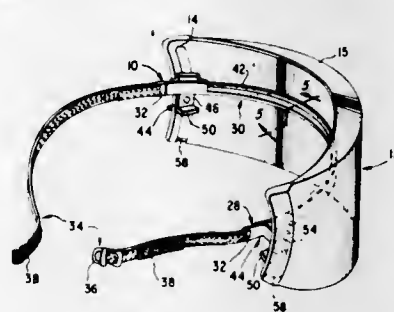
3,613,114
HELMET SUPPORTING AND POSITIONING ASSEMBLIES
Rodney S. Hill, Kenard E. Urion, and Frederick W. Feldmann, Dover, Del., assignors to ILC Industries, Inc., Dover, Del.
Filed Aug. 20, 1969, Ser. No. 851,650
Int. Cl. A42b 3/00
U.S. Cl. 2—3 20 Claims



Support and positioning devices for use in combination with conventional or other components of a protective

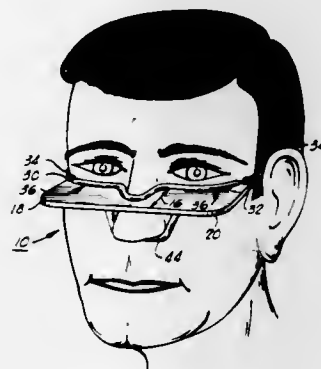
helmet that is generally classified in Class 2. These novel devices can be quickly assembled into a protective helmet shell and are capable of rigidly and/or adjustably securing and supporting an energy-absorbing member and/or headband mechanism and/or a variety of head suspensions in desired positions within the cavity of the helmet.

3,613,115
DETACHABLE FACE SHIELD SUPPORT FOR A HELMET
Rodney S. Hill, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.
Filed Aug. 20, 1969, Ser. No. 851,623
Int. Cl. A61f 9/04
U.S. Cl. 2—10 17 Claims



An attachment device for removably securing a retractable face shield assembled therewith, supported on a protective helmet. The device utilizes a band horizontally encircling the helmet near its edge with gripping clips located on opposite sides of the band that engage under edges of the helmet and cooperate with front portions of the band to position and anchor the device securely in place for good operation of the face shield. At the front portion of the band there is a yoke-like bracket which includes a gasketed gripping strip that fits horizontally around the front edge of the helmet with the clips mounted on side ends of the strip to both support slide blocks for carrying the face shield and provide, when the band is tightened, for the front edge of the helmet to be wedged in a sling-like gripping action between the band at the front and the clips at the sides of the helmet.

3,613,116
DRIBBLE TEACHING AID
James G. Stroup, 1501 Pawnee, Enid, Okla. 73701
Filed Apr. 23, 1969, Ser. No. 818,767
Int. Cl. A61f 9/04
U.S. Cl. 2—12 7 Claims



A teaching aid apparatus for basketball dribbling instruction, the apparatus consisting of a horizontal blinding

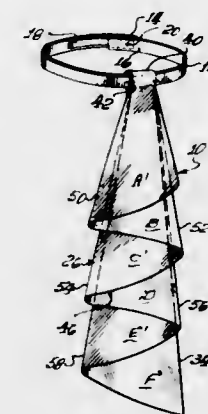
OCTOBER 19, 1971

GENERAL AND MECHANICAL

895

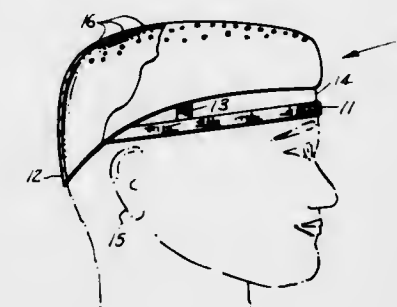
panel having one edge contoured to fit against a basketball player's face to block downward vision, the apparatus also including brace means for maintaining the blinder panel firmly at a predetermined position relative to the player's nose while a suitable headband holds the blinder apparatus firmly against the face.

3,613,117
ARTICLE OF ORNAMENTAL WEAR PARTICULARLY A NECK TIE
Charles L. Gingerich, 445 N. Westmount, Los Angeles, Calif. 90048
Filed Oct. 13, 1969, Ser. No. 865,618
Int. Cl. A41d 25/02
U.S. Cl. 2—149 12 Claims



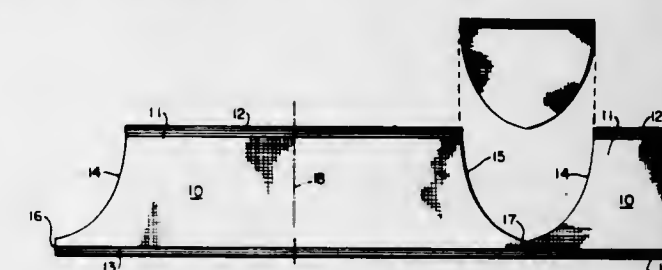
The device is an ornamental article of apparel made from flexible material particularly a cloth fabric. A piece of the material is formed to have two substantially straight edges and preferably one curved edge. Spaced folds are formed in the material extending from spaced positions along the curved edge of the material to spaced positions along one of the straight edges. Alternate folds are opposite to each other. The fold lines form tapered sections of material. These sections are folded, that is superimposed over each other or cascaded to form an article of folded sections depending from a narrow upper end with portions of both sides of the material at the lower ends of the sections being visible.

3,613,118
SLEEP CAP
Raymond J. Lucas, 115 Broad St., Mount Holly, N.J. 08060
Filed Dec. 2, 1968, Ser. No. 780,403
Int. Cl. A42b 1/02
U.S. Cl. 2—195 1 Claim



A sleep cap to be worn on the heads of men and women while they are sleeping is composed of a head conforming cap portion to enclose areas of the head which normally grow hair having elastic bands secured thereto for snugly retaining the cap portion on a wearer's head.

3,613,119
ONE-PIECE OR TWO-PIECE PANTY-TYPE GARMENT, AND PROCESS AND FABRIC SUITABLE FOR MAKING SUCH GARMENT
Louis Sarmiento, Hasbrouck Heights, N.J., assignor to International Stretch Products, Inc., New York, N.Y.
Continuation-in-part of applications Ser. No. 10,770, Feb. 12, 1970, and Ser. No. 21,409, Mar. 20, 1970. This application May 12, 1970, Ser. No. 36,552
Int. Cl. A41b 9/04
U.S. Cl. 2—224 A 4 Claims



The invention is directed to a panty-type garment (for example, panty or panty girdle), which is constructed in a novel manner, utilizing one or two pieces of fabric. The fabric is of warp knitted construction, and is constructed to have integrally knitted parallel selvages of one-way stretch, elastic construction. In the finished garment, one of the elastic selvages forms the waist band, and the other elastic selvage is cut and sewed to form leg band elastics. A desirable, body-conforming shape is imparted to the garment by utilizing, in the construction thereof, cut sections of the warp knitted material in which the end edges are provided with concave arcuate cuts extending downward and outward from the upper edge. Where large body sizes are to be accommodated, a separate crotch piece is incorporated in the garment construction, extending in the front-to-back direction. The crotch piece, like the main fabric section, is of warp knitted construction and has integral elastic selvages. In the case of the crotch piece fabric, however, both of the elastic selvages are the same and correspond to the leg band selvages of the main or body fabric section.

3,613,120
FLEXOR TENDON PROSTHESIS
Gordon B. McFarland, Jr., New Orleans, La., assignor to Research Corporation, New York, N.Y.
Filed Oct. 21, 1969, Ser. No. 868,076
Int. Cl. A61f 1/00
U.S. Cl. 3—1 5 Claims



Artificial tendons, and particularly a prosthesis for flexor tendons, are provided which comprise end portions which are woven, or of other open mesh configuration to

promote ingrowths of fibrovascular tissue essential for good tendon anchorage and a center portion consisting of multiple parallel filaments which resist infiltration of fibrovascular tissue and promotes free sliding motion of the center part of the prosthesis.

ERRATUM

For Class 3—334 see:
Patent No. 3,613,133

3,613,121

FLUSHING APPARATUS FOR A WATER CLOSET

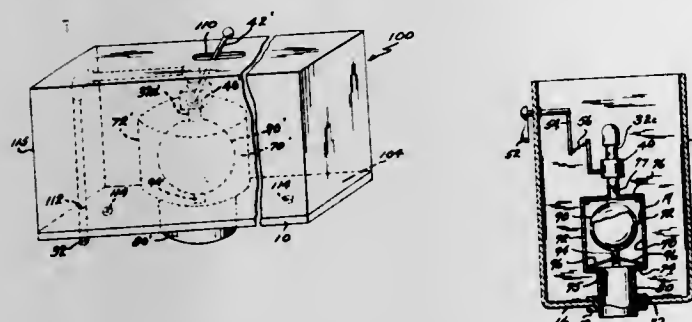
William S. McKinstry, 1520 Waterbury Road,
Lakewood, Ohio 44107

Filed Apr. 27, 1970, Ser. No. 32,235

Int. Cl. E03d 1/22; F16d 55/00

U.S. Cl. 4—40

7 Claims



A flushing unit for a water closet comprising a pressurized water supply, a manually operable valve in the supply line, said valve discharging into a silencer chamber that contains a silencer element in the form of a spreader that receives the valve discharge and distributes it uniformly in the chamber from whence the liquid is quietly discharged through a conduit that leads directly into the inlet of the toilet bowl.

3,613,122

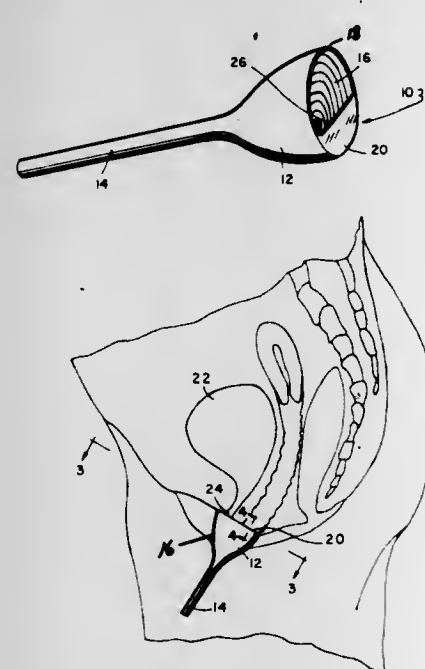
FEMININE HYGIENE DEVICE

Anton F. Gross and Phyllis M. Gross, both of 216
Spackenhill Road, Poughkeepsie, N.Y. 12603

Filed June 23, 1970, Ser. No. 49,063

Int. Cl. A61g 9/00; A61f 5/44; E03d 13/00; A47k 11/12
U.S. Cl. 4—110

6 Claims



A feminine hygiene device comprising a tapering body portion connecting into an elongated discharge tube, with the body portion including a lip whereby in use urine is

directed into the body portion to be discharged through the tube, with the lip being positioned against the body to the rear in order to prevent any backward dripping of urine.

3,613,123 COLLECTING RECEPTACLE FOR LIQUIDS, ESPECIALLY URINE

Hakon Olof Schelbe Langstrom, Goteborg, Sweden, as-
signor to Peanna, Langstrom & Co., Goteborg, Sweden

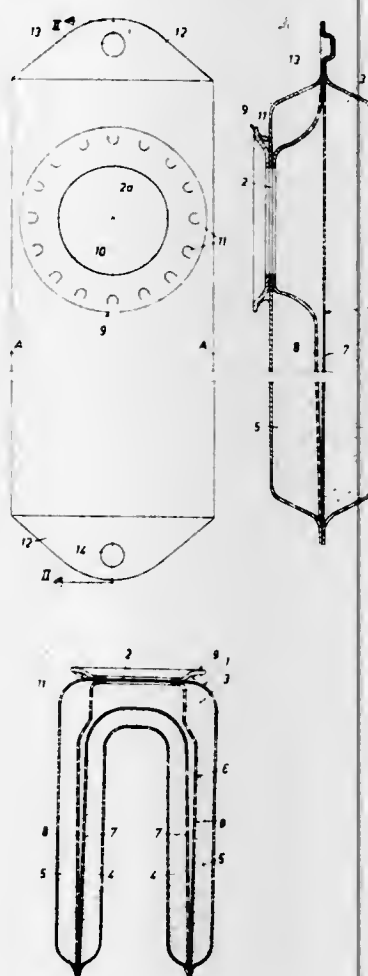
Filed Dec. 18, 1969, Ser. No. 886,267

Claims priority, application Sweden, Dec. 31, 1968,
18,045

Int. Cl. E03d 13/00

U.S. Cl. 4—110

13 Claims



A collecting receptacle for liquids, especially urine is formed as a pliable elongated bag having a single opening in one of its side walls, and comprising a partition dividing the receptacle into two compartments along a major dimension of the bag, the compartments each being filled with absorbent material. The partition is formed by two perforated substantially parallel wall elements of which at least the one nearer said opening includes an aperture substantially aligned with said opening and forming a liquid-tight passage therewith. The wall elements are generally perforated except in the region of said passage and opposite said opening.

3,613,124

AUTOMATIC WATER-SUPPLY APPARATUS

Masuo Ichimori, Mukomachi, Kyoto Prefecture, and
Hideyuki Suzuki, Kyoto, Kyoto Prefecture, Japan, as-
signors to Omron Tateisi Electronics Co., Ukyo-ku,
Kyoto, Japan

Filed Aug. 26, 1969, Ser. No. 853,150

Claims priority, application Japan, Aug. 28, 1968,
43/74,040

Int. Cl. A47k 1/04

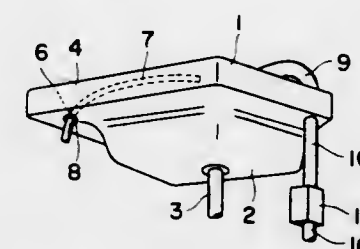
U.S. Cl. 4—166

13 Claims

An automatic water-supply apparatus, in which the water-supply to a basin is automatically controlled by the mere proximity to the basin of a human body, operating

by means of a proximity switch to switch an electromag-
netic valve in the event of proximity of a human body
to an antenna; the antenna is made of a resilient metal

of. Supporting means is provided in the pool below the
upper level of the water so spaced from the position which
the cover layer assumes in deployed condition that it does



rod for insertion into a cavity in the brim of the basin
through a hole provided in the brim; the cavity is prefer-
ably provided in the front brim of the basin, that is, on
the side the human thighs approach when using the basin.

3,613,125

SWIMMING POOL COVER

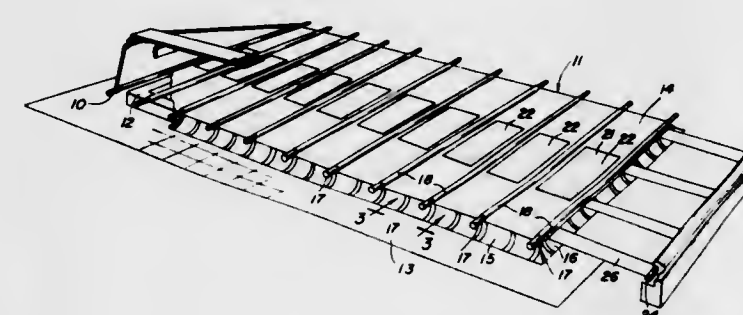
Mile Ivkovich, 190 Montgomery St.,
Gary, Ind. 46403

Filed Sept. 19, 1969, Ser. No. 859,291

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4—172.14

8 Claims



A swimming pool cover comprising a panel having a
plurality of lengthwise spaced and transversely extend-
ing tubes supporting the panel on the pool coping. A stor-
age means is provided at one end of the pool.

3,613,126

BUOYANT COVER FOR A SWIMMING POOL

Robert Granderath, Am Rodenbach 19,
Bergisch Gladbach, Germany

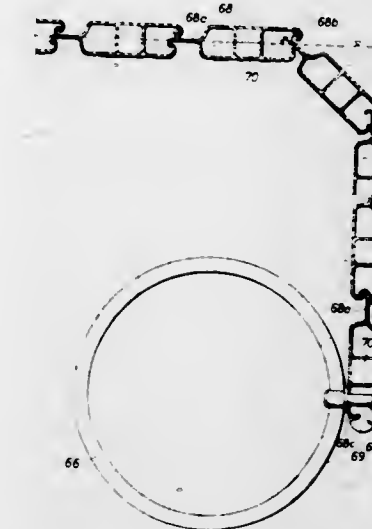
Filed Oct. 22, 1969, Ser. No. 868,296

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4—172.14

19 Claims

A swimming pool has two opposite sides and is filled
to a predetermined level with a body of water. A cover
layer arrangement is provided in the form of a cover
layer normally rolled in a coil on a shaft extending along
and in parallelism with one of the sides of the pool. The
cover layer is normally blocked from uncoiling but so
arranged that in response to unblocking it can automati-
cally deploy in a sense moving from the one side towards
the opposite side of the swimming pool, covering the
same and floating in the water near the upper level there-



not interfere with movement of the cover layer to the
deployed condition but supports the cover layer when a
weight is placed upon the same.

3,613,127

APPARATUS FACILITATING CARE OF A BEDFAST PATIENT

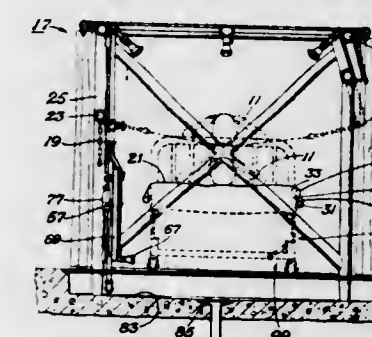
James M. Bond, 3435 Ave. H, Fort Worth, Tex. 76105

Filed Nov. 5, 1969, Ser. No. 874,342

Int. Cl. A47k 3/12

U.S. Cl. 4—185

25 Claims



Apparatus facilitating care of a bedfast patient char-
acterized by a bed adapted to support bedding and a
patient and to elevate and lower the bedding and patient
vertically, the bedding including an upper layer to pro-
trude through apertures in a flat net and support a
patient's body without irritating the patient's skin; and
a bathing apparatus large enough to encompass the bed
and patient. The specific structure and accessories are
also disclosed.

3,613,128

SELF-RIMMING PORCELAIN ENAMELED SINK

Harris P. Moyer, Deerfield, Ill., assignor to

Unarco Industries, Inc.

Filed May 18, 1970, Ser. No. 38,291

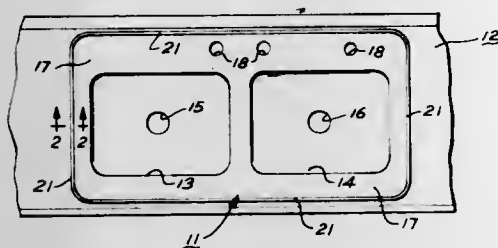
Int. Cl. E03c 1/18

U.S. Cl. 4—187

10 Claims

An improved self-rimming porcelain enameled sink in-
cluding a novel clamping channel used for securing the
porcelain enameled sink in a counter top. The clamping
channel is mounted on the underside of the sink and co-
operates with a lug that engages the underside of the
counter top to secure the sink in the counter top. A stain-
less steel bead is bonded completely around the peripheral

edge of the porcelain enameled sink so that this bead protects the edge during installation and usage and so that the combined edge-bead will extend from the sink a sufficient



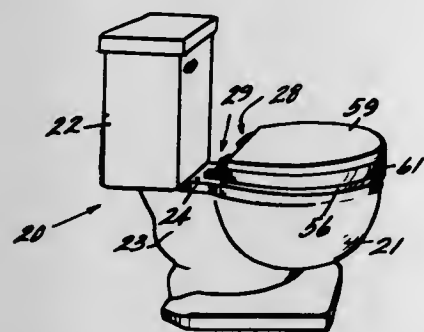
distance to cover the ragged edges of the hole in the counter top in which the sink is mounted. A tight water seal is formed between the bead and the counter top.

3,613,129 HINGED COVER CONSTRUCTION FOR A WATER CLOSET

George W. Blount, 171 Lakeview Drive,
Middletown, Ohio 45042
Filed Dec. 22, 1969, Ser. No. 887,129
Int. Cl. A44k 13/12

U.S. Cl. 4-236

6 Claims



A hinged cover construction for a water closet in which stationary brackets mounted adjacent the bowl are provided with tracks extending between the tank and the bowl on which hinge supporting brackets are mounted. A hinge pin supported by the hinge supporting brackets moves toward and away from the tank between a normal position adjacent the tank and an advanced position spaced from the tank. A lower cover and an upper cover are pivotally mounted on the hinge pin. A resilient cushion is mounted on the lower cover. The covers swing between a lowered position in which the bottom cover is supported on an upper edge of the bowl and the upper cover rests on the cushion and a raised position in which the covers lean against the tank in stable position when the hinge supporting brackets are in advanced position.

3,613,130 REMOVABLE TOILET SEAT

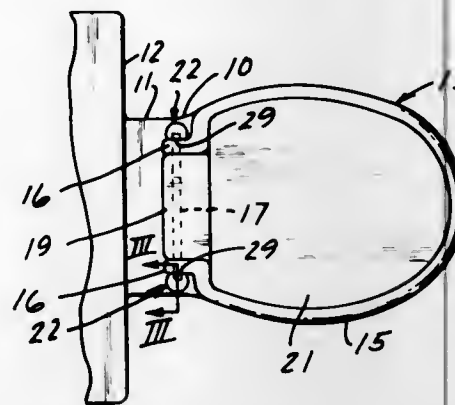
Fred A. Sansone, 2923 N. 75th Ave.,
Elmwood Park, Ill. 60635
Continuation-in-part of application Ser. No. 659,488,
Aug. 9, 1967. This application May 21, 1969,
Ser. No. 826,457

U.S. Cl. 4-240

2 Claims

Fixture for detachably mounting toilet seat on toilet bowl without the use of tools, firmly holding the seat in position and enabling removal of the seat by lifting the seat and the hinge pin for the seat and post parts of the fixture. The fixture includes two socket members extending through the back part of the toilet bowl and secured thereto as by nuts, and posts for the hinge pins, each post having a locking pin depending therefrom within the socket

of the socket member and camming the socket member to be locked thereto by pressing each post and pin downwardly along its socket. A detent locking connection is provided between the socket and pin. The posts, pins and



sockets are made from a suitable thermoplastic material having good memory qualities, to assure a snap gripping action of the detent locking connection as the pins are inserted into and withdrawn from the sockets.

3,613,131 DENTAL CUSPIDOR

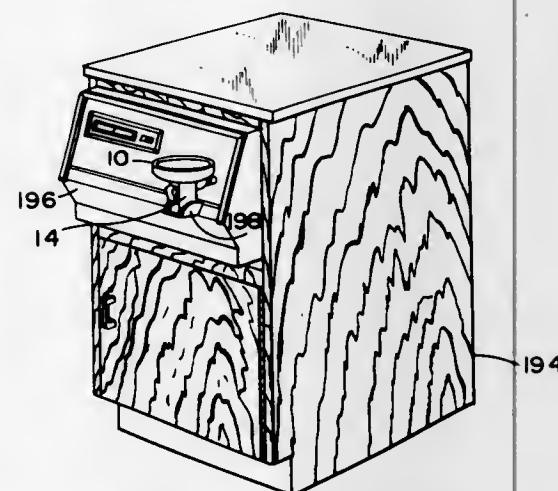
George H. Stram, York, Ralph J. Williams, New Oxford,
George E. Altland, Dover, and Thomas J. Dunn, Red
Lion, Pa., assignors to Dentsply International, Inc.,
York, Pa.

Filed May 19, 1970, Ser. No. 38,769

Int. Cl. A61c 17/04

U.S. Cl. 4-263

17 Claims



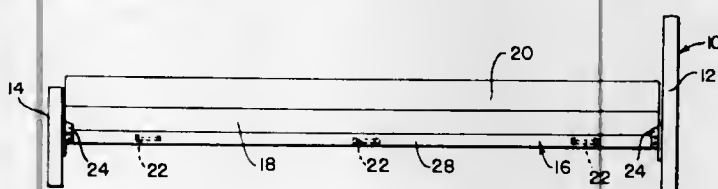
A portable dental cuspidor connected to sources of vacuum and water and including a drain control valve and a water control valve, and valve actuating means operable to open the drain control valve to evacuate the cuspidor bowl prior to introducing flushing water to the bowl.

3,613,132 SAFETY BED RAILS

Maurice Weinhart, 18620 Ardmore St.,
Detroit, Mich. 48235
Filed Feb. 19, 1969, Ser. No. 800,390
Int. Cl. A47c 23/06

U.S. Cl. 5-238

12 Claims



The invention relates to a safety bed rail having lugs provided therein or affixed thereto for securing removable bed slats in fixed spaced-apart relationship, whereby

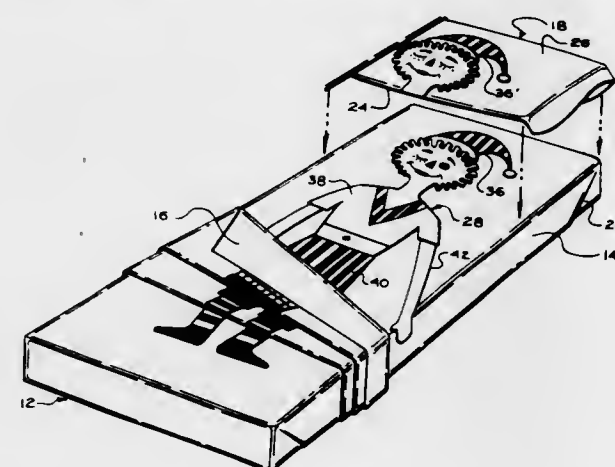
the bed slats are prevented from shifting off of the side rails, maintain support for the box spring and mattress imposed thereon, and substantially restrain the side rails from bending or bulging outwardly in the medial portion thereof.

3,613,133 BED CLOTHES

Richard A. Isola, 6748 Leslee Crest Drive, Birmingham,
Mich. 48010, and Herman Keith Miller, 3720 Erie
Drive, Orchard Lake, Mich. 48033
Filed May 21, 1969, Ser. No. 826,370
Int. Cl. A47g 9/00; A63h 33/00

U.S. Cl. 3-334

5 Claims



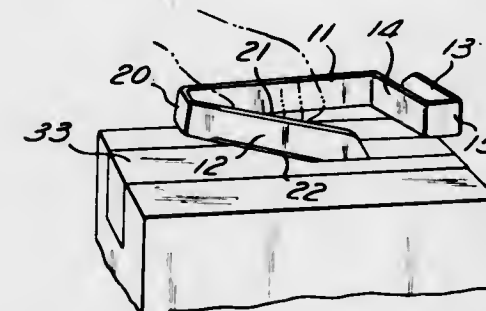
A set of bed clothes including at least two individual bed clothes elements, one at least partly overlying the other; the elements having means provided thereon defining a composite pictorial illustration of a person, character, animal, article, or scenic background, with the composite illustration consisting of the person, character, etc. appearing in one condition on one of the bed clothes elements and appearing in a different condition on the other of the elements, so that when the bed is viewed with one of the elements overlying the other thereof, the depicted person, character, etc. appears to be in one condition, and when the uppermost of the elements is at least in part removed or folded back from its overlying relation to the other of the elements, the person, character, etc. is viewed as being in the second condition.

3,613,134 CARTON OPENER TOOL

Clarence R. Bassett, 255 Steele Ave.,
Ashland, Ohio 44805
Filed Apr. 23, 1969, Ser. No. 818,643
Int. Cl. B67b 7/30; B25f 1/00

U.S. Cl. 7-14.1

21 Claims



A carton opener tool having a U-shaped handle, an elongated arm extending transversely away from the handle, and an insertion blade connected to the opposite end of the elongated arm and extending back toward the handle and terminating short of the handle in a beveled free end. The insertion blade is angularly inclined to one side so that its free end is offset to that side of the handle and the elongated arm. The free end of the insertion

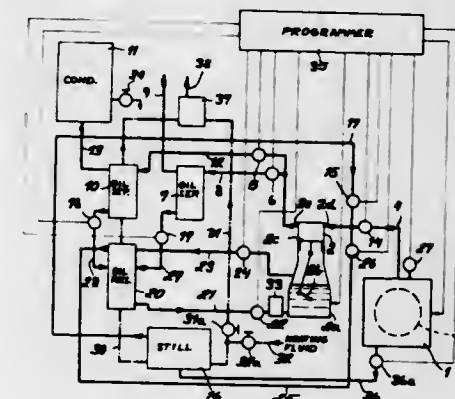
blade is disposed slightly beyond the plane of an end face of the handle in a direction away from the elongated arm.

3,613,135 CLEANING SYSTEM USING VOLATILE SOLVENTS AND METHOD OF REDUCING SOLVENT LOSSES THEREIN

Heinrich Fuhring, Augsburg, and Johannes Helmut Sieber, Aystetten, Germany, assignors to Firma Bowe, Bohler & Weber KG, Augsburg, Germany
Filed Mar. 27, 1970, Ser. No. 23,402
Claims priority, application Germany, Mar. 31, 1969,
P 19 16 523.2
Int. Cl. D06f 43/08

U.S. Cl. 8-158

12 Claims



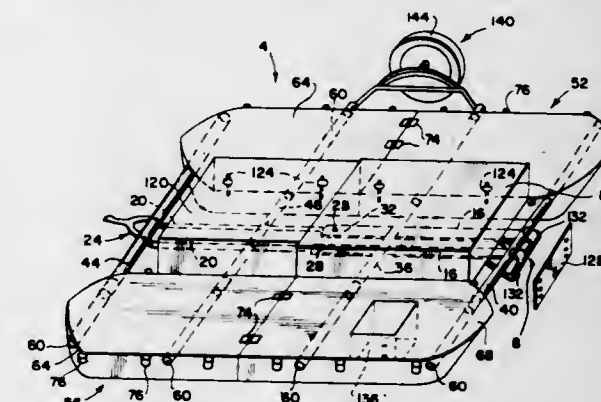
In a dry-cleaning plant a single pump is used to evacuate a freshly loaded treatment drum and, after cleaning operation, the extract solvent vapors from that drum. In the first pumping phase, the air is discharged into the atmosphere by way of a first oil separator which removes entrained lubricant; in the second pumping phase, the vapors pass through a second oil separator into a condenser for the recovery of spent solvent. Thereafter, the two oil separators are emptied into a reservoir whose top is connected with the suction side of the pump for removal of residual solvent via the second oil separator to the condenser; the remaining oil is then returned to the crankcase of the pump.

3,613,136 CATAMARAN

Joseph A. Coglian, 1268 Maple Ave.,
Baltimore, Md. 21227
Filed Oct. 3, 1969, Ser. No. 863,572
Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

12 Claims

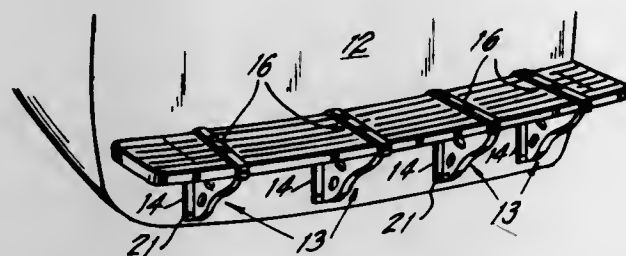


A catamaran is disclosed which can be converted into a trailer. The catamaran includes a central support unit which telescopes, two cross members which telescope and which are attached to the central support unit, and two boat units which are formed of two sections, each of which is attached to one of the cross members. One of the boat sections of each boat unit is folded over on the other boat.

3,613,137
SWIMMING PLATFORM FOR BOATS
 William Eccles, Northport, N.Y., assignor to Harvey-Westbury Corporation, Westbury, N.Y.
 Filed Mar. 20, 1970, Ser. No. 21,246
 Int. Cl. B63c

U.S. Cl. 9-1 R

9 Claims



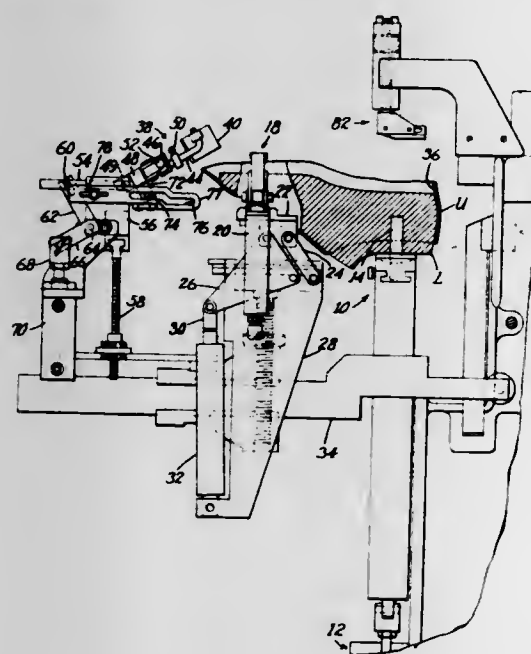
A plurality of brackets designed to withstand lateral and vertical stresses are secured to the boat transom at spaced intervals therealong. Each of the brackets is provided with a plurality of spaced slots arranged in alignment with associated slots of the remaining brackets for receiving wood strakes slightly curved to conform to the transom curve. End spacers are secured between each pair of adjacent strakes to firmly locate and maintain the strakes in alignment with one another.

The brackets may be pivotally mounted to the transom by suitable hinges with the free end of the platform portion of each bracket being supported to a lower transom mounted hinge by supporting struts which may be cut to size in order to adjustably level the platform.

3,613,138
METHOD FOR MAKING SHOES
 Raymond T. Pelletier, Beverly, and Karl V. Becker, Topsfield, Mass., assignors to USM Corporation, Boston, Mass.

Filed Jan. 14, 1970, Ser. No. 2,720
 Int. Cl. A43d 21/00
 U.S. Cl. 12-145

4 Claims



A method and machinery for lasting shoes in which an upper and an insole are assembled on a last with the insole registered on the last bottom at the heel end by the tensioned upper margin and at the toe end by a band. The heel end of the tensioned upper is lasted and secured to the registered insole. The last in subsequent operations is forced into the shaped heel end of the upper to re-establish registration of the insole on the last and the toe end of the upper is lasted and secured to the insole.

3,613,139
SELF-PROPELLED FLOATING STRUCTURE
 Klaus Hänggen, Witten, Fritz Kinzler, Düsseldorf, and Hans Werner Spohr, Willich, Germany, assignors to Firma Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Aug. 7, 1969, Ser. No. 848,319
 Claims priority, application Germany, Aug. 14, 1968, P 17 81 060.5; Mar. 14, 1969, P 19 13 967.4
 Int. Cl. E01d 15/08

U.S. Cl. 14-27

14 Claims

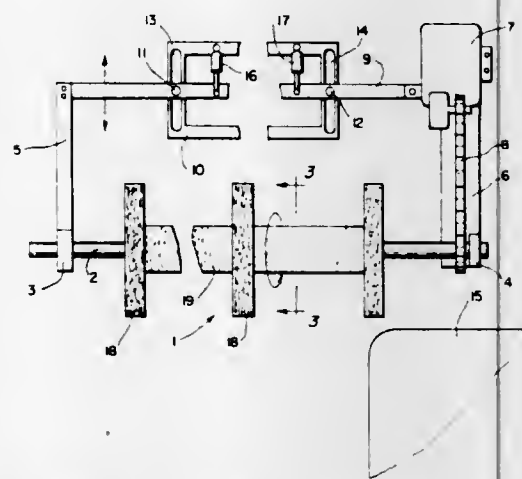


A three-float collapsible unit with amphibious drives is disclosed, the floats being hinged to permit vertical stacking for overland transport and horizontal unfolding to form a platform.

3,613,140
WHEEL AND TIRE BRUSH
 Obed M. Oas, Moorhead, Minn., assignor to Northern Car Wash Systems, Moorhead, Minn.
 Filed Mar. 6, 1970, Ser. No. 17,202
 Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

8 Claims



A wheel and tire brush arrangement for automatic vehicle washing devices comprises a horizontal motor driven brush having alternating sections of relatively short, stiff nylon bristles for scrubbing tires and sidewalls and relatively long, soft polypropylene bristles for washing deep set wheels, hubcaps and rocker panels. The brush is movable toward and away from the path traversed by the vehicle being washed so that the same brush may be used to wash the vehicle's rocker panels, as well as the tires, sidewalls, deep set wheels and hubcaps thereof.

3,613,141
MATERIAL CONDITIONING DEVICE
 Harold T. Sawyer, Pacific Palisades, Calif., assignor of a fractional part interest to Vernon D. Beehler, Los Angeles, Calif.

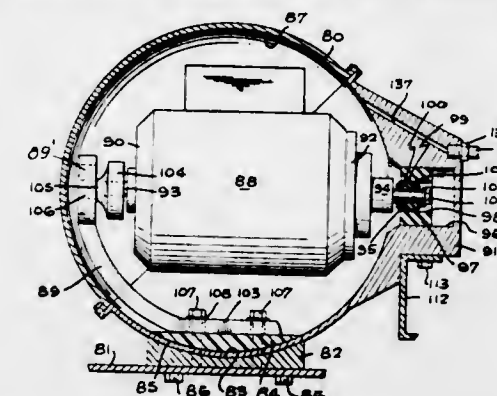
Continuation-in-part of applications Ser. No. 631,736, Apr. 18, 1967, and Ser. No. 642,077, May 29, 1967. This application June 11, 1969, Ser. No. 832,156
 Int. Cl. A47i 11/12

U.S. Cl. 15-98

5 Claims

A sonic energy fabric treating apparatus having an eccentrically rotational mass which is resiliently shock mounted at one axial end by one shaft. Another shaft at

the other axial end is connected for transmitting sonic vibration. The shock mounting includes a bore in a boss on a shell surrounding said mass and annular resilient

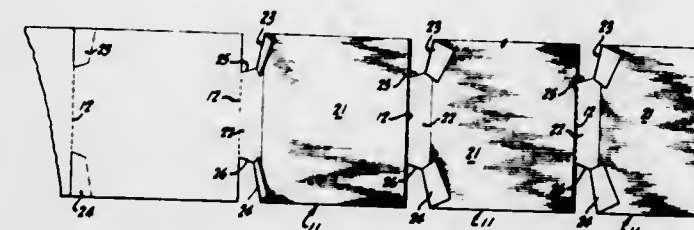


sleeves between said one shaft and said bore. There is also provided a handle with a vibration isolated connection therefor.

3,613,142
CLEANSING PACKET
 Verne E. Chaney, Jr., 1000 Chestnut St., San Francisco, Calif. 94109
 Continuation-in-part of application Ser. No. 636,065, May 4, 1967. This application Mar. 23, 1970, Ser. No. 21,596

Int. Cl. A47k 7/03; B65d 83/00
 U.S. Cl. 15-104.94

9 Claims



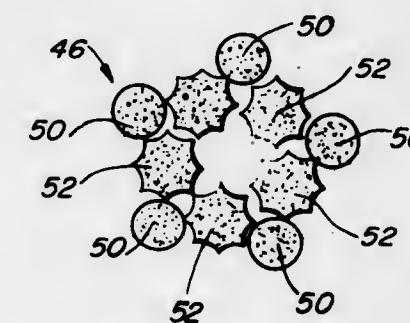
A package constituting a continuous strip of interconnected packets separable from each other along tear lines therebetween and being folded transversely along such tear lines to form an accordion-fold stack positioned within a dispensing container therefor. Each packet comprises an absorbent applicator sheet carrying a liquid or semi-liquid agent to be applied thereby to a body surface, and further comprises an outer overwrap or backing sheet of plastic material attached to the applicator sheet and providing pull tabs adjacent such tear lines.

3,613,143
BRUSH WITH ABRASIVE-IMPREGNATED BRISTLES
 Joseph C. Muhler and George K. Stookey, Indianapolis, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Nov. 12, 1970, Ser. No. 88,625
 Int. Cl. A46b 15/00

U.S. Cl. 15-167 R

18 Claims



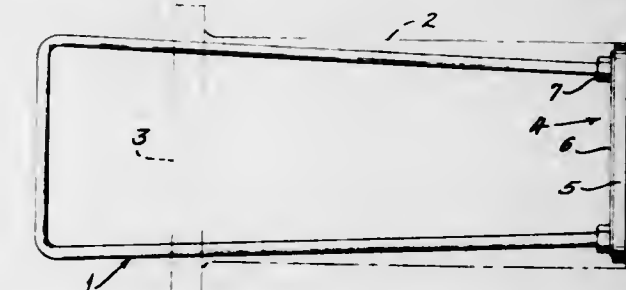
An abrasive material is incorporated in the plastic from which bristles are formed by extrusion or otherwise, and

the abrasive-impregnated bristling material is employed in the manufacture of brushes, especially toothbrushes. One preferred brush is formed with bristle tufts, each tuft having in combination relatively small diameter bristles containing a relatively high level of abrasive and having a circular cross section and relatively large diameter bristles containing a relatively low level of abrasive and having a shaped or configured cross section.

3,613,144
JOURNAL BOX CLEANING TOOL
 John H. Wetherill, Columbus, Ohio, assignor to Hennessy Products, Incorporated, Chambersburg, Pa.
 Filed Nov. 17, 1969, Ser. No. 877,301
 Int. Cl. B61f 17/28

U.S. Cl. 15-210

4 Claims



A cleaning tool for insertion into a railway axle journal box and beneath a journal and bearing therein for removing waste, dirt and sediment in the lower portion of the box. The tool comprises an elongated handle with a transverse blade at one end adapted to be inserted under the journal, and adapted to be manipulated freely from the outside of the box.

Preferably, the handle is of a U-shaped adapted to straddle the journal endwise, and the blade is a felt strip with a stiffening plate of less length and width than the felt strip.

3,613,145
POLISHING RING
 Rudolf Kneusels, Wuppertal-Vohwinkel, Germany, assignor to Bi-Flex Birkenstock KG, Wuppertal-Vohwinkel, Germany
 Filed Mar. 14, 1969, Ser. No. 807,382
 Claims priority, application Germany, Mar. 16, 1968, P 16 77 144.1
 Int. Cl. B24d 13/04

U.S. Cl. 15-230.15

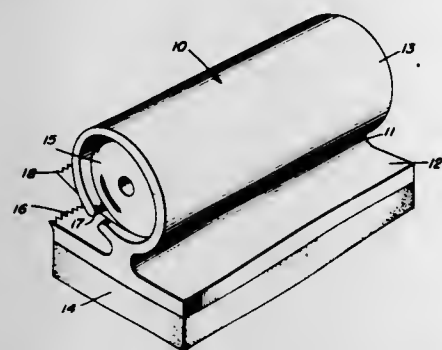
5 Claims



A polishing ring with individual textile strips constituting a polishing border, which comprises a carrying ring, and a plurality of textile-strips surrounding the carrying ring in about U-shape. The textile-strips have multi-layer legs, and means are provided for connecting together the multi-layer legs outside of the carrying ring. Each of the U-legs forms foldings by multiple twisting of the textile-strips.

3,613,146
BLACKBOARD ERASER
 Edwin N. Oviatt, Crotty Ave., P.O. Box 327,
 Brookfield, Mass. 01506
 Filed Feb. 4, 1969, Ser. No. 796,521
 Int. Cl. B431 21/04
 U.S. Cl. 15—231

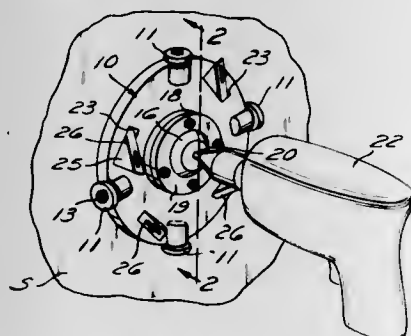
1 Claim



In general, this invention is a hand-held device for cleaning surfaces such as blackboards, such device having a disposable cleaning surface.

3,613,147
WALL SURFACE SCRAPER TOOL
 John H. Norfleet, 15006 Naples St.,
 Cleveland, Ohio 44128
 Filed May 26, 1969, Ser. No. 827,850
 Int. Cl. A471 1/06
 U.S. Cl. 15—236

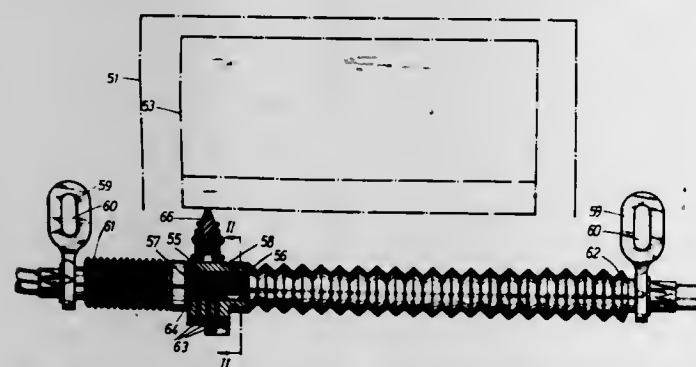
7 Claims



Wall surface scraper tool having rollers to engage the surface to be scraped and one or more adjustable blades supported to extend at an acute angle to that surface. The tool is power driven by an electric drill and has a plurality of inclined blades and rollers around its periphery.

3,613,148
WINDSHIELD WIPER ARRANGEMENT
 Willi Meissner and Horst Wietisch, Heiligenhaus, Germany, assignors to Teleflex Gesellschaft mit beschränkter Haftung, Heiligenhaus, Germany
 Filed June 17, 1970, Ser. No. 46,868
 Claims priority, application Germany, June 20, 1969, P 19 31 384.9
 Int. Cl. B60s 1/44
 U.S. Cl. 15—250.29

10 Claims

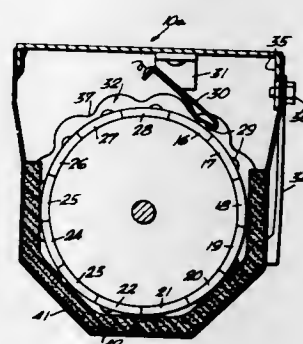


A wiper assembly, especially for maintaining clean a plurality of sight surfaces forming an angle with each

other, which includes a plurality of wiper blades actuated by a single drive, in which the power transfer from a drive to the wiper blades is effected by means of a push rod, and in which for each wiper blade there is provided a carriage coupled to said push rod and movable parallel to the sight surface to be cleaned, said push rod being movable in a guiding pipe serving as guiding means for said carriage while power transfer means operatively interconnect said carriage and said push rod.

3,613,149
SELF-CLEANING DEVICE FOR ROTARY TELEVISION SET TUNERS
 David E. Gurkin, 3165 SW. 18th St.,
 Miami, Fla. 33145
 Filed Feb. 6, 1970, Ser. No. 9,154
 Int. Cl. H03j 3/00
 U.S. Cl. 15—256.51

2 Claims



A resilient brush member is described for application against the longitudinally-extending sets of electrical contact points of tuner strips in a rotary drum tuner for brush-cleaning the points as the tuner is rotated during use while changing from channel to channel. In one form, the brush is supported by the tuner drum housing and support structure, and in another embodiment the brush is in the form of a layer of resilient brush material fixed against the inside of the tuner assembly cover and adapted to press against the contact points when the cover is fitted in place on the housing and support structure.

3,613,150
HINGE
 Norman W. Osborn, 2199 East 2875 South,
 Salt Lake City, Utah 84109
 Filed July 2, 1970, Ser. No. 51,984
 Int. Cl. E05d 7/04
 U.S. Cl. 16—134

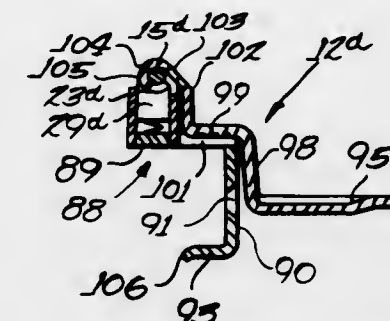
11 Claims



A vertically, horizontally adjustable hinge that is easily installed and that can be readily adapted to any hardware decor and that can be adjusted to give free swinging and equal weight distribution of a door with which it is used even within a deformed or wracked frame.

3,613,151
HINGE CONSTRUCTION
 Ralph F. Anderson and Richard C. Henson, Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.
 Filed June 27, 1969, Ser. No. 837,130
 Int. Cl. E05d 1/12
 U.S. Cl. 16—180

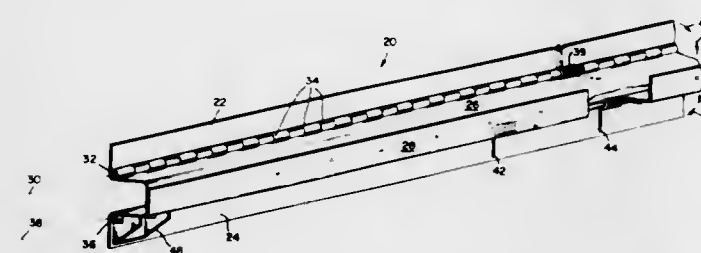
4 Claims



Hinge constructions for the doors of cabinets or other enclosures where the door is mounted to swing between open and closed positions, with the hinge having a door wing and a cabinet wing. The door wing is of a configuration for either an inset or an overlay type of door, and the cabinet wing is either exposed or partially concealed. One type of cabinet wing includes a generally U-shaped flange that fits around and clamps onto the edge of the cabinet frame with only a single screw required to secure the wing to the frame. The cabinet and door wings may include a self-closing mechanism having a housing secured to or integral with the cabinet wing, the housing containing a spring-biased cam that is urged outwardly to engage the knuckle of the door wing, and a hinge pin or pintle defining the axis of the door. The door wing knuckle includes a cut-out portion cooperating with the cam to urge the door through the last few degrees of the arc of closing movement and yieldably retain the door closed.

3,613,152
SELF-CLOSING 180° OPENING, CONCEALED HINGE
 Joseph L. Spurlin, Oceanside, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
 Filed Nov. 21, 1968, Ser. No. 777,792
 Int. Cl. E05f 1/12
 U.S. Cl. 16—189

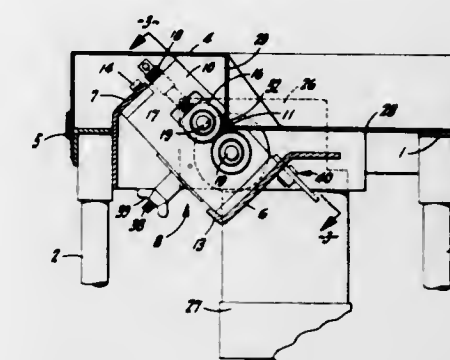
11 Claims



A cabinet hinge system wherein a swingable cabinet closure member is hinged to a stationary cabinet member for outward swinging substantially 180° between closed position uniplanar with the stationary member to fully open position facing the stationary member. Individual flat hinge leaves are respectively surface mounted to the interior surface of the members and hinged to a common linking channel member along parallel spaced hinge axes flanking the channel member. Unequal elastic means, such as helical springs or resilient flex hinge joints, acting along each hinge axis coact to cause sequential swinging about one and then the other hinge axis during movement of the closure member and to urge the closure member to closed position.

3,613,153
TENDON PULLING MACHINE
 Emery L. McDonald, Cupertino, Calif., assignor of a fractional part interest to Anthony J. Volk, Turlock, Calif.
 Filed Feb. 2, 1970, Ser. No. 7,951
 Int. Cl. A22c 21/00
 U.S. Cl. 17—11.3

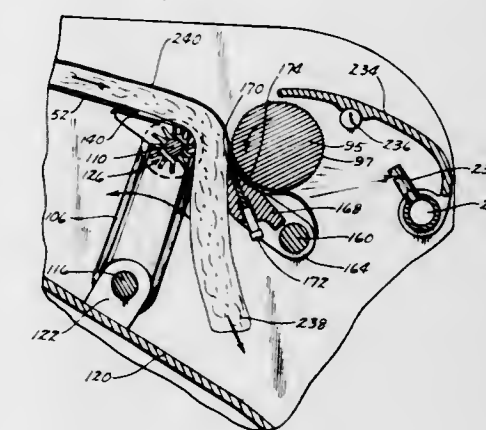
7 Claims



A machine, for pulling the tendons from deboned leg meat of poultry, comprising essentially a pair of toothed, parallel rolls—in the nature of pinch rolls—running in meshing engagement and driven in opposition so that such rolls turn on one side toward the line of engagement, or pinch line, thereof; there being a guard plate overlying such one side of the rolls, and the guard plate having a row of relatively short slots therethrough closely adjacent and parallel to said pinch line. The deboned leg meat, in the form of a substantially flat piece, is pressed against the guard plate in a position such that end portions of the tendons project through the slots and to the pinch line of the rolls, whereupon the latter grasp such tendons and forcefully pull them out of the leg meat; the latter being restrained or held back from the rolls by the guard plate.

3,613,154
FISH SKINNING DEVICE
 Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
 Filed Oct. 15, 1969, Ser. No. 866,530
 Int. Cl. A22c 25/17
 U.S. Cl. 17—62

16 Claims

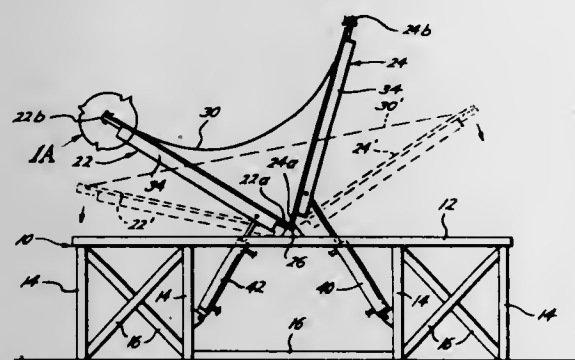


A fish skinning device comprising, a feed tray means mounted on a support means and adapted to support the fish to be skinned thereon. A cutting blade means is pivotally supported on the support means and is pivotal away from and towards a rotatable feed roller positioned thereabove. A pressure roller means is rotatably and pivotally mounted on the support means between the feed roller and the feed tray and is adapted to engage the under side of the fish being skinned to yieldably urge the same into engagement with the cutting blade and feed

roller. Linkage means interconnects the cutting blade and the pressure roller to permit the cutting blade to be pivoted away from the feed roller and to permit the pressure roller to be pivoted away from the cutting blade and the feed roller. Means is also provided to permit the pressure roller to pivot away from the feed roller without causing the pivotal movement of the cutting blade.

3,613,155
APPARATUS FOR STRETCHING THERMOPLASTIC
Dan E. Bloxson, 5615 Rice Ave., Houston, Tex. 77036
Original application May 8, 1967, Ser. No. 636,850.
Divided and this application Apr. 7, 1969, Ser. No. 856,865

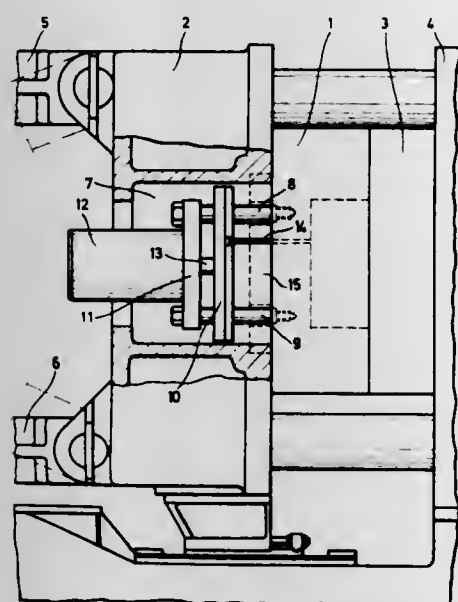
Int. Cl. B29c 17/02
U.S. Cl. 18-1 FS 4 Claims



A method and apparatus for stretching a sheet of thermoplastic material to increase substantially the surface area thereof while simultaneously increasing strength of the material. In one embodiment, opposed ends of the sheet are supported and moved through an arcuate path in opposite directions until the ends are in a substantially horizontal coplanar relation. In another embodiment, opposed ends of the sheet are supported and rotated axially in opposite directions and then forced apart in opposite directions in coplanar relationship.

3,613,156
PRESSURE CASTING MACHINE
Heinz Jäger, Braunschweig, Germany, assignor to Volkswagenwerk Akt., Wolfsburg, Germany
Filed Sept. 23, 1969, Ser. No. 860,273
Int. Cl. B29f 1/14

U.S. Cl. 18-2 RM 1 Claim

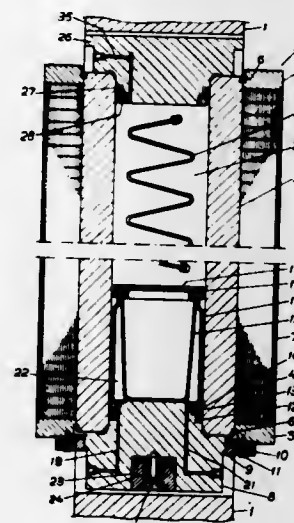


Pressure casting machine having a movable frame and an ejector plate with ejectors guided along columns together with a hydraulic shifting arrangement as a hydraulic cylinder for the ejector plate.

3,613,157
PRESSURE CHAMBER FOR TREATING MATERIAL WITH HIGH PRESSURE, SUCH AS ISOSTATIC COMPRESSION OF POWDER BODIES

Torstein Landa, Per O. Syvakeri, and Erik Westman, Vasteras, Sweden, assignors to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Mar. 10, 1969, Ser. No. 804,756
Claims priority, application Sweden, Mar. 11, 1968, 3,163/68

Int. Cl. B30b 5/02
U.S. Cl. 18-5 H 6 Claims

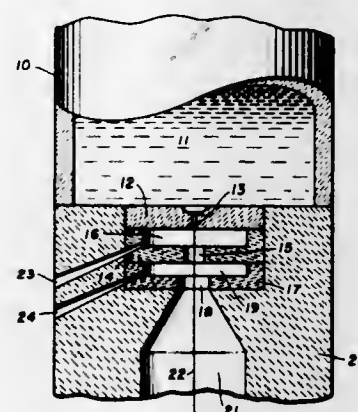


A pressure chamber for the isostatic compression of powder bodies includes a high pressure cylinder with end closures projecting into the cylinder. There are two arrangements for supplying pressure media. One of the end closures is a unit surrounded by the pressure medium which operates on the workpiece, this unit projecting into the cylinder and having a displaceable wall which separates the two pressure media.

3,613,158
ORIFICE ASSEMBLY FOR SPINNING LOW VISCOSITY MELTS

John W. Mottern, Cary, Robert E. Cunningham, Raleigh, and Robert P. Bell, Cary, N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 15, 1969, Ser. No. 884,859
Int. Cl. D01d 11/00

U.S. Cl. 18-8 QM 4 Claims

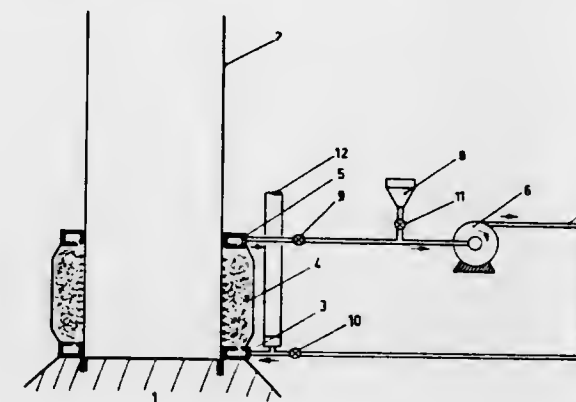


An improved orifice assembly and process is provided whereby fine diameter and/or light fibers and filaments may be formed from essentially inviscid melts without attending sinuous effects upon the extruded molten stream.

3,613,159
APPARATUS FOR COATING EXTRUDED PLASTIC TUBES WITH FINELY DIVIDED SILICA OR SILICATES

Hanns Biegler, Wessling, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Original application July 2, 1968, Ser. No. 741,942.
Divided and this application Feb. 3, 1970, Ser. No. 8,186

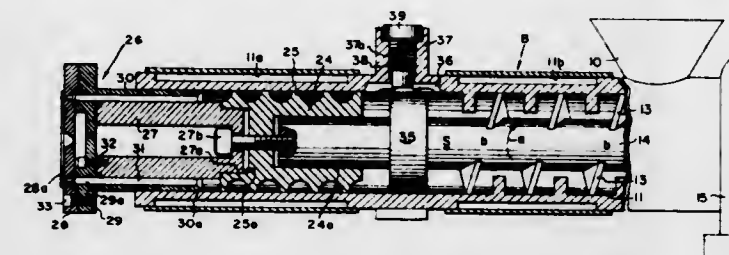
Claims priority, application Germany, July 5, 1967, D 53,530
Int. Cl. B05b 13/00
U.S. Cl. 18-14 A 4 Claims



Extruded plastic tubes are coated with finely divided silica or silicates by contacting such tubes shortly after extrusion while they are still warm and soft with a turbulent suspension of the finely divided silica or silicates in air which have assumed a negative electrostatic charge whereby the silica or silicates are deposited as a thin coating on the oppositely charged extruded tube. The apparatus for such coating process comprises an extruder, an annular chamber adapted to surround the extruded tubes, means for introducing finely divided silica or silicates turbulently suspended in air into such chamber to contact and coat such extruded tubes and means for withdrawing excess suspended silica or silicates from such chamber and recycling it back to the chamber.

3,613,160
VARIABLE BYPASS ORIFICE FOR CONTINUOUS MIXER
Bernard A. Loomans and David B. Todd, Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.
Filed Nov. 24, 1969, Ser. No. 879,446
Int. Cl. B29f 3/02

U.S. Cl. 18-12 SA 3 Claims

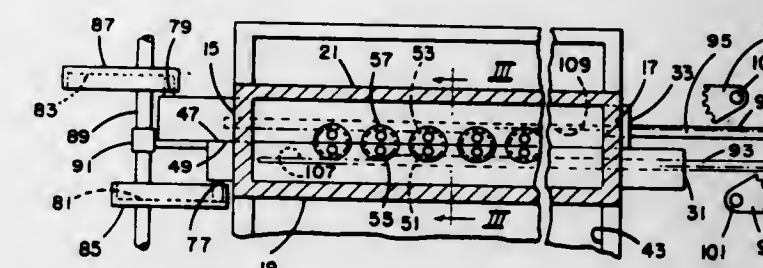


A mixer, including a barrel having a passage through in which is accommodated a reciprocating and rotating mixer shaft. An annular ring or plug mounted on the shaft closes the passage to the flow of material therethrough and a bypass orifice of variable size connects the passage portions on opposite sides of the ring. Externally adjustable means is operable during operation of the mixer shaft to vary the size of the orifice and control the flow of material therethrough and the holdback of material therein.

3,613,161
APPARATUS FOR CONTINUOUSLY EXTRUDING NET-LIKE STRUCTURES COMPOSED OF TWISTED MULTIFILAMENT YARNS

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed May 16, 1969, Ser. No. 825,213
Int. Cl. B29f 3/06

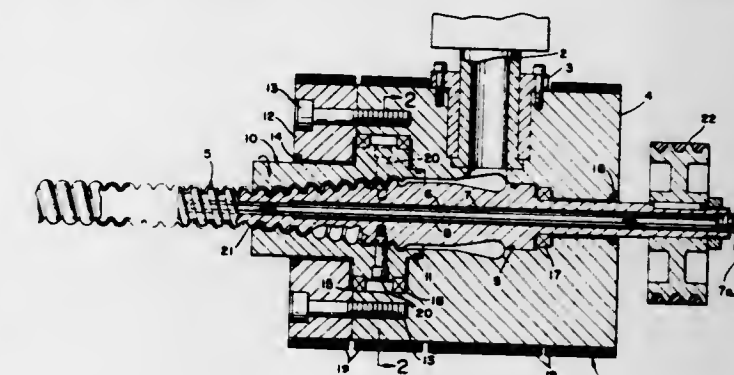
U.S. Cl. 18-12 N 5 Claims



Apparatus for making net-like structures in which extruded groups of streams of strand-forming material are set into groups of filaments, with the individual groups of filaments being twisted into yarns and interlaced and/or twisted with each other concomitantly with their formation.

3,613,162
APPARATUS FOR THE FORMATION OF HELICAL PLASTIC PIPE
Herbert Talsma, East Cleveland, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Filed Mar. 10, 1970, Ser. No. 18,213
Int. Cl. B29d 23/04

U.S. Cl. 18-14 RR 3 Claims

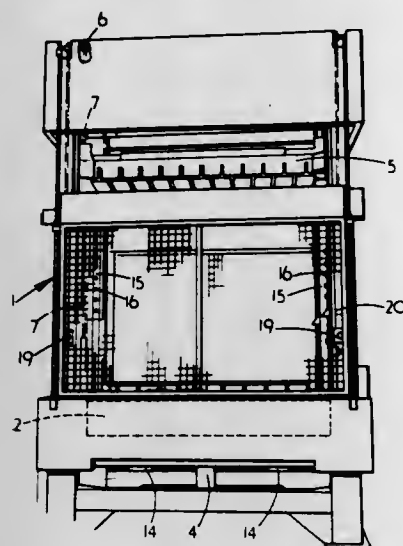


Plastic resin is extruded over a rotatable cooling mandrel in a die assembly which is disposed upon the barrel of an extruder. A rotatable die bushing embraces the end of the mandrel; when the die bushing is rotated in unison with the mandrel in a direction counter to that imparted the extrudate by the helix, an extrudate with no net rotation is produced.

3,613,163
PRESSES
Cyril Kennerley, Middlewich, England, assignor to E.R.F. Engineering Limited, Biddulph Moor, Stoke-on-Trent, England
Filed Mar. 20, 1969, Ser. No. 808,951
Claims priority, application Great Britain, Mar. 22, 1968, 13,937/68
Int. Cl. B30b 1/34

U.S. Cl. 18-16 R 8 Claims
A press comprising a table mounting a lower platen, an upper platen connected with the table via chains and

pulleys, a ram for moving the table between a loading mold and into the moldable material to compress and position and a position in which a pressing operation can mold that material into a molded object. Thereafter the



be effected, and at least one ram for moving the lower platen relative to the table to effect a pressing operation.

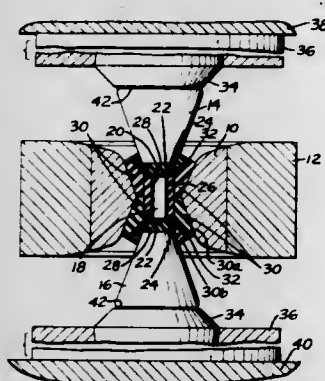
3,613,164 PISTON CONSTRUCTION FOR HIGH PRESSURE APPARATUS

Bela J. Nemeth and Benjamin Clark Boeckeler, Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.
Filed Aug. 7, 1968, Ser. No. 750,809

U.S. Cl. 18—16.5

Int. Cl. B30b 11/32

5 Claims



The invention pertains to a piston structure for high pressure work in which a smaller end of the piston is subjected to pressure and wherein the piston is divided into a first smaller tapered end part which is introduced into a chamber small end foremost to exert high pressure on a sample in the chamber, and into a second larger part separate from the smaller end part and which larger part delivers the thrust from a press to the larger end of the smaller end part so that if piston breakage occurs it will be confined to the smaller end part.

3,613,165 PRESS FOR FORMATION OF MOLDED OBJECTS

Dwight O. Corey, Memphis, Tenn., assignor to Ambac Industries, Incorporated

Filed Jan. 21, 1969, Ser. No. 792,556

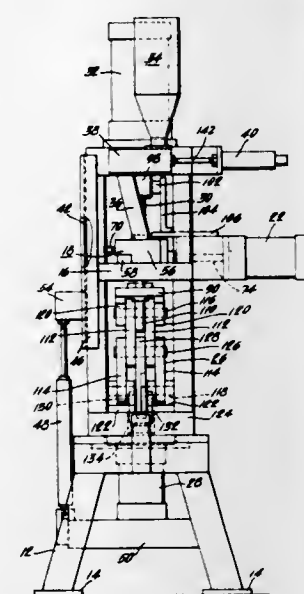
Int. Cl. B30b 11/00

U.S. Cl. 18—16.5

24 Claims

This press forms a molded object in a mold which is open at at least one end to receive flowable moldable material which has a lateral wall which is movable in order to permit lateral removal from the mold of a molded object. A tube is first inserted laterally into the mold and the mold is closed. A mold bottom is moved upwardly into the bottom of the mold and closes the bottom of the mold. Flowable moldable material is allowed to enter the open upper end of the mold by gravity flow, after which a ram is driven down into the upper end of the

ram and mold bottom are withdrawn from the mold and the mold wall is opened laterally to permit the removal of the molded object.



3,613,166 COMPACTION OF PARTICULATE MATTER

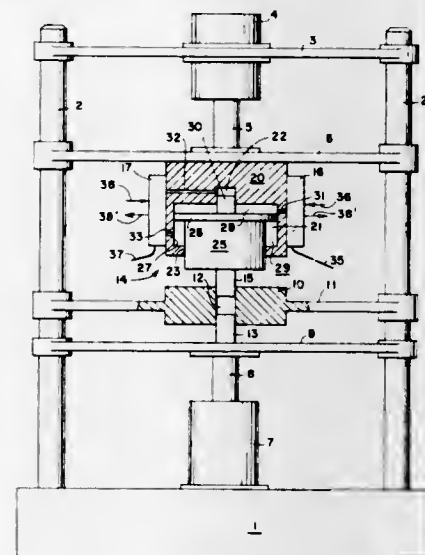
Richard W. Wallace, Pittsburgh, and Stanley R. Pavlica, Irwin, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed June 26, 1969, Ser. No. 836,810

Int. Cl. A22b 5/08

U.S. Cl. 18—16.5

3 Claims



An apparatus and method for compressing particulate material using at least one die in a mold wherein at least one actuator is employed for forcing the die toward and away from the mold and at least one servo valve is employed for controlling the actuator so as to apply to the die both static and dynamic forces.

3,613,167 CASTING APPARATUS

Alexander Young Stirrat, Fairlawn, Broadstone, Dorset, England

Filed July 23, 1969, Ser. No. 844,049

Claims priority, application Great Britain, July 26, 1968, 35,879/68

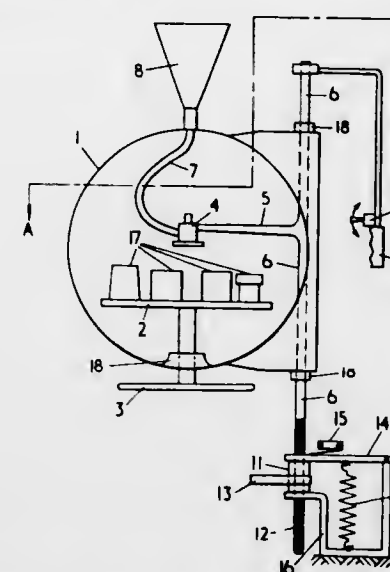
Int. Cl. B29c 5/00

U.S. Cl. 18—26 R

7 Claims

Casting apparatus having a vacuum chamber in which moulds to be filled are supported. A flexible supply duct feeds the material to be cast to the moulds through a nozzle and is positionable from outside the chamber to

sequentially bring the nozzle into register with the moulds while the chamber is evacuated. The nozzle can be urged



3,613,168 APPARATUS FOR MANUFACTURE OF CORED RUBBER ROLLS HAVING A SLEEVE THEREON

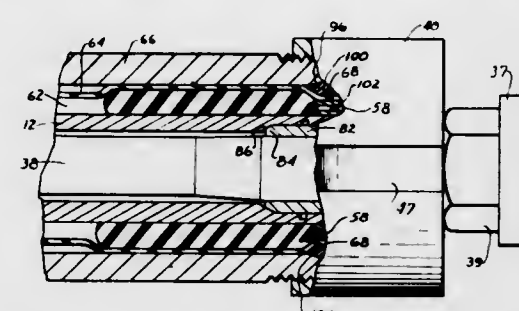
Le Roy R. Rowland, % Mrs. Gertrude Rowland, 2014 Frampton St., Charleston, S.C. 29407, and Charles L. Tavelle, 107 Temple Ave., North Charleston, S.C. 29406

Filed July 2, 1969, Ser. No. 9,242
(Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. B29f 1/00

U.S. Cl. 18—30 UM

10 Claims



A method and an apparatus for producing a cored rubber roll having a thin flexible sleeve placed thereon. The method is characterized by the simultaneous formation of the rubber roll and the placement of the sleeve thereon. The sleeve is placed in a mold casing concentric with and substantially evenly spaced from a core, and rubber is forced into the space between the core and sleeve. The rubber is under pressure while it is continuously supplied to the area between the core and the sleeve and the pressure of the rubber on the sleeve causes the sleeve to expand against the inside surface of the casing. The rubber is continuously fed into the available area until all of the spacing has been filled, and in this manner the sleeve is integrally bonded to the rubber while the rubber is simultaneously integrally bonded to the core.

3,613,169 DRIVE ASSEMBLY FOR A RECIPROCATING SCREW EXTRUDER

William E. Ziegler, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed May 5, 1970, Ser. No. 34,692

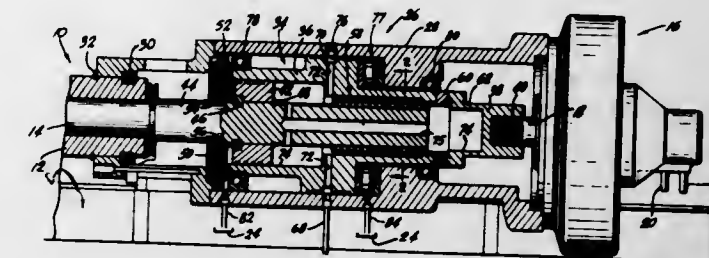
Int. Cl. B29f 1/02

U.S. Cl. 18—30 SS

8 Claims

Extruder apparatus for plasticizing and extruding organic plastic material which includes a drive assembly

for reciprocating and continuously rotating the screw of the extruder. A hydraulic motor is provided for turning the screw at the speed of the motor. Mounted between the screw and the motor is a shot or hydraulic cylinder which is connected at the cylinder end to the rotary output shaft of the motor and at the piston rod end to the screw of the extruder. The piston and its rod are coupled for co-



rotation with the cylinder by a ball spline assembly which allows free axial movement between the piston and the cylinder. The ball spline assembly is located within the pressure chamber of the cylinder so that it is lubricated by the hydraulic fluid supplied for actuating the hydraulic cylinder. The hydraulic fluid for the cylinder can be supplied from the same source that is available for operating the hydraulic motor.

3,613,170 SPINNING APPARATUS FOR SHEATH-CORE BICOMPONENT FIBERS

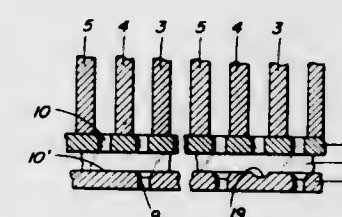
Keiichi Soda and Masayuki Ueki, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 28, 1970, Ser. No. 32,650
Claims priority, application Japan, May 27, 1969, 44/49,761

Int. Cl. D01d 3/00

U.S. Cl. 18—85 C

5 Claims



An apparatus for spinning a large number of sheath-core type bicomponent fibers from a single spinnerette is disclosed which comprises a spin dope distribution assembly, immediately adjacent the outlet surface of said assembly an orifice plate, and spaced therefrom, a spinnerette plate arranged in a manner wherein a first spin dope upon emerging from said orifice plate emerges through aligned orifices in said spinnerette plate and a second spin dope upon emerging from said orifice plate travels laterally in the spacing provided and emerges as a sheath around said first spin dope.

3,613,171 CLAMPING UNIT FOR MOLDING MACHINES

Karl Hehl, 183 Stedlung, 7291 Loosburg, Wurttemberg, Germany

Filed July 29, 1970, Ser. No. 59,135

Claims priority, application Germany, July 30, 1969, G 69 30 136.6

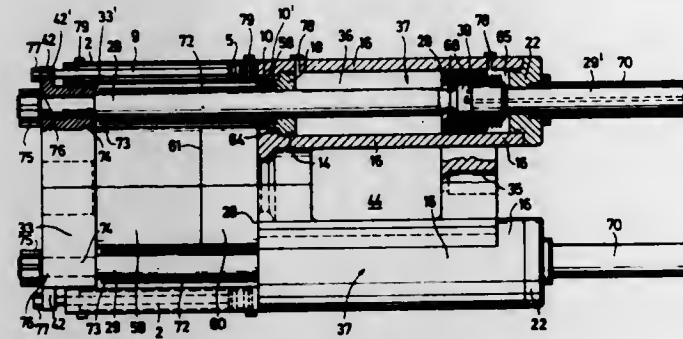
Int. Cl. B29f 1/06

U.S. Cl. 18—30 LV

11 Claims

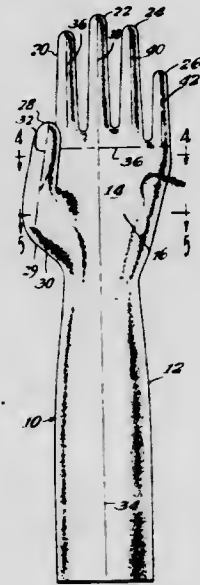
A clamping unit for a mold designed for processing synthetic material has a cylinder block defining a plurality of cylinders. Each cylinder has a piston rod arranged

therein to form a fluid drive means for clamping a movable and a fixed mold part together. The movable mold part is attached to the piston rods by means of a movable



clamping plate. A sleeve member is arranged over a respective piston rod in the space between the respective cylinder and the movable clamping plate, and is attached to the end face of the respective cylinder.

3,613,172
FORM FOR ELASTIC GLOVES
Harry Joseph Giambrone, Kettering, Ohio, assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Oct. 22, 1969, Ser. No. 868,331
Int. Cl. B29c 13/00; B29h 3/04
U.S. Cl. 18-41 9 Claims

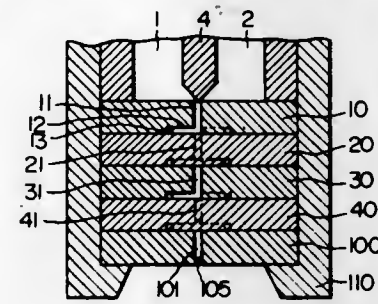


A form for making elastic, form-fitting surgical gloves and the like in which the center of the first joint of the thumb portion is transversely located forward of the palm of the hand shaped form, and is laterally located at one side of the finger portions, and in which the thumb portion bends at a transverse angle away from the palm and at a lateral angle toward the side of the thumb on which the finger portions are located.

3,613,173
MIX-SPINNING APPARATUS
Masao Matsui, Takatsuki, and Masahiro Yamabe, Neyagawa, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 13, 1968, Ser. No. 783,508
Claims priority, application Japan, Dec. 20, 1967, 42/82,822; Feb. 27, 1968, 43/12,426
Int. Cl. D01d 5/28
U.S. Cl. 18-8 SC 20 Claims

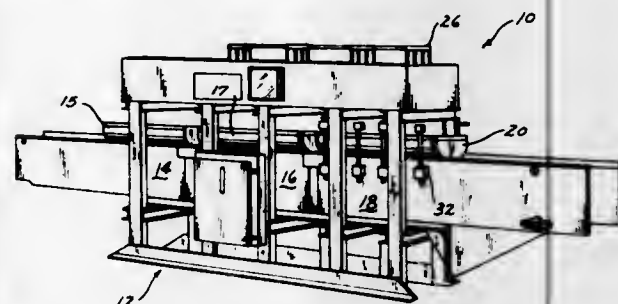
A spinning apparatus capable of manufacturing a multi-layer filament from at least two-spinning materials by using a layer-multiplying mixer consisting of a three-dimensional passage network which include at least two net-

work elements arranged in successive stages, the network element being composed of repeated unit passages arranged on a plane, whereby the spinning materials are joined and separated in different phase in multi-stages.



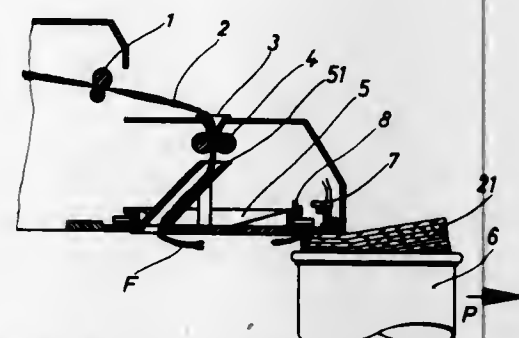
ranged on a plane, whereby the spinning materials are joined and separated in different phase in multi-stages.

3,613,174
APPARATUS FOR PRODUCING MOLDED PRINTING PLATES
Edward M. Redding, Algonquin, Ill., assignor to Printing Plate Supply Co., Chicago, Ill.
Continuation-in-part of application Ser. No. 580,393, Sept. 19, 1966, now Patent No. 3,427,970. This application Jan. 9, 1969, Ser. No. 790,031
Int. Cl. B29c 3/00, 17/00
U.S. Cl. 18-19 R 8 Claims



The method of placing plate material including a layer of plastic between at least a first pair of heated dies under pressure, and the repeating of said first step in a second pair of dies under pressure, wherein bearers of greater thickness are used to limit closing of said first pair of dies than bearers used to limit the closing of said second pair of dies.

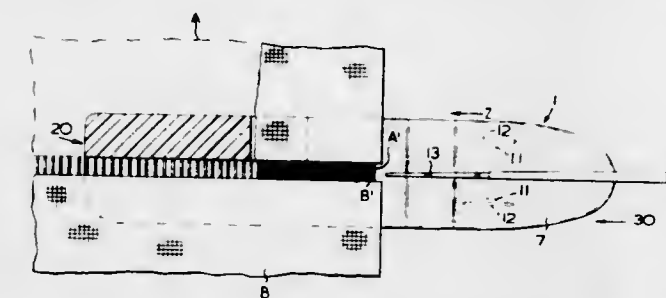
3,613,175
METHOD FOR INDUCING PARTING OF FIBER SLIVER BETWEEN A CONTAINER-FILLING DEVICE AND A CONTAINER
Fritz Schumann, Ingolstadt, and Erich Edler, Zuchering B., Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Continuation of application Ser. No. 698,458, Dec. 11, 1967. This application Nov. 3, 1969, Ser. No. 871,637
Claims priority, application Germany, Dec. 17, 1966, Sch 39,983
Int. Cl. B65h 54/80
U.S. Cl. 19-157 1 Claim



Fiber sliver is fed in a known manner into a container through an inclined tube carried by a rotary wheel with its upper inlet end in registry with the axis of the wheel

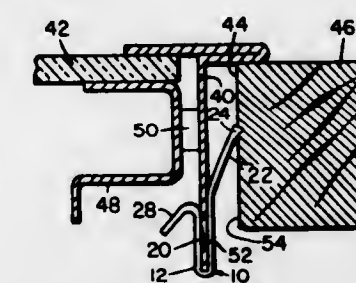
and its lower outlet end offset from the wheel's axis so that the sliver is discharged helically into the container beneath the tube. After the container is filled, rotation of the wheel is stopped in response to actuation of photo-electric sensing means in a rotative position in which the tube is inclined downwardly away from a predetermined established direction in which the container is to be pulled from the filling machine transversely of the wheel's axis. A sharp return bend is formed in the sliver by its being pulled against the side of the tube as the container is moved outward with the sliver held in it, so that further container movement pulls the sliver apart at a location between the tube and the coil in the container.

3,613,176
SLIDER FOR SEPARABLE FASTENERS
James Haythornthwaite and Joseph A. Fardeau, Joliette, Quebec, Canada, assignors to Scapa Dryers (Canada) Ltd., Joliette, Quebec, Canada
Filed Apr. 9, 1970, Ser. No. 26,810
Int. Cl. F16g 3/00
U.S. Cl. 24-31 H 9 Claims



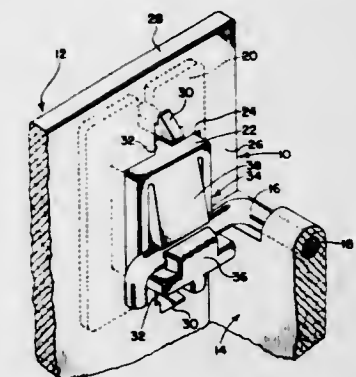
This invention relates to a slider for connecting the ends of paper-making felts, the slider having a pair of vertically spaced grooves laterally offset to one another and having a threading means insertable into the loops of the ends of the felt to connect them together. The invention also relates to a method of connecting the ends of the felt together when employing the slider.

3,613,177
ANCHORING CLIP FOR MOUNTING APPLIANCES
John B. Davis, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 27, 1970, Ser. No. 58,264
Int. Cl. A44b 21/00; E03c 1/18
U.S. Cl. 24-73 B 5 Claims



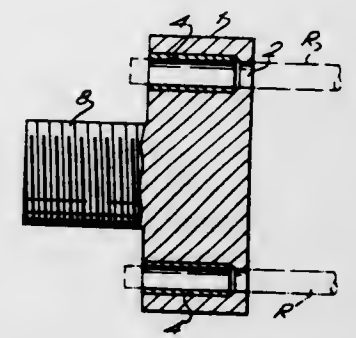
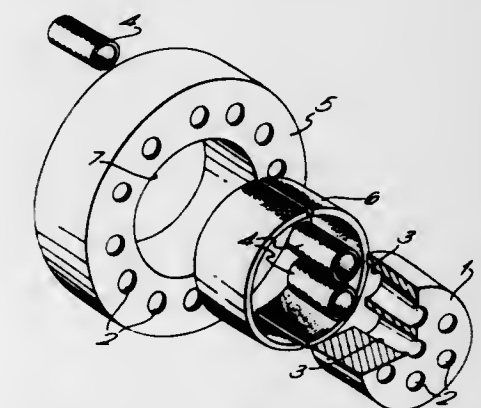
An anchoring clip having a U-shaped clamping portion with an interlocking tab, a gripping arm with bite-in ear portions, and a removal flange, is lockably positioned upon a mounting frame of a drop-in or surface-mounted appliance, such as a sink or cook-top. With a plurality of such anchoring clips secured about the periphery of the mounting frame, the appliance is lowered into position within a pre-cut opening formed in a counter top or the like, and the bite-in ears of the gripping arm are forced into a surface of the counter top surrounding the opening to securely mount and lockably position the appliance within the opening.

3,613,178
PLASTIC CLIP DEVICE
Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 13, 1968, Ser. No. 783,636
Int. Cl. A44b 21/00
U.S. Cl. 24-73 PF 3 Claims



A plastic clip for connecting perpendicular panels. The clip has a planar head portion with a rearwardly directed shank portion and prong connector elements. The rear of the shank portion defines a yieldable throat area opening to a socket. The shank portion of the clip is inserted into an opening in one of the panels and held in the opening by the prong connector elements. An arm element is secured to the other panel and the panels are perpendicularly connected by pressing the arm element on the second panel through the yieldable throat into the socket of the clip on the first panel.

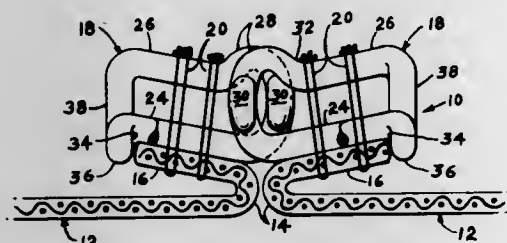
3,613,179
CABLE OR ROD ANCHORING MEANS
William Whittaker, Leeds, England, assignor to C.C.L. Systems Limited, Surbiton, Surrey, England
Filed Aug. 12, 1970, Ser. No. 63,202
Claims priority, application Great Britain, Aug. 20, 1969, 41,565/69
Int. Cl. F16g 11/02
U.S. Cl. 24-123 W 18 Claims



A clamping and anchoring device for rods and stranded cables comprising a cylindrical or tubular element having

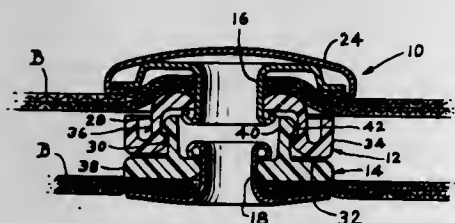
bores and hardened inserts to receive and hold the rods or strands, and a clamping and anchoring structure consisting of two or more of said elements which are mounted and clamped one upon the other.

3,613,180
COIL FOR A SLIDE FASTENER
John Emerson Burbank, Middlebury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Aug. 21, 1970, Ser. No. 65,895
Int. Cl. A44b 19/12, 19/34
U.S. Cl. 24—205.1 C 2 Claims



A zipper plastic coil is formed at its rearward end with a line of knobs, one on each convolution, the line being parallel to direction of coil for engaging the edge of a tape in an "invisible" type zipper.

3,613,181
SNAP FASTENER SOCKET
Donald O. Taylor, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Aug. 26, 1970, Ser. No. 67,065
Int. Cl. A44b 17/00
U.S. Cl. 24—216 1 Claim

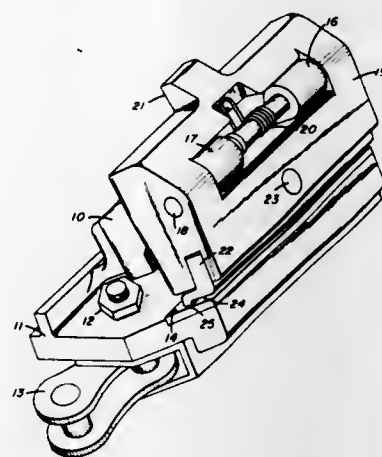


A plastic socket has an outward and doubled back extension which gives a husky appearance without sacrificing reliable snap action. The socket is a cup shaped member having an inward rib about its mouth and a flange extending outward about the mouth and downward thereby concealing a portion of the socket.

3,613,182
TENTER CLAMP POSITIONING RIDGE
Arthur W. Spencer, 1669 Lake Ave., Rochester, N.Y. 14650
Filed Apr. 13, 1970, Ser. No. 27,852
Int. Cl. A44b 21/00; D06c 3/02, 3/10
U.S. Cl. 24—253 4 Claims

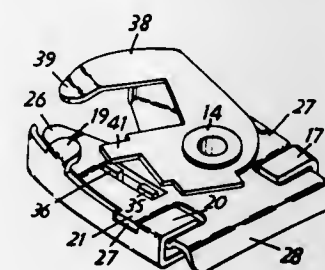
A device for the tenting of ribbed-edge plastic films. The device comprises a tenter clamp having a generally C-shaped first member bearing a rib-supporting surface. A second member is pivotally connected to the first member and bears a rib-contacting surface so disposed as to coact with the rib-supporting surface in a clamping engagement. In operation, the ribbed edge of the film is clamped between the two surfaces in such a manner that the sheet-like web portion of the film is not contacted. Proper clamping engagement is insured by a positioning ridge formed co-extensively with the trailing edge of the

rib-contacting surface. The clamp is so constructed that lateral tension exerted on the film during tenting will



cause the clamp to exert increased clamping force on the rib.

3,613,183
END ATTACHMENTS FOR WATCH BRACELETS
Yuen Sang Poon, Hong Kong, assignor to Yuen Sang Hardware Co., Ltd.
Filed Mar. 13, 1970, Ser. No. 19,321
Claims priority, application Great Britain, Nov. 18, 1969, 56,496/69
Int. Cl. A44b 13/00; A44c 5/18
U.S. Cl. 24—265 SH 8 Claims

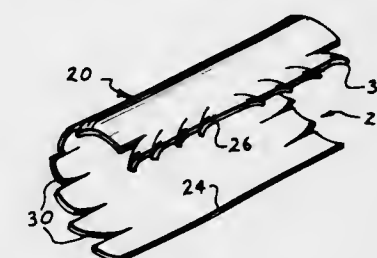


An end attachment for a bracelet, comprising a fixed base adapted to be secured to the end of the bracelet, a hook member mounted on the base for swivelling movement about an axis normal to the said plane between a closed position in which an end of the hook member forms with the base an enclosed aperture and an open position in which the said end of the hook member is spaced away from the base to form a gap in the periphery of said aperture, and a catch mounted on the base and resiliently urged into a first position in which, when the hook member is in said closed position, the catch engages a latch on the hook member to hold said member in said closed position, the catch being movable against the resilient force to release the latch.

3,613,184
SPRING CLIPS FOR TUBULAR FURNITURE
Armand T. Rankin, Louisville, Ky.
(1614 Hedden Court, New Albany, Ind. 47150)
Filed July 28, 1970, Ser. No. 58,880
Int. Cl. A47c 31/00
U.S. Cl. 24—265 C 4 Claims

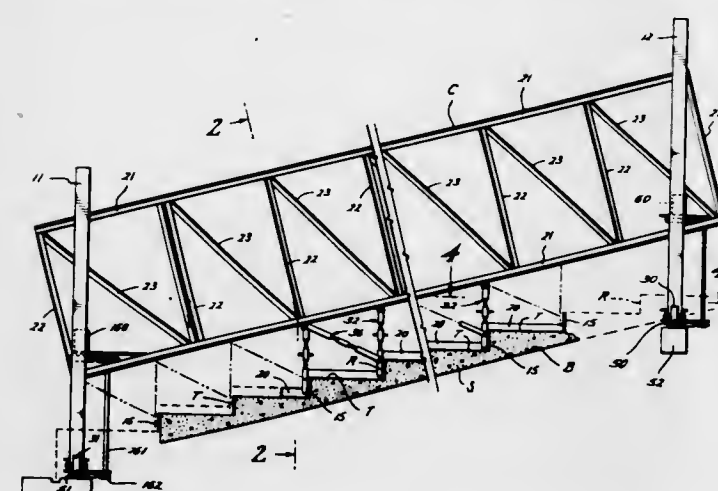
Outdoor, casual and patio furniture is frequently made from tubular frames having interwoven or crossed straps which are secured at their ends to the frame and are stretched across the furniture piece. During the life of the furniture piece, therefore, it is usually the practice to replace the straps one or more times. Desirable means of securing straps to tubular furniture entail the use of fasteners or clips. Prior art clips, while affording a particularly useful means of attaching straps to furniture pieces, are nevertheless subject to certain disadvantages. The clips

provided herein overcome these problems. They function very well on square tubular frames, and in addition the



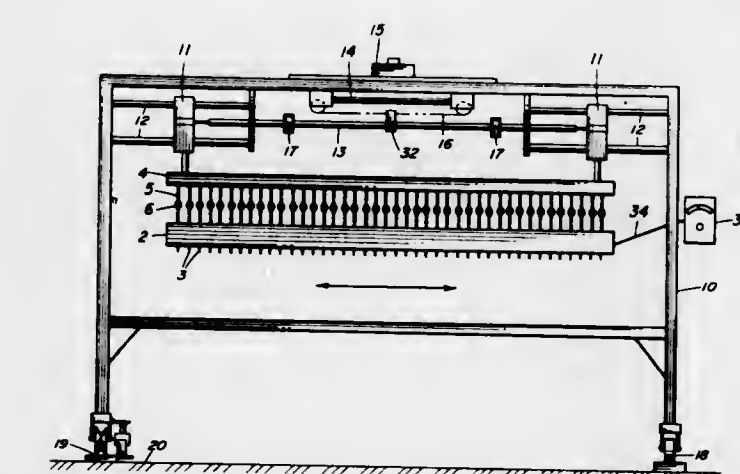
surrounding strap need not be wound around to the degree necessary with prior art clips.

3,613,185
CONCRETE SHAPER APPARATUS
George A. Hacker, Houston, Tex., assignor to H. A. Lott, Inc., Houston, Tex.
Filed Mar. 26, 1969, Ser. No. 810,455
Int. Cl. B29b 7/22
U.S. Cl. 25—118 S 9 Claims



Concrete shaper apparatus having power means for moving same, and a method, for shaping a plurality of concrete stadium risers and treads, or a similar structure, continuously as the apparatus is moving.

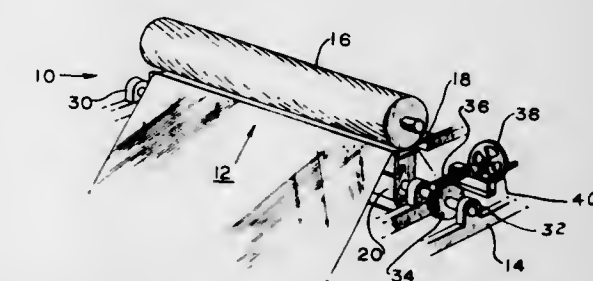
3,613,186
APPARATUS FOR PRODUCING SCULPTURED EFFECTS ON PILE FABRICS
Charles P. Mazzone, Dover, and Herbert J. Pike, Martinsville, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Oct. 7, 1969, Ser. No. 864,437
Int. Cl. D06c 23/00, 29/00
U.S. Cl. 26—2 R 9 Claims



An apparatus and process is described for moving a series of jets in two directions over a fabric, which may

also be moving, or in one direction if the fabric motion provides the other, or the jets may be stationary and the fabric moving in one or more directions. The jets are in a heater manifold and individually supplied by connectors having individual micrometric valve adjustments, the heater head being adjacent the jets and the air and control valves being located where they are not at high temperature. Means are also described for tilting the jet heads so that the jets may direct hot fluid, such as hot air, at an angle which is adjustable from 90°. The blast of hot fluid from the heated jets softens the nap or pile of the fabric and also bends it down, so that a sculptured effect is produced which resists numerous washings. Typical fabrics are napped acetates and other synthetic fabrics with thermoplastic threads.

3,613,187
CLOTH SHEAR WITH CHANGEABLE REST
William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Filed July 14, 1969, Ser. No. 841,201
Int. Cl. D06c 13/00
U.S. Cl. 26—15 R 1 Claim



A machine for shearing a running fabric web is provided with a changeable rest mechanism by which any one of a plurality of different rests can be moved into operating position. A rotatable shaft carries a single edge hard rest and a multiple edge gap rest angularly spaced from one another and either of which may be rotated into position and locked.

3,613,188
PLUG FOR OPENINGS IN CADAVERS
Ted Muscott, Box 315, Othello, Wash. 99334
Filed Feb. 24, 1969, Ser. No. 801,331
Int. Cl. A01n 1/00
U.S. Cl. 27—21 5 Claims



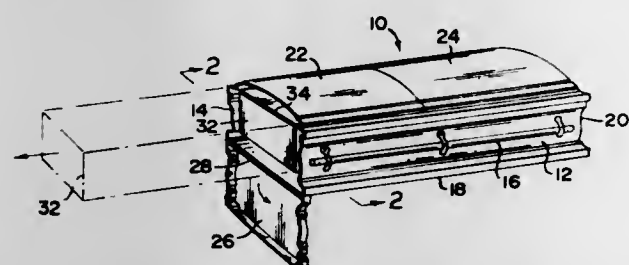
A tapered plug having plural annular series of anchors, a central bore containing an absorbent material and quadrilateral openings into the bore; the base or large end

being circumferentially uninterrupted and impervious and having sockets adapted to cooperate with an applicator implement exposed at the base end.

3,613,189
END EJECTING COFFIN
Donald R. Kirby, 637 Carey Place,
Lakeland, Fla. 33803
Filed Mar. 19, 1970, Ser. No. 21,088
Int. Cl. A61g 17/00

U.S. Cl. 27—35

7 Claims

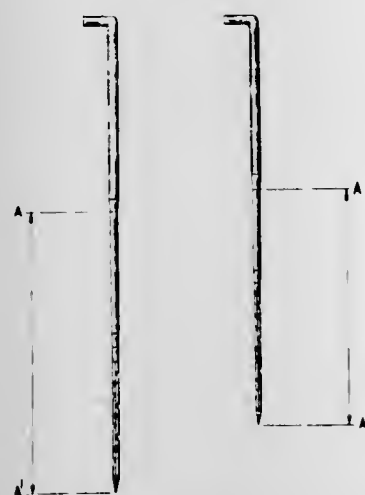


A coffin adapted for use in mausoleum burials. The device comprises an inner coffin of inexpensive construction, enclosed within an outer, reusable coffin which is of ornate construction. An end of the outer coffin is openable and the inner coffin is rollably mounted within the outer coffin to move longitudinally into and above the ground mausoleum vault without being seen by the funeral party.

3,613,190
NONWOVEN FABRICS AND A PROCESS FOR MAKING THEM
David Winston Crosby, Cwmbran, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of abandoned application Ser. No. 578,637, Sept. 12, 1966. This application July 13, 1970, Ser. No. 54,121
Claims priority, application Great Britain, Sept. 13, 1965, 38,990/65
Int. Cl. D04h 18/00

U.S. Cl. 28—4 R

8 Claims



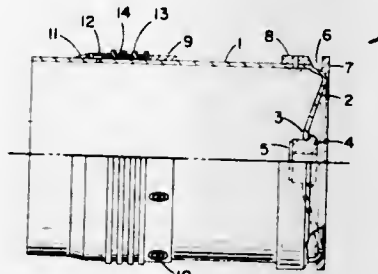
A process for making a non-woven fabric having a predetermined repeating pattern of closely spaced tufts by the technique of moving a fibrous assembly along a path which is in the plane of the assembly and needle punching the assembly, said method comprising: arranging a plurality of pattern-forming punching needles in each of a plurality of sets and spacing the sets along the path of travel of the assembly, each set containing only a proportion of the total number of needles necessary to produce the predetermined tuft pattern; driving said needles into the fibrous assembly to produce a number of tufts less

than the total number required for the pattern; forwarding the assembly along said path a distance such that each needle set will penetrate the assembly to form additional tufts which with the tufts inserted by a preceding needle set will form at least a part of the pattern; driving said needles into the assembly to form said additional tufts; and repeating the forwarding and needle driving steps whereby the tuft pattern is gradually built up.

3,613,191
MISSILE COVER AND METHOD OF MAKING THE COVER
Violet C. Minnich and Walter J. Krueger, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Dec. 1, 1969, Ser. No. 881,031
Int. Cl. B23p 15/22

U.S. Cl. 29—1.4

3 Claims

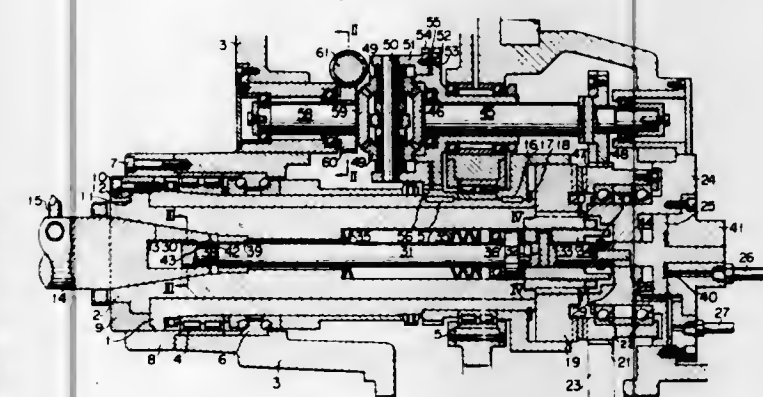


A cover for attachment on a dummy training missile prior to loading the missile into a gun breech tube having a firing pin and breech fingers. A cylindrical tube is formed by heating, drawing and spinning a metal blank around a mandrel or by cutting off a section of tubing. One end of the tube is open and the opposite end is closed and indented to provide clearance for movement of the firing pin. A peripheral flange is attached to the tube at the closed end and an annular sleeve is secured to the tube to form an annular slot between the flange and the sleeve for breech finger engagement. An attachment ring is secured to the cylindrical tube and a hoop adapter is mounted for movement on the tube. Metallic and flexible ring spacers are alternately placed between the attachment ring and the adapter to allow movement of the adapter when loading the missile into the gun breech tube.

3,613,192
TOOL SPINDLE ASSEMBLY
Yutaka Tanabe and Masaharu Tajima, Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,723
Int. Cl. B23b 39/02, 19/02, 47/00

U.S. Cl. 29—26

1 Claim



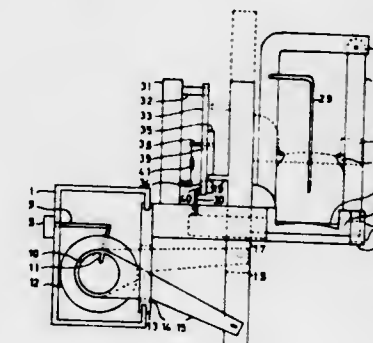
A main spindle device comprises a main tool spindle of such construction, wherein an inner spindle member is arranged in a rotatable outer sleeve member in such a

relation that the center axis of said inner member is parallel with, and eccentric by a predetermined amount to, the axis of rotation of said outer member. Said inner member is also rotatable and provided with an eccentric opening for mounting a suitable tool holder or boring bar, the eccentricity thereof relative to the center axis of said inner member being equal to said predetermined amount. Therefore the spindle device includes means for effecting any predetermined amount of relative angular deviation between said inner and outer members, so that a tool mounted on the tool holder may be accurately adjusted for a given rotational radius or a radial depth of a cut thereof.

3,613,193
APPARATUS FOR MOUNTING VENETIAN BLIND SLATS
Bertil Westberg, Rombergsgatan 32, Enköping, Sweden
Filed Feb. 7, 1969, Ser. No. 797,499
Claims priority, application Sweden, Feb. 9, 1968, 1,746/68
Int. Cl. B23p 19/04

U.S. Cl. 29—24.5

9 Claims

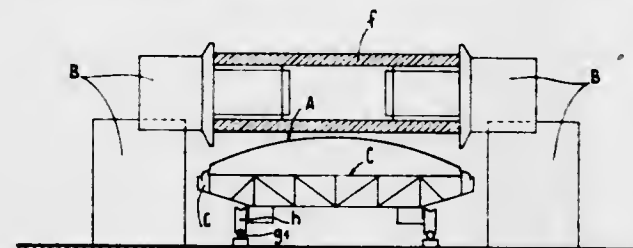


A Venetian blind assembling apparatus for inserting Venetian blind slats in aligned openings in cord ladders. During insertion of successive slats, the cross cords of the ladders are positioned alternately to respectively one side and the other side of the usual lift-cord-receiving holes formed in opposing end portions of each slat. Thus, during mounting of the lifting cords in the Venetian blind, they are inserted in a zig-zag configuration between the cross cords of the cord ladders.

3,613,194
METHOD AND MEANS FOR PRODUCING A RAILWAY CARRIAGE ROOF
Francois Colas, Bourg-la-Reine, France, assignor to Cegedur G.P., Paris, France
Filed June 30, 1969, Ser. No. 837,544
Claims priority, application France, July 11, 1968, 158,743
Int. Cl. B60j 7/12; E04b 7/14

U.S. Cl. 29—33 E

7 Claims



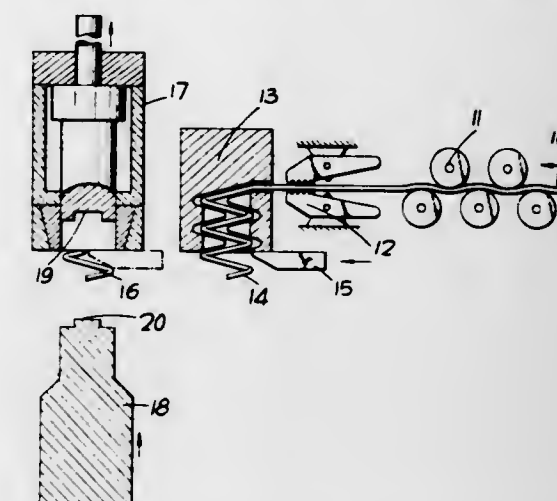
The manufacture of railway carriage roof comprising the steps of unrolling a metal band over a framework of a railway carriage roof formed with arched members between uprights, fixing one end of the band to an arched member at one end of the framework, curving the other end of the band in the transverse direction so that it assumes the shape of the arched members, tensioning the band and nailing the band to the frame-work along the

side members and then along the other end of the arched members, and then separating the framework from the unused portions of the band.

3,613,195
METHOD OF MAKING FILTER RINGS
Kenneth Senior, Frinton-on-Sea, Essex, England, assignor to Stella-Meta Filters Limited, Laverstoke, near Whitechurch, Hampshire, England
Filed Apr. 2, 1969, Ser. No. 812,633
Claims priority, application Great Britain, Apr. 2, 1968, 15,803/68
Int. Cl. B23p 17/00

U.S. Cl. 29—412

6 Claims

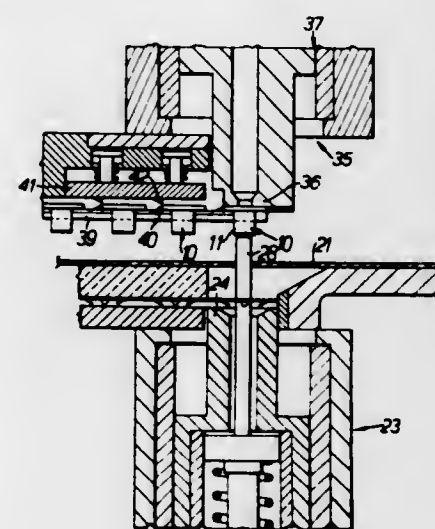


The disclosure is concerned with a method of producing filter rings of the kind comprising an annulus having shallow projections projecting from the face thereof. Waste of metal is avoided by forming the annulus from a wire. The wire is first formed into a helical coil, which is subdivided into its separate convolutions, and each convolution is then flattened. By using a die to achieve flattening, the projections on the annulus may be formed simultaneously.

3,613,196
APPLICATION OF VENTILATORS AND SIMILAR FITTINGS TO ARTICLES OF UPHOLSTERY
Leslie Thomas Docker, Chadwick End, England, assignor to Slumberland Group Limited, Tyseley, Birmingham, England
Filed Sept. 11, 1969, Ser. No. 857,100
Claims priority, application Great Britain, Sept. 11, 1968, 43,126/68
Int. Cl. B68g 7/12

U.S. Cl. 29—91

8 Claims



The invention is concerned with the mounting of ventilators and other fittings, such as handle anchorages, on mattresses and other articles of upholstery. Known fittings

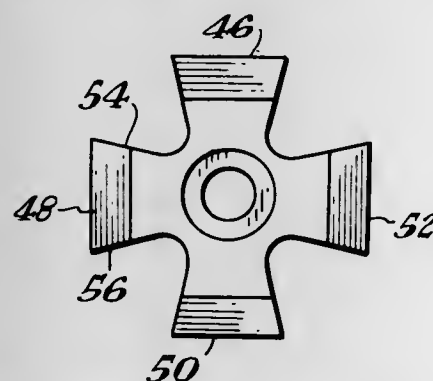
and retaining washers are employed. Each fitting has a neck which extends through a hold in the article and a head which lies on one side of the article. Each retaining washer comprises a plate with an aperture for the neck of the associated fitting and tongues which allow the neck to be pushed into the aperture but strongly resist its withdrawal. The invention provides bands of fittings and bands of retaining washers, and apparatus which severs a fitting and a washer from the bands, guides them to opposite sides of the article, passes the neck of the fitting through a preformed hole in the article and into the aperture in the retaining washer.

3,613,197

THREADING INSERT

Henry W. Stier, Dearborn Heights, Mich., assignor to Carnet Company, Pittsburgh, Pa.
Continuation of application Ser. No. 648,677, June 26, 1967. This application Mar. 9, 1970, Ser. No. 17,026
Int. Cl. B26d 1/00; B23g 1/00
U.S. Cl. 29—95

4 Claims



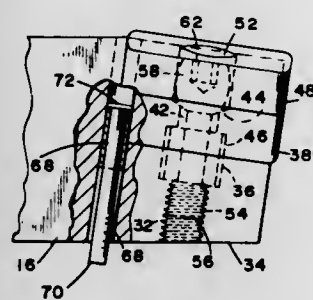
An indexable and reversible threading or grooving insert having a hub portion and a plurality of radially extending projections therefrom, each of said projections being substantially identical in size and shape, each of said projections having a pair of cutting edges on either side of the projection. Insert support means are also provided to support the operative cutting edge on the underside of its projection.

3,613,198

CUTTING TOOL ASSEMBLY

Emil W. Weber, 924 Marbrook Lane, York, Pa. 17404
Filed Sept. 19, 1969, Ser. No. 859,397
Int. Cl. B26d 1/00
U.S. Cl. 29—96

6 Claims



A cutting tool assembly comprising a tool shank having a recess in one end thereof defined by a base surface and at least one wall perpendicular thereto, a hole extending through said base surface, and a disposable cutting tool having an axial hole aligned with said hole in said shank. A seat member complementary in shape to said cutting tool also has an axial hole chamfered at one end and an annular bushing extends between and is received within complementary recesses in said base surface and seat member to secure the same against movement within planes parallel thereto. A locking pin threaded on one end is threaded into the hole in said base surface of said

tool shank and the opposite end is received within the hole in said disposable cutting tool, while an intermediate portion is complementary to the chamfer of the hole in the seat member and is operable to wedge the cutting tool within said recess in said tool shank when the pin is threaded into the hole in the recess of the shank and also permit ready release of said cutting tool when a limited amount of unthreading movement of said locking pin occurs relative to the tool shank.

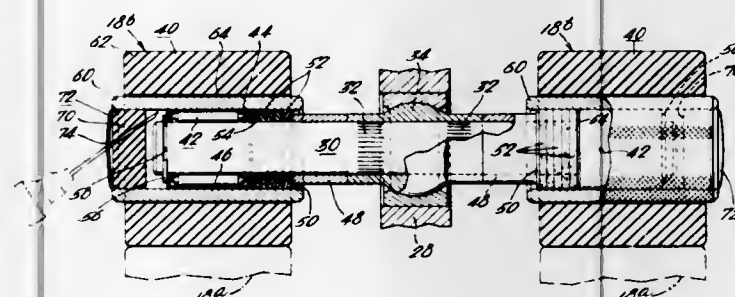
3,613,199

TOP ROLL ASSEMBLY FOR SPINNING FRAMES

Paul E. Duquette, 108 Homestead Drive, Doylestown, Pa. 18901
Filed July 16, 1969, Ser. No. 848,258
Int. Cl. B21b 13/02

U.S. Cl. 29—116

2 Claims



A top roll assembly for a spinning frame comprising an elongated arbor, a roller assembly rotatably mounted at opposite axial ends of said arbor, each roller assembly including a needle roller bearing, an elongated cylindrical arbor sleeve press fitted on the shell of the needle roller bearing, a cot made of a resilient material secured to the outer peripheral surface of said arbor sleeve, a plurality of washer elements confronting one axial end of the needle roller bearing and disposed interiorly of said arbor sleeve, a rubber plug mounted in the opposite axial end of said arbor sleeve and a cap member press fitted in the outer end of said arbor sleeve over said plug.

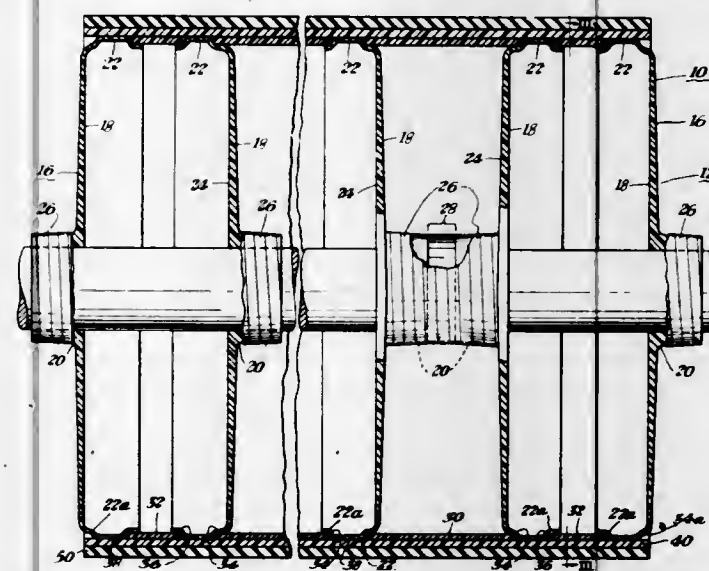
3,613,200

REINFORCED PLASTIC SHELL STRUCTURES AND METHODS AND MEANS FOR CONSTRUCTING THE SAME

Leonard S. Meyer, Columbia, S.C., assignor to McCreary Industrial Products Company, Inc., Indiana, Pa.
Filed Oct. 29, 1968, Ser. No. 771,407
Int. Cl. B21b 31/08

U.S. Cl. 29—132

16 Claims



I disclose a reinforced plastic shell structure mountable upon a shaft or the like, said structure including a pair of spaced end discs fabricated from laminated

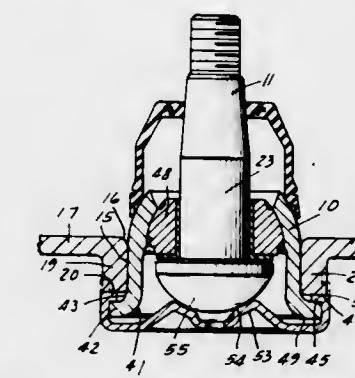
layers of plastic and reinforcing material, each of said discs having a rim structure and a hub, at least some of said reinforcing layers extending at least partially into said rim and said hub, and a reinforced plastic shell section extending between said rims and adhered thereto.

3,613,201

STAMPED BALL JOINT ASSEMBLY AND METHOD OF MAKING SAME

Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed Jan. 20, 1970, Ser. No. 4,183
Int. Cl. B23p 11/00; B21d 39/00
U.S. Cl. 29—149.5 B

7 Claims



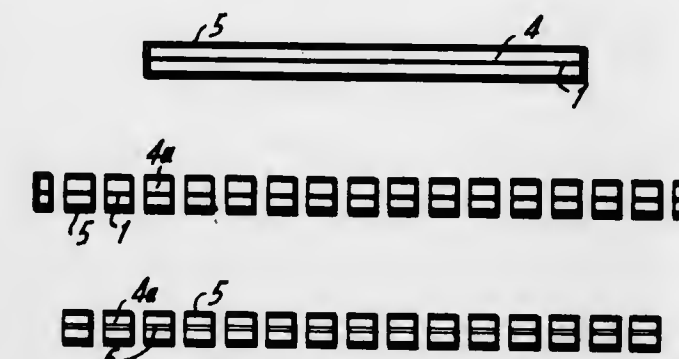
A movable stud ball joint assembly having a stamped cup-shaped housing with an open top and bottom with an outturned flange around the open top end. A closure cap is used to close the open top and has a circumferential inturred flange spin-swaged over the outturned flange of the housing to provide a squared flat surface to abut the side of the member in which the housing is inserted.

3,613,202

METHOD OF MANUFACTURING BEARINGS, PARTICULARLY MICROBEARINGS

Robert Soder, Territet, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland
Filed Feb. 7, 1969, Ser. No. 797,580
Claims priority, application Switzerland, Feb. 29, 1968, 3,063/68
Int. Cl. B21d 53/10
U.S. Cl. 29—149.5 NM

12 Claims



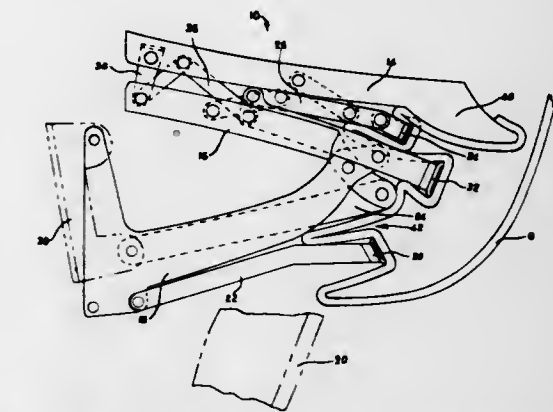
A process for manufacturing bearings, particularly microbearings comprising, embedding an elongated support in at least one particular material so as to produce a bar of this material which is traversed longitudinally by the support, slicing the bar into fragments the thickness of which corresponds to the weight of the bearings to be manufactured, exposing these fragments to the action of a support-etching agent so as to destroy the material of the support in the fragments and thus producing therein a longitudinal hole, which includes providing around the support a gradient of particles of the particular material, said particles being progressively deposited and agglomerated on the support, this resulting in progressive embedment of the support.

3,613,203

METHOD AND APPARATUS FOR CONSTRUCTING CONVERTIBLE TOP LINKAGES

Raymond J. Allds, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula, Ohio
Continuation-in-part of application Ser. No. 638,492, May 15, 1967, now Patent No. 3,490,120, dated Jan. 20, 1970. This application Jan. 7, 1970, Ser. No. 874,980
The portion of the term of the patent subsequent to Jan. 20, 1987, has been disclaimed
Int. Cl. B23p 17/04, 19/00
U.S. Cl. 29—155

13 Claims



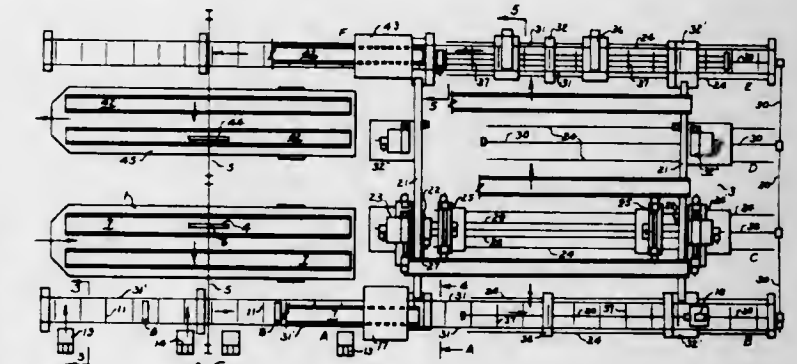
This invention relates to a method and apparatus for deburring the rails, bows and links of a convertible top framework so as to prevent tearing of the convertible top material and injury to passengers. The method includes the use of novel, opposed-force deburring rollers which act on opposite edges of elongated sheared sheet metal blanks that are to form the framework elements. Pivoted arms support the rollers so that fluid driven pistons, such as hydraulic or air or air-hydraulic actuators, acting through the arms can supply the force for deburring even as the width dimension of the elongated blanks varies. The mechanism to accomplish the deburring provides for a changing lateral movement of the piston which drives the arm to accommodate the arc made by the pivoting arm during reciprocal movement of the piston.

3,613,204

OVERALL PROCESSING OF STRUCTURAL MEMBERS

John R. McConnell, 148 Woodside Ave., Ridgewood, N.J. 07450
Continuation-in-part of application Ser. No. 737,654, June 17, 1968, now Patent No. 3,546,772. This application Jan. 20, 1970, Ser. No. 4,360
Int. Cl. B23p 17/00, 19/00, 21/00
U.S. Cl. 29—155 R

3 Claims



The process comprises the placing of a trailer of raw structural shapes under an overhead crane alongside a longitudinally-arranged apparatus for the coping, cleaning, drilling, attachment of details, bolting and painting of members in a single continuing handling of the work material. It includes hoisting, placement, longitudinal movement and transfer of the shapes to apparatus for transverse movement to pre-located plural fabricating

units for simultaneous execution of all required fabricating operations. The completely finished members are then moved longitudinally to a dual longitudinal track for hoisting and placement on an empty outbound trailer for shipment. The mechanized apparatus can automatically and precisely measure, layout and execute any combination of various fabricating operations required for all different types of beams and girders.

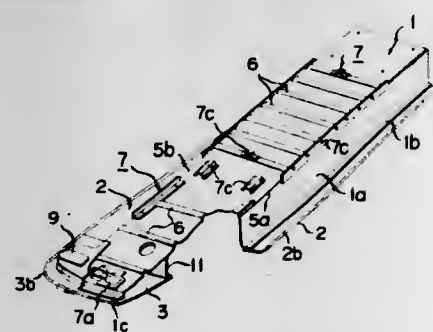
3,613,205
METHOD OF MAKING A FRAME ASSEMBLY OF AN ENDLESS-BELT TRACTION MIDGET SNOW VEHICLE

Norio Takada, Hamamatsu-shi, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan

Filed Mar. 25, 1969, Ser. No. 810,260
Claims priority, application Japan, Mar. 30, 1968, 43/20,661

Int. Cl. B23p 17/00, 19/00
U.S. Cl. 29—155

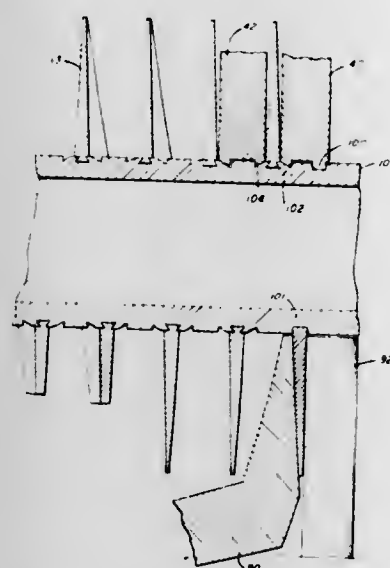
6 Claims



A vehicle frame assembly consists of an inverted channel-shaped plate having stepped strips formed along the flanges, a pair of foot step plates welded to the stepped strips of the inverted channel-shaped plate in a manner to extend along the free edge of the flange of said channel-shaped plate, and a front bottom plate for supporting a pair of a skis which is welded to the front bottom of said channel-shaped plate. The plates are assembled after complementary parts are attached to any one or ones of said plates.

3,613,206
ROLLED GROOVE FIN TUBE
Arthur H. McElroy, 2789 E. 45th Place, Tulsa, Okla. 74105
Filed May 7, 1969, Ser. No. 822,647
Int. Cl. B23p 15/16, 15/26
U.S. Cl. 29—157.3 AH

8 Claims

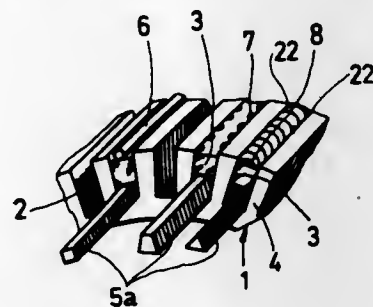


A fin tube formed by a combination of groove forming and backfilling helically wound fins substantially integral with tubing. Groove forming and backfilling rollers are combined in cooperation with the fin forming mechanism.

3,613,207
METHOD FOR COVERING AND CLOSING COOLING CHANNELS OF A COMBUSTION CHAMBER
Werner Adolf Malburg, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow Gesellschaft mit beschränkter Haftung, Munich, Germany

Filed June 5, 1969, Ser. No. 830,743
Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26
U.S. Cl. 29—157 C

13 Claims



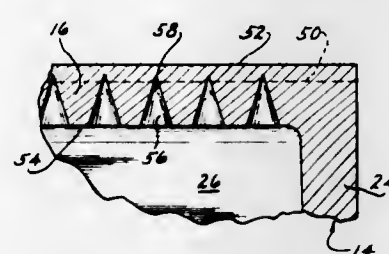
A method for covering and closing cooling channels which are defined in a combustion chamber wall includes inserting wire rods over the radially outer opened ends of the channels between longitudinally extending webs which define the channels and establishing a permanent connection of the wire rods to the webs such as by welding or soldering. A combustion engine particularly rocket engine is formed preferably with a cylindrical main combustion chamber portion having a narrow throat section terminating in a nozzle discharge for the thrust gases and with longitudinally extending grooves for cooling fluid which extend along the complete length of the combustion chamber and including the nozzle section. Spacers or templates are inserted into the bottom of the grooves from each end of the combustion chamber and they abut for example, in the narrow throat section. Thereafter wire rods are pressed into the grooves between the webs of the wall up to the limit of the templates and they are secured to the walls such as by electronic welding, by brazing using a soldering rod or by shield gas welding. Instead of using templates the rods may be formed with transverse supports or projecting shoulders or the webs may be formed with a step or shoulder to position the rod up to the desired groove penetration.

3,613,208
METHOD OF FABRICATING A PERFORATED PANEL FOR A VACUUM WORK-HOLDER OR CHUCK

Harold A. Seberg, 10741 Spring St., Sturtevant, Wis. 53177, and Leo E. Fitzgerald, 8710 Clover Lane, Racine, Wis. 53406

Filed Aug. 20, 1968, Ser. No. 754,053
Int. Cl. B23p 15/16; B22d
U.S. Cl. 29—163.5 R

2 Claims



This disclosure comprises a fixture or chuck employed to hold work-pieces while the latter are being machined, and is especially intended to hold such pieces that cannot be conveniently clamped, or to hold those of non-magnetic material that cannot be held on a magnetic chuck. This disclosure comprises a vacuum chamber provided with orifices in the work-holding surface thereof. A

vacuum is maintained in the chamber to hold the work-pieces which have been placed upon the surface, thereby closing the orifices. This disclosure primarily relates to the method of producing the orifices in the surface of the device.

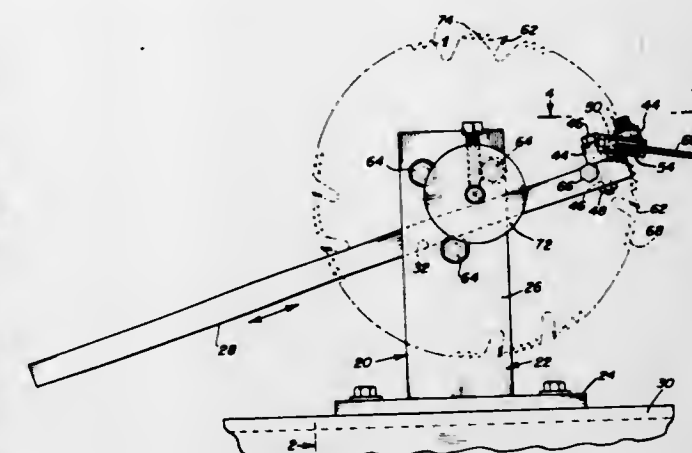
3,613,209
PROCESS FOR MANUFACTURING GOLD ALLOY WATCH CASINGS

Ervin Piquerez, Bassecourt, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 685,956, Nov. 27, 1967, which is a continuation-in-part of application Ser. No. 437,592, Mar. 5, 1965, now abandoned. This application Dec. 9, 1969, Ser. No. 883,588

Int. Cl. B23p 13/00

10 Claims

A process for manufacturing watch casings composed of gold or gold alloy is disclosed. A suitable gold alloy is melted with an oxidization inhibiting metal in an inert gas and the molten metal is then injection molded into the shape of a watch casing. The watch casing is then heat treated for two to five hours at a temperature near 400° C. to eliminate internal strains formed during the molding operation. Finally the watch casing is surface hardened and polished whereupon it is ready for commercial use.

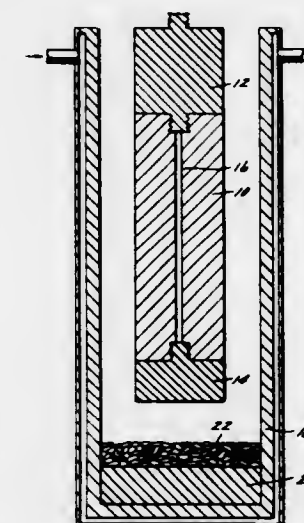


out of such aligned position. The assembly can be adjusted to positions corresponding to the desired shape of the cutting faces of the hard teeth.

3,613,210
ARC CAST INGOT
Winston H. Chang, Cincinnati, Ohio, assignor to General Electric Company
Filed June 6, 1966, Ser. No. 555,483
Int. Cl. B21c 1/00, 27/00

U.S. Cl. 29—187

3 Claims



A vacuum arc melted ingot central portion of a high temperature alloy based on one of the refractory metal elements or on Fe, Ni or Co is substantially crack-free through provision of an integral ingot top portion of at least one inch nominal thickness of the unalloyed element on which the alloy is based.

3,613,211
DEVICE FOR POSITIONING AND ADJUSTING RELATIVELY HARD TEETH TO THE TEETH OF A CIRCULAR SAW

Byron G. Gaggett, 3836 Centraloma Drive, San Diego, Calif. 92108
Filed Oct. 7, 1969, Ser. No. 864,359

Int. Cl. B23p 19/00

10 Claims

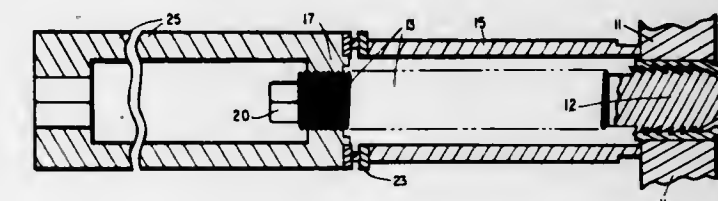
A device for positioning and adjusting relatively hard teeth to tooth holders of steel, circular saws. The device includes a frame and an assembly of elements and pivots

3,613,212
TAP FOR REMOVING TUBES FROM TUBE SHEETS

Charlie D. Miller, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed July 22, 1969, Ser. No. 843,361

Int. Cl. B25b 27/06

5 Claims



The tube pulling tap is formed with a thread, the force applying side of the helixes of the thread confronting the shank of the tap inclining from the crest of the threads toward the roots thereof in a direction from the shank. Accordingly, the tube is not cammed outwardly into tighter engagement with the tube sheet but conversely is contracted inwardly resulting in axial withdrawal of the tube from the sheet with less applied force.

3,613,213
STAKING MACHINE
Dirk Landman, Mechanicsburg, and Edmund G. Pinger, Freeland, Pa., assignors to Berg Electronics, Inc., New Cumberland, Pa.
Original application Nov. 1, 1967, Ser. No. 679,675. Divided and this application July 22, 1969, Ser. No. 870,890

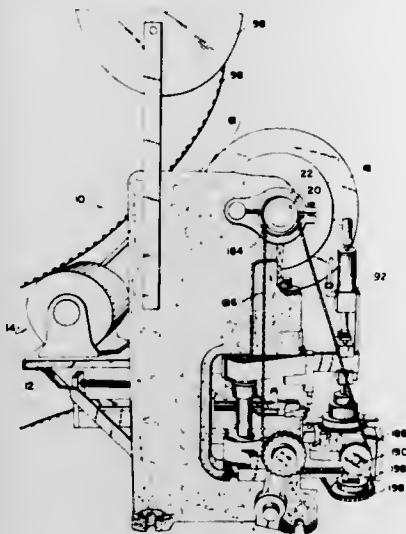
Int. Cl. H05k 13/04

U.S. Cl. 29—203 B

17 Claims

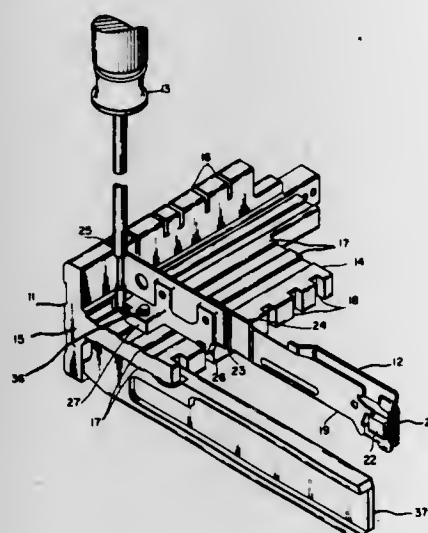
A machine is provided for successively staking terminals onto an arcuate or semi-circular terminal board. The terminal board is of the type used in electrical apparatus. The staking structure is provided in a punch press which has a lower fixed die shoe and an upper movable die shoe. The lower die shoe carries a support structure for the terminal board. The support structure is mounted on a spring so that it will be depressed during the staking operation. Clamp means are provided to releasably secure the terminal board onto the support structure. The clamp

means permit slight tilting of the board during staking to result in good seating of terminals. Additional roller



clamp means are provided for firm pressure engagement with the outer rim of terminal boards.

3,613,214
APPARATUS FOR MOUNTING A HEAD/ARM ASSEMBLY
Steven J. MacArthur, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.
Filed Jan. 16, 1970, Ser. No. 3,321
Int. Cl. B23p 19/00
U.S. Cl. 29—200 P 3 Claims

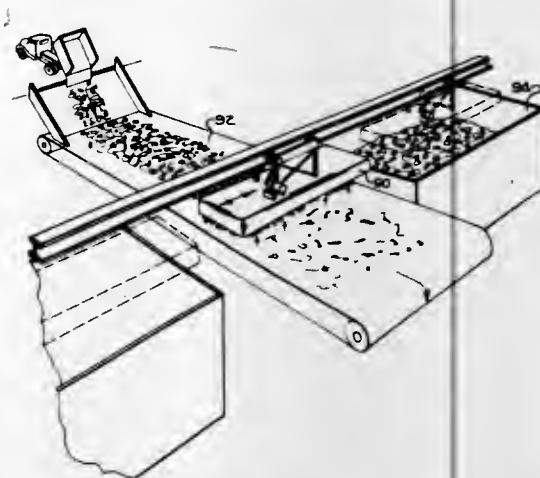


Apparatus for mounting a head/arm assembly in a disk storage drive including a flange on the assembly, a tool for cooperation with a portion of the flange, means for converting rotary motion of the tool into axial movement of the assembly and means for clamping the flange to secure the assembly in a selected position.

3,613,215
PROCESS FOR COLLECTING WASTE MATERIALS
James F. Uhl, P.O. Box 11065, Charlotte, N.C. 28209
Filed June 16, 1970, Ser. No. 46,722
Int. Cl. B23g 17/00; B23p 19/00; B23q 7/00
U.S. Cl. 29—403 10 Claims

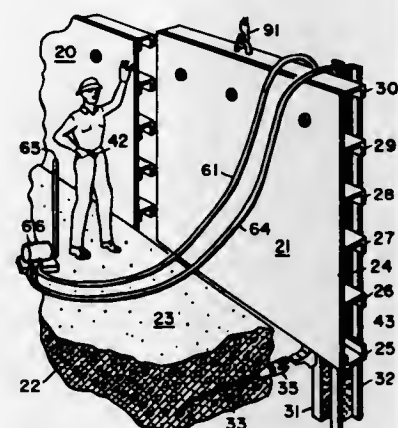
A process for collecting and removing waste or litter in the form of non-magnetic containers, wherein a sufficient quantity of a magnetically attractive material has been assembled with the container to permit the same to be moved or lifted by a magnetic field. If the container is deposited as waste or litter in a public place by the consumer, it may then be moved or lifted by a magnet into a

suitable receptacle for proper disposal. Reusable materials collected in this manner may then be separated from



non-reusable materials, and recycled into new products.

3,613,216
METHOD FOR SECURING FORMS FROM A POSITION OF SAFETY
Chester I. Williams, 347 Greenbrier S.E., Grand Rapids, Mich. 49504
Original application June 5, 1967, Ser. No. 643,453, now Patent No. 3,464,666, dated Sept. 2, 1969. Divided and this application Mar. 21, 1969, Ser. No. 833,221
Int. Cl. B23p 19/00
U.S. Cl. 29—428 4 Claims

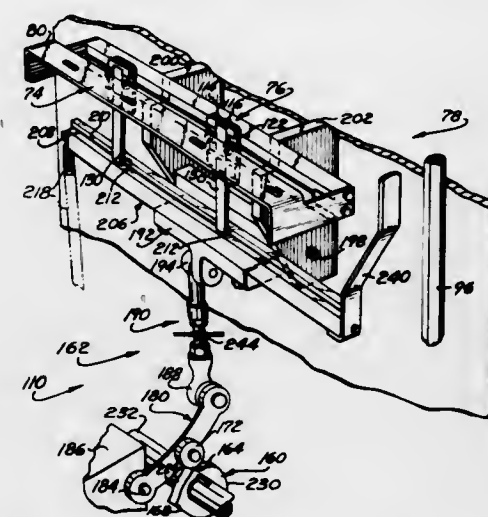


A mechanism for securing forms in position to develop a concrete structure in successive pours, including an anchor embedded in the previous pour, and a coupling unit on the form, the coupling unit being extendable to a position for engagement with means fixed with respect to the anchor when the form is set back from the formed face of the concrete, the coupling unit being retractable by a device controllable from the face side of said form to draw the form into engagement with the formed face; and the method of securing a form from the face side.

3,613,217
STITCHER ASSEMBLY
Howard R. Perkins, Grafton, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 9, 1970, Ser. No. 1,480
Int. Cl. B42c 1/12
U.S. Cl. 29—432.2 16 Claims

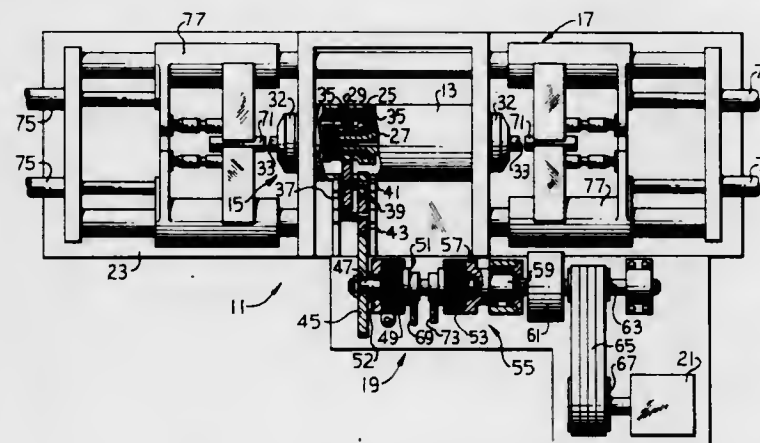
An improved stitcher assembly for stapling groups of sheets in succession includes a stapler head operated cyclically with an automatic sheet feeding mechanism for driving a staple into each group of sheets in turn. A clincher assembly is actuated to clinch a staple from the opposite side of a group of sheets upon each operation of the stapler head. The clincher assembly is also additionally actuated between successive operations of the

stapler head to eject clinched staples from the clincher assembly in the event sheets were not present during the previous stapling operation. In this manner, staples which were clinched while sheets of material were absent are automatically ejected from the clincher assembly before



a next succeeding stapling operation to eliminate the need for discontinuing the stapling operation during the time sheets are absent, and at the same time to protect the stapler head and clincher assembly against damage from unused clinched staples lying on the clincher assembly.

3,613,218
WELDER POWER AND DRIVE SYSTEM
Jozef Kiwalle, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1969, Ser. No. 852,782
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 2 Claims

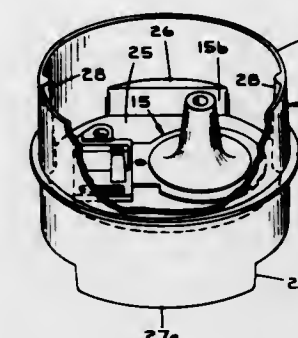


A power and drive system for an inertia welding machine having a power section connected to a gear train through a selectively actuatable clutch and brake. The drive train portion is connected to the rotating spindle of the machine through a one-way clutch. When the machine reaches welding speed, the selectively actuatable clutch is deactivated, the brake is actuated, and the one-way clutch allows the spindle to continue to rotate without having the flywheel or drive train mass WK² added thereto.

3,613,219
METHOD OF MANUFACTURING PIECE PARTS
Everett H. Fisher, Wilkinson, Ind., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 8, 1969, Ser. No. 864,652
Int. Cl. B23p 17/00
U.S. Cl. 29—423 8 Claims

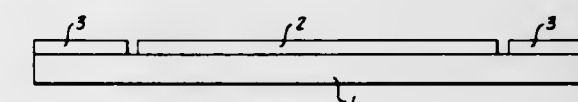
A universal die cast or molded ring is formed with a flat outer rim of appreciable width and an integral inner web extending across the rim other than in a central

region thereof. One or more parts, which may have irregular profiles and/or complex contours, are initially integrally formed with, and located within the central region of, the web. In accordance with the method, the rings, including the parts supported thereby, are successively fed, preferably from a vibratory supply bowl, to and properly oriented at one or more work stations whereat



various machining operations are to be performed on the parts. Thereafter, each part is trimmed from the thin web of the associated ring and the latter is then fed along a vibratory track back to reclamation apparatus, whereat the ring is re-melted when formed of metallic die cast material or reground when formed of plastic material for subsequent use in forming a new ring-piece part combination.

3,613,220
METHOD OF FORMING TRANSITION INSERT MATERIAL
Walter D. Finnegan, Concord, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Nov. 25, 1969, Ser. No. 879,752
Int. Cl. B23k 31/02
U.S. Cl. 29—472.1 8 Claims

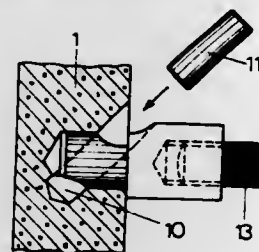


A method for forming long lengths of trilayer and bi-layer composite material for transition inserts comprising preparing a prebond pack containing at least an aluminum facing plate, a ferrous plate, and aluminum side bars, having substantially the same deformability as the facing plate, attached to face of the aluminum plate adjacent to the ferrous plate, heating the pack to a temperature between 400 and 900° F. and subjecting the pack to a one-step reduction to reduce the thickness of the aluminum materials adjacent to the ferrous element by at least 12%, preferably between 20 and 50%.

3,613,221
METHOD FOR CONNECTING AN ANCHORING DEVICE TO THE REAR OF A FRONTAL PLATE OR THE LIKE
Cornelis Jan Pronk, Castricum, Netherlands, assignor to N.V. Bataafsche Aanneming Maatschappij v/h F.A.J. van der Wal & Zoon, Amsterdam, Netherlands
Filed Mar. 17, 1969, Ser. No. 808,017
Claims priority, application Netherlands, Mar. 18, 1968, 6803835
Int. Cl. B23p 19/00
U.S. Cl. 29—526 6 Claims

A method of connecting an anchoring device to the rear surface of a frontal plate including providing a blind hole in the rear surface of the frontal plate, inserting a projecting end portion of the anchoring device into the blind hole, providing a second blind hole in the frontal

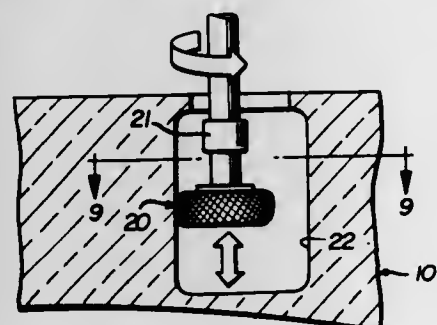
plate extending transversely through said first blind hole in alignment with a transversely positioned bore in said projecting end portion, and insert a pin into the trans-



verse bore so as to extend into the second blind hole and thereby interconnect the anchoring device and the frontal plate.

3,613,222
METHOD FOR MAKING A LIGHTWEIGHT OPTICAL MIRROR
Charles E. Richey, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc.

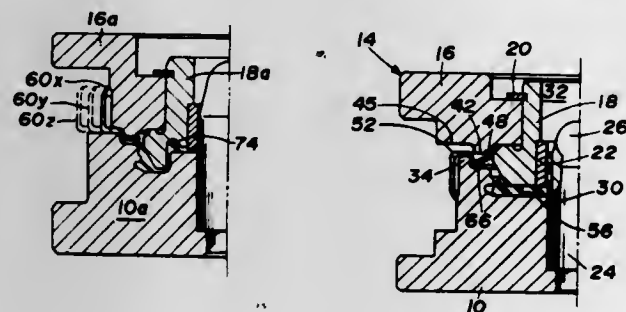
Filed June 23, 1969, Ser. No. 835,612
Int. Cl. B23p 13/04, 17/00
U.S. Cl. 29—527.1 18 Claims



Method and apparatus for lightweighting mirror blanks by first machining a series of accurately positioned bores in the back surface of the blank and then enlarging a portion of these bores into cavities extending a predetermined distance from the back surface to the bore bottom. The enlargement of these cavities is done by an apparatus which reciprocates an air driven tool along the bore walls and also moves the tool around the bore first in a circular path and then in a non-circular path.

3,613,223
METHOD AND APPARATUS FOR MAKING FLUID SEALS
Jack A. Bush, Birmingham, Mich., assignor to Garlock Inc.

Continuation of application Ser. No. 559,549, June 22, 1966. This application Oct. 13, 1969, Ser. No. 866,167
Int. Cl. B23p 17/00, 25/00
U.S. Cl. 29—527.1 4 Claims

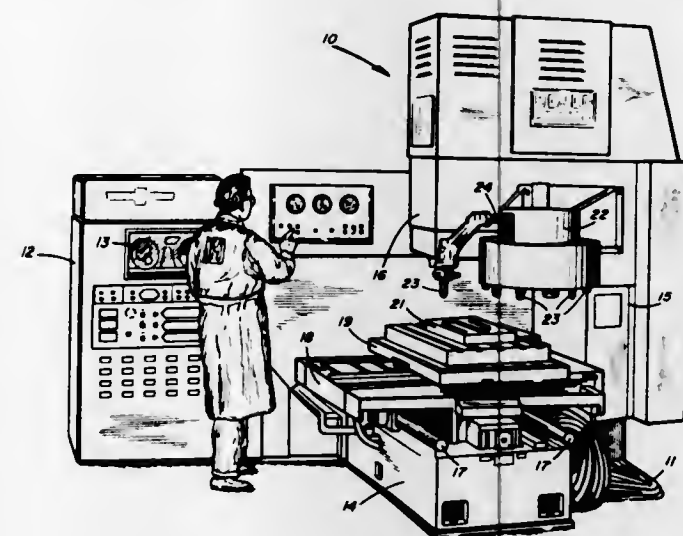


The method and apparatus of this invention provide for so engaging a sidewall of metal shell with a die member as to prevent radial shifting of the shell and to prevent

distortion of an outer cylindrical wall thereof while an annular rubber sealing element is being molded to the inner margin of said sidewall.

3,613,224
MACHINE TOOL
Robert F. Newton and Tibor J. Csapo, Worcester, Mass., assignors to The Heald Machine Company, Worcester, Mass.

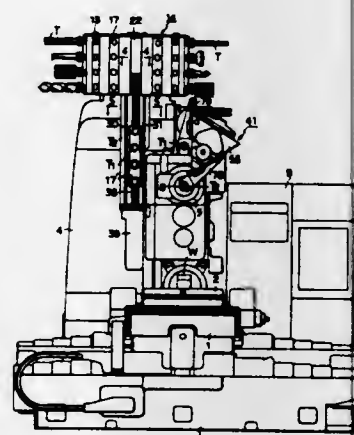
Filed Mar. 26, 1969, Ser. No. 810,626
Int. Cl. B23q 3/157
U.S. Cl. 29—568 5 Claims



This invention relates to a machine tool having an automatic tool-changing capability and, more specifically, to such an apparatus wherein the tools are stored in a rotatable magazine and transported to a driven spindle by an arm.

3,613,225
TOOL CHANGER FOR MACHINE TOOL
Yoshikazu Sato, 1026, 4-chome, Shimotakaido, Suginami-ku, Tokyo, Japan, and Susumu Ogasawara, 57 Hatsu-gaoka, Hodogaya-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed June 12, 1969, Ser. No. 832,764
Claims priority, application Japan, June 18, 1968, 43/41,641
Int. Cl. B23q 3/157
U.S. Cl. 29—568 4 Claims

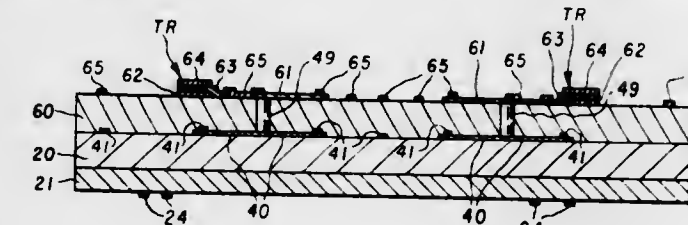


A tool changer for changing tools in a machine tool in accordance with a preselected schedule. A body comprising a pair of converging ways is oscillated by a data controlled servo motor between a pair of positions. In the first position an arm carried by one of the ways grasps a selected tool from storage and lifts it away from the

storage position. In the second position the tool is inserted in the tool spindle for operating on a work piece. An arm carried by the other of the ways removes the tool from the spindle when the work operation is completed and returns it to storage. Synchronized fluid motors are used to operate the movement of the arms.

3,613,226
THREE-DIMENSIONAL INTEGRATED CIRCUITS AND METHODS OF MAKING SAME
Robert W. Haisty, Richardson, and Rowland E. Johnson and Edward W. Mehal, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

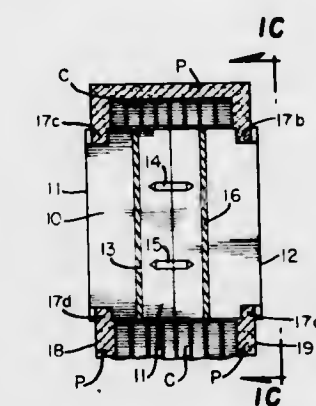
Original application Aug. 18, 1964, Ser. No. 390,298. Divided and this application Jan. 27, 1969, Ser. No. 836,675
Int. Cl. B01j 17/00; H01l 1/16
U.S. Cl. 29—577 12 Claims



Disclosed are methods for forming a plurality of integrated circuits in three dimensions within a single body of monocrystalline material. The method includes forming a plurality of circuit function-performing regions located respectively in separate spaced apart layers of a monocrystalline body. Regions of the respective layers are then electrically interconnected by conductive means extending through the body of monocrystalline material.

3,613,227
METHOD OF MAKING STATOR ASSEMBLIES FOR AXIAL AIRGAP MACHINES
Louis W. Parker, 2408 Sunrise Key Blvd., Fort Lauderdale, Fla. 33304

Continuation-in-part of application Ser. No. 699,196, Jan. 19, 1968. This application Dec. 12, 1969, Ser. No. 884,401
Int. Cl. H02k 15/00
U.S. Cl. 29—596 8 Claims

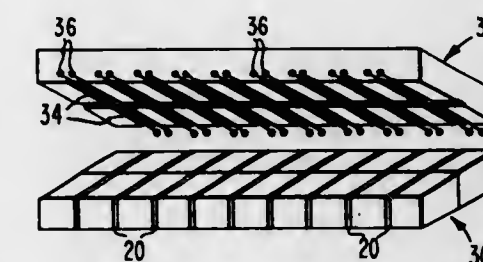


An axial airgap machine stator is fabricated by sequentially positioning halved laminated blocks between casting pressure plates, each such block, when completed, consisting of a comparatively narrow central laminated portion integral with comparatively wider end lamination portions. Preformed stator coils are positioned between the halved blocks in staggered relation to one another in an arrangement providing a plurality of radially extending voids. The voids are blocked by plugs whereafter plastic material is poured into the casting plates, and cured. The plastic material, during subsequent cooling,

contracts to secure the halved blocks forceably together adjacent said stator coils. After the cooling step, the blocking plugs are removed from the assembly to leave radial voids between the assembled stator coils and lamination blocks.

3,613,228
MANUFACTURE OF MULTIELEMENT MAGNETIC HEAD ASSEMBLIES
Miles H. Cook, Walter Nystrom, Duane R. Secrist, and Harold L. Turk, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

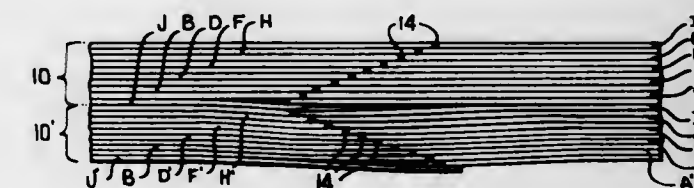
Filed July 2, 1969, Ser. No. 838,545
Int. Cl. H01f 7/06
U.S. Cl. 29—603 5 Claims



In the process of batch fabrication of multigap magnetic head assemblies, such as used in fixed head storage files, a nonmagnetic support structure is bonded to a magnetic ferrite body to facilitate grinding and polishing of the ferrite to desired dimensions, which represent track width and spacing, and gap length and throat height, inter alia. Conductors or wires are disposed in grooved portions of a magnetic ferrite back structure for electromagnetic coupling with the transducing gaps disposed in the front structure. Bonding glasses having three different flow temperatures are employed for joining the parts of the assembly, and the coefficients of thermal expansion of the several parts match within a narrow range.

3,613,229
METHOD OF MAKING TRANSFORMER CORES
Willy Olsen, Mount Vernon, Ill., John B. McKee, Glendale, Mo., and William M. Pahel, Salem, Ill.; said Olsen and said Pahel assignors to Olsen Magnetic, Inc., Mount Vernon, Ill., and said McKee assignor to Wagner Electric Corporation, Newark, N.J.

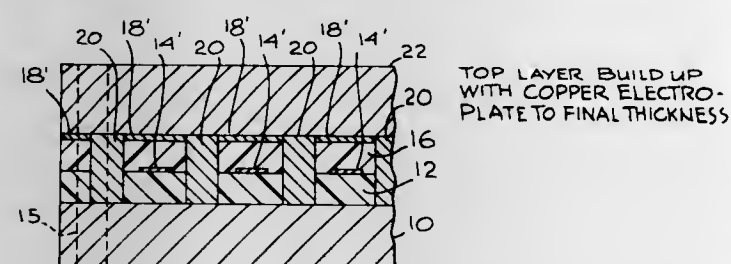
Filed Dec. 31, 1969, Ser. No. 889,512
Int. Cl. H01f 7/06
U.S. Cl. 29—605 10 Claims



An improved method of making transformer cores comprises winding a plurality of turns of grain-oriented magnetic material, cutting the turns along a radial line extending perpendicular to the turns, arranging the resulting laminations in groups comprising adjacent laminations such that the laminations in each group increase in length from the innermost to outermost lamination, relocating at least one lamination of each group to another position in that group wherein it lies between two shorter laminations, tightly nesting the various groups with one another and joining the ends of all laminations to form a closed core wherein the ends of all but the relocated laminations form butt joints and wherein the ends of said relocated laminations form overlapped joints.

3,613,230 METHOD OF FABRICATING COAXIAL CIRCUITRY

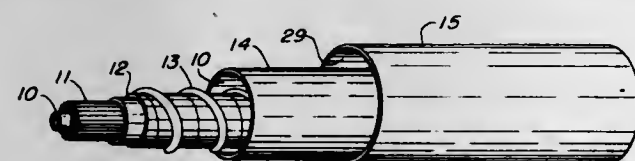
William Griff, Tarzana, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Apr. 29, 1969, Ser. No. 820,108
Int. Cl. B41m 3/08; H05k 3/00
U.S. Cl. 29—624 R 8 Claims



A method of fabricating microminiaturized coaxial circuitry in which laminating techniques are combined with selective etching and electroforming techniques to obtain a high order of dimensional precision at reasonable cost.

3,613,231 METHOD FOR MANUFACTURING HIGH VOLTAGE CABLE SYSTEMS

Paul F. Pugh, 4082 Sequoyah Road, Oakland, Calif. 94605
Filed July 25, 1969, Ser. No. 844,954
Int. Cl. H01b 13/00; H05k 3/00
U.S. Cl. 29—624 15 Claims



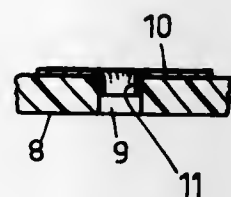
Preassembled high voltage cable system operated with oil and water circulation incorporating forced cooling permits lower cost underground cable work. A unique method of manufacturing preassembled high voltage cables facilitates ease of forced cooling and monitoring the temperature and quality of high voltage cable. Pressurized fluid aids electrical and mechanical performance of cable during manufacturing, installation, and while in operation. Heat is extracted by a unique method. Ageing of cable is determined by an electronic circuit. Existing overhead bare and insulated lines can be placed directly underground and quickly. Splices and terminations are sealed by fluid pressure. New fluid-filled and pressurized high voltage cables have centering material and extruded polymers on the conductors. Many novel aspects of manufacturing high voltage cables in a box-shaped container which is used for shipping and transporting potheads—factory attached—are presented.

3,613,232 MANUFACTURE OF CIRCUIT BOARDS

George W. Edwards, 6-10 Harp St., Campsie, New South Wales, Australia
Filed July 1, 1969, Ser. No. 838,095
Claims priority, application Australia, July 12, 1968, 40,591/68
Int. Cl. B41m 3/08; H05k 3/00
U.S. Cl. 29—625 2 Claims

A circuit board, in which circuits are formed on a dielectric substrate member by a layer of conductive material bonded to one side of the substrate member, or by two layers of conductive material bonded one to each side of the substrate member, is manufactured by the following steps: forming holes in desired positions through the substrate member to form terminal points of a desired

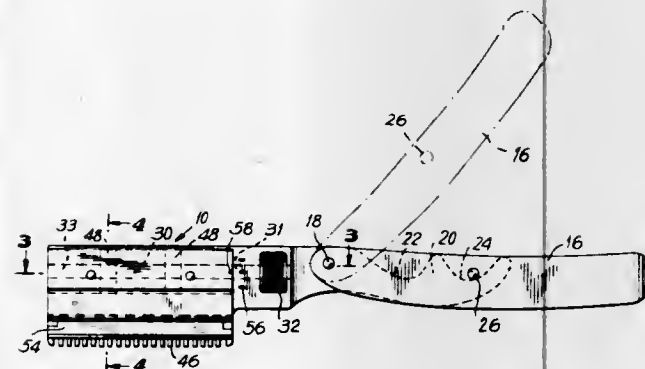
circuit layout; bonding the layer or layers of conductive material to the substrate member and over the holes; printing and etching the circuit; and drawing that part of



the layer or layers over the holes into the holes in a mechanical operation to form a conductive wall or walls in each of the holes.

3,613,233 HAIRCUTTING DEVICE

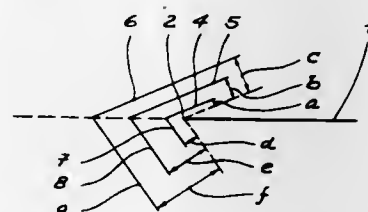
Arnold W. Lundell, 220 Byram Shore Road, Byram, Conn. 10573
Filed Aug. 5, 1969, Ser. No. 847,621
Int. Cl. B26b 19/00, 21/12
U.S. Cl. 30—30 6 Claims



A device for cutting hair having finger manipulating means for adjusting the depth of cut of the hair. The adjusting means may be operated without ceasing the haircutting operation, and the elongated handle of the device may be pivoted out of the way if it is desired to use the formed finger rest.

3,613,234 HAIR CUTTING MACHINE

Wilhelm Gumbmann, 15 Herbsthald, 7 Stuttgart 1, Germany
Filed May 2, 1969, Ser. No. 821,315
Claims priority, application Austria, May 10, 1968, A 4,529/68; Dec. 2, 1968, P 18 12 214.0
Int. Cl. B26b 21/12
U.S. Cl. 30—31 7 Claims



A hair cutting machine with at least one cutting blade between two plates having rows of teeth in parallel with the cutting edge of the blade. The plates comprise flat or slightly concave guide surfaces having different perpendicular distances from the cutting edge.

Previous hair cutting machines with interchangeable blades supported between two plates comprise base plates having double combs with a handle designed to support

these blades. Cover plates are attached to the base plates and the blades are held between both. Both base plate and cover plate have rows of teeth running parallel with the cutting edges of the blades. The outer surfaces of the plates have convex curvature normal to the cutting edges of the blades; this convex curvature passes over to the curvature of the external edges of the teeth. This type of hair clipper has also been designed with one of its sides forming a cutting comb and the other a normal comb. With this type of hair clipper it is possible to change the cutting length of the hair, but there is no possibility to make exact adjustments because the setting angle of the machine cannot exactly be determined on its head.

New types of hair cutting machines, equipped with razor blades which are held between plates, permit a considerable improvement in graduation of cutting stages without mechanical alterations of the machine. This is due to the fact that both plates have almost the same size, that each side of the two plates parallel with the cutting edges of the blades has a row of teeth, and that the length of the teeth of one row is different from that of the teeth belonging to the other row. This type of machine, having two cutting combs with teeth of different length on both sides of the cutting edge, allows operating in four different cutting stages. This is due to the different length of teeth, and the fact that, as a result of the symmetrical design of both base and cover plate, the machine can be used in every cutting position. Hair cutting machines of this type have also been used in versions having more than two cutting combs, i.e., more than two operative cutting edges of the blades.

The cutting length of the hair, obtained with this type of hair cutting machine, depends on the distance in which the cutting edge of the blade is passed through the hair above the skin of the head. Moreover, the thinning-out effect depends on the cutting angle, i.e., the angle formed by the direction of the guide motion of the blade and the plane of the blade. The hair cutting and thinning-out instruments described above have teeth, the external edges of which more or less have convex curvature, making it possible to change to a certain extent the length of the hair-cut by varying the cutting angle. These continuous graduations in a hair-cut's length, however, cannot exactly be determined during the cutting operation, thus requiring considerable skill to make possible a perfect hair-cut when using these generally known machines. In particular, it is difficult to carry out a correct transition cut from the back-hair to the hair of the head.

Other hair cutting machines have interchangeable blades supported between two plates, one of which has a row of teeth on the side that runs parallel with one cutting edge of the blade, the cutting edge itself being overlapped by the teeth. The external edges of these teeth lie partially or totally in a guide surface which runs parallel, plain or in a slight convex curvature with the corresponding cutting edge. The guide surface sets off clearly against the rest of the machine's surface. For adjustment of the cutting length in this type of generally known hair cutting machine, the blade in any case must be displaced against the teeth, thus complicating hair cutting to such an extent that it becomes impossible for an amateur to cut his own hair with good results.

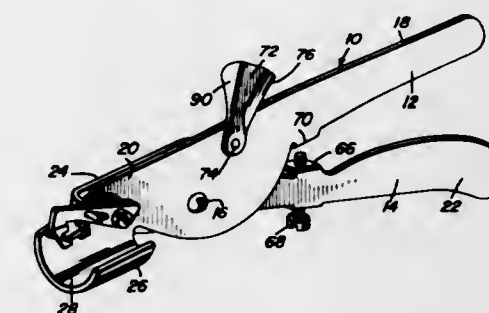
3,613,235 CABLE RIPPER

Thomas C. McCormick, Eugene, Oreg., assignor of a fractional part interest to John P. Neufeld, Eugene, Oreg.

Filed May 15, 1970, Ser. No. 37,673
Int. Cl. B21f 13/00

U.S. Cl. 30—91.1 6 Claims
A pair of first and second crossed and pivotally connected levers including rear handle ends and front jaw

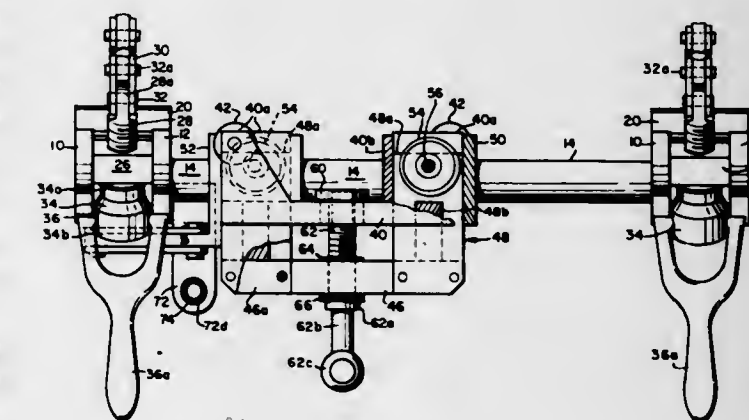
ends. The jaw end of the first lever defines a channel extending longitudinally along one side thereof and opening toward the other jaw end and includes a longitudinally extending cutting lever having a rear base end and a front cutting end. The channel opens toward the



cutting lever and the base end of the cutting lever is pivotally supported from the jaw end of the first lever for oscillation of the front cutting end thereof toward and away from the bottom of the channel and the jaw end of the second lever is connected to the cutting lever forward of its axis of oscillation.

3,613,236 AXIAL PIPE CUTTER

William A. Lauck, Elyria, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.
Filed May 16, 1969, Ser. No. 825,152
Int. Cl. B23d 21/02, 21/08
U.S. Cl. 30—92.5 10 Claims



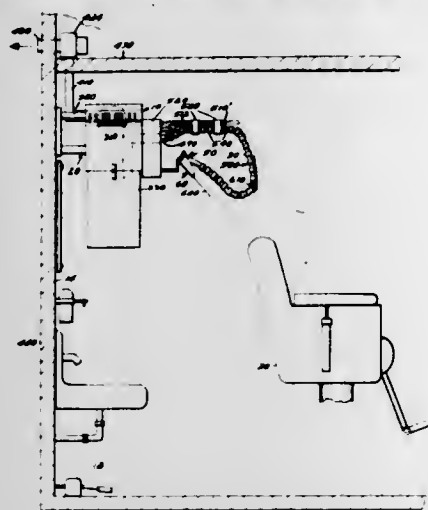
A frame is provided and includes a pair of pipe clamping means with a pair of ways extending between the clamp means. A carriage is reciprocally mounted on the ways and carries one or more pipe cutting wheels which may be advanced by screw means into cutting relation with the pipe to make longitudinal cuts therein. A linkage is connected between the frame and carriage, operated by a handle, for reciprocating the carriage and the pipe cutting means longitudinally of the pipe.

3,613,237 VACUUM ASSEMBLY FOR HAIR CLIPPER

Thomas P. Keane, 14 Euclid Ave., Council Bluffs, Iowa 51501
Filed Feb. 18, 1970, Ser. No. 12,287
Int. Cl. B26b 19/44

U.S. Cl. 30—133 11 Claims
A vacuum assembly for a hair clipper comprising a vacuum attachment fixed to the top of the clipper body and having its forward opening inclined with respect to

the blade assembly. A suction hose connecting to the vacuum attachment above the handle portion thereof.



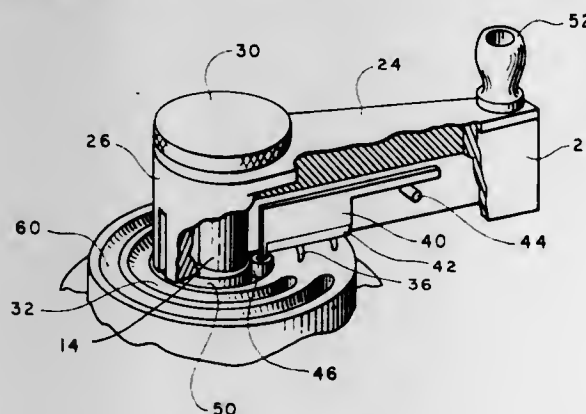
A cutting trap suction means comprising a motor disposed outside of the clipper room and clipper storage means.

3,613,238 ADJUSTABLE CUTTER FOR HOOKED RUG MATERIALS

Emery C. West, North Hollywood, Calif., assignor to Harold W. Smith and Elinore Churchin, fractional part interest to each
Filed June 26, 1970, Ser. No. 50,128
Int. Cl. B26b 27/00

U.S. Cl. 30-136

3 Claims



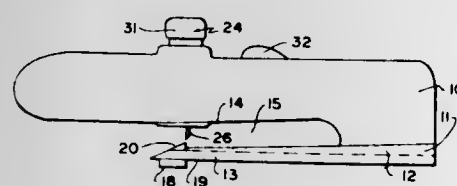
An implement for cutting uniform short lengths of yarn from a strip of material or yarn skein for use in making hooked rugs is disclosed. Rotation of a member causes yarn to be fed over a channeled surface beneath an oscillating blade in the rotating member and cut off at a predetermined point in each rotation. The length of the cut off pieces may be altered by insertion or removal of a collar at the hub of the rotating member.

3,613,239 CUTTER FOR FLOOR COVERING SUCH AS LINOLEUM AND THE LIKE

Leonard B. Porrelli, 716 Eau Claire Ave.,
Calgary 1, Alberta, Canada
Filed May 19, 1969, Ser. No. 825,492
Int. Cl. B26b 29/02

U.S. Cl. 30-293

4 Claims



A linoleum cutter having a base plate with a guide on the underside engaging the edge of the adjacent linoleum.

The edge to be cut overlies the base plate and a spring loaded cutter is forced through the overlying portion which is ramped upwardly by the base plate to facilitate the cutting action. The cutter is drawn along guides by the guide so that the cutter slices the linoleum whereby the two edges abut closely with one another.

3,613,240 SHEARS

Edward M. Wallace, Longmeadow, Mass., assignor to Wallace Mfg. Corp., Thompsonville, Conn.
Filed July 30, 1969, Ser. No. 846,055
Int. Cl. B26b 13/26

U.S. Cl. 30-248

3 Claims



A shears or cutting device having a movable blade disposed in a horizontal plane vertically below the plane of the stationary blade, with the shears-closing movement being through a pulling force exerted, via a pull rod, on the movable blade to cause the movable blade to be rotated horizontally and vertically toward the stationary blade into a positive cutting engagement with the cutting edge of the stationary blade, the means for achieving the pulling force being pivotally interengaged with the movable blade at a point in spaced relationship with and vertically upwardly of the general plane of the movable blade.

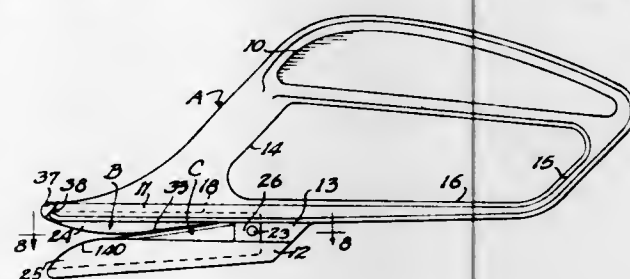
3,613,241 CUTTER FOR SOFT FIBROUS MATERIALS

Derek R. Allen, Montrose, Calif., assignor to Allen Medical Instruments Division of Bio-Dynamics Inc., Montrose, Calif.

Filed Sept. 22, 1969, Ser. No. 859,920
Int. Cl. B26b 29/00

U.S. Cl. 30-294

9 Claims



A knife for cutting surgical bandages, paper and the like, comprising a blade and an opposed feeding jaw cooperatively defining a material-receiving narrow gap in which the blade's cutting edge substantially intersects the supporting face of the jaw at a small angle in the range of 0°-10° and in which the material is severed as it is pushed through the gap.

3,613,242

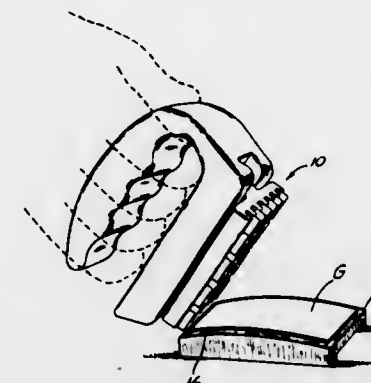
SKIN GRAFT CUTTER

Charles C. Hill, Ann Arbor, and Frank Romberger, Ferndale, Mich., assignors to Michigan Research Corporation, Ann Arbor, Mich.

Filed Dec. 29, 1966, Ser. No. 605,796
Int. Cl. B26b 3/04

U.S. Cl. 30-305

1 Claim



A skin graft cutter comprising a body which supports a plurality of cutting blades defining longitudinally and transversely spaced cutting edges. A block is provided with a curved surface which supports the skin graft in position for progressive engagement with the cutting edges.

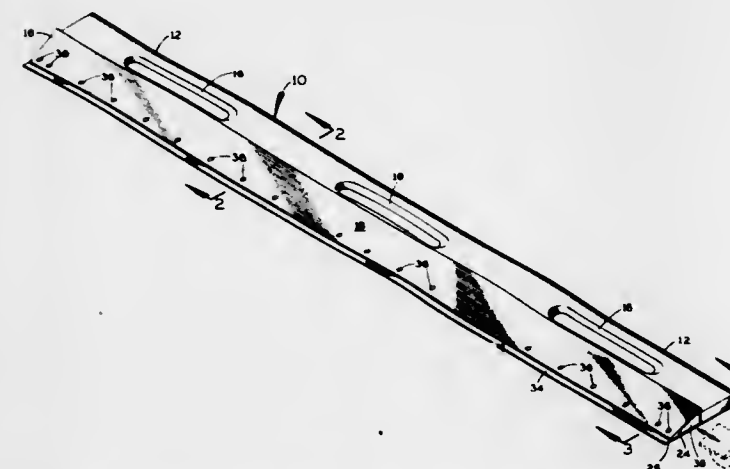
3,613,243 CUTTING ROD

Jesse Wade Baker, 122 Glen Parkway,
Hollywood, Fla. 33021

Filed Nov. 10, 1969, Ser. No. 875,318
Int. Cl. E01c 19/12

U.S. Cl. 30-314

3 Claims



A cutting rod which includes an elongated handle, an elongated hollow metal member attached to the handle and an elongated metal blade attached to the metal member.

3,613,244

SLIDE BOLT

Albert Flecher, 35 Rue Herder, F-67,
Strasbourg, France

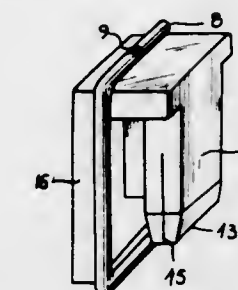
Filed Sept. 15, 1969, Ser. No. 858,084
Claims priority, application France, Sept. 17, 1968,
9,270; Sept. 3, 1969 6931254
Int. Cl. A61c 13/22

U.S. Cl. 32-5

4 Claims

Semi-automatic locking means for artificial dentures part of which is readily removable and part of which can only be removed by a dental surgeon, comprising a male element with means for guiding it when mounting it and for ensuring vertical stability, and a female element provided with centering and locking means, and a resilient

element for keeping the male and female elements assembled.



A slightly modified form of the locking means can be utilised as an attachment.

3,613,245

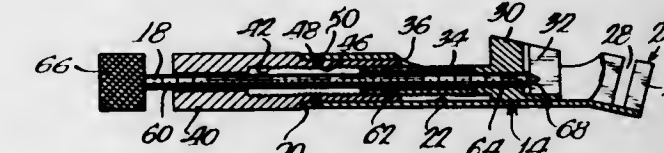
MATRIX RETAINER

Sigmund P. Knight, 535 N. Michigan Ave.,
Chicago, Ill. 60611

Filed Nov. 3, 1969, Ser. No. 873,533
Int. Cl. A61c 5/12

U.S. Cl. 32-63

7 Claims



A dental matrix retainer for clamping a matrix band around a tooth. The retainer includes an elongated member having slots defined on one end thereof and slidably supporting a block within an opening. The block has clamping means for locking the ends of a looped matrix band therein with intermediate portions of the band being received in at least one of the slots. The movable block has a major portion enclosed by said member and has an externally threaded portion extending towards the opposite end of the opening. A sleeve having an internally threaded bore is rotatably supported within the opposite end of the opening and the threaded bore cooperates with the externally threaded portion to shift the block within the opening upon rotation of the sleeve in opposite directions.

3,613,246

MOUTH MIRROR

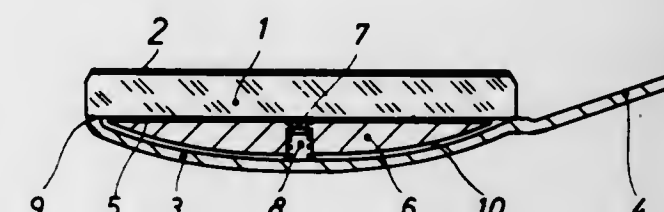
Eduard Zdaraky, 6 Oberfohringer Strasse,
Munich, Germany

Original application May 3, 1966, Ser. No. 547,330.
Divided and this application Sept. 30, 1969, Ser.
No. 871,108

Int. Cl. A61c 3/00

U.S. Cl. 32-69

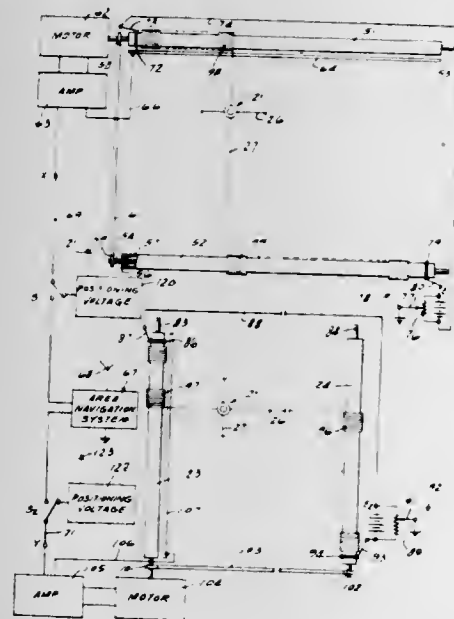
7 Claims



A dental mirror is composed of a mirror body, a flexible intermediate plate and a mounting plate, all three elements being of approximately the same diameter; the intermediate plate and mirror body being bonded to each other only at their peripheries, while the intermediate

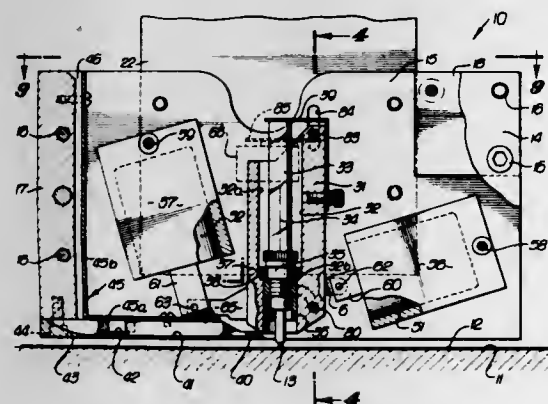
plate is secured to the mounting plate by means of a central connecting means which exerts force to pull the rim of the intermediate plate into abutting engagement with the rim of the mounting; the flexibility of the intermediate plate permitting slight misalignment of the central connecting means while ensuring a close fit around the periphery.

3,613,247
X-Y PLOTTER
Earl Stuart Perkins, Oak Brook, and Daniel A. Wierzbowski, Downers Grove, Ill., assignors to Butler National Corporation, Oak Brook, Ill.
Filed Aug. 22, 1969, Ser. No. 852,403
Int. Cl. B43I 5/00
U.S. Cl. 33—1 M 13 Claims



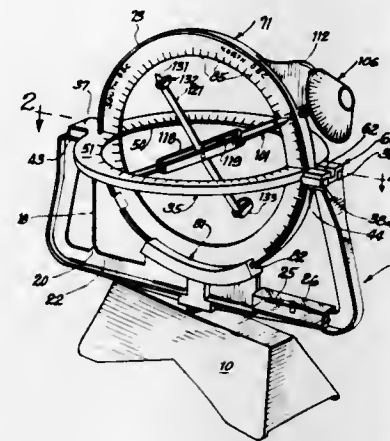
An X-Y plotter for use with an area navigation system, for example, which utilizes resistance wire wound about and extending between spaced rollers which are driven to position an indicator block mounted on the wire between the rollers. An indicator is rotatably mounted on the block and has a portion which frictionally engages a transparent layer to indicate the most recent direction of movement of the indicator.

3,613,248
DRAFTING MACHINE PEN CONDITIONER
Andrew M. McInnis, Covina, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.
Filed Aug. 27, 1969, Ser. No. 853,342
Int. Cl. B43I 13/00
U.S. Cl. 33—18 R 15 Claims



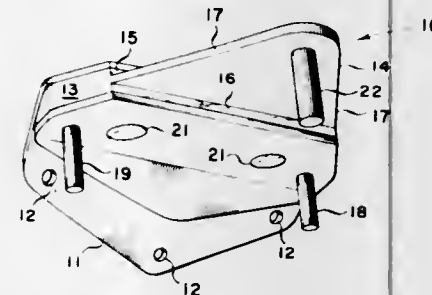
The invention concerns apparatus for lifting and lowering a pen in an automatic drafting machine, and wherein the pen tip is conditioned during storage in retracted position.

3,613,249
DEVICE FOR LOCATING HEAVENLY BODIES
Arthur Edward Evenson, 3606 Pheasant Drive, Rolling Meadows, Ill. 60008
Filed Nov. 18, 1968, Ser. No. 777,214
Int. Cl. G01c 17/34
U.S. Cl. 33—61 6 Claims



A device for locating a heavenly body by knowing its azimuth and declination with respect to the celestial sphere or, having a specific body, reversing the process and determining the azimuth and declination. The device includes sighting means mounted for movement in azimuth and declination, a horizon (azimuth) ring and declination ring, both marked in degrees, means for establishing a horizontal plane of reference and means to take into account the time of observation. The device is characterized by simplicity of construction in order to adapt the same for use by youthful or amateur astronomers.

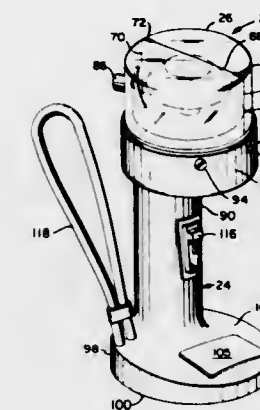
3,613,250
EYE POSITION INDICATOR FOR MOUNTING IN A VEHICLE
Harry Antler, North Hollywood, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed June 22, 1970, Ser. No. 48,403
Int. Cl. G01c 1/00
U.S. Cl. 33—63 10 Claims



This disclosure involves an eye position determining device and indicator for mounting within view of the operator on the centerline of a vehicle.

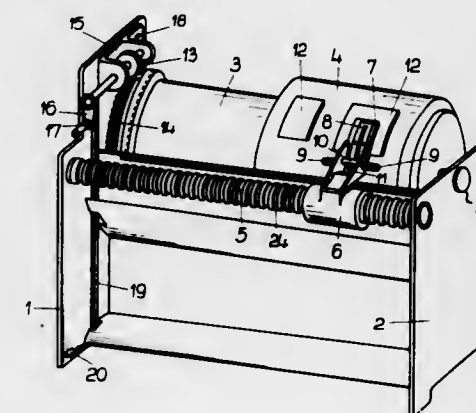
It employs a body of light-conducting material with an internal light source and localized light-emitting and light-blocking regions so arranged that a pre-determined image, for example, a pair of horizontal parallel lines and a halo of light around a vertical rod are observed by the operator only when his head and eyes are in the correct position for precise maneuvering of the vehicle. It employs a planar light-blocking member restricting vision of the operator in view of the indicator so that he can view the parallel lines only when his eyes are at the required vertical distance above a pre-determined reference in the vehicle. The indicator includes a source of light and a light interrupter, so arranged that the light source is visible at all times unless the observer's eyes are at the correct angular displacement relative to the indicator.

3,613,251
HAND HELD BEARING COMPASS
Richard Fitzpatrick and Richard D. Fitzpatrick, Wethersfield, and William Balch, Bolton, Conn., assignors to Quint Machine Corporation, Manchester, Conn.
Filed Apr. 2, 1969, Ser. No. 812,681
Int. Cl. G01c 17/10
U.S. Cl. 33—72 3 Claims



A magnetic compass, specially adapted to be held by hand, includes a transparent compass bowl housing a transparent compass card. A lubber line and a pair of sights on the bowl enable the compass to be used for taking bearings of distant objects for navigational purposes. Attached to the bottom of the bowl is a base including a generally cylindrical vertical hand grip. This grip also serves as a housing for batteries for energizing a lamp used to illuminate the bowl and card for nighttime use. There is a wrist strap fixed to the base.

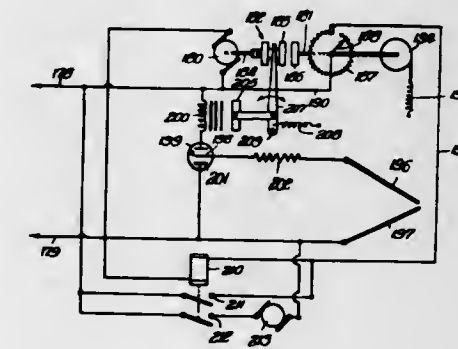
3,613,252
APPARATUS FOR ALIGNING PRINTING FORMS
Franz Moos, Frankenthal, Pfalz, Germany, assignor to Schnellpressenfabrik Frankenthal, Albert & Cie, Frankenthal, Pfalz, Germany
Filed Feb. 10, 1969, Ser. No. 797,798
Claims priority, application Germany, Feb. 27, 1968, P 16 11 387.4
Int. Cl. B41b 1/00
U.S. Cl. 33—184.5 6 Claims



A method and apparatus for mounting printing forms and the like onto a separate form mounting device for application to form cylinders and form saddles of printing form carriers consisting of mounting the color matter of the transparent print onto a transparent foil having a fixed measurement cross hair and aligning this foil with its corresponding printing form so that the combination can be mounted onto a printing form carrier. The apparatus is provided with a guide rail means which is mounted parallel with respect to printing form carrier and a pivotable arm which is mounted on the guide rail

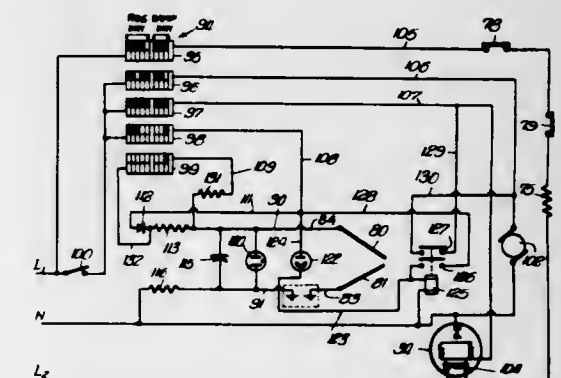
means for step-by-step movement so that the transparent print which is mounted on its transparent foil can be aligned onto the printing form carrier.

3,613,253
DRIER CONTROL
Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Application Dec. 9, 1963, Ser. No. 329,155, which is a continuation of application Ser. No. 22,323, Apr. 14, 1960. Divided and this application Nov. 30, 1970, Ser. No. 93,732
Int. Cl. F26b 13/10
U.S. Cl. 34—45 13 Claims



This invention is directed to a control system useful in a clothes drier for providing a signal when articles being dried therein have reached a predetermined selected degree of dryness. Electrodes are positioned for contact with and completion of an electrical circuit through the articles being dried. Means connected to the electrodes are responsive to the electrical resistance of random samples of the articles to effectively sense the moisture content thereof and to produce a control signal at a selected article dryness condition. In one embodiment, motor-driven spring-biased storage means gradually accumulate potential energy as the sensing means indicates an increasing dryness condition and at a preselected degree of dryness effectively produces said control signal.

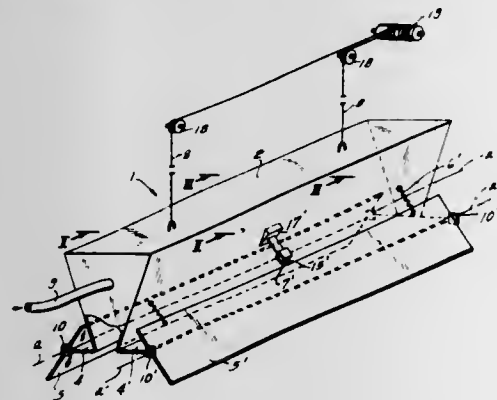
3,613,254
DRIER CONTROL
Thomas R. Smith, 710 W. 11th St. S., Newton, Iowa 50208
Continuation of application Ser. No. 22,323, Apr. 14, 1960. This application Dec. 9, 1963, Ser. No. 329,155
Int. Cl. F26b 13/10
U.S. Cl. 34—45 13 Claims



This invention is directed to a control system, useful in a clothes drier, for providing a signal when articles have reached a preselected degree of dryness. Electrodes are positioned for contact with, and completing an electrical circuit through, the articles being dried. A capacitor

connected in circuit with the electrodes is charged with a DC voltage. A circuit is provided for discharging the capacitor. The relative rates of charge and discharge of the capacitor varies with the electrical resistance of the articles which changes with the moisture content. A control signal is provided when the capacitor reaches a predetermined charge. An adjustable preselection device varies the relative rates of charge and discharge of the capacitor so that the control signal will be produced when the articles attain a preselected degree of dryness.

3,613,255
VEHICULAR DRYING APPARATUS
Uberto Capra, Vicenza, Italy, assignor to Ceccato & Co. S.p.A., Alte Ceccato, Vicenza, Italy
Continuation-in-part of application Ser. No. 860,663, Sept. 24, 1969. This application Mar. 3, 1970, Ser. No. 16,067
Claims priority, application Italy, Mar. 5, 1969, 13,660/69
Int. Cl. F26b 21/00
U.S. Cl. 34—54 10 Claims

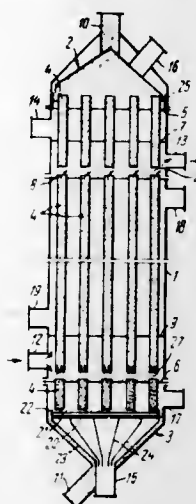


A frame, movable with reference to a vehicle to be dried, carries an elongate nozzle at right angles to the path of relative motion, the nozzle having a slot trained upon a vehicular surface and flanked by a pair of mobile flaps controlling a switch for reversing the operation of a motor normally tending to move the nozzle toward the vehicle. Reversal of this motion occurs when a flap touches a vehicular surface or when air emitted by the nozzle slot is reflected by the vehicle toward the flaps with a sufficient force to indicate an overly close approach of the nozzle toward the surface to be dried.

3,613,256
APPARATUS FOR CONTACTING GASES WITH GRANULAR SOLID MATERIALS
Anatoly Ovseevich Belopolsky, Ulitsa Uritskogo 10a, kv. 37; and Jury Pavlovich Evdokimov, Ulitsa Gribodova 38, kv. 18, both of Dzerzhinsk, U.S.S.R.; Garald Lvovich Vexelman, Moskovskoe shosse 139, kv. 37, Gorky, U.S.S.R.; and Gennady Georgievich Nikolsky, Ulitsa Uritskogo 10a, kv. 41; and Vitaly Pavlovich Pchelkin, Ulitsa Uritskogo 10a, kv. 10, both of Dzerzhinsk, U.S.S.R.
Filed Sept. 2, 1969, Ser. No. 854,694
Int. Cl. F27b 15/00
U.S. Cl. 34—57 A 3 Claims

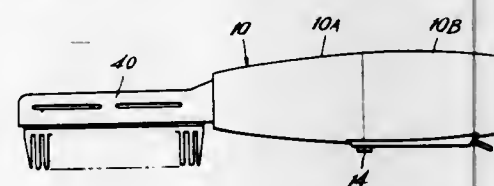
An apparatus for bringing gases in contact with granular solid materials, wherein in the granular solid material charging and discharging chambers there are provided means for allowing a granular solid material fluidizing agent to flow through them, thereby making it possible to attain uniform distribution of solid material particles and to ensure uniform discharge of the granular solid material from the apparatus. The charging chamber accom-

modates a cone-shaped baffle whose apex faces a connection provided for the charging of a granular solid material into the chamber. The baffle directs the stream of



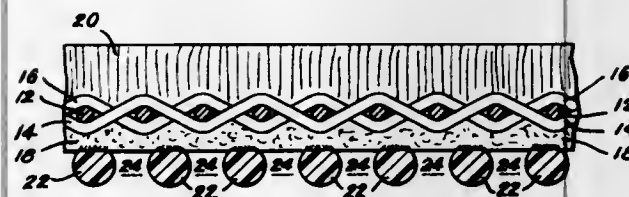
granular solid material from the charging connection to the peripheral zone of the charging connection to the peripheral zone of the charging chamber.

3,613,257
HAIR DRYER
Chikao Yoshiike, 191, 6-chome, Gotanda, Shinagawa-ku; Hideyuki Tsuru, 7, Shimburi-cho, Azabu, Minato-ku; and Yoichi Yoshiike, 191, 6-chome, Gotanda, Shinagawa-ku, all of Tokyo, Japan
Original application Apr. 4, 1966, Ser. No. 539,682. Divided and this application Mar. 3, 1969, Ser. No. 823,224
Int. Cl. A45d 20/48
U.S. Cl. 34—91 4 Claims



A hair dryer having a cylindrical two-part main body, a holder for a comb or a brush connected to the body and receiving a supply of heated air from an electric heater located in the body. Projections on opposite sides of the comb or brush distribute heated air throughout their longitudinal extent.

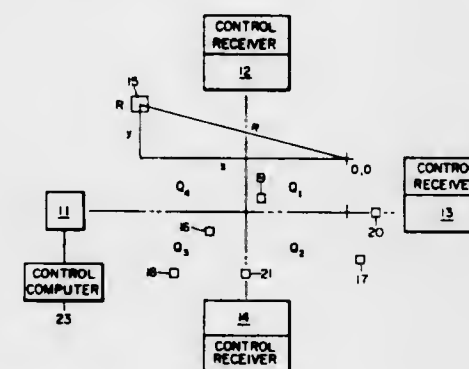
3,613,258
FELT FOR PAPERMAKING MACHINE
Thomas A. Jamieson, Harmony, R.I., assignor to Draper Brothers Company, Canton, Mass.
Filed Sept. 15, 1969, Ser. No. 857,890
Int. Cl. F26b 13/26
U.S. Cl. 34—95 12 Claims



A felt for use in a papermaking machine including an endless belt on the back side of which a plurality of monofilaments are adhered in spaced relation, the monofilaments defining water-conveying channels into which

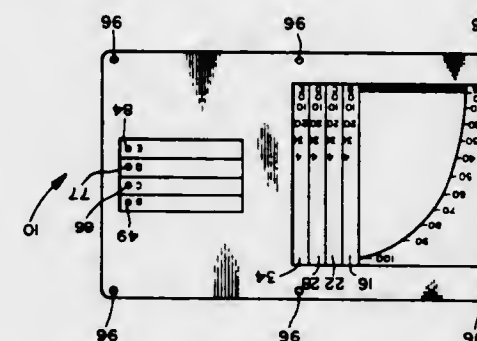
water expressed from a paper sheet located on the face of the belt is directed when the endless belt and the paper sheet are moved through a press section of the paper-making machine.

3,613,259
SIMULATION DEVICE
Thomas W. McCurnin and Lloyd J. Perper, Tucson, Ariz., assignors to the United States of America as represented by the Secretary of the Navy
Filed Nov. 5, 1968, Ser. No. 773,451
Int. Cl. G09b 23/20
U.S. Cl. 35—1 5 Claims



A simulation system including a control device, a master transmitter, a plurality of slave transmitters and a plurality of receivers. The master and slave transmitters are physically spaced apart and their transmission signals form a hyperbolic grid network. The receivers are positioned within the hyperbolic grid network and process the signals from the master and slave transmitters to simulate dose and dose rate of a simulated detonation that takes place in the hyperbolic grid network. The master and slave transmitters operate at different modulation frequencies to identify receiver quadrants and to provide desired resolution. The receivers are controlled by control signals from the master transmitter to compare and remember the phase difference between oppositely positioned transmitters for determining position and dose at each receiver within the hyperbolic grid.

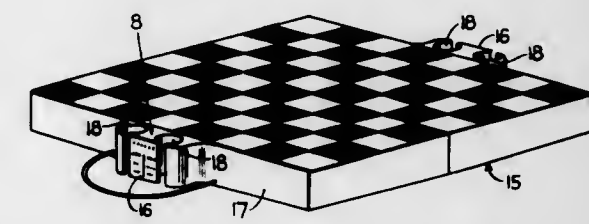
3,613,260
CONFIDENCE TESTING DEVICE
Emir H. Shuford, Jr., 4 Lincoln Terrace, Lexington, Mass. 02173, and Herman Edward Massengill, Jr., 107 Hemlock St., Arlington, Mass. 02174
Filed May 4, 1970, Ser. No. 34,422
Int. Cl. G09b 1/28
U.S. Cl. 35—8 R 7 Claims



A device for answering multiple choice test questions having a plurality of superimposed, laterally slidable plates interposed between fixed top and bottom plates. Each of the slidable plates and the bottom plate is provided with a bar representing confidence level and a graduated curve representing the score associated with the confidence level. The top plate is formed with an

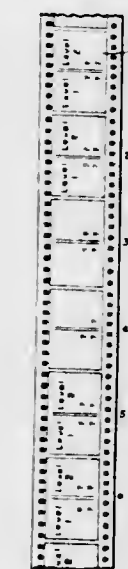
opening which allows viewing of the bar and graduated scale on each of the underlying plates. The length of exposed bar on each of the plates represents the degree of confidence in each of several possible answers, the exposed length being specified by the position of an overlying plate with respect to the adjacent underlying plate. The score associated with the degree of confidence is presented on the graduated curve of an underlying plate at the intersection of the edge of the adjacent overlying plate and the graduated curve on the underlying plate.

3,613,261
CHESS PLAYING AID
Eligia J. Petty, % John H. Petty, Stella Rte., Paxton, Fla. 32205
Filed May 29, 1969, Ser. No. 828,853
Int. Cl. G09b 19/22
U.S. Cl. 35—8 R 3 Claims



This invention consists of a chess board of predetermined thickness that is made of two pieces of material of equal size that are hinged together to form a single surface on which the game of chess is played. The chess board is provided with two diametrically opposed chip holders that are integrally formed with the ends of the board and project outward from the ends. A plurality of chips, each chip having the basic configuration of a disk, are placed in the chip holder when not in actual use. Indicia are located on each side of the chips for the playing of the chess game, as noted later on in this specification.

3,613,262
COINCIDENT DISPLAY ARRANGEMENT AND PRESENTATION OF DIFFICULTY DIFFERENTIATED PROGRAMMED INSTRUCTION
Hubert C. Feder, 1517 Roosevelt Ave., Alamogordo, N. Mex. 88310
Filed June 30, 1969, Ser. No. 837,773
Int. Cl. G09b 1/16
U.S. Cl. 35—8 R 1 Claim



The arrangement of instructional material in educational texts, films, filmstrips or other similar means of communication for teaching groups of learners in which

individual learners are distinguished by different learning ability with the communication means being divided into composite learning frames having a plurality of sectors, each sector containing subject matter material presented on different levels of difficulty of the learning goal and each level of difficulty offering multiple questions to support simultaneously toward different learning goals in the same time period by learners of different ability levels.

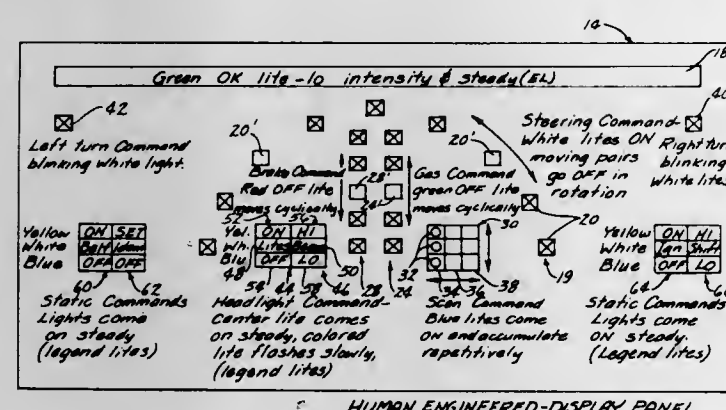
3,613,263

PERIPHERAL VISION DISPLAY PANEL FOR AUTOMOBILE DRIVER TRAINERS

Donald H. Schuster, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa
Continuation-in-part of application Ser. No. 655,045, July 21, 1967, now Patent No. 3,523,374, dated Aug. 11, 1970. This application June 19, 1969, Ser. No. 834,794
Int. Cl. G09b 9/04

U.S. Cl. 35-11

9 Claims



A device used with automobile driver trainers including a display panel mounted just below the driver's view as he watches the driver training film on a projection screen. The driver's responses to the driver training film are compared with film commands and the errors are converted to corrective commands expressed by the display panel directing the driver through his peripheral vision to take specific corrective action. The magnitude of the corrective action required is indicated by the speed of the cyclical repetition of the corrective commands. The signalling lights on the display panel issuing the corrective commands are situated in their relationship corresponding to the operative controls of the driver trainer unit. Upon the giving of proper responses to the situations presented on the screen the display panel will signal no corrective action is required of the student driver.

3,613,264

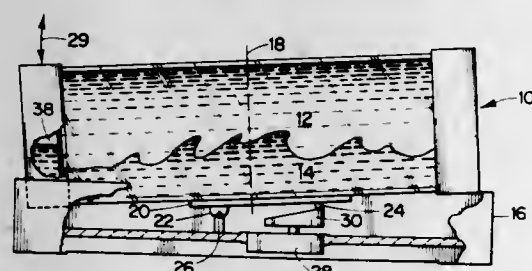
WAVE CELL

Joseph A. Vitka, Winchester, and James D. Murphy, Framingham, Mass., assignors to Motionetics, Inc., Endicott, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,871
Int. Cl. G09b 23/12

U.S. Cl. 35-19 R

7 Claims



A wave cell, in which plural non-miscible liquids display fluidic wave motion, employs light mineral oil as a principal constituent of a first liquid and employs water

as a principal constituent of a second liquid, with a minor portion of a fluorinated hydrocarbon in the first liquid and preferably with a minor portion of alcohol in the second liquid. The optional addition of a low-foaming surfactant enhances the displayed wave motions. An optically transparent acrylic resin tube closed with acrylic resin end caps forms the wave cell chamber, and an air trap at one end of the tube accommodates thermal expansion and contraction without unduly stressing the vessel.

3,613,265

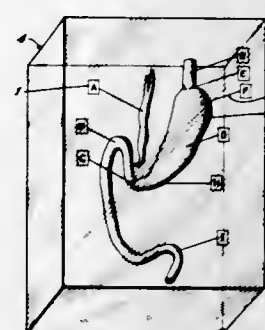
PLASTIC EMBEDDED LABELED ARTICLES

Elliott Stern, Coral Gables, Fla. (704 Teasel Drive, Kingsport, Tenn. 37660), and Richard L. Aaron, 11340 SW. 47th Terrace, Miami, Fla. 33165

Filed May 14, 1969, Ser. No. 824,527
Int. Cl. G09b 23/00

U.S. Cl. 35-20

10 Claims



Articles primarily for educational purposes are embedded in plastic together with labels and pointers or lead lines from the labels to specific regions or structures of the embedded article.

3,613,266

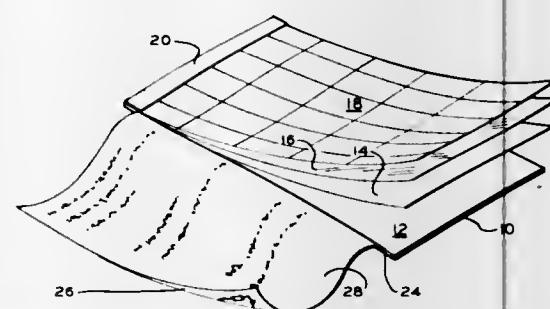
METHOD AND MEANS FOR ENHANCING MENTAL IMAGING CAPABILITIES

Malcolm J. Conway, Main Road, Gill, Mass.

Filed Mar. 24, 1969, Ser. No. 809,549
Int. Cl. G09b 19/00

U.S. Cl. 35-22 R

7 Claims



A method of developing and testing the degree of a student's ability to develop and retain a mental image by causing the student to record responses indicative of such image development in a manner such that the responses are not immediately visible to the student. Appropriate means for recording a visible image in a location not visible to the student as a stylus, or similar instrument, is moved without leaving a visible trace, are disclosed in various degrees of complexity. The recording of a mental image related to previously learned physical objects and relationships while precluding the student from directly viewing the progress or development of what he is recording improves the quality of the final recording as an indication of the complete mental picture which the student has developed. Additional inputs in the form of written, pictorial and/or audible material may be supplied to the student as the operation progresses to alter or modify the parameters, conditions, etc. which affect the mental image or responses developed therefrom.

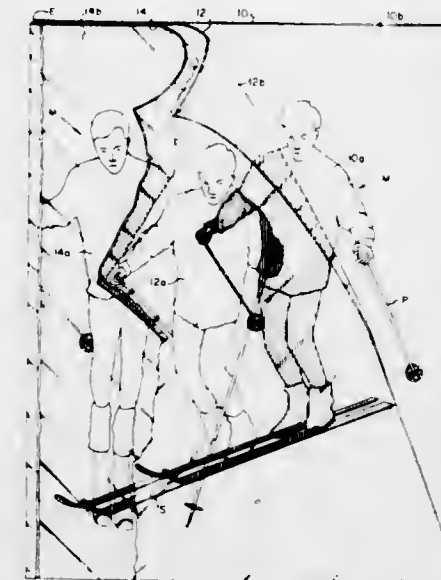
3,613,267

TRANSPARENCIES TEACHING A METHOD INVOLVING MOVEMENT

Martin E. Levin, 30585 Birchway, Franklin Village, Mich. 48025
Filed Jan. 29, 1970, Ser. No. 6,824
Int. Cl. G09b 19/00

U.S. Cl. 35-29 R

6 Claims



A device for teaching a method involving movement including a plurality of sheets sequentially movable into superposed relation. Each of the sheets includes a portion illustrating a representation of a person or an object in one different position of a plurality of different positions portraying a path of movement. At least one of the sheets includes a light permeable portion to facilitate the observation of the illustrating portion of a sub-adjacent sheet. When the successive sheets are in superposed relation, the progressive changes of the positions necessary to execute the entire movement may be simultaneously observed or if the sheets are separated and viewed individually any transitory position may be individually studied.

3,613,268

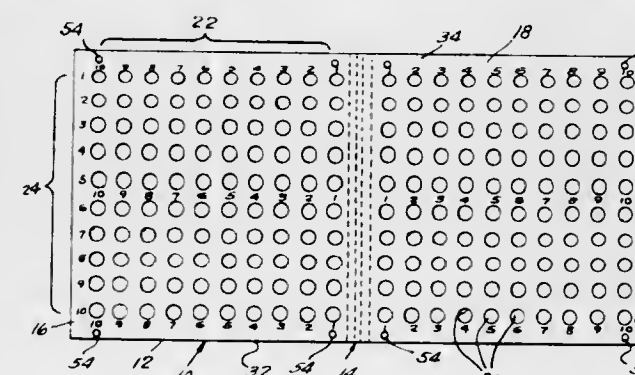
EDUCATIONAL GAME

Fred N. Fowler, 1140 E. Hillsdale B-209, Foster City, Calif. 94404

Filed Oct. 24, 1969, Ser. No. 869,058
Int. Cl. G09b 19/02

U.S. Cl. 35-31 R

3 Claims



An educational game useful for the teaching of mathematical concepts and relationships comprising a playing board having a plurality of openings on its upper surface, pivot means secured to the undersurface of said board for balancing same, and pegs of varying predetermined weights insertable in any of the openings. The game involves introducing a problem by unbalancing the board with pegs inserted on one half. The problem is then solved by inserting pegs on the other side in positions which balance the board.

3,613,269

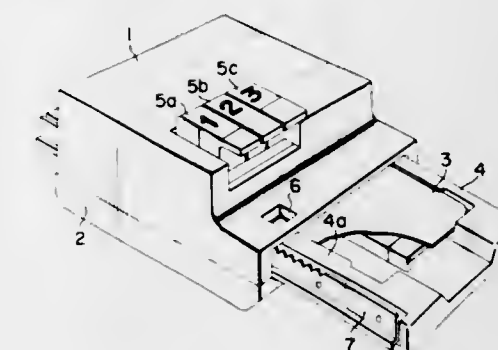
RESPONSE RECORDING DEVICE

Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 29, 1969, Ser. No. 872,014
Claims priority, application Japan, Nov. 4, 1968,
43/80,271

Int. Cl. G09b 1/02
U.S. Cl. 35-48 B

5 Claims



A response recording device wherein a card to be punched by depression of one of a plurality of push buttons is slidably movable in a holder. Depression of a push button will mark the card and upon return of the push button the card is advanced. However, a holding lever will prevent return of the push button if it is only partially depressed, and this will prevent advancement of the card.

3,613,270

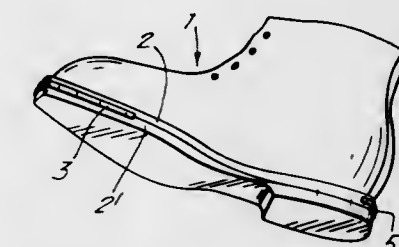
SOLE FOR A SKI BOOT

Nils Eke, Tennishveien 6, Oslo 3, Norway

Continuation of application Ser. No. 781,941, Dec. 6, 1968. This application May 28, 1970, Ser. No. 41,726
Int. Cl. A43b 13/12

U.S. Cl. 36-2.5 AL

8 Claims



A ski boot comprises at least one solid and rigid element embedded between the insole and tread sole of the boot, the element being constituted of wear-resistant material such as metal or the like, with edge portions protruding beyond the contour of the sole to form contact surfaces with binding means on skis. The edge portions encircle the sole at the toe thereof and also extend at the heel. The rigid element may have a triangular incision at the heel for receiving a correspondingly shaped securing means. In one embodiment, the element is a one-piece plate of T-shape with a cross piece at the toe and a stem extending towards the heel.

3,613,271

RESHAPEABLE BOOT OR SHOE AND METHOD OF RESHAPING

S. David Geller, 431 Broadway, Lawrence, N.Y. 11559

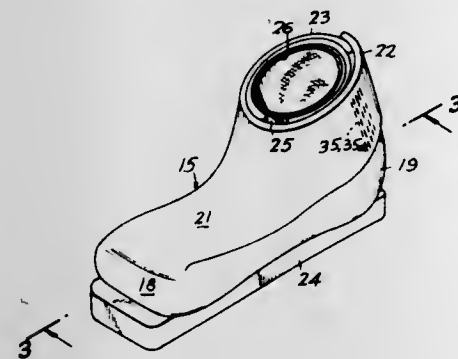
Filed June 4, 1970, Ser. No. 43,376
Int. Cl. A43b

U.S. Cl. 36-2.5 AL

17 Claims

A boot or shoe for special use, such as orthopedic or sport use especially for skiing, is made of translucent thermoplastic material retaining its characteristics at very low temperatures but being soft and moldable when mildly

heated. To reshape the preformed molded boot to an individual's foot, the boot is heated until softened. When the foot, protected by a sock is inserted, the foot expands the tight areas. The loose areas are manually pressed inwardly until the boot fits comfortably, after which the reshaped boot is allowed to cool and set and the foot is



moved. The apparent color of the boot is changed by changing the inner boot, sock or sock lining to one of the desired color. Interdigitating fastening means are molded on two overlapping wrap-around side straps extending from a front tongue which covers a front opening in the boot.

3,613,272 FOOTWEAR

Tatsuo Fukuoka, 3-3-Ban, 2-chome, Shin-Minami-Fukushima, Tokushima, Japan
Original application Oct. 24, 1968, Ser. No. 770,324, now Patent No. 3,552,039, dated Jan. 5, 1971. Divided and this application Aug. 31, 1970, Ser. No. 68,145
Int. Cl. A43b

U.S. Cl. 36-2.5 R

4 Claims



Improved footwear is provided which includes an integrally formed sole and a foot cover member, each of the sole and foot cover member being integrally molded from synthetic thermoplastic resin material and having a foamed interior portion and a non-foamed exterior portion integral with and surrounding the foamed portion.

3,613,273 ANKLE SUPPORT

Richard T. Marquis, Rosemead, Calif., assignor of a fractional part interest to William J. Parker, San Gabriel, Calif.
Filed Mar. 2, 1970, Ser. No. 15,754
Int. Cl. A43b

U.S. Cl. 36-2.5 N

6 Claims

A device for minimizing the possibility of excessive ankle strain, comprising an elastic member having an upper end connected to the outside of the wearer's leg above the ankle, and a lower end connected to the outside of the wearer's foot below the ankle. The relaxed length of the elastic member is no greater than the distance

between its connections to the wearer's leg and foot when the wearer's foot is in its normal position, i.e., generally perpendicular to his leg, whereby the elastic member biases the outside of the wearer's foot upwardly whenever it is disposed below its normal position. This minimizes the possibility of rolling the outside of the foot under, and thus placing excessive strain on the ankle, particularly when landing after a leap. The lower end of the elastic member is preferably connected to the sole

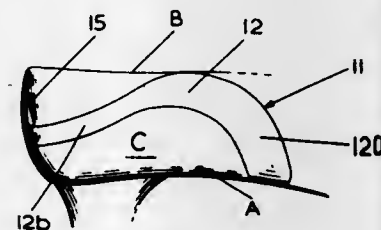


of a shoe adjacent the outer edge thereof. The upper end of the elastic member may be connected to an ankle strap, or to the top of a shoe extending above the wearer's ankle. The device includes inextensible means for limiting extension of the elastic member, thereby limiting the degree to which the outside of the wearer's foot can be turned under from its normal position.

3,613,274
HEEL STIFFENERS
Sally M. Willey, 44 Hampstead Lane, Highgate, London 6, England
Filed Nov. 6, 1969, Ser. No. 874,603
Int. Cl. A43b 13/42

U.S. Cl. 36-68

6 Claims



The invention concerns a heel stiffener for shoes. The stiffener is adapted to be fitted to the inside wall of a shoe heel so as to resiliently tension the wall along top line portions thereof. The stiffener is a U-shaped strip of springy resilient material, the upper edges of the arms of the U curving downwardly, at least along parts near where the stiffener is to be attached to the shoe. The curve is directed away from the base of the U. A projection or peg extends upwardly from about the mid-point of the base of the U.

3,613,275 SIGN MODULE

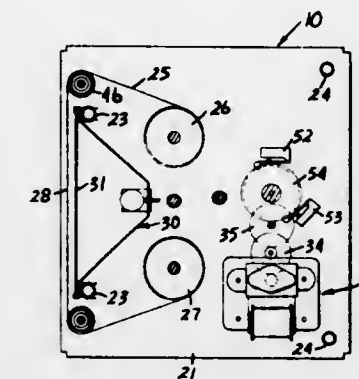
Edward M. Caferro, Spokane, Wash., assignor to American Sign & Indicator Corporation, Spokane, Wash.
Filed Apr. 21, 1969, Ser. No. 817,825
Int. Cl. G09f 11/28

U.S. Cl. 40-31

2 Claims

A sign module and display sign combination comprised of a plurality of such modules is disclosed in which each

module is a self-powered unit having a flexible tape for the display of visual information. Selected display areas spaced identically along the length of each tape are positioned before a lamp unit in a plane tape flight. A plurality of such modules can be combined in horizontal rows



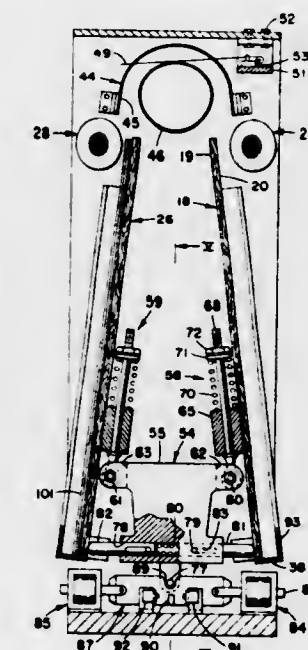
and vertical columns to provide a flexible sign display which can be changed at will. Control of the tape within each module is entirely mechanical and remote operation can be achieved by manual or automatically operated control units utilizing electrical signals.

3,613,276
CHART DISPLAY APPARATUS
Richard M. Johnson and William G. Redmond, Dallas, Tex., assignors to LTV ElectroSystems, Inc., Greenville, Tex.

Filed Aug. 28, 1969, Ser. No. 853,867

U.S. Cl. 40-36

14 Claims



An apparatus for successively exhibiting a plurality of charts includes first and second means for supporting the charts in parallel alignment, the first and second supporting means being positioned such that the charts on one supporting means are adjacent and approximately parallel to any charts on the second supporting means but facing in an opposite direction, and means for sliding the outer chart from either of the supporting means against a deflecting shield and onto the other supporting means. Provision is made for reversing the sequence such that previously shown charts may be repeated.

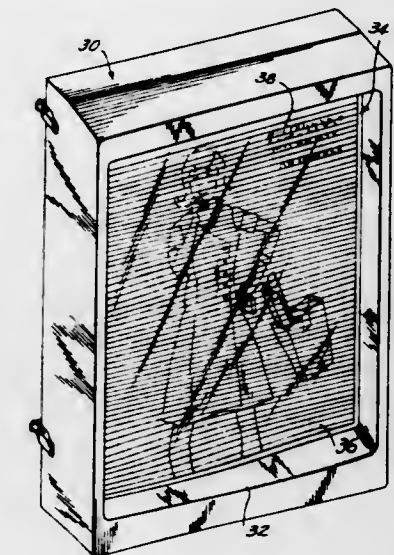
3,613,277
APPARATUS FOR THE SEQUENTIAL AND SELECTIVE PROJECTION OF GROUPS OF STRIPS OR THE LIKE AND CASSETTES FOR THE INSTALLATION OF THE STRIPS IN A HOUSING
Robert Joseph Rose, Los Angeles, and Frank Wilson Sanders, Topanga, Calif., assignors to Multimatic Displays, Inc., Great Neck, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,309

U.S. Cl. 40-65

Int. Cl. G09f 11/00

24 Claims

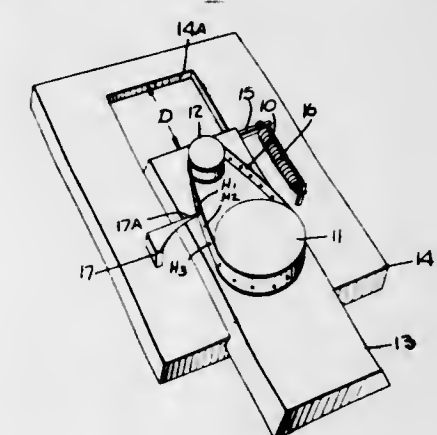


A display device in which groups of strips constitute respective displays which are sequentially exhibited through a window in a casing. The strips are interleaved and, by groups, are projected to an extended position and removed to a withdrawn position. When all the strips of a group are in extended position, they are in overlapping relation with respective edge portions exposed as in a louvre arrangement. A motor operates at constant speed to drive a cam arrangement to control movement of the strips with a certain pattern of movement according to which all groups are displaced to and from the extended position. The strips are readily removable and several embodiments are shown with the strips in a cassette arrangement.

3,613,278
DISPLAY ADVANCE MECHANISM
David C. Hughes, White Plains, N.Y., assignor to Child Guidance Toys Inc., Bronx, N.Y.
Filed Jan. 2, 1970, Ser. No. 95

U.S. Cl. 40-96

7 Claims



A display device in which numbers or other data to be presented appear sequentially along a movable endless tape supported between spaced guides mounted on a carriage, the tape having a continuous series of equi-

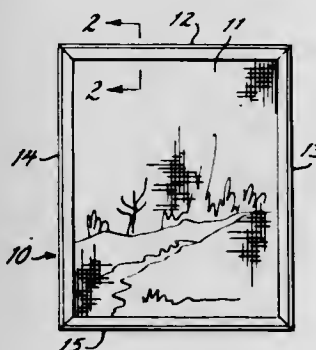
spaced sprocket holes formed therein. The carriage is slidable with respect to a bed having a claw fixedly mounted thereon, the tip of the claw being adapted to enter said holes during the forward and reverse stroke of said carriage, but to effect engagement therewith only during the reverse stroke. The carriage is spring-biased normally to assume a fully extended position relative to said bed, at which position the tip is admitted into one of said holes. When the carriage is pushed in against the action of the spring by a distance which is greater than the spacing between successive holes but less than twice the spacing, the tip then enters and passes over the next hole during the forward stroke without entering the succeeding hole, and when the carriage is thereafter released, the tip re-enters and engages said next hole to cause an incremental advance of the tape until the carriage again assumes its fully extended position.

3,613,279 PICTURE FRAME CONSTRUCTION

Myer D. Belfor, Cooper River Plaza,
Pennsauken, N.J. 08110
Filed May 14, 1970, Ser. No. 37,245
Int. Cl. G09f 1/12

U.S. Cl. 40—152

8 Claims

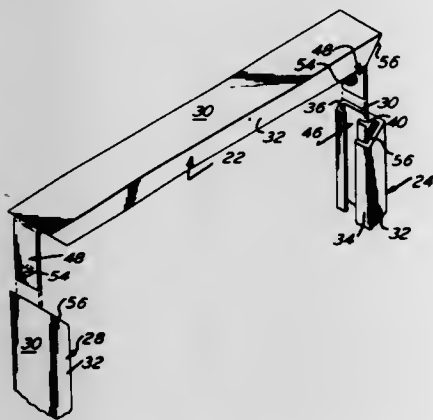


A picture frame including a plurality of elongate sections each of constant cross-sectional configuration and provided with an open-ended through passageway for frictionally receiving a connector key, and backing means for backing a picture or the like within the frame.

**3,613,280
PICTURE FRAMING KIT**
Benjamin Tuchinsky, 7 Fernwood Court 07011; David Howard Stein, 301 Park Slope 07013; and Jeffrey J. Friedlander, 565 Grove St. 07011, all of Clifton, N.J.
Filed Sept. 2, 1969, Ser. No. 854,697
Int. Cl. G09f 1/12

U.S. Cl. 40—155

6 Claims



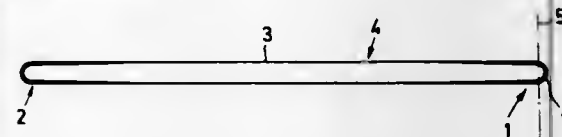
A frame is provided which is comprised of extruded aluminum side members. Each of the side members includes an integrally formed channel which enables the frame to be utilized for pictures of both narrow and wide thicknesses.

3,613,281 PLASTIC FILE FOLDERS

Walter Lennartz, 9/BRD Waldstrasse, 806 Rothschwalge,
near Dachau, Germany
Filed Mar. 6, 1970, Ser. No. 17,120
Claims priority, application Germany, Mar. 7, 1969,
P 19 11 729.4
Int. Cl. B42f 7/00

U.S. Cl. 40—359

3 Claims



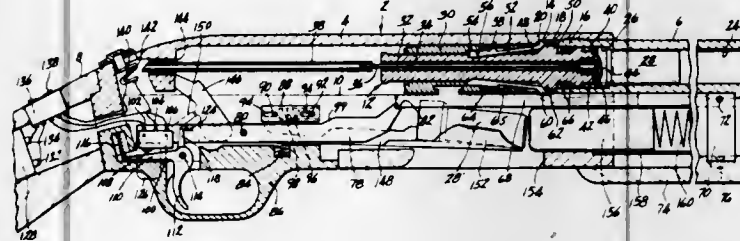
File folder of plastic having thickened sections at critical wear zones. The file folder is made from tubular plastic extruding in such a manner as to have thickened zones at diametrically located portions. The tubing is then flattened with the fold points centrally of the thickened zone. Lastly, the flattened tubing is trimmed adjacent a fold to eliminate the bight but to leave thickened free edges.

3,613,282 ELECTRICAL IGNITION SHOTGUN FOR FIRING CASELESS AMMUNITION

Marcus Ramsay, New Haven, Conn., assignor to
Olin Corporation
Filed Sept. 15, 1969, Ser. No. 857,665
Int. Cl. F41c 19/12

U.S. Cl. 42—84

18 Claims



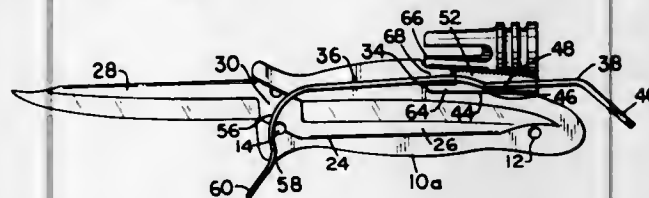
A multi-shot firearm for electrically firing caseless ammunition having no primer. A switch is actuated by the trigger to permit passage of current from a capacitor to an electrode contacting the ammunition. Elapsed time between trigger pull and firing of the ammunition is decreased as compared to impact ignition firearms. The gun is prevented from firing automatically should the trigger be kept depressed as the action is operated.

3,613,283 BAYONET AND UTILITY KNIFE

William B. Mozey, Jr., 4139 Colorado Ave. S.,
Minneapolis, Minn. 55416
Filed Nov. 3, 1969, Ser. No. 873,349
Int. Cl. F41c 27/02

U.S. Cl. 42—86

6 Claims



A bayonet designed as a utility knife having a handle shaped to be conveniently gripped, the handle having a hollow center to house one blade of a reversible double-bladed knife and having a slotted band secured in said handle cooperating with a groove in said handle to form a keyway to lockably engage a key fixedly attached to the flash suppressor of a rifle and/or a machine gun or submachine gun.

3,613,284 FISHING DEVICE

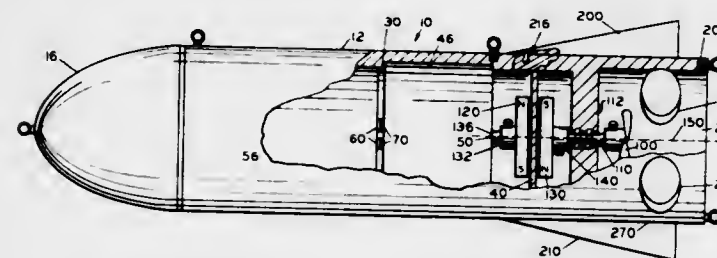
Edgar F. Anderson, Rte. 2, Box 11,
Wakefield, Nebr. 68784
Continuation-in-part of abandoned application Ser. No.
727,849, May 9, 1968. This application June 3, 1969,
Ser. No. 840,091

Int. Cl. A01k 85/06

U.S. Cl. 43—26.1

6 Claims

A fishing device comprising a tiny motorized trolling submarine having remotely controlled rudder means for steering it upwardly and downwardly to fish at various depths.



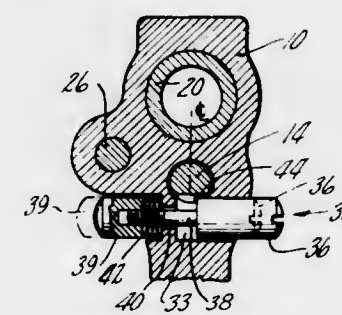
The combination described in further combination with an upright line, a tethering line means attached to the submarine and revolvably attached to the upright line for causing the submarine to move in a circular motion about the upright line.

3,613,285 REVOLVER CYLINDER PIN AND LOCK THEREFOR

Ralph C. Kennedy, Wapping, Conn., assignor to
Colt's Inc., Hartford, Conn.
Filed Jan. 22, 1970, Ser. No. 4,848
Int. Cl. F41c 1/00

U.S. Cl. 42—59

4 Claims



A revolver has a frame which has a transverse opening in the front portion and a lock mounted in the opening. A cylinder is mounted in the frame by means of a removable cylinder pin which is secured in place by the lock and has a transverse arcuate groove for engagement with the lock and a rearwardly extending longitudinal guide recess that communicates with the groove. The recess terminates before the rear end of the pin to prevent the complete removal of the pin from the revolver when the lock is in the assembled condition. The lock is partially received within the transverse groove and is movable between a locked position in which it contacts the cylinder pin and an unlocked position in which it is free of locking contact with the cylinder pin to enable the cylinder pin to slide over the lock.

3,613,286 REVOLVER WITH DOUBLE ACTION

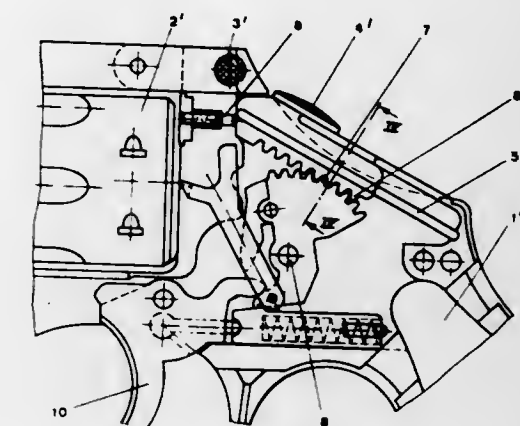
Klaus Mayer, 9 Arnsberger Strasse,
Neheim-Husten, Germany
Filed Apr. 16, 1969, Ser. No. 816,656
Int. Cl. F41c 19/00

U.S. Cl. 42—65

2 Claims

A revolver with double action is characterized in that the actuating part is shaped as a flat tension slide. This

slide is guided in a straight movement along an end edge of the casing to the firing pin. The slide has teeth upon

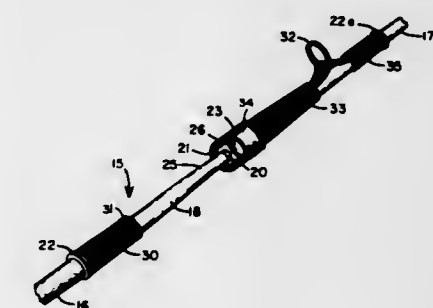


its lower side which mesh with a gear segment of an operational member of the firing mechanism.

**3,613,287
GLASS FERRULE WITH EXTERNAL SLEEVE**
Thomas E. Grein, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Apr. 7, 1969, Ser. No. 813,868
Int. Cl. A01k 87/02

U.S. Cl. 43—18 GF

4 Claims



A fishing rod including a thin-walled shaft formed of a plurality of individual tapering rod segments, the forward end of certain segments being adapted to be mated to the trailing end of the next adjacent forward segment, the segments adapted to be retained together to form a single unitary structure. Ferrule means releasably retain the mated segments together and comprises a male coupling prong secured to the forward end of one of the mating segments and received within the hollow inner core of the trailing end of the next forwardly adjacent segment. A hood sleeve means, secured to the outer periphery of one of the segments, encloses the junction established between the mating segments, and has an inner diameter exceeding the outer diameter of the next adjacent segment so as to form a narrow gap therebetween.

3,613,288 BAG MAKING MACHINE

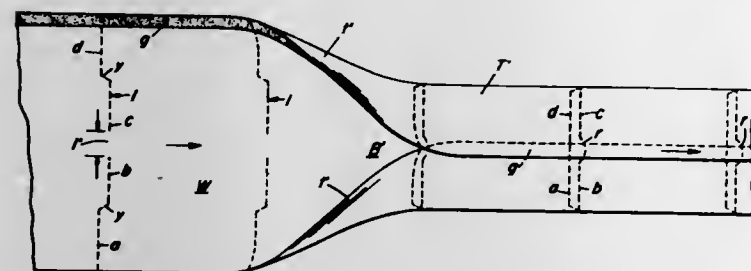
Albert L. Ross, P.O. Drawer 1120,
Hammond, La. 70401
Original application June 17, 1968, Ser. No. 737,640, now
Patent No. 3,561,332, dated Feb. 9, 1971. Divided
and this application Apr. 24, 1970, Ser. No. 43,290
Int. Cl. B31b 49/04

U.S. Cl. 93—35 R

14 Claims

A machine for making notion and millinery type bags having a lip on one layer extending beyond the edge of the other layer, the machine including means for trans-

versely perforating the paper web in successive steps in advance of and following a folding of the web into tube



form, and means to repetitively rupture the tube along the perforations to form individual bag lengths.

ERRATUM

For Class 43—26.1 see:
Patent No. 3,613,284

3,613,289
SPINNING BOBBER
Harold J. Wehren, Rte. 1, Box 315,
Eagle, Idaho 83616
Filed Sept. 15, 1969, Ser. No. 857,864
Int. Cl. A01k 93/00

U.S. Cl. 43—43.11

4 Claims



A buoyant element or a bobber through which fishing line is threaded and about which such line is wound to a length equal to a desired depth in water of ultimate fish-hook location. End projections and pockets are provided for the looping of line thereabout and removable retention of a sinker weight, respectively.

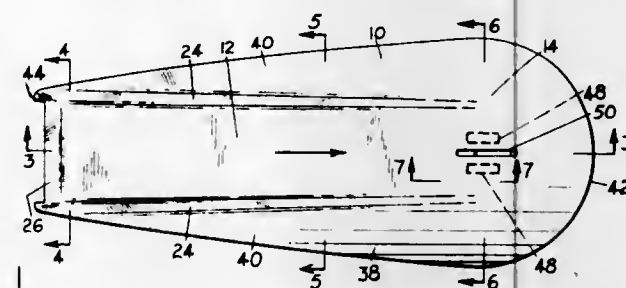
3,613,290
TROLLING UNDERWATER FISHING KITE
Clasolde L. Louthan, 7477 N. Wayland,
Portland, Oreg. 97203
Filed Feb. 24, 1970, Ser. No. 13,309
Int. Cl. A01k 93/00

U.S. Cl. 43—43.13

16 Claims

A trolling underwater fishing kite having a buoyant wedge-shaped body portion with vane means extending along the sides and around the front and assuming a narrow tapered configuration toward the rear. The vane means at the front is concave downwardly as viewed in transverse cross section. The bottom of the body portion has a downward curvature at about the center of gravity of the kite. The body portion is buoyant and has a formation of mass arranged such that when laid in water the forward end of the body portion noses down a slight amount. The body portion may include longitudinally

shiftable ballast means which assist in performance of the kite. The forward portion of the kite has a vertical slot for receiving the fish line, and the bottom of the kite

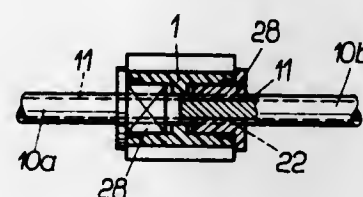


carries a slotted projection having disengageable connection with the fish line whereby when a fish strikes, the kite floats up the line to the surface to an inoperative position.

3,613,291
BUILDING BLOCK GAME
August Wilhelm Howe, Gottelmannstrasse 42,
Mainz (Rhine), Germany
Filed Sept. 11, 1969, Ser. No. 857,072
Claims priority, application Austria, Sept. 18, 1968,
A 9,110/68
Int. Cl. A63h 33/00

U.S. Cl. 46—16

13 Claims

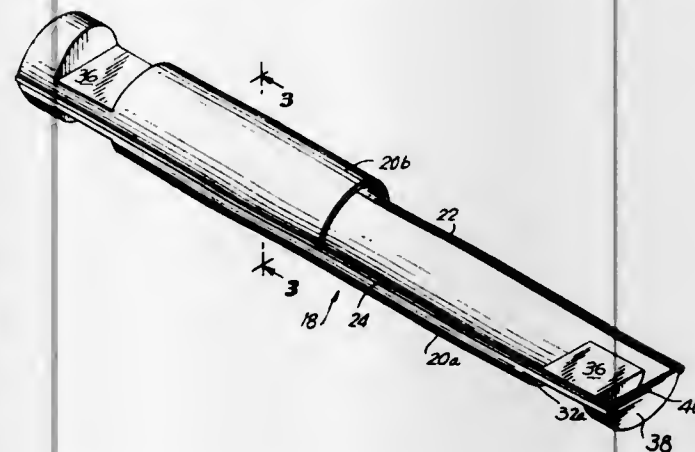


A building block set, essentially consisting of modular components of a plastic material, adapted for fixed assembly by interfitting pegs and corresponding holes and/or rotary assembly by special locking adapters to each other for forming a large number of different fixed structural and/or rotary assemblies limited only by the number of individual components of a game set.

3,613,292
NESTING HALF-LOGS FOR TOY STRUCTURES
Robert G. Schilling, Jr., Flushing, N.Y., assignor to Robert G. Schilling, Flushing, and Andy Connor, Spring Valley, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,566
Int. Cl. A63h 33/08

U.S. Cl. 46—20

7 Claims



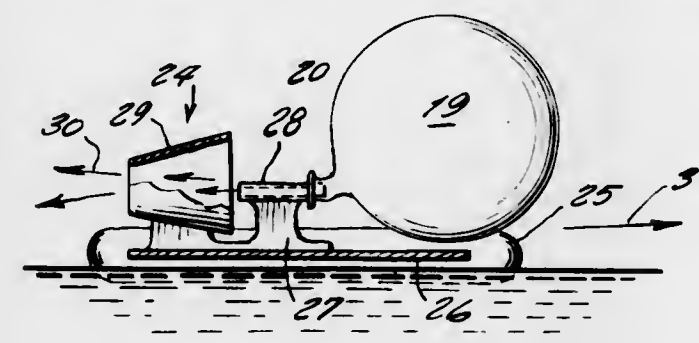
A toy structure such as a log cabin. The toy structure includes elongated log-simulating bodies in the form of hollow tubular units which are longitudinally split so that

each unit is composed of a pair of elongated trough-shaped members coacting to form the elongated tubular log-simulating unit. Thus, when the structure is taken down and stored away the log-simulating units can be disassembled and all of the components will form half-logs which can be nested within each other to enable a large number of these components to be stored in a small space.

3,613,293
FOAM SKIMMER
Richard H. Scott, 55 N. Preston St.,
Centerburg, Ohio 43011
Filed Oct. 17, 1969, Ser. No. 867,129
Int. Cl. A63h 29/16

U.S. Cl. 46—44

1 Claim

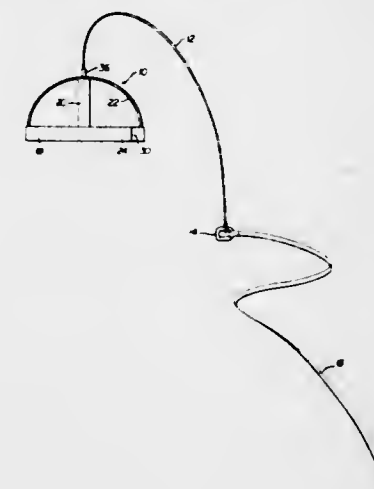


A toy for use upon the surface of water, the toy comprising a catamaran comprised of two spaced apart pontoons with a platform therebetween, the platform supporting a horizontal tube to one end of which a nozzle of an inflated rubber balloon is attached, the opposite end of the tube being directed toward a conical venturi, the discharged air from the balloon passing through the tube and venturi so to cause the toy to be propelled forwardly across the water.

3,613,294
HAT TOY
David E. Graham, 4708 NE. 23rd Ave.,
Fort Lauderdale, Fla. 33308
Filed Mar. 13, 1970, Ser. No. 19,304
Int. Cl. A63h 1/32

U.S. Cl. 46—51

4 Claims



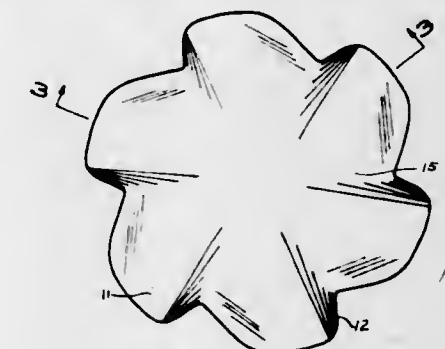
A hat toy worn on the head of a person and operated by swinging the head to make figures with a weight and streamer of the toy. The hat portion includes a circular elastic headband which fits tightly on the head of a person, and crossbands extending across the headband in an arc and having a central anchoring portion to which a

free swinging flexible line is attached. A weight is affixed to the end of the line and carries a streamer which traces the path of the weight as the weight loops about when the head is swung. In a preferred embodiment, the headband is split and has overlapping ends respectively carrying hooking material and pile material providing an overlap fabric fastener to adjust the size of the headband to fit the head of the person firmly.

3,613,295
AERIAL TOY
Robert A. Everett, 704 S. 142nd East Ave.,
Tulsa, Okla. 74108
Filed Dec. 12, 1969, Ser. No. 884,556
Int. Cl. A63h 27/00

U.S. Cl. 46—74

3 Claims

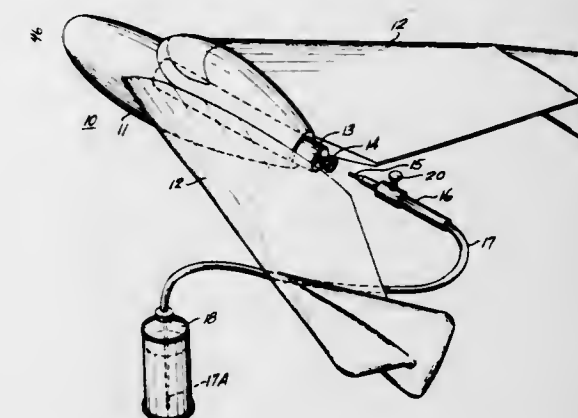


The disclosure is of a hollow unitary body, which has a series of airfoils joined together and extending from their center to form a unitary composite airfoil. Each of the airfoils have a negative dihedral design and are weighted at their peripheral tips. In profile, the composite airfoil is shown as having a substantially flat bottom.

3,613,296
TOY AIRCRAFT WITH PRESSURIZED FLUID PROPULSION SYSTEM
Charles J. Green, Vashon Island, Wash., assignor to Vashon Industries, Inc., Vashon Island, Wash.
Filed Jan. 30, 1970, Ser. No. 7,021
Int. Cl. A63h 27/00

U.S. Cl. 46—76 A

18 Claims



A toy aircraft having wings which provide lift in combination with an engine operating on jet principles. The propulsion engine is filled with liquid Freon just prior to launch. The vapor pressure of the Freon forces Freon in the liquid state from the rear of the engine and thus thrust is provided to the craft. As liquid is discharged the center of gravity of the plane changes causing intricate maneuvers to be performed and repeated dive and climb operations to take place. Details of the propulsion engine are provided.

3,613,297
TOY ROWING BOAT AND ACTUATING MECHANISM

Patrick M. Tomaro, Maplewood, N.J., assignor to Remco Industries, Inc., Harrison, N.J.
Filed Sept. 19, 1969, Ser. No. 859,363
Int. Cl. A63h 23/04

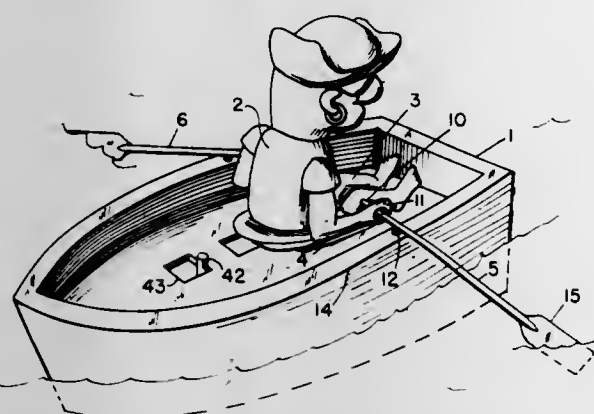
U.S. Cl. 46—23

4 Claims

3,613,299
ANIMATED DOLL
Francis Robert Amici, Northford, Conn., and Ralph Bornn, South Farmingdale, N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed July 16, 1969, Ser. No. 842,156
Int. Cl. A63h 11/00

U.S. Cl. 46—120

11 Claims



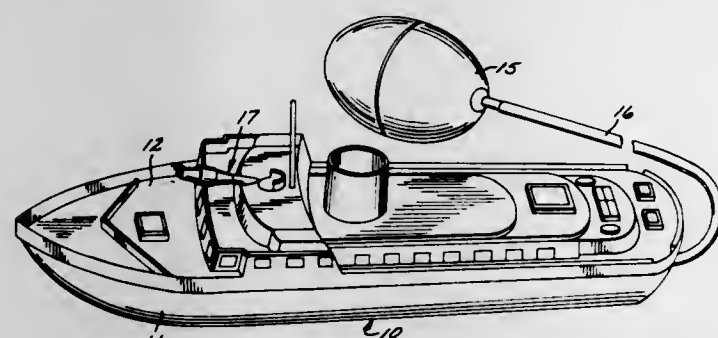
A toy boat is provided with a toy man and oars actuated to row the boat. In operation the man's body moves back and forth and slightly up and down with a rowing motion, his legs moving comparably. As a result the man's hands, holding the oars, cause them to move in an oscillatory, elliptical fashion to move the boat forward. The motion of the man's body is caused by an eccentrically operated linkage within the boat. The boat is steered by moving the operating mechanism laterally to move the center of gravity and so incline the boat to one side of the other. This will cause the oar on one side or the other of the boat to dip more deeply into the water. The actuating mechanism may be used to animate other toys requiring a similar oscillatory, elliptical motion.

3,613,298
TOY BOAT WITH PROPULSION MEANS AND WATER CANNON

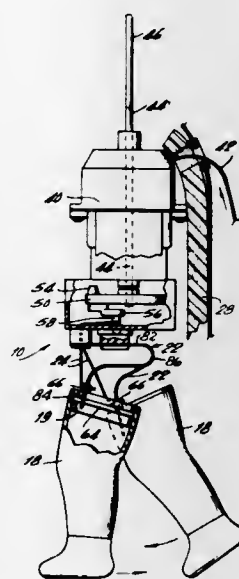
Jan Okonski, 1032 Andrews, Tustin, Calif. 92680
Filed Sept. 3, 1969, Ser. No. 854,880
Int. Cl. A63h 23/06

U.S. Cl. 46—95

12 Claims



A toy boat having an expandable bulb power unit therein which, in response to intermittent squeezing of a hand-held bulb, intermittently draws water into and ejects water from a pressure chamber through an exit port to cause the boat to be propelled forward and to squirt water out of a water cannon which is on the boat and connected to the power unit. The discharge port through which the propulsion water is ejected is specially shaped and has a specially shaped guide structure around it in order to spread the propulsion water in a preferred manner. Said boat has a special guide structure around the exit port in order to draw water in front of the exit port and force that water rearwardly to increase the propulsion effectiveness of the water being ejected through the exit port.

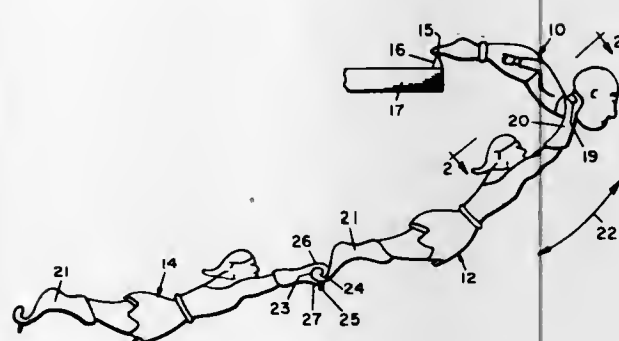


An animated doll is described as comprising a doll body, a head movably mounted on the body for complex motion and legs for walking motion. The motion of the head and legs is provided by a motor which rotates a drive shaft. The drive shaft terminates at one end in an angularly offset shaft extension projecting into the head of the doll and at the other end as the axis of a crank. The crank cooperates with a crank arm which has a crank pin movable by the rotating action of the crank in an elongated slot in the base of a body housing. Harnesses and C-springs depend into each leg, the springs mounting the legs and the harnesses loading the springs for flexure alternately by means of their attachment to the crank pin.

3,613,300
SECTIONAL BALANCING TOY
Ernest Seguin, Montreal, Quebec, Canada, and Max Whiteman, 5450 King Edward Ave., Montreal, Quebec, Canada; said Seguin assignor to said Whiteman
Filed May 22, 1969, Ser. No. 826,903
Int. Cl. A63h 13/12

U.S. Cl. 46—131

6 Claims



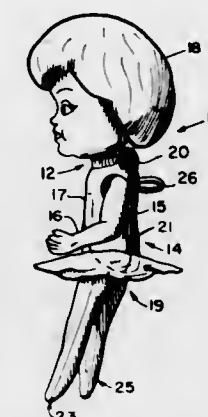
A set of elongated body members including a primary member which is rockable in a vertical plane about a fulcrum. The set also includes additional body members which are rigidly but separably connectable to the primary member and to one another to provide a unitary rockable assembly which has its center of gravity disposed below the fulcrum.

3,613,301
TOY PUPPET-LIKE FIGURINE WITH ACCESSORIES

Sid Noble, 100 Warren Road, West Orange, N.J. 07052, and George Gilder, 6738 108th St., Forest Hills, N.Y. 11375
Continuation-in-part of application Ser. No. 859,269, Sept. 19, 1969. This application June 22, 1970, Ser. No. 48,042
Int. Cl. A63h 3/14

U.S. Cl. 46—154

16 Claims



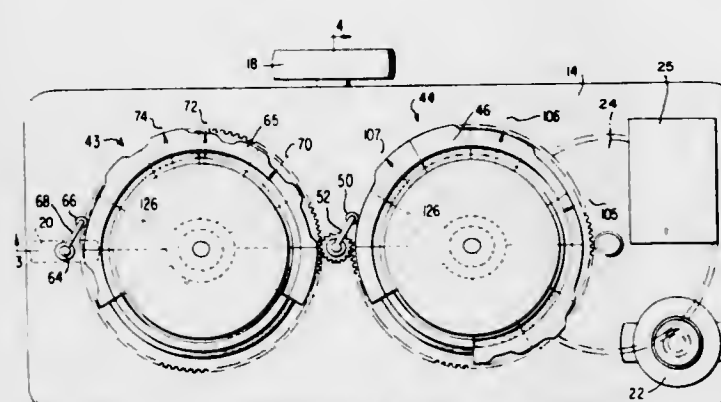
A toy puppet-like figurine with accessories is provided for animated life-like motion by the fingers of a child. The figurine has a rigid upper body including a torso and a removable elastic fabric lower body forming hollow legs connected thereto. The elastic fabric lower body includes an attached garment for covering the upper body, the garment being open at the back for entry of the child's fingers and having a recess formed in the upper rear of the legs dimensioned to receive two fingers for insertion into the hollow legs. A retention means is secured high up on the flat back of the torso between the shoulders to hold at least one finger directly against the back of the upper body providing upright support to the torso. The individual accessories are shaped to receive and be frictionally retained by the legs when rigidified or distended by the fingers.

3,613,302
CAM CONTROLLED TOY VEHICLE
George D. Stohrer, 2810 Bosworth Lane, Bowie, Md. 20715

Original application May 1, 1967, Ser. No. 635,067, now Patent No. 3,481,072, dated Dec. 2, 1969. Divided and this application Aug. 28, 1969, Ser. No. 853,794
Int. Cl. A63h 11/10

U.S. Cl. 46—202

8 Claims



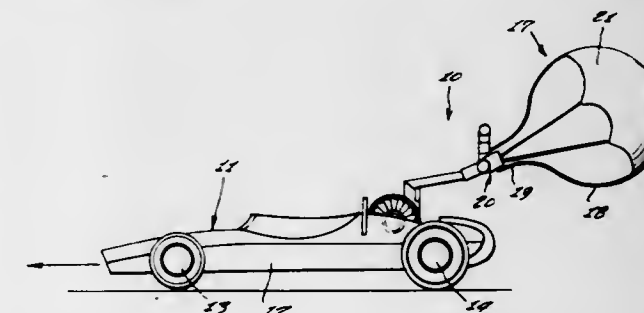
A motor driven toy vehicle which includes selectively operable locomotion means for moving the vehicle in opposite directions. First follower means for selecting the

direction of motion of the locomotion means is controlled by first cam means driven in timed relation to the motor. Selectively operable steering means for steering the vehicle is controlled by second follower means operated in response to the motion of second cam means driven in timed relation to the motor. At least one of the first and second cam means includes a base moved along a predetermined path relative to the adjacent corresponding follower means. A plurality of cam members detachably secured to the base have peripheral portions extending different distances outwardly of the path of motion of the base. The peripheral portions of the various cam members successively contact and move the adjacent corresponding follower means which in turn controls the operation of the vehicle in timed relation to the motor.

3,613,303
BALLOON POWER TURBINE TOY ENGINE
Herman Allen, 2020 Daron Place, Flint, Mich. 48505
Filed Nov. 18, 1968, Ser. No. 776,522
Int. Cl. A63h 17/00

U.S. Cl. 46—206

4 Claims

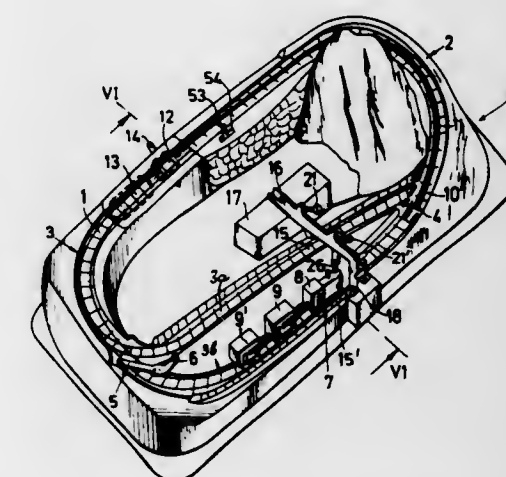


A toy vehicle operated by pneumatic power for the purpose of propelling the toy forwardly, and comprising a wheeled vehicle upon which there is secured an inflated balloon from which compressed air is forced against a turbine connected through a gear train to the driving wheels of the vehicle.

3,613,304
TRACK TOY
Alfred Einfalt, Nuremberg, Germany, assignor to Firma Gebrüder Einfalt, Nuremberg, Germany
Filed June 16, 1970, Ser. No. 46,637
Claims priority, application Germany, Mar. 28, 1970, G 70 11 453.3
Int. Cl. A63h 17/00

U.S. Cl. 46—206

18 Claims



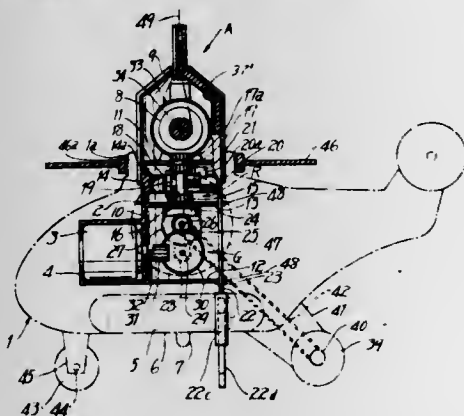
A track toy comprises a base simulating a mountain landscape traversed by a continuous track including an upgrade and one or more downgrades. Toy vehicles are

power driven up the upgrade and roll down the downgrades by force of gravity. A control station is associated with each downgrade for selectively arresting and releasing a vehicle rolling down the grade. Control of the vehicle is effected by moving a stop member constituting part of each station into and out of engagement with the vehicle on one of the downgrades.

3,613,305 VERTICALLY AND HORIZONTALLY MOVABLE TOY

Isamu Suzuki, Tateishi, Japan, assignor to
Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 860,659
Claims priority, application Japan, Sept. 27, 1968,
43/84,713

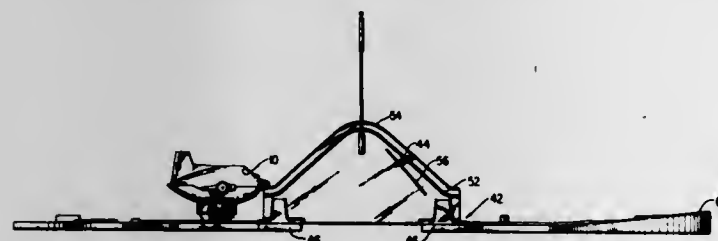
Int. Cl. A63h 17/00
U.S. Cl. 46—206 6 Claims



A vertically and horizontally movable toy which comprises motor means, reel means operatively connected to said motor means and arranged to wind and unwind a string suspending the toy from a ceiling, a reversing gear for said reel means, vertically outwardly extending slidable means for operating said reversing gear, and wheel means driven by said motor means for propelling the toy on a supporting surface.

3,613,306
TOY AIRPLANE AND TRACKWAY
Toshikatsu Arita, Tokyo, Japan, assignor to
Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed June 4, 1970, Ser. No. 43,496
Int. Cl. A63h 19/24

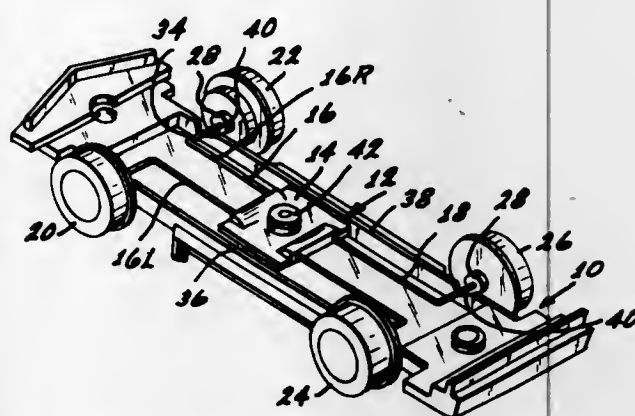
U.S. Cl. 46—216 3 Claims



The invention features a trackway comprised of runway and turn-around sections wherein the airplane is propelled by rotating landing gear wheels, a flying area in which rotating pinion wheels projecting from the wings of the plane mesh with and advance along a continuous rack and an aerobatics area in which simultaneously with the advancement of the plane along the continuous rack stationary pinion wheels mesh with and advance along an abbreviated rack causing the plane to somersault.

3,613,307
INDEPENDENT SUSPENSION FOR TOY VEHICLES
William R. Baynes, Palos Verdes Peninsula, and Stephen
H. Kaminski, Burbank, Calif., assignors to Mattel,
Inc., Hawthorne, Calif.

Filed Oct. 16, 1969, Ser. No. 866,896
Int. Cl. A63h 17/26
U.S. Cl. 46—221 9 Claims



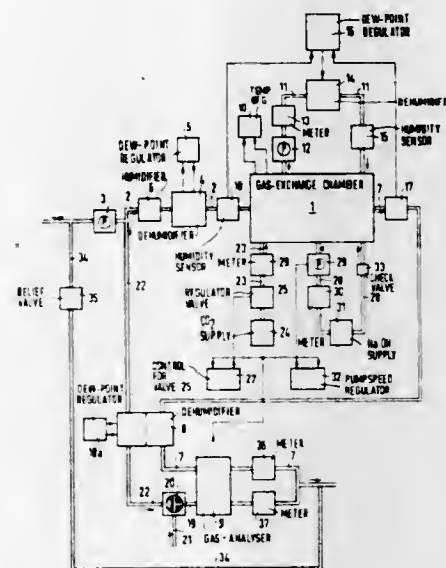
A toy vehicle in which the axle wires are molded into a mounting member that is attached to the vehicle frame. Each axle wire extends a substantial distance along the length of the vehicle between the mounting member and the wheel, to provide independent suspension of the wheels.

3,613,308
DEVICE FOR REGULATING AND DETERMINING
CHANGES OF A CO₂ CONTENT IN A CLIMATIC
GAS-EXCHANGE CHAMBER

Erwin Klein, Erlangen, Werner Koch, Grafrath, and
Heinz Walz, Eltersdorf, Germany, assignors to Siemens
Aktiengesellschaft, Berlin, Germany

Filed Apr. 30, 1969, Ser. No. 820,581
Claims priority, application Germany, Apr. 30, 1968,
P 17 73 320.9
Int. Cl. A01g 9/18

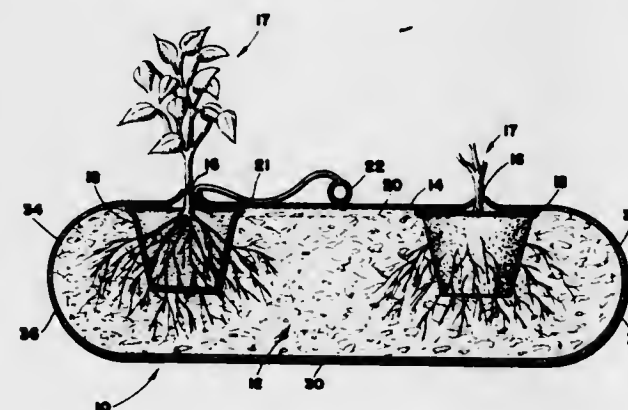
U.S. Cl. 47—17 7 Claims



Described is a device for controlling and determining changes in the CO₂ content in a gas-exchange measuring chamber, which contains plants, living plant parts or organisms, air conditioned by peltier elements, and into which measuring gas can be pumped, via a gas line. A gas outlet contains a peltier-cooled dehumidifier and a gas analyzer, wherein a measured value can be determined as a difference between the CO₂ content of the measuring gas and

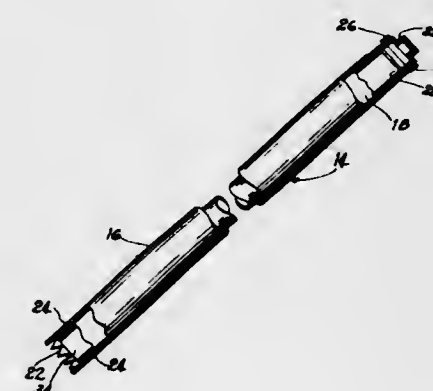
the CO₂ content of a supplied standard gas. The device is so characterized that CO₂ gas can be supplied, via a regulating valve and a flow counter, to the gas-exchange measuring chamber. Also provided is a bypass to the gas-exchange measuring chamber, wherein a flow counter and means for changing the flow and for binding the CO₂ gas are arranged. The regulating valve and the devices which regulate the flow are each provided with a regulating system, wherein the control magnitude of each regulator constitutes the measured value of the gas analyzer.

3,613,309
PLANT CULTIVATION
Charles W. Coburn, Lake Forest, Ill., assignor to
Ickes-Braun Glasshouses, Inc., Chicago, Ill.
Filed July 3, 1969, Ser. No. 839,023
Int. Cl. A01g 9/02, 31/02
U.S. Cl. 47—38 3 Claims



A package for growing plants, and a system including such packages, is disclosed. As illustrated, the package is in the form of a plastic bag containing a root-supporting material, with openings being provided in the top wall of the bag through which the stems of the plants protrude. Within each bag is a liquid distributing tube and, in the disclosed system, means are provided to supply a nutrient in liquid form to the tube of each bag.

3,613,310
WATER LEVEL INDICATING AND CONTROL
CONSTRUCTION
Robert W. Rynberk, 4347 W. 109th St.,
Oak Lawn, Ill. 60453
Filed Sept. 19, 1969, Ser. No. 859,401
Int. Cl. A01g 29/00
U.S. Cl. 47—48.5 4 Claims

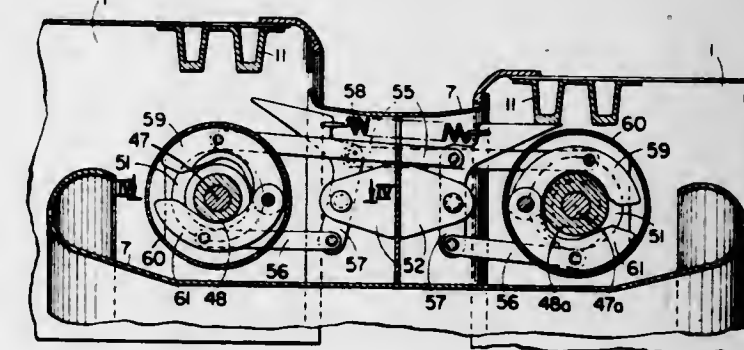


A water level indicating and control construction adapted to be inserted in the ground for adding or removing water depending upon the water level detected by the construction. The construction comprises inner

and outer tubular members with the outer member being held in the ground and with the inner member being slideable relative to the outer member so that it can be readily removed. Openings are defined by the outer member so that water will be retained in the outer member in accordance with the water level. The inner member serves as a dip stick while also providing means for removing water by suction when an excessive level is detected.

3,613,311
DEVICE FOR OPENING AND CLOSING SLIDING
ROOF SECTIONS OF A FREIGHT CAR
Felix Schneider, Eckmannshausen, Paul-Werner Wagener,
Netphen (Sieg), and Ernst Neuser, Dries-Tiefenbach,
Germany, and Rudolf Walser, Jegenstorf, Switzerland,
assignors to Rheinstahl Sieger Eisenbahnbedarf
G.m.b.H., Dries-Tiefenbach Kreis Siegen LW., Ger-
many

Filed May 15, 1969, Ser. No. 824,841
Claims priority, application Germany, May 18, 1968,
P 17 59 609.7
Int. Cl. E05f 11/04
U.S. Cl. 49—136 9 Claims

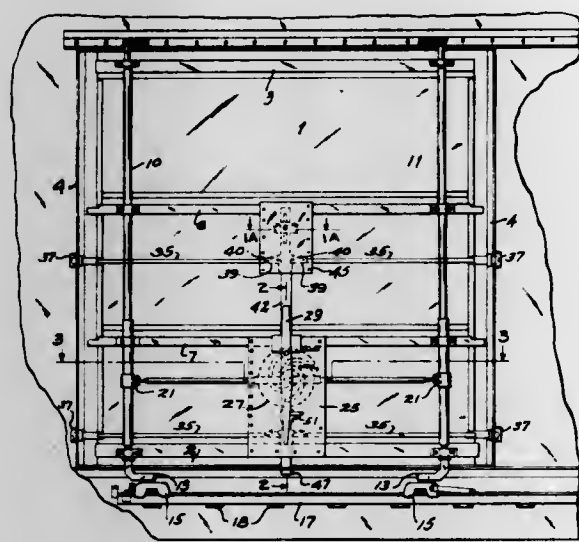


In a device for opening and closing sliding roof sections of containers, such as two-section roofs of freight cars, each roof section is connected by two cables to a respective drum rotatably mounted on a cross connection of a freight car. Each of the two cables is connected to the roof section adjacent a respective end of the latter, and the two cables are wound in opposed directions on the associated drum. Manually operable crank means rotate the drums through transmission means interconnecting the crank means and the drums. Respective clutches are interposed between each drum and the transmission means, and clutch operating means connect the crank means to the clutch means and are operable, responsive to operation of the crank means in a direction to open one roof section, to engage the clutch means connecting the associated drum to the transmission means and to disengage, and maintain disengaged the clutch means interposed between the other drum and the transmission means. When one roof section has been moved to the open position, the other roof section cannot be moved to the open position until the one roof section has been returned to the fully closed position. Continued movement of the crank means in the closing direction for one roof section will, after the two roof sections are in the closed position, initiate opening movement of the other roof section.

3,613,312
RAILWAY CAR PLUG DOOR STRUCTURE
Norbert S. Wolak and Thomas J. Wolak, Cicero, and
Alfonso W. Ceyer, Berwyn, Ill., assignors to Evans
Products Company, Plymouth, Mich.
Filed Aug. 11, 1969, Ser. No. 848,887
Int. Cl. E05d 15/10
U.S. Cl. 49—220 11 Claims

A railway house car having a plug-type door mounted on upright shafts including laterally swinging cranks with

their swinging ends journaled on wheeled carriages traveling on a track running lengthwise on the car body. Mechanism to rotate the shafts and move the door in and out of the opening in the car wall includes a manually operable timing plate paralleling the door and journaled thereon and having a plurality of arcuate cams with followers operatively connected to respective crankshafts. Other cams and followers actuate locking bars slidable



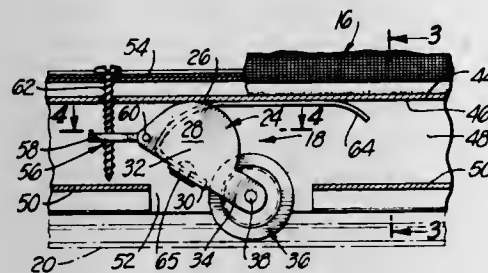
on the door to engage and disengage keepers on the car wall to hold the door tightly closed. The cams and their connections to the shafts hold the door against movement by pressure from car lading or by impacts due to car shifting. All the above-mentioned operations are attained without use of levers extending laterally from the door. The mechanism may be secured against operation by the usual railway car seal but only when the door is completely closed and locked.

3,613,313 SUPPORTING ROLLER ASSEMBLY FOR A SLIDING PANEL

B. J. Helmick, 303 Deborah Court,
Upland, Calif. 91786
Filed May 13, 1970, Ser. No. 36,915
Int. Cl. E05d 13/02

U.S. Cl. 49—420

13 Claims



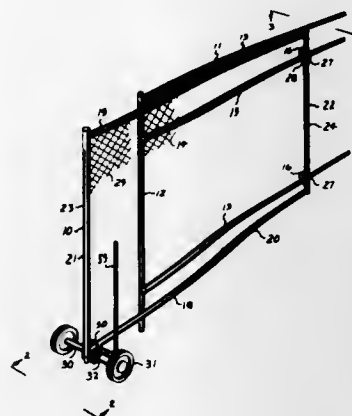
A supporting roller assembly for a sliding panel, such as a sliding screen door, movable along a track and having an edge surface facing the track. The roller assembly includes a spring biased rocker arm having a rounded seating edge seating against the panel edge surface, a track engaging roller on the arm adjacent one end of its seating edge, and attachment means pivotally secured to the arm adjacent the other end of the seating edge for securing the arm to the panel and adjusting the arm to shift the point of contact of its seating edge with the panel edge surface in a direction along the seating edge, thus to adjust the roller toward and away from the panel edge surface.

3,613,314 ROLLAWAY FENCE GATE

Francis L. Ford, 1110 Raymond Ave.,
Fort Pierce, Fla. 33450
Filed Oct. 17, 1969, Ser. No. 867,163
Int. Cl. E05d 13/02

U.S. Cl. 49—425

5 Claims



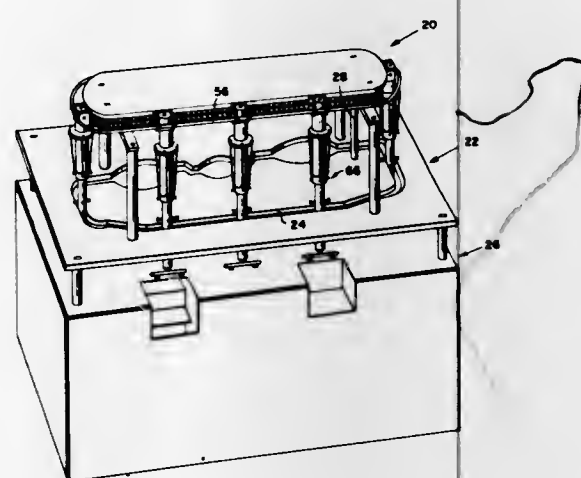
In a rollaway fence gate, one end of the gate frame is supported by guide rail traversable wheels while the other end is supported on a pivotally movable support assembly that includes a ground contacting wheel assembly which has a pair of spaced wheels. The bottom rail of the gate frame rests on a seat component of the support assembly and is straddled by a pair of members that serve as stops which prevent pivotal movement of the support assembly when the rail is seated. The pivot is carried by the support assembly and permits relative axial movement of the frame and support assembly, and a lever mounted on the wheel assembly is manipulatable to move the frame relative to the support assembly so as to disengage the stops and permit pivotal movement of the wheel assembly. The mounting for the pivot is adjustable to permit adaptation of the wheels to the ground contour.

3,613,315 AUTOMATIC MAIL OPENER

Robert A. Schickling, B & S Machine Co., 1915 E.
Willard St., Philadelphia, Pa. 19134
Filed Nov. 13, 1969, Ser. No. 876,524
Int. Cl. B24b 7/20

U.S. Cl. 51—74 R

16 Claims



A machine for opening the envelopes in a stack comprises a plurality of arms arranged to pick up envelopes individually from the stack. Each envelope is moved by an arm in a path so that it passes three abrading wheels. One of its edges is opened by the first abrading wheel. The

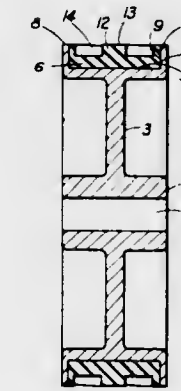
envelope is then rotated 90° by the arm, and a second edge is opened by the second abrading wheel. The arm then rotates the envelope a further 90° so that a third edge is opened by the third abrading wheel. The arm then deposits the opened envelopes in a stack.

3,613,316 SERRATED CONTACT WHEEL

Richard L. Eten, Vancouver, Wash., assignor to The
Carborundum Company, Niagara Falls, N.Y.
Filed Aug. 11, 1969, Ser. No. 848,858
Int. Cl. B24b 21/12

U.S. Cl. 51—141

4 Claims



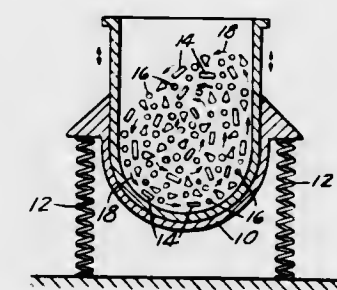
This invention relates to a contact wheel for backing coated abrasive belts. The wheel has a composite working periphery comprised of a hard rubber central section supported by marginal metal sections. The working periphery is serrated having transverse lands and separating grooves extending entirely across the central and marginal sections.

3,613,317 MEDIA FOR FINISHING PLASTICS AND SOFT METALS

John B. Kittredge and Richard L. Larson, White Bear
Lake, Minn., assignors to Minnesota Mining and Manu-
facturing Company, St. Paul, Minn.
Original application May 26, 1967, Ser. No. 641,666, now
Patent No. 3,504,124, dated Mar. 31, 1970. Divided
and this application June 25, 1969, Ser. No. 869,980
Int. Cl. B24b 31/02

U.S. Cl. 51—164.5

3 Claims



Finishing media for mechanical barrel or vibratory finishing of soft metals and plastics consisting of discrete flexible polymeric shapes having a Shore D hardness of 45 to 80 at room temperature, the hardness of said shapes being inversely variable with temperature, preferably formed from a resilient polyester resin containing finely divided abrasive having particle diameters below 30 microns, and method of finishing soft articles, including the steps of first agitating in the presence of media at a low temperature whereby increased hardness of media increases metal cut rate and subsequently raising the temperature whereby the metal cut rate is decreased but the

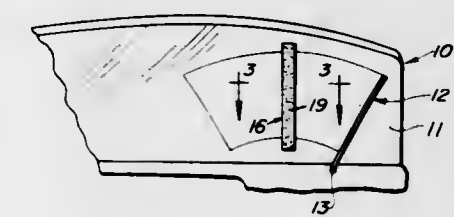
surface smoothness produced on articles is greatly increased, plastics being finished in cold water to increase cut rate and minimize softening and swelling.

3,613,318 AUTOMOTIVE VEHICLE WINDSHIELD AND WINDSHIELD WIPER AND WIPER BLADE SHARPENER ATTACHMENT THEREFOR

Henry L. Gianatasio, River Forest, Ill., assignor to
Pres-on Products, Inc., Addison, Ill.
Filed Dec. 10, 1969, Ser. No. 883,976
Int. Cl. B24b 19/00

U.S. Cl. 51—241 R

1 Claim



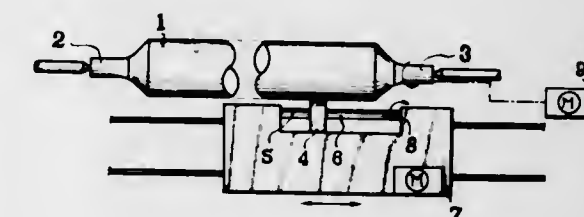
An automotive vehicle windshield and windshield wiper and wiper blade sharpener attachment strip therefor are provided including a strip of water-resistant cloth, fabric, paper, or like material, having a pressure-sensitive adhesive coating on one surface thereof and having an abrasive-coated surface on the other side thereof. The windshield wiper blade sharpener attachment strip is attached by the pressure-sensitive adhesive coating thereon to the outer surface of the windshield in the path of movement of the windshield wiper blade so that when the windshield wiper is moved in operation it passes over and engages the abrasive-coated outer surface of the windshield wiper blade sharpener attachment strip, thus sharpening and maintaining the wiping efficiency of the outer surface of the flexible rubber or like windshield wiper blade.

3,613,319 METAL ROLLING WORK ROLL AND METHOD OF MAKING SAME

Shojiro Takimura, Tomeji Doi, and Hiroshi Kuwamoto,
all % Nippon Kokan Kabushiki Kaisha Mizue Iron
Works, 5-1 Mizue-cho, Kawasaki-shi, Kanagawa-ken,
Japan
Continuation-in-part of application Ser. No. 678,603,
Oct. 27, 1967. This application Mar. 2, 1970, Ser.
No. 15,444

U.S. Cl. 51—289 R

9 Claims



A work roll for rolling low carbon steel or the like has a surface which is dull finished by grinding with a #40 or less roll grinder to form circumferentially oriented impressions on the surface of the work roll. These work rolls impart surface roughnesses and qualities to the rolled steel strip whereby the roughness of the surface in the direction transverse to rolling is greater than the roughness in the direction of strip rolling, to thereby reduce sticking tendencies, improve the surface luster, and improve manufacturing economies.

3,613,320

PIPE MACHINING METHOD

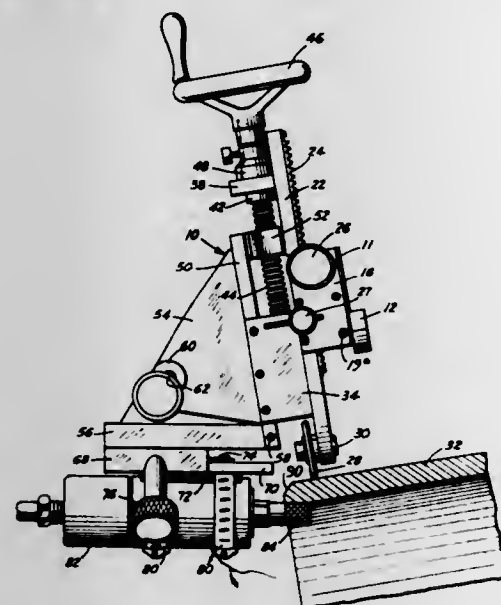
Percipitus J. Mighton, Tulsa, Okla., assignor to Mary C. Harter, Tulsa, Okla.

Application Aug. 8, 1966, Ser. No. 570,978, now Patent No. 3,501,872, which is a continuation-in-part of application Ser. No. 293,479, July 8, 1963, now Patent No. 3,265,679. Divided and this application Oct. 8, 1969, Ser. No. 871,340

Int. Cl. B24b 1/00

U.S. Cl. 51—290

9 Claims



A method of preparing the end of a tubular member wherein the machining operation on the said end is indexed or referenced from the outer periphery of the pipe. A follower roller or indexing wheel rides circumferentially around the outer periphery of the pipe during operation of a pipe end preparing apparatus. A machining or grinding tool is carried by the wheel support structure in such a manner that the tool moves both circumferentially and radially simultaneously with the indexing wheel thus assuring that the function being performed on the pipe end is directed or reversed from the contour of the outer periphery of the tubular member.

3,613,321

BUILDING CONSTRUCTION

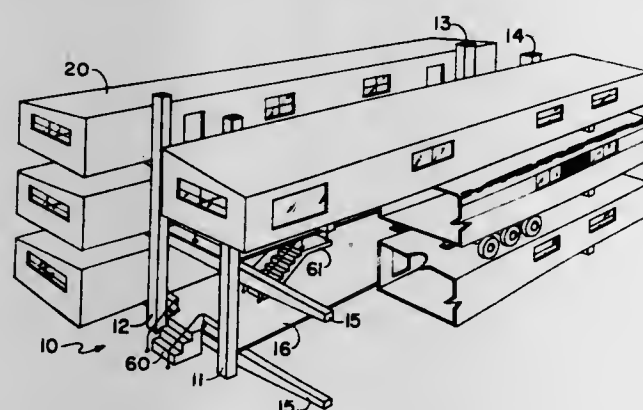
Karl R. Rohrer, 264 Kenilworth Drive, Akron, Ohio 44313

Filed July 9, 1969, Ser. No. 840,246

Int. Cl. E04b 1/34

U.S. Cl. 52—73

4 Claims



A method and structure for building construction in which a first pair of opposed vertical, hollow, spaced apart columns is erected and then a second pair of opposed vertical, hollow columns is erected in spaced apart relationship to the first pair of columns. One or more horizontal cantilevered beams are then secured to each pair of columns with their outboard ends projecting outwardly beyond each of the columns so as to form an H-shaped frame. Prefabricated housing components can then be

mounted on the extending arms of the beams and utility connections can then be mounted on the extending arms of the beams and utility connections can be made through the hollow columns with the H-shaped arrangement providing an open space between adjacent frames which permits installation of stairs and other appurtenances.

3,613,322

CABLE SUPPORTED ROOF CONSTRUCTION

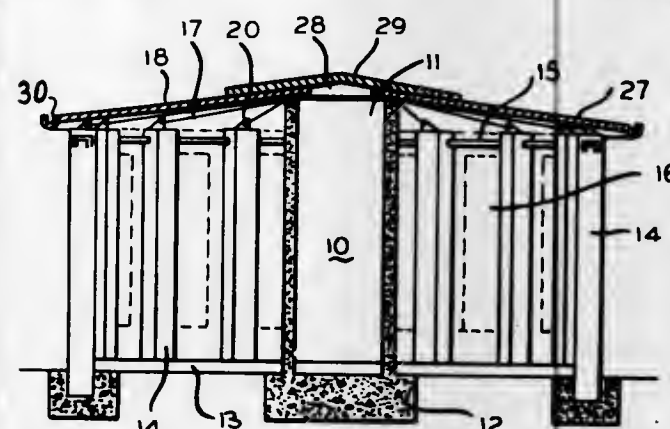
Thomas H. Czarnecki, Sr., 13543 N. Cedarburg Road 64-W, Mequon, Wis. 53092

Filed Mar. 27, 1970, Ser. No. 23,208

Int. Cl. E04b 7/14

U.S. Cl. 52—83

6 Claims



A building may be erected in a simple and efficient manner by suspending the roof on cables extending outwardly from a central pillar. The periphery of the roof rests on a cylindrical outer wall. This wall may be constructed as a closed wall, or with windows, doors or the like. A centrally disposed pillar-like portion may be also accessible as a room for use.

3,613,323

FORM AND DRAIN TILE

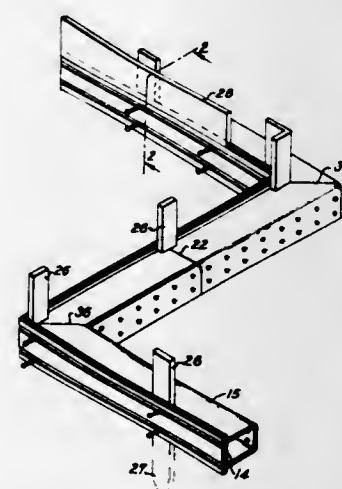
Fred J. Hreha, 226 Sullivan St., Exeter, Pa. 18644

Filed Mar. 10, 1970, Ser. No. 18,240

Int. Cl. E02d 27/04; E04b 1/70

U.S. Cl. 52—169

15 Claims



This specification discloses a form intended for use in the casting of concrete or cement foundations and which has a drain tile integral with an element thereof. The form comprises two flat wall sections detachably connected. A drain tile is integrally formed on the lower wall section and is of rectangular cross section presenting spaced horizontal walls and a side wall. The latter is formed with a plurality of spaced drainage openings and the horizontal walls are formed at spaced intervals with aligned slot-like apertures adjacent to the wall section from which they extend. Stakes are driven through these apertures and nailed to the upper wall section of the form.

A mechanical interlock between the lower wall section and the material cast is provided and may take different forms.

3,613,324

DOOR SEAL UNIT

Gary L. Conger, 3043 W. Mason St., Green Bay, Wis. 54303

Filed May 12, 1969, Ser. No. 823,908

Int. Cl. E04h 14/00

U.S. Cl. 52—173

4 Claims



The seal unit of this disclosure includes a pair of similar side pads and a top pad formed of a polyurethane foam. Each side wall pad is formed of a tapered section having a relatively narrow base face secured to the adjacent exterior structure wall immediately adjacent an opening. An inner side face extends from the narrow end outwardly of the structure and inwardly of the space or opening between the pads to the outer edge portion of a wide sealing face defining a sealing lip portion. When the trailer is backed into abutting engagement, it engages the lip portions which deflect and form a weather-tight seal.

The top wall pad spans the sidewall pads and is also formed of tapered cross-section having a relatively deep mounting base and a slanting top surface to shallow front face. A fabric flap extends downwardly from the top pad between the two side wall pads to which it is secured. A drop flap is secured to the lower end of the first flap.

3,613,325

CONCRETE CONSTRUCTION

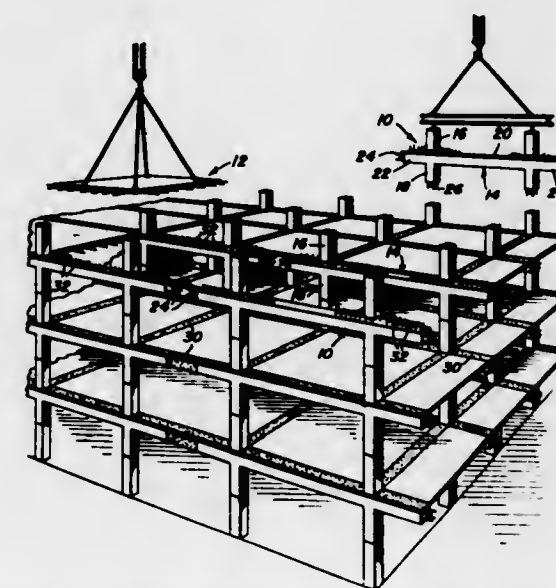
Alfred Alphonse Yee, Suite 810, 1441 Kapiolani Blvd., Honolulu, Hawaii 96814

Filed July 10, 1969, Ser. No. 840,725

Int. Cl. E04b 5/04, 5/16

U.S. Cl. 52—236

4 Claims



A construction system utilizing a plurality of combination column and beam units or trees assemblable so as to define a concrete building frame for the reception of a

plurality of pre-formed concrete slabs. Each tree consists of upper and lower column sections which join at mid-height to similar column sections on subjacent and superjacent trees, the joining being effected through embedded splice sleeves. Each upper column section is spaced above the transverse tree beam to which it is joined for the accommodation of a slab joining pour whereby a positive interlock between the beam-supported slabs and the frame unit or tree is achieved.

3,613,326

PREFORMED SIMULATED BRICK PANEL HAVING STEPPED EDGES

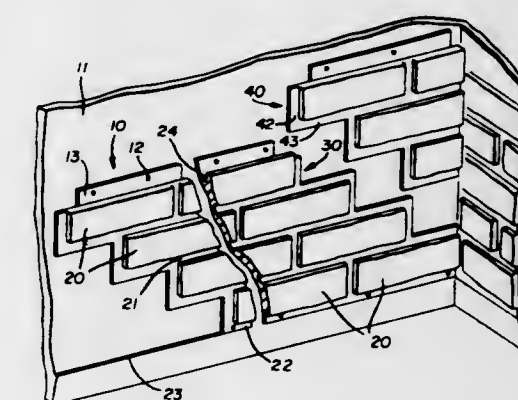
Robert E. Mollman, Moreland Hills, Ohio, assignor to Alsida International Corporation, Akron, Ohio

Filed Oct. 3, 1969, Ser. No. 863,610

Int. Cl. E04c 1/10, 2/10

U.S. Cl. 52—314

1 Claim



A preformed panel simulating brick or other stone material laid in successive courses and being characterized by the presence of stepped longitudinal edges that are formed for tongue and groove aligned engagement so as to minimize the presence of vertical joints upon installation.

3,613,327

STRUCTURAL SYSTEM FOR WALLS OR CEILINGS OR DECKS

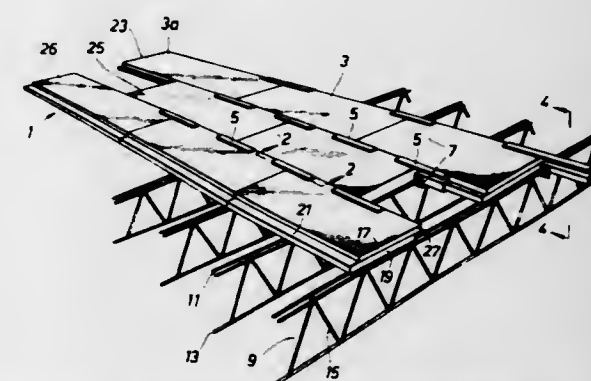
Herbert Lynwood Hall, 1842 Tattenhall, Houston, Tex. 77008

Filed Mar. 27, 1969, Ser. No. 812,563

Int. Cl. E04b 5/10, 5/52

U.S. Cl. 52—489

1 Claim

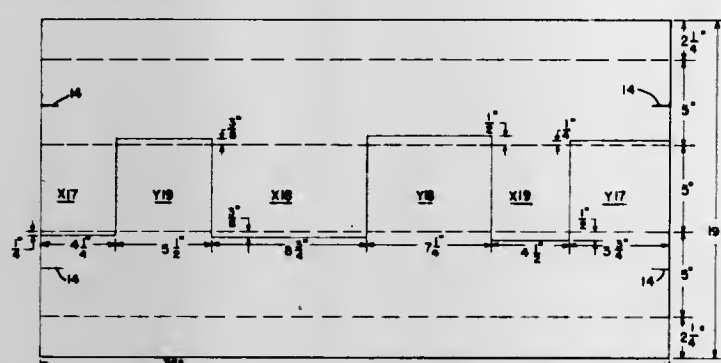


An improved structural system comprising a plurality of panel-like members each having parallel ship lap edges for cooperative engagement with one another. Disposed intermediate the ship lap edge of each panel member is attachment means designed to engage and joint the panel edges together. In installation the panels are laid perpendicularly to the structural supports of the building and a clip attachment which is integral with each attachment member is adapted to engage the structural support. Each of the panels are disposed with their butt end joints in staggered relationship with respect to each adjacent panel.

3,613,328
LAMINATED STRIP SHINGLE WITH MULTIPLE EXTENDED SHADOW-PRODUCING TABS OF VARIABLE WIDTH AND LENGTH
 Albert R. Morgan, Jr., Paul R. Antoun, Howard E. Callahan, and Theodore R. Mangel, Cincinnati, Ohio, assignors to Panason Corporation, Cincinnati, Ohio
 Filed May 13, 1970, Ser. No. 36,891
 Int. Cl. E04d 1/00

U.S. Cl. 52-555

19 Claims



A laminated, mineral-surfaced, asphalt strip shingle, which, when laid in courses on a roof, simulates the irregularity and attendant shadow effects found in wood shingles, while complying with Underwriters' Laboratories, Inc., standards for fire retardant asphalt shingles. The laminated shingle comprises an overlay lamina of asphalt roofing composition, of full width and length dimensions, with widely spaced cut-out tabs in its exposed area as applied on a roof, said cut-out tabs being of generally rectangular shape, and each being of different width and length. An underlay lamina, constituted by a narrow sheet of the same asphalt composition roofing material with no cut-outs, is laminated adhesively to the underside of the overlay lamina, filling the spaces between the tabs of the overlay lamina and providing tab-simulating areas between said tabs. The tabs of the overlay lamina overhang the lower edge of the underlay lamina, and the underlay lamina is shifted laterally with respect to the overlay lamina by a small amount to cover the butt joint between adjacent underlay laminae in the same course. Vertical alignment marks are provided, such that the underlay lamina overhangs the tops of the cut-outs between tabs of the overlay lamina in the next lower course. A plurality of horizontal laying marks, differently spaced, are provided to create a laying program, which avoids the appearance of repetitive or directional patterning.

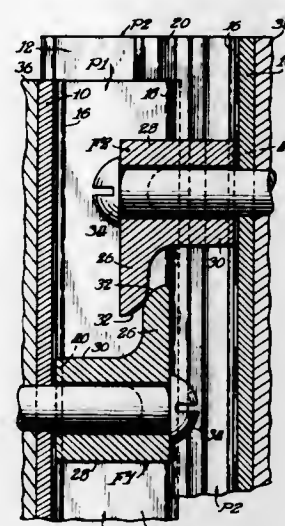
3,613,329
PANEL POST JOINING MEANS
 Arthur Fernandez, Bayamon, and David H. Humphrey, San Juan, Puerto Rico, assignors to Orbit International, Inc., San Juan, Puerto Rico
 Filed June 18, 1969, Ser. No. 834,438
 Int. Cl. E04c 1/30, 3/30

U.S. Cl. 52-582

9 Claims

Means is provided for joining panel posts together in such manner that partitions or the like formed of panels and post units may be readily assembled in a minimum of time and thereafter "knocked down" with equal facility. Channel-shaped posts are provided having the flanges thereof interfitting with each other and joined by means of finger wedges concealed inside the channel-shaped posts. The finger wedges are designed to coact with each other by first longitudinally offsetting one channel-shaped post relative to the other, and then sliding them to achieve final alignment, whereupon interlocking tongue and groove connections between the flanges of one channel-shaped member and the flanges of the other channel-shaped member so coact with each other that the two posts form a single substantially rectangular post. These channel-shaped posts may be formed as extrusions of metal,

plastic or the like and used for assembling panels together by securing the channel-shaped posts to the edges of panels of wood, plastic, particle board or the like as by means of screws. The channel-shaped posts are provided with mating wedge surfaces so disposed as to spread



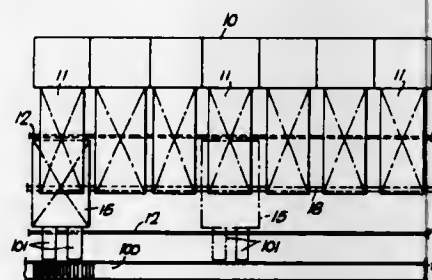
the post flanges as the post webs are drawn toward each other by the finger wedges, and the spreading action effects entry of the tongues into the grooves of the flanges to attain final assembly of the two posts into a single rectangular post.

3,613,330
METHOD OF AND APPARATUS FOR PACKING BATCHES OF SIZED AND/OR GRADED FRUIT
 Izak Johannes Voullaire, Monak, New South Wales, Australia (P.O. Box 543, Mildura, Victoria 3500, Australia)

Filed Sept. 11, 1969, Ser. No. 857,159
 Claims priority, application Australia, Sept. 13, 1968, 43,356/68

U.S. Cl. 53-26

10 Claims



A method and apparatus for packing whole fruit such as oranges in a carton wherein a mobile packing station is arranged to co-operate individually with any one of a plurality of feed stations each of which receives fruit of a particular grade. Each feed station is arranged to form the fruit into a particular layer formation corresponding to the layers required in the carton and to deliver this preformed layer of fruit to the packing station. The packing station then deposits the layer into a carton.

3,613,331
FEEDING MECHANISM FOR A CONTAINER FILLING MACHINE

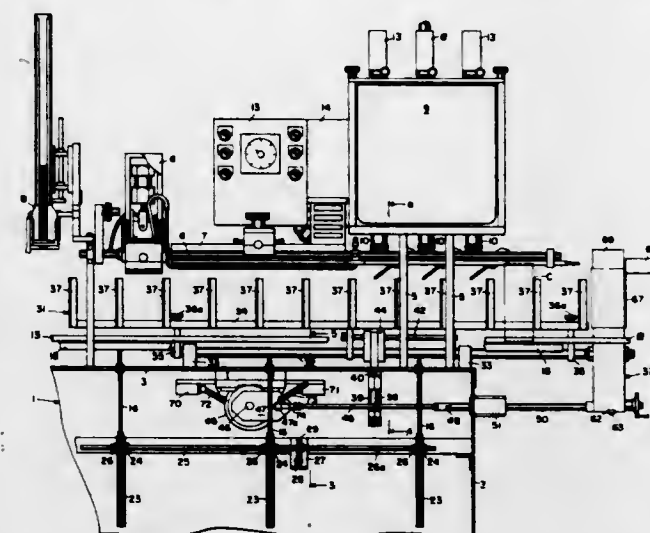
Howard R. Garrett, St. Paul, Minn., assignor to Haskon, Inc., St. Paul, Minn.
 Continuation-in-part of application Ser. No. 636,182, May 4, 1967. This application Mar. 28, 1969, Ser. No. 811,466

U.S. Cl. 53-266

5 Claims

A feeding mechanism for advancing containers through a container filling and closing machine, comprising an endwise movable feed bar having feeding elements for

engaging the containers and advancing the same there-with, the feed bar being moved endwise by a rotary hydraulic motor having a throw of substantially one-half

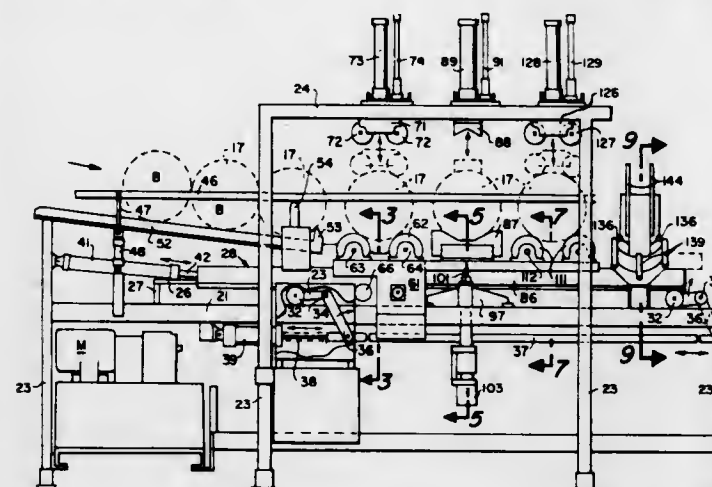


revolution whereby the containers are accelerated slowly at the beginning of the advance stroke and are decelerated slowly at the end of the advance stroke so that the containers are not upset or the contents splashed therefrom.

3,613,332
MACHINE FOR REMOVING BUNGS FROM KEGS
 Henry J. Davis, Stockton, Calif., assignor to Automation International, Inc., Stockton, Calif.
 Filed Mar. 5, 1970, Ser. No. 16,782
 Int. Cl. B65b 43/40

U.S. Cl. 53-381 A

6 Claims



A multi-station machine has a walking beam which moves a keg from a (1) receiving station to an (2) orienting station, where the bung is stopped in lowermost position, thence to a (3) debunging station where a rotating auger penetrates and removes the bung, then to a (4) sensing station where the presence of improperly conditioned kegs is determined, thence to a (5) discard station where improperly conditioned kegs are discarded from the line, and finally to a (6) discharge station where kegs with bungs removed are deposited for washing and filling in subsequent equipment.

3,613,333
PROCESS AND APPARATUS FOR CLEANING AND PUMPING CONTAMINATED INDUSTRIAL GASES

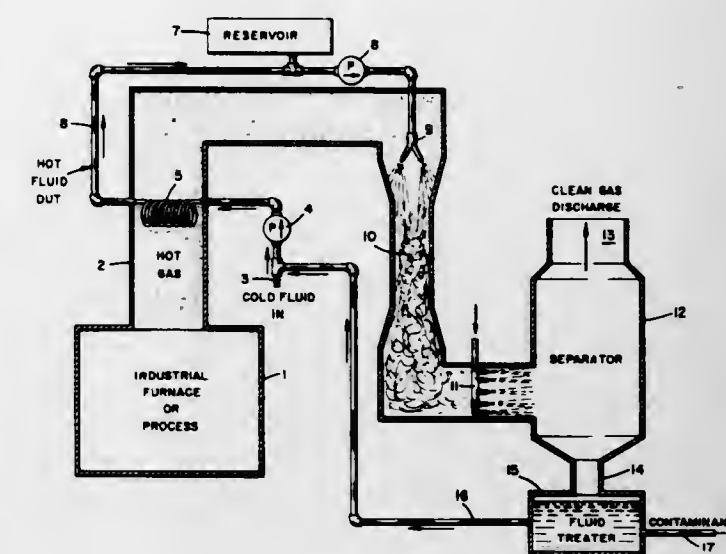
Hugh E. Gardenier, P.O. Box 206, 903 Forrest Drive, Tullahoma, Tenn. 37388
 Filed July 17, 1969, Ser. No. 842,635
 Int. Cl. B01d 47/10

U.S. Cl. 55-89

21 Claims

Process and apparatus for removing contaminants from and pumping a gas stream comprising indirectly heat ex-

changing the gas and a liquid, introducing the liquid under conditions of elevated temperature and pressure in



vaporized and atomized form into the gas, mixing same thereby entrapping the contaminants, and separating clean gas from the atomized liquid containing the contaminants.

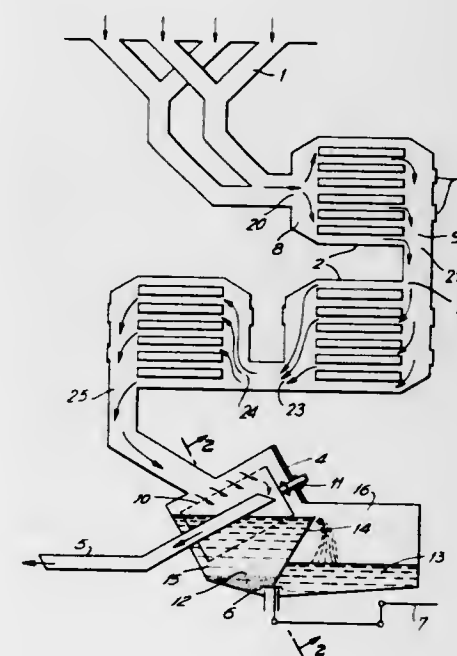
3,613,334
APPARATUS FOR THE PURIFICATION OF WASTE GASES

Renzo Rafanelli, Via Maffia 13, Florence, Italy
 Filed Apr. 9, 1969, Ser. No. 814,655
 Claims priority, application Italy, Apr. 12, 1968, 833,982

U.S. Cl. 55-222

Int. Cl. B01f 3/04

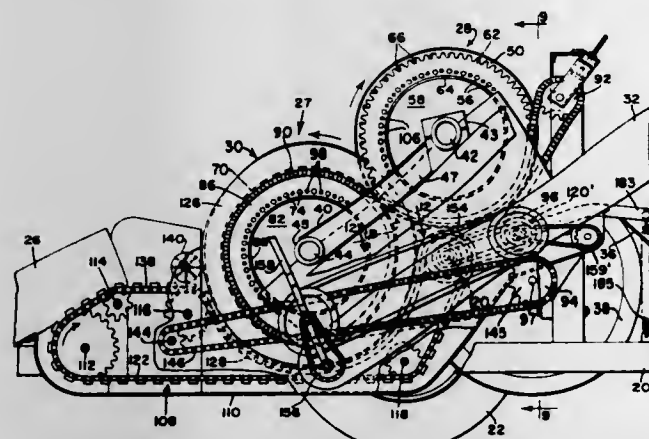
2 Claims



The waste gases of the combustion of a hydrocarbon fuel are passed along a path, in which the gases change direction, through a succession of heat exchangers until the gases exit from the last exchanger at about ambient temperature with the water vapor in the gases condensed, the gases then being passed to a filter where the condensed water and impurities are separated to leave a purified product which can now be discharged into the atmosphere. The condensed water and impurities are stored in a vessel which is periodically emptied.

3,613,335
MATERIAL COMPRESSING MACHINE
 Murray W. Firth, Moline, Ill., assignor to
 Deere & Company, Moline, Ill.
 Continuation-in-part of application Ser. No. 661, Jan. 5,
 1960. This application Feb. 19, 1965, Ser. No. 434,138
 Int. Cl. A01d 49/00
 U.S. Cl. 56—1

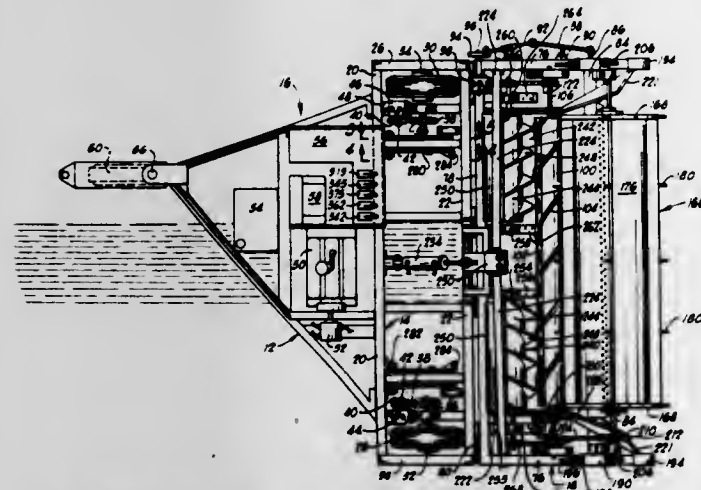
16 Claims



1. Apparatus for making compressed wafers from forage crops, comprising: a mobile frame having a longitudinal axis extending in the direction of travel of said frame, crop wafering means carried by the frame and including a plurality of die cells arranged in a circular series about a transverse horizontal axis and compression means rotatable about a transverse horizontal axis and cooperative with said cells to compress crops into and through said cells to form wafers, an input shaft journaled on a transverse horizontal axis and connected to and for driving said compression means, a power plant carried on the frame to the rear of and generally in longitudinal alignment with the wafering means and having an output shaft rotatable on a transverse horizontal axis, crop pick-up means carried by and projecting from a forward portion of the frame ahead of and generally in longitudinal alignment with the wafering means and having an input shaft rotatable on a transverse horizontal axis, and drive means connected among the output shaft and the two input shafts and including fore-and-aft extending flexible drive elements.

3,613,336
HAY SWATHING MACHINE
 Loran M. Smith, P.O. Box 641, Chickasha, Okla. 73018
 Continuation-in-part of application Ser. No. 606,797,
 Jan. 3, 1967. This application Oct. 22, 1969, Ser.
 No. 868,560
 Int. Cl. A01d 43/08
 U.S. Cl. 56—2

16 Claims

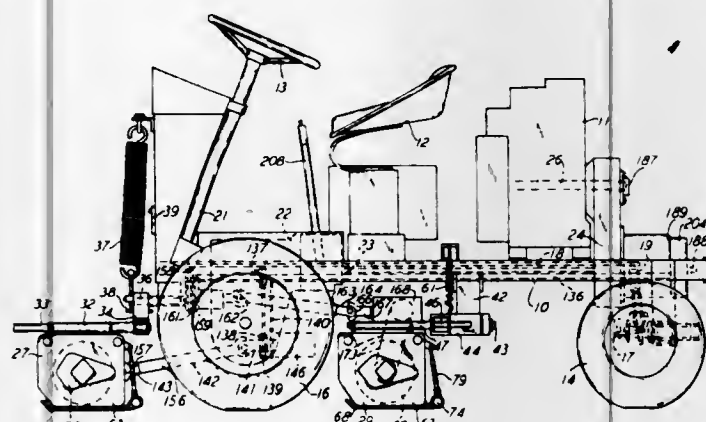


A self-propelled hay swather having hydraulic drive motors individually driving and controlling the ground engaging driving wheels. The hay swather includes a cutter

bar at the forward end thereof, a reel rotatable to move the hay toward the cutter bar, with the reel being disposed in an elevated position above and forwardly of the cutter bar, a pair of conditioning rollers for partially crushing or breaking the stems of the hay, and cooperating, oppositely disposed augers to direct the hay into a centrally disposed windrow. The augers, reel, and conditioning rollers are driven independently from yet another hydraulic motor, and a fourth hydraulic motor drives the cutter bar. Transport wheels and lifting means are provided for the hay swather for enabling over-the-road transport thereof.

3,613,337
GANG LAWN MOWER
 Sahag C. Akgullian, Donald G. Haffner, and Sherman C. Heth, Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
 Filed Apr. 9, 1970, Ser. No. 27,065
 Int. Cl. A01d 75/30
 U.S. Cl. 56—7

11 Claims



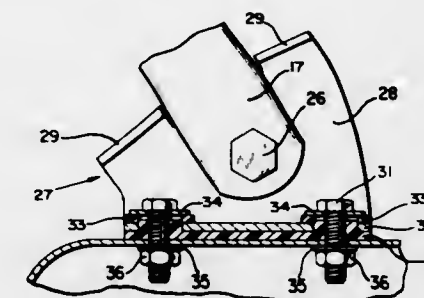
A tractor including a prime mover and traction wheels and a plurality of lawn mowers. Arms are pivotally mounted on the tractor and the extending ends of the arms pivotally support mowers of the reel type. Each mower is independently and separately pivotally supported, and each mower is driven by a mechanical drive extending from the tractor to the mowers. The mechanical drive is flexible to permit pivotal motion of the mowers, and the mowers can be positioned in a transport position where latches secure the mowers on the tractor. The drive mechanism to the mowers is also extendable in length, to accommodate the mower pivot action, and a limit connector is provided so that the extendable drive mechanism does not come apart upon maximum pivotal motion of the mowers relative to the tractor. A lift connector extends between two of the mowers such that lifting one of the mowers will also cause the other mower to be lifted, and lift springs are provided for assisting of lifting of the mowers and for also positioning the pivot arms in an optimum sturdy position with a minimum of play in the connection to the tractor. Abutment surfaces are provided on the tractor and the mowers for limiting the pivot of the mowers in both the mowing position and the transport position.

3,613,338
LAWN MOWER HANDLE MOUNTING ASSEMBLY
 Clayton C. Furtaw, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
 Filed Oct. 1, 1969, Ser. No. 862,698
 Int. Cl. A01d 35/26
 U.S. Cl. 56—10.1

7 Claims

The handle of an electric mower is insulated from the housing of the mower by dielectric members which are located entirely on an upper surface of the housing. Spe-

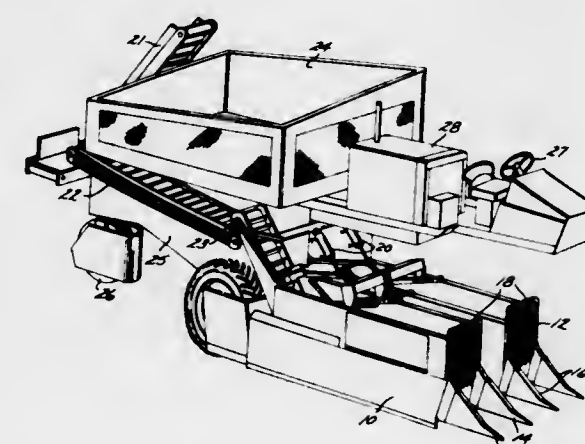
cifically, dielectric insulators are provided which isolate the handle mounting brackets from the housing and from



the mounting bolts which extend through to the under surface of the housing.

3,613,339
HARVESTERS FOR PEPPERS AND OTHER CROPS
 Ernest Riggs, Las Cruces, N. Mex., assignor to New Mexico Chili Company, Las Cruces, N. Mex.
 Filed June 23, 1969, Ser. No. 835,417
 Int. Cl. A01d 45/22
 U.S. Cl. 56—130

13 Claims



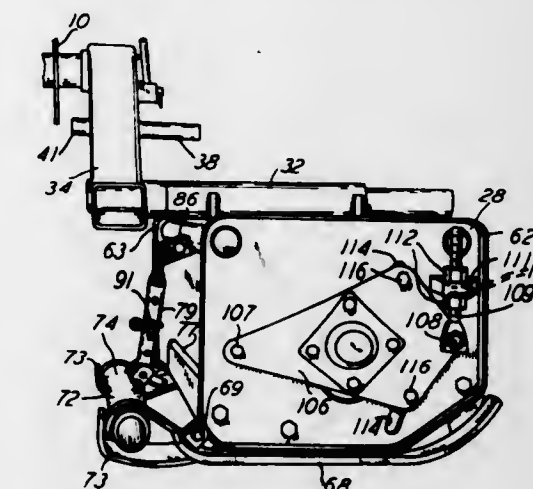
This invention relates to improvements in crop harvesters for row crops including chili peppers. The embodiment selected for illustration is a chili pepper harvester in which the harvesting mechanism comprises a pair of oppositely rotating, elongate brushes arranged in parallel so that they can be moved forward relative to a row crop between them. Associated with each of the brushes, at the side away from the other brush, is a belt conveyor to carry away crop brushed from the crop plant. An elongate, rotating stripper bar is arranged in the path of movement of material from the brushes to the conveyor in position to be brushed by the bristles of the rotating brush. The stripper bar cooperates with a blade which extends along its length closely adjacent to its surface to shear and chop crop plant torn off by the brushes and cleaned from the brushes by the stripper bar. The machine incorporates provisions for elevating, including, and altering the separation between the brushes and their associated conveyors and stripper bars.

3,613,340
TRACTOR-DRIVEN LAWN MOWER
 Sahag C. Akgullian, Donald G. Haffner, and Sherman C. Heth, Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
 Filed Apr. 9, 1970, Ser. No. 27,043
 Int. Cl. A01d 55/20
 U.S. Cl. 56—249

7 Claims

A tractor-driven lawn mower including a tractor having an arm pivotally mounted thereon and having a mower

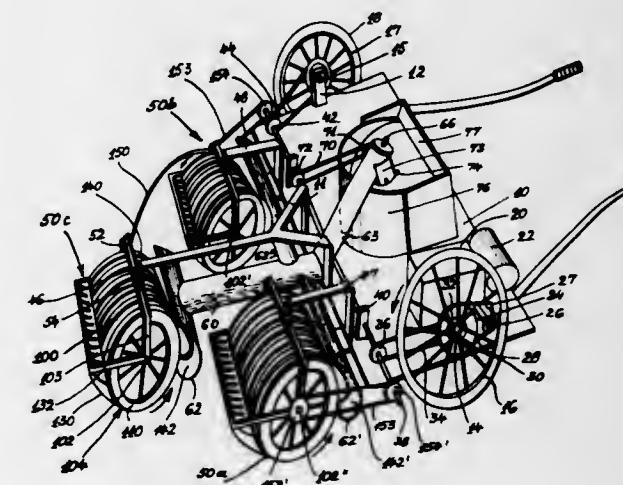
pivotally supported on the extending end of the arm. The mower has two spaced-apart side members and a mower reel and a bed knife extending between the side members. The reel is adjustable toward and away from the bed knife. Conically shaped bearings support the reel on the side members, and a spring urges the reel in a direction



the same as the direction which the reel is urged in as its spiralled blades move in cutting rotation over the bed knife. A drive train extends from the tractor to the mower reel, and drive gears are included in the train and have a beveled gear which is on the reel shaft and urges the reel shaft in the same direction that the spring urges the shaft.

3,613,341
NUT HARVESTER
 Sam B. Reeves, 2323 Cherry St.,
 Montgomery, Ala. 36107
 Filed Apr. 10, 1970, Ser. No. 27,315
 Int. Cl. A01d 51/00
 U.S. Cl. 56—328

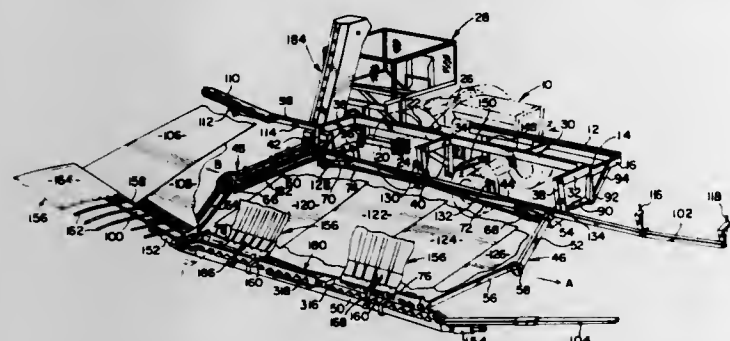
9 Claims



A nut harvester machine includes a carriage for advancing along a ground surface from which nuts are to be gathered. A conveyor is carried by the carriage to pass picked up nuts to a receptacle. A framework is mounted on the carriage. One or more nut gathering units are connected to the framework and conveyor to pick up nuts from the ground. Each unit includes an assembly of spaced tines which align nuts on the ground for engagement between laterally spaced flexible supported wheels. Other tines expel the nuts into a trough connected to the conveyor means. A motor on the carriage may be arranged to drive the carriage, nut gathering unit and conveyor.

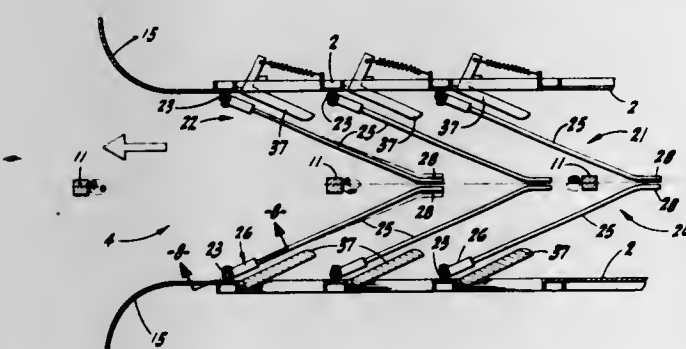
3,613,342
FRUIT CATCHER AND CONVEYOR SYSTEM
 Stuart D. Pool, Wheaton, Harold G. Meid, Clarendon Hills, Calvin P. Rickard, La Grange Park, and Tommy A. Middlesworth, Hinsdale, Ill., Jack B. Findlay, Mound, Minn., and Arlie J. Thayer, Tinley Park, Ill., and Edward Sverika, deceased, late of Chicago, Ill., by Mary J. Sverika, legal representative, Chicago, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 16, 1969, Ser. No. 867,103
 Int. Cl. A01g 19/06
 U.S. Cl. 56—329 17 Claims



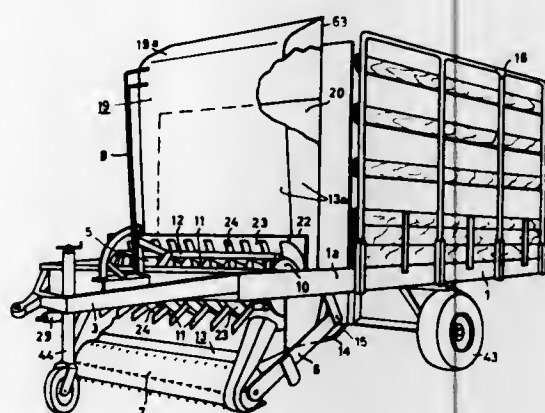
A self-propelled fruit harvester unit having a frame and a fruit-catching apron mounted for extension toward a tree to be harvested and retraction into a transport position. A conveyor on the frame collects fruit from the apron and conveys it to a foldable conveyor assembly which conveys it upwardly toward a collection point on the unit. The foldable conveyor assembly is mounted on the frame so as to pivot or fold as the frame is extended and retracted. Extension catcher assemblies and a gap closer apron are pivotally mounted on the frame and provide sloping surfaces for gravity feeding of fruit to the conveyor. Hydraulic means are operable to automatically stop the extension of the frame and to position the extension catcher assemblies and gap closer apron in response to engagement of the frame with a tree to be harvested.

3,613,343
GRAPE HARVESTER
 Jean Sagoupe and Eugene D. Riley, Los Banos, Calif., assignors to Genie Grape Harvester, Inc., Los Banos, Calif.
 Filed Apr. 21, 1969, Ser. No. 817,863
 Int. Cl. A01g 19/60
 U.S. Cl. 56—330 6 Claims



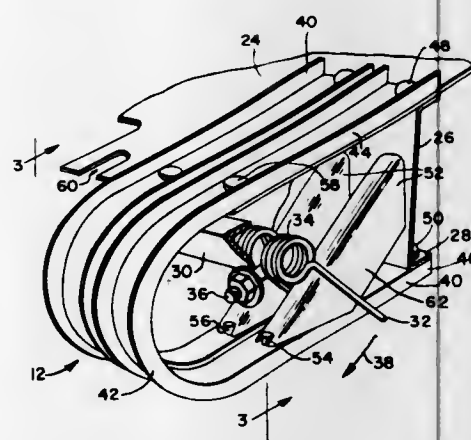
A grape harvester, for mechanically harvesting grapes from a row of vines trained on a post-supported above-ground wire, comprising a self-propelled mobile frame adapted to straddle and advance along the row of vines; the mobile frame being fitted with a power driven mechanism arranged to engage and shake the vines whereby to cause detachment of the grapes upon such advance of said frame, and the latter having thereon a detached-grape catching and conveying system.

3,613,344
SELF-LOADING VEHICLE FOR AGRICULTURAL BULK MATERIALS
 Ernst Weichel, 1 Bahnhofstrasse, 7326 Heiningen, Germany
 Continuation-in-part of application Ser. No. 115,208, June 6, 1961. This application Oct. 22, 1965, Ser. No. 501,108
 Int. Cl. A01d 43/06
 U.S. Cl. 56—364 13 Claims



A self-loading vehicle for loading, transporting and unloading bulk agricultural materials, particularly in the form of blades, stalks and the like, including a receiving device and a cooperating conveyor arrangement including a closed duct extending upwardly at a relatively steep slope, which duct rises to a level above that of the loading space and is curved at its outlet portion so that material being conveyed through the duct is discharged therefrom in a substantially horizontal direction toward the loading space.

3,613,345
CROP-HANDLING MEANS AND STRIPPER THEREFOR
 Larry Wilson Cofer, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
 Filed Sept. 30, 1969, Ser. No. 862,349
 Int. Cl. A01d 89/00
 U.S. Cl. 56—364 4 Claims

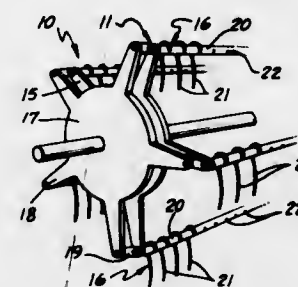


A crop-handling device, especially for use as the crop pick-up for an agricultural machine and having improved crop strippers and reversible mounting means therefor.

3,613,346
FINGER FOR A PICK-UP REEL
 Stephen R. Hubbard, Stockton, Calif., assignor to Universal Harvester Co., Inc., Stockton, Calif.
 Filed Aug. 25, 1969, Ser. No. 852,793
 Int. Cl. A01d 57/02
 U.S. Cl. 56—400 8 Claims

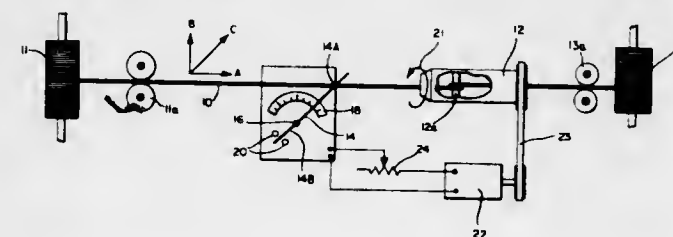
A finger for a reel structure of the type used in swathers, combines, hay rakes, and like harvesting machinery to harvest grain and similar grass-like crops; and

of the type used in harrows, scarifiers, and like cultivating machinery to work or condition the ground. The finger is mountable upon a bat bar of such reel structure.



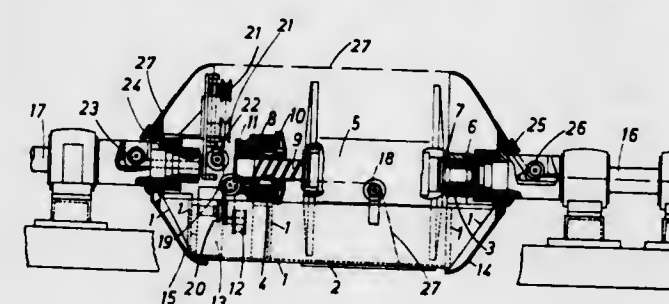
ture, and it comprises a long stem equipped at one end with an attachment element defining a stiff resilient clamp adapted to grip a bat bar and having lugs cooperative therewith to confine the finger thereon.

3,613,347
YARN TWIST MEASURING INSTRUMENT
 George A. Carruthers, Havercroft, England, assignor to Turbo Machine Company, Lansdale, Pa.
 Filed May 8, 1970, Ser. No. 35,675
 Int. Cl. D01h 13/26
 U.S. Cl. 57—1 R 6 Claims



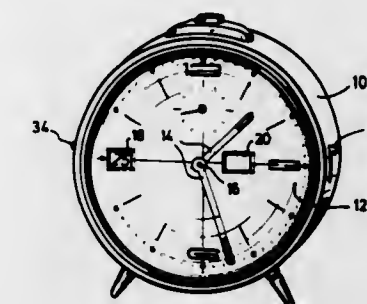
Yarn twist measuring instrument comprises a needle which rests on the yarn and is otherwise supported by a low friction bearing permitting the needle to turn freely in a horizontal plane. If the needle is counter-balanced, the yarn and the plane in which the needle turns need not be horizontal. As the yarn moves longitudinally and is rotated to produce twist or false twist, the needle assumes an angular disposition indicative of the amounts of twist being placed in the yarn.

3,613,348
FLYER SPINDLE FOR TWO-FOR-ONE TWISTING MACHINE
 Guillermo Galceran Costa, Mongat, Spain, assignor to Maschinenfabrik Memmingen Espanola, S.A., Barcelona, Spain
 Filed June 24, 1969, Ser. No. 836,124
 Claims priority, application Spain, July 8, 1968, 356,165
 Int. Cl. D01h 7/86
 U.S. Cl. 57—58.86 4 Claims



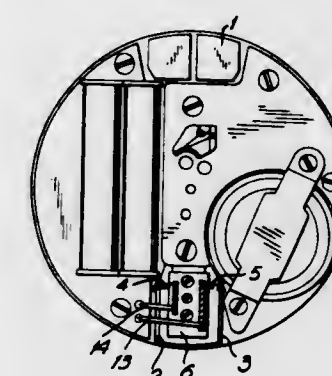
The invention provides a flyer spindle for a two-for-one twisting machine wherein the tension on the yarns being drawn off for twisting is self regulated by means of a mechanism including a tensioning roller.

3,613,349
TIME MEASURING AND DATE INDICATING DEVICE
 Otto Horst Reinhold, Denzlingen, Germany, assignor to Blessing-Werke KG, Feinbau, Waldkirch im Breisgau, Germany
 Filed Feb. 17, 1970, Ser. No. 12,077
 Claims priority, application Germany, Feb. 21, 1969, G 69 06 772
 Int. Cl. G04b 19/24
 U.S. Cl. 58—4 10 Claims



A clock is provided with a large ring concentric with the pointer axis and indicating the day of the month and a smaller overlapping eccentric disk indicating the names of the months which can be viewed through windows in the dial arranged along a line passing through the axis of the pointers.

3,613,350
ELECTRIC TIMEPIECE
 Kikuo Kurino, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
 Filed Mar. 12, 1970, Ser. No. 18,989
 Claims priority, application Japan, Mar. 4, 1969, 44/22,326
 Int. Cl. G04c 3/00
 U.S. Cl. 58—23 TF 3 Claims

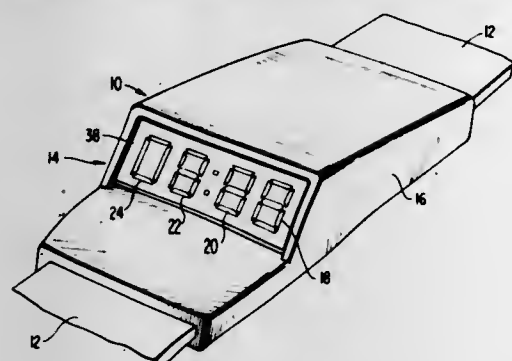


An electric timepiece having a vibrator energized by a piezoelectric or electrostrictive element. The vibrator is mounted on a terminal board provided with a lead wire for connection to said piezoelectric or electrostrictive element. The vibrator, piezoelectric or electrostrictive element, and terminal board are adapted to be mounted on the main plate of the timepiece or removed therefrom as a unit.

3,613,351
WRISTWATCH WITH LIQUID CRYSTAL DISPLAY
 Richard S. Walton, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
 Filed May 13, 1969, Ser. No. 824,148
 Int. Cl. G04b 19/30
 U.S. Cl. 58—23 9 Claims

Disclosed is a liquid crystal display and power supply system particularly suited for a wristwatch. A bar segment digital display is subjected to an electric field to energize selected portions of the display in accordance

with the output of a timekeeping source within the watch. The display is separately powered either from solar cells

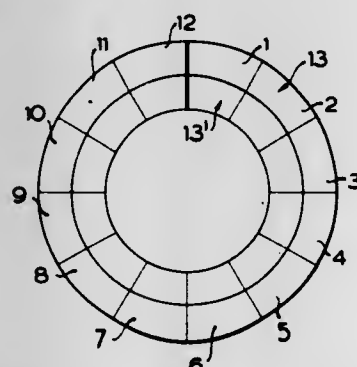


or from a piezoelectric transducer actuated by watch movement.

3,613,352
INDICATING DEVICE
Werner Giersleben, Am Freudenberg 59,
Wuppertal-Elberfeld, Germany
Filed June 9, 1969, Ser. No. 831,785
Int. Cl. G04b 19/30

U.S. Cl. 58—50

28 Claims

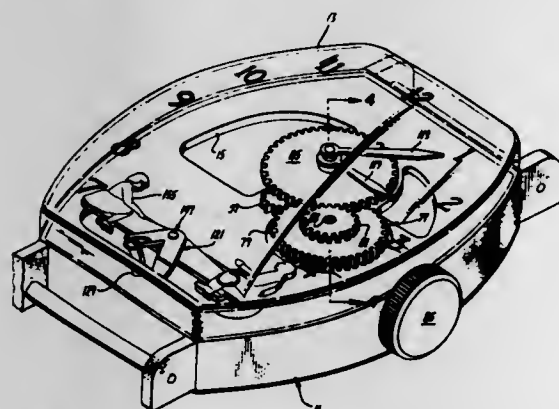


An indicating device has a dial provided with an exposed surface. Marking means subdivides the dial and provides it with a first series of identical surface portions each of which is representative of a predetermined number of minutes, and a second series of identical surface portions each representative of a predetermined number of hours. Illuminating means sequentially illuminates at least one surface portion each of the first and second series for providing an indication of elapsed time.

3,613,353
WATCH
Bruce A. Kock, 6017 Ocean View Drive,
Oakland, Calif. 94618
Filed May 3, 1968, Ser. No. 726,347
Int. Cl. G04b 33/00

U.S. Cl. 58—59

14 Claims



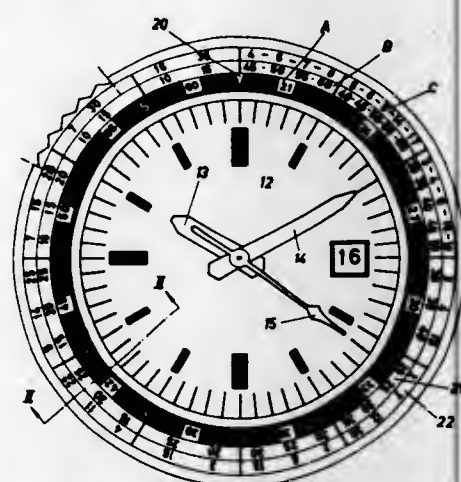
A shock resistant watch of relatively few parts and consequent inexpensive construction employing a dumbbell balance freely pivoted on a staff with the only connection

between the balance and the staff being a leaf spring. The entire gear train of the watch is arranged on two shafts and the minute and hour hands are both driven directly by an intermediate wheel. The entire watch is assembled without screws, nuts or bolts.

3,613,354
RIM FOR A DIVER'S WATCH
Werner Jenny, Lengnau, Switzerland, assignor to Jenny
et Cie S.A., Lengnau, Switzerland
Filed May 15, 1969, Ser. No. 824,940
Int. Cl. G04b 19/00

U.S. Cl. 58—126 R

4 Claims

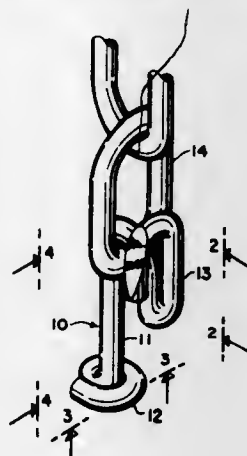


A rim for a diver's watch comprising three concentric annular zones bearing indications concerning respectively the depth of immersion, the time interval of immersion and the corresponding decompression time interval to be observed by a diver before returning to the surface of the water.

3,613,355
CONNECTOR DEVICES
Roger L. Gower, 21 Coburn Ave., Skowhegan, Maine
Filed June 30, 1969, Ser. No. 837,521
Int. Cl. F16g 15/00

U.S. Cl. 59—93

2 Claims



This disclosure relates to connector devices for chain and cable assemblies, combining ease of assembly and disassembly with minimal possibility of accidental disassembly.

3,613,356
AUXILIARY BRAKING SYSTEM
Heber Jay Woodward, Salt Lake City, Utah, assignor to
Index Industries, Inc., Salt Lake City, Utah
Filed Aug. 4, 1969, Ser. No. 847,278
Int. Cl. F01b 21/00

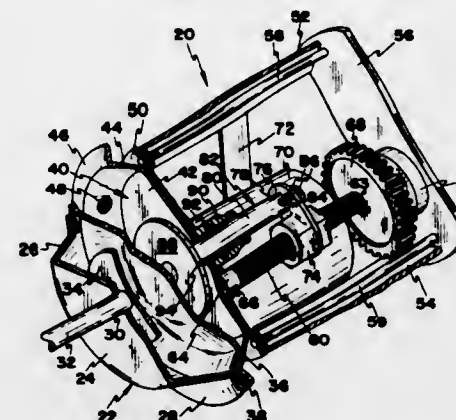
U.S. Cl. 60—6

3 Claims

Method and apparatus for applying brakes, the apparatus including an electrically driven displaceable plunger situated so as to oppose the actuating rod of an air brake system and, when the plunger is advanced into

engagement with the actuating rod, the brakes of a vehicle will be applied independent of the presence of pressurized air. In another embodiment, a hydraulic fluid master cylinder is provided with a float which indicates the amount of fluid in the master cylinder reservoir. An

energizing cylinder is displaced, a charge of compressed air is expressed into the control cylinder to displace the piston thereof into its machinery-actuating position. Exhaust means associated with the two cylinders dissipates any such charge of air after utilization by the control mechanism and also prevents delivery of a subsequent charge thereto until a cycle of operation of the power machinery has been completed.

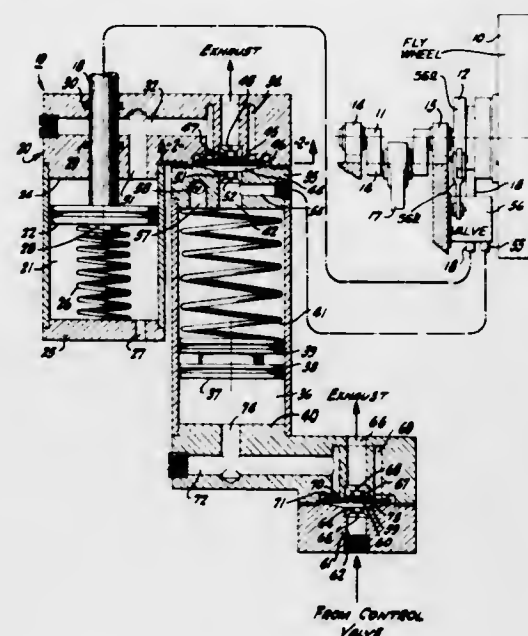


electrically driven rod advances or retracts a wedge nut having opposed ramp surfaces so that the spacing between push arms, attached to the brake shoes of a hydraulic braking system, is varied between a fully applied and a fully released braking condition.

3,613,357
NON-REPEAT CONTROL APPARATUS FOR POWER MACHINERY
Clinton E. Withington, 21233 Grubben Ave.,
Hayward, Calif. 94541
Filed July 10, 1969, Ser. No. 840,666
Int. Cl. F15b 5/00, 11/16, 15/22

U.S. Cl. 60—10.5

8 Claims



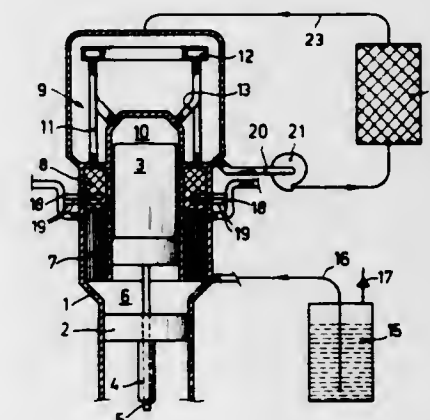
Non-repeat control apparatus for cyclically operative power machinery. Power machinery having a cyclically repetitive mode of operation such as punch presses perform one complete cycle of operation in response to manual initiation thereof. Control apparatus embodying the invention is effective to prevent inadvertent or repetitive cyclic operation of such machinery following any initiation of such cycle. The apparatus includes control mechanism comprising a cylinder having a piston reciprocable therein which is connected with the operating lever of the machinery to displace the same and thereby cause its operation. The control mechanism is actuated by energizing mechanism also comprised of a cylinder having a piston reciprocable therein. Whenever the piston of the

3,613,358
DEVICE FOR CONVERTING CALORIFIC ENERGY INTO MECHANICAL ENERGY
Roelf Jan Meljer, Emmasingel, Eindhoven, Netherlands,
assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,087
Claims priority, application Netherlands, Dec. 19, 1967,
6717268

U.S. Cl. 60—24

Int. Cl. F02g 1/00

3 Claims

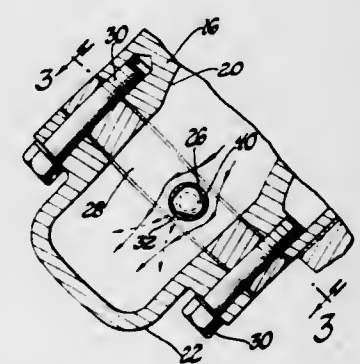


A hot-gas engine having additional means for selectively supplying thermal energy above ambient temperature to the heater and for withdrawing thermal energy below ambient temperature from the cooler.

3,613,359
ASPIRATED EXHAUST SYSTEM
Raymond C. Posh, Livonia, and William T. Downs,
Howell, Mich., assignors to Lear Siegler, Inc., Santa
Monica, Calif.
Filed Jan. 15, 1970, Ser. No. 3,157
Int. Cl. F01n 3/10

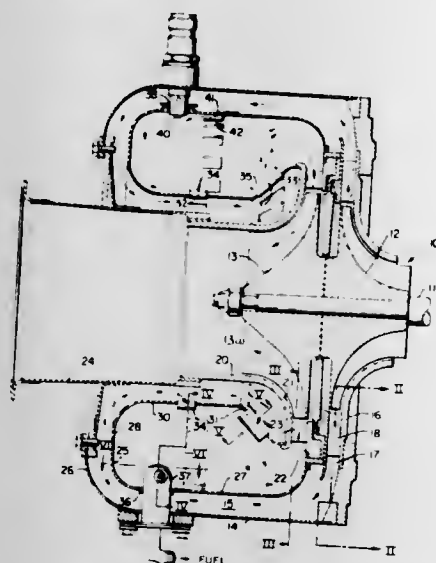
U.S. Cl. 60—30

9 Claims



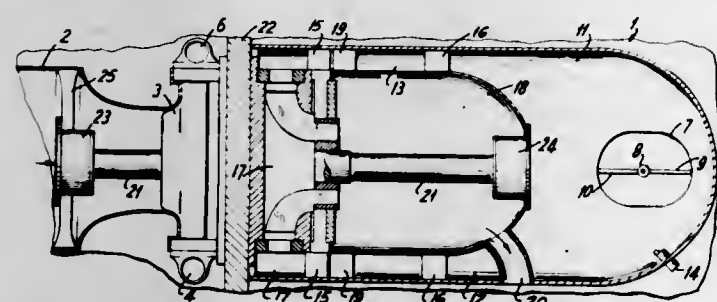
An air aspirating device in the form of a tubular member which is disposed in the exhaust gas passage adjacent the exhaust valve and equipped with a check valve to aspirate ambient air into the exhaust stream thereby to promote continuing exhaust gas combustion after removal from the combustion chamber. The air aspirating device may be installed in the head assembly of the engine or in the exhaust manifold or in an adaptor member which is to be disposed between the head assembly and the exhaust manifold.

3,613,360
COMBUSTION CHAMBER CONSTRUCTION
 Leslie D. Howes, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
 Filed Oct. 30, 1969, Ser. No. 872,628
 Int. Cl. F02c 3/08; F23r 1/10
 U.S. Cl. 60—39.36



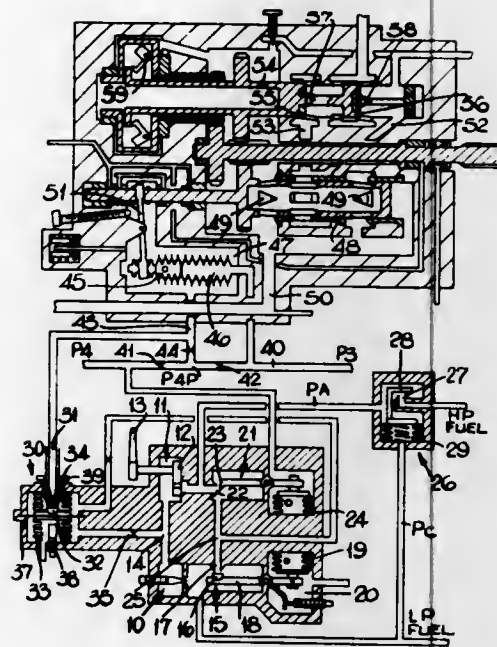
The subject combustion chamber construction has an outer casing enclosing an inner casing to form an annular combustion chamber with an air plenum or passage extending along the outside, radially inwardly at the rear end, and axially along the inner side. Air from the engine compressor enters the plenum at the front end and flows through the passage into the combustion chamber through openings in the inner wall thereof, such air then flowing tangentially from the inner wall to form a toroidal flow pattern. Fuel is sprayed into combustion chamber from tangentially directed jets to mix and burn with the air in the toroidal flow pattern, the resulting gases discharging from the chamber via an annular radially inwardly directed nozzle adjacent the air inlet. The toroidal flow pattern in the annular chamber prolongs the air/fuel mixing and burning period.

3,613,361
TURBO-COMPRESSOR ENGINE
 Frank Rifkin, Roselle, N.J., assignor to Turbo-Compressor Engine Corp.
 Filed July 1, 1969, Ser. No. 838,103
 Int. Cl. F02c 7/00; F02k 3/02
 U.S. Cl. 60—39.41



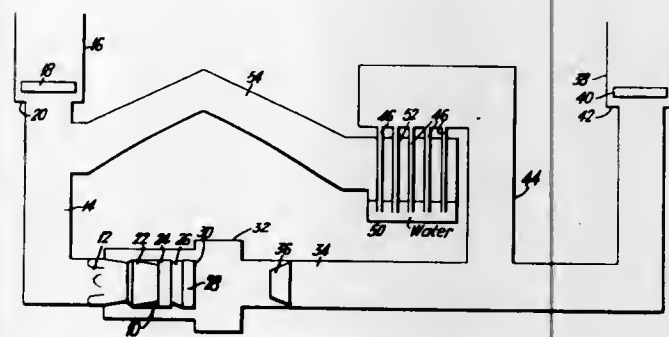
The engine herein described is particularly adapted to create a constantly flowing stream of pressurized gases and generally includes the serial alignment along a common shaft of a first compressor, a second compressor and a turbine. The initial body of air entering the engine is compressed by the first compressor and divided. A portion of the air is directed to the main exhaust or accumulating tank of the engine with the other portion mixed with fuel and ignited. The combustion gases drive the turbine and are further compressed downstream of the turbine by the second compressor. The recompressed exhaust is then recombined with the initially divided first portion of air in the exhaust or accumulating tank.

3,613,362
GAS TURBINE FUEL CONTROL SYSTEMS
 Trevor Stanley Smith, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
 Filed Sept. 17, 1969, Ser. No. 858,763
 Claims priority, application Great Britain, Sept. 20, 1968, 44,804/68
 Int. Cl. F02c 9/08
 U.S. Cl. 60—39.28 R



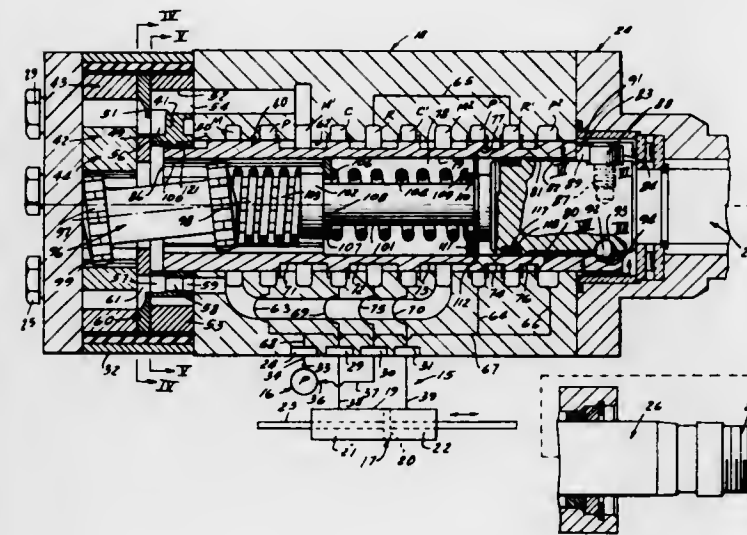
A fuel control system for a gas turbine engine comprises an hydraulic bridge circuit, a flow restrictor being included in each arm of the bridge and three of the restrictors being variable in accordance with signals obtained from desired and actual engine operating conditions. The input to the bridge is formed by fuel connections having a constant pressure difference and applied at diagonal points of the bridge. Any pressure difference at the bridge output formed by the remaining two points is used to provide a control signal to actuate a control valve through which fuel is supplied to the engine.

3,613,363
SYSTEM FOR PROTECTING GAS TURBINE ENGINE OF A POWER PLANT WHILE THE ENGINE IS RUNNING DOWN
 Albert Jubb, Kenilworth, and Stanley Hutchinson and Richard H. Webb, Mickleover, England, assignors to Rolls-Royce Limited, Derby, England
 Filed July 24, 1969, Ser. No. 844,420
 Claims priority, application Great Britain, July 25, 1968, 35,456/68
 Int. Cl. F02c 7/08
 U.S. Cl. 60—39.52



The invention comprises a gas turbine engine power plant having a rapid shutdown facility. The air inlet can

3,613,364
HYDROSTATIC STEERING SYSTEM WITH HYDRAULIC REACTION AND REACTION LIMITING
 Raymon L. Goff, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio
 Filed Mar. 6, 1970, Ser. No. 17,058
 Int. Cl. F15b 15/18
 U.S. Cl. 60—52 S

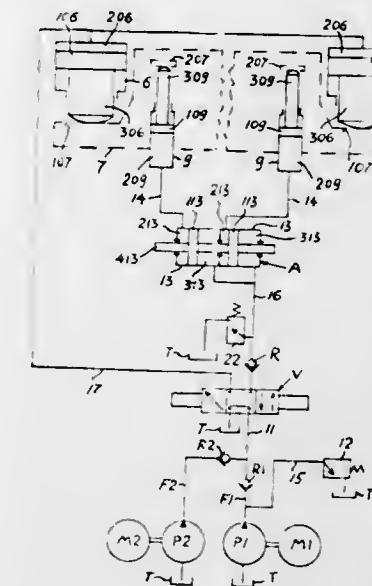


A vehicular hydrostatic power steering system including a main power fluid pump, a double-acting hydraulic cylinder and a one-piece hydraulic controller for controlling the flow of fluid to and from the hydraulic cylinder. The controller includes a valve movable alternatively in opposite directions from a neutral position, at which the fluid pressure at the opposite ends of the hydraulic cylinder is balanced, to a pair of operating positions, at which the fluid pressure at the opposite ends of the hydraulic cylinder is unbalanced to move the piston within the cylinder and the dirigible wheels of the vehicle attached thereto. The valve is biased to its neutral position by two forces, the first of which is mechanically produced and substantially constant and the second of which is hydraulically produced and varies in magnitude with variations in the magnitude of the fluid pressure differential between the opposite ends of the hydraulic cylinder. The valve is moved from its neutral position to its operating position against the mechanical and hydraulic biasing forces by virtue of an operating shaft which, conventionally, has a steering wheel mounted thereon. The hydraulic reaction or biasing force applied to the valve, and thus to the steering wheel, provides an improved "feel of the road" for the operator of the vehicle.

3,613,365
HYDRAULIC DRIVING DEVICE FOR BENDING PRESSES
 Giuseppe Costa, Genoa, Italy, assignor to Verrina S.p.A., Genova-Voltri, Italy
 Filed Mar. 25, 1970, Ser. No. 22,605
 Claims priority, application Italy, Mar. 29, 1969, 6,913/69
 Int. Cl. F15b 11/22
 U.S. Cl. 60—52 HP

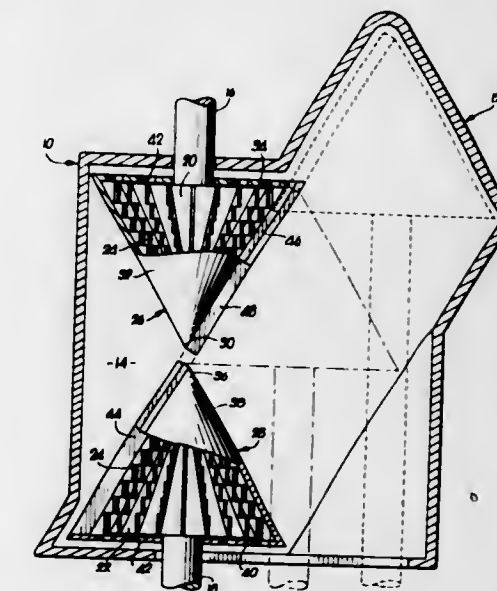
The hydraulic system for a hydraulic driving device of a bending press includes two hydraulic control cylinders which co-operate with the upper jaw to effect vertical reciprocation of the upper jaw between guides there-

for. The invention provides for the inclusion in the hydraulic system of compensating cylinders associated with the control cylinders and housing pistons having opera-



tive surface of equal area and which by co-operation with the control cylinders prevent jamming of the upper jaw in the guides during reciprocation of the upper jaw.

3,613,366
HYDRAULIC TRANSMISSION
 Harold L. Cottrell, Grandview, Mo., assignor to Power Control, Inc., Kansas City, Mo.
 Continuation-in-part of application Ser. No. 628,228, Mar. 29, 1967, now Patent No. 3,455,110, dated July 15, 1969. This application July 7, 1969, Ser. No. 839,158
 Int. Cl. F16d 33/04; F16h 41/00
 U.S. Cl. 60—54



A hydraulic transmission unit including, within a sealed, fluid filled container, a pair of shafts rotatably mounted in the container and extending therefrom, a conical impeller on one of the shafts and a conical turbine on the other shaft, the shafts being relatively shiftable from an initial position in axial alignment to a position wherein the impeller and the turbine are in closer proximity than in the initial position. In one form of the invention the impeller and turbine are each provided with a perforate casing whereby to direct the fluid flow therebetween in the most efficient manner; and in the other form, the impeller is in the nature of a conical male impeller, the turbine being in the form of a conical female unit.

3,613,367

CONSTANT SPEED DRIVE

Charles Philip Smith and John Roger Wynne, Wolverhampton, England, assignors to H. M. Hobson Limited, London, England

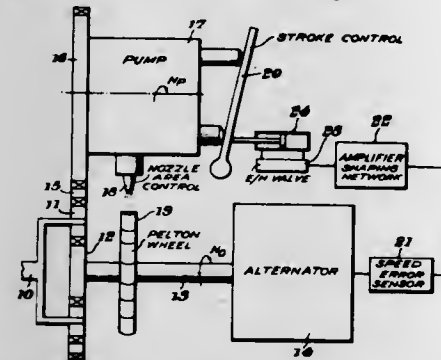
Filed Nov. 12, 1969, Ser. No. 875,948

Claims priority, application Great Britain, Nov. 12, 1968, 53,597/68

Int. Cl. F16d 31/02

U.S. Cl. 60—54

4 Claims



A mechanism for driving a load at constant speed from a variable speed input shaft, which comprises epicyclic gearing including a member driven by the input shaft, a member driving an output shaft connected to the load and a reaction member, a variable delivery hydraulic pump connected to be driven by the reaction member and having a peltion nozzle which adjusts its area automatically in the sense to maintain the delivery pressure of the pump substantially constant, a peltion wheel on the output shaft driven by liquid discharged by the nozzle, mechanism for sensing the rotational speed of the output shaft and means controlled by the sensing mechanism for controlling the delivery of the pump in the sense to maintain the rotational speed of the output shaft at a constant level.

3,613,368

ROTARY HEAT ENGINE

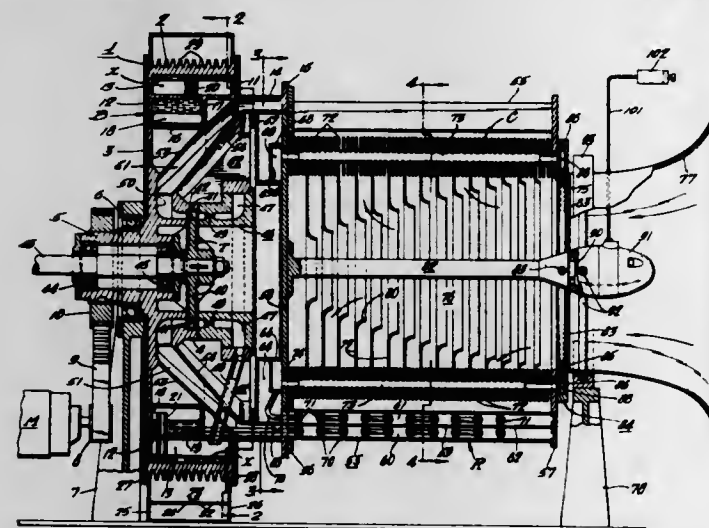
William A. Doerner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1970, Ser. No. 35,712

Int. Cl. F01k 11/04

U.S. Cl. 60—95

18 Claims



A closed cycle Rankine rotary engine comprising a boiler, expander and condenser. The boiler is of annular configuration and is rotationally driven about its axis at predetermined speed to maintain in the boiler an annular body of liquid having an inner surface level spaced a predetermined distance radially outward from the rotation axis. The condenser is mounted coaxially adjacent the boiler to rotate therewith as a unit and comprises an array of annular radial fins having axial heat exchange tubes extending therethrough in which the exhaust vapor from the expander is condensed by heat exchange with a cooling fluid discharged outwardly between said fins. The con-

denser heat exchange tubes are spaced radially outward from the rotation axis a predetermined distance less than the boiler liquid inner surface level and the spacings of said liquid surface level and heat exchange tubes are correlated with respect to each other and the rotational speed of the boiler to provide the required radial distance between the tubes and liquid surface necessary to produce the boiler liquid pressure required to maintain the desired boiler vapor pressure at said speed of rotation.

3,613,369

TURBINE SPEED CONTROL

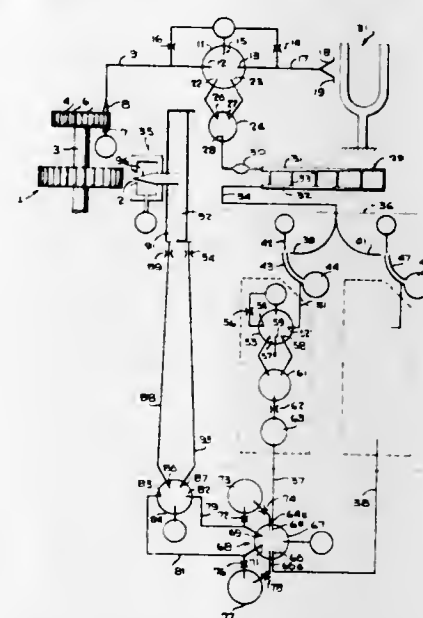
John R. Colston, Monroeville, Pa., assignor to Bowles Fluidic Corporation, Silver Spring, Md.

Original application July 5, 1963, Ser. No. 293,108. Divided and this application Aug. 19, 1966, Ser. No. 573,661

Int. Cl. F01k 13/00

U.S. Cl. 60—105

21 Claims



A fluid control system generates a first fluid signal having a frequency component which varies as a function of a parameter of a device to be controlled, and a second fluid signal having a fixed frequency, the fluid signals are combined to produce a further fluid signal whose frequency varies as a function of deviation of the parameter from a predetermined condition, and a detector for generating a fluid signal having an amplitude and sense which is a function of said further fluid signal and an output device to maintain the further signal at a prescribed frequency.

3,613,370

ION THRUSTER

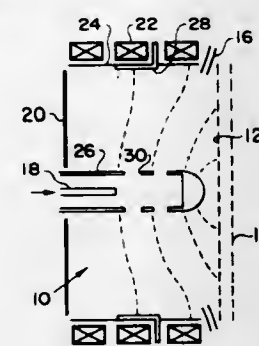
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Wolfgang Knauer, Malibu, and Robert L. Poeschel, Los Angeles, Calif.

Filed Nov. 26, 1969, Ser. No. 880,246

Int. Cl. F03h 1/00; F04b 37/02; F05h 1/04

U.S. Cl. 60—202

11 Claims



Improving the efficiency of an ion thruster by utilizing a radial magnetic field to achieve uniformity in electron density and energy.

3,613,371

HYPERGOLIC BI-PROPELLANT PROPULSION PROCESS USING BORON COMPONENTS

Lawrence J. Edwards, Zellenople, Pa., assignor to Callery Chemical Company, Pittsburgh, Pa.

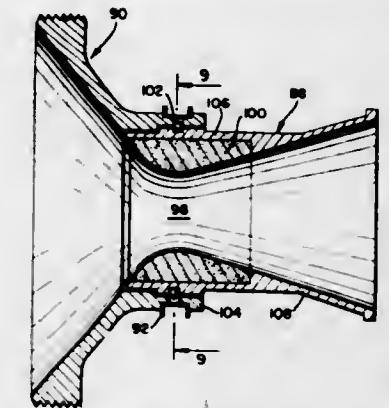
No Drawing. Filed Feb. 4, 1959, Ser. No. 791,231

Int. Cl. C06d 5/00, 5/06

U.S. Cl. 60—214

9 Claims

1. The method of developing a thrust which comprises reacting a borane component selected from the group consisting of boron hydrides, hydrocarbon substituted boron hydrides, and mixtures thereof, and a hydrazine component selected from the group consisting of hydrazine, hydrocarbon substituted hydrazines, and mixtures thereof, in a chamber which is closed except for a constricted exhaust nozzle, and expelling the resultant reaction products through said nozzle to produce a reaction thrust on said chamber.



escaping gases, whereby the pressure in said casing is suddenly reduced and said propellant is thereby extinguished.

3,613,372

METHOD OF PROVIDING POWER WITH ESSENTIALLY NONAQUEOUS EMULSIONS

Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application May 10, 1967, Ser. No. 637,332, now Patent No. 3,539,406, dated Nov. 10, 1970. Divided and this application Mar. 23, 1970, Ser. No. 22,052

Int. Cl. C06d 5/10; C101 7/02

U.S. Cl. 60—216

10 Claims

An essentially nonaqueous, thixotropic emulsion of (1) an emulsifiable oil and (2) a nonoily, nonaqueous material, the emulsion containing in the internal phase at least 80% oil by volume of the total emulsions; methods of preparing the emulsion; and uses therefor, particularly as fuels, including their use as a source of power in engines normally capable of burning the oil phase, such as in jet, rocket, diesel, etc., engines including fuel injection engines, such as an internal combustion engine, for example employed in landcraft, watercraft, aircraft, etc.

3,613,373

HYBRID HIGH ENERGY PROPULSION METHOD

Martin H. Kaufman, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 13, 1964, Ser. No. 352,432

Int. Cl. C06d 5/10

U.S. Cl. 60—219

6 Claims

1. A solid fuel comprising the following constituents:

Constituent:	Percent by weight
Hydrazine gel	40-70
Zirconium	30-60

said hydrazine gel consisting essentially of about 1% by weight aluminum acetate, 9% by weight sodium alginate, and 90% by weight hydrazine.

3,613,374

THRUST-TERMINATION NOZZLE FOR A SOLID-PROPELLANT ROCKET ENGINE

Harold W. Ritchey, Huntsville, Ala., assignor to Thiokol Chemical Corporation, Trenton, N.J.

Filed June 24, 1958, Ser. No. 745,237

Int. Cl. C06d 5/00

U.S. Cl. 60—219

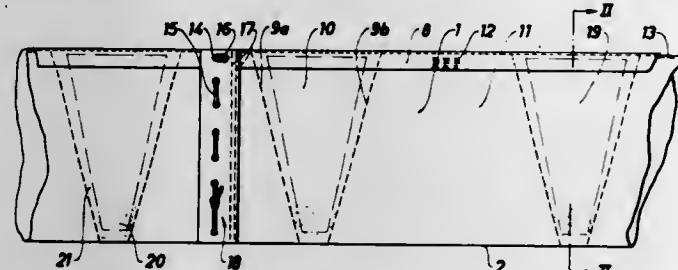
1 Claim

1. The method of terminating, in flight, the thrust generated by the burning of a solid propellant charge in a rocket engine comprising a casing terminating in rearward portions in a constricted throat and having a detachable nozzle of cross-sectional area smaller than the constricted throat of said casing, said detachable nozzle being positioned within said throat, which method comprises

1. A propellant feeding and control system for a rocket engine having a combustion chamber and a reaction nozzle surrounded by a vaporizing jacket, and fuel and oxidizer injectors to supply propellants to the combustion chamber, comprising: a first propellant supply line including a first pump means connected with said fuel injector; a second propellant supply line including a second pump means connected with said oxidizer injector; one of said propellant supply lines including said vaporizing jacket; turbine means drivingly connected with said first and said second pump means, and being disposed in said propellant supply line which includes the vaporizing jacket, between said vaporizing jacket and the injector, in said propellant supply line, whereby said turbine means and said pump means are driven by vaporized propellant; at least the pump means connected with said vaporizing jacket supplying a cryogenic propellant; a first control valve movable to a propellant flow cut-off position in said first supply line adjacent said fuel injector; a second control valve movable to a propellant flow cut-off position in said second supply line adjacent said oxidizer injector; and a trap valve, movable to a propellant flow cut-off position, in said propellant supply line including the vaporizing jacket, said trap valve and said control valves being disposed downstream from the pump means in their respective supply lines, and the vaporizing jacket and turbine means being disposed between the trap valve and a control valve, whereby cryogenic propellant in said

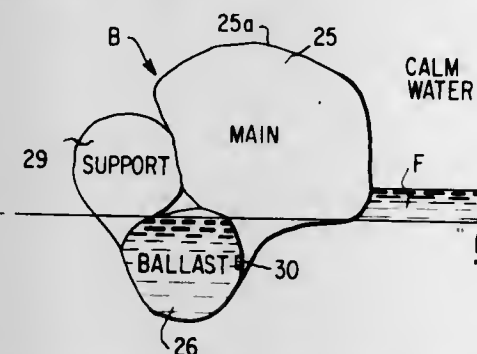
supply line between said trap valve and said control valve therein, when said valves are closed, is in a vaporized state.

3,613,376
FENCE FOR ENCLOSING IMPURITIES
FLOATING ON WATER
Bo Midby, Kaprifolvägen 31, Kungälv, Sweden
Filed May 12, 1969, Ser. No. 823,604
Int. Cl. E02b 15/04
U.S. Cl. 61—1 6 Claims



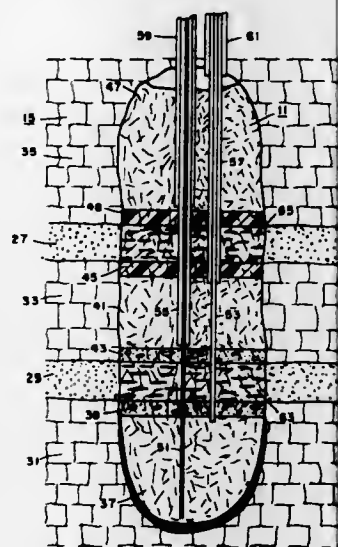
A fence for enclosing impurities floating on water, having an elongated two layer piece of material with spaced apart pockets provided by connections to the two layers of material which pockets have openings facing one longitudinal edge of the material and floats and weights in said pockets capable of keeping the fence floating in water with the sides of the fence substantially vertical and the longitudinal edges of the fence substantially parallel with the surface of the water.

3,613,377
MULTICHAMBER FLOATING BARRIER
Ramon Earl Zaugg, 14223 Georgia Ave., Apt. 103, Silver Spring, Md. 20910
Filed July 30, 1969, Ser. No. 846,071
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 11 Claims



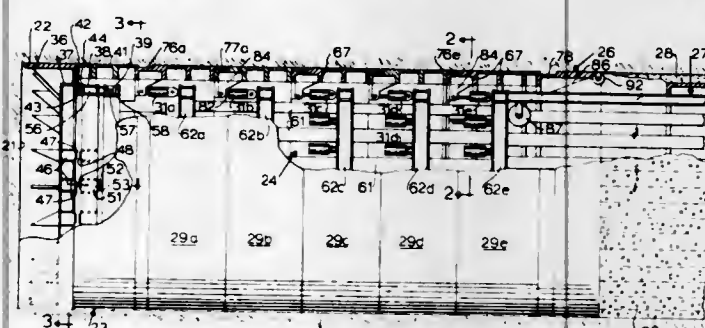
A multiple-chamber barrier of flexible material adapted to float near the surface of a liquid and confine to a restricted area thereof buoyant materials floating on that surface. The barrier is particularly useful in connection with the present illustrative example for confining buoyant materials such as oil floating on the surface of a body of water, especially during adverse weather or sea conditions when wave activity is high and wind tends to spread the floating material rapidly away from its source, i.e. an oil leak. The present barrier comprises multiple chambers joined to form, when floating, a triangular cluster of flexible bag-like tubes including a ballast chamber partly filled with water and virtually immersed beneath the other chambers so that it lies mostly submerged, a main chamber partially inflated with air and rising above the water surface like a large continuous pillow, and a support chamber more firmly inflated with air and lying above the top of the ballast chamber and behind the main air chamber to help support the latter when the wind tries to beat it flat on the water surface. The invention includes means for manipulating the ends of the chambers including inflating and sealing them, and means for storing and reeling out the barrier to whatever length of it is required under actual working conditions.

3,613,378
UNDERGROUND STORAGE
Henry F. Dunlap and Robert Wilson, Dallas, Tex., assignors to Atlantic Richfield Company, Philadelphia, Pa.
Filed Nov. 13, 1967, Ser. No. 682,114
Int. Cl. B65g 5/00
U.S. Cl. 61—5 20 Claims



Underground storage comprised of a conduit system extending into one or more storage sections of a large, vertically extended volume of void spaces and rock rubble, such as a chimney created by a subsurface nuclear explosion. Each storage section traverses an impermeable formation and is separated from a more permeable non-storage section by one or more lateral impermeable barriers which has set. The barriers may be formed by injecting enough flowable, time-setting barrier material lighter than a heavier liquid in the volume to form a floating layer over the heavier liquid which was previously located or located and adjusted to a predetermined level which separates impermeable from permeable zones. A controlled fluid loss material may be placed opposite permeable zones.

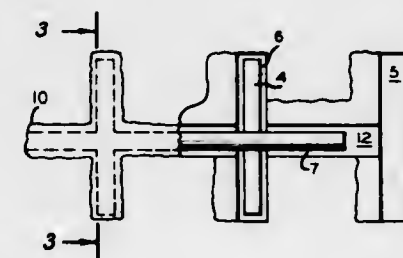
3,613,379
METHOD FOR ADVANCING TUNNEL SUPPORTS
Joseph Donovan Jacobs, San Rafael, Calif. (% Jacobs Associates, 500 Sansome St., San Francisco, Calif. 94111)
Continuation-in-part of application Ser. No. 798,097, Feb. 10, 1969. This application June 25, 1969, Ser. No. 836,546
Int. Cl. E01g 3/00
U.S. Cl. 61—42 11 Claims



Apparatus and method for continuously or intermittently advancing tunnel supports against surrounding earth pressure. Cutting edge and trailing shells are interconnected by a longitudinal frame or cage structure. Intermediate the forward and trailing shell are overlapping intermediate shells which are individually connected to the cage structure by hydraulic cylinders so that each intermediate shell can be moved longitudinally relative to the others and relative to the tunnel wall while the other intermediate shells engage the tunnel wall and advance the

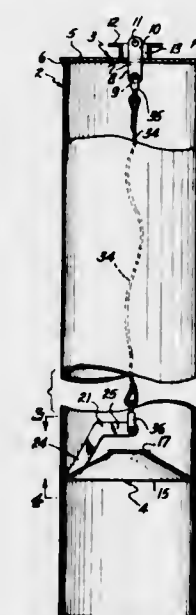
cage as well as the forward or support and trailing shells. The intermediate shells are sequentially moved forwardly, preferably by releasing the pressure exerted against the wall, as by contracting the shell or by projecting through the shell various-shaped devices which grip or penetrate the wall. The support may incorporate steering guidance means for adjusting the direction of the excavation device about perpendicular transverse axes. Means is also provided on the trailing shell for feeding out the rearward end ribbons, or rods to support the tunnel walls prior to concreting and also a retainer shell which functions as a screed for the concrete and supports the concrete as it is gaining strength.

3,613,380
METHOD OF SUPPORTING WARM PIPELINE IN ARCTIC REGION
Jack Turner, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 18, 1969, Ser. No. 834,442
Int. Cl. E02d 27/36, 27/46; F16l 1/00
U.S. Cl. 61—46 9 Claims



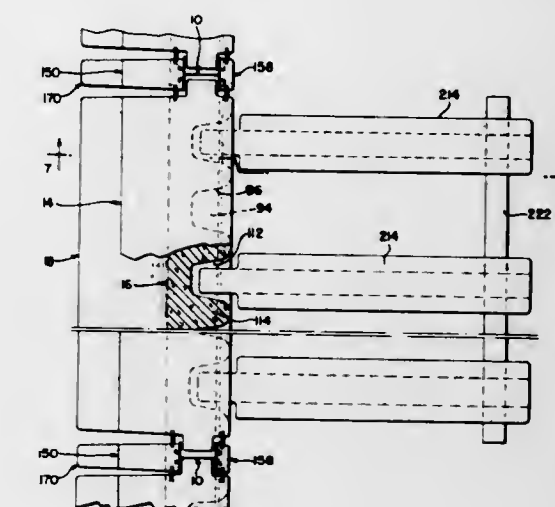
A stable pipeline in permafrost areas is achieved by laying pipe on spaced supports extending away from the pipeline and into the solidly frozen permafrost so as to prevent sinking of the pipeline into a thawed zone produced by heat leakage from warm fluid carried in the pipeline.

3,613,381
OFFSHORE STRUCTURES AND THEIR INSTALLATION
Dwight J. Cox, New Orleans, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.
Filed June 22, 1970, Ser. No. 48,060
Int. Cl. E02b 17/02; E02d 23/02
U.S. Cl. 61—46.5 19 Claims



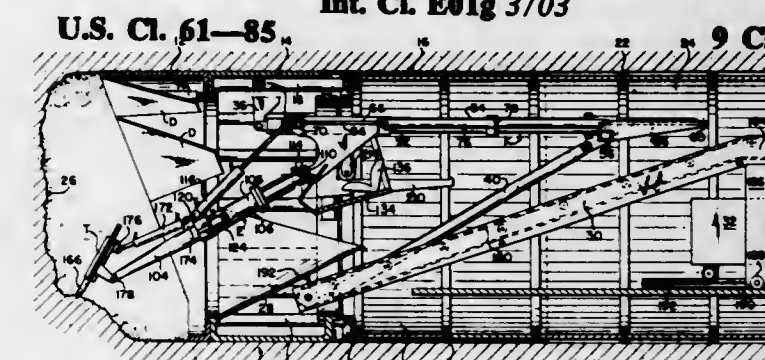
Jacket columns for offshore structures, rendered initially buoyant by removable upper and lower closure members, are installed by being upended and the lower closure member is then completely removed by tearing it away from the surrounding jacket column wall and withdrawing the torn remains upwardly through the jacket column.

3,613,382
SEA WALL CONSTRUCTION
Bryan J. Dickinson, Des Moines, Wash., assignor to West Construction Enterprises, Inc., Des Moines, Wash.
Filed Aug. 6, 1969, Ser. No. 847,886
Int. Cl. E02b 3/08; E02d 5/00; E04b 2/08
U.S. Cl. 61—49 31 Claims



Modular sea wall structure utilizing steel beam bearing pilings between and on which are supported modular concrete block units. The pilings are driven as deeply as required to give firm support and the bottommost concrete block unit is positioned between and resting on two adjacent pilings at a preselected depth below or above the bottom surface. The top block is post-tensioned and the intermediate blocks are designed along with the other structural components to hold the geometry of the wall. All steel parts, namely, pilings and pretensioned cables, are sealed or isolated from the corrosive effects of water and air. Flexibility of movement is maintained between component parts such as blocks and pilings.

3,613,383
TUNNELING SHIELD WITH BREASTING DOORS
Tyman H. Fikse, Enumclaw, Wash., assignor to James S. Robbins and Associates, Inc., Seattle, Wash.
Original application Dec. 10, 1968, Ser. No. 782,567. Divided and this application July 9, 1970, Ser. No. 53,400
Int. Cl. E01g 3/03
U.S. Cl. 61—85 9 Claims



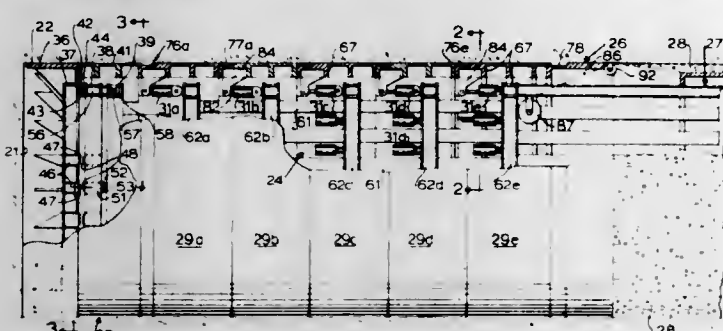
The shield has a tubular skin. The radially outer edges of a plurality of breasting doors are hinge connected to the skin adjacent its forward edge. Each door is equipped with an independently controllable hydraulic actuator which is pivotally connected at its forward end to a rearward intermediate part of the door and at its rear end to a location on the shield skin spaced axially rearwardly of the hinge means. The doors both alone and in combination with a rearwardly inclining mined material ramp serve to support the tunnel face.

3,613,384
METHOD AND APPARATUS FOR ADVANCING TUNNEL SUPPORTS
 J. Donovan Jacobs, San Rafael, Calif. (% Jacobs Associates, 500 Sansome St., San Francisco, Calif. 94111)

Filed Feb. 10, 1969, Ser. No. 798,097
 Int. Cl. E01g 3/00

U.S. Cl. 61—85

16 Claims



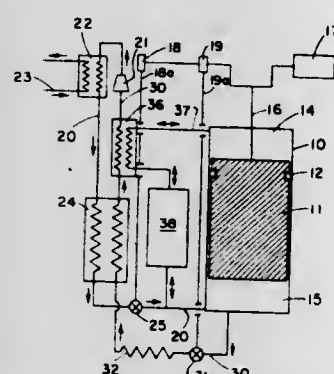
Apparatus and method for continuously or intermittently advancing tunnel supports against surrounding earth pressure. Cutting edge and trailing shells are interconnected by a longitudinal frame or cage structure. Intermediate the forward and trailing shell are overlapping intermediate shells which are individually connected to the cage structure by hydraulic cylinders so that each intermediate shell can be moved longitudinally relative to the others and relative to the tunnel wall while the other intermediate shells engage the tunnel wall and advance the cage as well as the forward or support and trailing shells. The intermediate shells are sequentially moved forwardly, preferably by releasing the pressure exerted against the wall, as by contracting the shell. The support may incorporate steering guidance means for adjusting the direction of the excavation device about perpendicular transverse axes. Means is also provided on the trailing shell for feeding out the rearward end wires or rods to support the tunnel walls prior to concreting and also a retainer shell which functions as a screed for the concrete and supports the concrete as it is gaining strength.

3,613,385
CRYOGENIC CYCLE AND APPARATUS
 Walter H. Hogan, Wayland, and Robert W. Stuart, Wakefield, Mass., assignors to Cryogenic Technology, Inc., Waltham, Mass.

Filed June 12, 1969, Ser. No. 832,752
 Int. Cl. F25b 9/00

U.S. Cl. 62—6

29 Claims



An apparatus suitable for developing cryogenic temperatures. Incoming high-pressure fluid is expanded and further cooled after being initially cooled by heat exchange with returning low-pressure fluid. At least a portion of the work developed in the expander is extracted by compressing a fluid which is circulated back and forth between the expansion chamber and a balancing chamber in which the compression takes place. Means are provided to remove the heat of compression through heat exchange.

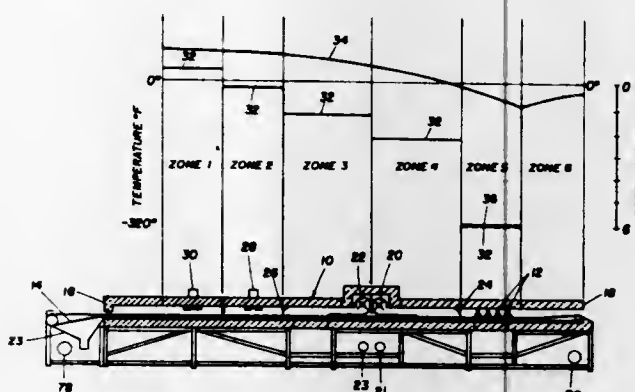
3,613,386
CRYOGENIC FREEZER CONTROL

David J. Klee, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
 Filed Mar. 23, 1970, Ser. No. 21,625

Int. Cl. F25d 13/06

U.S. Cl. 62—64

8 Claims



A method and apparatus for controlling the heat transfer characteristics of a spray-type tunnel freezer by combining a signal generated by the temperature measured in the coldest gas recirculation zone of the tunnel with a signal generated by measuring the pressure of the cryogen at the spray header and comparing the combined signal with a known reference signal, a difference between the two signals causing a change in the flow rate of the cryogen. The invention is further characterized in that wide oscillations of recirculating gas temperature and cryogen flow are avoided.

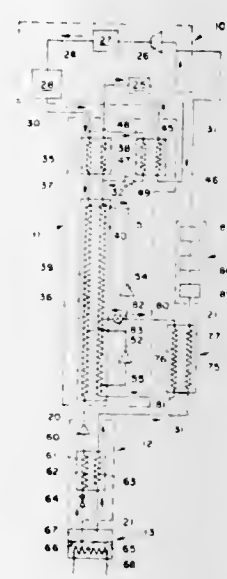
3,613,387
METHOD AND APPARATUS FOR CONTINUOUSLY SUPPLYING REFRIGERATION BELOW 4.2° K.

Samuel C. Collins, Belmont, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.
 Filed June 9, 1969, Ser. No. 831,482

Int. Cl. F25j 3/00

U.S. Cl. 62—100

16 Claims



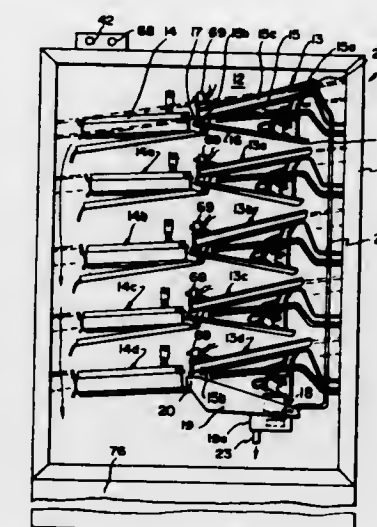
A cryogenic apparatus capable of continuously supplying liquid helium at a temperature below 4.2° K. by reducing the vapor pressure over liquid helium to the extent required to obtain the desired temperature. The resulting cold, subatmospheric-pressure gas is extracted and, subsequent to its use in indirectly cooling a portion of fluid circulated in an integrated cryogenic refrigerator, is compressed and returned to the system at essentially ambient temperature and pressure.

3,613,388
ICEMAKER APPARATUS
 Oscar E. Wendt, Benton Harbor, Mich., assignor to Whirlpool Corporation
 Filed Oct. 1, 1969, Ser. No. 862,713

Int. Cl. F25c 1/12

U.S. Cl. 62—130

10 Claims



An apparatus for forming ice in the form of slabs which may be subsequently divided into rectangular ice bodies of the desired dimensions. The apparatus includes a plurality of refrigerated plates for concurrently forming a plurality of such slabs. Means are provided for flowing water serially over the respective plates and recirculating the water by suitable pump means. Means are provided for freeing the ice slabs from the plates by heating the plates upon completion of the formation of the ice slabs. The apparatus includes a control having means for sensing the failure of a released ice slab to clear the lower end of the plate and thereby at least partially obstruct the means for conducting water from one plate to the subjacent plate, or reservoir, and cause a continuation of the operation of the releasing means until the slab is fully released. The control further includes means for providing a visual indication of the failure of the slab to be completely freed from the plate and delivered to the cutting means. Further, the means for conducting the water from the lower end of one plate to the subsequent plate is provided with improved means for assuring flow of water in the cascading arrangement notwithstanding a partial blocking of the outlet of the conducting means as by slush ice.

3,613,389
ICEMAKER APPARATUS
 Leonard W. Ohlsson, St. Paul, and Robert H. Sitko, Stillwater, Minn., assignors to Whirlpool Corporation
 Filed Dec. 5, 1969, Ser. No. 882,631

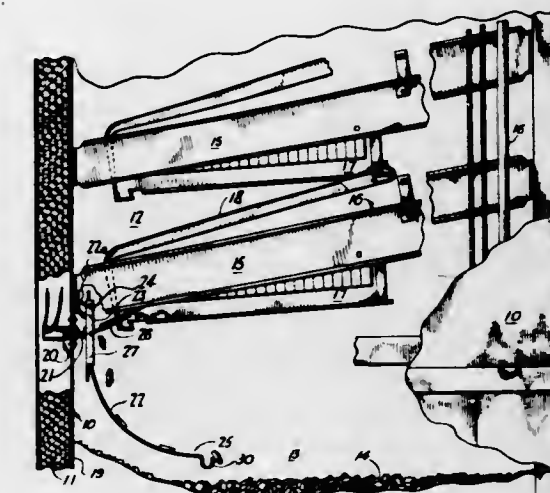
Int. Cl. F25c 1/00

U.S. Cl. 62—137

10 Claims

Apparatus for producing a supply of ice cubes that comprises an automatic ice cube former, control means for controlling the operation of the ice cube former, an ice cube directing means embodied in an inclined plate located adjacent a wall of the apparatus and sloped away from this wall over which the ice cubes pass to direct the cubes away from the wall and into a storage space with the directing means having a lower end portion located at a height corresponding to a desired maximum height of the supply of ice cubes, yieldable means including spring means mounting the directing means for yielding deflection by the ice cubes passing thereover and means such as an electric switch in the electric circuit to the ice cube former operated by deflection of the yielding means for

activating the control means and thereby terminating operation of the ice cube former so that an accumulation of ice cubes in the storage space to the desired maximum height covers this lower end of the directing means and thereby retains the directing means in its lowered deflected position to terminate operation of the ice



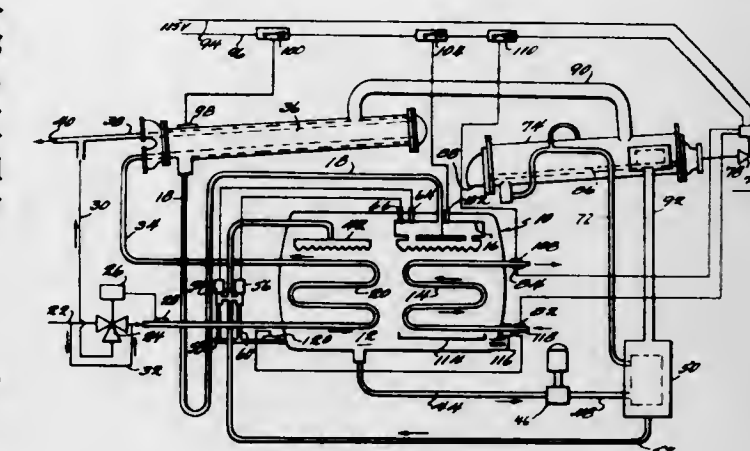
cube former so long as the accumulation of ice cubes is sufficient to maintain the deflected position. In one embodiment the lower end of the directing means has associated therewith a generally horizontal water flow trough to collect water from the ice cubes and direct it to one side of the storage space.

3,613,390
CONTROL CIRCUITS FOR ABSORPTION REFRIGERATION MACHINE
 Fred W. Bawel, Boonville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Filed Mar. 3, 1970, Ser. No. 16,021
 Int. Cl. F25b 15/06

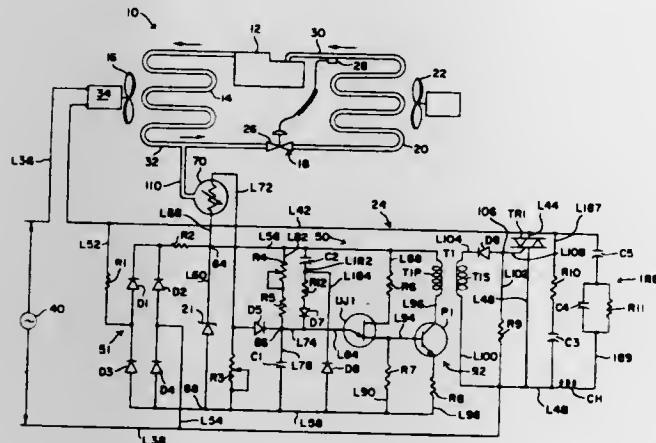
U.S. Cl. 62—148

2 Claims



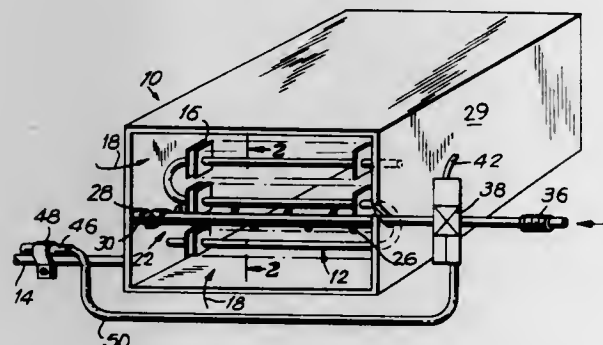
In an absorption refrigerating machine, such as a salt absorption type of machine, control of the temperature in the refrigerant flash chamber is effected by bypassing absorbent around the absorber when the chamber temperature approaches the freezing temperature. Concentration of the salt solution is controlled by withdrawing refrigerant from the circuit into the chamber and dumping the refrigerant into the absorber circuit when there is a drop in the temperature of the cooling water entering the absorber. The heat input to the refrigerant generator is controlled in accordance with the load on the machine as determined by measuring the temperatures of the chilled water entering and leaving the evaporator.

3,613,391
HEAD PRESSURE CONTROL SYSTEM
 Donald G. Harter, Scarsdale, N.Y., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
 Filed Sept. 12, 1967, Ser. No. 667,275
 Int. Cl. F25b 39/04
 U.S. Cl. 62—184 10 Claims



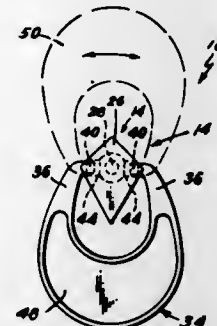
Motor speed controls including ramp and pedestal or phase type speed control circuitry and a pressure sensing transducer for altering the speed of the controlled motor as the sensed pressure changes. An arrangement for controlling the head pressure in a refrigeration type air conditioning system by varying the speed of the system's condenser fan motor which employs such a control and in which the transducer of the control senses the system pressure.

3,613,392
ATTACHMENT FOR AIR-COOLED COOLING UNITS
 Charles Di Tucci, 246—12 63rd Ave., Douglaston, N.Y. 11362
 Filed Dec. 17, 1969, Ser. No. 885,879
 Int. Cl. F25b 39/04
 U.S. Cl. 62—184 10 Claims



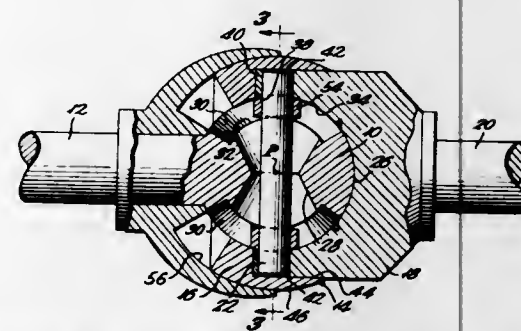
An air-cooled cooling unit having condenser coils in the path of a stream of cooling air. A spray tube forms part of an attachment which can be attached to an existing air-cooled cooling unit for spraying water in the space occupied by the condenser coils. A valve is provided for opening and closing the tube. This valve may be a solenoid valve operatively connected with a sensing unit such as a thermostat which senses the outside temperature for opening the valve to admit water to the spray tube when the ambient temperature rises to a given value. In addition a thermal bulb may be operatively connected with the liquid line to open the valve when the liquid in the liquid line rises to a given temperature. In this way additional cooling for the condenser coils is achieved only under overload conditions.

3,613,393
CLAMP TYPE EARRING CONSTRUCTION HAVING REVERSIBLY MOUNTED ORNAMENTAL MEMBER
 Roland W. Lamoureux, Warwick, R.I., assignor to Hedison Corp., Providence, R.I.
 Filed Apr. 7, 1969, Ser. No. 813,967
 Int. Cl. A44c 7/00
 U.S. Cl. 63—14 D 4 Claims



An earring construction having a mounting member on which an ornamental member is rotatably mounted, wherein a portion of the ornamental member is also rotatable and may be selectively reversed to expose one of two designs formed on opposed surfaces of the portion, the rotatable movement of the portion locating one of the surfaces in an outer position relative to the wearer's earlobe for visual display.

3,613,394
UNIVERSAL JOINT
 Calvin W. Federline, Rte. 1, Box 170, Thurmont, Md. 21701
 Continuation-in-part of application Ser. No. 621,978, Mar. 9, 1967, now Patent No. 3,453,841, dated July 8, 1969. This application July 7, 1969, Ser. No. 839,596
 The portion of the term of the patent subsequent to Mar. 9, 1984, has been disclaimed
 Int. Cl. F16d 3/16
 U.S. Cl. 64—7 7 Claims

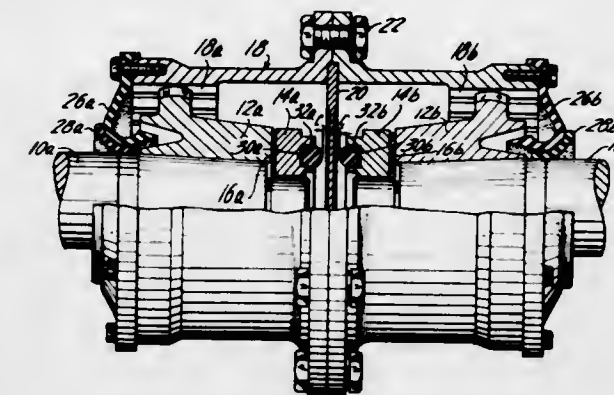


This disclosure contains a drawing and a description of a ball and socket type universal joint for transmitting torque between misaligned rotary shafts. Torque transmission between the ball and the socket of the joint is effected by a single transverse pin which is secured to the socket member and which carries bearing means slidably engaged in the ball to facilitate oscillatory movement about a transverse axis therethrough. This disclosure further illustrates and describes the manner in which the joint is assembled.

3,613,395
SHAFT COUPLING DEVICE
 Junichi Shigeura, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed May 18, 1970, Ser. No. 38,119
 Int. Cl. F16d 3/18
 U.S. Cl. 64—9 R 5 Claims

The disclosed coupling device comprises a pair of annular elastic members oppositely disposed on nuts threaded on the end portions of the driving and driven

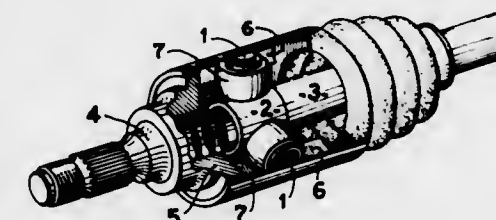
shafts. A resilient disc is disposed between the elastic members with having clearances therebetween. The hold-



two conical surfaces on the outer surface thereof, while the outer joint member has two conical surfaces on the inner surface thereof. Each conical surface on the inner joint member is faced to each conical surface on the outer joint member. The facing conical surfaces incline relative to the axial center line of the two members by an angle one-half of the joint angle α , and the intersection line of each pair of facing conical surfaces is on a plane perpendicular to the axial center line (FIG. 1). By this arrangement, the balls can be retained within the guide grooves and the both joint members can be inclined within the joint angle.

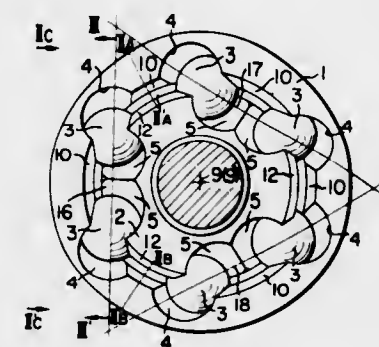
ing plate is in the form of a circular disc decreased in thickness at its central portion.

3,613,396
UNIVERSAL JOINT
 Michel Drevard, Montbellard, Charles Mognetti, Seloncourt, and Andre Vermot, Etupes, France, assignors to Automobiles Peugeot, Paris, and Regie Nationale des Usines Renault, Billancourt, France
 Filed Feb. 25, 1970, Ser. No. 14,145
 Claims priority, application France, Feb. 26, 1969, 6904894; June 26, 1969, 6921443
 Int. Cl. F16d 3/30
 U.S. Cl. 64—21 11 Claims



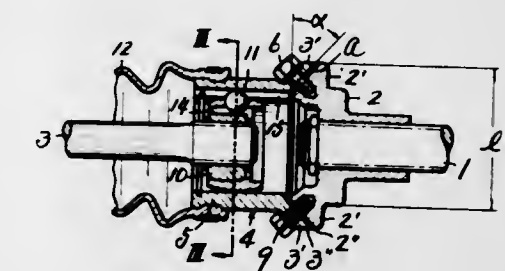
At least one resiliently-yieldable means is interposed between each spherical roller and the first drive element of a universal joint comprising the latter, which carries three trunnions, and a second drive element having three radial pairs of recesses in which the spherical rollers mounted on the trunnions are slidably and rotatably engaged.

3,613,397
CONSTANT-VELOCITY UNIVERSAL JOINT
 Hideo Okoshi, Fujisawa-shi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan
 Filed Feb. 3, 1970, Ser. No. 8,314
 Claims priority, application Japan, Feb. 7, 1969, 44/8,753; Mar. 22, 1969, 44/21,231
 Int. Cl. F16d 3/30
 U.S. Cl. 64—21 2 Claims



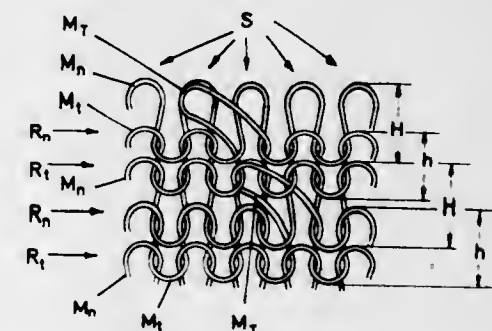
The constant-velocity universal joint consists of an inner and outer joint member. The inner joint member has

3,613,398
CONSTANT VELOCITY BALL JOINT
 Hisao Hasegawa, Nagoya, and Masashi Sanami, Takarazuka, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka, Japan
 Filed Oct. 6, 1969, Ser. No. 863,845
 Int. Cl. F16d 3/30
 U.S. Cl. 64—21 4 Claims



In a universal joint comprising inner and outer members coupled rotationally by torque transmitting balls, the outer member has a conical flange portion, an attaching member for securing the outer member to one of the drive members has a conical flange portion fitting therewith, clamp bolts secure said flange portions together, and the outer member and attaching member further have radial interengaging spline means cooperating to avoid exertion of shearing force in the bolts during driving of the joint.

3,613,399
METHOD AND APPARATUS FOR KNITTING LADDER-PROOF TUBULAR PRODUCTS
 Josef Fecker, Freudenstadt, Wurttemberg, Germany, assignor to Texpatent GmbH, Fribourg, Switzerland
 Filed Sept. 4, 1969, Ser. No. 855,235
 Int. Cl. D04b 9/48, 15/02
 U.S. Cl. 66—55 10 Claims

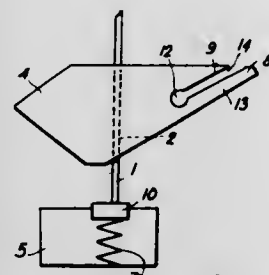


A method and apparatus for knitting ladder-proof tubular products in which the loops are transferred laterally from certain courses to adjacent wales. The loops in the courses from which the loops are transferred are made larger than the loops in the other courses such that, after transfer, all of the courses have loops of approximately the same size.

3,613,400
KNITTING MACHINES
 Milan Havranek, Brno, Drahomir Zouhar, Blansko, and Jaroslav Javorek, Trebic, Czechoslovakia, assignors to Elitex, Zavody textilního strojírenství, generalni reditelství, Liberec, Czechoslovakia
 Filed Sept. 9, 1969, Ser. No. 856,303
 Claims priority, application Czechoslovakia, Sept. 13, 1968, 6,427/68
 Int. Cl. D04b 15/32

U.S. Cl. 66—57

7 Claims

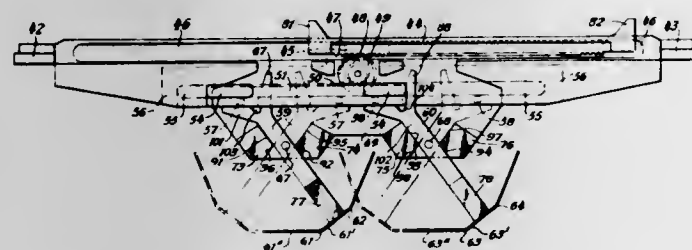


Knitting machine cams provided with operatively resilient members to absorb the impact between it and the associated needle/sinker butt.

3,613,401
KNITTING MACHINE AND METHOD
 Keith Jeffcoat, Nuneaton, and Max William Betts, Coventry, England, assignors to Courtaulds Limited, London, England
 Filed Nov. 7, 1969, Ser. No. 874,938
 Claims priority, application Great Britain, Nov. 8, 1968, 52,942/68
 Int. Cl. D04b 7/00

U.S. Cl. 66—60

13 Claims



A flat V-bed knitting machine having at least two opposed arrays of latch needles arranged in needle beds and means for actuating needles of the arrays independently in succession along the arrays, is characterized by two hold-down elements carried on the same member which is so mounted that it can be moved to bring the two hold-down elements alternately into an operative position in which the operative element extends beneath active needles of the arrays, the said member being arranged to carry the hold-down elements along the arrays of needles in synchronism with the actuation of the needles and the operative hold-down element being arranged to hold down the knitting so that the opened latches move up through the loops on the needles as the needles rise during knitting and are closed by the loops as the needles descend.

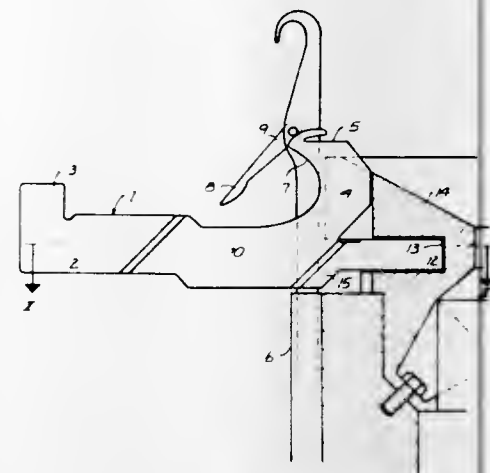
3,613,402
CIRCULAR KNITTING MACHINE SINKERS
 Jorge Rectoret Comas, Calle San Agustín 59, Mataro, Barcelona, Spain
 Filed Jan. 23, 1969, Ser. No. 803,520
 Claims priority, application Spain, Jan. 23, 1969, 350,174
 Int. Cl. D04b 15/06

U.S. Cl. 66—107

2 Claims

Sinkers for a circular knitting machine have a central portion of reduced tangential thickness to facilitate the

working of needles between the sinkers. A tongue at the front end of each sinker is received in a continuous

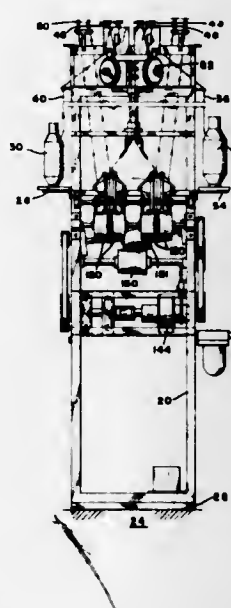


groove in a sinker guide ring. This tongue of each sinker is thicker than the central portion thereof and slidably engages the needles to be guided thereby.

3,613,403
YARN TEXTURING AND KNITTING APPARATUS
 Robert Peel, 1502 Reynolda Road, Winston-Salem, N.C. 27104
 Filed Aug. 22, 1969, Ser. No. 852,170
 Int. Cl. D04b 15/48

U.S. Cl. 66—125 A

9 Claims

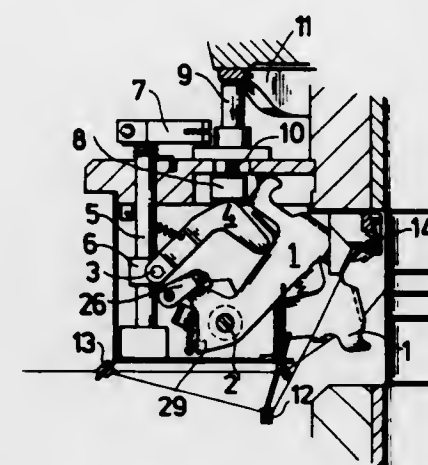


A system for texturing yarn using a flat-twisting technique in which one or more yarn ends are pulled from a yarn supply, twisted, heat-fixed and fed immediately from the heat-fixing means to a knitting machine for the formation of knitted fabric. The yarn texturing apparatus includes a guide means directing one or more yarn ends from a yarn supply and means for twisting the yarn which is thereafter moved through a heater that, in preferred form, is comprised of a chamber filled with small particles through which the twisted yarn moves. The particles are elevated in temperature and uniformly transfer heat to the twisted yarn moving there-through. After the heat-fixing operation, one or more yarn ends are introduced immediately to a knitting machine which is synchronized in yarn consumption with the texturing apparatus so that textured yarn is fed to the machine continuously as needed during the knitting operation.

3,613,404
YARN-CHANGING DEVICE FOR CIRCULAR KNITTING MACHINES
 Ernst-Dieter Plath, Taifingen, Germany, assignor to Mayer & Cie Maschinenfabrik, Taifingen, Germany
 Filed Aug. 9, 1968, Ser. No. 751,470
 Claims priority, application Germany, Aug. 31, 1967, M 75,374
 Int. Cl. D04b 15/60

U.S. Cl. 66—140

8 Claims

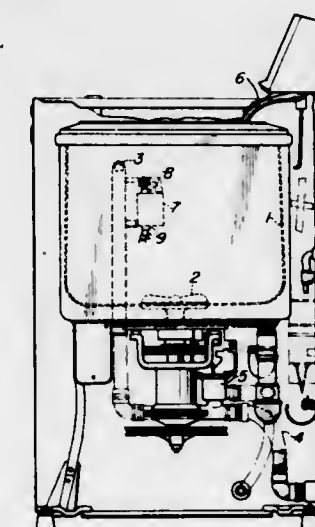


A device for situating a selected one of a plurality of different yarns at a knitting station in a circular knitting machine. The device includes a plurality of yarn-changing means supported by a support means for movement between rest and changing positions with each yarn-changing means situating the yarn controlled thereby at a knitting station when the yarn-changing means is in its changing position. A drive means is common to all of the yarn-changing means for displacing them from the rest to the changing position, while a selecting means is situated between the drive means and the yarn-changing means for transmitting movement of the drive means only to a selected one of the yarn-changing means. A plurality of yarn-clamping-and-cutting means respectively coact with the plurality of yarn-changing means.

3,613,405
WASHING MACHINE
 Kazuo Shimokusu and Takashi Korekawa, Osaka, Tomoyuki Hosokawa, Takarazuka-shi, Taro Yamamoto, Kyoto, and Takao Kobayashi, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Nov. 13, 1969, Ser. No. 876,283
 Claims priority, application Japan, Nov. 15, 1968, 43/84,350
 Int. Cl. D06f 33/02

U.S. Cl. 68—12 R

5 Claims



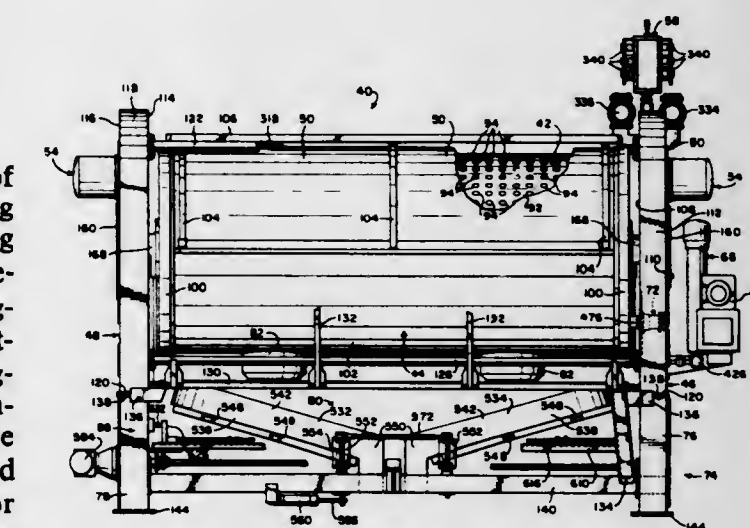
A washing machine which comprises a time switch providing a series of automatic time cycles ranging from

washing cycle through rinsing cycle to draining cycle, and in which particularly during the rinsing cycle a photo-sensitive element detects the transparency of the rinsing water, thereby automatically detecting the completion of the rinsing operation or a point of time at which the concentration of the detergent in the rinsing water is lower than a predetermined level, so that a series of subsequent time cycles takes place.

3,613,406
COMMERCIAL LAUNDRY MACHINE
 Alex Toth, Lincolnwood, Ill., assignor to Ellis Corporation, Chicago, Ill.
 Filed Mar. 25, 1970, Ser. No. 22,508
 Int. Cl. D06f 21/04

U.S. Cl. 68—140

23 Claims



A commercial laundry machine includes an inner perforated cylinder and an outer casing both mounted on a pair of end frames for rotation about their common central axis. Cylinder drive assemblies are coupled to opposite cylinder trunnions for rotating the cylinder during washing operations and each drive assembly includes a shock absorbing gear drive arrangement. A clutch or interlock system serves to fix the casing to the end frames, thereby to hold the casing stationary, or alternatively to fix the casing to the cylinder for simultaneous rotation of the cylinder and casing. Washing fluid, steam, electrical and pressurized air connections are selectively made from the end frames to the casing by means of releasable connection structures. Movable mounted drain chutes serve to transfer discharged washing fluids from the casing to a rear floor gutter, and are moved out of the way to clear the region beneath the machine for laundry carts. A cart positioning system moves carts between a convenient location at the front of the machine and an unloading position directly beneath the casing.

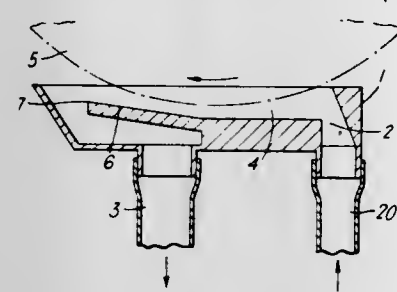
3,613,407
APPARATUS AND METHOD FOR TREATING MOVING YARNS WITH A LIQUID
 Geoffrey P. Graham, Grenoble, France, assignor to Societe Rhodiaceta, Paris, France
 Filed Mar. 18, 1969, Ser. No. 808,100
 Claims priority, application France, Mar. 18, 1968, 144,242
 Int. Cl. D06f 35/00

U.S. Cl. 68—202

5 Claims

The specification discloses an apparatus and method of treating textile yarns with a liquid, in which the yarn is

passed around a portion of the periphery of the disc. The lower periphery of the disc dips into a trough, the width of which is only slightly greater than the axial length, and



the liquid flows through the trough in the same direction as the lower periphery of the disc. A very uniform coating of the periphery is thus achieved.

3,613,408

IMPACT DYEING APPARATUS

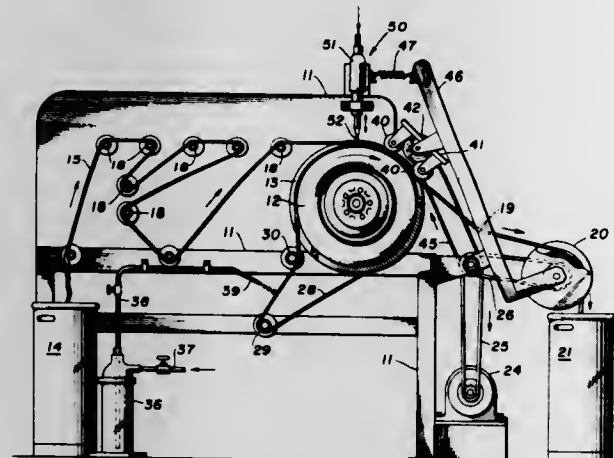
James G. T. Paterson, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed July 31, 1969, Ser. No. 846,534

Int. Cl. D06f 35/00

U.S. Cl. 68—204

5 Claims



In this invention a tow is passed under tension around a portion of the periphery of a resilient roll. A porous belt extends around the resilient roll in a position between the roll and the tow, the belt carrying a supply of a suitable dye. At a point where the belt is sandwiched between the roll and the tow a suitable mechanism applies impact forces to the tow at a high rate of speed to drive the dye from the belt through the tow.

3,613,409

PADLOCKS

Jose Paiolletti, Av. Alcantara Machado, 884-886 Sao Paulo, Brazil

Filed Jan. 5, 1970, Ser. No. 561

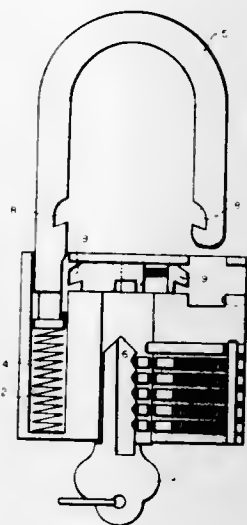
Int. Cl. E05b 67/22

U.S. Cl. 70—38 A

1 Claim

A lock having a casing provided with two parallel recesses for receiving the legs of a U-shaped shackle, and a locking block which controls the positioning of a locking

bolt. Each of the shackle legs is provided with a slot having at least one surface which is oblique with respect to the longitudinal axis of the parallel recesses. The position-



able locking bolt has a portion which complements the slot in the shackle legs to selectively and securely lock the shackle against undesired movement with a double locking effect.

3,613,410

VEHICLE ACCELERATOR PEDAL LOCK

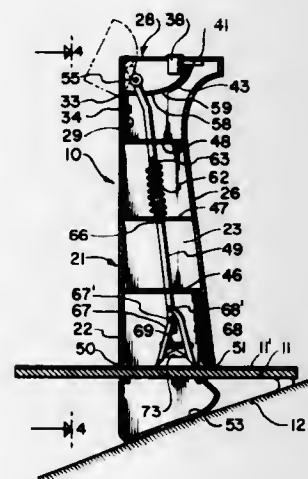
Leonard Shaw, 358 Montgomery St., Brooklyn, N.Y. 11225

Filed June 24, 1970, Ser. No. 49,257

Int. Cl. B60r 25/00; E05b 73/00

U.S. Cl. 70—202

7 Claims



An accelerator pedal lock is provided by this invention comprising an elongated closed housing having top, bottom, side, front and rear portions and in which there is a lock lever having tumbler locks extended thereacross and hinged to the top side of the housing and held closed when the tumbler lock projection engages with the stationary part of the front of the housing. A latch operating rod pivotally connected to the tumbler lock lever and extends longitudinally through the housing and has sharpened grip members for engaging the top of the pedal when the pedal has been received through bottom and top slots of the housing. The pedal will be wedged upwardly from the inclined floor from which the pedal extends and in locked position. A biasing spring is anchored on the rod and connected to the housing to bias the gripping members in engagement with the top of the lever.

3,613,411

LOCKING DEVICE FOR A REMOVABLE CONNECTOR

Gerald L. Crump, 6250 NW. 18 Court,

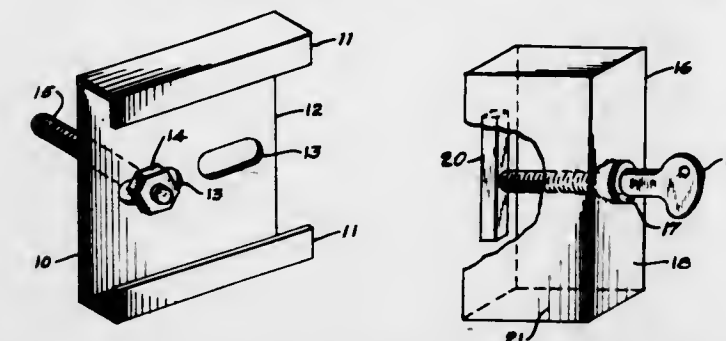
Sunrise Golf Village, Fla. 33313

Filed June 26, 1969, Ser. No. 836,731

Int. Cl. F16b 41/00

U.S. Cl. 70—232

3 Claims



A locking box for a removable connector with a flat housing having flanged sides for cooperation with a locking mechanism encased in a detachable cover.

3,613,412

STEERING COLUMN LOCK

Kenichi Yamaguchi, Chigasaki, Japan, assignor to

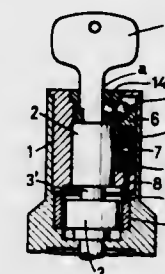
Nagatoshi Suzuki, Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,327

Int. Cl. B60r 25/02; E05b 63/18

U.S. Cl. 70—252

1 Claim



The invention relates to a steering column lock having a lock cylinder and provided with a safeguard against accidental locking of the steering through retaining the bolt in releasing position until the key is completely withdrawn from the lock. Said safeguard comprises a key controlled retaining pin and the corresponding catch slot formed in one side of a bolt portion.

3,613,413

COMBINATION LATCH AND LOCKING MECHANISM

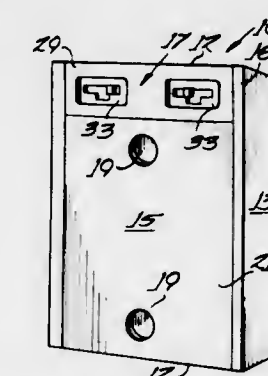
Dwight W. Glass and Robert L. Dauenbaugh, Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Dec. 4, 1969, Ser. No. 882,027

Int. Cl. E05b 32/00, 65/52

U.S. Cl. 70—298

9 Claims



A combination latch and locking mechanism for small containers having a slidable door or cover forming one side

of the container, including two or more slidable latching buttons, each button having several predetermined positions and provided with a locking finger depending beyond the mechanism to engage a rib formed on the underside of the slidable cover. The rib has a gate positioned for each button to allow passage of the finger and movement of the cover when the buttons have been shifted to their unlocked positions.

3,613,414

SELF-EJECTING KEYHOLDER WITH ILLUMINATION

Seymour A. Ostrager, 1188 Grand Concourse,

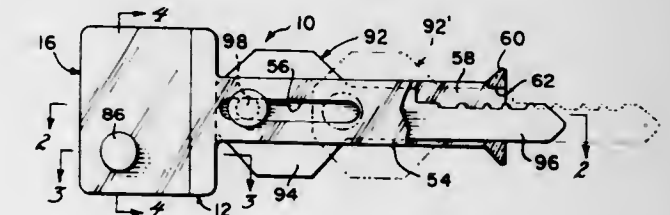
Bronx, N.Y. 10456

Filed Dec. 22, 1969, Ser. No. 886,869

Int. Cl. E05b 19/00

U.S. Cl. 70—414

5 Claims



A keyholder comprising a case with a channel formed therein for reception of a key. The key is slidably mounted within the channel and spring means are provided for automatically ejecting a key from a lock. The casing is formed from a transparent plastic, and light means are positioned within the casing. When the light means are turned on, the light produced will be diffused through the transparent plastic, thereby illuminating the key and the associated lock, and thus facilitating the insertion of the key in the lock.

3,613,415

HOLDING DEVICE FOR LOCK CYLINDERS

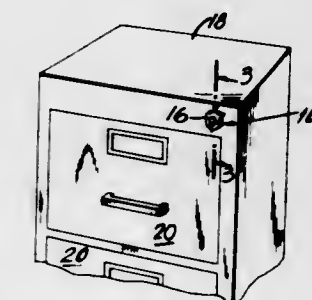
M. Leonard Singer, 1500 Cardinal Drive, Little Falls, N.J. 07424, and Robert M. Woletz, 789 Main St., Hackensack, N.J. 07601

Filed Mar. 17, 1970, Ser. No. 20,292

Int. Cl. E05b 15/00

U.S. Cl. 70—447

10 Claims



A device for preventing the accidental or malicious locking of a plunger type lock cylinder of a device such as filing cabinet includes a member which is adapted to be engaged around at least a portion of the lock cylinder when the lock cylinder is in an extended open position and hold it in this position against the possibility of it being closed. The device includes a sleeve member which may be made of a rigid material such as metal or of a resilient or semi-resilient material such as plastic or rubber and it includes means for anchoring it in position

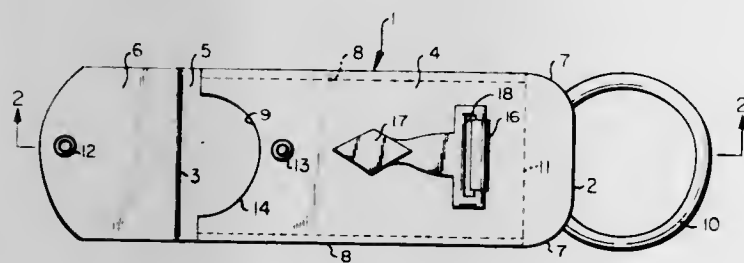
around at least a portion of the lock cylinder so as to engage the cylinder and prevent it from being moved backwardly into the accommodating recess therefor on a filing cabinet. The device includes means for clamping it in position which in one form of the invention comprises a rotatable screw which may be moved by either a screw driver or a unique tool to permit its fastening or release from the associated lock cylinder.

3,613,416 KEY FOB

Douglas W. Paton, 1534 Albemarle Way,
Burlingame, Calif. 94010
Filed Nov. 12, 1969, Ser. No. 875,965
Int. Cl. A44b 15/00

U.S. Cl. 70-456 R

7 Claims



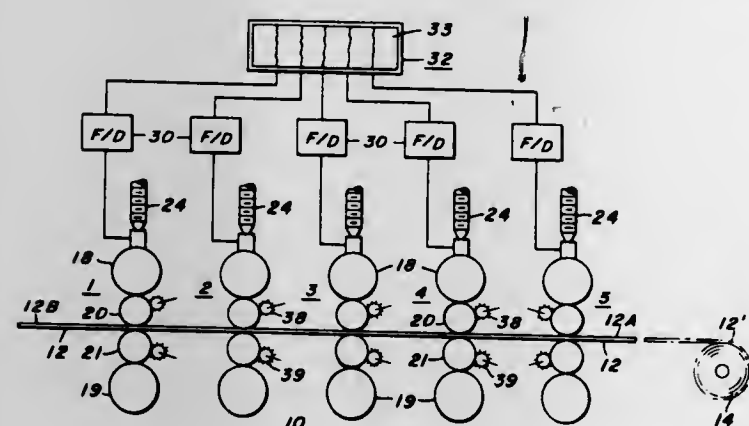
A key fob is disclosed comprising a pouch with a closure flap therefor, a key ring attached to the bottom of the pouch, and a medallion or other insignia attached to the exterior of the pouch by means of interlocking loops of material.

3,613,417 PROCEDURE FOR CONTROLLING A MULTISTAND ROLLING MILL

Wilton A. Woodburn, Lower Burrell, Pa., assignor to
Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 9, 1970, Ser. No. 9,867
Int. Cl. B21b 37/00

U.S. Cl. 72-8

3 Claims



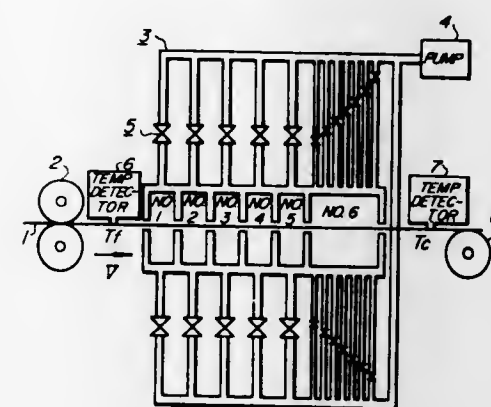
A method of controlling the tracking of a traveling strip of material being reduced in thickness by the working rolls of a multistand mill. The method includes the steps of measuring the rolling force adjacent the ends of the working rolls to provide force-differential information for each stand of the mill. This information is monitored with reference to a time base, and when force-differentials occur indicating an error in stand level or frictional forces, correction of stand level and/or frictional forces are effected in a predetermined procedure on the basis of the time based, force-differential information.

3,613,418 AUTOMATIC CONTROL SYSTEM FOR HOT STRIP MILL AND THE LIKE

Akinao Nara, Kodaira-shi, and Masahisa Ono, Nishino-
miya-shi, Japan, assignors to Sumitomo Metal Indus-
tries, Ltd., Osaka, and Hitachi, Ltd., Tokyo, Japan
Filed Jan. 26, 1970, Ser. No. 5,493
Claims priority, application Japan, Feb. 12, 1969,
44/9,717

U.S. Cl. 72-8 Int. Cl. B21b 37/10

1 Claim



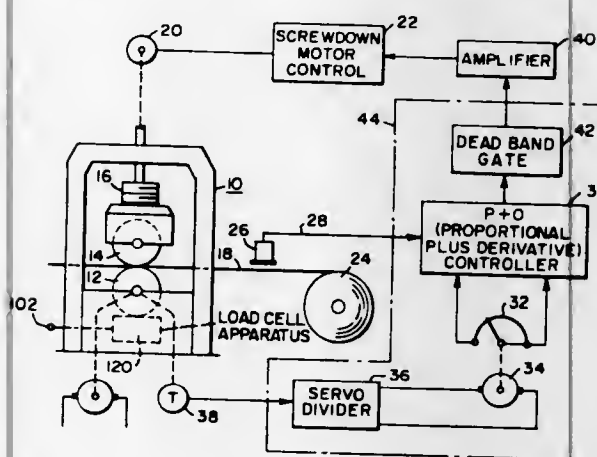
Spray valves are sequentially manipulated in the order of from the input side to the output side of a hot strip mill and the succeeding one has a larger cooling power than that of the preceding one. A computing device for computing the on-off time of the spray valves computes the cooling power required for a certain length of a sheet bar ranging from the leading end to a certain point of the sheet bar on the basis of predicted values of various process variables given by a predetermined program. The cooling power required for the remaining length of the sheet bar is computed on the basis of the values obtained by correcting the predicted values by the detected values of the process variables. The individual spray valves are turned on or off depending on the cooling power computed in this manner.

3,613,419 ROLLING MILL AUTOMATIC GAUGE CONTROL WITH COMPENSATION FOR TRANSPORT TIME

Antonio V. Silva, Buffalo, N.Y., assignor to Westing-
house Electric Corporation, Pittsburgh, Pa.
Filed Aug. 1, 1969, Ser. No. 846,803
Int. Cl. B21b 37/12

U.S. Cl. 72-8

9 Claims



Described are a gauge control method and apparatus for a rolling mill wherein the transport time required for the material being rolled to pass from the bite of the rolling mill rolls to a gauge measuring device is

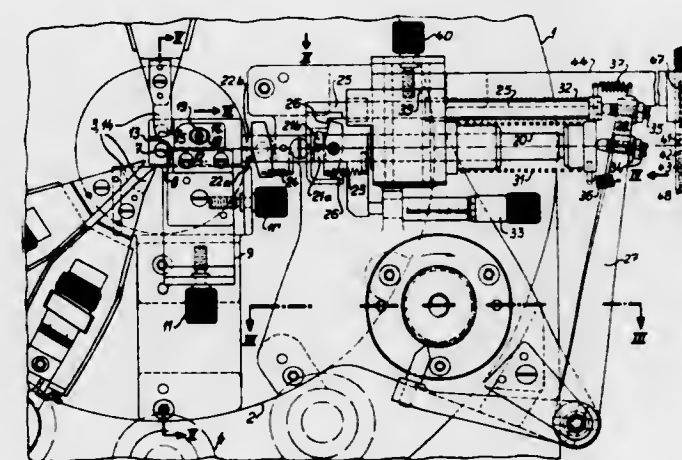
compensated for by means of circuitry having a transfer function which is the inverse of the transfer function of the transport time.

3,613,420 AUTOMATIC MACHINE FOR THE MANUFACTURE OF PLANAR STEEL WIRE SPRINGS

Rene Perrenoud, 14 Sugits, 2114 Fleurier, Switzerland
Filed May 26, 1969, Ser. No. 827,535
Claims priority, application Sweden, Apr. 23, 1969,
6,109/69

U.S. Cl. 72-131 Int. Cl. B21f 11/00; B21d 43/10

4 Claims



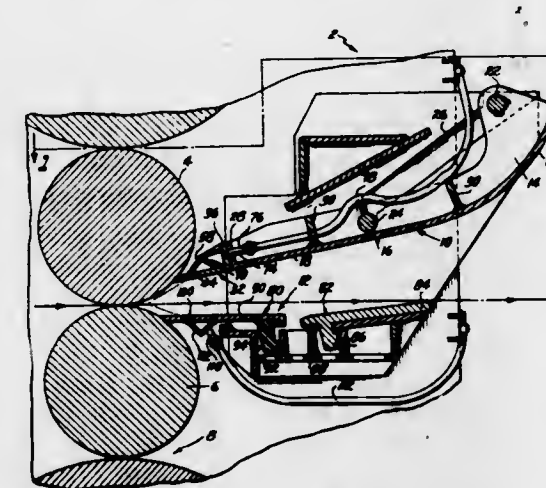
A machine for the manufacture of planar steel wire springs, notably for timepieces, comprises a plate member on which are slidably mounted forming tools sliding in the direction of the center of the plate, means for advancing the wire, and means for clamping and cutting the wire. The means for advancing the wire extend parallel to the plate member to ensure an advance of the wire parallel to the plate member and the advancing means comprises a clamping device for the wire and a braking device for the wire co-operating with the clamping device to maintain the wire under tension.

3,613,421 METHOD AND APPARATUS FOR ELIMINATING IRON OXIDE DUST

Theodore A. Repper, 501 Stanley St.,
Middletown, Ohio 45042
Filed June 17, 1969, Ser. No. 834,030
Int. Cl. B21b 9/00, 45/04

U.S. Cl. 72-38

8 Claims



Iron oxide dust formation at the work rolls in a hot rolling mill for sheet steel is eliminated by establishing an inert atmosphere at the exit side of the rolls, specially

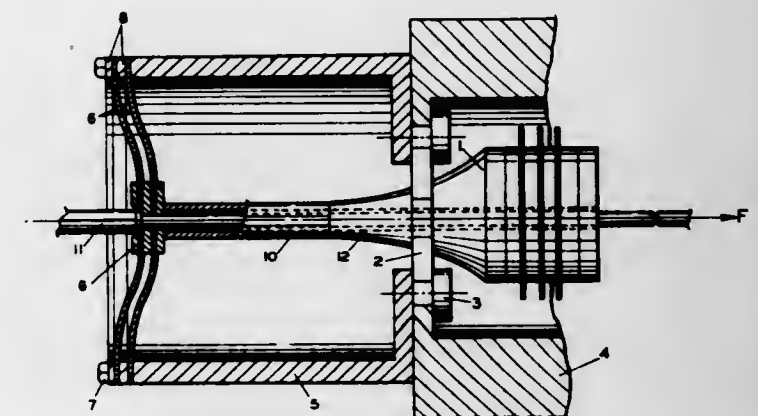
constructed upper and lower strippers having nozzles mounted therein being arranged to spray an inert gas into the bite region of the work rolls to establish the inert atmosphere.

3,613,422 WIRE DRAWING APPARATUS AND METHOD USING INTERMEDIARY IMPACT DEVICE

Lytton A. Kendall, Jr., Columbus, Ohio, assignor to The
Ohio State University, Columbus, Ohio
Filed Apr. 28, 1969, Ser. No. 819,750
Int. Cl. B21c 3/00

U.S. Cl. 72-56

10 Claims



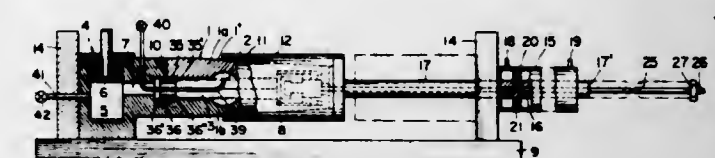
This invention is an apparatus for drawing wire utilizing an axially apertured piezoelectric electromechanical transducer and axially apertured straight vibratory-mechanical transmission line in conjunction with a wire-drawing die (impacted by the transmission line) to reduce the cross section of the wire. Reference is made to the claims for a legal description of the invention.

3,613,423 BULGING APPARATUS

Masanobu Nakamura, 2-10-2 Shichirigahama Higashi,
Kamakura, Kanagawa, Japan
Filed Jan. 2, 1970, Ser. No. 228
Int. Cl. B21d 26/04

U.S. Cl. 72-58

1 Claim



A fluid pressure bulging apparatus comprised of a die cavity in which a tube to be bulged is enclosed. A chuck automatically grips the front end of the tube to permit accurate bulging without off-center working.

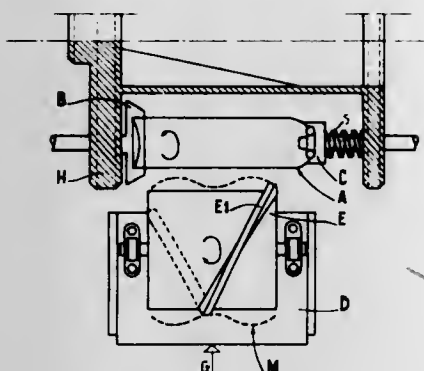
3,613,424 METHOD AND APPARATUS FOR SHAPING BOTTLES

Norbert Normos, Courbevoie, France, assignor to Societe
de Conditionnement en Aluminium (SCAL) GP, Paris,
France
Filed Jan. 2, 1969, Ser. No. 788,559
Claims priority, application France, Jan. 9, 1968,
135,260

U.S. Cl. 72-103 Int. Cl. B21d 22/14

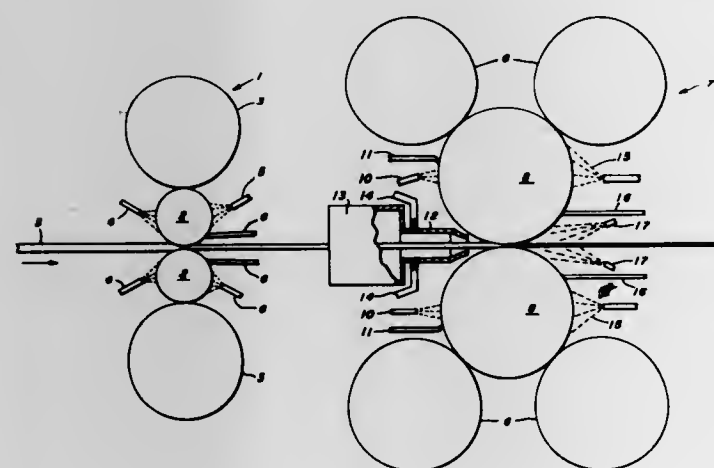
Method and apparatus for profiling bottles to any form of revolution in the absence of internal formers comprising a means for mounting the bottle for rotational

movement about its axis and a tool having an edge in the form of an open spiral applied against a mandrel and which is mounted for rotational movement and for



displacement in the direction toward and away from the bottle for engagement with the bottle to effect the desired profiling action.

3,613,425
ANNEALING STRIP DURING COLD ROLLING
William L. Roberts, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed Jan. 29, 1970, Ser. No. 6,861
Int. Cl. B21b 37/00, 37/04, 1/00; B21d 31/00
U.S. Cl. 72-202 14 Claims

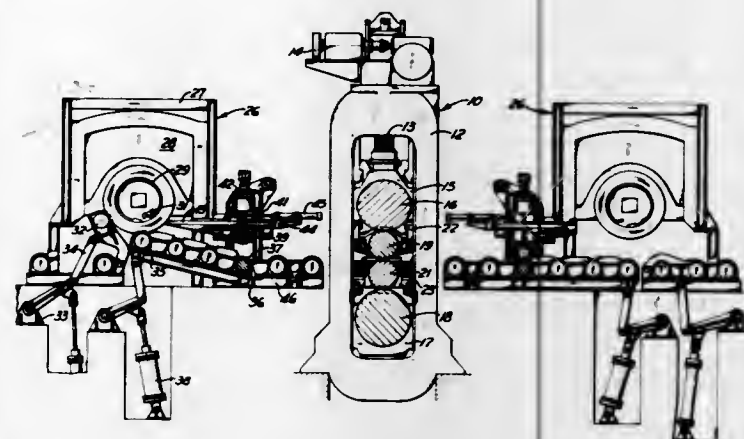


A method and apparatus for continuously annealing cold rolled sheet strip in which a temperature sufficient to provide a recrystallized and annealed structure is attained by utilizing the energy of deformation to provide the required ultra-fast heat-up rate.

3,613,426
HOT REVERSING STRIP MILL METHOD AND APPARATUS
James Richard Adair and Tadeusz M. Bijasiewicz, Pittsburgh, Pa., assignors to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Oct. 14, 1969, Ser. No. 866,214
Claims priority, application Great Britain, Nov. 4, 1968, 52,101/68
Int. Cl. B21b 27/06, 1/22
U.S. Cl. 72-202 10 Claims

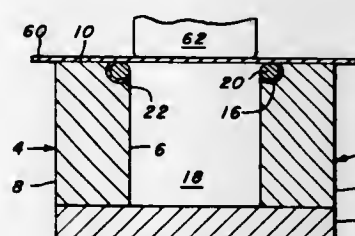
The disclosure of this application relates to a rolling mill and, more particularly, to a hot metallic strip reversing mill of the type known as a Steckel Mill. There is provided a 4-high mill on either side of which there are located coiling furnaces and reels for receiving the strip as it is passed to and from the mill. The mill is also provided with a quick roll changing device in which con-

nection the novel method is disclosed for employing the furnace to hold the strip in the furnace while the work



rolls are being changed from a roughing set to a finishing set of work rolls.

3,613,427
FORMING DIE STRUCTURE
Roger C. Haddon, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Apr. 28, 1969, Ser. No. 819,850
Int. Cl. B21d 9/10
U.S. Cl. 72-212 5 Claims

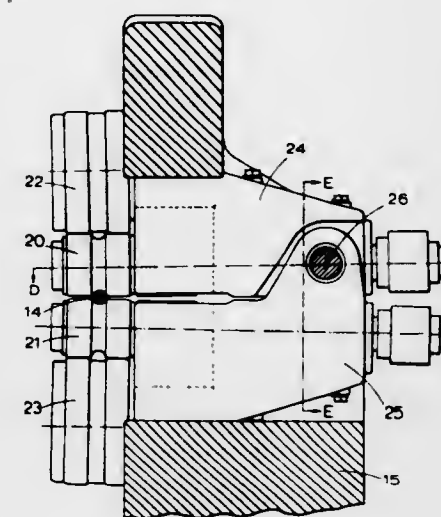


A forming die having a base member and an elongated forming member secured to the base member, the forming member having an inner surface, an outer surface and a connecting sheet contacting surface. The forming member defines an elongated recess disposed generally at the intersection of the inner surface and the sheet contacting surface. A cylindrical roller which is rotatably supported is disposed within the recess. In one form the die is particularly suited to bending decorated sheet without creating surface damage. It has two spaced parallel forming members secured to the base member in channel defining position. The forming die may have the rollers in contact with the forming member within the generally cylindrical recess or may have unitary or segmented spacer means interposed between the rollers and the forming member. The spacer means has a concave surface of substantially the same radius of curvature as the roller, in contact with the roller.

3,613,428
ROLLING MILLS
Nicholas A. Townsend, Bexley Heath, Kent, and Roy R. Oxlade, London, England, assignors to The British Iron and Steel Research Association
Filed Nov. 14, 1968, Ser. No. 775,668
Claims priority, application Great Britain, Nov. 15, 1967, 52,090/67
Int. Cl. B21b 31/00
U.S. Cl. 72-237 20 Claims

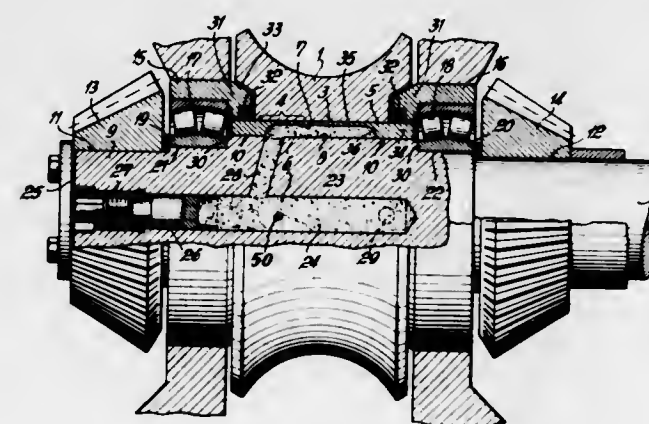
A four high rod or bar rolling mill, wherein the work rolls and their drive shafts are carried for rotation in arms

mounted in the mill frame for pivotal movement about defined pivot axes (or a common pivot axis) extending parallel to and spaced a fixed distance from the stock pass line, whereby to permit adjustment of the work gap



between the work rolls. The support rolls may or may not be carried in the arms with their work rolls and are movably mounted so that they can align themselves on their work rolls.

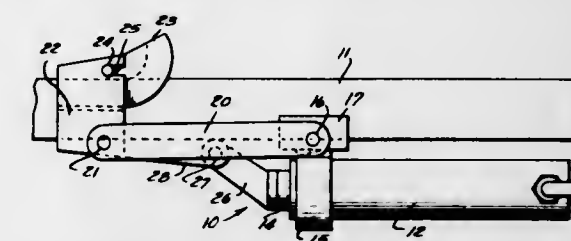
3,613,429
MEANS FOR SECURING OF ROLLING MILL ROLLS IN PARTICULAR THOSE IN STRETCH REDUCING MILLS
Karl-Heinz Schwarzenberg, Rumeln-Kaldenhausen, and Rolf Michel, Bochum-Hovel, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed July 30, 1969, Ser. No. 846,078
Claims priority, application Germany, Aug. 1, 1968, P 17 52 902.1
Int. Cl. B21b 35/00
U.S. Cl. 72-249 8 Claims



The disclosure relates to a means of securing rolling mill rolls, in particular those in stretch reducing mills, consisting of a friction-type connection between the roll body centre bore and one or more ring(s) fitted to the drive shaft portion to transmit the driving torque.

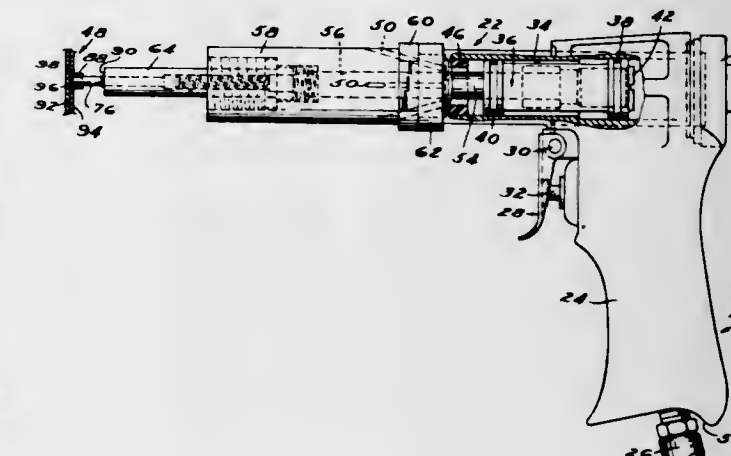
3,613,430
WIRE BENDING APPARATUS
Silas R. Crees, 1170 Sarno Road, Eau Galle, Fla. 32935
Filed July 25, 1969, Ser. No. 844,836
Int. Cl. B21d 11/04
U.S. Cl. 72-318 14 Claims

A wire bending apparatus for bending electrical cables, or the like, in narrow confines such as panel boxes. The apparatus is connected to an electrical conductor by a wire holding member which is connected to a hydraulic



member attached thereto and when the hydraulic cylinder is actuated the engaging member bends the wire around the wire guide on the wire holding member.

3,613,431
IMPACT GUN AND METHOD OF FORMING A STRUCTURAL CONNECTION
Engelbert A. Meyer, Union Lake, Mich., assignor to Warren Fastener Corporation, Mount Clemens, Mich.
Filed Dec. 31, 1968, Ser. No. 788,138
Int. Cl. B21j 7/24
U.S. Cl. 72-369 11 Claims

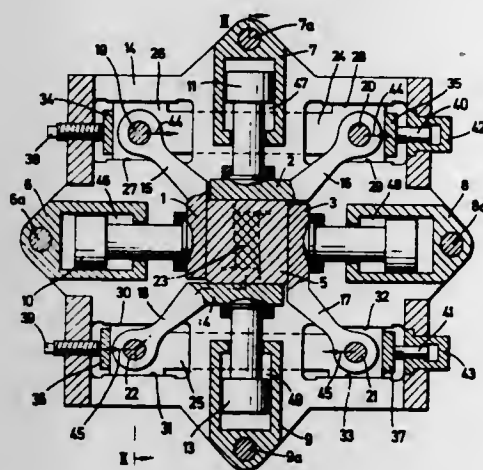


An impact gun adapted to deform the tubular end of a fastener secured to a support, including a plunger means supported for reciprocating movement by the body portion of the gun having a specially designed head portion adapted to engage the inner edge of the fastener and deform the tubular end radially outwardly and toward the support. The head portion or anvil is initially separated from the plunger or hammer, and is guided into contact with the end of the fastener by a pilot supported for reciprocation within the head portion. The method disclosed herein includes disposing a supporting member within the tubular fastener and impacting the fastener end.

3,613,432
FORGING MACHINE
Horst Schenk, Dusseldorf-Rath, Jakob Wetter, Huls, and Rudolf Guse, Dusseldorf-Rath, Germany, assignors to Maschinenfabrik Sack G.m.b.H., Dusseldorf-Rath, Germany
Filed Dec. 2, 1969, Ser. No. 881,467
Claims priority, application Germany, Dec. 2, 1968, P 18 12 169.2
Int. Cl. B21j 9/12
U.S. Cl. 72-399 17 Claims

A forging machine is disclosed having four forging saddles carried on guiding arms which are pivoted on a frame. Each saddle has a hydraulic ram by which it can be moved inwards in use, the four saddles embracing a workpiece and reducing its cross-section. The pivots of the guiding arms are shiftable relatively to the

frame whereby the machine is capable of forging rectangular section bar, the ratio between the sides of the rectangle taking any value within a range. For ease of adjustment the four pivots are arranged as two adjacent pairs, each pair of pivots being coupled together by being mounted on a common slider. Each of the rams is pref-



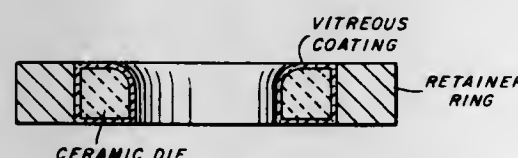
erably rigidly fixed to the frame and connected to its saddle through a doubly articulated joint. Each saddle is preferably connected to its guiding arm by an overload safety connector which responds, for example by braking should one saddle foul its neighbour and impose excessive forces upon the neighbouring pivot.

3,613,433 CERAMIC DIE AND METHOD OF MAKING SAME

Harry E. Deverell, Craigdell Gardens, and Frank L. Muscatell, Gibsonia, Pa., assignors to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
Filed Mar. 13, 1969, Ser. No. 807,096
Int. Cl. B21c 3/00

U.S. Cl. 72—467

3 Claims



Described herein is a ceramic die for use in shaping metal by extrusion, drawing, etc., which contains a smooth, continuous coating of vitreous material diffusion bonded to the ceramic body. Also disclosed is a method of making such a ceramic die.

3,613,434 DIFFERENTIAL PRESSURE ANALYZER FOR PROPELLANT INGREDIENTS

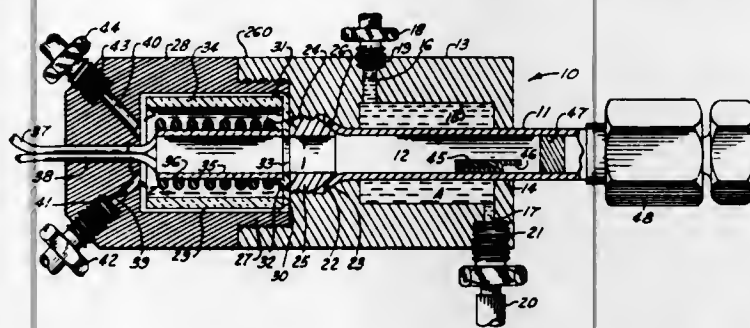
William W. Schwarz, Huntsville, David A. Flanagan, Guntersville, and William C. Aycock, Huntsville, Ala., assignors to Thiokol Chemical Corporation, Bristol, Pa.
Filed Aug. 21, 1969, Ser. No. 851,869
Int. Cl. G01n 33/22

U.S. Cl. 73—35

4 Claims

An apparatus including a heated chamber and a cooled chamber that are connected together in interaxial relation with each other, and having a coaxial passageway therebetween which is gas pressurized, a pressure indicator and a temperature indicator connected to the heated chamber, a micro-combustion boat positioned for free sliding movement within the passageway, a magnetic plug positioned adjacent to the boat so that when a propellant ingredient

is placed in the boat, it may be subjected to a cooling temperature and at a predetermined time the plug may be moved under the influence of a magnet to move the



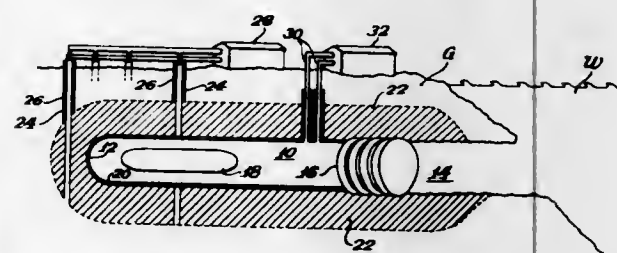
boat into a heated atmosphere whereby the decomposition of the propellant ingredient may be achieved under recorded temperature and pressure rises.

3,613,435 METHOD AND SYSTEM FOR STATIC TESTING STRUCTURES

Philip J. Anderson, Deerfield, Ill., assignor to Institute of Gas Technology
Filed Apr. 16, 1970, Ser. No. 29,011
Int. Cl. G01m 3/02, 10/00

U.S. Cl. 73—37

12 Claims



A method and system for pressure testing a large test specimen exteriorly. A test chamber is excavated in an earth formation for receiving the test specimen. An entry is provided in the formation to the test chamber permitting the passage of the specimen. Water is frozen in the earth formation around the test chamber and a closure member is provided in the entry so as to withstand the pressure load imparted to the specimen in the chamber. Pump members are provided for introducing a pressurized fluid, such as water, into the chamber so as to static pressure test the test specimen at desired test pressures.

3,613,436 NON-DESTRUCTIVE TESTING OF PRESSURE VESSELS

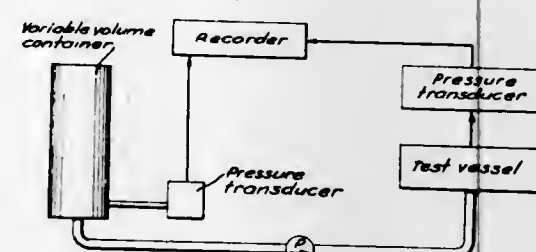
Lewis R. Drake and Nell R. Erickson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 28, 1969, Ser. No. 845,349

Int. Cl. G01m 3/02, 19/00

U.S. Cl. 73—37

7 Claims



A liquid volume transducer in a method of hydrostatic testing of pressure vessels. The volume transducer comprises a liquid container having a constant cross-sectional area from top to bottom and provided with means for

varying the volume of liquid in the container while providing a constant cross-sectional area and the same initial height of liquid. A pressure transducer is connected near the bottom of the container to indicate the change in pressure caused by a drop in height of liquid in the container when it is withdrawn through a liquid outlet. Because the liquid has a constant cross-sectional area from its surface to the bottom of the container the change in pressure is proportional to the volume of liquid withdrawn.

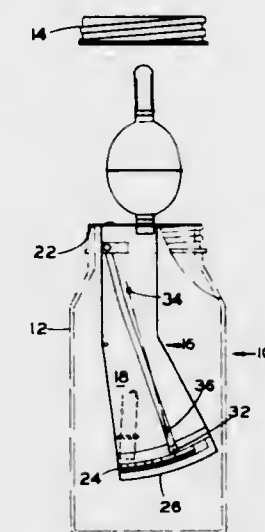
3,613,437 EXPANSION METER

Theodore Colgren, Kalamazoo, and Morris W. Kane, Parchment, Mich., assignors to Brown Company, New York, N.Y.
Substituted for abandoned application Ser. No. 787,728, Dec. 30, 1968. This application Nov. 25, 1969, Ser. No. 879,864

Int. Cl. G01n 19/10, 35/34

U.S. Cl. 73—73

3 Claims



An improved expansion meter is provided for measuring the rate of expansion of a material as a function of the relative humidity of the surrounding environment. The expansion meter includes a sealed container provided with a deflection gauge having a pointer which is adapted to be shifted along the gauge scale by the expansion or contraction of the material under predetermined conditions of relative humidity within the container.

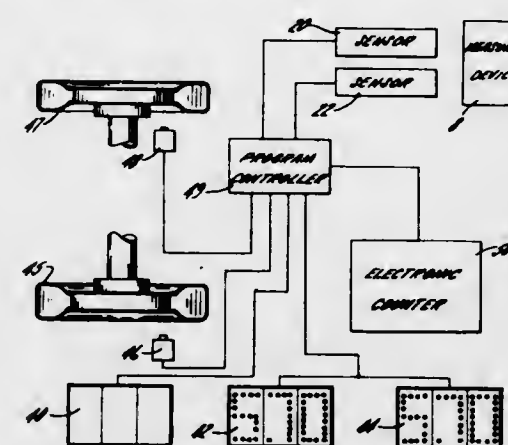
3,613,438 APPARATUS FOR FUEL EFFICIENCY TESTING

Norman D. Esau, Lansing, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed Oct. 9, 1969, Ser. No. 865,126

Int. Cl. G01l 3/24

U.S. Cl. 73—113

8 Claims



A device for demonstrating the comparative performance of fuel uses in combination a volumetric measuring

device, a fuel consuming device (such as an automobile), simple performance measuring devices and visual display indicators. The volumetric measuring device includes an outer reservoir and an inner tube for retaining fuel, and appropriate sensing means, such as photocells, whereby the position of a floatable object confined within the inner tube can be detected. The entrance for introducing fuel into the device is positioned such that entering fuel will not exert a downward force on the object within the inner tube.

3,613,439 APPARATUS AND METHOD FOR MEASURING NONUNIFORMITIES OF TRANSMISSIONS HAVING A SMALL TRANSMISSION RATIO

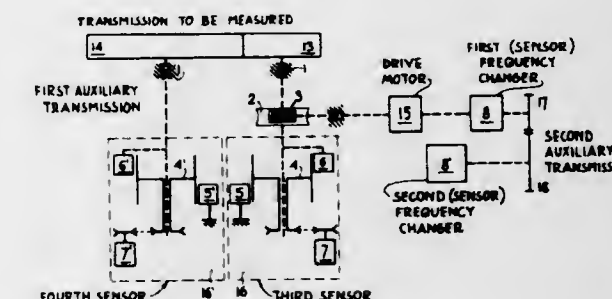
Karel Štěpánek, Prague, Czechoslovakia, assignor to Vyzkumny ustav obrabecich stroju a obrabeni, Prague, Czechoslovakia

Filed Apr. 21, 1969, Ser. No. 817,645

Int. Cl. G01m 13/02

U.S. Cl. 73—118

4 Claims



Nonuniformities of transmissions having a small transmission ratio are measured by converting the measurement to a measurement of two transmissions having a large transmission ratio by utilizing an auxiliary transmission having the same transmission ratio as that to be measured and by driving the transmission to be measured and the auxiliary transmission at a different speed from the transmission with a large transmission ratio. This provides two transmissions having large and equal transmission ratios. The difference in the measurement results is determined to eliminate the nonuniformities of the auxiliary transmissions and such difference indicates the nonuniformities of the transmission to be measured.

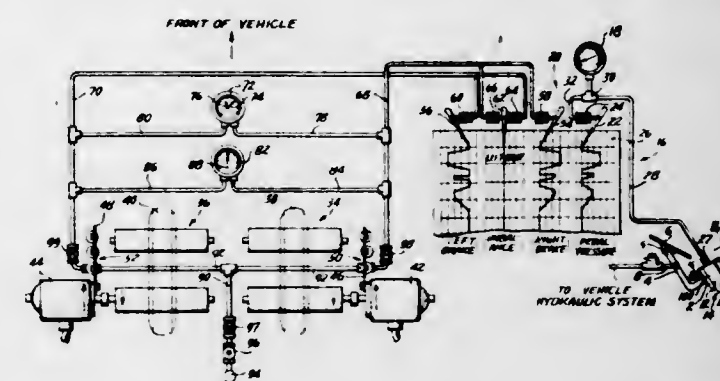
3,613,440 BRAKE PEDAL PRESSURE SIGNAL SENDING UNIT

Leland P. Tinkham, Temple City, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.
Filed Mar. 27, 1969, Ser. No. 811,167

Int. Cl. G01l 5/28

U.S. Cl. 73—132

14 Claims



A hydraulic pressure signal sending unit for use with an assembly for measuring the force applied to an automobile brake pedal by the foot of an operator, the sending unit being detachably mountable upon a conventional

brake pedal and being connected with a remote fluid pressure gauge. The sending unit is operated manually and is designed to translate foot pressure into hydraulic pressure, which is transmitted through a flexible hose to the pressure gauge. The sending unit includes a rolling diaphragm mounted in a housing, and to which diaphragm foot pressure is applied through a pivoted pressure plate mounted on said housing and a treadle pivotally mounted on said pressure plate. The pivotal axis of the pressure plate is adjacent one end thereof and parallel with the pivotal axis of the treadle, which is about midway of the length of the pressure plate. This arrangement, coupled with the rolling diaphragm makes the sending unit insensitive to the angle at which foot pressure is applied.

3,613,441

ZERO DEFLECTION LOAD TRANSDUCER

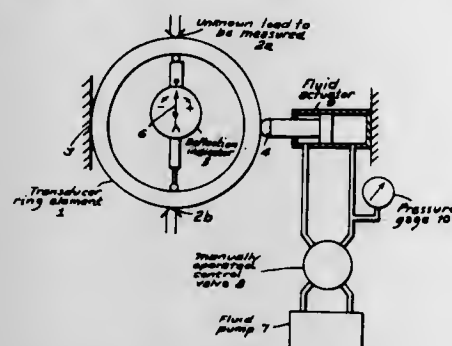
Ralph R. Papirno, Norfolk, Mass., assignor to the United States of America as represented by the Secretary of the Army

Filed Jan. 19, 1970, Ser. No. 3,662

Int. Cl. G011 5/12

U.S. Cl. 73-141 A

6 Claims



A load to be measured tends to deflect, crush or warp a ring type of transducer. However, a sensor detects the slightest deflection or warping of the ring and actuates apparatus to restore the ring so that the net result is substantially zero deflection of the transducer ring. The force required of the apparatus, to hold the transducer ring or to restore the ring to zero deflection, is proportional to the force applied to the ring. By measuring this force, by a hydraulic pressure gage, for example, the magnitude of the load to be measured can be ascertained. In simple terms, a "heavy duty" yet very sensitive scale is provided to indicate light or heavy weight or force. Nevertheless, the sensing element incurs substantially zero deflection. And, this is true even when comparatively lightweight and inexpensive apparatus is used.

3,613,442

MAGNETO-ELASTIC TRANSDUCER FOR LATERAL FORCE

Nils Ove Bielsten, Vasteras, Sweden, assignor to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

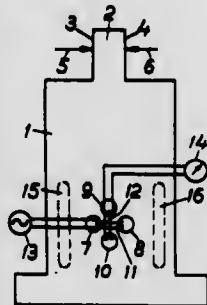
Filed Dec. 4, 1969, Ser. No. 882,263

Claim priority, application Sweden, Dec. 9, 1968, 16,783/68

Int. Cl. G011 5/12

U.S. Cl. 73-141 A

4 Claims



A magneto-elastic force transducer formed by a laminated core of magneto-strictive material has apertures

containing a flux generating winding and a measuring winding. The core is a beam fixed at one end, the other end having engagement surfaces for forces which are exerted generally perpendicular to the longitudinal direction of the beam. The apertures extend perpendicular to the longitudinal direction of the beam and of the force operating on it. The parts of the core between the apertures have a longitudinal direction which substantially coincides with the direction of the main stresses in the shearing stress field. The beam may be provided with slots or the openings may be of enlarged generally triangular cross section in order to reduce the stiffness of the beam.

**3,613,443
LARGE SCALE EXTERNAL BALANCE FOR WIND TUNNELS**

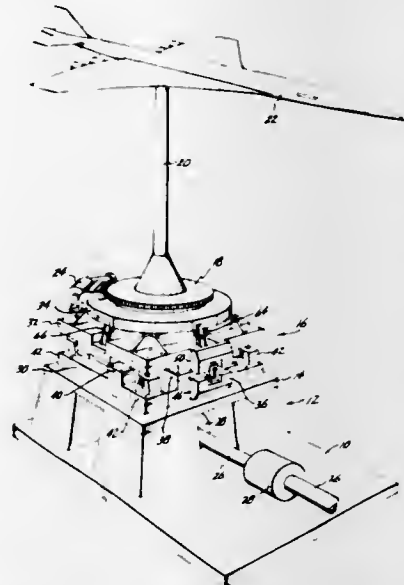
Truman M. Curry, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 22, 1969, Ser. No. 886,914

Int. Cl. G01m 9/00

U.S. Cl. 73-147

27 Claims



A large scale external balance for wind tunnel applications which can measure the six basic components of force and moment acting on a test model from a location outside the wind tunnel is adapted to cover a broad range of test requirements with compact, lightweight rigid design. The disclosed balance consists of three annular plate structures assembled in spaced relationship separated and supported by flexure members having the same temperature coefficient of expansion as the plate structures and permitting simultaneous measurement of strains proportional to the six components of loading. The strains are localized to minimize deflections and are measured as reactions internal to the structure by strain gauges wire in bridge circuits to measure the forces and moments about a reference center external to the physical body of the balance itself. A space in the center of the annular balance permits ducting of auxiliary air through the balance and test model supporting strut to the model itself for special test uses without interference with the functions of the balance. Various details of flexure configurations and cooperative arrangements thereof are disclosed.

3,613,444

TESTING DEVICE FOR FILM

Robert F. Grunwald, Northbrook, Richard R. Wallace, Wilmette, and Howard Bowen, Evanston, Ill., assignors to The Harward Company, Inc., Evanston, Ill.

Filed Aug. 13, 1969, Ser. No. 849,841

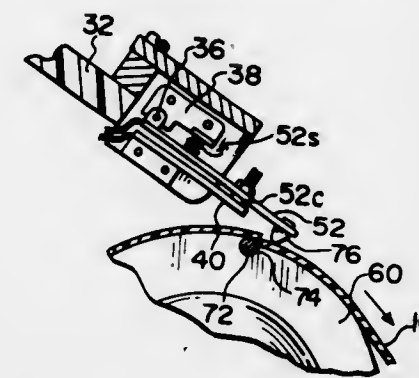
Int. Cl. G01n 3/20

U.S. Cl. 73-157

5 Claims

The film to be tested is moved along a predetermined path at high speed and is supported by the flanges of a

roller which engage the film at points spaced from the edges of the film, preferably in the areas of the edges of the picture track of the film. A fixed jewel section engages one face of the film and supports the edge thereof in the vicinity of a test feeler which engages the film on the face



opposite said one face. The test feeler is resiliently urged into engagement with the film at a point spaced longitudinally from the fixed jewel section but the longitudinal separation is small so that the feeler has substantial movement when the leading edge of a break in the film is encountered.

3,613,445

FABRIC CHARACTERIZING APPARATUS

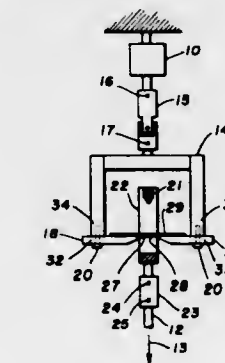
Robin W. Dent, Durham, John C. Ostfield, Cary, and Richard T. Mayes, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1969, Ser. No. 881,790

Int. Cl. G011 5/10

U.S. Cl. 73-159

3 Claims



An apparatus and method for determining the roughness and stiffness components of the hand of a fabric from a load-extension curve are provided. The test fabric is forced vertically downward through a slot at a constant speed for a distance which is at least greater than one-half the width of the slot. A signal is generated in proportional response to the load incurred in moving the fabric into and through the slot while simultaneously measuring the distance through which the fabric moves. A load-extension curve is generated by plotting the signal as a function of the distance. Smoothness and stiffness (as well as "hand") are obtained from this curve.

3,613,446

SELF-RECORDING ACCELEROMETER

Ronald F. Scott, Altadena, Calif., assignor to California Institute of Technology

Filed Nov. 5, 1968, Ser. No. 773,489

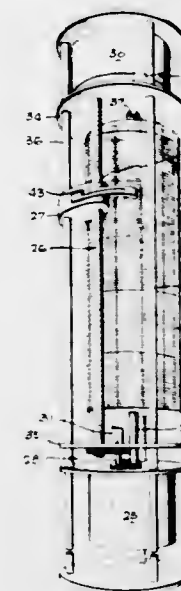
Int. Cl. G01n 1/00; G01v 9/00; G01d 9/10

U.S. Cl. 73-170

27 Claims

A self-recording, single-axis accelerometer is provided by utilizing a mass, which moves against a bellows-type spring force, in the form of a cylinder to carry a chart. A lead screw parallel to the cylinder axis, and geared thereto, advances a stylus assembly from one end of the drum to the other as the cylinder is rotated at constant

speed. When subjected to acceleration, the cylinder is displaced along its axis, thereby causing the trace of the stylus to depart from its helical path in proportion to the magnitude of the acceleration, and in a direction corre-



sponding thereto. A method is disclosed for obtaining information on the strength of ocean-floor soils by instrumenting conventional shallow or deep-ocean sampling, coring or other apparatus with a single-axis accelerometer.

3,613,447

CALORIMETER FOR FLOWING FLUIDS

Shigeji Ishikawa, Yuji Terayama, and Masahiro Wada, Tokyo, Japan, assignors to Oval Kiki Kogyo Kabushiki Kaisha, Tokyo, Japan

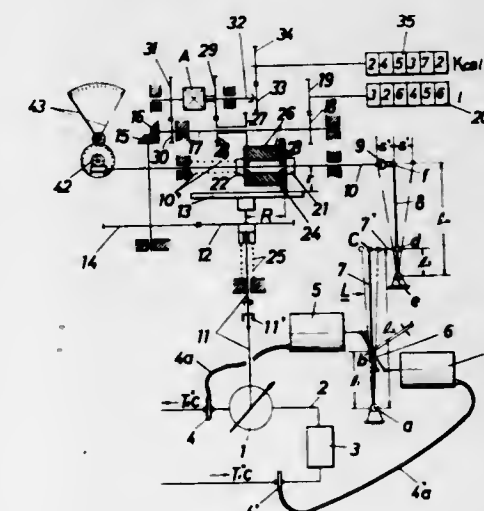
Filed July 24, 1969, Ser. No. 844,422

Claims priority, application Japan, July 31, 1968, 43/65,428; May 27, 1969, 44/48,370

Int. Cl. G01k 17/06

U.S. Cl. 73-193 R

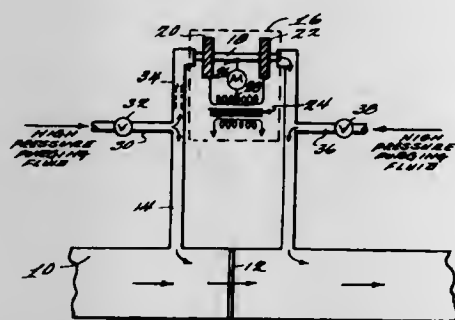
6 Claims



Apparatus for calculating and integrating calories of flowing fluids, wherein it is possible to calibrate and integrate flow rate and calories of flowing fluids and to indicate difference in temperature of the fluids at points upstream and downstream of a thermal load by directly detecting the flow rate of the fluids, calculating uninterruptedly and in relation to the detected flow rate the removal of heat from the fluids through detecting mechanical variations proportional to said difference of temperature and directly transferring said variations onto an indicating means, and wherein it is also possible to

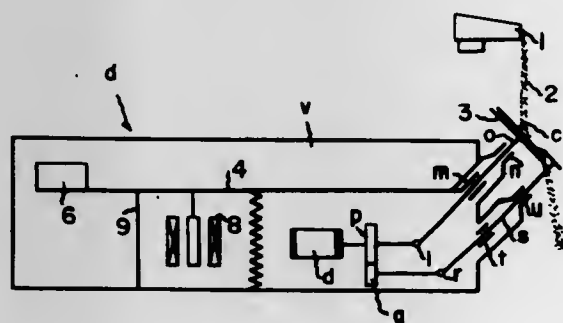
keep an output member constantly rotating in a fixed direction by changing a change-over mechanism provided in the apparatus, so as to make digital wheels rotate in a fixed direction to integrate calories either used for air-cooling or heating always in a positive number without the replacement of temperature detecting means and consequently to indicate whether the system is under air-cooling or heating.

3,613,448
FLUID FLOW MEASURING APPARATUS
James M. Benson and Edmond Easter, Hampton, Va., assignors to Teledyne, Inc., Los Angeles, Calif.
Filed Nov. 26, 1969, Ser. No. 880,237
Int. Cl. G01p 5/14
U.S. Cl. 73—205 R 9 Claims



Apparatus for measuring the flow of fluid through a main supply line which has a head element therein to develop a pressure drop. A shunt path having a restrictive element is provided to bridge the head element. The shunt path includes a thermal flowmeter comprising a conduit at least a portion of which is electrically and thermally conductive, the conductive portion having one or more thermoelectric devices positioned therealong. Heating current is passed through the conductive conduit portion, and the temperature gradient caused by fluid flow through the heated conduit is sensed by the thermoelectric devices to provide an indication of mass flow substantially independent of pressure and temperature. A source of purging fluid at high pressure is connected through bleed valves to the shunt path on opposite sides of the thermal flowmeter.

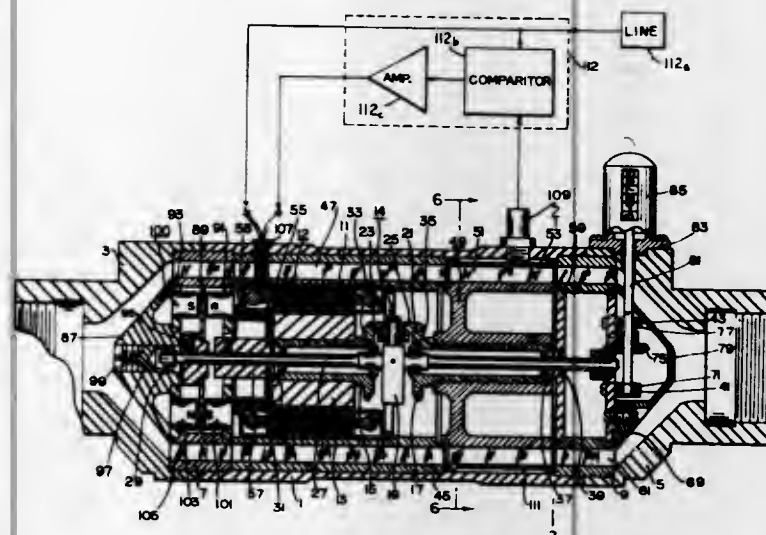
3,613,449
IMPACT FLOW METER FOR POWDERY AND GRANULAR MATERIALS
Tamihiko Soejima, 20-2 Nanan-cho, Showa-ku, Nagoya-shi, Japan; and Hiroshi Kajitara, 1-5, 2-chome, Higashinakano, Nakano-ku; and Kinnoyuke Watanabe, 22-8, 3-chome, Nishiochiai, Shinjuku-ku, both of Tokyo, Japan
Filed Aug. 28, 1968, Ser. No. 755,982
Int. Cl. G01f 1/00
U.S. Cl. 73—228 7 Claims



An impact flow meter for powdery and granular materials comprising an impact-receptive detecting plate for receiving a powdery or granular material dropped from a

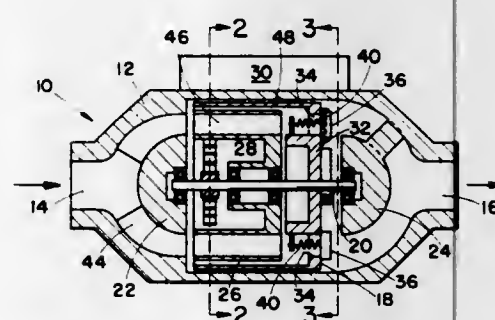
predetermined height and a wiper for keeping the plate clean and preventing deposition of the dropping material, said detecting plate and said wiper being arranged close to each other and made symmetrically operable with respect to each other.

3,613,450
FLUID MASS FLOWMETER
Philip K. Bodge, 45 Abbot St., Andover, Mass. 01810
Filed Apr. 2, 1968, Ser. No. 718,051
Int. Cl. G01f 1/10
U.S. Cl. 73—231 M 12 Claims



A fluid mass flowmeter of the angular momentum type utilizes a variable-speed servomotor to drive a fluid-accelerating impeller at a constant speed through a translating unit which causes the torque available at the servomotor to develop a constant-speed output while concurrently providing a variable-speed output the velocities of which are proportional to mass flowrate and the total excursions of which are proportional to mass quantity.

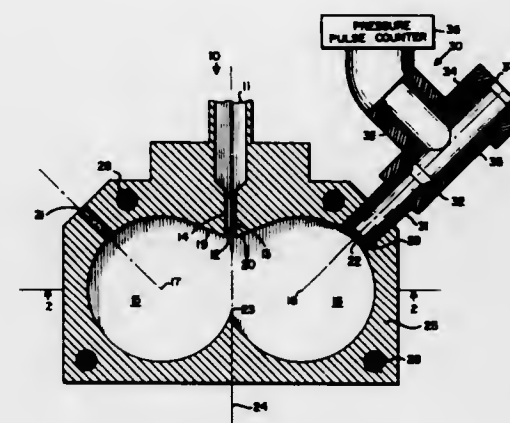
3,613,451
MASS FLOWMETER
Richey L. Scott, Davenport, Iowa, assignor to The Bendix Corporation
Filed Oct. 24, 1969, Ser. No. 869,152
Int. Cl. G01f 3/00; F04d 29/18
U.S. Cl. 73—231 M 3 Claims



A flowmeter which operates on a time-base angular-momentum principle to provide accurate time-mass gaging of fluid streams of varying density and viscosity. The flowmeter includes a rotatable drive turbine and a rotatable reaction turbine which is mechanically coupled to the drive turbine through a linear spiral spring which causes the reaction turbine to lag the drive turbine by a lag angle which when measured on a time-base produces a signal which is proportional to the mass flow rate of the fluid stream. The drive turbine includes a plurality of bypass

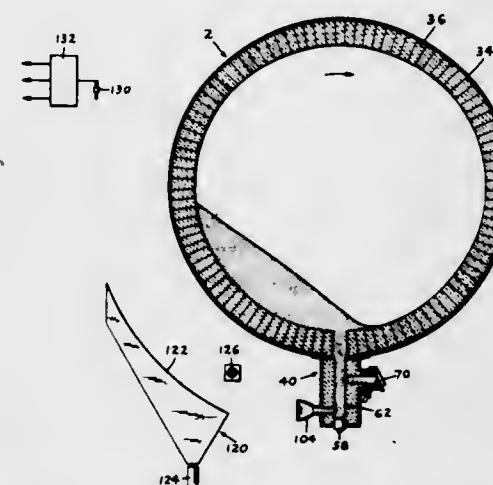
openings which permit flow of the fluid stream there-through and is provided with a plurality of variable angle turbine blades which are disposed adjacent the bypass openings to progressively permit increased flow through the bypass openings when the pressure drop across the drive turbine exceeds a predetermined value.

3,613,452
CONTROL APPARATUS
Edward G. Zoerb, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 30, 1965, Ser. No. 469,972
Int. Cl. G01k 11/22
U.S. Cl. 73—339 A 4 Claims



An improved temperature sensitive acoustical fluidic oscillator whose frequency of oscillation and response time depend upon a specially shaped chamber and a specially located exhaust passage together with a system for utilizing the fluidic oscillator output comprising apparatus for converting an oscillating fluid signal into an analog output signal.

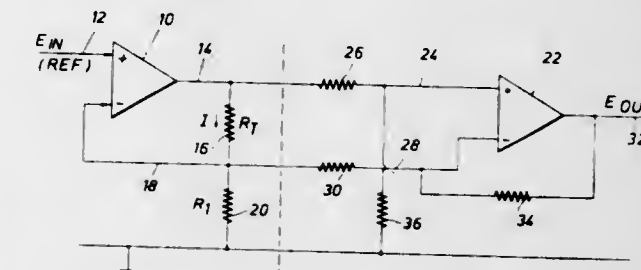
3,613,453
ROTARY KILN SAMPLING DEVICE
Kenneth R. Small and John F. Small, Dover, Pa., assignors to The J. E. Baker Company, York, Pa.
Filed Nov. 18, 1969, Ser. No. 877,699
Int. Cl. G01k 13/02, 13/12; G01n 1/02
U.S. Cl. 73—351 12 Claims



A method and apparatus for measuring the temperature and determining the treatment condition of material undergoing processing in a rotary kiln; the method comprising withdrawing a sample of material undergoing treatment from the rotary kiln, measuring the temperature of the sample, removing from the withdrawn sample a portion and analyzing the removed portion; the apparatus including a ceramic insulation lined sampling chamber

affixed to the outer shell of the kiln and having a first passageway in communication with the interior of the kiln, and closed at its opposite end, a second passageway at right angle to said first passageway open at one end into said first passageway, a cover over the opposite end of the second passageway, means for opening and closing the cover, means for measuring the temperature of a sample in the first passageway when the cover is open, a third passageway open at one end into the first passageway, a cover over the opposite end of the third passageway, means for opening and closing the cover on the third passageway and means for receiving a sample of material discharged from the third passageway when the third passageway cover is open.

3,613,454
PLATINUM RESISTANCE THERMOMETER CIRCUIT
Louis W. McFadin, Houston, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Mar. 16, 1970, Ser. No. 19,572
Int. Cl. G01k 7/20
U.S. Cl. 73—362 AR 1 Claim



A platinum wire resistor is exposed to a temperature to be measured. The voltage drop across the resistor is input to a differential amplifier. The platinum resistor is connected to ground through a sensing resistor. Variations in voltage across the sensing resistor drives the differential amplifier to maintain a constant current through the resistance thermometer and the sensing resistor. A second differential amplifier connected across the resistive thermometer forms an output signal which is related to the temperature of the sensor and hence, proportional to the measured temperature.

3,613,455
FLUTED TRANSDUCER PRESSURE SENSING MEMBER
Russell E. Hightower, Albuquerque, N. Mex., and Charles B. Aufl, deceased, late of Albuquerque, N. Mex., by Paula J. Watkins, executrix, Albuquerque, N. Mex., assignors to Sparton Corporation, Jackson, Mich.
Original application Aug. 19, 1968, Ser. No. 753,791, now Patent No. 3,501,960, dated Mar. 24, 1970. Divided and this application Dec. 8, 1969, Ser. No. 882,965
Int. Cl. G01l 7/04
U.S. Cl. 73—418 2 Claims



The invention pertains to a fluted pressure sensing member utilized with a pressure transducer wherein the pressure sensing member is of a tubular configuration and

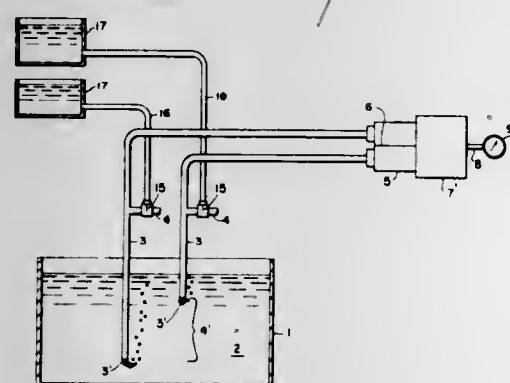
includes spirally formed flutes wherein a pressure differential acting upon either the interior or exterior wall of the sensing member causes a twisting and angular deflection of the member about its longitudinal axis proportional to the pressure differential. The flutes are formed in the member by a deformation of the member materials, usually inwardly, rather than the flutes being formed by the twisting of a noncircular tubular blank as is known.

3,613,456

BUBBLER METHOD AND APPARATUS
Dieter H. Hopfe and William P. Wilson, Sr., Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed July 25, 1969, Ser. No. 844,781
Int. Cl. G01f 23/14; G01n 9/28

U.S. Cl. 73-439

2 Claims



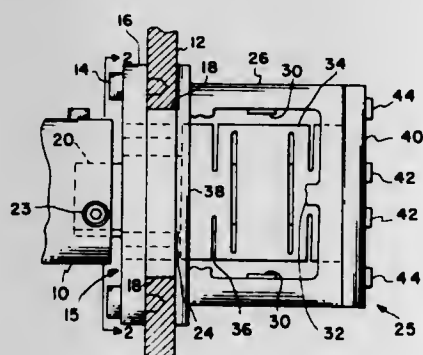
Differential bubbler method and apparatus for determining the specific gravity or density of a liquid using a humidified operating gas to prevent deposition of solids in the bubbler pipes.

3,613,457

ISOLATION COUPLING ARRANGEMENT FOR A TORQUE MEASURING SYSTEM
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Lawrence P. Davis, James E. Crutcher, and Jerald H. Weidenhamer, all of Phoenix, Ariz.
Filed Nov. 29, 1969, Ser. No. 880,249
Int. Cl. G01l 3/10; G01c 19/00

U.S. Cl. 73-133

7 Claims



A coupling arrangement for isolating the torque loads from axial, radial, and bending loads in a load path having a torque measuring transducer therein so as to eliminate errors in torque measurement resulting from their imposition on the transducer, while retaining substantial support for these loads. This is attained by the use of a pair of flexures connected in parallel in the load path which have complementary load bearing characteristics, a first one compliant to radial, axial, and bending loads and rigid under torque, the second having opposite characteristics, with the transducer measuring the torque carried by the first flexure.

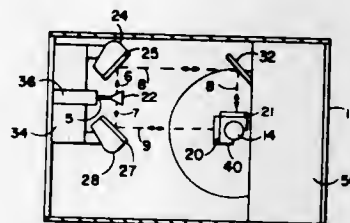
3,613,458

LASER PICKOFF FOR STRAPDOWN GYROSCOPIC ACCELEROMETER

James V. Johnston and Guilford J. Hutcheson, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Jan. 8, 1970, Ser. No. 1,479
Int. Cl. G01p 15/08

U.S. Cl. 73-504

6 Claims



The shaft of a strapdown gyroscope rotor is attached at one end to the housing of an accelerometer. The other end of the shaft has a pair of fully reflective mirrors orthogonally carried thereon. The other end of the shaft is free to move. A laser and beam splitter is mounted to split the beam into two optical paths. A detector with a partially reflective mirror at its input is positioned in each optical path. Each detector responds to Doppler shift of the beam reflected back from the fully reflective mirror.

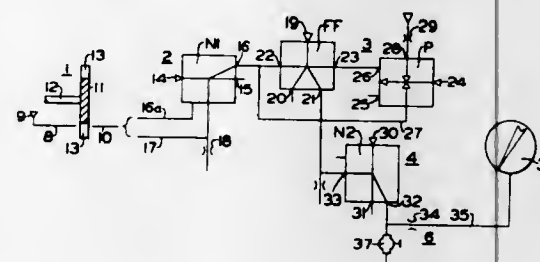
3,613,459

FLUIDIC SPEEDOMETER

Ronald A. Sarbach, Columbus, Ohio, assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed June 3, 1968, Ser. No. 734,073
Int. Cl. G01p 3/26

U.S. Cl. 73-506

5 Claims



A fluidic speedometer in which a pulse generator produces fluid pressure input pulses in square wave form varying in frequency in accordance with the speed of a given member, which pulses are reinforced and differentiated by interconnected pure fluid devices to produce pulses of short uniform duration corresponding to the frequency of the pulses produced by the pulse generator, which short duration pulses of uniform length are integrated by a choke means and a volume to provide to a gauge an analog pressure having an amplitude proportional to the frequency of the square wave input pulses initiated at the pulse generator.

3,613,460

ONE WAY CLUTCH FOR GOVERNORS

James T. Hammond, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 2, 1969, Ser. No. 863,124
Int. Cl. G05d 13/16

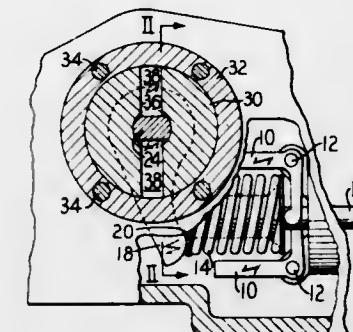
U.S. Cl. 73-543

3 Claims

A one way clutch which permits a governor spring to be tensioned upon rotation of a shaft in the governor control linkage but prevents movement of the control linkage by energy stored in the governor spring, the shaft in the control linkage has a disc at its end with a diametrically disposed groove, a second and coaxial shaft has a flat end which extends across said groove. The disc is within

an annular drum and shoes in the grooves extend between the drum and the flat end of the shaft. When the governor control linkage is actuated to rotate the discs, the shoes

the power take-off for an implement and which is supported for rotation on a pivotally mounted countershaft; the pivotally mounted countershaft is loaded in the direction of the belt drive for rotation around its pivot to tension the belt-engagement around the pulleys and is



impart rotation to the flat end but when the governor spring tends to rotate the flat end, it urges the shoes outwardly into braking contact with the drum.

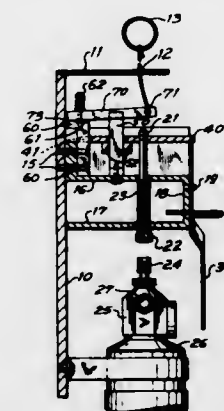
3,613,461

CAM LOCKED RELEASE MECHANISM

Roger R. Cholin, Old Stone Hill Road, R.D. 2, Pound Ridge, N.Y. 10576, and Kenneth E. Guest, 43 Bainbridge Ave., Thornwood, N.Y. 10594
Filed Jan. 27, 1970, Ser. No. 6,079
Int. Cl. G05g 17/00; A62c 37/26

U.S. Cl. 74-2

3 Claims



This invention relates to a spring loaded cam locked release mechanism used for fire extinguishers. The mechanism comprises a spring loaded cam plate having an actuating bolt fixed thereto and adapted to unseat a valve on a fire extinguisher; a release bar having a stud on the top thereof for abutment and a pair of spaced-apart integral inclined slope cams therebelow upon which slopes said cam plate rests when in cocked position; a guide plate disposed in a co-acting channel in said cam plate for holding said cam plate in horizontal position at all times during vertical movement thereof; and a cable retainer bar secured swingably to a tensioned steel cable having a fusible link and also secured loosely to a hand pull cable for vertical movement of said cable retainer over said stud of said release whereby movement of said cable retainer effects release of said release bar to permit said cam plate to move downwardly under spring pressure on said cam slopes thereby allowing said actuating bolt to strike a release pin to unseat the valve on a fire extinguisher.

3,613,462

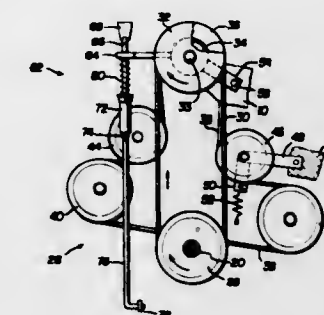
DRIVE BELT ASSEMBLY FOR TRACTOR MOUNTED IMPLEMENT

Paul H. Stibbe, Neenah, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed June 10, 1970, Ser. No. 44,916
Int. Cl. F16h 37/02, 7/10

U.S. Cl. 74-15.4

11 Claims

A PTO belt drive assembly includes an engine driven pulley which drives a twin pulley assembly comprising



provided with a release and clutch linkage arrangement to pivot the countershaft carrying the twin PTO drive pulleys in the opposite direction of the belt drive to thereby disengage the twin PTO pulleys from the engine drive.

3,613,463

DEVICE FOR PROVIDING MECHANICAL TRANSMISSION THROUGH THE WALL OF AN ENCLOSURE

Michel Midy, Pavillon-sous-Bois, France, assignor to MECI-Materiel Electrique de Controle et Industriel, Paris, France
Filed Dec. 17, 1969, Ser. No. 885,945
Claims priority, application France, Dec. 30, 1968, 182,274
Int. Cl. F16j 15/50

U.S. Cl. 74-18.1

8 Claims



A device providing mechanical transmission through the wall of an enclosure, comprising a passage in the wall the inner end of which passage terminates at a reduced diameter circular lip which encircles with substantially line contact a transmission rod which extends through the passage and is capable of tilting therein, and a resilient sealing member disposed and retained against the inner surface of the enclosure wall around the rod to seal the passage.

3,613,464

APPARATUS FOR ORIENTING BEAM DIRECTING OR VIEWING APPARATUS

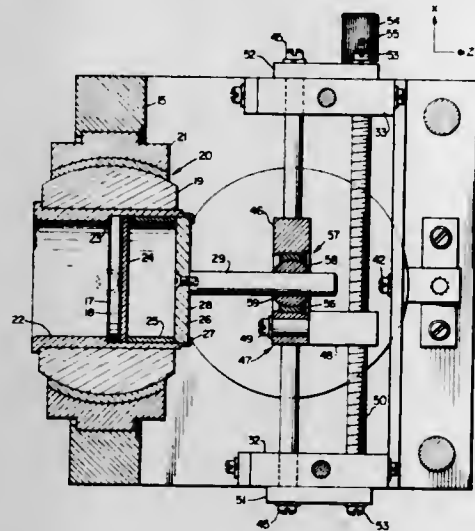
Robert L. Archer, 17 Wren Drive, Woodbury, N.Y. 11797
Filed Oct. 2, 1969, Ser. No. 863,277
Int. Cl. F16c 1/00; F16h 27/02

U.S. Cl. 74-89.15

11 Claims

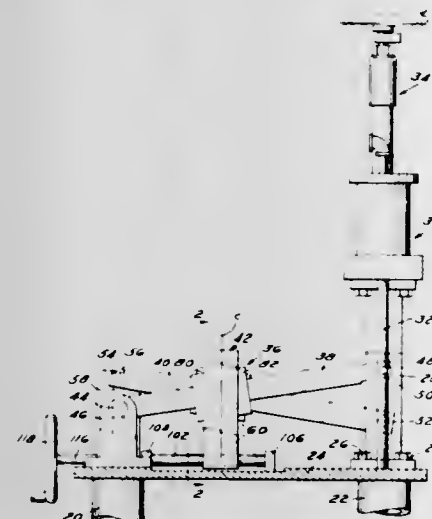
Apparatus for orienting a beam directing or viewing device having means for rotatably mounting the sensitive element of the device at the geometrical center of a

spherical bearing. One end of a linkage arm is directly or indirectly connected to the device and the other end is then coupled to a mechanism which limits its motion to translation along either of two mutually orthogonal ref-



erence axes. Translation along either one of the two reference axes will cause the sensitive element to be rotated about the corresponding orthogonal axis without cross-coupling therebetween.

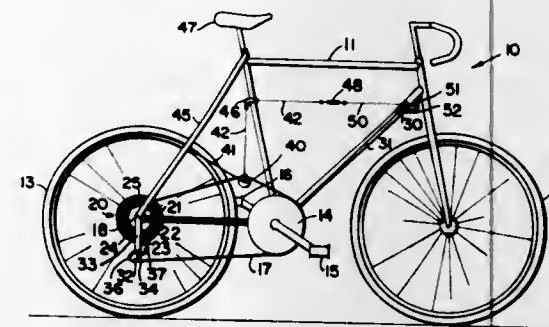
3,613,465
RATIO LINKAGE ASSEMBLY
Fred M. Wood, Orchard Lake, Mich., assignor to Pyles Industries, Inc., Wixom, Mich.
Filed Dec. 9, 1969, Ser. No. 883,569
Int. Cl. F16h 21/44
U.S. Cl. 74—110 4 Claims



A linkage assembly for driving a pair of reciprocable elements conjointly, including means for selectively varying the stroke ratio between the elements, comprising two lever arms each connected at one end to a respective reciprocable element and at the other end to a support, mechanism coupling the lever arms together for swivable movement about a common vertically slidable pivot while permitting slight longitudinal shifting between the arms, and motor means connected to one of the arms and operable to swing the arms to reciprocate the elements.

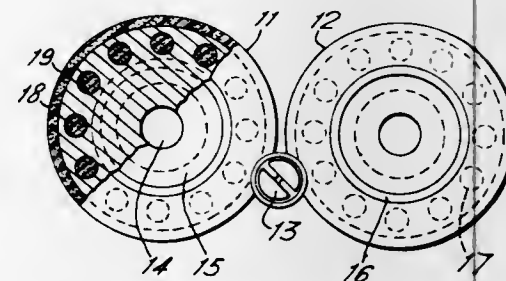
3,613,466
AUTOMATIC GEARSHIFT FOR BICYCLE
George F. Houghton, 650 Geronia Road, Stanford, Calif. 94305
Filed June 22, 1970, Ser. No. 48,012
Int. Cl. F16h 9/00, 11/06
U.S. Cl. 74—217 B 12 Claims
A bicycle having a manually operated gearshift is converted to an automatic shift dependent upon the pedal

pressure used to propel the bicycle. The drive chain engages a special shift-control wheel which is attached to a first cable that goes to the frame and to a second cable that goes up vertically, then turns horizontally, and is attached, preferably through a turnbuckle, to the manual gearshift lever. Also attached to this gearshift lever is a spring which is anchored to the frame forward of the gearshift lever. The pedal pressure exerted through the



drive chain tends to pull the special shift-control wheel down and to pull the shift lever back; this pressure is opposed by the spring attached to the gearshift lever, which tends to pull the shift-control wheel up and to pull the shift lever forward. Thus the amount of effort needed to move the drive chain acts to vary the position of the gearshift lever. The gearshift lever operating through its usual shift mechanism, such as a typical derailleur, does the actual shifting of the gears.

3,613,467
TEXTILE APPARATUS
Harold William Lee, Poynton, England, assignor to Ernest Scragg & Sons Limited
Filed Dec. 11, 1969, Ser. No. 884,180
Claims priority, application Great Britain, Dec. 12, 1968, 59,115/68
Int. Cl. F16h 55/34; D01h 7/46, 7/92
U.S. Cl. 74—215 15 Claims



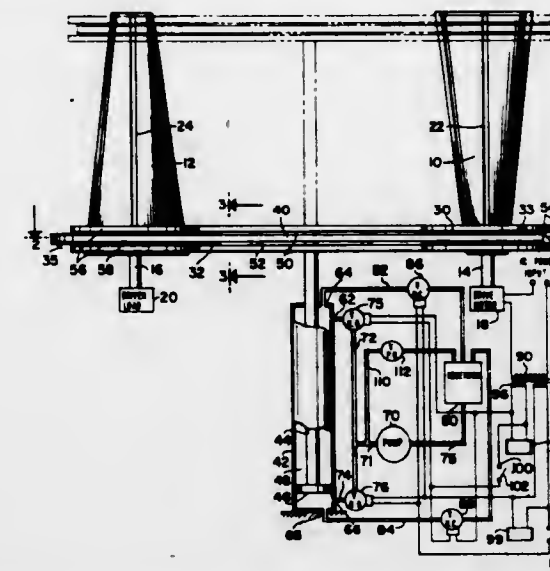
A roller for driving a false twist spindle has a rigid core surrounded by a coating of moldable material which is reinforced by high-tenacity material in whisker form.

3,613,468
CONTINUOUSLY VARIABLE TRANSMISSION SYSTEM EMPLOYING SEGMENTED PULLEYS
Sydney Rand, G.P.O. 2034, San Juan, Puerto Rico 00936
Filed July 22, 1970, Ser. No. 57,173
Int. Cl. F16h 9/16
U.S. Cl. 74—217 CV 10 Claims

A mechanical transmission system includes axially parallel conical members on which are longitudinally slidable pulley segments constituting composite pulleys drivingly engaged by one or more drive belts. Simultaneous movement of the pulley segments and belt changes the ratio of pulley diameters as the pulley segments move longitudinally and radially of the conical members. Means for shifting the pulley segments and belt simultaneously is provided. A drive motor and driven load can be coupled to the conical members. Control means responsive

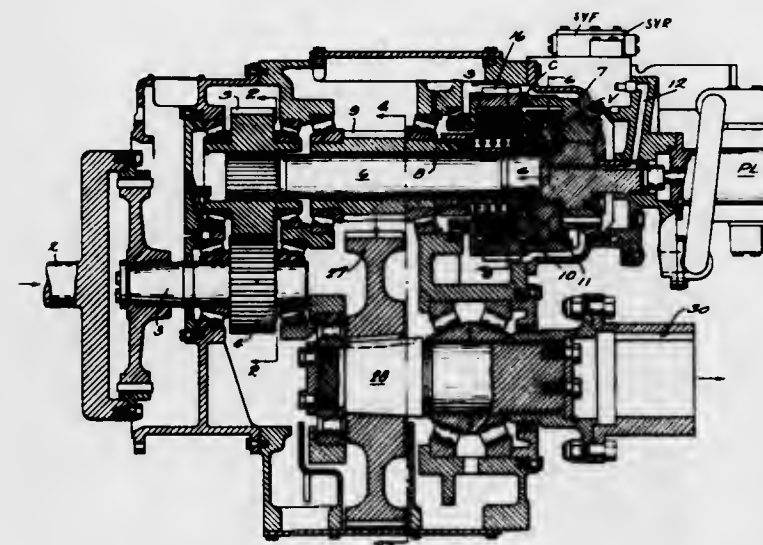
to the magnitude of power drawn by the drive motor in response to change in the load automatically actuates the

using a gear train, time-functional rotation speed change of the latter within one rotation cycle of the former is attained by insertion into the gear train of a combination



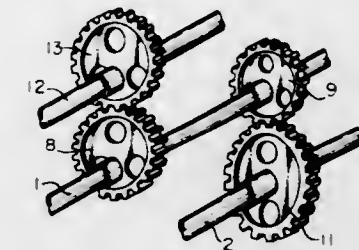
shifting means to position the pulley segments for setting an optimum ratio of pulley diameters.

3,613,469
POWER TRANSMISSION OF THE HYDRAULICALLY ACTUATED, FRICTION CLUTCH TYPE
Richard C. McRoberts and Bruce C. Arnold, Racine, Wis., assignors to Twin Disc, Incorporated, Racine, Wis.
Filed Apr. 29, 1970, Ser. No. 32,914
Int. Cl. F16h 3/08, 3/14
U.S. Cl. 74—361 15 Claims



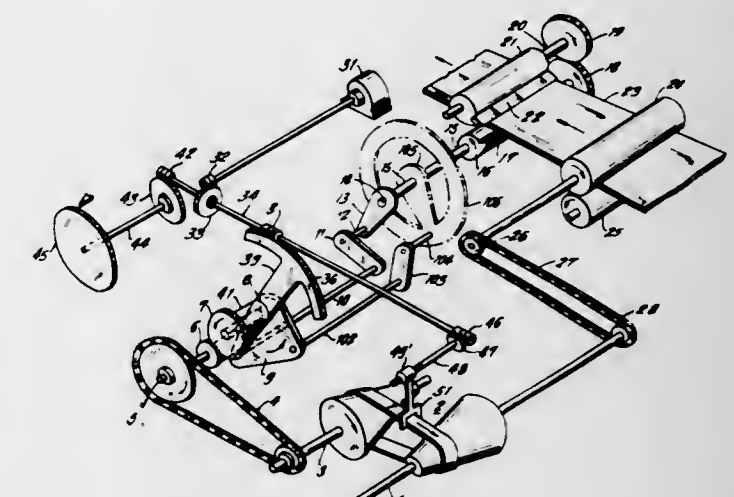
A power transmission including forward and reverse shafts each having a hydraulically actuated clutch which is controlled by a centrifugal valve. The transmission finds particular utility in regulating the speed, rotational direction, and power delivered to the propulsion drive in a marine vessel.

3,613,470
GEAR TRANSMISSION MECHANISM OF A WEAVING LOOM
Kazuyuki Arakawa, Kanazawa-shi, Japan, assignor to Tsudakoma Industrial Co., Ltd., Kanazawa-shi, Ishikawa-ken, Japan
Filed Aug. 22, 1969, Ser. No. 852,335
Claims priority, application Japan, Sept. 7, 1968, 43/77,339
Int. Cl. F16h 35/02
U.S. Cl. 74—393 2 Claims
In a transmission of rotation from a driving shaft of constant rotation to a driven shaft on a weaving loom



of gears of elliptical pitch circles, a combination of gears eccentrically mounted on the shafts, or a combination of elliptically profiled gears with eccentrically mounted gears.

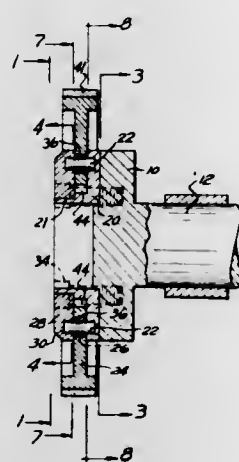
3,613,471
COUNTERBALANCING MEANS FOR CUTOFF KNIVES
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,486
Int. Cl. B23d 25/02; F16h 35/02
U.S. Cl. 74—393 15 Claims



A kinematic or quadric chain type adjustable speed knife driving mechanism is provided with a counterbalancing means freely rotated on the shaft which directly drives the knife bars. The drive arms or links for the knife bars and the counterbalancing means are driven at speeds which vary cyclically within each revolution of the knife bar, with the arm driving the counterbalancing link arranged to push the counterbalance while the arm driving the knife bars is arranged to pull the knife crank. The driving pins connecting the counterbalance and knife crank to the input power source are spaced apart by an angular distance in the order of 60-90 degrees, with the pin for the counterbalance drive arm leading the pin for the knife bar drive arm.

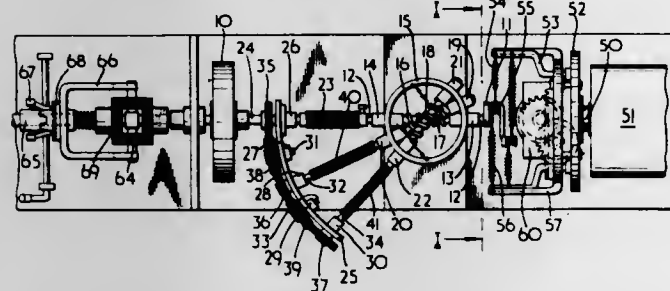
3,613,472
HONING GEAR ASSEMBLY
Gerhard R. Held, 22644 Shell Drive, Mount Clemens, Mich. 48043
Filed Aug. 12, 1970, Ser. No. 63,121
Int. Cl. F16h 55/12; B24b 41/00; B24d 5/00
U.S. Cl. 74—411 3 Claims
A honing gear assembly comprising a backing plate, a gear plate, and a cover plate, all bolted together, and mounted on a drive spindle hub, with pin and bushing

connections between the backing plate and the gear plate, with the pins of such connections being received in blind sockets of the cover plate, with the holes of the gear plate



being lined with shock absorbing bushings for absorbing shocks transmitted for the gear plate to the backing plate and thus to the drive spindle hub.

3,613,473
UNIDIRECTIONAL DRIVE ELEMENT
Roy Cyril Vaughan, Dublin, Ireland, assignor of a fractional part interest to Alan Salisbury Lamburn, Gloucestershire, England
Filed Nov. 20, 1969, Ser. No. 878,296
Claims priority, application Great Britain, Nov. 30, 1968, 56,952/68
Int. Cl. F16h 1/08, 27/04, 57/00
U.S. Cl. 74—424.5 7 Claims

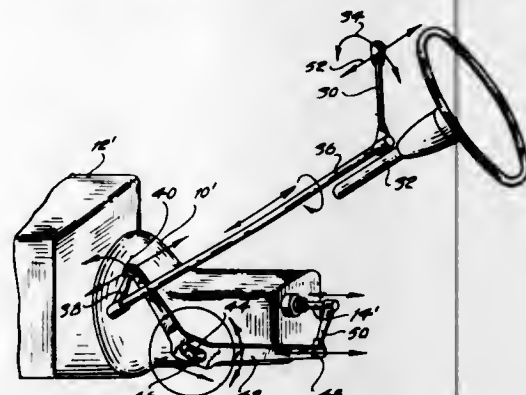


A unidirectional drive element, such as a free-wheel, includes a pair of meshing toothed members, for example worm gears of the same hand, and bias means urge the teeth of the gears together in one direction so that they jam when an attempt is made to rotate one gear in such a direction that its teeth move towards the contacting teeth of the other gear, but the bias means prevents the flanks on the opposite sides of the teeth from contacting so that they do not jam in the opposite direction of rotation.

3,613,474
TRANSMISSION RATIO CONTROL LINKAGE MECHANISM
Paul Baumgardt, Sao Paulo, Brazil, assignor to Ford Motor Company, Dearborn, Mich.
Filed July 17, 1970, Ser. No. 55,802
Int. Cl. G05g 9/18 8 Claims

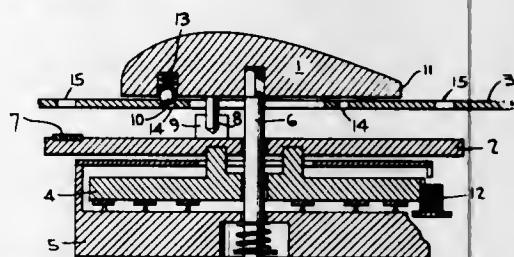
A transmission ratio control linkage mechanism for an automotive vehicle comprising a gearshift lever mounted for rotation and for reciprocation on the vehicle's steering column, a control lever mounted for oscillation about a movable axis whereby angular motion as well as transitory motion is permitted, a motion transmitting con-

nection between the gearshift lever and one end of the control lever and another motion transmitting connection between the other end of said control lever and a ratio controlling element of the transmission mechanism.



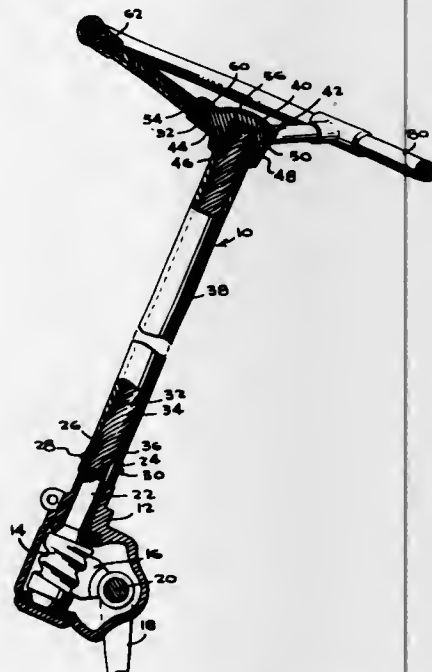
tion between the other end of said control lever and a ratio controlling element of the transmission mechanism.

3,613,475
DEVICE FOR THE PRESELECTION OF A PROGRAM
Walter Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland
Filed Feb. 12, 1970, Ser. No. 10,958
Claims priority, application Germany, Feb. 15, 1969, P 19 07 725.9
Int. Cl. H01h 43/14; G05g 1/00
U.S. Cl. 74—491 3 Claims



This invention relates to a device for the preselection of a program and for the recording of the flow of said program of automatic cycle mechanisms, especially for the use in washing machines and dishwashers.

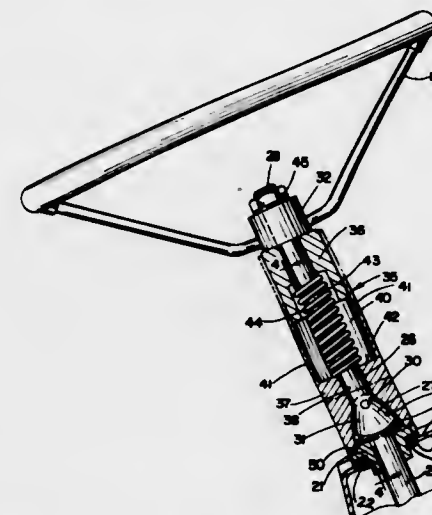
3,613,476
STEERING COLUMN ASSEMBLIES
Isalah V. Cunningham, P.O. Box 9837, South Charleston, W. Va. 25303
Continuation-in-part of application Ser. No. 818,248, Apr. 22, 1969. This application Aug. 24, 1970, Ser. No. 66,433
Int. Cl. B62d 1/18
U.S. Cl. 74—492 3 Claims



Steering assemblies comprise columns, wheels and spokes, for motor vehicles or the like and are constructed

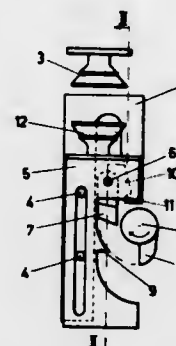
principally from heavy wire or cable which is flexible upon impact to prevent injuries. The assembly components are coated with plastic.

3,613,477
WEDGE-LOCK COLLAPSIBLE STEERING COLUMN
Robert H. Heise, Glen Ellyn, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 6, 1970, Ser. No. 52,276
Int. Cl. B62d 1/18 14 Claims



A steering column adaptable for use as a component of a steering assembly for riding mowers, the column including a pair of shafts having adjacent ends hingedly connected by a mating clevis arrangement and telescoping collars one of which fits around the clevis arrangement and is operative to tightly wedge the shafts in axial alignment with the each other.

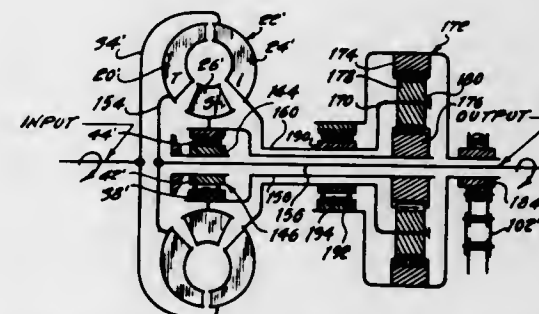
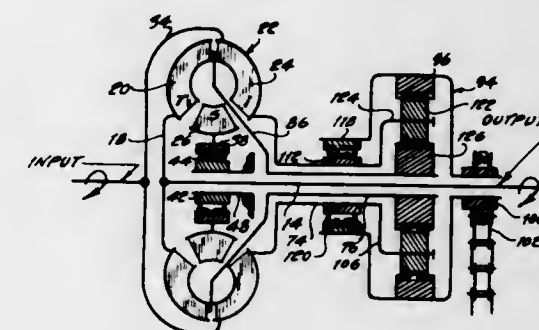
3,613,478
APPARATUS FOR TEMPORARILY LOCKING A SPINDLE, PARTICULARLY IN A HAND TOWEL DISPENSER
Holger O. Rasmussen, Kilchberg, Switzerland, assignor to CWS Apparate AG, Zurich, Switzerland
Filed June 10, 1970, Ser. No. 45,021
Claims priority, application Switzerland, June 24, 1969, 9,632/69
Int. Cl. G05g 5/00 5 Claims



There is disclosed an arrangement for temporarily locking a spindle, particularly in a hand towel dispenser, after two or more complete revolutions for a period of time determined by a suction cup held by suction against a counter element. The suction cup is carried on a movable member and it cooperates with the counter element when the movable member is in an end position in which it stops the spindle. During a first revolution of the spindle a cam piece connected to the spindle engages a first abutment on said member for moving the latter from a starting position into an intermediate position in which it is retained by a pawl mechanism. During at least one succeeding

revolution of the spindle said cam piece engages at least one further abutment on said member for moving it into further intermediate positions and finally into its end position. Limiting means may be provided for selectively preventing complete restoration of said member to its starting position so that the spindle is then locked after fewer than a maximum number of resolutions.

3,613,479
HYDROKINETIC TRANSMISSION AND ACCESSORY DRIVE
Karl J. Borneman, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 6, 1970, Ser. No. 52,233
Int. Cl. F16h 47/00, 47/08 7 Claims

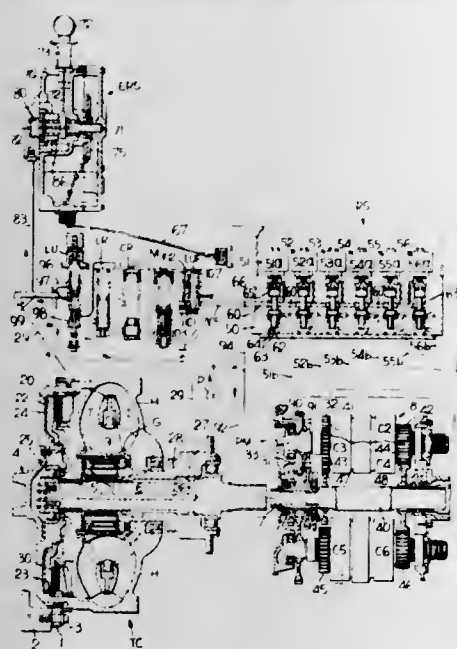


A hydrokinetic power transmission mechanism for an automotive vehicle including an accessory drive for powering engine driven accessories, said accessory drive having an input member connected to one member of the hydrokinetic unit in the transmission mechanism and a reaction member connected to another member of the hydrokinetic unit whereby the ratio of the driven speed of the accessory drive to the speed of the power input member for the accessory drive is decreased when the hydrokinetic unit approaches a coupling condition.

3,613,480
POWER TRANSMISSION HAVING DOWNSHIFT INHIBITOR
Bradford K. Skull, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed July 13, 1970, Ser. No. 54,316
Int. Cl. F16h 3/44, 33/00, 67/00 6 Claims

A transmission of the type having a torque converter that can be engaged in direct drive through a direct drive clutch whenever the speed of the engine is at a rated speed, and in which the transmission should not be downshifted if it is operating at too fast a speed because of possible damage to the engine and transmission. A downshift inhibitor is provided for such a transmission and includes a fluid actuated brake and a one-way clutch connected with the speed selector shifting lever whereby the lever can be shifted in the upshift direction but the brake retards the lever against downshifting when the transmission is operating over a predetermined speed. The fluid brake on the downshift inhibitor is actuated by the same fluid pressure that actuates the direct drive clutch. Thus,

the downshift inhibitor includes a one-way clutch and a fluid brake that work together automatically to indicate



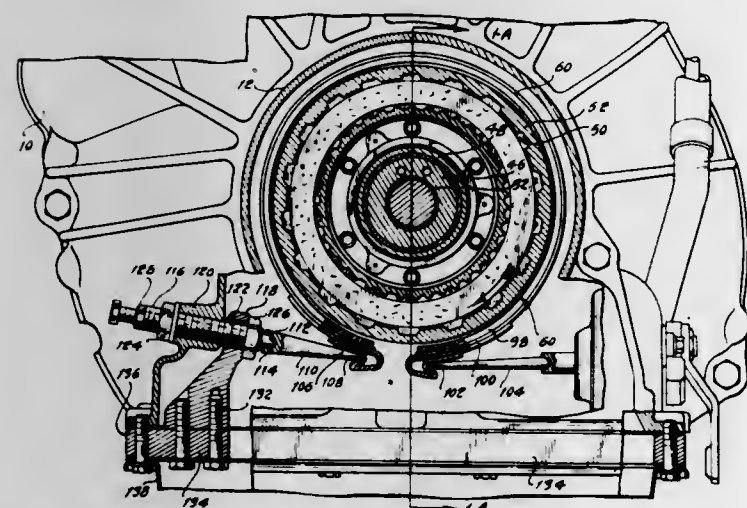
to the operator of the vehicle when it is unsafe to downshift.

3,613,481
REINFORCED CASE FOR AN AUTOMATIC TRANSMISSION

Charles W. Lapinski, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 24, 1969, Ser. No. 879,468
Int. Cl. F16d 65/06; F16h 57/08

U.S. Cl. 74-753

2 Claims



A case for an automatic power transmission in an automotive vehicle driveline, said transmission including a reaction brake band for selectively anchoring a torque reaction gear element in the transmission, a stiffener plate secured to the base of the transmission, a reaction shoulder bolted to said torque reaction plate and means for transferring torque reaction from the brake band to the case through the stiffener plate thereby avoiding flexure of the case.

3,613,482
FORWARD-REVERSE SELECTOR WITH STARTER SWITCH

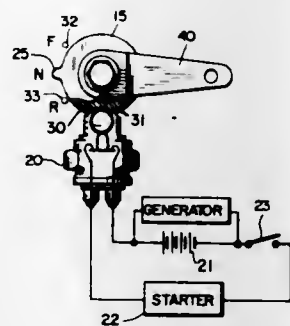
Carl Ivar Benson, Jr., Westwood, and James Rapoza, Fall River, Mass., assignors to Paragon Gears, Incorporated, Taunton, Mass.
Filed Mar. 27, 1970, Ser. No. 23,168
Int. Cl. F02d 11/00

U.S. Cl. 74-850

1 Claim

A system is provided for preventing the starting of a marine engine when the transmission control means is in any position other than neutral. A series electrical

circuit is provided which includes a power source (battery), a neutral start switch operatively associated with



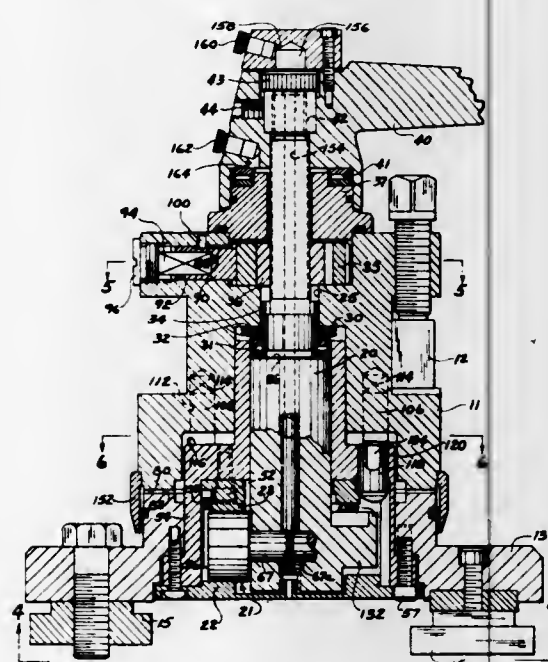
the transmission control means, the ignition switch in the boat control panel, and a starter.

3,613,483
SQUARE TURRET INDEXING MECHANISM

Frank A. Cinadr, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Apr. 13, 1970, Ser. No. 27,934
Int. Cl. B23b 29/32

U.S. Cl. 74-824

10 Claims



An improved turret indexing mechanism for selectively rotating an indexible turret to bring tools held thereby into an operative relation with a workpiece includes a Curvic coupling for locking the turret in a selected angular position. A central shaft member operatively associated with the turret and having a cam follower affixed thereto which is rotatable with the central shaft, and a cam track in which the cam follower rotates and which effects axial movement of the central shaft and the turret associated therewith upon movement of the cam follower through the cam track. Rotation of the central shaft in one direction raises the turret to disengage the teeth of the Curvic coupling and indexes the turret. Rotation of the central shaft in the opposite direction lowers the turret and engages the teeth of the Curvic coupling to thereby lock the turret in a selected position. The indexing mechanism also includes stop means which normally limit the rotation of the turret so that the turret may only be rotated to its next operative position. This construction enables the turret to be rapidly and efficiently unlocked, automatically indexed to a new position, and then locked in the new position with a sufficient force so that inadvertent rotation of the turret out of the new position will not occur due to vibration of the turret.

3,613,484
RATIO SHIFT TIMING VALVES FOR USE IN A CONTROL SYSTEM FOR A MULTIPLE RATIO AUTOMATIC POWER TRANSMISSION MECHANISM

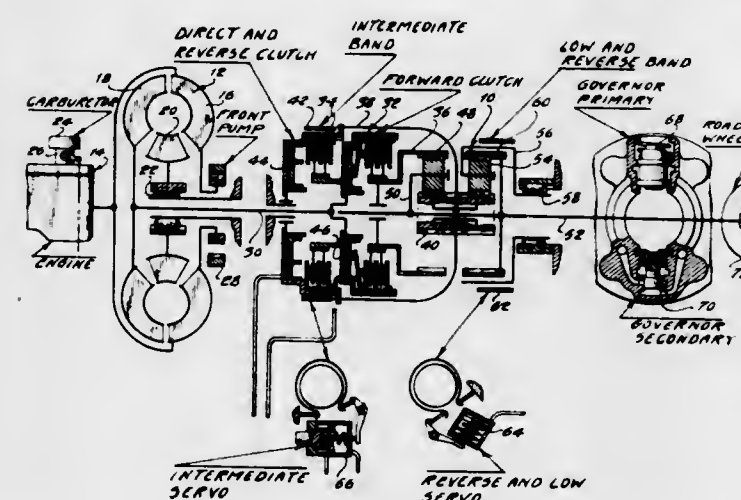
Stanley L. Pierce, Birmingham, and William C. Winn, Inkster, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1969, Ser. No. 883,061

Int. Cl. B60k 21/10

U.S. Cl. 74-869

10 Claims

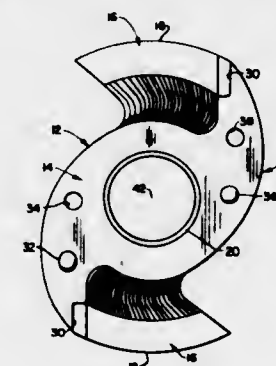


A control valve system for controlling ratio shifts in a multiple ratio power transmission mechanism in an automotive vehicle driveline having fluid pressure operated clutch and brake servos for controlling ratio shifts, said system comprising a valve assembly for controlling the rate of engagement of one servo during a ratio change from the lowest speed ratio to an intermediate speed ratio and for controlling the clutch and brake engagement and release pattern when a down shift from the high speed ratio to an intermediate speed ratio occurs in response to increased torque demand at low vehicle speeds, and a separate valve assembly for controlling corresponding torque demand downshifts when the vehicle is operated in a relatively high speed range.

3,613,485
METHOD OF FABRICATING A CUTTER
Hubert K. Kelly, Clay, Thomas J. McDonnell, Syracuse, and Richard C. Lamkin, Skaneateles, N.Y., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Original application Aug. 1, 1967, Ser. No. 657,647, now Patent No. 3,491,422, dated Jan. 27, 1970. Divided and this application Aug. 12, 1969, Ser. No. 862,574
Int. Cl. B21k 21/00

U.S. Cl. 76-101 A

4 Claims

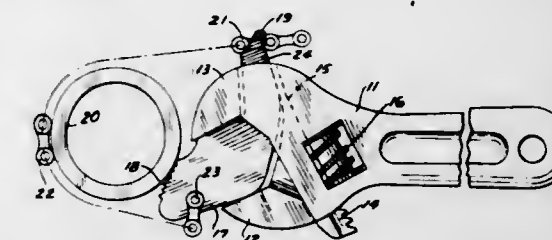


A cutter head including a laminate of platelike elements joined into a unitary structure. The elements define a continuous cutting edge extending the length of the cutter or a similarly dimensioned seat for a separate cutting edge member. An element locating and positioning arrangement angularly indexes each element relative to the element or elements thereadjacent to provide a cutting edge or seat of specified configuration.

3,613,486
PIPE WRENCH ADAPTER
William C. Chapman, 6061 Brighton Road, Brighton, Mich. 48116
Filed Jan. 2, 1970, Ser. No. 286
Int. Cl. B25b 13/52, 13/58

U.S. Cl. 81-180

2 Claims

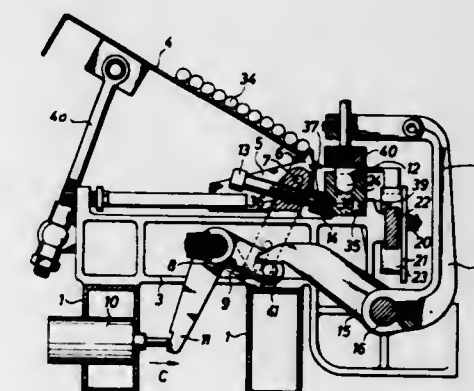


This application discloses a device for making a conventional, adjustable, open end wrench into a pipe wrench. The invention resides in the particular combination and arrangement of elements and particularly in a flat plate like element having serrations at one end, and a curved lip at the other end, which device is designed to be received in the slotted end of a conventional open end wrench, so that the wrench may be converted into a pipe wrench with the addition of a conventional sprocket chain. The invention device is also provided with means whereby it may be used with a ratchet wrench, or a socket wrench as well as a conventional open end wrench.

3,613,487
FEEDING APPARATUS FOR ROD STOCK FOR A MACHINE TOOL
Johannes Werkmeister, Reichenbach (Fils), and Holger Scheler, Faurndau, Germany, assignors to Firma Traub Vertriebsgesellschaft mbH, Reichenbach (Fils), Germany
Filed Mar. 3, 1969, Ser. No. 803,614
Int. Cl. B23b 13/00

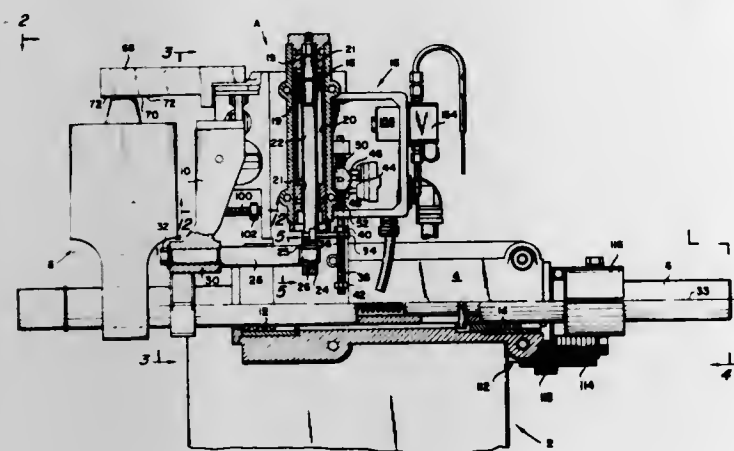
U.S. Cl. 82-2.7

8 Claims



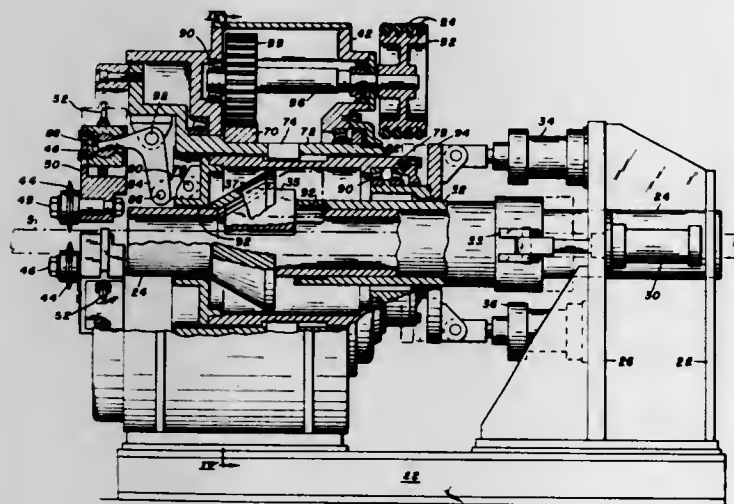
An apparatus for feeding rods of different diameters in their axial direction to a machine tool, for example, to an automatic lathe by sliding the rods of one diameter by means of a feed rod along a feed channel in a guide rail which is clamped in a fixed position to parts of the stationary frame of the apparatus, but may be easily and quickly removed therefrom to be replaced by a similar guide rail with a feed channel for rods of a different diameter. The feed channel is open at its upper side which is normally covered by a cover bar which may be pivoted off this side to permit another rod of the same diameter to be inserted into the empty feed channel after the previous rod has been consumed and the feed rod has been withdrawn from the channel. The feed rod and the means for moving and guiding it may be adjusted to different levels in accordance with the width of the feed channel and the diameter of the rods to be fed.

3,613,488
AUTOMATIC POSITIONING DEVICE FOR A LATHE
THREADING ATTACHMENT
 Hubert J. Parsons, Horseheads; Francis D. Catlin, Horseheads, and James Cordier, Erin, all of N.Y., assignors to Hardinge Brothers Inc., Elmira, N.Y.
 Filed Sept. 3, 1969, Ser. No. 854,908
 Int. Cl. B23b 5/46
 U.S. Cl. 82—5.5 17 Claims



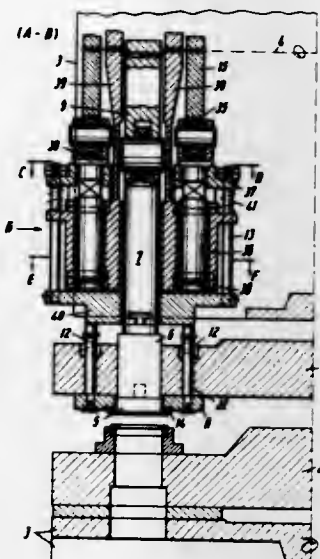
A device for automatically positioning a threading attachment for a lathe having a spindle including a lead screw mounted on said spindle; a rotatable bar mounted on said lathe and extending parallel to the spindle; a follower connected with the bar and movable into mesh with the lead screw for imparting lengthwise motion to the bar; a head secured to the bar; a cutting tool mounted on the head; an arm secured to the bar; a bearing supported means on the lathe for supporting the bar; the arm, bar, and head each having operative and inoperative positions; power means connecting the bearing support means to the arm for rotating the arm, bar and head about the axis of the bar between the operative and inoperative positions, and means for actuating the power means.

3,613,489
METHOD AND APPARATUS FOR SEVERING TUBES
 Erasmus A. Randich, Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
 Filed Aug. 4, 1969, Ser. No. 854,349
 Int. Cl. B23b 3/04, 1/00
 U.S. Cl. 82—70.2 11 Claims



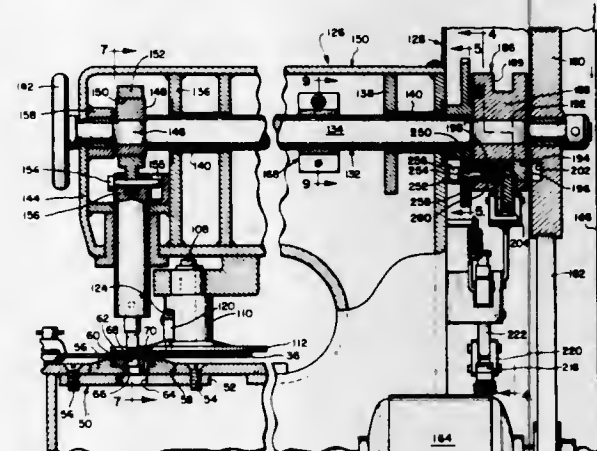
The application describes a method and apparatus for accurately severing tubes and pipes, preferably with a burr-free cut. Tubes are clamped into position and severed by means of cutters. The cutters and tubes are in relative revolvment. Clamping is preferably done in a manner which exerts a tensile stress in the axial direction of the tube. The tensile stress substantially precludes burr formation. A preferred cutter is an edge tool with a rounded cutting edge.

3,613,490
PUNCHING PRESSES
 Walter Bredow, Alfeld (Leine), Ziegelmach, Germany, assignor to C. Behrens Aktiengesellschaft, Alfeld (Leine), Germany
 Filed Feb. 18, 1969, Ser. No. 800,160
 Claims priority, application Germany, Feb. 24, 1968, B 96807
 Int. Cl. B26d 7/06, 5/42
 U.S. Cl. 83—132 12 Claims



A punching press comprising transmission means having an energy-absorbing resilient portion adapted to be compressed during a punching operation after the stripper assembly contacts a workpiece to be punched.

3,613,491
PUNCHING MACHINE
 Manfred Kahmann, 1520 1/2 Birchwood, Chicago, Ill.
 Filed Sept. 15, 1969, Ser. No. 857,872
 Int. Cl. B26d 7/16
 U.S. Cl. 83—146 10 Claims



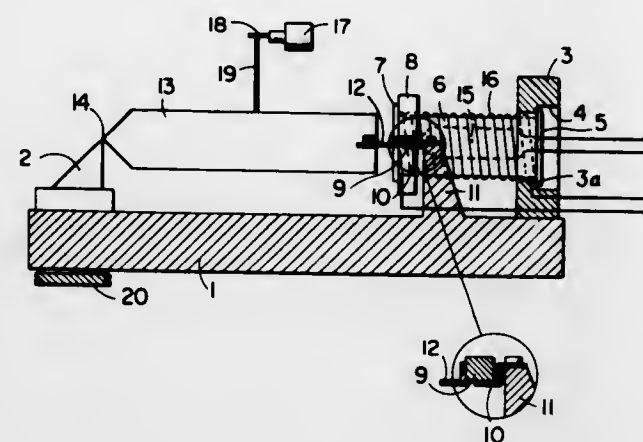
A stylus template-duplicating punching machine having, in addition to a conventional pin-type clutch arrangement for releasably interconnecting the driving flywheel and driven clutch collar, a secondary clutch mechanism which permits the rotation of the crankshaft and clutch collar through a 360° arc while the flywheel is rotating at full speed.

3,613,492
MICROTOME
 Lars Olof Anton Soderkvist, Vallingby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden
 Filed June 16, 1969, Ser. No. 833,546
 Claims priority, application Sweden, July 2, 1968, 9129/1968
 Int. Cl. B26d 7/10
 U.S. Cl. 83—170 6 Claims

A microtome comprises a holder for a specimen to be cut, a knife for cutting the specimen, a means to impart the

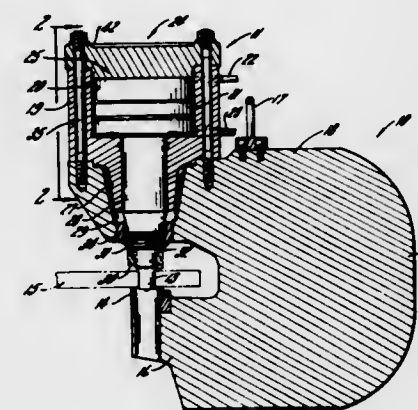
holder with a cutting movement in relation to the knife, and a means to impart the holder with a feeding movement in relation to the knife. The feeding means consists of an expansion body provided with a heating means. A thermostat

3,613,494
ADJUSTABLE KEYBOARD-TRANSPOSING ADAPTER
AND INSTRUMENT
 Jae P. Rogers, 1186 Yost St., Aurora, Colo.
 Filed May 14, 1970, Ser. No. 37,281
 Int. Cl. G10c 3/12
 U.S. Cl. 84—448 17 Claims



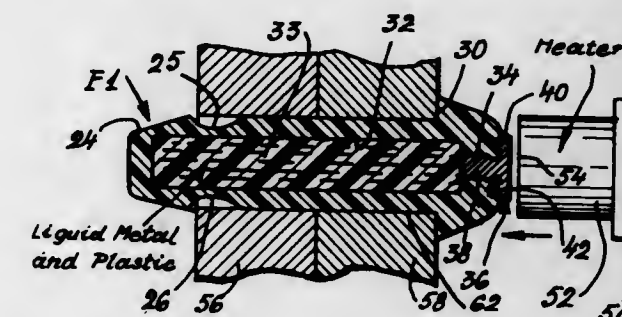
is arranged on the expansion body to regulate the power supplied to the heating means. This regulated supply of power to the heating means makes it possible for the expansion body to maintain a constant temperature, so that the expansion body neither expands nor contracts.

3,613,493
PUNCH PRESS
 Harry Conn; Robert W. Mauk, and Paul M. Lancaster, all of Rockford, Ill., assignors to W. A. Whitney, Rockford, Ill.
 Filed Dec. 1, 1969, Ser. No. 881,026
 Int. Cl. B26d 5/12
 U.S. Cl. 83—639 8 Claims



For perforating a workpiece, a press with a two-way fluid operated actuator which is mounted on a support and is operable to reciprocate a punch through a hole in the support into and out of the workpiece. The actuator comprises a cylinder, a cap, a piston, and a ram with a ram guide formed integrally with the cylinder, and the cap and the cylinder are joined together and mounted on the support by studs which are threaded on the opposite end portions. To distribute both the stretching due to the tightening stress on the studs more uniformly over the entire length of the studs, each stud is formed with a center portion of reduced diameter, this diameter being no greater than the root diameter of the threaded end portions. The studs extend through fastener holes in the cap, the cylinder, and the support. So that these holes can be drilled in the separate pieces and then be easily aligned when the press is assembled and mounted on the support, guide holes of equal diameter are formed in the cap, the cylinder, and the support thus allowing the same template to be used to drill the fastener holes in each piece around the guide hole in that piece.

3,613,495
FASTENER MEANS INCLUDING AN INTERIOR
EXPANSIBLE CORE
 Henry J. Podgursky, 64 Reyan Road, Lynbrook, N.Y.
 Filed Aug. 6, 1969, Ser. No. 847,986
 Int. Cl. F16b 13/04
 U.S. Cl. 85—65 5 Claims

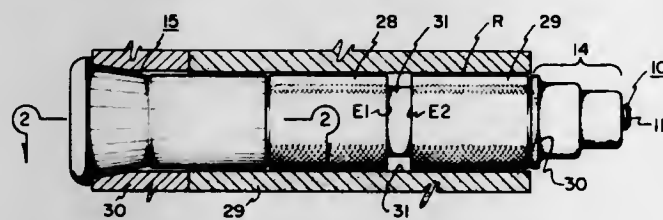


A hollow rivet includes a casing containing an expansible core which when heated or subjected to pressure deforms the casing to lock apertured parts together. The core contains a thermosetting resin plastic, and a metal substance dispersed throughout the core to increase thermal conductivity of the core to facilitate setting of the resin plastic and to increase rigidity of the core when the resin plastic sets.

3,613,496
FERRULE-TYPE FRICTION LOCK DEVICE
 Lee Triplett, 2878 South 860 West, Magna, Utah
 Filed Mar. 25, 1970, Ser. No. 22,494
 Int. Cl. F16b 13/06
 U.S. Cl. 85—69 9 Claims

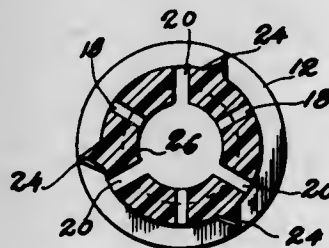
The present invention comprises a friction lock attachment device for use in releasably attaching a given member to a

support, and this in a manner such that the attaching device need not be disassembled for mounting purposes or manipulated at its rear threaded connection. In the device, a unique ferrule is employed, the reacting surface of which, abutting the shouldered surface of a bolthead, is chamfered or tapered such that only the inner circumferential edge of said surface engages the undersurface of the bolthead used.



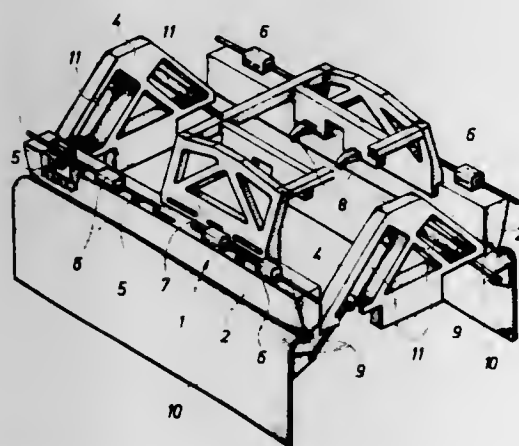
Bearing friction between the bolthead of the securement bolt and such ferrule surface is thus reduced to an absolute minimum, ensuring that the friction lock attachment device is properly tightened, and this in a manner such that the ferrule, designed for wedging into such given member, will not turn upon such tightening process. Various embodiments of the invention illustrate the ferrule in a number of useful forms.

3,613,497
EXPANSION ANCHOR
James F. Heldermaun, York, Pa., assignor to U.S. Expansion Bolt Company, York, Pa.
Filed Apr. 10, 1969, Ser. No. 814,912
Int. Cl. F16b 13/06
U.S. Cl. 85-84 1 Claim



An expansion anchor for wood screws and the like having a plurality of spaced longitudinal slots and a plurality of longitudinal ribs disposed asymmetrically between the slots. The slots extend alternately to the head and to the tip of the anchor.

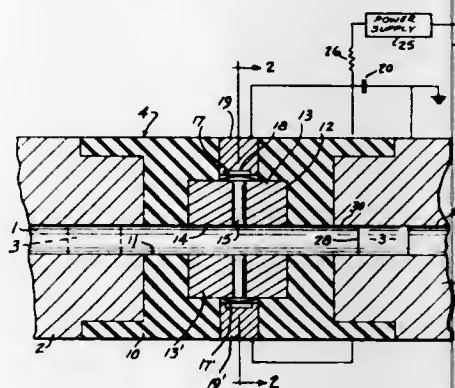
3,613,498
APPARATUS FOR LOADING ON AN AIRPLANE GOODS TO BE DROPPED OFF OR TILTED OUT OF THE PLANE
Rolf Riccius, Worpsswede, and Gunter Weitkamp, Bremen, both of Germany, assignors to Vereinigte Flugtechnische Werke Gesellschaft mit beschränkter Haftung fruher "Weser" Flugzeugbau/Focke-Wulf/Heinkel-Flugzeugbau, Bremen, Germany
Filed Jan. 7, 1969, Ser. No. 789,516
Int. Cl. F41f 5/02
U.S. Cl. 89-1.5 R 1 Claim



An apparatus for loading loads on an airplane which are releasable from the airplane when the latter is in flight, which

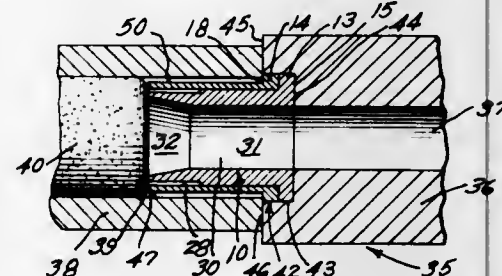
includes frame means detachably arranged in a loading chamber in the fuselage of an airplane preferably within the region of the center of gravity of the airplane, while said frame means has displaceably mounted thereon carriage means for suspending a load thereon, said carriage means being adapted to be locked to said frame means in a desired position of said carriage means on said frame means.

3,613,499
SWITCH FOR PROJECTILE-ACCELERATING SYSTEM
Frank T. Hubbard, Valcartier, Quebec, and Gaston Demers, Gap Rouge, Quebec, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence
Filed Sept. 24, 1969, Ser. No. 860,677
Claims priority, application Canada, Sept. 25, 1968, 030,894
Int. Cl. F41f 1/00
U.S. Cl. 89-8 5 Claims



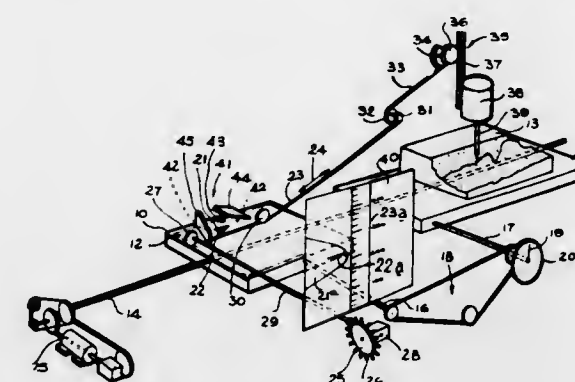
An apparatus for accelerating a projectile through the barrel of a weapon is provided by a plurality of spaced-apart stations or sections along the barrel which are responsive to the passage of the projectile and cause an electrical discharge whereby enthalpy at each station is added to the expanding gas behind the projectile resulting in an increase in the projectile velocity.

3,613,500
COMBINATION PROJECTILE GUIDE AND FIRING CHAMBER SEAL
Francis J. Warin, Oakharbor, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Feb. 18, 1969, Ser. No. 800,103
Int. Cl. F41d 11/00
U.S. Cl. 89-26 9 Claims



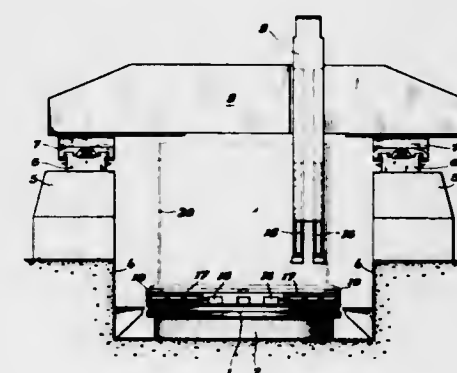
A firing chamber front end seal having two concentric tubular members with out-turned flanges at their leading ends. The flanges are adapted to be seated in a counterbore in the end of the weapon barrel. The inner diameter of the inner member is equal to the diameter of the barrel bore and concentric therewith. The inner member has a substantial wall thickness and strength with an internally frustoconically outwardly tapered end opposite the flanged end. The inner member is effective to act as a projectile guide to align a moving projectile with the weapon barrel. The outer member has a wall thickness less than the inner member and the end remote from the flanged end is adapted to be expanded by pressure of the propellant gases into sealing engagement with the inner diameter of the firing chamber thereby preventing gases from escaping from the chamber at the interface of the chamber and barrel.

3,613,501
METHOD OF AND APPARATUS FOR USE IN PRODUCING A THREE-DIMENSIONAL MODEL OF A PIECE OF TERRAIN
Norman Thomas Sanders, Green Ridges, Mappleborough Green, Studley, England
Filed June 18, 1969, Ser. No. 834,453
Claims priority, application Great Britain, June 18, 1968, 28961/68
Int. Cl. B23c 1/16
U.S. Cl. 90-13 R 20 Claims



Method of and apparatus for producing a three-dimensional model of a piece of terrain wherein a plan having contour lines, and a block of machineable material, are traversed in unison past a cursor and a motor-driven shaper element respectively, and the height of the shaper element above the block is controlled by moving a control member to bring the appropriate graduation of a height scale displayed in proximity to the plan and cursor into coincidence with a contour line as the latter passes the cursor during traverse, there being an operative connection between the control member and a height adjustment means for the shaper element. Alternatively the ratio of longitudinal traverse increment to height increment may be preset by operation of key switches each corresponding to a particular graduation on a modified stationary scale extending lengthwise of the direction of longitudinal traverse on both sides of a viewing point.

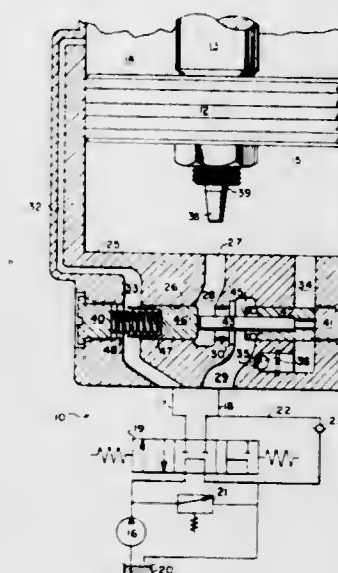
3,613,502
VERTICAL BORING MILL
Hans O. Wagner, Dusseldorf-Lohausen, Germany, assignor to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany
Filed Mar. 28, 1969, Ser. No. 811,435
Claims priority, application Germany, Mar. 30, 1968, P 17 52 082.0
Int. Cl. B23c 3/04
U.S. Cl. 90-14 5 Claims



A vertical boring mill, especially for machining large containers, in which the face plate or chuck means is rotatably arranged in a pit while outside said pit and in diametrically opposite arrangement to each other there are provided two guiding bed means each carrying a bed carriage which in their turn support the opposite ends of a transverse beam supporting a vertically displaceable tool carriage, said bed carriages being adapted to displace the transverse beam

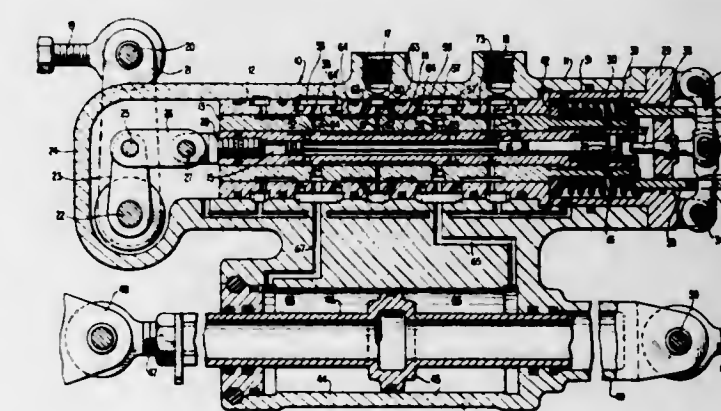
in the direction of its longitudinal extension, and said guiding bed means being adapted to move said transverse beam in the direction transverse to the longitudinal extension of said transverse beam.

3,613,503
HYDRAULIC CYLINDER WITH PRESSURE CONTROL
John F. Phillips, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed Apr. 28, 1969, Ser. No. 819,655
Int. Cl. F15b 15/22, 13/07
U.S. Cl. 91-26 10 Claims



A pressure-actuated control valve which is responsive to an increase in pressure in the contracting or discharge chamber of a hydraulic actuator to restrict discharge flow from said chamber thereby reducing the velocity of the movable barrier therein. The operation of the valve is conditional on inlet pressure as it is held in a nonrestricting position by pressure fluid being admitted to the intake or expanding chamber and moves to a flow-restricting position only when a predetermined loss of pressure occurs in the intake chamber. An additional valve may be included in the system which places the actuator discharge and intake supply passages in communication to shunt fluid therebetween when discharge chamber pressure increases to a predetermined value.

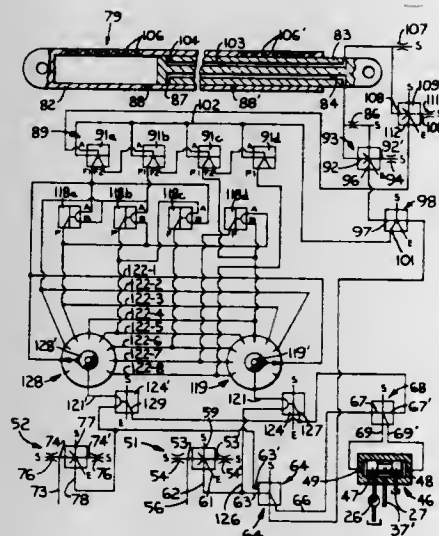
3,613,504
JAMPROOF AND FAIL OPERATIONAL SERVO VALVE FOR AIRCRAFT FLIGHT CONTROL HYDRAULIC SYSTEMS
Hans G. Kraus, Broomall, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Jan. 19, 1970, Ser. No. 3,703
Int. Cl. F15b 13/04
U.S. Cl. 91-32 10 Claims



When the primary valve spool in an aircraft flight control servo valve jams or seizes, at any position within its stroke,

the aircraft pilot is enabled not only to halt the resulting run away condition of the affected power ram in the flight control system but is also enabled quite readily to regain full operational control of the aircraft. This regaining of control is made possible through the manual operation of an intermediate auxiliary valve sleeve which will shift with the jammed primary valve spool and the coordinated operation of a primary valve shutoff means which completely nullifies the action of the jammed primary valve spool by closing a return passage for hydraulic fluid.

3,613,505
FLUIDIC MOTION-LIMITING SYSTEM FOR MOTOR-DRIVEN APPARATUS
Thomas J. Bubula, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 19, 1970, Ser. No. 3,734
Int. Cl. F15b 21/02; G06d 1/04; F15c 1/08
U.S. Cl. 91-35 10 Claims

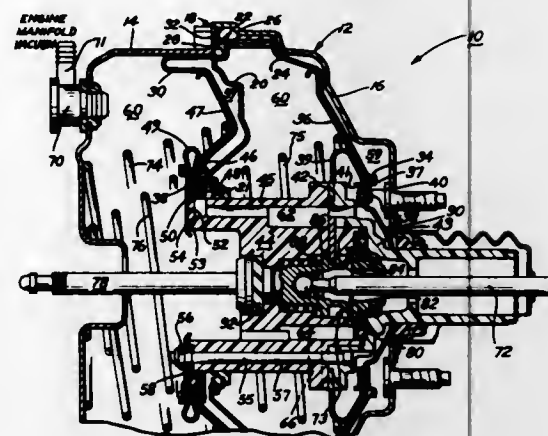


An operator's control lever which is shifted to actuate a hydraulic motor is returned to the initial position to stop the motor after a preselected amount of travel of an element driven by the motor. A fluidic circuit has means producing digital signals indicative of successive increments of travel of the element and has a counter for storing any preselected number of such signals. When the selected count is reached, a kickout means manipulates the operator's control lever to stop further operation of the motor. The count required to stop the motor, and thus the amount of travel of the element, may be changed by turning of a control knob. The system is applicable, for example, to limiting movement of the lift arms of a loader vehicle.

3,613,506
SERVOMOTOR HAVING IMPROVED NO-POWER OPERATION
Oswald O. Kytt, South Bend, Ind., assignor to The Bendix Corporation
Filed July 17, 1969, Ser. No. 842,585
Int. Cl. F15b 9/10, 13/10; F01b 19/00
U.S. Cl. 91-369 7 Claims

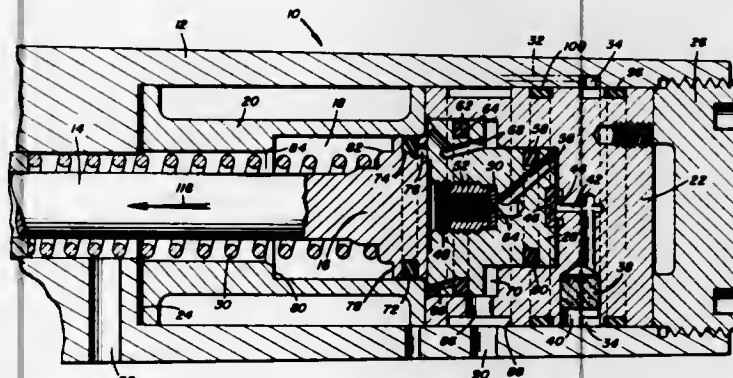
A servomotor having first and second diaphragm members joined together to form a movable wall. The first diaphragm member is attached to the periphery of the housing of the servomotor and the second diaphragm member is retained by a hub member. The hub member contains a control valve for selectively communicating fluid pressure to one side of the first and second diaphragm members while vacuum is present on the other side in response to an input. When this pressure differential is sufficient to overcome a resilient force acting on the first diaphragm member, a corresponding force is transmitted to the hub member. If the pressure differential is

insufficient to overcome the resilient force, the second diaphragm member will expand as the hub member is moved



by an input to pressurize a master cylinder while the first diaphragm member remains stationary.

3,613,507
POWERPACK UNIT
Forrest P. Smith, Jr., Northport, N.Y., assignor to United States Surgical Corporation, Baltimore, Md.
Filed Apr. 28, 1970, Ser. No. 32,550
Int. Cl. F15b 13/04; F01b 11/02
U.S. Cl. 91-398 10 Claims

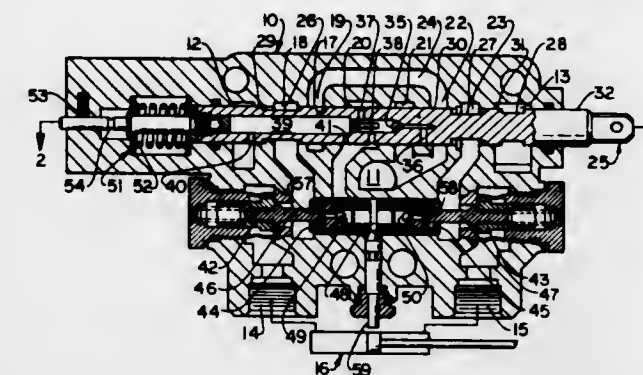


A powerpack for converting gas pressure into rectilinear movement of a drive shaft. The powerpack is activated by unseating a spool, releasing a volume of pressurized gas and thereby driving a shaft adapted to be associated with a mechanism requiring an input of rectilinear movement. Differential pressures cause the spool to be resealed, thus allowing the drive shaft, biased toward the spool, to return to its rest position. The operation of the power unit depends upon the formation of pressure-tight chambers; and these chambers are defined by a plurality of floating O-rings. The forwardmost journey of the drive shaft is cushioned by the action of an air dashpot.

3,613,508
HYDRAULIC VALVE
Robert D. Krehbiel, Hutchinson, and Homer R. Graber, Pretty Prairie, both of Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.
Continuation of application Ser. No. 638,226, May 15, 1967.
This application July 27, 1970, Ser. No. 58,333
Int. Cl. F15b 13/042, 11/08
U.S. Cl. 91-420 5 Claims

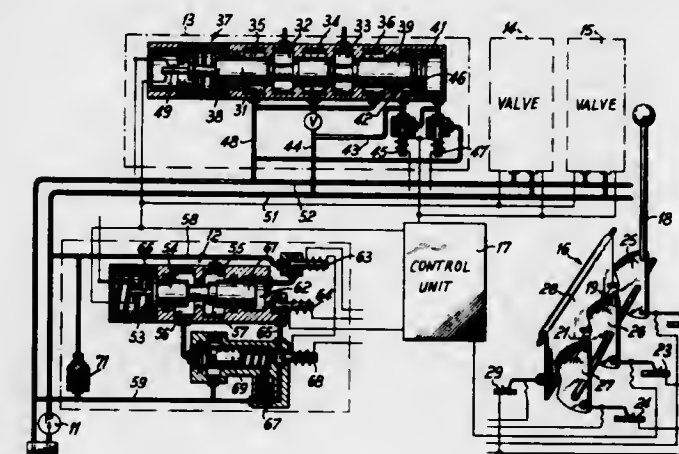
A manually operated spool type closed center flow control valve having two lockout check valves, one for each end of a double-acting pressure fluid actuated motor. The valve affords precise spool metering of pressure fluid returning from either end of the motor to the hydraulic system reservoir because both lockout check valves are fully opened and maintained open prior to, and entirely independent of, any flow of fluid to or from either end of the motor. Thus

fluid flowing through either of the fully open lockout check valves can in no way interfere with precise spool metering of flow through the control valve. The flow metering spool can



also be positioned to afford floating movement of the motor plunger and rod in either direction in response to an applied external load.

3,613,509
ELECTROHYDRAULIC REMOTE CONTROL ARRANGEMENT FOR HYDRAULIC DIRECTIONAL VALVES
Heinz Flaschar, Ludwigsburg; Wilhelm Weigert, Schwieberdingen; Walter Werner, Waiblingen, and Manfred Kramer, Fellbach-Lindle, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 30, 1969, Ser. No. 872,671
Claims priority, application Germany, Nov. 6, 1968, P 18 07 173.3
Int. Cl. F15b 13/044
U.S. Cl. 91-459 13 Claims

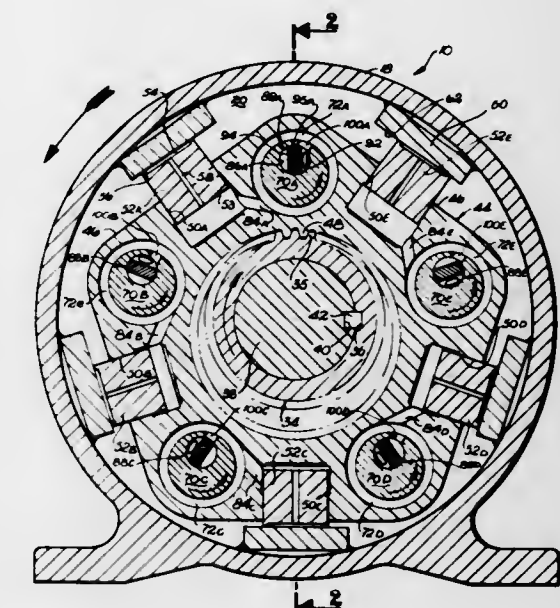


An arrangement for controlling directional valves electrohydraulically. The valve is connected between a constant pump and a load which is actuated through fluid under pressure from the pump. The directional valve has a control slide to which a signal transducer is secured to give a signal indicative of the position of the control slide. Control levers are also arranged with the control slide and have signal transducers for indicating the deflection of the control lever from a neutral position. A control circuit is connected to the signal transducers for comparing their signal outputs, and to actuate electrohydraulic positioning member on the control slide for controlling the position of the control slide dependent upon the position of the control lever. A switching valve controls the neutral fluid flow from the pump to the load as a function of the position of the control lever.

3,613,510
FLUID PRESSURE APPARATUS WITH ORBITING OSCILLATOR
Henry B. Chambers, Santa Barbara, Calif., assignor to Hydranautics, Goleta, Calif.
Filed Apr. 17, 1970, Ser. No. 29,398
Int. Cl. F01b 3/00, 13/04; F04b 1/04
U.S. Cl. 91-478 11 Claims

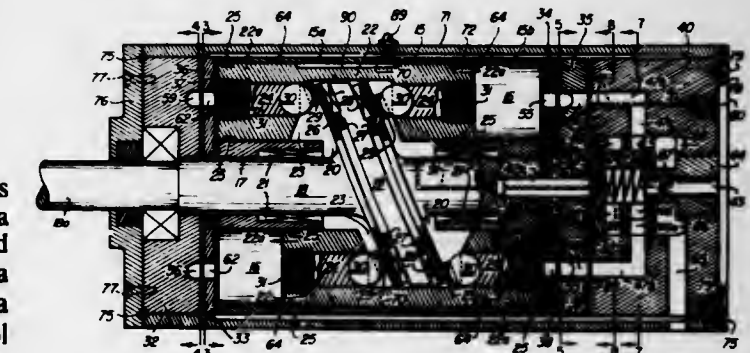
A low speed, high-torque fluid pressure apparatus adapted for use as a reversible motor or a pump, which includes a

rotor having an axis which is fixed relative to the supporting housing and containing external gear teeth which mesh with internal gear teeth on an oscillator mounted for orbital motion relative to the housing. The oscillator contains radially spaced piston cavities which receive reciprocating



pistons having the outer ends thereof in limited sliding engagement with the housing. Each piston cavity has an eccentric valving assembly associated therewith for controlling the flow of fluid among the piston cavity and the housing fluid inlet and fluid outlet.

3,613,511
FLUID-POWERED, POSITIVE-DISPLACEMENT ENGINE
George D. Eddington, 266 East 100 South, Logan, Utah
Filed Apr. 21, 1969, Ser. No. 818,206
Int. Cl. F01b 3/02, 13/04
U.S. Cl. 91-502 11 Claims



A fluid-powered, positive-displacement engine of the type wherein pistons, in annular series arrangement within respective cylinders, act successively on the circumferential margin of a positionally fixed shuttle plate to rotate a power-output shaft to which the plate is rigidly secured, concentrically therewith. There is disclosed a compact and efficient fluid-flow system for both the supply and exhaust of a pressure fluid, such as steam, that provides the power to operate the engine, and a rotary valve operated by the power-output shaft for timing supply and exhaust of pressure fluid progressively around the annular series of cylinders and for effecting reverse operation of the engine. Each piston is formed to straddle the shuttle plate and to, thus, be double acting at respectively opposite sides of such plate. Adjustable low-friction couplings connect the pistons with the shuttle plate.

3,613,512 PNEUMATIC CONTROL ROD DRIVE INCLUDING A SCRAM CUSHION

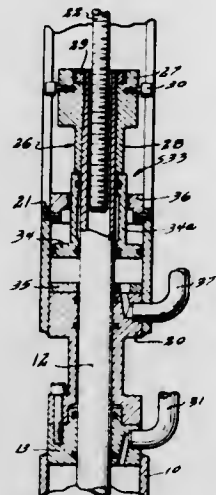
William E. Taft, Los Gatos, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 16, 1969, Ser. No. 866,928

Int. Cl. F01b 31/00

U.S. Cl. 92-13.8

2 Claims



A control rod drive for a nuclear reactor includes a vertically disposed pneumatic cylinder containing a piston having shafts extending above and below the piston. The lower shaft is connected to the control rod and the upper shaft extends through a second, short pneumatic cylinder to terminate in an enlarged head. Air is supplied to the pneumatic cylinder below the piston during normal operation of the reactor to force the enlarged head of the upper shaft against a stop nut on a lead screw, the position of the stop nut on the lead screw determining the position of the control rod within the reactor. To scram the reactor high-pressure air is admitted to the pneumatic cylinder above the piston while the air below the piston is simultaneously exhausted. Deceleration of the control rod is obtained by admitting the high-pressure air used for scrambling the reactor through a check valve into the second, short pneumatic cylinder below a free-floating piston therein. When the upper shaft head contacts the piston air is compressed in the second cylinder cushioning the fall of the control rod. A bleed line is provided by passing the check valve and connecting the short cylinder to the scram gasline.

3,613,513 DUAL DIAPHRAGM THREE-POSITION ACTUATOR

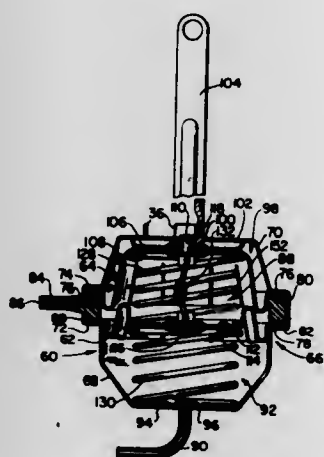
Jesse R. Johnson, Gowanda, N.Y., assignor to AVM Corporation, Jamestown, N.Y.

Filed Apr. 24, 1968, Ser. No. 723,862

Int. Cl. F01b 19/00

U.S. Cl. 92-48

39 Claims



A three-position vacuum actuator having a housing including two diaphragms clamped between parts of the

housing and a fluid communicating spacer ring located between the outer edges of the diaphragms. Fluid communication passages lead into all three chambers formed by the casing and the two diaphragms. Springs are in each of two operating chambers, one spring biasing the diaphragms apart and another spring biasing one diaphragm toward the other. An operator rod extends through the casing wall and is secured to one diaphragm. A collapsible link unit connects the two diaphragms so they can move toward each other yet the separated condition of the two diaphragms is limited. The actuator in assembly with a valve will operate the valve through three positions.

3,613,514 FLUID PRESSURE SENSING INSTRUMENT

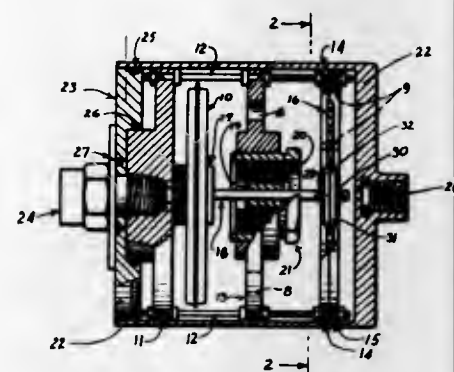
Frederick C. Melchior, 258 Riverside Drive, New York, N.Y.

Filed Apr. 24, 1969, Ser. No. 819,007

Int. Cl. G011 9/10; F01b 19/02

U.S. Cl. 92-48

1 Claim



In a fluid pressure sensing instrument using a diaphragm as a pressure-responsive element, an auxiliary diaphragm is used not only to guide the motion produced by deflections of the diaphragm capsule along a straight line, but also as a spring member to modulate the linearity of the said motion, to adjust the amplitude of said motion to desired value, and to restrain motion from vibration, acceleration and gravitational forces in directions other than along a straight line.

3,613,515 BRAKE ACTUATOR

Kenneth D. Swander, Jr., and Charles G. Wearden, both of Prairie Village, Kans., assignors to Certain-Teed Products Corporation, Ardmore, Pa.

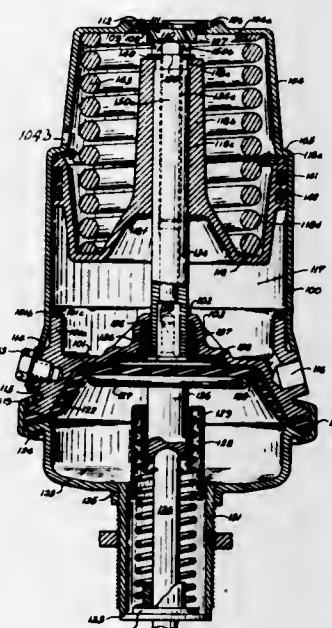
Division of Ser. No. 812,538, Mar. 10, 1969, Pat. No. 3,508,470, which is a Continuation-in-part of Ser. No. 520,693, Jan. 14, 1966, abandoned.

Filed Sept. 22, 1969, Ser. No. 859,782

Int. Cl. F01b 21/02

U.S. Cl. 92-63

4 Claims



A vehicle spring emergency and parking brake of the "add-on" or "piggy back" type with the spring chamber

outboard (with respect to the wheel, axle or brake, per se) of the service (diaphragm) chamber, said add-on brake having a mechanical release (manual spring back-off) utilizing a bolt stored within the spring chamber itself, one modification having means preventing or warning of attempts to recompress the emergency spring before the bolt is restored to its storage position within the spring chamber and one modification having a portion of the spring chamber retractable within the spring chamber housing itself when the emergency or power spring has been expanded.

3,613,516 SPRING CUSHIONING DEVICE FOR CLUSTERED CYLINDER LIFTS

Frank Howard Field, 133 East Virginia Blvd., Jamestown, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,854

Int. Cl. F01b 11/02

U.S. Cl. 92-85

6 Claims



Spring cushioning devices are provided in each cylinder of a clustered cylinder lift, each device including a single coil-type compression spring operable to cushion its associated cylinder during both extension and retraction thereof.

3,613,517 TENSION LOAD CELL

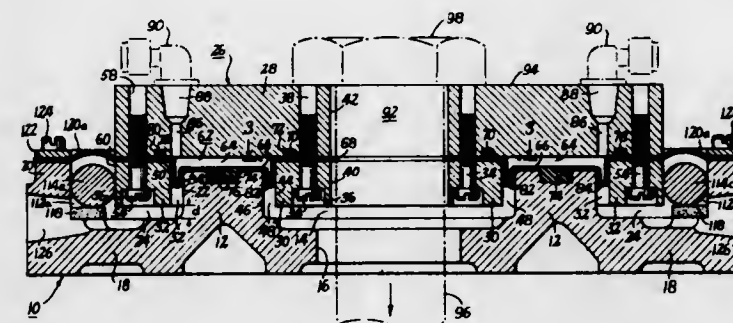
Chester D. Bradley, Darien, and Malcolm C. Tate, Stamford, both of Conn., assignors to The A. H. Emery Company, New Canaan, Conn.

Filed Mar. 18, 1970, Ser. No. 20,747

Int. Cl. F16j 3/00

U.S. Cl. 92-98

5 Claims



A piston-cylinder type load cell for the measurement of tension loads. The piston and cooperating cylinder portions are ring-shaped and surround an open central passage through the cell which accommodates a simple, external tension loading member. The piston and cylinder carrying members may be assembled about roller bearings for free

relative axial and angular telescopic movement even under high-cross loads. The cell may also be provided with a flexible diaphragm which extends over the roller bearings and is secured to form an integral dust jacket.

3,613,518 DIAPHRAGM ACTUATOR

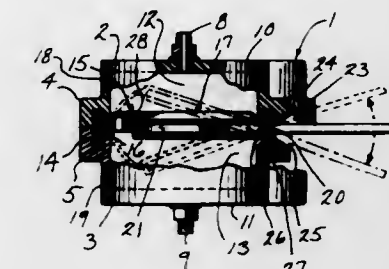
David G. Prosser, Milwaukee, Wis., assignor to Autrol Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 800,481, Feb. 19, 1969, now abandoned. This application Dec. 31, 1969, Ser. No. 889,670

Int. Cl. F16j 3/00

U.S. Cl. 92-98 RD

3 Claims



A diaphragm actuator includes a rigid lever that has an internal arm embedded in a soft resilient rubber membrane to reciprocate pivotally between two chambers in a housing and an external arm which projects out of the housing to reciprocate pivotally externally of the housing. Two hollow members clamped together against a seal formed about the periphery of the membrane make up the housing. The seal also serves as a fulcrum where the lever projects out of the housing. Either end of the lever may serve as a force end or a work end.

3,613,519 PRESSURE FLUID OPERATED ACTUATORS

John N. Southall, Dudley, England, assignor to Serck Industries Limited, Birmingham, England

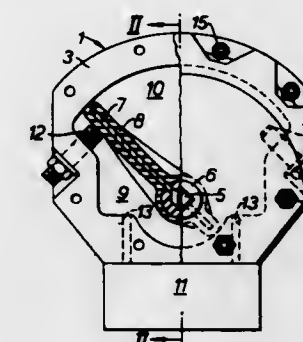
Filed Feb. 17, 1969, Ser. No. 799,627

Claims priority, application Great Britain, Feb. 22, 1968, 8635/68

Int. Cl. F01c 9/00

U.S. Cl. 92-125

4 Claims



A pressure fluid rotary vane actuator in which the actuator housing is formed of thermosetting resin and the rotary vane is encapsulated in an integrally molded rubber covering.

3,613,520 THROTTLE CONTROL VALVE ASSEMBLY

Donald A. Worden, Pompton Plains, N.J., assignor to Morotta Scientific Controls, Inc., Boonton, N.J.

Filed Apr. 27, 1970, Ser. No. 32,317

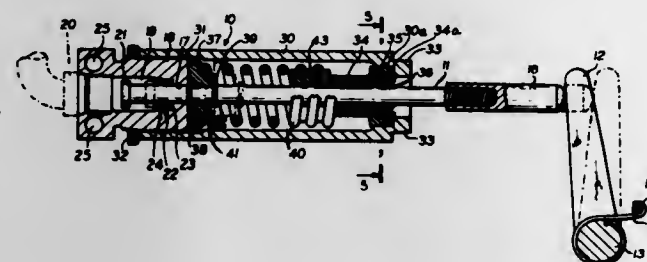
Int. Cl. F01b 31/00

U.S. Cl. 92-133

6 Claims

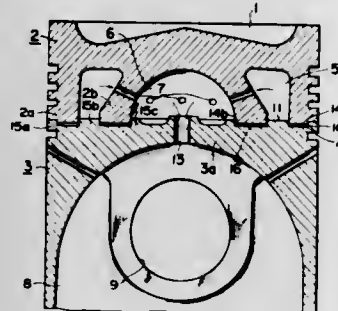
This is mechanism for adjusting the pressure to be applied to actuate valve that is operate by movement of a rod. The rod is slidably received through a bore through a base

member and extends through a sleeve that has one end threaded onto the base member. A coil spring around the portion of the rod within the sleeve has one end attached to a collar that is on the rod in a fixed position relative to the length of the rod and its other end loosely threaded onto a



matingly threaded annular element fixed in the interior of the sleeve. Thus, screwing the annular element relatively into or out of the spring varies the spring rate, and screwing the sleeve relatively toward or away from the base varies the compression of the spring, for adjusting the amount of pressure that must be applied to move the rod.

3,613,521
PISTON FOR INTERNAL COMBUSTION ENGINE
Takumi Itano, Tokyo, Japan, assignor to Komatsu Manufacturing Co., Ltd., Tokyo, Japan
Filed Sept. 30, 1969, Ser. No. 862,422
Claims priority, application Japan, Nov. 7, 1968, 43/80921
Int. Cl. F01b 31/08; F16j 1/00; B23p 15/10
U.S. Cl. 92—186 4 Claims

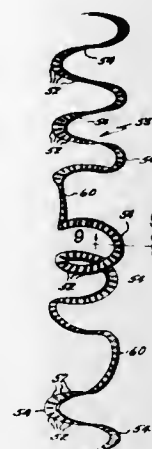


This specification discloses a cooling system for a piston formed of two parts and joined by brazing within annular grooves. Passages for cooling fluids are conveniently formed before the separate pieces are joined and are positioned such that the high temperature at common joined areas is effectively limited to prevent temperature deterioration of the bond between the two joined pieces. In addition, the cooling fluid transfers heat away from a head portion of the piston and means are provided to utilize as a cooling fluid a lubricating fluid normally present at a pin-bearing surface of the piston.

3,613,522
METHOD OF PRODUCING CUSHIONING DUNNAGE
George R. Johnson, Chagrin Falls, Ohio, assignor to The Arpax Company, Chagrin Falls, Ohio
Division of Ser. No. 640,145, May 22, 1967, abandoned.
Filed Sept. 12, 1969, Ser. No. 857,307
Int. Cl. B31f 1/10; B31d 5/00; B31b 49/00
U.S. Cl. 93—1 WZ 14 Claims

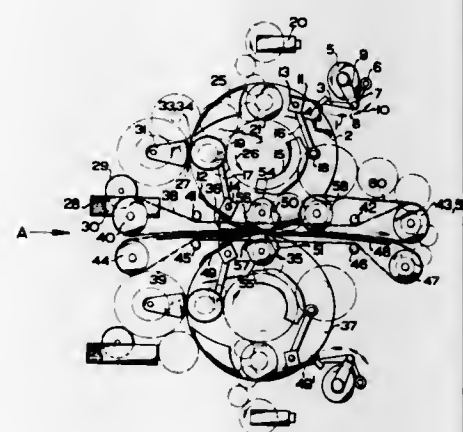
A method of producing coiled, resilient cushioning dunnage comprising taking a web of sheetlike material, such as paper, of predetermined width and crumpling it down into a relatively narrow strip and then forming the strip by pressure into generally helically coiled form. Also a method of producing elongated, tubularlike dunnage is disclosed which comprises taking a web of flexible sheetlike material, such as paper, of predetermined width and forming the web into a generally tubularlike shape by moving the lengthwise

edges of the web inwardly toward one another and then loosely crumpling the inwardly turned web and stitching the



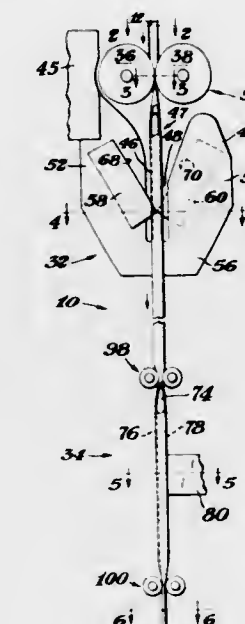
article along the lengthwise extent thereof to maintain it in its formed configuration.

3,613,523
MACHINE FOR MAKING AND APPLYING U-SHAPED CARRYING HANDLES CONSISTING OF STRIPS OF PAPER OR THE LIKE
Heinz Wesselmann, Brochterbeck, Germany, assignor to Windmoller & Holscher, Westphalia, Germany
Filed July 31, 1969, Ser. No. 846,453
Claims priority, application Germany, Aug. 2, 1968, P 17 61 992.0
Int. Cl. B31b 1/86; B31d 1/06
U.S. Cl. 93—8 WA 16 Claims



A machine is provided for making U-shaped carrying handles consisting of strips of paper or the like and for applying these carrying handles to bags of paper or the like in such a manner that the central grip portions are disposed on the inside of the handle legs. The machine comprises two folding cylinders for respective sides of the bag, which cylinders are provided with grippers for gripping the strips of material adjacent to the portions intended to form central grip portions, creasing tools for creasing the strips at an angle of 45° at both ends of the portions intended to form the central grip portions, folding tools for folding the strip end portions upside down through 180° about the creases, and two handle-applying stations respectively associated with the folding cylinders. The tools of the creasing station are arranged to produce creases on the outside relative to the periphery of the folding cylinder. The width of the folding cylinder in the area where the handle legs are formed is smaller than the clear width between the creasing tools. The folding tools are caused to act from the outside on the strip end portions, which are folded inwardly relative to the periphery of the folding cylinder.

3,613,524
METHOD AND APPARATUS FOR MANUFACTURING BAG STOCK
Raymond D. Behr, Midland; Edward A. Friebe, Kawkawlin, and Earl E. Brandow, Bay City, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Feb. 24, 1970, Ser. No. 13,487
Int. Cl. B31b 1/18; B37b 1/60; B31b 1/78
U.S. Cl. 93—33 R 19 Claims



Method and apparatus for fitting together multiple pairs of interlocking beadlike closure members of a type extending continuously at the inside of tubular film while the film is moving such as during its manufacture, and at a rate accommodating at least the maximum extrusion speed of the film. Such apparatus can comprise a forward slitting station adapted to receive the tubular film in a flattened condition, separate it, and strategically slit the same for use as bagmaking stock; and thereafter to controllably direct the film to a mandrellike member including guide means such as, for example, grooves or the like. The latter align the pairs of closure members, respectively, to cooperatively assist subsequent fitting of the pairs together such as by application of external pressure. Such method and apparatus effectively overcomes problems relating to irregularities in the lateral spacing between the closure pairs.

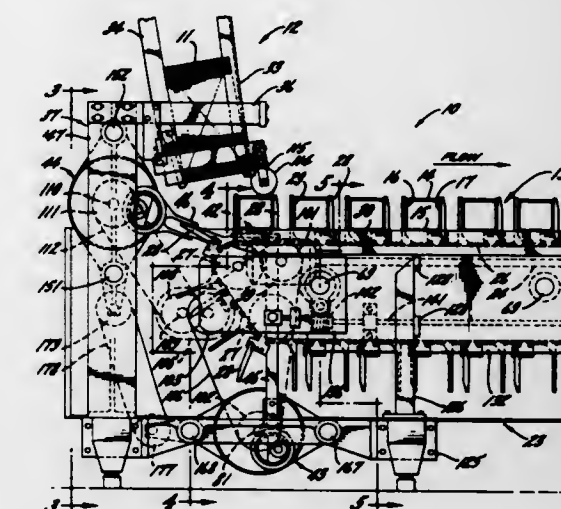
ERRATUM

For Class 93—35R see:
Patent No. 3,613,288

3,613,525
CARTON-HANDLING DEVICE
Robert F. Lense, and Wilbur M. Court, both of Rockford, Ill., assignors to Riegel Paper Corporation, New York, N.Y.
Filed Jan. 27, 1970, Ser. No. 6,240
Int. Cl. B31b 1/76 11 Claims

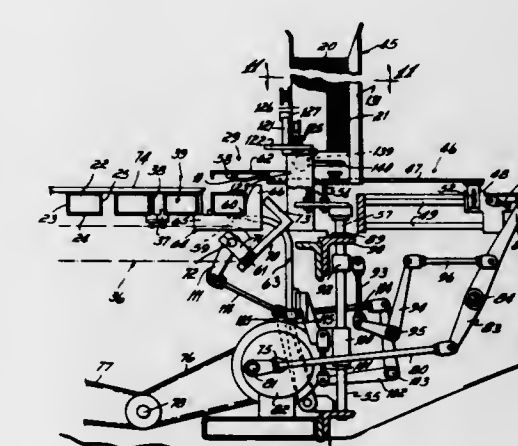
A device for drawing successive flattened cartons downwardly and outwardly from a magazine and placing each carton on a conveyor between two successive, spaced holders on the conveyor in timed relation with the speed at which the holders are moved. As an incident to being drawn from the magazine, each carton is erected and thus is placed on the conveyor in an erected position to be filled with a product. A transfer device for gripping the cartons and delivering the latter from the magazine to the conveyor is moved along a triangular path by the action of two drive mechanisms acting in concert. One drive mechanism is operative to raise and lower the transfer device, and the second is operative to move the transfer device horizontally. To draw the carton out of the magazine and place it on the conveyor, both mechanisms work together thus moving the transfer device downwardly and outwardly toward the conveyor along one leg of the triangle. A dwell means is built

into each drive mechanism so that, after the carton is placed on the conveyor, the first mechanism dwells and the second mechanism moves the transfer device in a generally horizontal direction from the conveyor to a position spaced



beneath the magazine. Then the second mechanism dwells, and the first mechanism is operable to raise the transfer device into engagement with the terminal carton in the magazine.

3,613,526
CARTON FEEDING AND ERECTING APPARATUS
Wickliffe Jones, Cincinnati, Ohio, assignor to R. A. Jones and Company, Inc., Covington, Ky.
Filed May 9, 1969, Ser. No. 823,430
Int. Cl. B31b 1/76 9 Claims

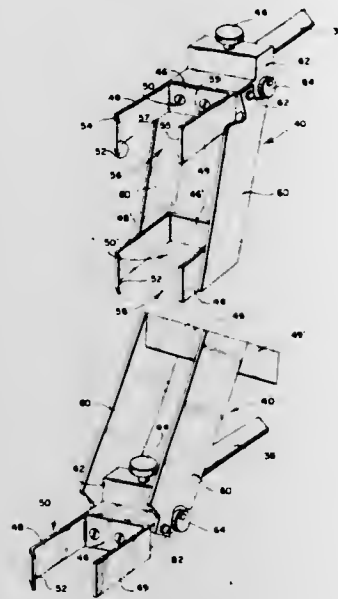


Apparatus whereby flat folded carton blanks are fed one at a time from a stack contained within a magazine, each blank being gripped between opposed suction cups, the lower suction cup pulling the carton downwardly against a guide to open or erect it, the erected carton then being carried away between forward and rearward lugs of a transport conveyor.

3,613,527
CONTAINER ERECTING AND HOLDING DEVICE
Ronald L. Hentges, Minneapolis, and Howard R. Garrett, St. Paul, both of Minn., assignors to Haskon Incorporated, Warsaw, Ind.
Filed Aug. 15, 1969, Ser. No. 850,527
Int. Cl. B31b 1/78; B23q 3/10; B25j 15/00
U.S. Cl. 93—53 R 5 Claims

A device is provided for erecting and holding a flattened tubular container blank of generally rectangular cross section in an open and upright position, from its external vertical sides, for use in a container forming, filling, and sealing machine. The device includes a backing plate for engaging the outer surface of a first wall of the container blank, a pair of side flanges that extend normally outward from the

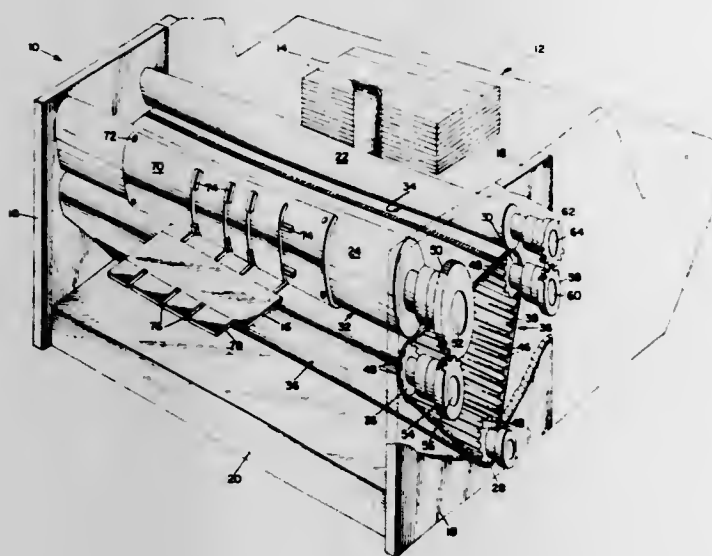
backing plate for engaging the outer surface of the pair of opposed container walls adjacent the first wall, and a locking lip that extends inwardly from the outer end of one of the



side flanges for engaging the outer surface of the container wall opposite the first wall to keep the container blank in an open position against its inherent resiliency to return to flattened form.

3,613,528
BELT ROTARY DIECUTTER
Roy E. Vermes, Wilbraham, Mass., assignor to Revco, Inc., Agawam, Mass.
Filed Sept. 15, 1969, Ser. No. 857,712
Int. Cl. B31b 1/06, 1/22; B26d 7/20
U.S. Cl. 93—58.4

1 Claim

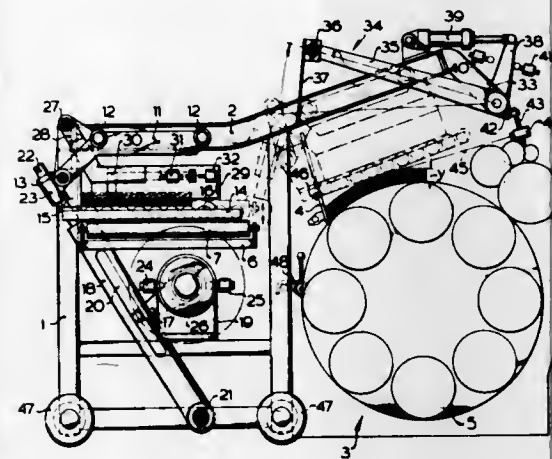


Diecutting apparatus for cutting and slotting corrugated carton blanks comprising, a rotatable die-mounting roll carrying a plurality of cutting dies on its periphery, a backup roll defining, with the die-mounting roll, a nip, a resilient endless belt passing through the nip and entrained around the backup roll, and feed means for feeding a carton blank into the nip for the cutting and slotting thereof by the cutting die.

3,613,529
APPARATUS FOR AUTOMATICALLY CHARGING A STACK MAGAZINE OF A BAG-MAKING MACHINE WITH TUBE SECTION STACKS
Willi Stork, Tecklenburg, and Karl Haupt, Wolbeck via Munster, both of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany, by said Haupt

Filed Feb. 24, 1970, Ser. No. 13,351
Claims priority, application Germany, Feb. 27, 1969, P 19 10 059.5
Int. Cl. B31b 1/98, 1/08; B65b 67/00
U.S. Cl. 93—93 HT

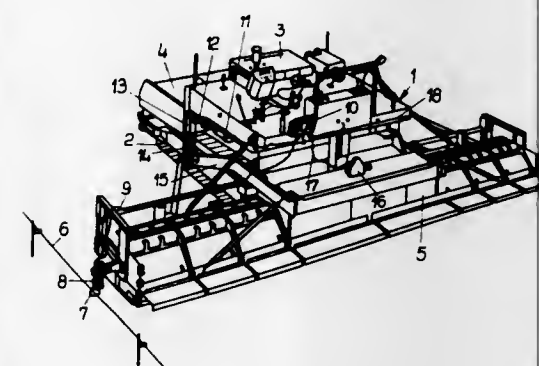
13 Claims



A roller bed serves to receive the tube section stacks from a feeder conveyor. A movable transfer rake has tine rods which are about as long as the rollers of the roller bed and in one end position extend between the rollers of the roller bed. The rake is movable relative to the roller bed in a vertical direction to take over the stacks and subsequently in a substantially horizontal direction to its other end position. A stripper is movable to a position behind the stack of tube sections lying on the transfer rake above the stack magazine and remains in stripping position during the return movement of the transfer rake.

3,613,530
APPARATUS FOR POSITIONING A FINISHING SCREED MEMBER IN A ROAD PAVING MACHINE
Bruno Hess, Ladenburg, Germany, assignor to Joseph Voegel AG, Mannheim, Germany
Filed Sept. 9, 1969, Ser. No. 856,332
Claims priority, application Germany, Sept. 17, 1968, P 17 84 775.5
Int. Cl. E01c 19/48
U.S. Cl. 94—46 AC

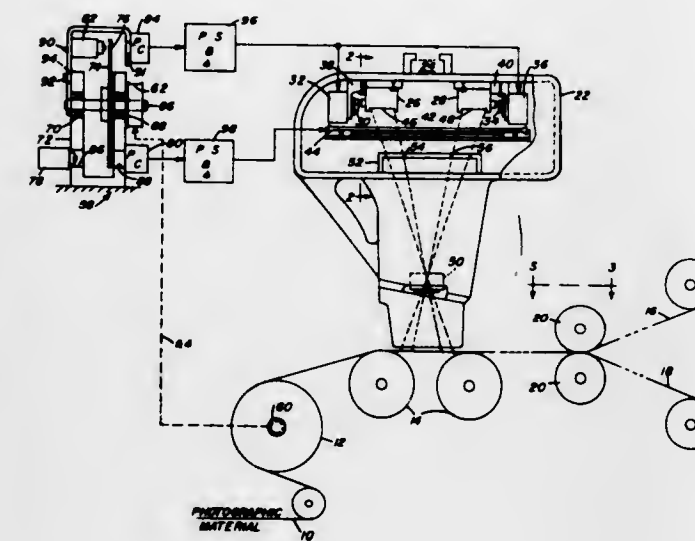
5 Claims



In a road-paving machine, surfacing material is deposited on a subbase and a finishing screed board spreads and finishes or levels the surface of the material to the proper grade and plane. Test feelers are mounted on the screed board to detect any deflections from a reference position, though the machine causes vibration, the test feelers are arranged to measure the actual deflection and to signal the extent of the deflection to a regulating instrument for correcting the position of the screed board in accordance with the deflections measured.

3,613,531
MANUFACTURING PHOTOGRAPHIC WEBS
Raymond Lorenzini, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 15, 1969, Ser. No. 866,680
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1

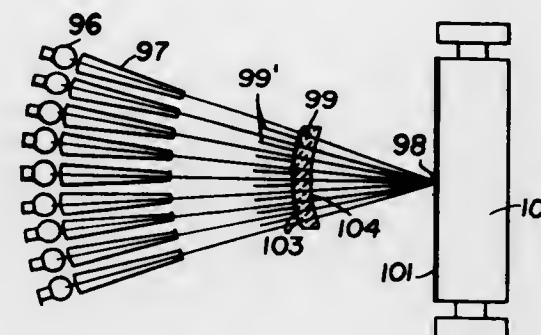
3 Claims



A photographic web is manufactured with latent images of reference indicia along the length of such web. A projection printer embodies a mechanical counter which is driven by means of a stepping motor; and a flash tube is adapted to be excited after such discrete counter indexing (and before a subsequent indexing thereof) to image the counter face onto the web. A controller not only assures that the indicia is evenly disposed along the length of the web, but assures that flashing sees only stationary counts.

3,613,532
RAY TYPEWRITER
Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.
Filed May 1, 1969, Ser. No. 820,958
Int. Cl. B41b 13/00, 15/00, 17/00
U.S. Cl. 95—4.5 R

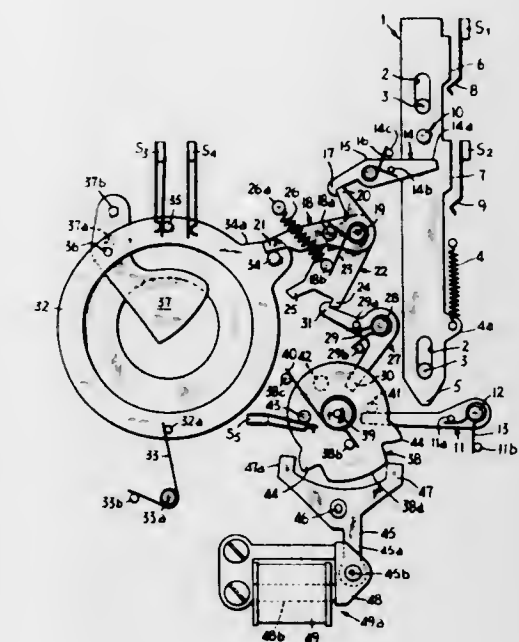
18 Claims



This ray typewriter has two main applications. It may serve as a computer output to rapidly produce small-size photographic copies, or also as a typewriter operated by hand from a keyboard. Each type has its own source of radiant energy that is directed through an outlet representing the type. Said sources are arranged in an arc about a common point and their rays are directed towards said point. When activated, images of said outlets are made in a common region containing said point. In a computer output said successive images are reduced in size and placed along lines on a record. In a manually operated typewriter they are directly printed on the record.

3,613,533
AUTOMATIC FLASHING DEVICE
Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokaiten, Tokyo, Japan
Filed Feb. 25, 1969, Ser. No. 801,988
Claims priority, application Japan, Feb. 28, 1968, 43/12430
Int. Cl. G01j 1/00
U.S. Cl. 95—10 C

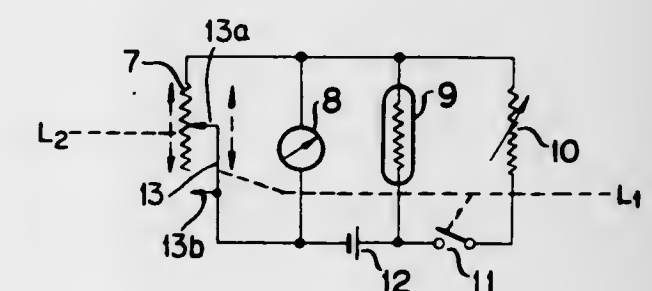
11 Claims



A camera is equipped with apparatus including an electric circuit for sensing the brightness of a subject to be photographed and means for automatically taking a daylight exposure if the brightness is above a predetermined level and a flash exposure if the brightness is below a predetermined level. Also included are lights that indicate to the operator that certain portions of the electric circuit are in their operative state.

3,613,534
FLASH GUIDE NUMBER SETTING DEVICE FOR CAMERA
Mutsunobu Yazaki, Yokohama-shi, and Takashi Uchiyama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 1, 1969, Ser. No. 820,901
Claims priority, application Japan, May 9, 1968, 43/38016
Int. Cl. G03b 7/16
U.S. Cl. 95—10 C

4 Claims



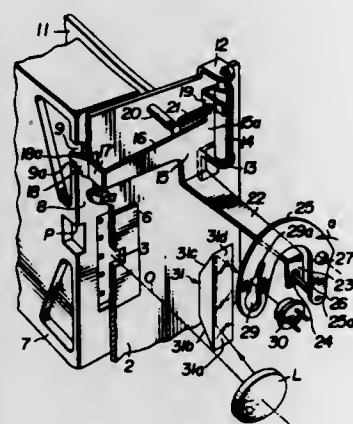
A guide number setting device wherein a guide number for a predetermined film sensitivity may be set by a guide number setting ring irrespective of the sensitivity of the film being used when flash photography is made by utilizing an exposure control mechanism of a camera having a built-in exposure meter.

3,613,535

DEVICE FOR AUTOMATICALLY EFFECTING ADJUSTMENTS OF THE VOLUME OF LIGHT COMING TO AN EXPOSURE METER OF A CAMERA
Yoshiaki Hirabayashi, Nagano-ken, Japan, assignor to Sankyo Kogaku Kogyo Kabushiki-Kaisha, Oaza, Suwa-shi, Nagano-ken, Japan

Filed July 18, 1969, Ser. No. 842,871
Claims priority, application Japan, July 29, 1968, 43/53008
Int. Cl. G03b 19/04, 19/18
U.S. Cl. 95—10 C

5 Claims



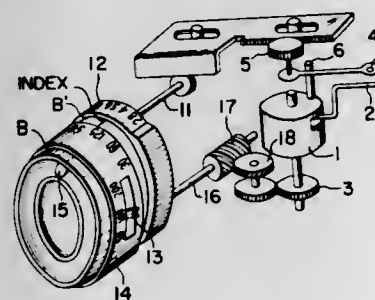
A device for automatically effecting adjustments of the volume of light coming to an exposure meter of a camera using a film cassette having a cutout whose position is determined by the sensitivity of a particular film contained in said film cassette. When such film cassette is inserted in a film cassette housing of the camera, the angle of pivotal motion of a bifurcated member of the camera is determined by the position of said cutout, whereby adjustments of the volume of light incident on the exposure meter can be automatically effected.

3,613,536

WARNING DEVICE FOR EXPOSURE METER
Tatsuya Taguchi, Tokyo, and Yoshiaki Watanabe, Fujisawa-shi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 18, 1969, Ser. No. 843,056
Claims priority, application Japan, July 24, 1968, 43/63274
Int. Cl. G03b 7/04, 17/18
U.S. Cl. 95—10 C

2 Claims



A warning device for an exposure meter for avoiding an erroneous photographic exposure. A restricting pin is provided at a limit point of the range of movement of the meter pointer so that the coincidence of the followup pointer with the meter pointer is avoided at the limit of said range.

3,613,537

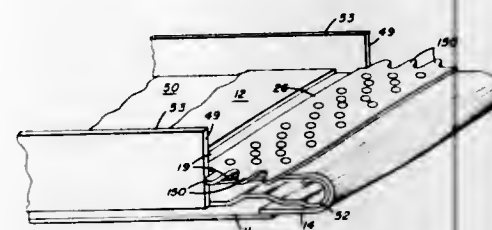
PHOTOGRAPHIC FILM PACK
David A. Frost, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1969, Ser. No. 841,864
Int. Cl. G03b 17/50
U.S. Cl. 95—13

12 Claims

A film pack containing a plurality of film units in which a diffusion transfer process is utilized to form photographic

images and each film unit comprises a photosensitive sheet which is connected to an image-receiving sheet by means for moving the photosensitive sheet, after exposure, into superposition with the image-receiving sheet and thereafter withdrawing the two sheets in superposed relation through an opening in the end of the pack to spread a processing liquid between the two sheets is provided with an improved restraint mechanism for restraining movement of the image-



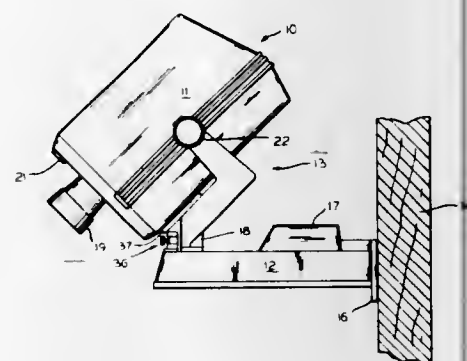
receiving sheet until the photosensitive sheet is moved into superposed relation therewith. This restraint mechanism comprises a deformable projection extending from at least one edge of the image-receiving sheet which engages the end of a wall forming a part of the pack and holds the image-receiving sheet against movement until the projection is deformed by the pulling force required to withdraw the two sheets from the pack in superposed relation.

3,613,538

CAMERA PATH GENERATOR
Charles Horberg, Jr., Chicago, Ill., assignor to Norman Industries, Inc., Chicago, Ill.

Filed Dec. 2, 1968, Ser. No. 780,544
Int. Cl. G03b 37/00
U.S. Cl. 95—15

9 Claims



A path generator for scanning devices, such as surveillance cameras. When the scanning devices are inclined and sweep through an arc the projection of the line of sight of the camera on a vertical plane parallel to a line tangential to the arc at its midpoint is a vertical arc with the apex at the center. The path generator varies this normal projection path to form a substantially straight projection path, for example.

3,613,539

INTEGRAL PHOTOGRAPHY
Leslie Peter Dudley, 10354 Wilshire Blvd. Apt. 1, Los Angeles, Calif.

Filed July 26, 1968, Ser. No. 747,996
Int. Cl. G03b 35/08
U.S. Cl. 95—18

3 Claims

Photographs of the integral type, exhibiting the effect of parallax about both horizontal and vertical axes, are recorded on a spherically lenticulated film or a spherically lenticulated screen-film combination by means of a modified type of camera. Light is admitted to the film via a rectangular aperture in the front of the camera instead of via the usual photographic objective. If the camera is held stationary during an exposure, the resulting photograph is pseudoscopic instead of stereoscopic. A feature of the invention is a

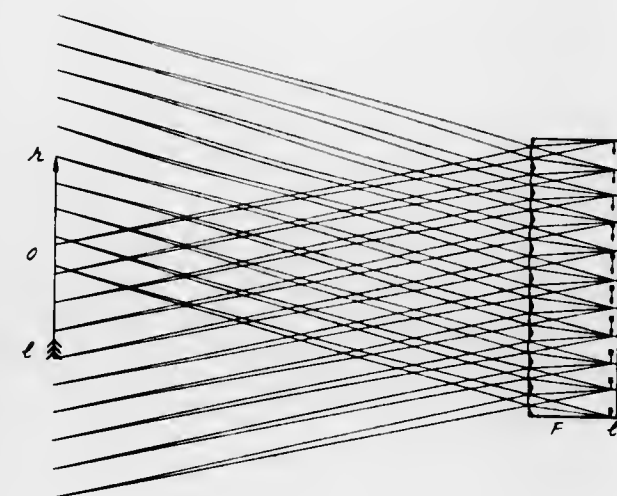
method, comprising a sequential printing technique, by which the elementary images constituting the composite picture are so transposed that the reproduction is stereoscopic. Another feature of the invention involves lateral movement of the camera during an exposure so that

3,613,541

GEAR DRIVE FOR A CAMERA AND FILM CARTRIDGE
David E. Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 6, 1970, Ser. No. 26,015
Int. Cl. G03b 19/04
U.S. Cl. 95—31 R

3 Claims



the necessary transposition is accomplished within the camera. Further features of the invention reside in methods of increasing the effective stereoscopic base of the integral photographic system and methods of adapting the system to aerial photography.

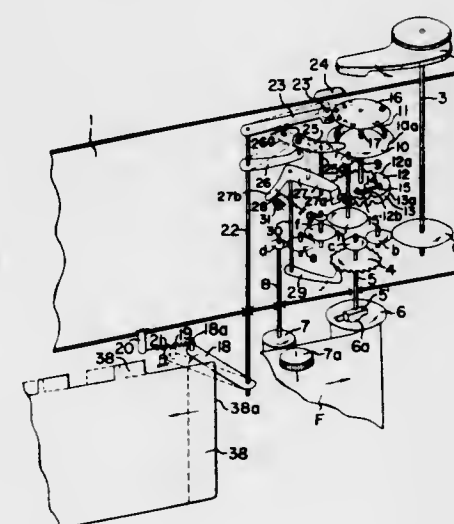
3,613,540

FILM COUNTER CHANGEOVER DEVICE FOR DIFFERENT KINDS OF FILM HAVING DIFFERENT FRAMES

Makoto Nakamura, Urawa-shi, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Oct. 7, 1969, Ser. No. 864,500
Claims priority, application Japan, Oct. 14, 1968, 43/89545
Int. Cl. G03b 1/14, 1/62, 1/66
U.S. Cl. 95—31 DS

4 Claims



A frame counter changeover and film-metering device is interconnected with a film guide changeover device to enable a camera to operate with different lengths and thickness of film. The film guide changeover device consists of two slidable pressure plates. Upon operation of an external control, the gap between the two plates is varied to accommodate different film thicknesses. The external control also adjusts the frame counter to accommodate different lengths of film.

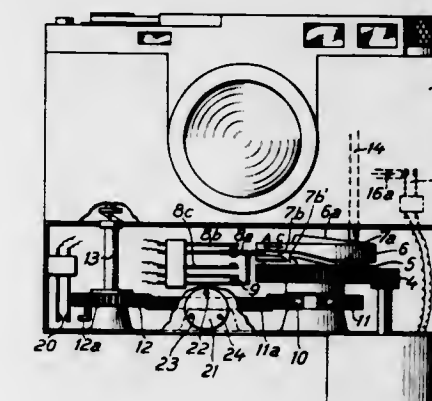
3,613,542

PHOTOGRAPHIC CAMERA HAVING ELECTRIC MOTOR DRIVE

Willi Wiessner, Wetzlar, and Georg Mann, Staufenberg, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed June 29, 1970, Ser. No. 50,805
Claims priority, application Germany, July 8, 1968, P 19 34 466.2
Int. Cl. G03b 19/04, 17/36
U.S. Cl. 95—31 EL

8 Claims



A photographic camera is provided with an electric motor drive which—upon closing of the motor circuit—releases the camera shutter in a first phase of operation, is then brought to a standstill for the time of the shutter run, and is started at the end of the shutter run by the shutter itself into a second phase of operation wherein the motor drive completes the shutter-cocking and film-advancing action. An electric contact is arranged in the proximity of an element that is rotated once per shutter-cocking and film-advancing action and the element is provided with a wiper that closes the contact momentarily once during every rotation. An electric pulse is thus generated during every film-advancing action and is made available at the outside wall of the motor drive

housing. The pulse may be put to different uses, for example, to release a second camera of similar type, the pulse of which is fed back for releasing the first camera so that both cameras release one another, or to operate an electromagnetic remote picture-counting device.

3,613,543
VIEWFINDER SHIELD FOR A CAMERA WITH A SELF-TIMER

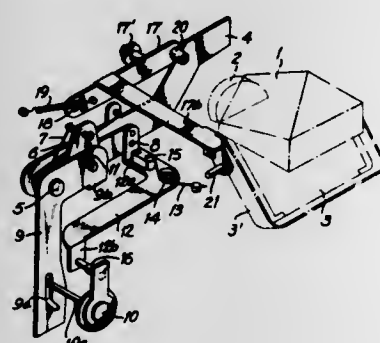
Kunio Mita, Yamato-Machi, and Yukio Umemura, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 17, 1970, Ser. No. 46,988

Claims priority, application Japan, June 24, 1969, 44/49304
Int. Cl. G03b 19/12, 9/64

U.S. Cl. 95—42

10 Claims



A camera having the possibility of shielding the viewfinder. The viewfinder of the camera provides a predetermined path for the viewfinder light. A shielding element is movable from a nonshielding position to a shielding position extending across the latter path to interrupt the travel of viewfinder light. When a self-timer of the camera is set for operation the shielding component is capable of moving to its shielding position. However, a releasable holding device holds the shielding component in its nonshielding position until operation of the self-timer is actually started. It is only in response to starting of the operation of the self-timer that the shielding component is released for movement to its shielding position.

3,613,544
OPTICAL SYSTEM
Hanns Plihal, Gerhard Roth, and Josef Schild, all of Vienna, Austria, assignors to Karl Vockenhuber, Vienna, Austria and Raimund Hauser, Vienna, Austria

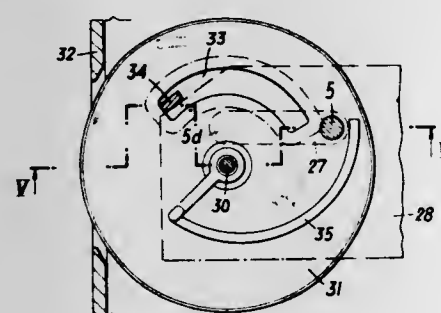
Filed June 24, 1970, Ser. No. 49,233

Claims priority, application Austria, June 27, 1969, A6194/69

Int. Cl. G03b 3/00; G02b 15/00

U.S. Cl. 95—45

32 Claims



A focusing arrangement for a lens system. Two mutually independent focusing mechanisms, one of which is associated with a normal range and the other a macrophotographic range are cooperatively connected to an adjusting device for at least one optical element. The optical system has substantially different optical responses to the operation of the normal and macrophotographic range focusing mechanisms.

3,613,545
FILM-HOLDING CAMERA CONSTRUCTION AND FILM PACKAGE

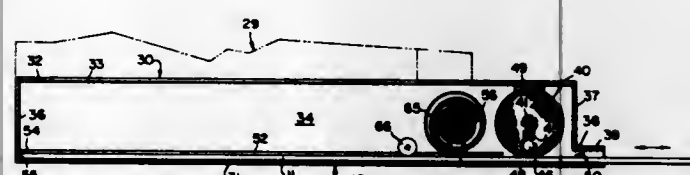
Mark J. Cohn, 123 South Berkley Square, Atlantic City, N.J.

Filed Jan. 3, 1969, Ser. No. 788,731

Int. Cl. G03b 17/26

U.S. Cl. 95—66

4 Claims



A housing for holding film in operative association with a camera, the housing having an edge slot for insertion and withdrawal of the film, a pressure roll in the housing for rolling engagement with the film package upon insertion and withdrawal thereof, and a coiling roll in the housing engageable with a film package upon insertion to open the package for exposure within the camera and to close the film package upon withdrawal from the housing.

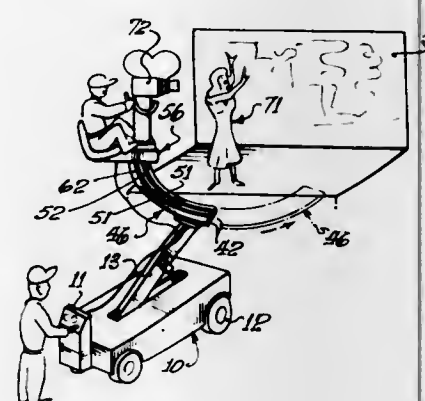
3,613,546
CAMERA-TRAVERSING STRUCTURE
Donald M. Richardson, 1751 Old Ranch Road, Los Angeles, Calif.

Filed Sept. 8, 1969, Ser. No. 855,826

Int. Cl. G03b 17/56

U.S. Cl. 95—86

4 Claims



A camera-traversing structure for supporting and altering the position of a motion picture or television camera without dependence on the surface conditions of that which a camera dolly or crane is situated upon. A conventional camera dolly or crane having means for vertically and/or radially positioning a motion picture or television camera is utilized. The camera-mounting capability is improved by the inclusion of a curved camera-supporting track permitting the camera to slidably move along the entire length of the track.

3,613,547
FILM PROCESSOR
James L. Snarr, Cleveland Heights, and Robert P. Hunt, South Euclid, both of Ohio, assignors to Picker Corporation, White Plains, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,478

Int. Cl. G03d 3/02

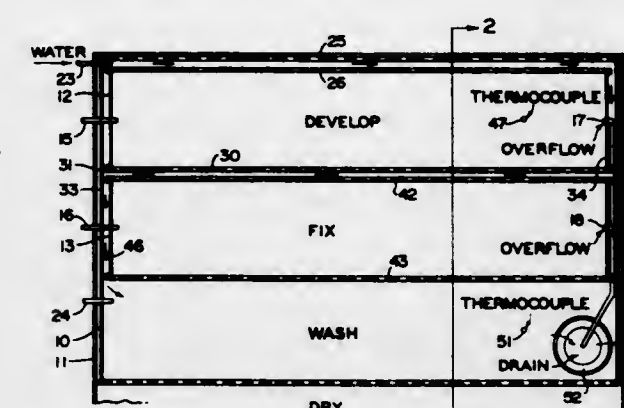
U.S. Cl. 95—96

8 Claims

An X-ray film processing machine having a main tank for retaining wash water. Developer and fixer tanks are positioned in spaced relationship in the main tank. Water is circulated around the developer tank to maintain the temperature of the developer at a desired level. The temperature of the developer is sensed to control the temperature of water being added to the main tank. Other

water is added to the wash tank as required to maintain wash water at its desired temperature.

of at least the majority of the volatile constituents of the coffee, the coffee being maintained in said space until



The processor has removable film transport mechanisms utilizing belts and rollers in spaced relationship.

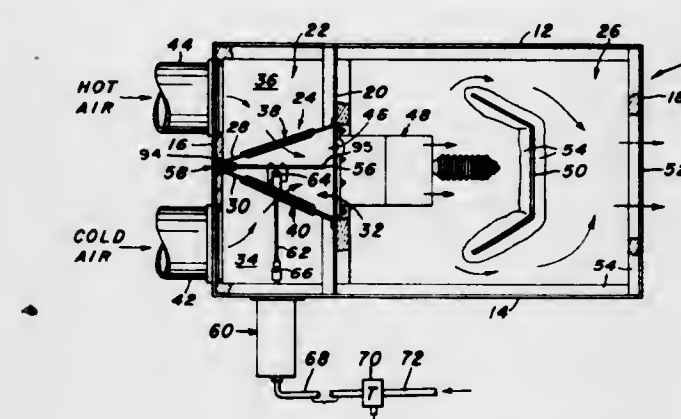
3,613,548
AIR-MIXING VALVE ASSEMBLY
Paul V. Motts, and Wayne K. Stoops, both of Connorsville, Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Dec. 30, 1968, Ser. No. 787,935

Int. Cl. F24f 13/04

U.S. Cl. 98—38

12 Claims



An air-mixing valve assembly for high-pressure air-conditioning systems. The valve assembly includes a damper disposed between opposed gasketed openings which are provided in spaced-apart walls. Link hinge means supports the damper for swinging movement about two spaced generally parallel axes, between the walls, toward and away from engagement with a selected one of the gasketed openings. A gasket of improved configuration is provided at each opening. A positive seal is formed when the damper engages either of the gasketed openings.

3,613,549
APPARATUS FOR CONDITIONING FRESHLY ROASTED COFFEE

Ronald Cheyney Champion, Crawley, Sussex, England, assignor to Kenco Coffee Company, Limited, London, England

Division of Ser. No. 767,443, Oct. 14, 1968, Pat. No. 3,506,446.

Filed Feb. 11, 1970, Ser. No. 14,889

Claims priority, application Great Britain, Oct. 16, 1967 47058/67

Int. Cl. A23f 1/02

U.S. Cl. 99—236

4 Claims

A process and apparatus for conditioning freshly roasted coffee to remove CO₂ therefrom. To accelerate evolution of the CO₂ from the cells of the coffee, the coffee is confined in a space evacuated to a subatmospheric pressure level, but a pressure level which is in a range above the vapor pressures

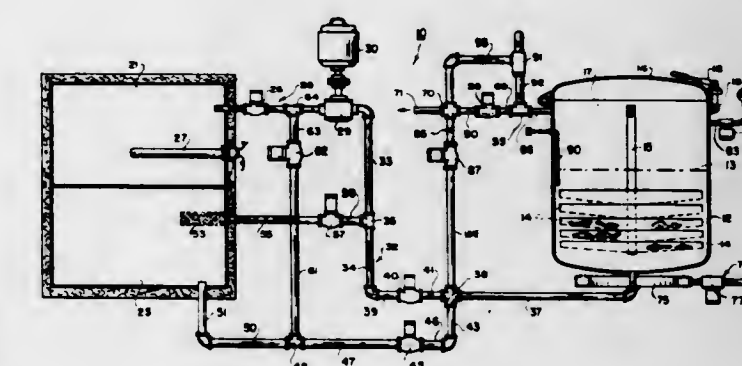
sufficient CO₂ has evolved from the coffee cells to allow final packaging of the coffee in sealed containers.

3,613,550
APPARATUS FOR COOKING FOODSTUFFS
Neal W. Thompson, Monroeville, Pa., assignor to Small Business Administration
Continuation-in-part of application Ser. No. 665,478, Sept. 5, 1967, now abandoned. This application July 1, 1968, Ser. No. 747,760

Int. Cl. A47j 37/12

U.S. Cl. 99—330

12 Claims



A method of and apparatus for cooking foodstuffs by immersing them in a heated liquid cooking medium contained in a pressure vessel, closing the vessel and relieving the pressure therein when it reaches a predetermined high limit at which point the burners turn off and the timing cycle begins. The pressure is relieved to a low limit at which point the burners are turned on. The cycle is repeated until the foodstuffs are cooked. The cooking medium is then discharged from the vessel under the urging of the pressure of the steam remaining in the vessel. Upon complete discharge of the cooking medium, the vessel is completely vented of residual steam. The discharged cooking medium, if desired, is filtered of all solid residue and is then ready for reuse.

3,613,551
HEAT TREATMENT APPARATUS
James L. Reimers, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 30, 1968, Ser. No. 787,647

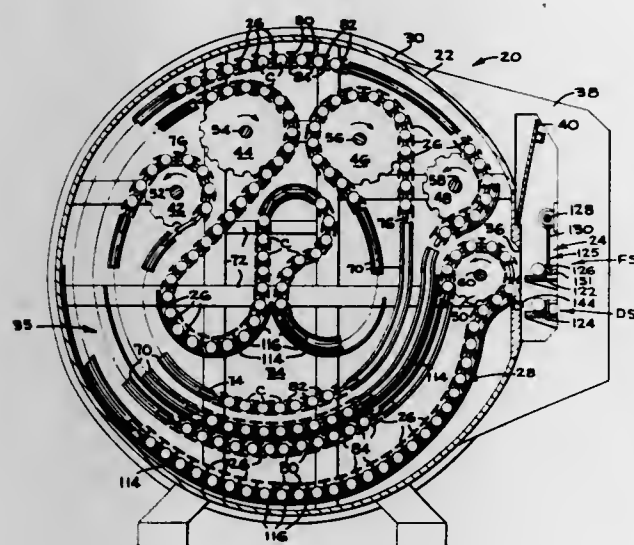
Int. Cl. A23i 3/04

U.S. Cl. 99—360

20 Claims

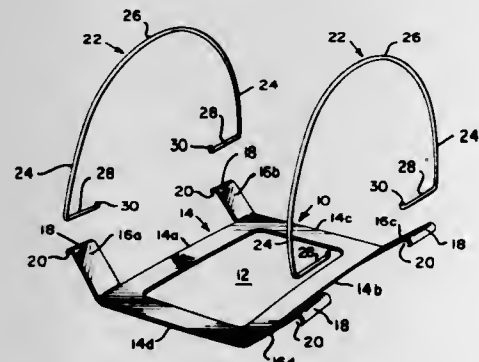
Food-processing apparatus for cooking rows of filled containers within a cylindrical pressure housing and for

supporting the containers in elongated carries of an endless processing conveyor. The conveyor is trained around a multiplicity of drive sprockets near the upper portion of the housing and is draped therefrom and guided along a plurality of looped paths below the drive sprockets as well as along an arcuate path above the sprockets to more fully utilize the holding capacity of the housing. The plurality of drive sprockets are arranged to cause a plurality of direction changes and to permit the conveyor to be driven at high



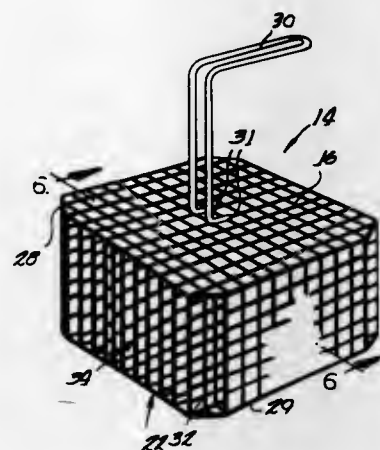
speeds during processing thereby agitating the contents of the containers to affect more efficient heat transfer. Additional agitation may be imparted to the containers by permitting them to project downwardly from the carriers against curved retaining plates during a portion of their travel through the cooker. The cooker also includes an improved feed and discharge mechanism for feeding rows of containers into and discharging rows of containers from the housing of the pressure cooker through one end thereof.

3,613,552
FOWL SLING
George W. Kean, Woodland Drive, Granby, Conn.
Filed May 20, 1970, Ser. No. 39,026
Int. Cl. A47j 43/18
U.S. Cl. 99—426



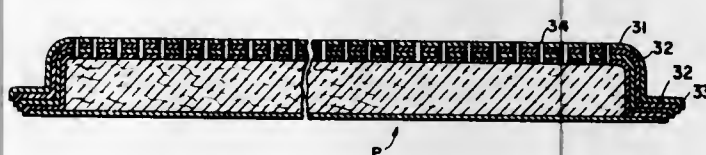
A sling for use in roasting fowl and the like and comprising a thin flat one-piece rectangular body having a large central opening and a pair of generally upwardly projecting arms on each side. Each arm has a hooklike formation at its upper end and free end comprising a downwardly open groove. A pair of similar bails each has a generally U-shaped inverted configuration with short horizontally inwardly projecting feet and short upwardly projecting toes. The feet of the bails are disposed beneath the associated hooklike formations on the arms for easy attachment and detachment and for raising and transporting fowl or other roasts from a roasting pan.

3,613,553
APPARATUS FOR PUFFED POTATO PRODUCT
Samuel J. Popell, Chicago, Ill., assignor to Popell Brothers, Inc., Chicago, Ill.
Division of Ser. No. 497,849, Oct. 10, 1965, Pat. No. 3,484,252
Filed July 14, 1969, Ser. No. 841,338
Int. Cl. A47j 43/18
U.S. Cl. 99—426



A hot oil bath rack for making intermediate potato puffs, said rack having a plurality of compartments to partially puff raw potato slices, said compartments having perforated portions to admit hot oil and having a lid to constrain the slices in substantially vertical orientation, and said compartments having a width from about one-half to about one inch to limit the partial extension of the intermediate potato puff.

3,613,554
LAMINATED COOKING PAD AND METHODS OF MAKING SAME
Edward B. Koger, and Dorothy G. Koger, both of 8040 Bobbyboyer Ave., Canoga Park, Calif.
Continuation-in-part of application Ser. No. 445,930, Apr. 6, 1965, now Patent No. 3,415,662. This application Dec. 3, 1968, Ser. No. 780,681
Int. Cl. A47j 27/00
U.S. Cl. 99—446

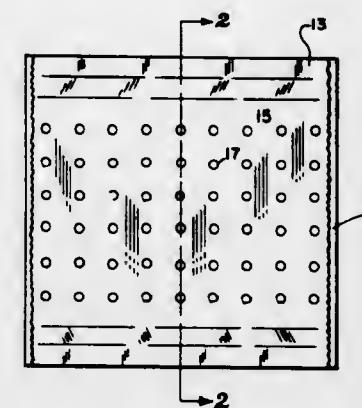


This specification discloses a laminated pad intended to be used in the cooking of foods, particularly meat. The pad is a laminated construction comprising a bottom layer of metallic foil, a comparatively thick intermediate layer of an absorbent material such as cellulose, and a top layer of metallic foil. The top and bottom layers initially are of greater extent than the absorbent layer so that protruding marginal portions may be folded about the side edges and joined to provide a complete envelop about the absorbent layer. The top layer is formed with a multiplicity of small openings through which grease or other food secretions drain to be absorbed the intermediate layer. In a modification a plurality of top foil layers are provided so that one may be peeled off to present a new layer after each usage. A method of fabricating such a pad is also disclosed in which the foil layers are integrally joined at one side so that after the absorbent pad is positioned they are folded and the remaining side edges joined.

3,613,555
DISPOSABLE COOKING GREASE TRAP
Murray Ogman, 32 Annrae St., San Diego, Calif.
Filed May 29, 1969, Ser. No. 829,051
Int. Cl. A47j 27/00
U.S. Cl. 99—446

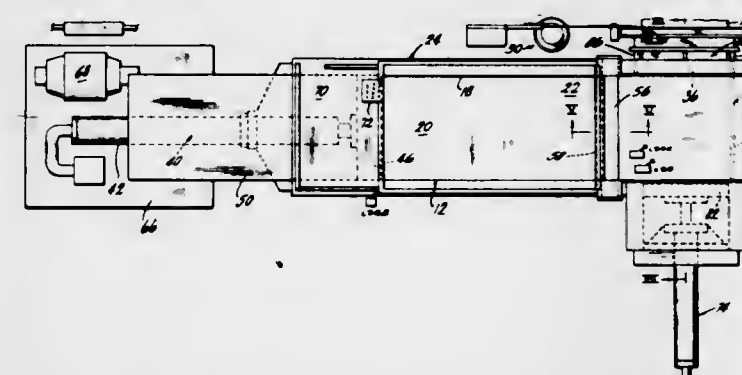
The invention is directed to a disposable cooking grease trap designed to absorb grease and fat drippings from food

being cooked. Two equal sized sheets of aluminum are joined at their periphery forming a compartment. One of the sheets is perforated to absorb drippings. A core of fluid absorbing



material, such as paper toweling, is contained in the compartment to absorb and trap fluids passing through the perforations.

3,613,556
APPARATUS FOR HORIZONTAL BALING
Collin S. Wright, Fort Lauderdale, Fla.; Robert E. Fogelson, Ann Arbor, Mich.; Jerold W. Johnson, Cordele, and Teja S. Jouhal, Cordele, Ga., assignors to American Hoist & Derrick Company, St. Paul, Minn.
Filed Apr. 22, 1970, Ser. No. 30,837
Int. Cl. B65b 13/04; B30b 15/32, 7/04
U.S. Cl. 100—14

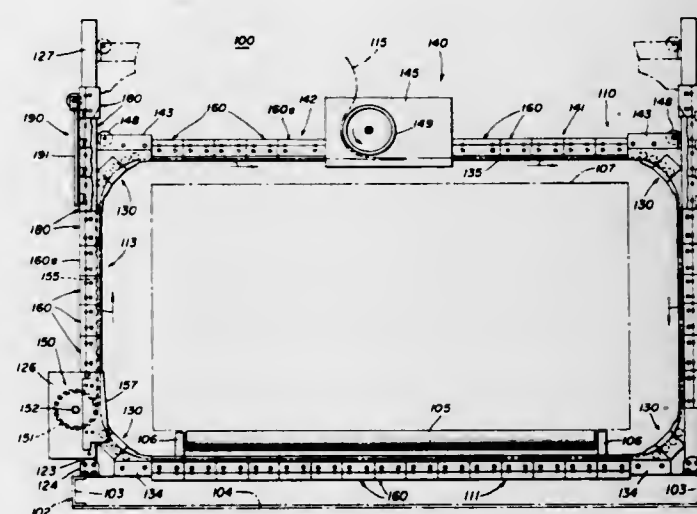


A horizontal baler for baling paper products incorporating a horizontally disposed gathering and compression chamber having an open upper portion communicating with a hopper wherein the paper to be compressed is directly introduced into the hopper and a gatherer and compression ram transfers the paper into a compression chamber to form a parcel of layered compressed material. The paper may be continuously introduced into the hopper as the gatherer ram cycles and a cover plate on the ram receives the paper when the ram is extended, wiping the paper from the cover plate as the ram retracts. Cycling of the gatherer ram continues until a parcel of predetermined compression is achieved, whereupon an ejector or transfer ram perpendicularly disposed to the gatherer ram intermittently transfers the compressed parcel in the direction of the formed compressed parcel layers through automatic strapping apparatus which straps the parcel in a direction perpendicular to the formed layers to define a bale. Gathering, compressing and transferring occurs at substantially the same horizontal orientation, and automatic control means are utilized to permit automatic operation of the apparatus cycle.

3,613,557
ADJUSTABLE PLATEN TRACK
Bestor P. Coleman, Willow Springs, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Aug. 6, 1970, Ser. No. 61,656
Int. Cl. B65b 13/04
U.S. Cl. 100—26

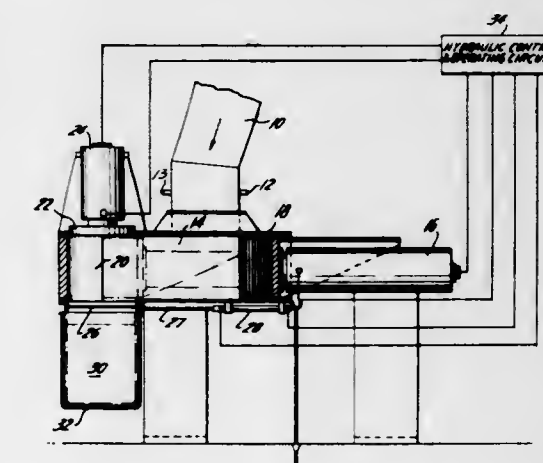
A generally rectangular binder strap track includes a stationary section and a movable section movable therealong

for varying the track length, a flexible tape being connected to the movable section and extending therefrom along the stationary section and outwardly through an opening therein to a tape supply for facilitating unencumbered passage of the leasing strap end from the stationary section to the movable section; each section includes a backing wall of a width substantially equal to that of the strap and pairs of retainers extending laterally outwardly of the opposite sides of the



backing wall and cooperating therewith to define a strap path substantially wider than the backing wall, each retainer having two flat surfaces thereon intersecting at an angle and having an opening therethrough with the axis thereof passing through the intersection of the surfaces, the openings of each pair of retainers receiving a pin therethrough to mount the retainers for movement between retaining and releasing positions.

3,613,558
REFUSE COMPACTOR CONTROL ARRANGEMENT
Irwin Math, Beechhurst, N.Y., assignor to International Patents & Development Corp., Kings Point, N.Y.
Filed Aug. 18, 1969, Ser. No. 851,003
Int. Cl. B30b 13/00
U.S. Cl. 100—35



A control arrangement for a refuse compactor in which a photocell cooperates with a time delay device to determine when refuse is being accumulated or has been accumulated in an accumulating chamber for eventual compaction into a bale. A hydraulic cylinder and piston is actuated thereupon to compact the refuse. After the compacted mass is realized, an ejecting door is opened and a hydraulic cylinder and piston ejects the compacted mass from the refuse compactor. The control arrangement coordinates the timing and sequence of operations of a compacting cycle during which a bale is formed and transferred from the compacting machine.

3,613,559

INSTALLATION FOR THE COMPRESSING AND EVACUATION OF HOUSEHOLD GARBAGE AND INDUSTRIAL REFUSE

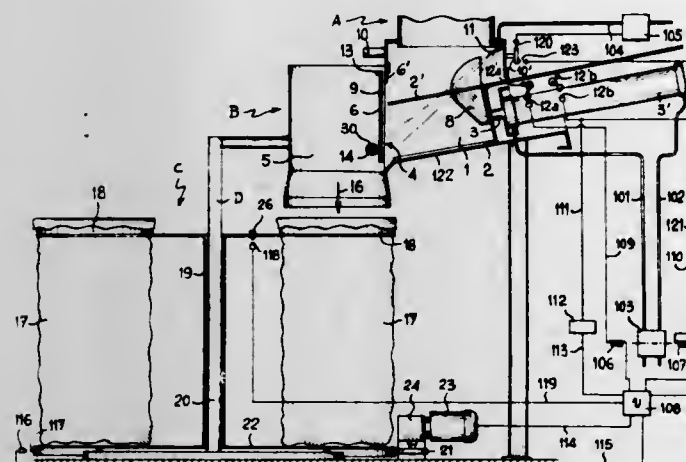
Marcel Bulsson, 3, place des Halles, Chartres (Eure et Loir), France

Filed May 1, 1970, Ser. No. 33,816

Int. Cl. B30b 15/16

U.S. Cl. 100-49

12 Claims



An installation for processing waste material, such as household garbage and industrial refuse, includes a hatch for receiving the waste material from a disposal chute the hatch divided by a pivotally mounted shutter into a space for accumulating the material from the disposal chute and a discharge chamber aligned above a receptacle into which the waste material is packed. Positioned for movement transversely across the hatch space toward the shutter is a hydraulic piston rod which compresses the accumulated material and pivotally displaces the shutter so that the compressed material is transferred into hatch chamber and then drops into a receptacle. A collecting drum supports a plurality of receptacles and is arranged to replace filled receptacles with empty ones. A photoelectric cell senses the level of the accumulated material in the hatch space and through an electrical circuit and hydraulic circuit commences the operation of the hydraulic piston rod for compressing the material. Another member counts the number of piston strokes and actuates the controlled movement of the collecting drum for replacing the filled receptacles. When all of the receptacles are filled the operation of the installation is shut down until the filled receptacles are removed from the collecting drum and are replaced by empty ones.

3,613,560

REFUSE COMPACTOR

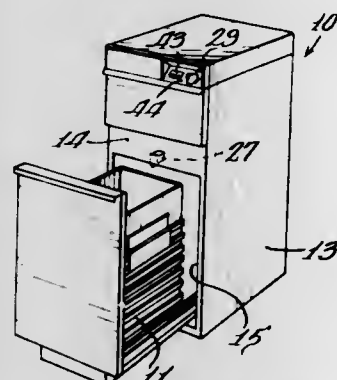
Michael J. Bottas, St. Joseph; Thomas R. MacFarlane, Benton Harbor, and Frank E. Miller, St. Joseph, all of Mich., assignors to Whirlpool Corporation

Filed Nov. 5, 1969, Ser. No. 874,249

Int. Cl. B30b 15/14

U.S. Cl. 100-52

17 Claims



A refuse compactor having a ram movably carried on a support for selective movement into a refuse-holding drawer

to compact refuse deposited therein. The ram is driven by an electric motor which is controlled to effect preselected forcible compaction of the refuse and return to a "start" position for subsequent compaction of additional refuse subsequently deposited in the drawer. The drawer is movable between an inner, compacting position and an outer, refuse-receiving position. The motor is controlled to permit operation of the ram only when the drawer is substantially in the compacting position.

3,613,561

REFUSE COMPACTOR

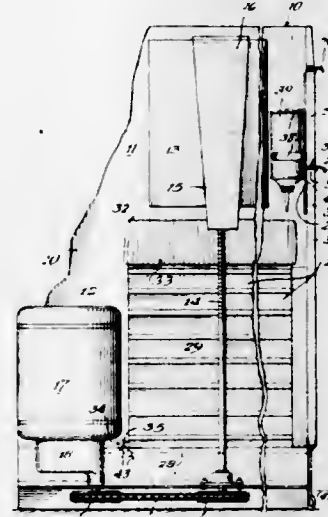
Charles R. Difley, Niles, Mich., assignor to Whirlpool Corporation

Filed Nov. 13, 1969, Ser. No. 876,399

Int. Cl. B30b 15/14

U.S. Cl. 100-53

8 Claims



A refuse compactor comprising a cabinet with top and bottom sections, a refuse receiver in the bottom section, a refuse compacting ram in the top section movable when energized in a cycle into and out of the receiver to compact refuse therein, a movable top closure in the cabinet top section extending across a top access opening when closed but movable for exposing the ram means through the opening and means for inactivating the ram before the closure means can be moved to expose the ram to preclude accidental operation of the ram when the closure is open in order to avoid possible injury to the operator of the compactor.

3,613,562

PROCESSING OF AUTOMOBILE BODIES INTO SCRAP

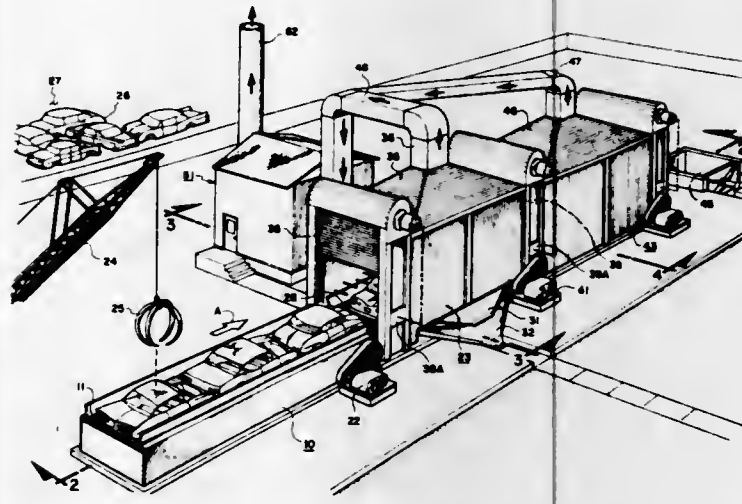
John C. Brewer, Salt Lake City, Utah, assignor to Garballizer Corporation of America, Salt Lake City, Utah

Filed May 6, 1970, Ser. No. 35,035

Int. Cl. B30b 15/30

U.S. Cl. 100-74

5 Claims



A vehicle body shell processing plant is provided wherein vehicle shells are fired and quenched prior to baling in a

manner such as to avoid air pollution difficulties. Exhaust gases from the furnace and quencher stages of the system are routed through an air-cleaning system such that only clean gases are exhausted from the system. Quenching is done in the system such that steam, entrained particulate matter, and residual exhaust gases are conveyed to a gas scrubbing system for cleansing purposes. Independent conveyors are utilized at feed-in, furnace, and quencher points. The quencher conveyor is designed to have a sloping construction such that there can be an automatic and continuous process to shell bodies for each intermittent group processed.

3,613,563

FILTER PRESS

Mikhail Yakovlevich Meshengisser, ulitsa Sumskaya, 126, kv. 5, Kharkov; Ivan Semenovitch Ermakov, prospekt Pravdy 7, kv. 44, Kharkov; Georgy Mikhailovich Kochkin, ulitsa 23 avgusta, 29, kv. 161, Kharkov; Alexandr Viktorovich Stankun, Karpovsky pereulok, 10, Kharkov; Filipp Nikolaevich Shakhov, ulitsa Chalkovskogo, 25, kv. 23, Kharkov; Ilya Pinkhusovich Velednitsky, ulitsa K. Libknekhta, 32/1, kv. 19, Berdichev, and Petr Petrovich Yagodin, ulitsa Pushkinskaya, 54, kv. 1, Berdichev, all of U.S.S.R.

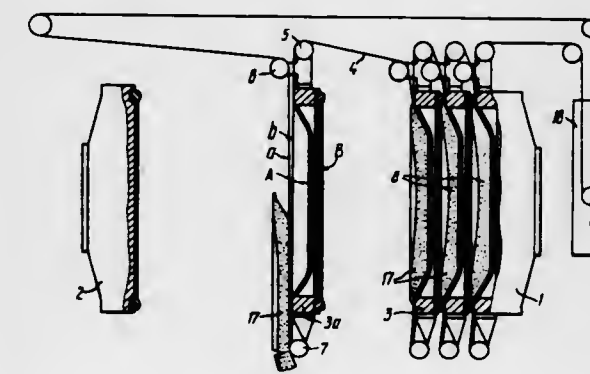
Filed May 12, 1970, Ser. No. 36,652

Claims priority, application U.S.S.R., July 7, 1969, 1345953

Int. Cl. B30b 9/06; B01d 25/32

U.S. Cl. 100-115

2 Claims



A filter press with vertical filter plates characterized in that each filter plate has guide rollers at the upper and lower parts thereof and is limited by a flat draining surface on one side and a concave draining surface on the other while the filter cloth in the form of a continuous band passes consecutively between the adjacent filter plates so that, resting on the guide rollers, it covers twice the draining surface of each filter plate. When the filter plates are spread apart one after another in the direction of the longitudinal axis of the set, the length of the filter cloth adjoining the filter plate being moved is also shifted with relation to the latter, thus carrying outside the cake formed in the filtering chamber.

3,613,564

SLUDGE-DEWATERING APPARATUS

Maximilian Adamski, Wheeling, and Donald S. Schover, Highland Park, both of Ill., assignors to General American Transportation Corporation

Filed Aug. 13, 1969, Ser. No. 849,770

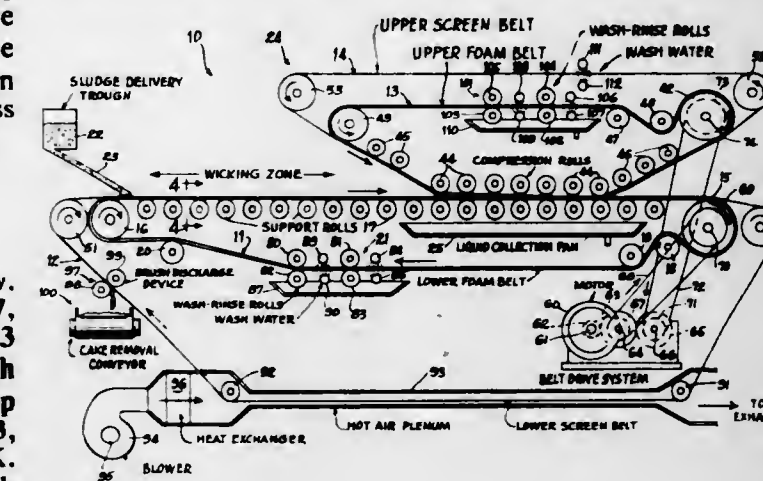
Int. Cl. B30b 9/24

U.S. Cl. 100-118

15 Claims

An apparatus for removing aqueous liquid from a flowable material, containing aqueous liquid as a continuous phase and suspended solids as a discontinuous phase, to obtain a dewatered product has two endless, driven belts of elongated porous sheets. The belts are supported so that one belt has its path of travel inside that of the other belt and with an upper horizontal run of the outer belt overlying and abutting that of the inner belt moving in the same direction. The sheet of the inner belt is resilient, compressible and made of cellular material capable of absorbing aqueous liquid by a wicking action, whereas the sheet of the outer belt is a fine-mesh sheet with pores providing passage of the liquid through the sheet by a wicking action of the abutting cellular sheet while retaining most of the solids on the outer belt. A feeder for

delivering the flowable material onto the outer belt is mounted adjacent the beginning of the dewatering zone where there is the wicking action due to the abutment of the two belts along that zone. A device for removing dewatered product is mounted downstream of that zone. A device to



compress the inner belt downstream of the upper horizontal run of that belt includes a pair of opposed rolls. Another compression device may be at the upper horizontal run but downstream of the dewatering zone at which initial wicking occurs.

3,613,565

APPARATUS FOR A SETTABLE WORKING MATERIAL FEED IN PRESSES IN FORM OF CYCLES

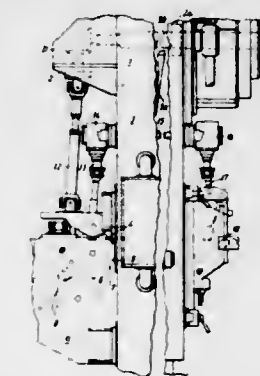
Roger Muller, Neuilly sur Seine, France, assignor to Etablissement D. F., Paris, France

Filed May 12, 1969, Ser. No. 823,678

Int. Cl. B30b 15/30

U.S. Cl. 100-215

7 Claims



An apparatus for a timed, settable working material feed in presses with a stepwise driven pair of first feeding rollers by the press by means of a step-by-step switching device, wherein the first feeding rollers grip the working material in a clamping manner. A first change gear drive having a coarse setting step and a correction- or fine-setting step is provided. The step-by-step switching device is operatively connected with the pair of the first feeding rollers by means of the change gear device. A pair of second feeding rollers, is also arranged and a second change gear drive for the pair of second feeding rollers, is provided. The first change gear drive is operatively connected with the second change gear drive, and the pair of second feeding rollers is disposed on the side of the apparatus opposite that of the pair of the first feeding rollers.

3,613,566

REFUSE COMPACTOR

Lloyd P. Shapleigh, Jr., 2896 Mansueto Drive, Stevensville, Mich., and Charles R. Difley, 2309 Emerald Drive, Niles, Mich.

Filed Oct. 20, 1969, Ser. No. 867,746

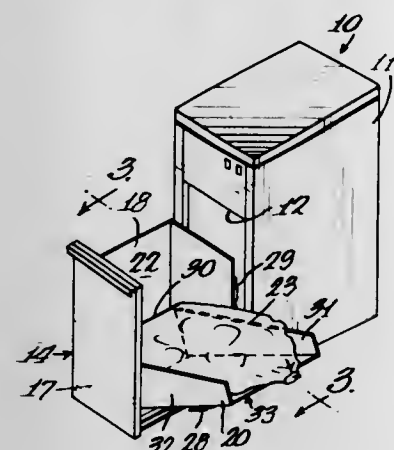
Int. Cl. B30b 15/32

U.S. Cl. 100-218

12 Claims

A refuse compactor having a ram adapted to move downwardly into a drawer to compact refuse deposited in the

drawer whereby a substantial quantity of refuse may be collected in a limited space. The compactor is adapted for use in a household kitchen for compacting household refuse. The drawer is provided with a movable sidewall permitting the user, such as a housewife, to remove the compressed refuse laterally from the drawer while yet arranging the drawer to define upright sidewalls to contain the refuse



effectively positively therein during compacting thereof by the ram means. Manually operable means are provided for selectively latching the sidewall in the upright position. The refuse may be collected in a bag in the drawer whereby the compacted refuse therein may be readily removed by the lateral removal of the bag with the movable sidewall portion in a downwardly disposed arrangement.

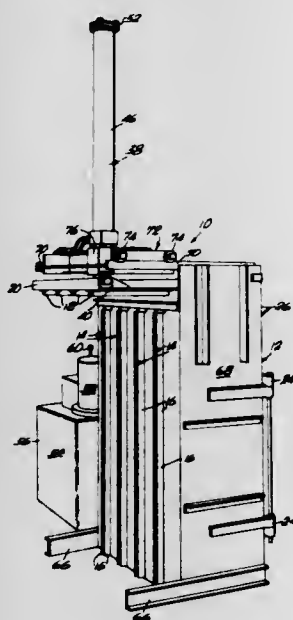
3,613,567 BAILING PRESS

Anthony Loughran, Farsley, England, assignor to Supermarket Service, Inc., Fort Lauderdale, Fla. and Greenwood & Batley Ltd., Leeds, England, part interest to each

Filed Sept. 19, 1969, Ser. No. 859,309
Int. Cl. B30b 1/32

U.S. Cl. 100—226

4 Claims



A baling press with a rectangular press box defining a workstation for receiving material to be baled therein. The sidewalls of the press box extend above the workstation and include upper rails which extend backwards beyond the defined workstation. A carriage is mounted on the rails for back and forth movement having a carriage hub. Mounted in the hub is piston ramrod assembly with a piston cylinder over the hub and the ramrod extending out of the cylinder below the hub. A press platen attached to the ramrod acts on the material in the workstation. When the platen is in position at the top of the workstation it can move backwards when the

carriage is pushed back along the rails. The piston ramrod assembly is operated by a hydraulic pump unit having flexible conduits connected to the piston cylinder. The pump unit can be moved about to a convenient location in the vicinity of the workstation.

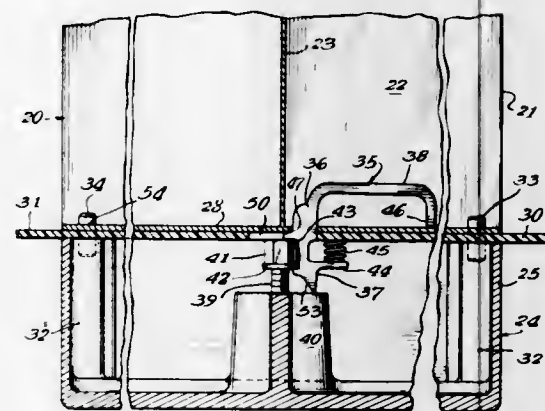
3,613,568 REFUSE COMPACTOR RAM COVER

Michael J. Bottas, St. Joseph; Charles R. Difley, Niles, and Frank E. Miller, St. Joseph, all of Mich., assignors to Whirlpool Corporation

Filed Nov. 13, 1969, Ser. No. 876,400
Int. Cl. B30b 15/06

U.S. Cl. 100—229

13 Claims



A refuse compactor particularly for household use having a receiver for the refuse, a refuse compacting ram movable into and out of the receiver to compact refuse therein comprising a ram body and an end cover on the ram body engaging the refuse during the compacting movement and movable latch means accessible when the ram is at rest on the outside of the receiver for releasably attaching the ram cover to the ram body so that the cover may be removed when desired for cleaning and other servicing.

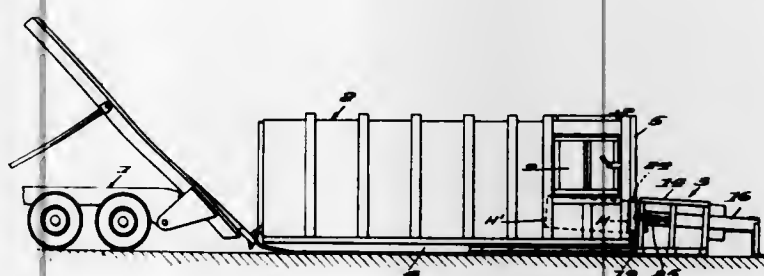
3,613,569 STATIONARY PACKER ASSEMBLIES

Harvey W. Liberman; James A. Wade, and Steven C. Voorhes, all of Knoxville, Tenn., assignors to Dempster Brothers, Inc., Knoxville, Tenn.

Division of Ser. No. 703,995, Feb. 8, 1968, Pat. No. 3,507,410
Filed Nov. 14, 1969, Ser. No. 876,883
Int. Cl. B30b 1/32

U.S. Cl. 100—229

6 Claims



A refuse packing and transporting assembly wherein the refuse is placed directly in a transport container while the container is connected with a packer device which is operated to compress the refuse therein. The packer device comprises a relatively simple frame structure mounted in position to have the transport container brought into juxtaposition thereto with an opening in the end of the transport container into and through which a head in the packer operates to compress the refuse in the container after deposit directly into the container. After a suitable quantity of refuse has been packed in the container, the latter may be disconnected from the packer and hauled away for discharging the refuse therefrom.

3,613,570 HOT STAMPING DIE STRUCTURE FOR HOT STAMP DECORATING

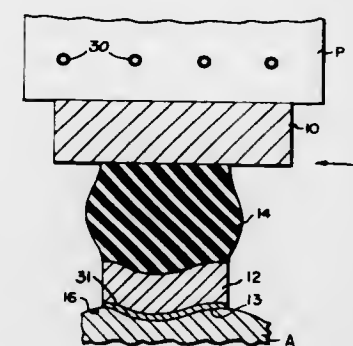
Carl F. Gladen, 3530 Wheeler Drive, Bay City, Mich.

Continuation-in-part of application Ser. No. 603,778, Dec. 22, 1966, now abandoned. This application June 11, 1969, Ser. No. 832,184

Int. Cl. B44b 5/02

U.S. Cl. 101—9

9 Claims



A hot stamping die for decorating the irregular surface of an article utilizing a laminated die comprised of a pair of spaced-apart plates having a layer of resilient material sandwiched therebetween. The die is heated and the outermost plate is deformed to match the irregular contour of the surface to be decorated in the stamping operation.

3,613,571 CONTAINER PRINTING MACHINE AND METHOD OF PRINTING

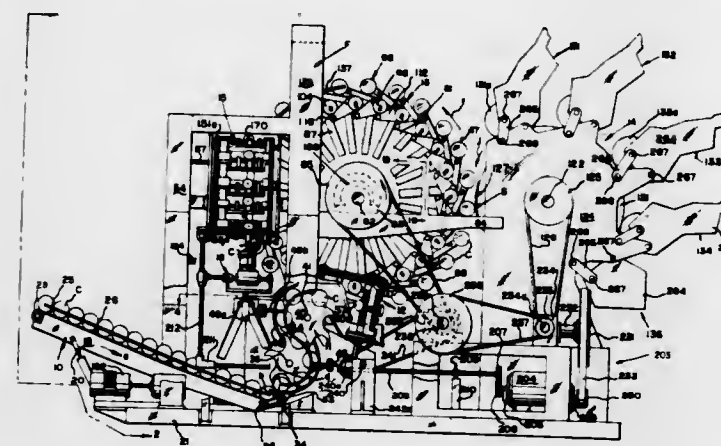
Edward J. Russell, Gladwin; Gaylord W. Brown, Beaverton, and Dennis J. Dorman, Coleman, all of Mich., assignors to Brown Machine Company of Michigan, Inc., Beaverton, Mich.

Filed Feb. 27, 1968, Ser. No. 708,690

Int. Cl. B41f 17/22; B65g 47/86

U.S. Cl. 101—40

40 Claims



High-speed printing or decorating apparatus capable of printing information and decoration in a variety of colors on container sidewalls and the like, and with quality half tones and fine type, including: a rotary mandrel drum having a series of circumferentially spaced mandrel lever assemblies with generally tangentially disposed, laterally projecting mandrels thereon mounted on each side of the drum "in line" with a rotary printing drum having offset printing blankets on its peripheral face which are revolved past the mandrel drum at a printing station; container supply and separating mechanism for individually moving containers to a position opposite the peripheral path of the mandrels; and endless transfer conveyor mounted opposite the peripheral path of travel of the mandrels and carrying cam-controlled pusher members which follow the arcuate path of the mandrels and at the same time move toward the mandrel drum to push containers endwise onto the mandrels upstream of the

printing station; and endless transfer conveyor mounted opposite the peripheral path of travel of the mandrels downstream of the printing station and carrying cam-controlled suction cup, container removing members, for engaging the end walls of the containers, which follow the arcuate path of the mandrels and remain squared with the ends of the containers while pulling them endwise off the ends of the mandrels and depositing them on discharge conveyor mechanism; valve mechanism for selectively communicating vacuum and air pressure sources with each mandrel for aiding in drawing the containers onto the mandrels and removing them therefrom; mechanism connected with the valve mechanism and sensitive to atmospheric pressure at a time when the vacuum source is communicating with a particular mandrel to sense that no container is on the mandrel and to actuate a particular mandrel lever assembly to remove the mandrel from "print" position as it moves to the printing station; mechanism for supplying ink to the leading ends of the printing blankets and lacquer to the trailing ends thereof so that the ink applied may be immediately protected by a fast drying lacquer; and drive step means on the printing drum adjacent each blanket and of greater thickness than the blankets for spinning the containers through a controlled number of revolutions relative to the blankets when the mandrels reach the printing station.

3,613,572 SELECTIVE-TRANSFER PRINTING MACHINE

Nicolas Gretchikhine, Paris, France, assignor to Societe Ormig

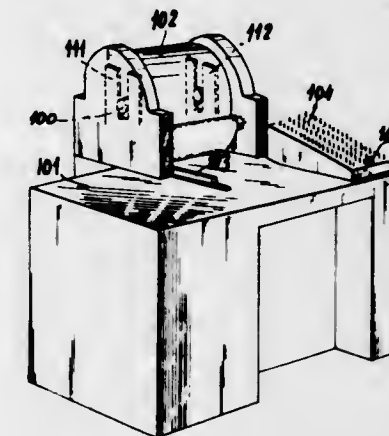
Filed Dec. 27, 1968, Ser. No. 787,531

Claims priority, application France, Dec. 29, 1967, 134,237

Int. Cl. B41f 47/46, 47/58

U.S. Cl. 101—91

1 Claim



The rotation and printing control devices of the plate-carrying cylinder, as well as the means actuating the pincers, each comprise an electromagnetic arrangement placed under the control of an electronic matrix connected, on the one hand, to a bank of electric switches which are manually selectable, and, on the other hand, to a photoelectric exploration system for a reference code of the angular positions of the plate-carrying cylinder corresponding to the lines of a plate mounted on the said cylinder, this code being connected to the plate-carrying cylinder and preferably integral with it.

3,613,573 PRINT SELECTION AND PAPER FEED ADJUSTING MEANS IN POSTAL FRANKING MACHINES

James Woodhead, Gloucestershire; David Alan Hedley, Essex, and Maurice Revie Jardine, Essex, all of England, assignors to Roneo Limited, Crydon, Surrey, England

Filed Aug. 7, 1968, Ser. No. 750,824

Claims priority, application Great Britain, Aug. 17, 1967, 37,992/67

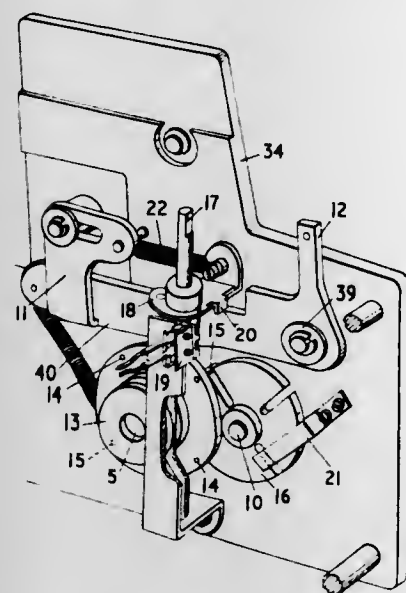
Int. Cl. B41f 13/04; B41f 47/46; B65h 25/00

U.S. Cl. 101—92

9 Claims

A franking machine of the kind adapted to provide printed labels for attachment to postal packets which cannot be inserted into the machine for franking in the normal way in

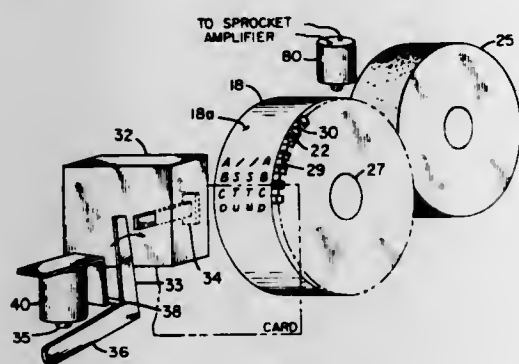
which the length of label to be issued by the machine is controlled by a Geneva wheel which is rotated alternatively either one-half or one complete revolution by a rotatable member having long and short pins. These pins engage in slots in the Geneva wheel while the rotatable member is movable axially into alternative positions by a manual control to engage all the pins with the slots or only the long pins with



the slots. The paper strip from which the labels are cut passes around a feed drum the circumference of which is equal to the length of a long label and the drum is rotated by way of a dog clutch mechanism the driving member of which is continuously rotated by an electric motor on the machine, the clutch being engageable by means of a sprag with the driven member of the clutch to rotate the drum at each operation of the machine by either 360° or 180° by means of a cam rotated by the Geneva wheel.

A pair of rotatable perforating knives positioned 180° apart is positioned adjacent the feed drum and rotate into contact with the paper around the drum at the appropriate positions thereof by being driven by the Geneva wheel to perforate the paper at long or short intervals as necessary.

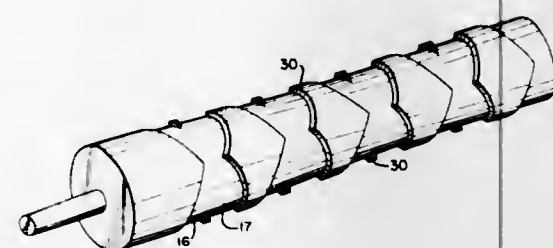
3,613,574
SELECTIVE PRINTING MEANS INCLUDING A ROTATABLE DRUM HAVING INTERSPERSED COMPLEMENTARY CHARACTER SETS THEREON
Richard L. Longcoy, Lansdale, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 10, 1969, Ser. No. 797,979
Int. Cl. B41j 1/34
U.S. Cl. 101-93 17 Claims



This invention relates to a printer device that prints on a medium which moves incrementally in a horizontal position. The print drum is arranged into sets of print wheels wherein a first set comprises print wheels which carry one-half of the characters and a second set which comprises print wheels that carry the remaining characters. The print wheels of a set carry identical characters and therefore are the duplicate of one another. To insure being able to print the required information at a particular position, the medium is

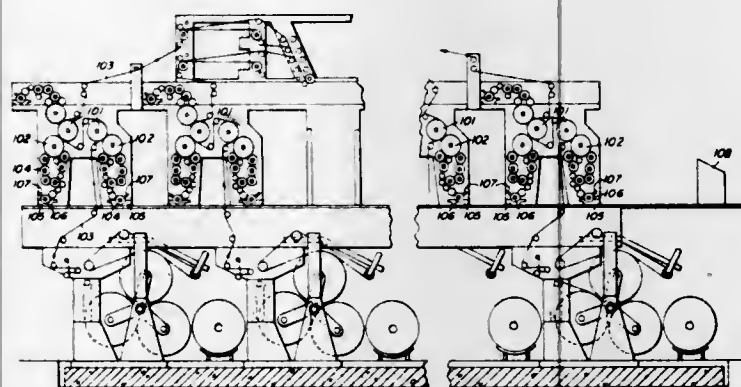
incremented horizontally in steps so that the print position is opposite a wheel of one set during the first push and then is moved so that the same column position is opposite a character wheel of the second set after the second push. If the character is not printed by a print wheel of the first set it is automatically printed by a print wheel of the second set.

3,613,575
OSCILLATOR ROLLER FOR PRINTING PRESSES
Paul R. Kantor, Cleveland, Ohio, assignor to Kantor Press Controls, Inc., Cleveland, Ohio
Filed May 27, 1968, Ser. No. 732,302
Int. Cl. B41f 7/36
U.S. Cl. 101-148 9 Claims



An oscillator roller for a printing press which achieves a superior breakup and distribution of the substances with which it comes into contact, and which comprises an elongated cylinder having one or more spiral bands or raised lands formed along its surface and which extends longitudinally therealong. When more than one spiral band or land is utilized, they are normally found in opposition to each other. The oscillator roller when used in the dampener of an offset printing machine is normally in surface-to-surface contact with one of the form rollers, as referred to, and is operable to distribute the dampening solution evenly over the surface of the form roller prior to its application to the printing plate. The oscillator roller may also be used in like manner in the inking system of a lithographic or conventional printing press to provide substantially even distribution of the ink prior to its application to the printing plate.

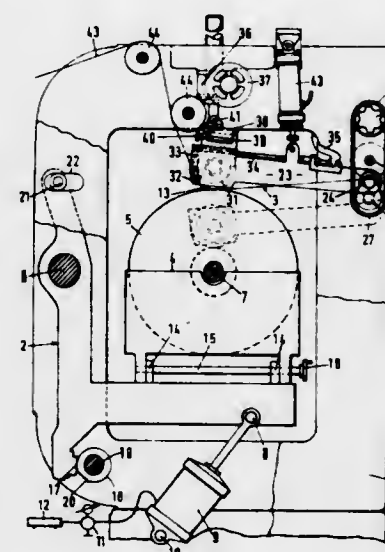
3,613,576
CENTRAL CONTROL SYSTEM FOR INK DUCT ADJUSTING SCREWS ON PRINTING PRESSES
Gregor Nikolaus Muth, Zell, and Karl-Heinz Wolfram, Eibelstadt, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer, Aktiengesellschaft, Würzburg, Germany
Continuation-in-part of application Ser. No. 745,577, July 17, 1968, Continuation-in-part of application Ser. No. 621,229, Mar. 7, 1967, now abandoned. This application June 19, 1970, Ser. No. 47,263
Claims priority application Germany, Mar. 26, 1966, Sch 38741
Int. Cl. B41f 5/16, 31/04
U.S. Cl. 101-181 6 Claims



In printing newspapers or the like where the number of pages that are printed by plates are frequently rearranged in various positions on the rotary printing cylinders it becomes a problem to provide for adjustment of the inking of each individual plate. The inking plate is positioned with respect

to a duct roller, by screws spaced along the plate. These screws may be screwed in and out by a pair of endless belts that are pushed against the screw to rotate it for "in" or "out" adjustment. A solenoid mechanism operated by an electromagnet pushes the belt running by a particular screw into engagement with the screw to turn it as desired. One of the pair of belts is for turning it in one direction and the other is for turning the screw in the opposite direction. There is provided a control at the central control station for turning on and off a particular motor driving a pair of belts for a particularly positioned plate for a certain page. The control may be a push button type of switch that when first pressed down turns on the motor and when pressed down a second time stops the motor. Along each belt there are electromagnets that press the belt against a screw for that electromagnet causing the belt to tangentially engage the screw and frictionally turn it. Each of the respective screw electromagnets of which there are two for each screw are connected in an electrical control circuit in parallel to a respective double throw switch. Movement of the switch in one direction causes energization of the proper electromagnet to screw the screw in while movement of the toggle switch in the other direction causes the energization of the companion electromagnet to cause the screw to be screwed out. In order to maintain the same push button for the same page number plate regardless of where the plate is positioned on the printing cylinders for a set up of printing, there is provided a key, code means or patch means. Such a means is interposed in the control circuits leading from the motor push buttons and power supply so when connected as desired for a particular printing page set up, the operator on pressing the push button for plate motor No. 1, for example, controlling the inking mechanism belts for plate 1, causes that motor to be actuated. The operator then moves the desired toggle switch in the desired direction and the electromagnet acts to press the moving belt for that electromagnet against the adjusting screw for that portion of the inking blade. When another set up of printing is desired, the push buttons for the motors are rewired for the respective plate positions and the inking mechanism therefore by utilization of the code or patch wiring means for the particular desired set up. The respective push buttons for controlling the motors remain the same for the respective plates regardless of where the plates are positioned.

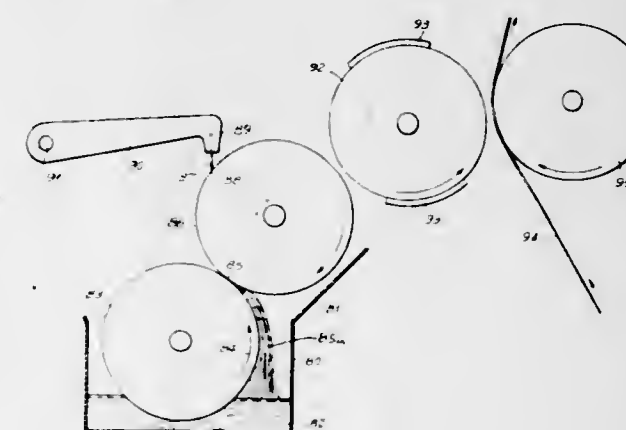
3,613,577
ROTARY WEB PROCESSING MACHINES
Angus Murray Halley, Birmingham, England, assignor to James Halley & Sons Limited, West Bromwich, England
Continuation of application Ser. No. 546,939, May 2, 1966, now abandoned. This application June 4, 1970, Ser. No. 41,768
Int. Cl. B41f 13/40
U.S. Cl. 101-247 1 Claim



A rotary web processing apparatus in which an impression cylinder is movably mounted to permit radial adjustment during setting up of the apparatus but is fixed during a web

processing operation. A processing cylinder is cradle-mounted to permit radial adjustment of the processing cylinder and movement without restriction during the web processing operation to maintain the nip pressure between the impression and processing cylinders. An abutment means fixes the radial position of the processing cylinder and its mounting cradle during setting up, but during web processing the abutment means permits unrestricted radial movement of the processing cylinder.

3,613,578
INK METERING ROLL FOR USE INTERMEDIATE A FOUNTAIN ROLL AND A PRINTING ROLL
Charles Heurich, Hanover, N.J., assignor to Pamarco Incorporated, Roselle, N.J.
Filed Aug. 18, 1969, Ser. No. 850,744
Int. Cl. B41f 31/06, 31/10
U.S. Cl. 101-350 2 Claims

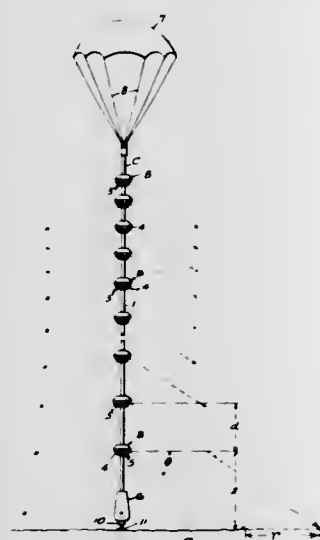


The disclosure sets forth a flexographic printing procedure utilizing metering rolls for flexographic processing, which metering rolls produce tone and color process printing of consistently and uniformly high quality throughout one press run and also from one press run to another. These metering rolls, which have from 250 to 600 cells per inch in any direction or from 62,500 cells to 360,000 cells per square inch of surface area have a mean of about 160,000 cells per square inch of surface area. These cells are smaller in area than the smallest highlight dot produced by engraving. The recess is quite shallow, having a maximum depth of about 12 microns or less than one-half thousandth of an inch. The shape of each cell is essentially that of a hemisphere, with polished, smooth walls.

3,613,579
ANTIPERSONNEL FRAGMENTATION WEAPON
Nathaniel B. Wales, Jr., Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 1, 1954, Ser. No. 472,543
Int. Cl. F42b 25/00
U.S. Cl. 102-4 4 Claims

1. In an explosive fragmentation assembly, a length of explosive cord having airborne suspension means at one end and an impact fuze at the other end, a plurality of inverted frustoconical pellets secured in spaced relation on and along said cord in progressively decreasing intervals from said impact fuze to said airborne suspension means, each said frustoconical pellet having a side surface formed at a predetermined angle, and a frustoconical casing snugly

embracing the side surface of said frustoconical pellet and having a series of grooves in its surface defining fragments to



be projected in a line substantially normal to the side surface of said frustoconical pellet on detonation of said impact fuze.

3,613,580

WEDGE-SHAPED FREE-FALL DEVICE

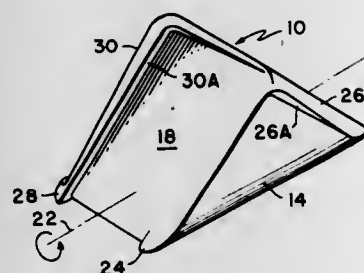
Thomas E. Bench, and James H. Coffenberry, both of Richmond, Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Nov. 10, 1969, Ser. No. 875,319

Int. Cl. F42b 25/16

U.S. Cl. 102-4

6 Claims



A free-fall device is disclosed which has a generally wedge-shaped body. Flutes or vanes are provided on all of the triangular faces of the body which cause the body to autorotate and glide when freely falling through the air.

3,613,581

EXPLOSIVE DEVICE FOR PERFORATING HIGH-STRENGTH METAL PLATES

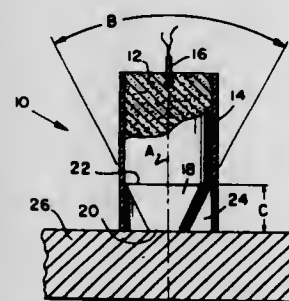
John Pearson; William B. McLean, and Lawrence N. Cosner, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 20, 1964, Ser. No. 413,678

Int. Cl. F42b 1/00

U.S. Cl. 102-24

5 Claims



An explosive device for removing a circular pluglike fragment from a metal plate structure, comprising: (a) cylindrical

metal outer casing tube having front and rear ends and containing a charge of explosive material, (b) said charge having a first, cylindrical, axial portion in circumferential contact with the inner surface of the wall of said tube and extending forwardly to a circular forward limit of explosive charge and tube contact, and having a second, front end, axial portion adjoining and extending forwardly from said circular forward limit and terminating at its forwardmost portion at an axial position substantially coadjacent the front end of the tube, said front end axial portion forming an axially aligned forwardly converging body of revolution having its outer surface in radially spaced relationship to the wall of the tube defining an annular cavity thereabout between the bare outer surface of the explosive material and the inner surface of the wall of said tube, said annular cavity being of forwardly increasing cross section forming an explosive pressure focusing cavity for concentrating the initial explosive effect in axially forwardly and laterally outward directions to produce a semitoroidal crater having a median crater diameter approximately coextensive with the diameter of the tube in the surface of a metal target plate disposed adjacently and normally to the front end of the tube at the time the charge is exploded, (c) said charge being made of an explosive material of such a character that it produces a time distribution of dynamic explosive loading effects by which the high level of explosive loading is sustained momentarily after formation of the semitoroidal crater to produce a punchlike explosive loading upon the surface of the target plate encircled by the crater tending to cause an approximately frustoconical fracture surface extending from the bottom of the crater to the opposite side of the plate and divergent in the direction toward said opposite side, whereupon the portion of the plate encompassed by the crater and fracture surface is removed from the body of the plate.

3,613,582

HOLLOW CHARGE HAVING A DIRECTED EXPLOSIVE EFFECT

Reijo Levamaki, Pitajärventie 15, Helsinki; Mikko Vehviläinen, Jokela, and Tapani Suhonen, Suonokk. 5 E, Helsinki, all of Finland

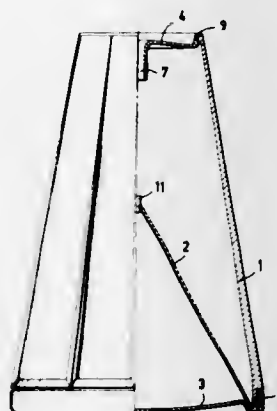
Filed July 31, 1968, Ser. No. 749,067

Claims priority, application Finland, Oct. 19, 1967, 2812/67

Int. Cl. F42b 1/02

U.S. Cl. 102-24 HC

4 Claims



A hollow charge is adapted for underwater demolition operations and has a directed explosive effect, the charge being provided with a cavity at its front end relative to the direction of the explosion, the cavity enlarging towards the front end. The charge has metal walls or a metal sheathing so that, on the occurrence of the explosion, a part of the metal

is formed into a thin metal stream which is directed forwards at high speed. The charge comprises an outer cone forming the shell of the charge, and a regularly shaped inner cone at the front part of the charge, enlarging towards its front end, the cones forming the cavity. A cover seals the back part of the outer cone and a base closes the front part.

3,613,583

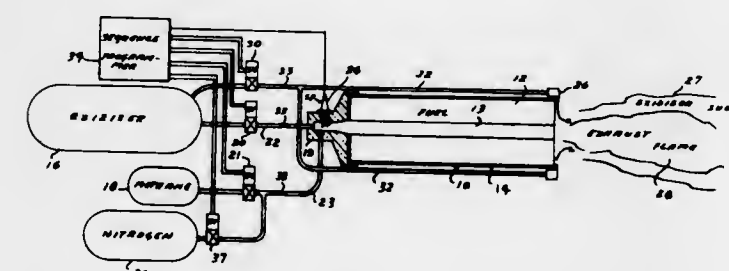
ALTITUDE-COMPENSATED HYBRID INFRARED FLARES

William Lal, Los Altos, and John C. Trowbridge, Saratoga, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed May 5, 1969, Ser. No. 821,596

Int. Cl. C06d 1/10

U.S. Cl. 102-37.8



A hybrid infrared flare is ignited by first igniting a methane-oxidizer mixture with a spark which in turn ignites the fuel grain. Burning is sustained by a continuous flow of oxidizer through the upstream oxidizer injector. Oxidizer is also supplied at the downstream end of the flare to provide an oxidizer sheath around the exhaust flame so that the oxidizer mixes with the fuel-rich exhaust products of the flare to enhance the infrared output regardless of the altitude at which the flare is located. Nitrogen is supplied at the upstream end of the flare to quence combustion between burns when the flares are used in multistart operation.

3,613,584

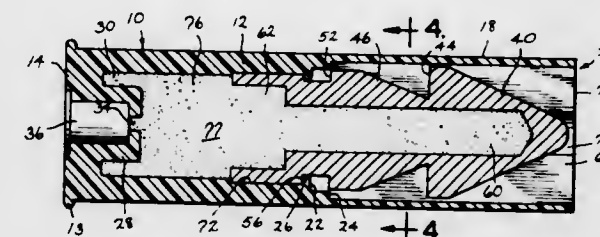
GUN CARTRIDGE

Grover E. Hendricks, 2241 Lake St., Niles, Mich.

Filed Oct. 16, 1968, Ser. No. 767,995

Int. Cl. E21b 43/06

U.S. Cl. 102-38



A gun cartridge which includes a projectile having a body which is substantially reduced in cross section intermediate its length. A multiple-part casement fits around the projectile and is snugly seated within a casing of the ammunition cartridge and serves to center the projectile in the casing. The multiple-part casement has parts fitting in said reduced projectile part and is adapted to accompany the projectile from the casing and to fall away from the projectile during flight.

3,613,585

HIGH EXPLOSIVE ANTITANK SHELL

Stanley Dubroff, Philadelphia, Pa., assignor to The United States of America as represented by the Army

Filed Oct. 24, 1958, Ser. No. 769,515

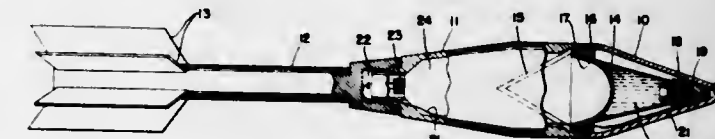
Int. Cl. F42b 13/04, 13/10, 15/26

U.S. Cl. 102-52

4 Claims

1. In a projectile of the hollow charge type wherein a jet of metal is formed by the detonation of an explosive material in

response to the impact of said projectile, said projectile having a body, an ogive forward of said body, said ogive being hollow; the combination therewith of the improvement whereby the behind the barrier effectiveness of the projectile is increased, said improvement comprising: a container mounted within said ogive, said container being imperforate and enclosing an inflammable material, said inflammable



1 Claim

material being distributed substantially uniformly and continuously in both longitudinal and transverse directions such that there is always a mass of said inflammable material along the axis of said projectile, whereby, upon detonation of said projectile the jet formed thereby, traveling along the axis of said projectile, passes through said inflammable material carrying a substantial part of said inflammable material through and behind a target barrier.

3,613,586

FORMED WIRE FRAGMENTATION DEVICE

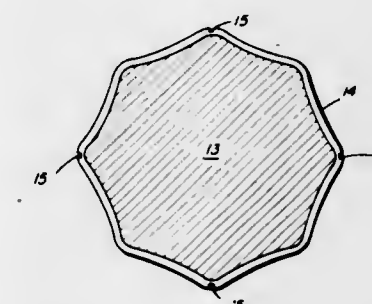
James C. Talley, Dahlgren, and Lester A. Potteiger, Fredericksburg, both of Va.

Filed Sept. 26, 1966, Ser. No. 582,800

Int. Cl. F42b 13/48

U.S. Cl. 102-67

9 Claims



A formed wire fragmentation ordnance device consisting of a coiled wire casing that has been bent so as to be fluted longitudinally of the device so that said flutes form a plurality of generally concave portions connected by peaks and in which notches are provided on alternate peaks so that each concave portion will separate at one end before the other, thereby permitting end-first impact. A shaped charge at alternate peaks may be used instead of the notches. The flutes may be parallel or helical with respect to the axis of the casing and the casing may be cylindrical or oval in shape.

3,613,587

PROJECTILE RETENTION SYSTEM FOR CASELESS AMMUNITION

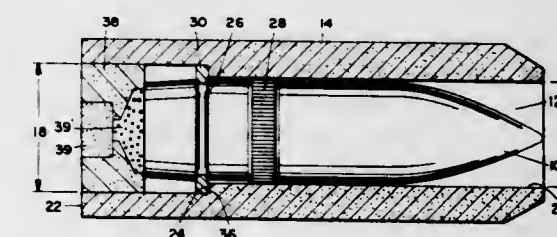
Elliott L. King, Edison, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 24, 1970, Ser. No. 13,403

Int. Cl. F42b 5/18

U.S. Cl. 102-40

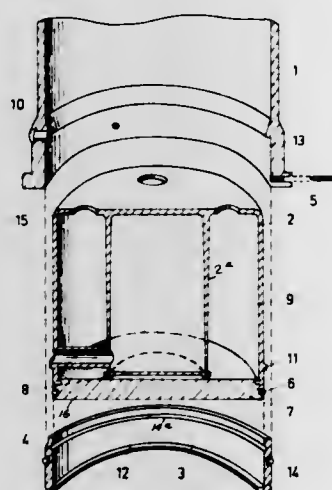
6 Claims



A projectile retention system is provided for caseless ammunition in which the projectile is at least partially housed

within the axial cavity extending throughout the propellant charge. The projectiles employed have a groove about the circumference of the projectile. A consumable ring having a greater outside diameter than the projectile is secured in the projectile groove. The surface area of the snapping extending beyond the outside diameter of the projectile provides a bearing surface for the projectile. A second bearing surface is provided within the propellant charge. The projectile assembled with the consumable ring is moved through the axial cavity in the charge until the two-bearing surfaces make contact and restrict movement of the projectile. This retention system prevents the projectile from coming loose when the caseless round is subjected to high-deceleration forces encountered in rapid fire weapons but releases the projectile as a result of initiation of the primer of the caseless round.

3,613,588
REPLACEABLE IGNITION UNIT FOR A RECOILLESS GUN CARTRIDGE
 Ulf Edlund, Eskilstuna, Sweden, assignor to Forsvarets Fabriksverk, Eskilstuna, Sweden
 Filed Aug. 4, 1969, Ser. No. 847,188
 Int. Cl. F42c 1/10
 U.S. Cl. 102-44 3 Claims

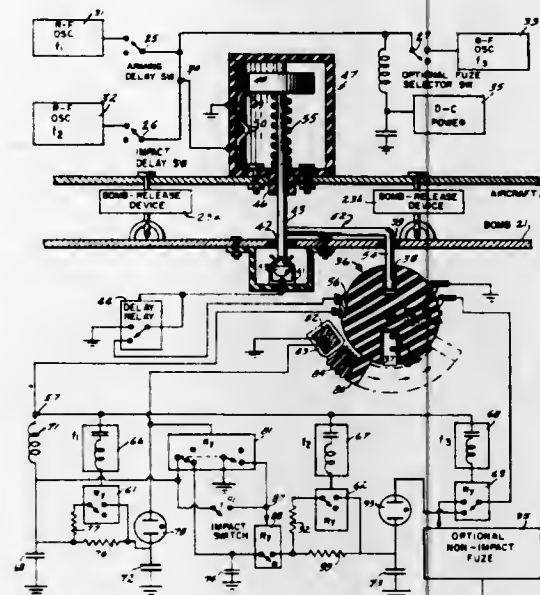


Cartridge cases provided with an ignition cap on their sidewalls usually require some device to transmit the ignition cap energy evenly to the full cross section of the powder charge and this invention includes a replaceable flange ring that enables a full-caliber ignition unit housing to be introduced into the rear end of a cartridge case. This makes it easier to find the proper location of the ignition unit housing relative to the ignition cap. The cartridge case body can as a result, be used for several rounds.

3,613,589
BOMB FUZING SYSTEM
 Maurice Apstein, Bethesda, Md.; Evert Blomgren, Kensington, Conn.; George R. Keehn, Washington, D.C.; Laurence M. Andrews, Silver Spring, and Jacob Rabinow, Takoma Park, Md., assignors to The United States of America as represented by the Secretary of the Army
 Filed Dec. 23, 1955, Ser. No. 555,216
 Int. Cl. F42c 11/06, 15/12, 13/04
 U.S. Cl. 102-70.2 R 1 Claim

1. An aircraft bomb fuzing system that permits the selection of alternative arming-delay and detonation-delay-after-impact times at any time prior to release of the bomb, said system comprising in combination: a first circuit point aboard said aircraft; a DC power source aboard said aircraft connected to said first circuit point for energization thereof with DC voltage; an AC generator aboard said aircraft also connected to said first circuit point, said generator being capable of selectively applying to said first circuit point any predetermined combination of a number of AC signals of different frequencies; means on said bomb and said aircraft for supporting said bomb prior to release thereof; an electrical input terminal aboard said bomb; an extensible and disconnectable conductor means connected between said

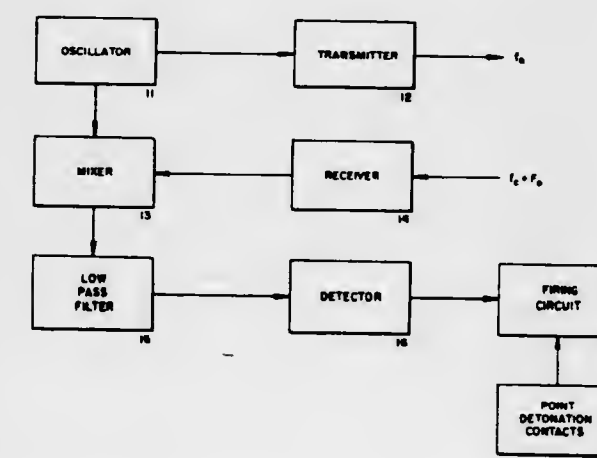
input terminal and a grounded point on said aircraft for maintaining said input terminal grounded prior to release of said bomb, said conductor means being so constructed and arranged that as the bomb falls away from said aircraft after release thereof, said conductor means first disconnects itself from said grounded point on said aircraft as the bomb begins to fall, the makes momentary electrical contact with said first circuit point after said bomb has fallen a short predetermined distance, and then disconnects itself from said input terminal after said bomb has fallen an additional predetermined short distance, the DC voltage of said DC power source and the predetermined combination of AC signal frequencies from said AC generator thereby being momentarily applied to said input terminal aboard said bomb as said bomb falls away from said aircraft; capacitive storage means within said bomb connected to said input terminal, said capacitive storage means being adapted to charge to the DC voltage of said



power source as a result of the momentary application of said DC power source to said input terminal as the bomb falls away from the aircraft; an arming-delay resistance means and an arming-delay capacitor in series across said capacitive storage means; an arming-delay gas diode and an impulse responsive arming means in series across said arming-delay capacitor, said DC voltage on said capacitive storage means flowing through said arming-delay resistance means to charge said arming-delay capacitor which upon attaining a voltage equal to the firing voltage of said arming-delay diode rapidly discharges through said diode and said arming means, said arming means being adapted to thereupon arm said bomb, the arming-delay time thus being the time taken by said arming-delay capacitor to charge to said firing voltage; a normally open impact switch, a detonation-delay resistance means and a detonation-delay capacitance in series across said capacitive storage means; a detonation-delay gas diode and a detonator in series across said detonation-delay capacitor, said impact switch being adapted to close on impact so that said capacitive storage means flows through said detonation-delay resistance means to charge said detonation-delay capacitor which upon attaining a voltage equal to the firing voltage of said detonation-delay diode rapidly discharges through said diode and said detonator, said detonator being adapted to thereupon detonate said bomb, the detonation-delay-after-impact time thus being the time taken by said detonation-delay capacitor to charge to the firing voltage of said detonation-delay diode; a plurality of parallel-connected frequency-sensitive switch devices connected to said input terminal, each of said switch devices comprising a tuned circuit and an irreversible impulse-responsive switch, each tuned circuit being tuned to a different one of the signal frequencies capable of being applied to said first circuit point by said generator, said switch devices being so constructed and arranged that the momentary application of the predetermined combination of AC signal frequencies applied to said input terminal as said bomb falls away causes irreversible actuation of the impulse-responsive switches of those switch devices whose tuned

circuit is tuned to one of the signal frequencies present in the predetermined combination applied by said generator; said arming-delay resistance means and said detonation-delay resistance means each comprising a plurality of resistors, the resistors of said arming-delay resistance means being adapted to cooperate with a first number of said impulse-responsive switches so that the resistance provided by said arming-delay resistance means is determined by the number of said first number of impulse-responsive switches which are actuated, and the resistors of said detonation-delay resistance means being adapted to cooperate with a second number of impulse-responsive switches so that the resistance provided by said detonation-delay resistance means is determined by the number of said second number of impulse-responsive switches which are actuated, the arming-delay and detonation-delay-after-impact times, which are dependent on the resistances of said arming-delay resistance means and said detonation-delay resistance means, respectively, thus being selectively variable by choice of the predetermined combination of signal frequencies applied to said first circuit point by said generator.

3,613,590
VT FUSE WITH INHERENT CAPACITY FOR PD ACTION WHEN ON A NORMAL APPROACH COLLISION COURSE
 Samuel W. Lichtman, Riverside, and Donald J. Adrian, Arlington, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
 Filed Feb. 15, 1956, Ser. No. 565,746
 Int. Cl. F42c 13/04, 11/00, 13/00
 U.S. Cl. 102-70.2 P 2 Claims

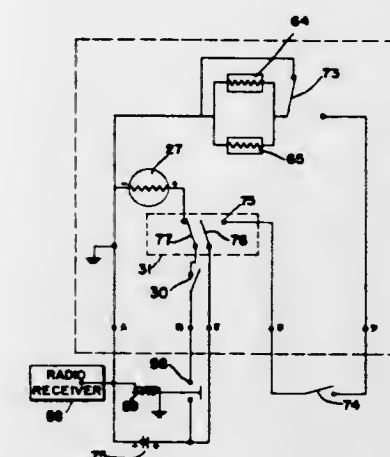


1. An ordnance fuze for an aerial missile comprising first circuit means for generating and transmitting a continuous wave radiofrequency signal into the surrounding spatial area, second circuit means for receiving a target reflected portion of said radiofrequency signal, third circuit means coupled to said first and second circuit means for developing an output signal having a frequency corresponding to the instantaneous frequency difference between said transmitted radiofrequency signal and said target reflected portion thereof, fuze firing means, fourth circuit means including a low pass filter and detector for effecting detonation of the fuze by said firing means only in response to said output signal when said output signal has a frequency indicative of a noncollision course by the missile, and impact responsive means for effecting detonation of the fuze by said firing means when the missile is on a target collision course.

3,613,591
MISSILE-ARMING DEVICE
 Donald R. Lenton, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army
 Filed Oct. 22, 1958, Ser. No. 769,043
 Int. Cl. F42c 11/06, 15/24, 9/02
 U.S. Cl. 102-70.2 R 5 Claims

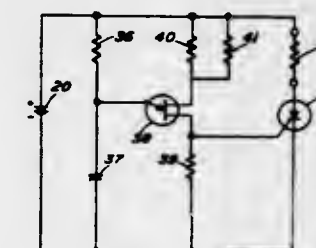
1. A missile-arming device including a time delay mechanism having an output shaft, means for starting

operation of said mechanism upon a predetermined acceleration of said device, a nose switch, first and second control switches, a power source, an electric motor, command switch means operable by a signal from a remote point to close a gap in a lead from said source, a first drum rotatable with said output shaft and having a pair of recesses, a second drum, a spring-biased pin operable upon its engagement with one of said recesses to release said second drum for rotation, means operable upon its engagement with the other of said recesses to close said first control switch



and complete a connection between said command switch and said motor, means coupling said second drum to said motor, said coupling means being operable upon a predetermined rotational movement of said motor to operate said second control switch for transferring a connection to said first control switch from said motor to one terminal of said nose switch, and a primer rotatable by said second drum and having one of its terminals connected to said source, said second drum having contacts rotatable to one position for short circuiting said primer and to another position for connecting said primer to the other terminal of said nose switch.

3,613,592
ELECTRONIC DELAY CARTRIDGE
 William J. Brown, King George; Robert F. Butler, King George; Smith E. Hedden, Dahlgren, and Janis Jablovakis, King George, all of Va., assignors to The United States of America as represented by the Secretary of the Navy
 Filed July 7, 1969, Ser. No. 840,603
 Int. Cl. F42c 11/06, 15/40, 19/12
 U.S. Cl. 102-70.2 R 13 Claims



An extremely compact electronic cartridge for delaying the delivery of a firing pulse to a squib which initiates a main charge. The delay provided by the circuit is maintained constant with temperature variations by using a thermistor in the circuit, and the original firing pulse is provided by a thermal battery.

3,613,593

MECHANICAL COUNTING FUZE

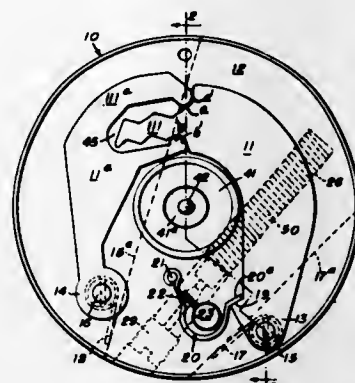
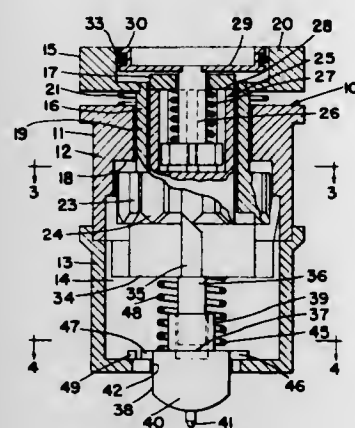
Richard G. Thresher, 651 Jennifer Lane, Aberdeen, Md.;
John P. Kosar, Apt. E6, Valley Stream Gardens, Denville,
N.J., and James F. Harper, 400 Strafford Ave., Wayne, Pa.

Filed Mar. 30, 1965, Ser. No. 444,520

Int. Cl. F42c 7/02, 15/14, 15/24

U.S. Cl. 102-76 R

6 Claims



A fuze comprising a body with an upper and a lower end having a main axial bore therethrough, said body lower end having an axial bore smaller than said main bore and having radial groove means in the wall defining said smaller bore, a hollow outer plunger member slidably mounted in said main bore, an inner plunger member movably mounted in said outer plunger member and coaxial therethrough, a firing pin releasably secured to the lower end of said inner plunger member, cam means fixed on the end of said outer plunger member, cam follower means carried by said inner plunger member so constructed and arranged that upon relative downwardly directed axial movement of said outer plunger member with respect to said body the cam means will act on said follower means to impart a limited rotational movement to said inner plunger member, means preventing rotational movement of the outer plunger member with respect to said body, a resilient means operative between said firing pin and said inner plunger member, said resilient means arranged to oppose relative downwardly directed axial movement of said inner plunger member with respect to said body, tab means radially fixed on said firing pin and so arranged and constructed as to align with said groove means when said inner plunger member is rotationally advanced with respect to said outer plunger member by a predetermined number of axial reciprocations of said outer plunger member whereby said firing pin is freed to move downwardly under the force of said resilient means.

3,613,594

ANTISHOCK SPIN DEVICE

John F. Burke, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 13, 1958, Ser. No. 715,162

Int. Cl. F42c 9/02, 15/18, 15/04

U.S. Cl. 102-79

1 Claim

1. An improved ordnance fuze-arming mechanism for use on a spinning missile, said mechanism comprising in combination: a cylindrical fuze body having a flat circular face located in a plane perpendicular to the axis of missile rotation, first and second flat planar leaf members, each of said members having one of its ends pivotally connected to said face at spaced-apart points such that a flat side of each leaf member is movable around its pivot point parallel to said face, the other end of each leaf member extending adjacent the perimeter of said face and curving to engage each other at their outermost ends, the other end of the first leaf member having an elongated serrated blade portion, said blade portion having opposite edges with a series of adjacent

grooves formed in each edge, the grooves on opposite edges being arranged so that the inner apexes of the grooves in one edge are opposite the outer apexes of the grooves in the other edge, the other end of said second leaf having an elongated opening therein for receiving said serrated blade portion, spring means connected to said fuze body and to the pivoted ends of said members so that said blade portion is urged into said opening, said opening having opposite inwardly projecting lips forming an entrance and adapted to

engage said blade such that when one lip engages an inner apex on one edge, the other lip is opposite but just out of contact with an outer apex on the other edge, said lips thereby alternately locking and unlocking with said grooves when said leaf members are urged apart by continuous centrifugal forces produced by continued missile rotation, the alternate locking and unlocking of said leaf members continuing until said members separate, and means in said fuze to effect detonation when said leaf members separate.

3,613,595

TAIL FUZE

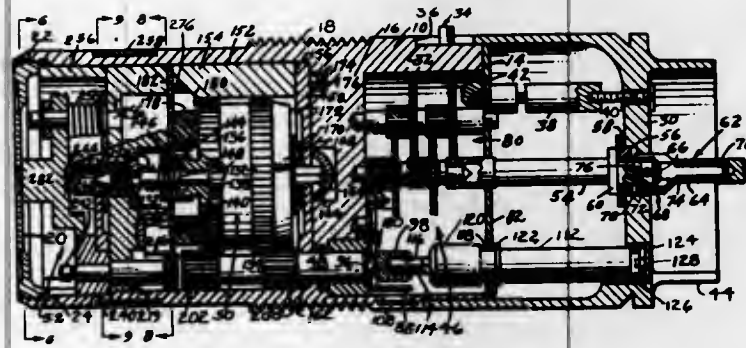
Evert Blomgren, Kensington, Conn., and James L. Baker, Bethesda, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Mar. 18, 1957, Ser. No. 646,945

Int. Cl. F42c 9/02, 15/34

U.S. Cl. 102-83

4 Claims



1. A tail fuze comprising in combination: a body having a nose end and a tail end, said body being adapted to fit into a fuze well; a cover at said nose end; a cap on said tail end; an air arming reduction gear cluster disposed in said body adjacent said tail end for transmitting a predetermined rate of angular rotation; a main setting shaft disposed in said body substantially parallel to the axis of said body and along a major portion thereof; a primary safety cam rotatably disposed in said body adjacent said tail end and coupled to said gear cluster and rotatable therewith, said safety cam engaging the end of said shaft disposed nearest said tail end

to maintain said shaft in a substantially fixed position, said safety cam adapted to longitudinally displace said shaft from said fixed position to a first position upon rotation of said gear cluster for a predetermined time interval, said shaft at said first position being free so as to be longitudinally displaced to a second position when said fuze body impacts on said nose end; a preset timer disposed axially of said fuze body and intermediate said nose and tail ends; gear means operably connecting said timer to said shaft, said gear means locking said timer against movement during said fixed and first positions and releasing said timer at said second position; a rotatable timing cam coupled with said timer and rotatable upon rotational movement of said timer, said timing cam having a slot in its periphery; a stop mounted on the nose end of said main setting shaft and disposed within said body; a spring-biased stab firing pin axially disposed adjacent said nose end; a spring-biased rotatable release lever having bifurcated first and second arms, the end of the first arm contacting the periphery of said timing cam; a spring-biased rotor mounted for rotation adjacent said nose end; a detonator in said rotor, the second arm of said lever blocking axial movement of said firing pin towards said rotor, said stop engaging said rotor during said fixed and first positions to lock said detonator out-of-line with said firing pin, said stop moving from engagement with said rotor at said second position so that said detonator is aligned with said firing pin, said stop also locking and unlocking said timing cam during said first and second positions, respectively, said timing cam after being unlocked rotating until the end of said first arm enters said slot, said second arm then being moved by the spring-bias acting on said lever so as to unblock said firing pin, said firing pin thereby being free to strike said detonator and initiate detonation of said fuze; a rotatable tamper release cam positioned in said nose end, said release cam being biased from locking contact with said stop, on end of said release cam being locked against rotative movement by said stop during said fixed and first positions and unlocked for rotation at said second position, the other end of said release cam being serrated so as to firmly grip the wall of said fuze well at said second position; and means on said release cam to contact the end of said second arm; said tamper release cam and said means thereon being so constructed and arranged that if subsequent to impact said body is rotated in a direction which would remove said fuze body from said fuze well, said second arm will be moved out of blocking position with said firing pin so that said firing pin can strike said detonator and initiate detonation of said fuze.

3,613,596

PROJECTILE FOR A MUZZLE LOADING RIFLE-BORE MORTAR

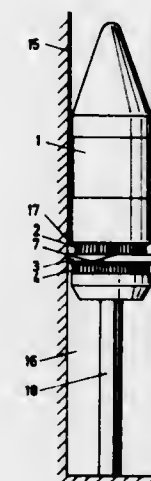
Erik Walde, Eskilstuna, Sweden, assignor to Forsvarets Fabriksverk, Eskilstuna, Sweden

Filed Apr. 30, 1969, Ser. No. 820,567

Int. Cl. F42b 31/00, 13/22

U.S. Cl. 102-94

5 Claims



A projectile for a muzzle loading rifle-bore mortar, with the projectile having an annular, circumferential groove provided with a rifled surface; an angularly split ring is

located in the groove and is of less width than the groove so that the ring can move within the groove. The ring has resiliency sufficient to permit it to expand to a diameter similar to the diameter of a rearward nonrifled area of the mortar barrel and the said nonrifled part of the barrel has a diameter similar to that of the bases of the rifling. The depth of the groove increases steadily from the rearmost to the foremost of its flank surfaces.

3,613,597

SOLID PROPELLANT GRAIN

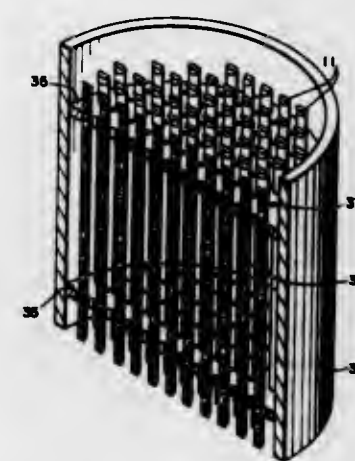
Francis A. Warren, Waco, and Sylvester C. Britton, McGregor, both of Tex., assignors to North American Rockwell Corporation

Filed Jan. 16, 1964, Ser. No. 338,260

Int. Cl. F42b 9/14

U.S. Cl. 102-100

2 Claims



A solid propellant grain including a binder matrix containing circumferentially disposed, elongated, hollow strands of filaments filled with reactive combustible material.

3,613,598

MOBILE APPARATUS FOR LAYING TRACK TIES

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

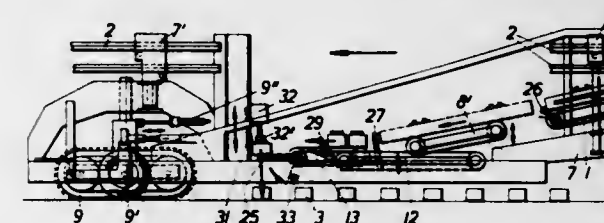
Filed Oct. 7, 1969, Ser. No. 864,373

Claims priority, application Austria, Oct. 16, 1968, 10088/68

Int. Cl. E01b 29/06; B65g 47/30

U.S. Cl. 104-6

10 Claims



In a mobile track renewal apparatus which includes an elongated track tie conveyor extending in the direction of track elongation and a turntable associated with the elongated conveyor for turning a tie 90°, the turntable includes a coplanar endless conveyor band in selective alignment with the elongated conveyor and a position transverse thereto.

3,613,599

GROUND TRANSPORTATION SYSTEMS

Solomon H. Seidman, 2021 Meridian Ave., Miami Beach, Fla.

Filed June 21, 1968, Ser. No. 739,122

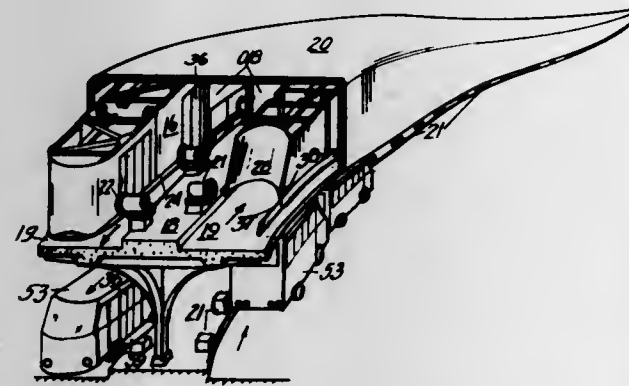
Int. Cl. B61b 13/10, 13/12

U.S. Cl. 104-18

11 Claims

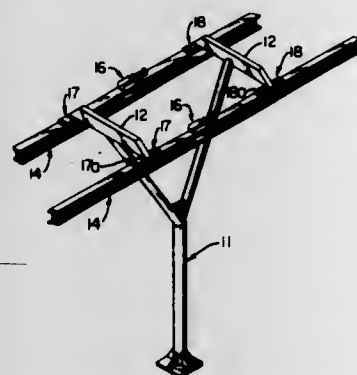
Systems of high-efficiency, continuous, electric-powered transportation for urban areas comprise a plurality of the following systems in various combinations:

(a) Dependable, continuous transportation is attainable by ever-accessible, external systems of continuous propulsion of individual and multisection vehicles by imparting successive impulses thereto. (b) The propulsion systems and three-dimensional guiding systems include resiliently yielding components of downward-directed pressure, serving to maintain positive, adequate traction between the driving-guiding systems and the tractional surfaces on successive vehicles for their propulsion at widely ranging operative speeds including speeds designed to propel vehicles buoyantly above ground. (c) Automatic timing systems operative to maintain the successive vehicles on headway time measurable in seconds, serve to provide ever-ready availability of transport. (d) Continuous loading systems include continuous, speed-adjusting load transfer systems in



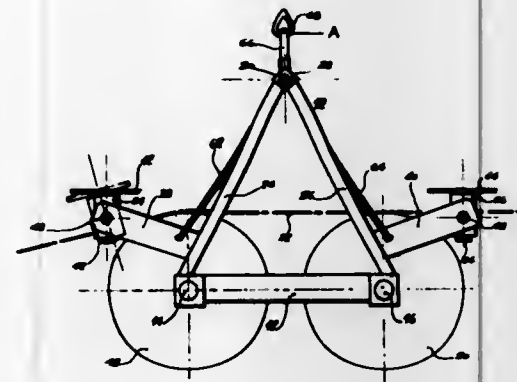
temporarily unitary relation with successive vehicles on short headway time, adjustability of loading speed establishing transport capacity of the systems. (e) Aerodynamic control systems serving to minimize head-on air resistance to movement of vehicles operative to aircraft speeds, comprise all-weather inclosure whose cross section varies inversely to vehicle speed change and embodies air passage for eliminating differential of pressure between air masses between vehicles. (f) All-electric automobile transport in a wide range of highway speeds and distances beyond storec power capability of electric automotive vehicles, is attainable in combination with the external, electric propulsion systems as in (a) and electric generator in each vehicle restoring the automotive power capacity while powered from vehicle propelled externally.

3,613,600
RAIL EXPANSION JOINT
Frank P. Pettit, Arvada, Colo., assignor to Projects General of America, Denver, Colo.
Filed Mar. 3, 1969, Ser. No. 803,636
Int. Cl. B61b 3/00; E01b 11/00
U.S. Cl. 104-91 10 Claims



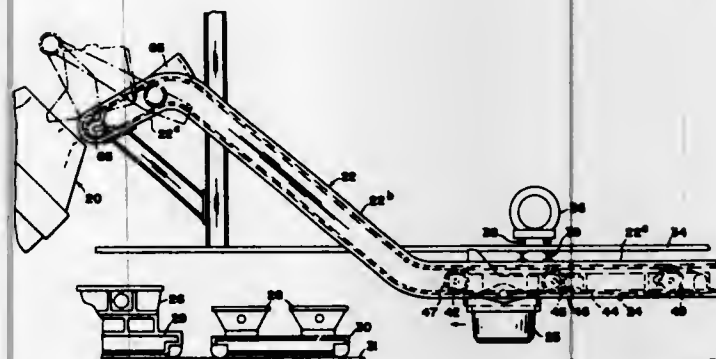
In a rail-type carrier system, the ends of the vehicle-carrying rail sections are supported by towers, and an expansion joint cooperates with the towers to support adjacent ends of the rail sections in a way so as to resist compression loading in the upper portion of each rail section resulting from the downward bending of the rail section under the weight of a vehicle while permitting normal expansion and contraction. The expansion joint is also constructed and arranged to prevent misalignment of the ends of the rail sections during vehicle movement therealong.

3,613,601
SUPPORT DEVICE FOR AERIAL CABLE
Jean Pomagalski, 114 Avenue de l'Eygale, 38 La Tranche, France
Filed Nov. 27, 1968, Ser. No. 779,438
Claims priority, application France, Dec. 29, 1967, 5208
Int. Cl. B61b 7/10
U.S. Cl. 104-197 4 Claims



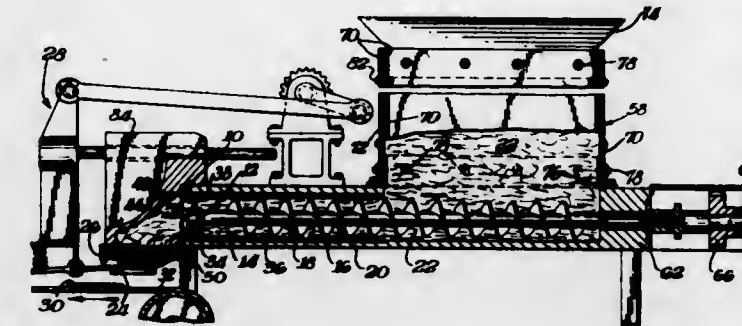
This disclosure concerns a device for supporting and guiding an aerial cable to which is imparted a longitudinal movement for the conveying of loads made fast on the cable, and including a chassis on which are pivoted to support the cable at least two rotatable rollers having substantially parallel rotational axes, the chassis being connected to a fixed element such as a tower. The device has two members positioned respectively at the entrance and the exit of the supporting device and preventing the cable from disengaging from the rolling surface of the rollers. The movable cable bears laterally against the members due to the spatial arrangement of the hooking point of the chassis to the fixed element relative to the active surfaces of these limiting members.

3,613,602
ARTICULATED CARRIAGE TILTING DUMPING VEHICLE
Klaus W. Forster, Brecksville, and Donald W. Schaper, Alliance, both of Ohio, assignors to Kerma Corporation, Alliance, Ohio
Division of Ser. No. 671,784, Sept. 29, 1967, Pat. No. 3,497,089
Filed June 5, 1969, Ser. No. 847,766
Int. Cl. B61d 3/10, 7/12, 9/14
U.S. Cl. 105-261 A 3 Claims



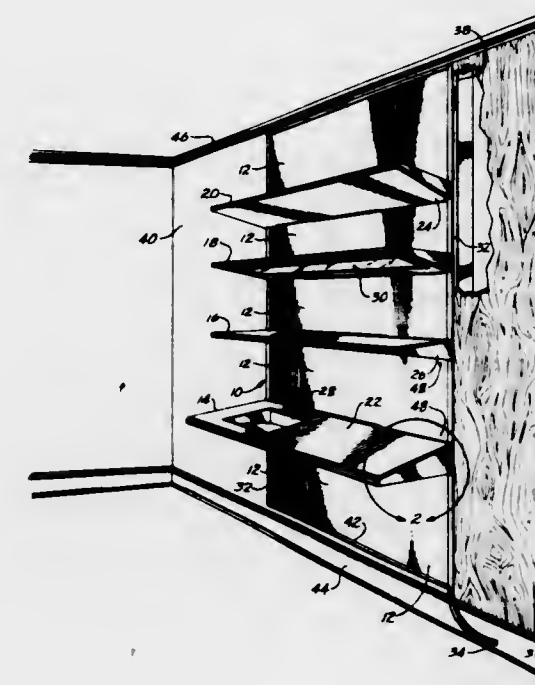
An articulated carriage with tandem sections is supported and guided by a track for movement to a location above a steelmaking furnace, preferably of the basic oxygen type. A forward carriage section carries a charge container and a following carriage section drives the carriage along the track. Forward movement of the front section is stopped above the furnace and continued movement of the trailing section jackknives the carriage, tilting the front section and charge container forward. A portion of the track above the furnace is angularly inclined downwardly relative to a preceding portion of the track to initiate tilting of the front section of the carriage.

3,613,603
DETACHABLE BEARING FOR EXTRUDER
Howard Reisman, Moorestown, N.J., assignor to Bakery Specialty Machinery Co., Moorestown, N.J.
Filed May 21, 1970, Ser. No. 39,437
Int. Cl. A21c 11/16
U.S. Cl. 107-14 C 4 Claims



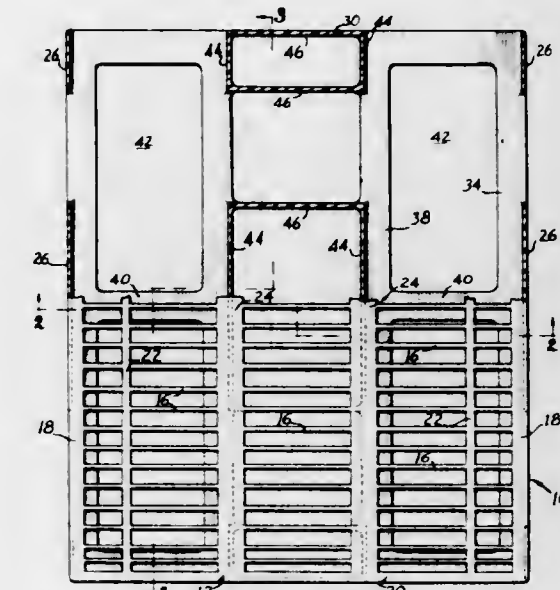
A cylindrical bearing in a hub is supported within and near the exit from an extrusion channel by a spider loosely engaged within recessed pockets in the wall of the extrusion channel. The legs of the spider are inserted or removed through entrance slots in the end of the channel which connect with the sides of the recesses. This allows the blind portions of the recesses adjacent the exit end of the wall to provide pockets for retaining the legs. The propelled doughy mass fills in the spaces between the legs and the pockets within which they are inserted and forces the spider into firm contact with the recesses to securely lock them in place and firmly support the bearing. The slotted recesses may be conveniently provided within a wear-resistant sleeve which forms the wall of the channel. The bearing element utilizes a food grade lubricant when dough for baking products, such as pretzel is extruded.

3,613,604
DISPLAY UNIT HAVING INTEGRATED CANTILEVER SHELVES
Ronald J. Butler, 223 Cabrillo Ave., Venice, Calif.
Filed Oct. 30, 1969, Ser. No. 872,553
Int. Cl. A47b 23/04, 55/00
U.S. Cl. 108-42 5 Claims



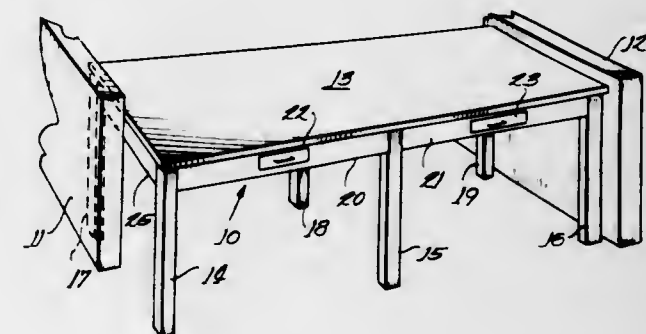
A display unit having substantially hollow cantilever shelves which are an integral part of a decorative support surface is provided for mounting to a vertically disposed structure such as a wall or studs.

3,613,605
FOUR-WAY, DOUBLE-FACE GENERAL PURPOSE PALLET
Ernest C. Holdredge, Jr., Decatur, Ga., assignor to Allastics, Inc., Norcross, Ga.
Filed Feb. 1, 1970, Ser. No. 12,812
Int. Cl. B65d 19/18
U.S. Cl. 108-58 9 Claims



A four-way, double-face general purpose pallet having sidewalls which are sufficiently thin so that they are not capable of and in fact do not offer a practical resisting moment to the termination of a top deck member by virtue of the walls' thickness. The resisting moment is provided by joining opposed sidewalls together through a series of tensile bottom deck members. The pallet is preferably prepared in a single, integral structural form from a foamed plastic material. Internal, structural supports provide inflexible areas for static support so that multiple loaded or unloaded pallets may be stacked upon one another.

3,613,606
ADJUSTABLE TABLE FRAME CONSTRUCTION
Harry N. Grow, Two Rivers; David F. Huempfer, Kewaunee, and Paul A. Reich, Two Rivers, all of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Feb. 27, 1970, Ser. No. 15,179
Int. Cl. A47b 3/06
U.S. Cl. 108-153 7 Claims

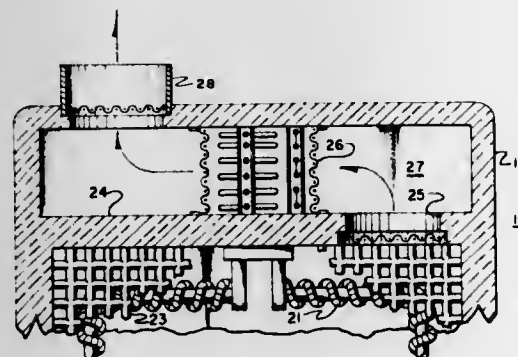


A metal table frame construction is provided which may be adjusted by cutting to vary the spacing between supporting legs or between a leg and a sidewall so that the frame will fit flush in a recess or against an adjacent wall, case, sink, etc.

The adjustment is easily accomplished on site, and the cut can be made at any location within the continuous adjustment range.

3,613,607
INCINERATOR OR SIMILAR ARTICLE
 Edward W. Hacker, 3 South William St., Kennewick, Wash.
 Filed Feb. 2, 1970, Ser. No. 7,474
 Int. Cl. F23g 5/10
 U.S. Cl. 110—18 E

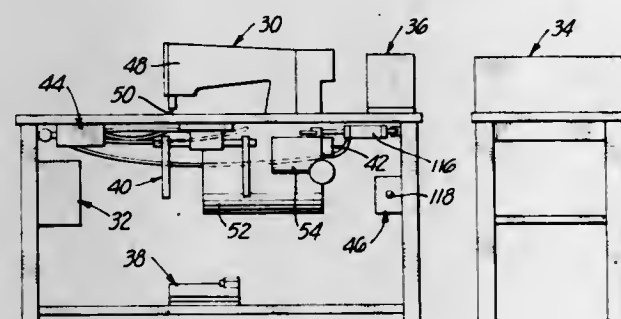
5 Claims



The incinerator of this invention includes an insulated box having heating means operable to cause combustible products deposited therein to be burned. A grid is provided over the heat means to increase burning of the combustible product. Venting exitways having air filters are provided in the housing to retain exhaust air contaminants. The incinerator is operable to destroy by burning a single combustible product at a time deposited therein.

3,613,608
CONTROL EQUIPMENT FOR MANUFACTURING EQUIPMENT SUCH AS SEWING EQUIPMENT AND THE LIKE
 Norman M. Hinerfeld, Mamaroneck, N.Y.; David S. Nobler, Carpinteria, and William H. Bartley, Orange, Calif., assignors to Kayser-Roth Corporation, New York, N.Y.
 Filed May 23, 1969, Ser. No. 827,293
 Int. Cl. D05b 23/00
 U.S. Cl. 112—2

42 Claims

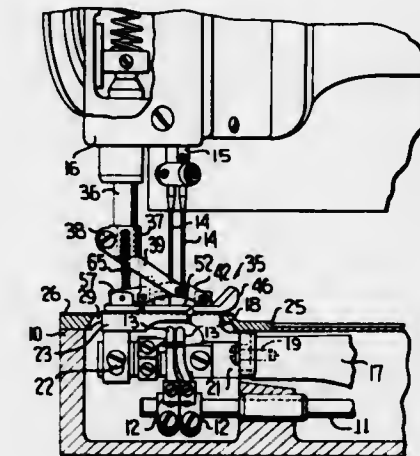


The manufacturing equipment is preferably in the form of sewing equipment comprised of a usual sewing head with a reciprocal up and down moving needle electrically driven for sewing a plurality of stitches in an article to be sewn. A presser foot retains the article in place during sewing and downwardly against usual feed dogs which move the article forwardly and rearwardly appropriate for the various stitching operations. A needle positioner is operable with the sewing with the sewing head for positioning the needle in a selected up or down position relative to the article at the termination of any sewing operational step, the needle preferably being positioned down extending through the article between at least certain successive sewing steps so

that the article may be manually repositioned by an operator between said steps. A thread cutoff component is operably arranged with the sewing head for cutting off thread used by the needle in stitching at the termination of selected sewing steps, the thread cutoff being operable when the needle is up above the article as positioned by the needle positioner. According to the invention, the needle positioner also includes a counter device automatically counting reciprocations of the needle and capable of transmitting an electrical signal equivalent to such movement count. The sewing equipment may be controlled by the usual manually operable switches such as knee control and foot control switches. The equipment likewise may include usual components such as an automatic pickup for supplying articles to the operator and an automatic stacker for removing sewn articles from the operator, and the sewing head may make use of usual attachments such as pleater and buttonhole attachments. Further, according to the invention, an automatic controller, a power interface and preferably an automatic recorder are electrically connected with the sewing equipment, and a permanent record command switch is preferably arranged with the foot control switch. The power interface serves to electrically integrate the manually operable switches and the automatic controller with the sewing equipment, said power interface being selectively switchable between a manual mode and an automatic mode. In manual mode, the power interface connects the manually operable switches for usual control of the sewing equipment to perform a plurality of operational steps in an overall sewing operation on the article to be sewn, while at the same time, the power interface translates each of the component operational steps into composite instruction signals for transmission to and temporary recording at the automatic controller, any selected of said composite instruction signals being permanently recorded by the automatic controller in sequence by actuation of the permanent record command switch. Each instruction signal includes both function, the component being operated, and duration, either pure time in time elements or needle reciprocations from the needle positioner and counter. The automatic recorder is connected to the automatic controller and is selectively actionable for inserting in proper sequence into temporary and permanent recording of the automatic controller composite instruction signals equivalent to certain of the composite instruction signals resulting from actual operation of the sewing equipment so that selected of the sewing equipment operations either need not be carried out by manual control or may be replaced by the automatic recorder. Also, the automatic controller is arranged for inserting instruction signals for determined time delays between selected component operations, either by permanently recording actual delays between component operations or by inserting numbers of time elements with the automatic recorder. Instructions for indeterminate time delays between component operations and training time delays intermediate selected component operations may likewise be appropriately inserted into the automatic controller. After completion of the permanent recording, when the power interface is in the automatic mode, the automatic controller may be operated to transmit back to the power interface the permanently recorded instruction signals in sequence which are translated by the power interface into commands for operating the various components to repeat the component operational steps to carry out the overall sewing operation including the now inserted determined delays, indeterminate delays and training delays. During the determined delays, a preceding operating component is stopped, the determined delay carried out in time, and a latter component started automatically. During the indeterminate delays, the preceding component operation is stopped, but the latter component operation is not started until manually actuated by a manual control. The training delays are indeterminate and may be intermediate a selected component operation interrupting such operation until manual control actuation or between component operations as an ordinary indeterminate delay, in either case, there being means on the automatic controller for selected elimination of the training delays with the effect of removal from the automatic controller permanent recording.

3,613,609
FEED MECHANISM AND PRESSER FOOT ARRANGEMENT
 Robert A. Hayes, Franklin Park, and James A. Frendreis, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.
 Filed Sept. 15, 1969, Ser. No. 857,929
 Int. Cl. D05b 27/02, 29/00
 U.S. Cl. 112—235

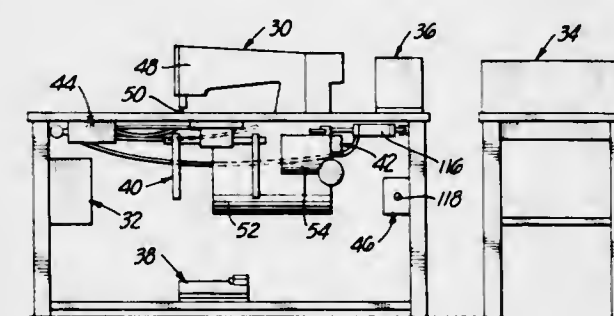
17 Claims



A multiple needle felling machine including a main feed bar and a differential feed bar connected, respectively, to a main feed dog and a differential feed dog each having several rows of teeth with one row being higher than the other rows and the teeth on the respective feed dogs facing in opposite directions. A multiple-section presser foot cooperates with the feed dogs and includes a spring-loaded yielding section to clamp the thread chain to insure nonskipping at the start of sewing operations.

3,613,610
METHODS OF AUTOMATICALLY CONTROLLING MANUFACTURING OPERATIONS SUCH AS SEWING OPERATIONS AND THE LIKE
 Norman M. Hinerfeld, Mamaroneck, N.Y.; David S. Nobler, Carpinteria, Calif., and William H. Bartley, Orange, Calif., assignors to Kayser-Roth Corporation, New York, N.Y.
 Filed May 23, 1969, Ser. No. 827,369
 Int. Cl. D05b 1/00
 U.S. Cl. 112—262

41 Claims



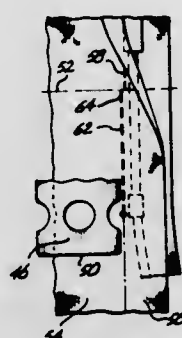
The manufacturing operations involve equipment preferably in the form of sewing equipment comprised of a usual sewing head with a reciprocal up and down moving needle electrically driven for sewing a plurality of stitches in an article to be sewn. A presser foot retains the article in place during sewing and downwardly against usual feed dogs which move the article forwardly and rearwardly appropriate for the various stitching operations. A needle positioner is operable with the sewing head for positioning the needle in a selected up or down position relative to the article at the termination of any sewing operational step, the needle preferably being positioned down extending through the

article between at least certain successive sewing steps so that the article may be manually repositioned by an operator between said steps. A thread cutoff component is operably arranged with the sewing head for cutting off thread used by the needle in stitching at the termination of selected sewing steps, the thread cutoff being operable when the needle is up above the article as positioned by the needle positioner. Required for certain of the methods of the invention, the needle positioner also includes a counter device automatically counting reciprocations of the needle and capable of transmitting an electrical signal equivalent to such movement count. The sewing equipment may be controlled by the usual manually operable switches such as knee control and foot control switches. The equipment likewise may include usual components such as an automatic pickup for supplying articles to the operator and an automatic stacker for removing sewn articles from the operator, and the sewing head may make use of usual attachments such as pleater and buttonhole attachments. Further, required for certain of the methods of the invention, an automatic controller, a power interface and preferably an automatic recorder are electrically connected with the sewing equipment, and a permanent record command switch is preferably arranged with the foot control switch. The power interface serves to electrically integrate the manually operable switches and the automatic controller with the sewing equipment, said power interface being selectively switchable between a manual mode and an automatic mode. In manual mode, the power interface connects the manually operable switches for usual control of the sewing equipment to perform a plurality of operational steps in an overall sewing operation as the article to be sewn, while at the same time, the power interface translates each of the component operational steps into composite instruction signals for transmission to and temporary recording at the automatic controller, any selected of said composite instruction signals being permanently recorded by the automatic controller in sequence by actuation of the permanent record command switch. Each instruction signal includes both function, the component being operated, and duration, either pure time in time elements or needle reciprocations from the needle positioner and counter. The automatic recorder is connected to the automatic controller and is selectively actionable for inserting in proper sequence into temporary and permanent recording of the automatic controller composite instruction signals equivalent to certain of the composite instruction signals resulting from actual operation of the sewing equipment so that selected of the sewing equipment operations either need not be replaced by the automatic recorder. Also, the automatic controller is arranged for inserting instruction signals for determined time delays between selected component operations, either by permanently recording actual delays between component operations or by inserting numbers of time elements with the automatic recorder. Instructions for indeterminate time delays between component operations and training time delays intermediate selected component operations may likewise be appropriately inserted into the automatic controller. After completion of the permanent recording, when the power interface is in the automatic mode, the automatic controller may be operated to transmit back to the power interface the permanently recorded instruction signals in sequence which are translated by the power interface into commands for operating the various components to repeat the component operational steps to carry out the overall sewing operation method including the now inserted determined delays, indeterminate delays and training delays. During the determined delays, a preceding operating component is stopped, the determined delay carried out in time, and a latter component started automatically. During the indeterminate delays, the preceding component operation is stopped, but the latter component operation is not started until manually actuated by a manual control. The training delays are indeterminate and may be intermediate a selected component operation interrupting such operation until manual control actuation or between component operations as an ordinary indeterminate delay, in either case, there being means on the automatic controller for selected elimination of the training delays with the effect of removal from the automatic controller permanent recording.

3,613,611
INSTALLATION OF SEAM-TYPE ZIPPERS
 Robert B. Howell, 2115 Madrona Blvd., Bremerton, Wash.
 Division of Ser. No. 768,466, Oct. 17, 1968
 Filed Apr. 22, 1970, Ser. No. 30,706
 Int. Cl. A44b 19/00

U.S. Cl. 112-265

6 Claims



An extension of lipped channel form extends endwise of the straight channel end portion of the slider of a seam-type zipper and is attached to the slider proper by means of a plurality of splice strips separated from each other by serrations. A plierslike tool is used to both sever the extension from the slider and to crimp it into certain of the fastener elements, to thereafter serve as a stop member for the slider.

3,613,612
HIGH-STRENGTH TUFTED PILE FABRIC
 Carroll Trowbridge Kennedy, Waynesboro, Va., assignor to Thiokol Chemical Corporation, Bristol, Pa.
 Filed May 5, 1965, Ser. No. 453,478
 Int. Cl. D05c 17/02

U.S. Cl. 112-410

2 Claims

The invention relates to a high-strength tufted pile fabric having a woven primary backing material of polypropylene or copolymer of propylene yarn, at least some of the yarn having a relatively flat cross section, which has been coated with about 0.2 to 12 percent, based on the weight of the yarn, of a lubricant material prior to penetrating tufts through the bodies of the yarn. The presence of the lubricant material on the yarns of the backing enhances penetration of the tufting needles and tufts into the yarns without the tufting needles causing the otherwise serious rupturing and shattering of the penetrated yarns which occurs during tufting of otherwise similar, but unlubricated, woven primary backing.

3,613,613
CLOSURE MEMBER COATING COMPOSITION
COMPRISING AN ORGANOSOL-SOLUTION OF
POLYVINYL CHLORIDE, ACRYLONITRILE-
BUTADIENE COPOLYMER, AND PHENOLIC RESOLE
RESIN

Edward F. Loritz, Chicago, and Harold W. Unger, Mount Prospect, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 29, 1959, Ser. No. 830,200
 Int. Cl. B21d 51/46

U.S. Cl. 113-80 DA

17 Claims

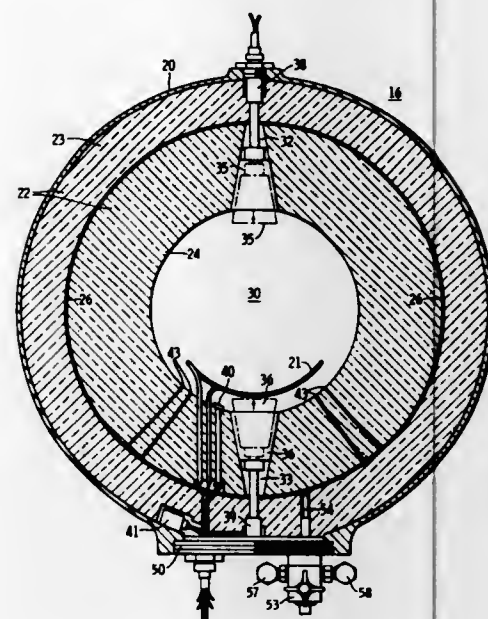
1. A three-component resin coating composition for coating closure members, comprising polyvinyl chloride resin, solvated acrylonitrile-butadiene copolymer, a solvated phenolic resole resin, and solvents for said acrylonitrile-butadiene copolymer and phenolic resole resin, said polyvinyl chloride resin being dispersed with the solvated components to form a combination organosol-solution.

3,613,614
FLOTATION APPARATUS
 Emerick T. Polgar, Vancouver, British Columbia, Canada, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 16, 1970, Ser. No. 19,653
 Int. Cl. B63g 8/00

U.S. Cl. 114-16 E

8 Claims

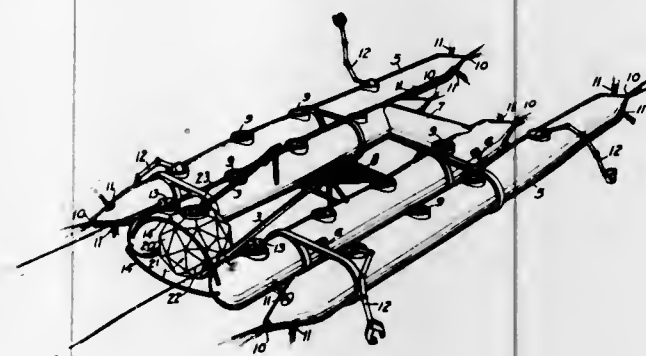


A spherical pressure vessel, to add buoyancy to a submersible vehicle, is designed to withstand a fraction of the maximum ambient sea pressure to be encountered. The sphere is filled with a pressurized gas and as the vehicle descends the gas is heated to increase its pressure in proportion to the absolute temperature. As the submersible ascends, the gas is cooled to decrease its pressure. Lining the inside of the sphere is an insulating means defining a central gas-filled core and having a cooling passage therein which is communicatable with the core by means of solenoid-operated plugs to effect cooling. The heating and cooling of the gas are monitored by means of instrumentation and so controlled that the difference between the internal gas pressure and the external pressure of the ambient sea is always within a broad safe range.

3,613,615
MANNED, MOBILE SUBMERSIBLE
 Roland G. Sturm, 1320 Forbes Drive, Huntsville, Ala., and John M. Coon, Rte. #2, Petersburg, Tenn.
 Filed Aug. 15, 1969, Ser. No. 850,375
 Int. Cl. B63g 8/00; B63h 5/12

U.S. Cl. 114-16

6 Claims



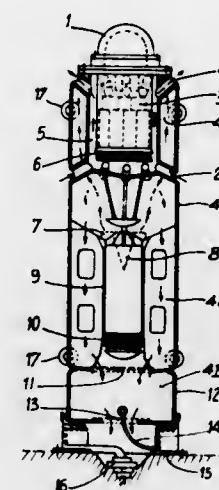
The present invention relates to a Geophysical Exploratory Manned, Mobile Submersible (GEMMS) craft, comprised of a polyhedral transparent personnel command unit supported by a quadritubular hull. The command unit is movable along ramps from a retracted to an extended position. The command unit is constructed of a plurality of triangular flat segments of transparent material arranged so that the vertices of all segments lie on a circumscribing sphere.

3,613,616
METHOD AND MEANS PROVIDING BUOYANCY OF
IMMERSED CRAFTS AND CRAFTS INCORPORATING
SUCH MEANS

James Basset, Brauns par Proue, Eure-&-Loir, France
 Filed July 25, 1969, Ser. No. 844,791
 Claims priority, application France, Apr. 25, 1969, June 19, 1969, 6913192; 6920629
 Int. Cl. B63g 8/24; B63c 7/00

U.S. Cl. 114-16.5

1 Claim



A buoy adapted to aid in the location of a submerged craft comprising an open-bottomed normally flooded buoyancy chamber, a case enclosed in said chamber containing a gas-producing substance used to displace the water in said chamber upon release, and another casing also enclosed in said chamber containing a signal transmitter. Both of said casings are partially expandable to permit a balance of fluid pressures to prevent crushing the buoy at extreme ocean depths.

ERRATUM

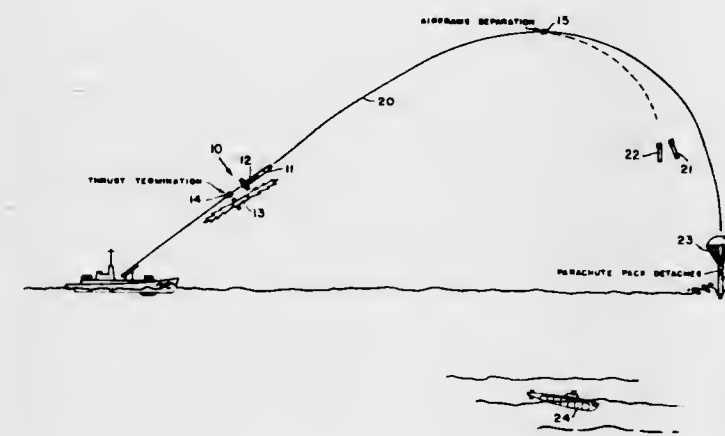
For Class 114-16R see:
 Patent No. 3,613,640

3,613,617
ROCKET-THROWN WEAPON
 Miles H. Hamilton, Pasadena, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 17, 1960, Ser. No. 15,769
 Int. Cl. F42b 15/22, 17/00, 19/00

U.S. Cl. 114-20 R

6 Claims



A missile for use against a target submarine, comprising, in combination: a forward section including a payload appa-

ratus for delivery to a suspect water area; a rocket motor stationed rearwardly of said forward section and in axial alignment therewith, to provide a thrust phase of missile flight; said rocket motor comprising a nozzle structure at its aft extremity to direct rocket motor pressurized propellant gases rearwardly, and further having a port at its forward extremity; a bulkhead structure stationed immediately forward of said rocket motor and in obturating relationship to said port; releasable fastening means securing said rocket motor to said forward section and maintaining said port-obturing relationship; said port having an orifice area greater than the effective orifice area of said nozzle structure; said rocket motor thereby being continuously subjected, during generation of pressurized propellant gases, to a net force tending to separate it from said airframe and bulkhead structure; said rocket motor having a characteristic maximum period of thrust generation; and means for releasing said fastening means, whereby to separate and jettison said rocket motor and correspondingly terminate said thrust phase of missile flight, predeterminedly during missile flight and prior to expiration of said characteristic maximum period.

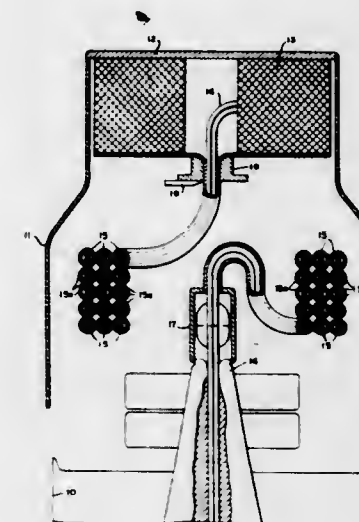
3,613,618
PROTECTIVE SHEATH FOR TORPEDO CONTROL
WIRE

Ernst Gruber, Eckernforde, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 2, 1965, Ser. No. 512,230
 Int. Cl. F41f 3/10, 3/08; F41g 7/04

U.S. Cl. 114-21 R

3 Claims



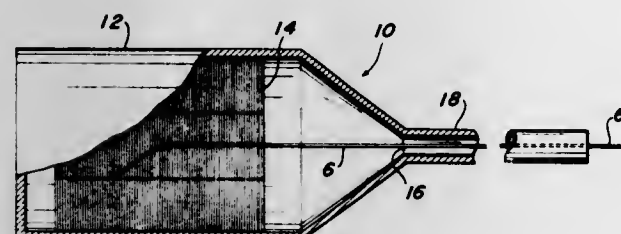
A protective arrangement for a control wire extending between a torpedo and a torpedo tube aboard a boat. The arrangement comprises a sheath through which the control wire extends, the length of this sheath being less than the range of the torpedo and equal to the distance from the boat through which the control wire is to be protected. One end of the sheath is secured to the torpedo tube, there being a rupturable connection for securing the other end of the sheath to the torpedo. Consequently, the torpedo, after reaching the above-mentioned distance from the boat, will tear itself free from the sheath. In this way, the control wire is protected near the boat, which is where such protection is needed, without it being necessary to store excessively large amounts of protective sheathing on the boat.

3,613,619 PAYOUT COIL IMPREGNATED WITH CONDUCTIVE ADHESIVE

Richard W. de Nobel, Silver Spring; Donald G. Schurman, Rockville; Theodore J. Lindstadt, Jr., Oleny, and Hans A. Koenig, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 5, 1969, Ser. No. 882,794
Int. Cl. F42b 19/06

U.S. Cl. 114-21

7 Claims



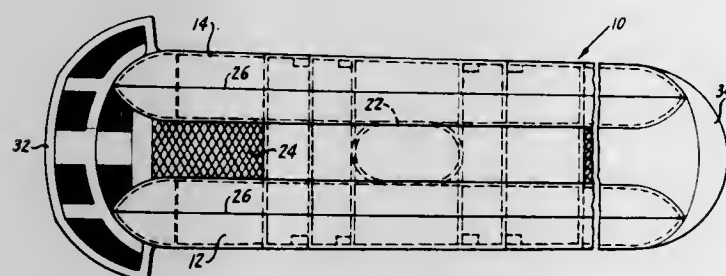
A wire-guided torpedo payout coil including a container which has an exit opening; a coil of insulated wire disposed within the container with a portion of the wire extending through the exit opening; and the voids within the coil of wire being filled with a conductive adhesive, such as an adhesive mixture of silicone fluid and graphite, such as carbon black.

3,613,620 SAFETY HULL FOR WATERCRAFT

Nicomedes S. Generoso, Bacolod City, Philippines
Filed Aug. 11, 1969, Ser. No. 848,786
Int. Cl. B63b 1/10

U.S. Cl. 114-61

1 Claim



A safety hull for watercraft in which a catamaran-type hull provides improved stability during all types of sea, minimizes friction contact with the water to afford maximum speed and efficiency, in which the twin hulls include compartmentalized walls to prevent sinking, and in which forward and aft resilient bumpers protect the hull during collision, and also protect the hull while anchored in a harbor or moored at a pier.

3,613,621 OCEANOGRAPHIC OBSERVATION PLATFORM

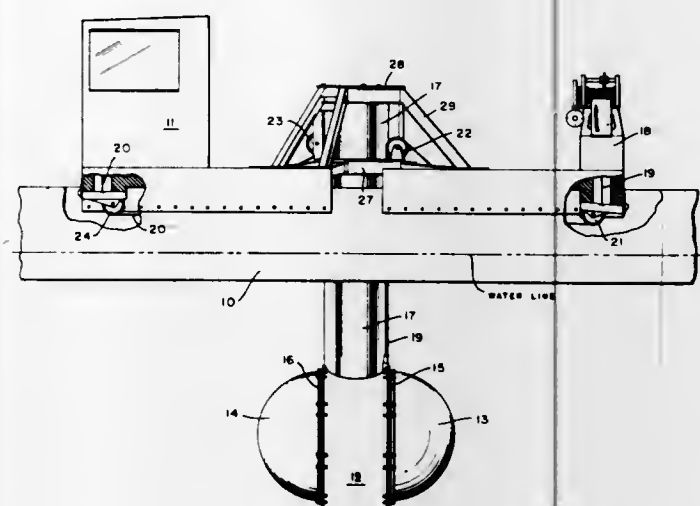
Larry E. McKinley, and William E. Evans, both of Escondido, Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 23, 1969, Ser. No. 860,344
Int. Cl. B63b 35/00

U.S. Cl. 114-66

1 Claim

An underwater viewing vehicle comprising a viewing

compartment fixedly attached to a vertical entry tube, a winch for raising and lowering the viewing compartment and

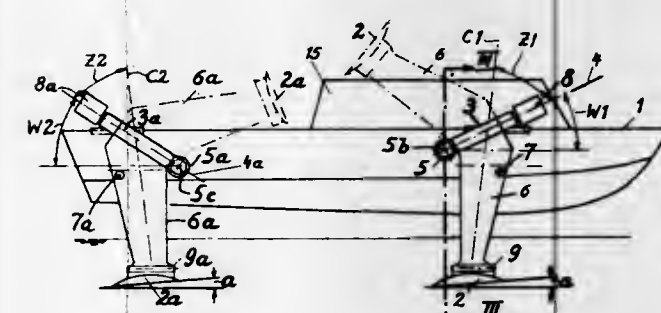


3,613,622 TILTABLE HYDROFOIL ARRANGEMENT

Karl Bueller, Lucerne, Switzerland, assignor to Supramar AG, Lucerne, Switzerland
Filed Mar. 16, 1970, Ser. No. 19,787
Int. Cl. B63b 1/18

U.S. Cl. 114-66.5 H

6 Claims



A tilting arrangement is disclosed for watercraft having a pair of hydrofoils mounted on opposite sides of the hull by means of struts. Such tilting arrangement allows the hydrofoils to be lifted into a position adjacent the deck of the hull or the superstructure of the watercraft. The tilting arrangement comprises for each of the hydrofoils a tilt bearing, the axis of which is angled relative to the centerline of the associated strut. Additionally, each hydrofoil may be pivotally connected to the lower end of the strut. By such pivotal connection, the hydrofoil may be rotated into a position adjacent the strut when the latter is tilted into its elevated position.

3,613,623 SLURRY TANKER

Hideo Suzuki, Yachiyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan
Filed July 28, 1969, Ser. No. 845,162
Claims priority, application Japan, Aug. 5, 1968, 43/55424
Int. Cl. B63b 25/02

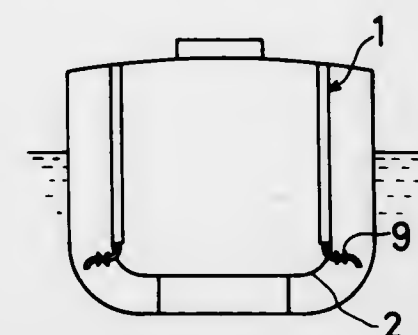
U.S. Cl. 114-73

1 Claim

A cargo vessel for handling materials received in the form of a slurry. The cargo tank of the vessel is provided with a dewatering device comprising a series of upstanding conduits

having filtering means along the entire height of the wall of the tank to discharge the water from the slurry into the

and aft of the ship and connected to fixed points on the quay. A pillar on the quay is engaged by a forked rod pivoted at the side of the ship. Pivoting of this rod by any movement of the ship operates a control device which sets one or the other of the winch motors in operation so as to restore the ship in its original position.



3,613,626 REMOTE OPERATED LIFT CONTROL DEVICE

Raymond E. Kelly, and Edward W. Johnson, both of Panama City, Fla.
Filed Mar. 20, 1970, Ser. No. 21,240
Int. Cl. B63b 21/56

U.S. Cl. 114-235

16 Claims

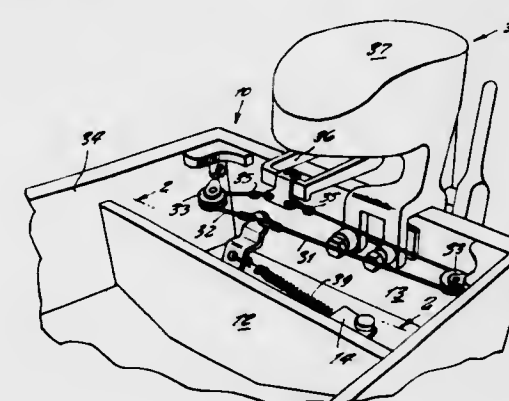
ballast tanks of the vessel, from which it may be discharged by the conventional ballast pumps, if desired.

3,613,624 ELECTRIC BOAT-STEERING SYSTEM

John G. Stauffer, 922 River Ave., Alma, Mich.
Filed Sept. 11, 1969, Ser. No. 857,002
Int. Cl. B63h 21/26

U.S. Cl. 114-144

2 Claims



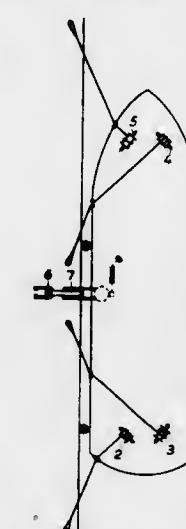
A boat-steering system which includes a remote control, a two-way switch in an electrical circuit with a through pole motor for driving a gear train for selectively pivoting a tiller toward a right or left, the tiller arm being connected by cable to opposite sides of a steering arm of an outboard motor.

3,613,625 MEANS FOR KEEPING THE POSITION OF A SHIP CONSTANT DURING MOORING

Per Rudelius, Halsingborg, and Ake Sallow, Vasteras, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Mar. 18, 1970, Ser. No. 20,540
Int. Cl. B63b 21/00

U.S. Cl. 114-230

5 Claims



In order to keep a ship in constant position when moored at a quay, one or more mooring winches are mounted fore

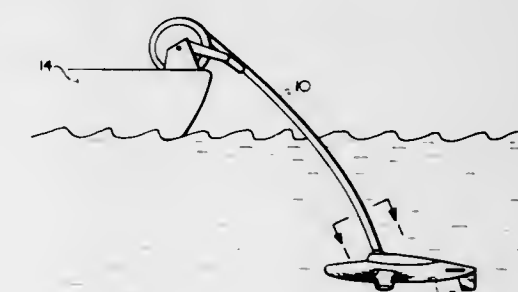
A hydrodynamic diverter is disclosed as including a lift surface and a shiftable tow mechanism attached thereto that enables said lift surface to be towed from at least two different latched attitude controlled positions which, in turn, respectively vary the angle of attack thereof, as it is being towed through water or other appropriate aqueous or fluid medium. Shifting of the tow mechanism from one position to the other in either direction is accomplished by successively reducing and increasing the towing force applied thereto in a predetermined manner, and such force changes may be effected directly by any convenient means or remotely by a tow cable, control link, servo, or other suitable means.

3,613,627 HIGH SPEED FAIRED TOWING CABLE

Paul B. Kennedy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed June 15, 1970, Ser. No. 46,189
Int. Cl. B63b 21/00; H01b 7/12

U.S. Cl. 114-235 F

8 Claims

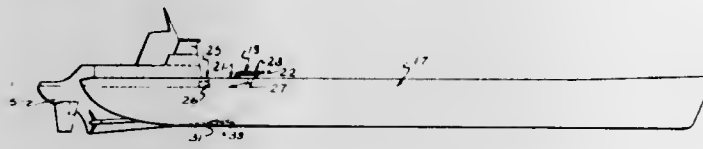


A low-drag underwater towing cable having a high stability at high towing speeds. The cable comprises an elongated hydrofoil-shaped structure with a leading edge made from continuous unidirectional glass fibers bonded together and a trailing edge made from flexible material such as plastic, rubber, or the like. An elastomer impregnated cross-woven material covers and encloses the leading and trailing edge portions. Braided electrical conductors are led through the trailing edge at a predetermined location nearest the leading edge for preventing tension forces and for avoiding interference with trailing edge yielding properties.

3,613,628
APPARATUS AND METHOD OF JOINING TUG AND BARGE IN OCEAN PUSH-TOWING
 Emilio C. Garcia, 441 Gravier St., New Orleans, La.
 Filed Dec. 18, 1969, Ser. No. 886,331
 Int. Cl. B63b 21/00

U.S. Cl. 114—235

5 Claims



A tug and barge push-tow combination joined rigidly in tandem; the forward part of the tug being held between an after bottom ramp of the barge and barge structure overhanging horizontal structure of the tug and between which wedges are forced; and the after part of the tug being held by barge and tug male and female structure that are respectively wedge shaped in three dimensions and cooperatively interfit with reinforced rubber pads therebetween that are compressed within their elastic limits but beyond a possibility of relative movement during forward motion of the combination.

3,613,629
BUOYANT CABLE TOWING SYSTEM
 William A. Rhyne; William W. McCrory, Jr., and Ray R. Mallory, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy
 Filed Dec. 23, 1969, Ser. No. 887,570
 Int. Cl. B63b 21/00

U.S. Cl. 114—235 B

7 Claims

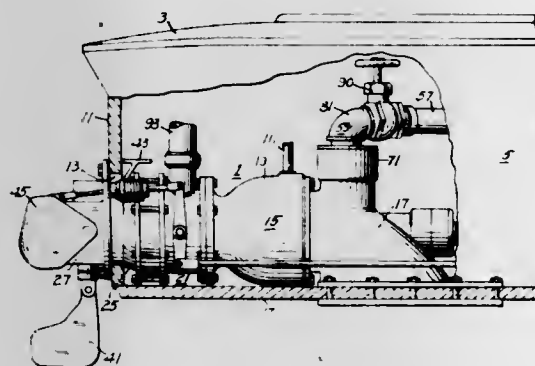


An improved marine towing system particularly adapted for towing suitable gear along a predetermined course on the surface of shallow water is characterized by a novel diverter-float. The float is of a streamlined shape with an underwater tail surface which stabilizes the float from porpoising and a diverter assembly suspended rigidly beneath the float body by a clamp device secured therebetween.

3,613,630
MARINE JET PUMPOUT AND FIRE-FIGHTING EQUIPMENT
 Frank Jacuzzi, Berkeley, Calif., assignor to Jacuzzi Bros., Incorporated
 Filed June 7, 1965, Ser. No. 461,972
 Int. Cl. B63h 11/00

U.S. Cl. 115—12 R

10 Claims



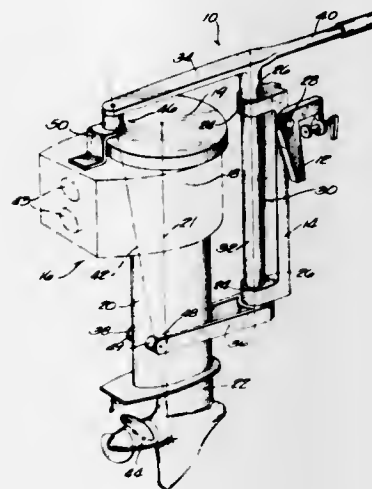
In combination, a vessel, a jet pump assembly in said vessel, having an intake end, flow connected exteriorly of

said vessel below the waterline thereof, and a discharge end at the stern of said vessel for jet propulsion discharge, and including a pump intermediate said intake end and said discharge end, means for steering said vessel, means for reversing, in varying degrees, said discharge, to effect and control reverse direction of movement of said vessel, pump-out means flow coupled to said pump assembly intake end and exposed to the suction side of said pump, and means, independent of said steering and reversing means, for adjustably diverting a portion of the discharge of said pump for use other than jet propulsion.

3,613,631
OUTBOARD MOTOR ISOLATION SYSTEM
 Gerald H. Wick, Menomonee Falls, and Theodore J. Holtermann, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.
 Filed Sept. 4, 1969, Ser. No. 855,292
 Int. Cl. B63h 21/26

U.S. Cl. 115—17

7 Claims



Disclosed herein is a sound and vibration isolation mounting arrangement for an outboard motor having a marine propulsion unit mounted rearwardly of the steering axis of the outboard motor and including a power head, and a lower unit including a drive shaft housing and a gear case. The torque roll axis of the propulsion unit extends approximately vertically through the power head, drive shaft housing and lower unit gear case. The mounting arrangement includes an upper resilient mount connected to the top of the power head and a lower resilient mount positioned on each side of the lower end of the drive shaft housing. The upper and lower mounts have elastic axes which are coaxially arranged with respect to the torque roll axis of the propulsion unit.

3,613,632
COMBINED STEERING, SHIFT AND THROTTLE CONTROL FOR OUTBOARD, INBOARD, OR INBOARD-OUTBOARD POWERED BOATS
 Alfred J. Farrell, 21 Cleveland Ave., Sayville, N.Y.
 Filed Aug. 15, 1969, Ser. No. 850,391
 Int. Cl. B63h 21/26

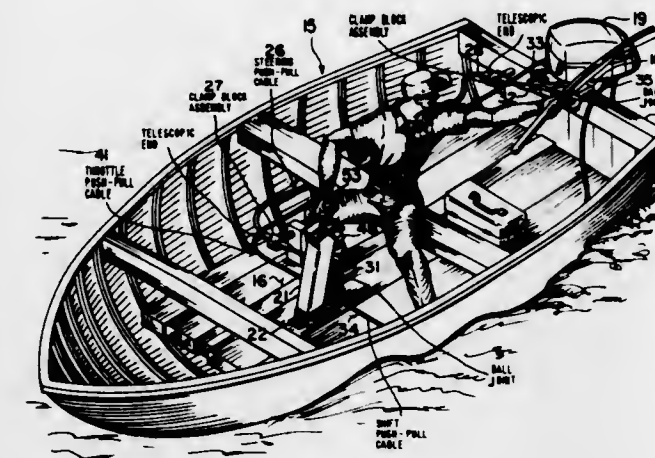
U.S. Cl. 115—18

5 Claims

A combined steering, shift and throttle control for outboard, inboard, or inboard-outboard powered boats in which a single capstan lever is pivoted upon the front of the boat for tilting movement to right or left and is connected through push-pull cables or similar devices to a steerable outboard motor rudder or to the outboard part of the

inboard-outboard drive combination at the rear of the boat to effect steering control of the boat and the shift and throttle of the outboard motor part or rudder. This capstan lever has handles extending from the top thereof which can be grasped by the pilot to effect steering movement of the lever. The upper end of the capstan lever is flaired and tightly receives the removable casings of throttle and shift levers

means holds the article being coated in "sight" of the evaporant, and is provided with thermal control means for controlling substrate temperature, the control means maintaining contact with an interior surface of the article being coated.

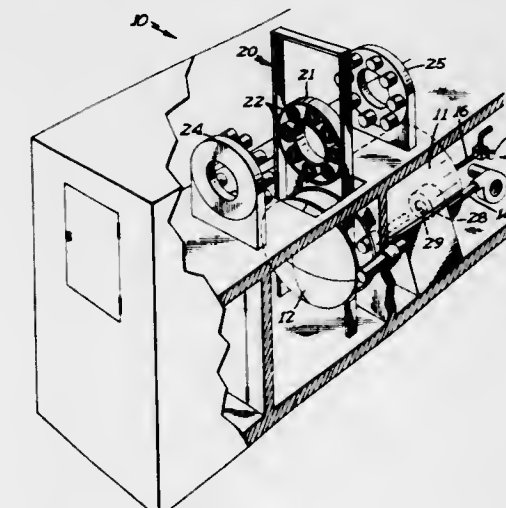


that are connected through push-pull cables with the outboard or inboard motor. Various connections are made from the capstan lever to the outboard motor to effect the steering of the outboard motor, not only in the form of a push-pull cable, but rod linkage and telemetric hydraulic cylindrical device. An instrument panel may be provided upon the capstan where it can be easily viewed by the pilot.

3,613,633
METHOD AND APPARATUS FOR COATING ARTICLES UTILIZING ROTATING CRUCIBLE COATING APPARATUS INCLUDING A CENTRIFUGAL-TYPE CRUCIBLE
 Donald E. Anderson, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.
 Filed Mar. 18, 1970, Ser. No. 20,643
 Int. Cl. B05c 11/14

U.S. Cl. 118—5

10 Claims

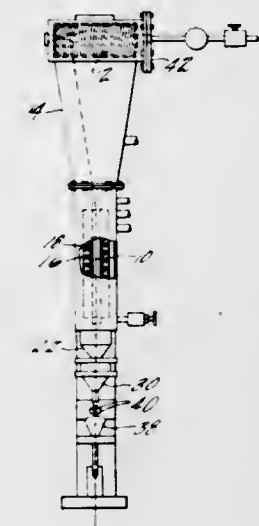


An evaporative deposition system including a chamber having means for evacuation and control of atmosphere, an evaporant-retaining crucible within said chamber having a generally closed cylindrical surface with a generally centrally disposed axis, the crucible having in-turned edge surfaces at either end thereof. Means are provided for heating the crucible, with the heating means being disposed generally radially outwardly of the closed cylindrical surface. In addition, means are provided for rotating the crucible about the central axis at an arcuate rate for centrifugally maintaining evaporant adjacent the inner surface of said closed cylindrical surface, and means are provided for inserting and retaining an article to be coated within said closed cylindrical surface. The article inserting and retaining

3,613,634
STRAND IMPREGNATION APPARATUS
 John J. Fiedorowicz, Cromwell, and Romeo L. Lamonde, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
 Filed Oct. 30, 1969, Ser. No. 872,647
 Int. Cl. C23c 13/10

U.S. Cl. 118—50

3 Claims

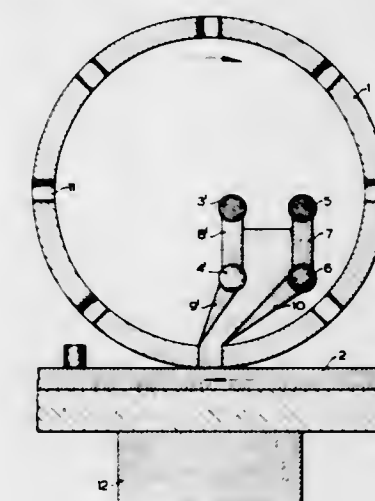


Strand immersion means include vertically aligned and spaced-apart funnels disposed within a vacuum system. Strand supply and heating means are disposed within the vacuum system.

3,613,635
APPARATUS FOR THE SPOT APPLICATION OF ADHESIVES TO CONTINUOUS SHEET MATERIAL
 Hans Brehm, Fuerth, Odenwald, Germany, assignor to Carl Freudenberg, Weinheim, Germany
 Filed Aug. 8, 1969, Ser. No. 848,459
 Claims priority, application Germany, Mar. 13, 1969, P 19 12 773.2
 Int. Cl. B05c 3/00

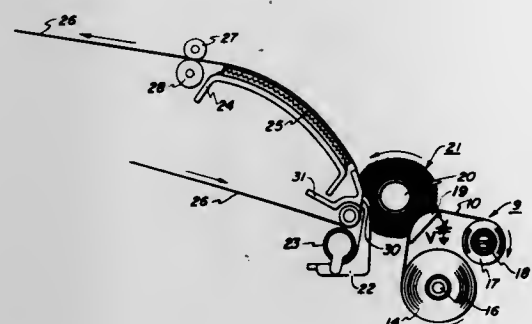
U.S. Cl. 118—406

6 Claims



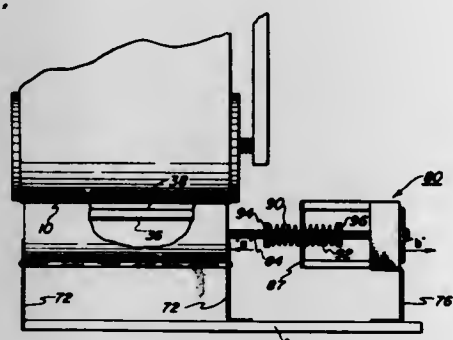
Apparatus for spot printing a powder onto a substrate including a perforated hollow roller; means for rotating the roller relative to a textile or other substrate; and hopper means within the hollow roller for holding the powder which hopper means mouth is about equal to the diameter of the perforations in the roller and registers with the perforations only when the perforations are adjacent the substrate.

3,613,636
ELECTROGRAPHIC DEVELOPER
 Nicholas M. Soares, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Mar. 10, 1969, Ser. No. 805,696
 Int. Cl. B05b 5/00
 U.S. Cl. 118—637 7 Claims



A pretensioned web mounted upon a supply roll and a takeup roll to form a cassette permits controlled deposition of toner onto a fibrous member by means of mechanical, electrical and triboelectrical forces.

3,613,637
DEVELOPER FOR ELECTROSTATIC IMAGES
 Dinesh S. Shah, Syracuse, and John F. Gardner, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
 Filed June 16, 1969, Ser. No. 833,459
 Int. Cl. G03g 13/00
 U.S. Cl. 118—637 2 Claims

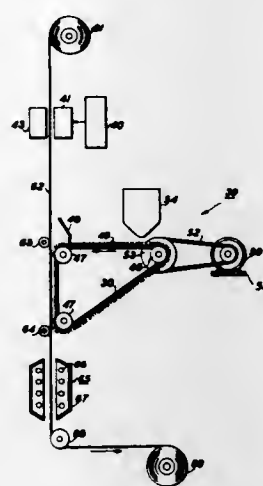


Apparatus for developing a latent electrostatic charge pattern including a developer bed comprising a supporting plate positionable beneath at least a portion of a surface having the latent electrostatic charge pattern formed thereon. The developer bed is vibrated by a driving member to fluidize the developer material supported thereon for contacting and developing the latent charge pattern. The bed and driving member are suspended by flexors and are coupled together by resilient means to minimize the drive force requirements by permitting operation at mechanical resonance and to isolate the noise and vibrations generated by the vibrating bed and driving member.

3,613,638
MATERIALS FOR FIBROUS DEVELOPMENT MEMBER
 Thomas W. Solarek, West Walworth, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Oct. 27, 1969, Ser. No. 869,673
 Int. Cl. G03g 13/00
 U.S. Cl. 118—637 7 Claims

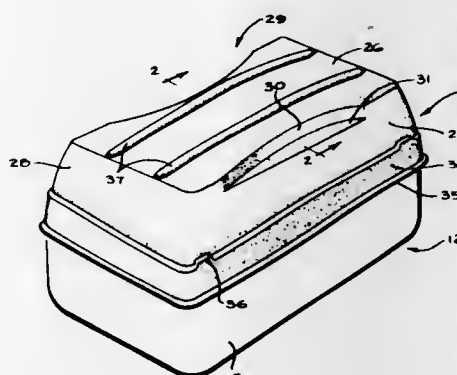
In a device for developing electrostatic latent charge

patterns, a fibrous development member comprising woven pile material, the fiber elements of which comprise



composite combinations of conductive and insulating materials, such as glass and steel.

3,613,639
ANIMAL CAGE PROTECTIVE COVER AND METHOD OF MAKING SAME
 Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to Appleton Wire Works Corporation, Appleton, Wis.
 Continuation-in-part of application Ser. No. 766,755, Oct. 11, 1968, now Patent No. 3,528,227. This application Feb. 12, 1970, Ser. No. 10,788
 Int. Cl. A01k 01/00; B01d 39/00
 U.S. Cl. 119—15 9 Claims

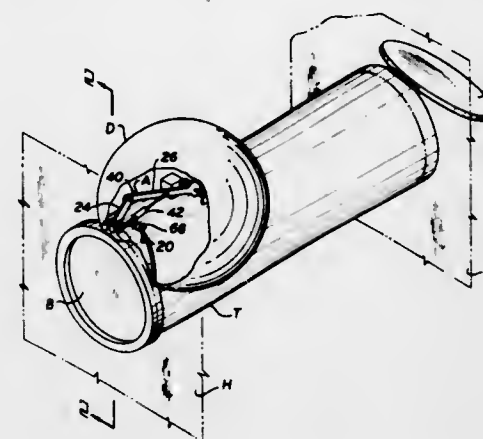


A protective cover for an animal cage is formed from a fibrous web material in which is incorporated a barrier media having a thermosetting resin formed into barrier areas in the fibrous web material for reducing the permeability of the fibrous web to a system of tortuous passageways and restricting the flow of air currents therethrough to a value less than that necessary to maintain contaminants airborne, thereby eliminating the transport of such contaminants into or out of such animal cage. The cover may be made by thermoforming the fibrous web into a shape to fit over and seal with the animal cage.

3,613,640
COMMUNICATING PASSAGE FOR SUBMERSIBLE VESSELS
 Paul Cohen, Glen Cove, N.Y., assignor to Subcom, Inc., Glen Cove, N.Y.
 Filed Aug. 8, 1969, Ser. No. 848,419
 Int. Cl. B63g 8/00
 U.S. Cl. 114—16 R 12 Claims

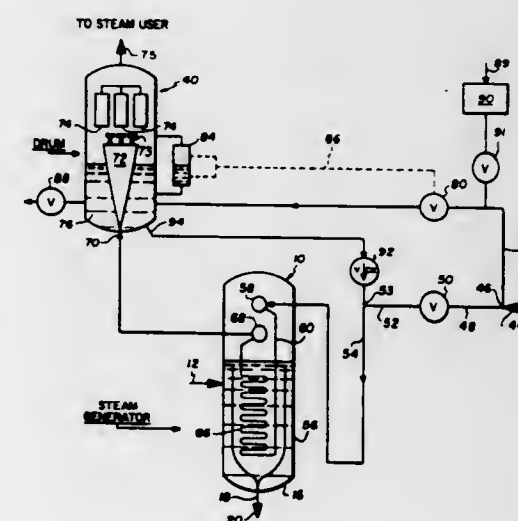
A communicating passage for submersible vessels

including a tube, a door frame facing inwardly of the tube, a door hinge means for moving said door into engagement with



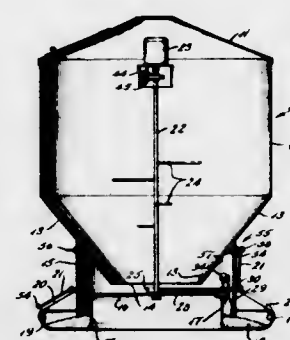
from the housing adjacent the valve-operating member in order to guard the valve-operating member against operation by an animal leaning against the valve-operating member. The animal pivots the valve-operating member to obtain a supply of liquid by squeezing the valve-operating member and the fixed extension together in its mouth.

3,613,643
COMBINED ONCE-THROUGH AND NATURAL CIRCULATION VAPOR GENERATOR
 Robert O. Barratt, Parsippany, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
 Filed July 18, 1969, Ser. No. 851,769
 Int. Cl. F22b 1/06
 U.S. Cl. 122—34 3 Claims



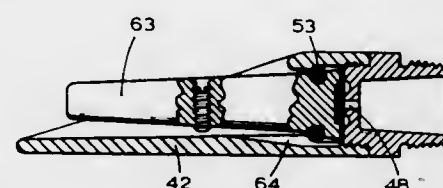
the frame and out of said tube, and a housing integral with said tube for receiving said door.

3,613,641
AUTOMATIC ELECTRIC HOG FEEDER
 Petrus Jacobus Geerlings, P.O. Box 179, Waterloo, Iowa
 Filed Mar. 26, 1970, Ser. No. 22,945
 Int. Cl. A01k 5/02, 39/00
 U.S. Cl. 119—51.11 9 Claims



Apparatus for dispensing feed to animals automatically, including large and small pigs, and with control means for operating the mechanism intermittently to maintain a supply of feed ready for consumption.

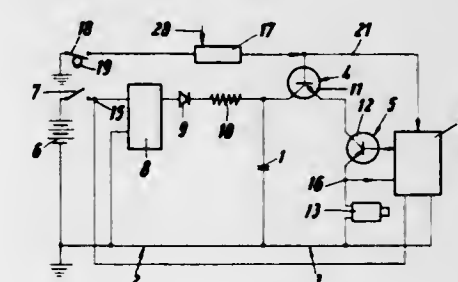
3,613,642
DEVICE FOR SUPPLYING ANIMALS WITH WATER OR OTHER LIQUID
 George Restall, 27 Little Aston Lane, Sutton Coldfield Works, and Robert M. Hattersley, 2 Eastfield Road, Royston Herts, both of England
 Filed June 30, 1969, Ser. No. 837,837
 Claims priority, application Great Britain, July 2, 1968, 31529/68
 Int. Cl. A01k 07/00
 U.S. Cl. 119—75 5 Claims



The invention provides a device such as a drinking nozzle for supplying animals with water or other liquid and comprises a housing, a pivotable valve operating member extending from the housing such that when an animal takes the valve-operating member in its mouth and pivots the valve-operating member liquid flows into the animal's mouth. The device is also provided with a fixed extension extending

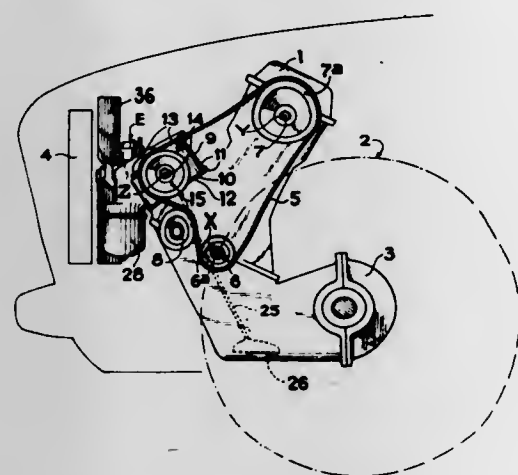
A sodium-heated vapor generator used in connection with a sodium-cooled fast breeder reactor is provided with means for supplying feedwater to the vapor generator in the event of feed pump failure, low-load operation, or reactor shutdown. Accordingly, a check valve will complete a natural circulation circuit to provide the necessary feedwater until water can be supplied from a suitable emergency supply.

3,613,644
FUEL INJECTION DEVICE
 Ferdinand Anton Ernst Porsche, Stuttgart-Nord, and Paul Breyer, Rutesheim, both of Germany, assignors to Firma Dr.-Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany
 Filed May 12, 1969, Ser. No. 823,612
 Claims priority, application Germany, May 24, 1968, P 17 51 403.3
 Int. Cl. F02m 51/00
 U.S. Cl. 123—32 EA 19 Claims



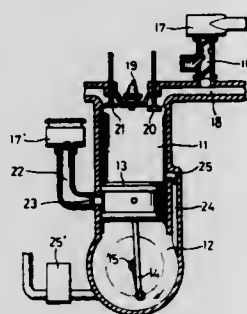
A fuel injection installation, especially for multicylinder internal combustion engines with at least one electromagnetically actuated injection valve and an energy storage device in the load circuit which is triggered in dependence on the rotational speed and in which the discharge of the energy storage device acting on the electromagnet of the injection valve is limited by a control device to a value above the holding current of the injection valve.

3,613,645
ACCESSORY UNIT FOR AN ENGINE OF A VEHICLE
AND AN ENGINE EQUIPPED WITH SAID UNIT
 Armand Froumajou, Pontoise, France, assignor to
 Automobiles Peugeot, Paris, France and Regie Nationale des
 Usines Renault, Billancourt, France
 Filed Nov. 19, 1969, Ser. No. 878,068
 Claims priority, application France, Dec. 2, 1968, 176,181
 Int. Cl. F02m 67/00, 77/00; B60k 11/04
 U.S. Cl. 123-41.46 6 Claims



An accessory unit for mounting on a vehicle engine. The unit comprises a body relative to which are mounted component accessories of said engine. The body is adapted to be fixed to a corresponding face of the engine. Drive means are provided whereby said accessories can be driven by the crankshaft of the engine.

3,613,646
SECONDARY AIR INJECTION SYSTEM FOR AN
INTERNAL COMBUSTION ENGINE
 Souichi Hisada, 460 11-2, 2-chome, Nishiki-cho, Naka-ku,
 Nagoya, Japan
 Filed Sept. 10, 1969, Ser. No. 856,540
 Int. Cl. F02b 75/02
 U.S. Cl. 123-75 CC 1 Claim

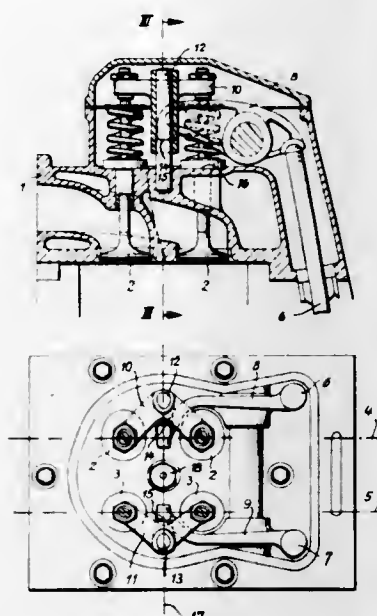


A secondary air-injecting system for obtaining a large compression ratio with a small engine stroke and for burning fuel gas completely, in which air is injected in engine cylinders at least in portions of intake, detonation and exhaust periods of the engine operation cycle from a separate air tank and/or engine crankcases where air is compressed by the downward motion of engine pistons.

3,613,647
APPARATUS FOR ACTUATING A PLURALITY OF
VALVES OF PISTON-OPERATED INTERNAL
COMBUSTION ENGINES
 Hermann Mettli, Rodenkirchen; Ernst-Siegfried Hartmann,
 Rosrath, and Georg-Wilhelm Lewen, Menden, all of
 Germany, assignors to Klockner-Humboldt-Deutz
 Aktiengesellschaft, Cologne, Deutz, Germany
 Filed Feb. 11, 1970, Ser. No. 10,432
 Claims priority, application Germany, Feb. 12, 1969, P 19 06
 882.7
 Int. Cl. F011 1/26, 1/18
 U.S. Cl. 123-90.22 7 Claims

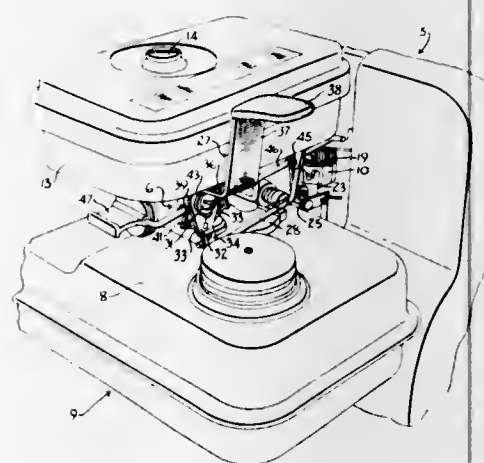
An apparatus for actuating valves for effecting a change in the charge of a piston machine, especially piston-operated

internal combustion engine, in which the valve control is effected by yoke means controlling two valves, and in which



the guiding means for the yoke means are laterally offset with regard to the area of engagement of said yoke means by the yoke-actuating means.

3,613,648
ENGINE CARBURETOR WITH THROTTLE CONTROL
LEVER
 Charles Robert Peifer, Pewaukee, Wis., assignor to Briggs &
 Stratton Corporation, Wauwatosa, Wis.
 Filed Jan. 23, 1970, Ser. No. 5,218
 Int. Cl. F02d 11/08; G05g 5/06
 U.S. Cl. 123-103 R 5 Claims

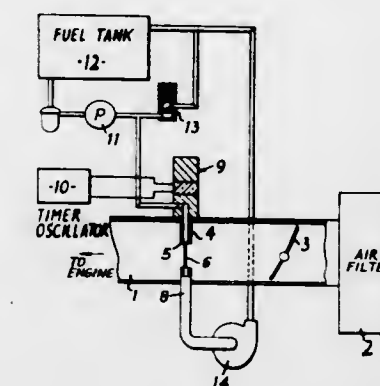


The throttle valve in the carburetor of an internal combustion engine is manually controlled by a lever pivotally mounted directly on one side of the body of the carburetor at a location beneath the air cleaner on the carburetor air inlet duct.

3,613,649
FUEL INJECTION SYSTEMS FOR INTERNAL-
COMBUSTION ENGINES FED WITH A FUEL-AND-AIR
MIXTURE
 Norman Moss, Ilford, and Michael John Broad, Enfield, both
 of England, assignors to The Plessey Company Limited,
 Ilford, Essex County, England
 Filed June 1, 1970, Ser. No. 42,274
 Claims priority, application Great Britain, June 25, 1969,
 32009
 Int. Cl. F02m 27/08; F02b 51/06
 U.S. Cl. 123-119 E 4 Claims

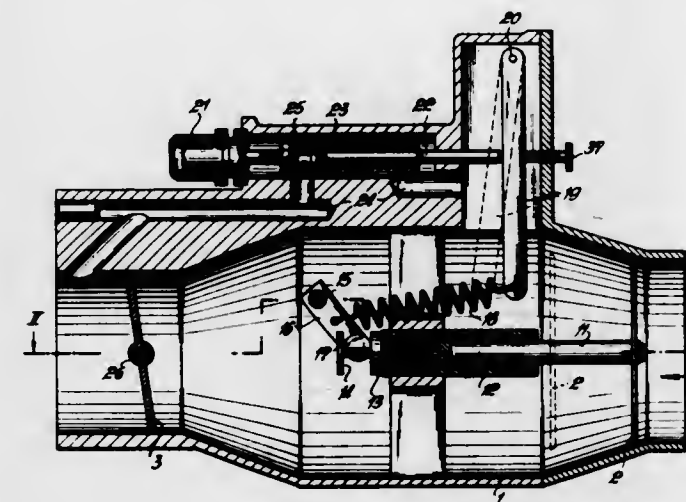
In a fuel injection system for a mixture-aspiring internal-combustion engine, fuel is injected through a nozzle unit equipped with an ultrasonic transducer so that when the

transducer is deenergized the nozzle produces a solid jet passing across the induction pipe of the engine into a collector tube through which the fuel returns to the fuel tank, while when the transducer is energized, the jet disintegrates, the fuel being atomized and therefore substantially all



admitted to the induced air. The quantity of fuel thus introduced during each stroke or revolution with the airflow in the induction pipe is determined by the length of the energization period of the transducer.

3,613,650
FUEL INJECTION SYSTEM FOR INTERNAL
COMBUSTION ENGINES
 Gerhard Stumpp, Stuttgart, and Klaus-Jurgen Peters,
 Affalterbach, both of Germany, assignors to Robert Bosch
 GmbH, Stuttgart, Germany
 Filed Dec. 11, 1969, Ser. No. 884,206
 Claims priority, application Germany, Dec. 14, 1968, P 18 14
 848.6
 Int. Cl. F02n 69/00; F02d 3/02
 U.S. Cl. 123-119 6 Claims

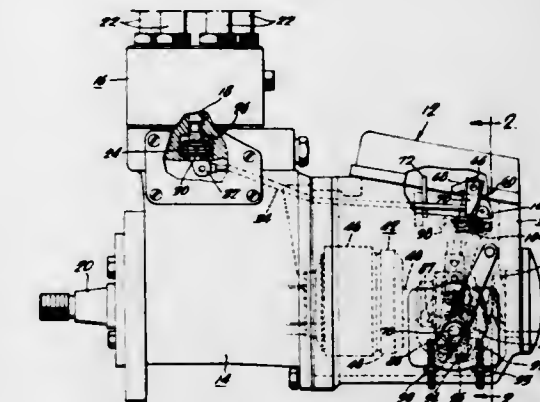


In the suction tube of an internal combustion engine there is disposed a regulator member which is displaceable by air pressure against the force of a return spring tensioned as a function of engine temperatures. Said regulator member is associated with a fuel metering device to vary the proportion of fuel in the fuel-air mixture. The fuel quantities are also varied as a function of an arbitrarily set butterfly valve disposed in the suction tube.

3,613,651
MINIMUM-MAXIMUM GOVERNOR WITH FULL LOAD
TORQUE CONTROL
 Warren E. Snyder, Wilbraham; John B. Cavanaugh, West
 Springfield, and Jean-Paul R. Aubin, South Hadley, all of
 Mass., assignors to AMBAC Industries, Incorporated,
 Springfield, Mass.
 Filed Sept. 15, 1969, Ser. No. 857,828
 Int. Cl. F02d 1/04
 U.S. Cl. 123-140 12 Claims

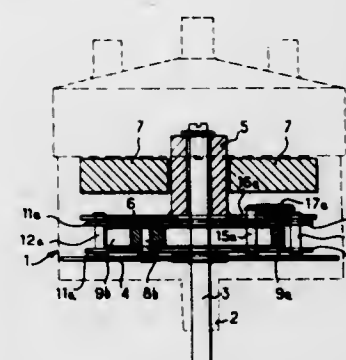
A governor for diesel engines and the like adapted to mechanically sense engine speed and to regulate fuel delivery

during engine idling and at speeds in excess of rated engine speed. In addition, the governor provides an automatic



control of full load fuel delivery over the operating speed range of the engine, the fuel delivery otherwise being under direct manual throttle control.

3,613,652
APPARATUS FOR AUTOMATICALLY ADJUSTING THE
TIMING OF IGNITION OF AN INTERNAL COMBUSTION
ENGINE TO CORRESPOND WITH THE ENGINE SPEED
 Jean Henri Stellwagen, Paris, France, assignor to Societe
 Anonyme Pour l'Equipelement Electrique des Vehicules,
 S.E.V. Marchal, Issy les Moulineaux, France
 Filed Feb. 16, 1970, Ser. No. 11,485
 Claims priority, application France, Feb. 18, 1969, Aug. 12,
 1969, 69 04032; 69 27755
 Int. Cl. F02p 5/06 9 Claims

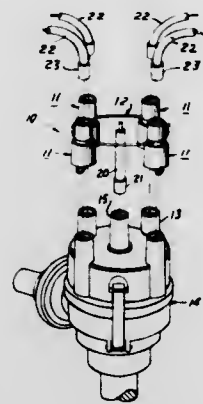


An apparatus for automatically adjusting the timing of ignition of an internal combustion engine by changes in centrifugal force caused by changes in the speed of the engine. The apparatus is particularly useful as a component of an automobile engine.

3,613,653
IGNITION DEVICE FOR INTERNAL COMBUSTION
ENGINE
 Eugene Irvin, Jr., 6635 Lakewood Blvd., Dallas, Tex., and
 Edwin A. Carrell, 1608 Westlake Drive, Plano, Tex.
 Filed Mar. 23, 1970, Ser. No. 21,782
 Int. Cl. F02p 9/00 8 Claims

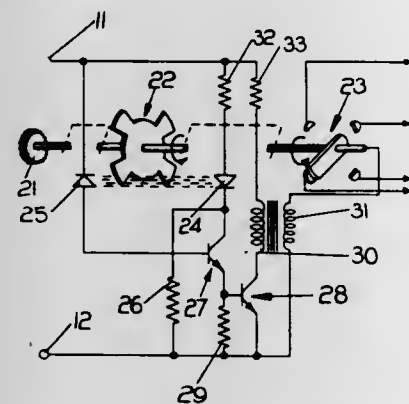
U.S. Cl. 123-146.5 A
 An air pollution control device for use in the ignition system of an internal combustion engine for applying a nonigniting electrical potential to nonfiring cylinders of the engine responsive to current flow to the firing cylinder including an assembly having a spark plug lead coupler connectible into each spark plug lead socket of the distributor head and engageable by the spark plug lead for that particular socket, each coupler having a conductor engageable at a lower end in the distributor head socket and contacted at the upper end by the spark plug wire. A conductive sleeve is secured in spaced electrically insulated relation around the conductor through the coupler, the

sleeves in the several couplers of the device being electrically interconnected in series whereby a potential induced in a sleeve by electrical flow through the conductor within such



sleeve induces a similar potential in the sleeves of the other couplers inducing a potential in the conductors through such other couplers effecting a nonigniting potential at the plugs of the nonfiring cylinders.

3,613,654
SPARK IGNITION SYSTEMS
Brian Gilbert, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Jan. 7, 1970, Ser. No. 1,167
Claims priority, application Great Britain, Jan. 10, 1969, 1637/69
Int. Cl. F02p 7/02
U.S. Cl. 123-148 E

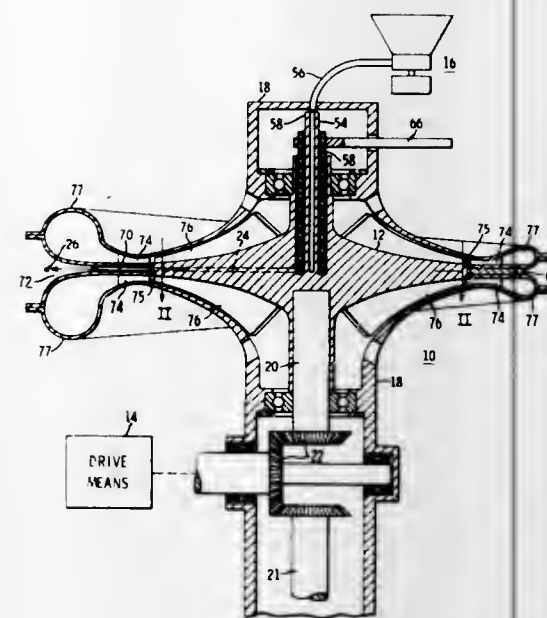


In a spark ignition system for an internal combustion engine there is an electrically powered radiation source and a radiation receiver. The engine drives means for exposing the receiver to the source when a spark is required, and to save power it is arranged that the source is operated at full power only when the receiver is exposed to the source.

3,613,655
CENTRIFUGAL GUN
Joseph M. Tobin, McMurray; Peter O. Tauson, Bradford Woods; Leonard R. Fleischer, Pittsburgh, and Harry F. Ebner, Clairton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 30, 1969, Ser. No. 837,441
Int. Cl. F41b 15/00
U.S. Cl. 124-6

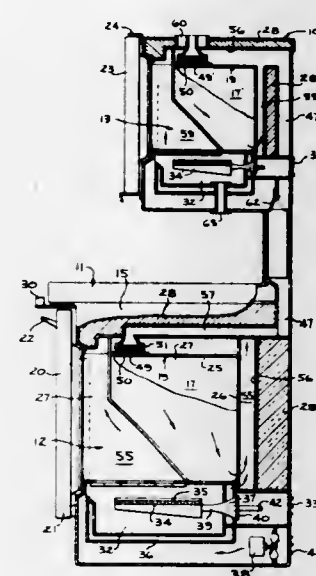
A centrifugal gun for discharging projectiles at very rapid velocities which gun includes a rotatable impeller having a center of rotation and a peripheral path of movement and having a continuous trackway along which the objects are propelled and which leads from the point of insertion at or near the rotation center to the exit point at the peripheral

path. The trackway has an outer concave section and an inner convex section, with the outer peripheral portion of the



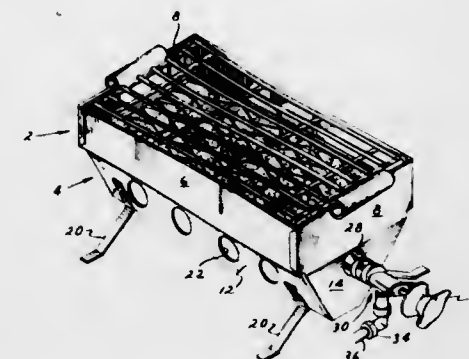
concave section facing the direction of rotation of the impeller.

3,613,656
PYROLYTIC CLEANING OF DOUBLE OVENS
Wayne L. Henderson, Louisville, Ky., assignor to General Electric Company
Filed Dec. 12, 1969, Ser. No. 884,500
Int. Cl. F24c 15/32
U.S. Cl. 126-21 R



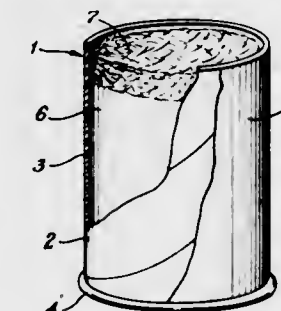
A double-oven gas range having a large master oven and a smaller companion oven. Each oven is provided with heating means for raising the temperature of the oven. The master oven has heating means with a capability of reaching and maintaining either a cooking temperature range or a pyrolytic oven-cleaning temperature range. The companion oven has heating means with a capability of reaching and maintaining a cooking temperature range. The master oven has an exhaust vent that empties into a flue duct. The companion oven also has an exhaust vent that empties into the same flue duct. The flue duct has a damper for shunting the exhaust of the master oven into heat-transfer relation with the companion oven either for warming the companion oven, or when the master oven is operating on a pyrolytic oven-cleaning cycle for raising the temperature of the companion oven into the pyrolytic oven-cleaning temperature range for cleaning both ovens at the same time with the same heat source.

3,613,657
OUTDOOR COOKER WITH REUSABLE CARTRIDGE-TYPE GRILL UNIT
John E. Wilska, 840 Amostown Road, West Springfield; Harold F. Felix, 51 Irving St., West Springfield; John A. Dialessi, 267 Kings Hwy., West Springfield, Mass., and Fred C. Emerson, Old Main Road, Worthington, Mass.
Filed Nov. 26, 1969, Ser. No. 880,095
Int. Cl. A47j 37/00; F24c 3/04
U.S. Cl. 126-41 R



A portable outdoor cooking unit having a gas-fired burner element in the lower section of a container housing body with a cooking grill cartridge pack removably mounted in the upper section thereof, the pack being formed as a composite reusable grill unit having a lower panel or layer of noncombustible briquets secured between open metalwork members and a cooking grill surface supported in elevated relation thereto.

3,613,658
HEATING COMPOSITION
Edwin C. Knowles, Poughkeepsie, and Frederic C. McCoy, Beacon, both of N.Y., assignors to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 288,866, June 19, 1963, now abandoned, Continuation-in-part of application Ser. No. 229,205, Oct. 8, 1962, now abandoned. This application July 20, 1964, Ser. No. 383,785
Int. Cl. A01g 13/06
U.S. Cl. 126-59.5

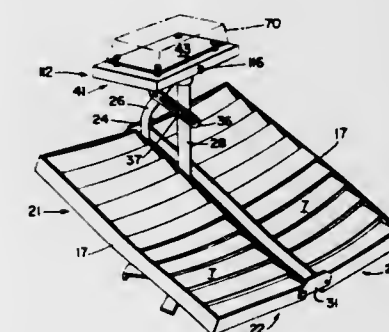


A heating composition consisting essentially of from 75 to 99.8 percent by weight of a wax component containing a microfibrinous material component in contact with the wax in an amount sufficient to increase the burning rate of the composition. The microfibrinous material component consists essentially of from 0.2 to 25 percent by weight of an inorganic substantially noncombustible material. The heating composition can be used as a fire starter and in a container as a solid fuel heater.

3,613,659
SOLAR-ENERGY-CONCENTRATING DEVICE
Robert M. Phillips, 326 Lakeview Way, Redwood City, Calif.
Filed Oct. 14, 1968, Ser. No. 767,072
Int. Cl. F24j 3/02
U.S. Cl. 126-270

Presented is a solar-energy-concentrating device in which a reflector-concentrator panel is supported in such manner

that radiant solar energy is intercepted by the reflector-concentrator panel and reflected onto a proportionately smaller radiant-energy-absorbing surface. The radiant-energy-absorbing surface and concentrator panel are supported in relation to each other so that the shadow cast by the radiant-energy-absorbing surface typically does not fall upon the reflective surface of the concentrator panel so as to preclude interference with reflection of radiant energy thereby. The concentrator panel may be in the form of a single module having a concentration ratio with respect to the radiant-energy-absorbing surface ranging between 6 1/2-12 to 1, and preferably closely approximating 10 to 1; or it may be in the form of a plurality of such modular panels arranged to provide a selected concentration ratio or permit adjustment of the temperature of the absorbing surface through independent adjustment of one or more of the panels. For concentration ratios falling into this preferred range, it has been found that the operating temperature of the radiant-energy-absorbing device or surface will selectively range between 350° F. and 500° F. In another embodiment the reflector-concentrator panel is provided with a reflective

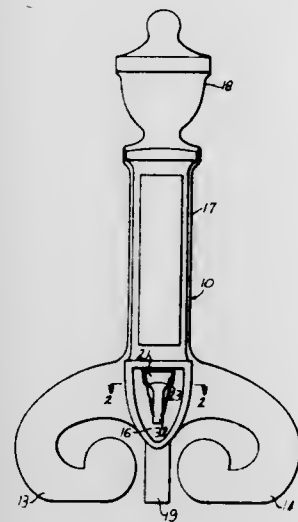


surface each increment of which is related to adjacent incremental surface areas so as to provide the desired predetermined concentration ratio. The radiant-energy-absorbing surface may be one surface of a flat plate arranged to absorb the radiant energy from the sun that is reflected to it by the concentrator panel, the heat from which may in turn be utilized for any appropriate purpose requiring a source of heat, as for instance to heat the interior of an oven chamber formed by placing an appropriate cover structure over the plate. The radiant-energy-absorbing surface is supported on a suitable frame in adjustable relation to the reflector-concentrator panel so that in all positions of the frame, giving effect to adjustments required to place the reflecting surface of the concentrator panel in relation to the sun so as to secure maximum efficiency, the radiant-energy-absorbing surface is maintained in a horizontal position so as to conveniently support objects thereon in heat transfer relation to the radiant-energy-absorbing surface.

3,613,660
ANDIRON
Judkins E. Wilkinson, Birmingham, Ala., assignor to Atlanta Stove Works, Inc.
Filed Dec. 15, 1969, Ser. No. 884,886
Int. Cl. F23h 13/00, 17/12; F24b 13/00
U.S. Cl. 126-298

Upstanding front member of andiron has passageway therethrough with sides of passageway sloping downwardly and inwardly. Forward end of horizontal bar has downwardly and inwardly extending side portions corresponding to and

engaging sloping sides of passageway with wedgelike fit. Cooperating stop surfaces limit forward and rearward

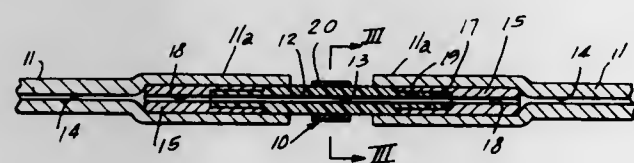


movement of side portions of bar relative to sloping sides of passageway.

3,613,661 MECHANICALLY CONTROLLING FLOW THROUGH LIVING BODY DUCTS

Nayan S. Shah, 1414 E. 59th St., Chicago, Ill.
Filed Dec. 20, 1968, Ser. No. 785,521
Int. Cl. A61b 17/00, 17/08, 17/12
U.S. Cl. 128-1 R

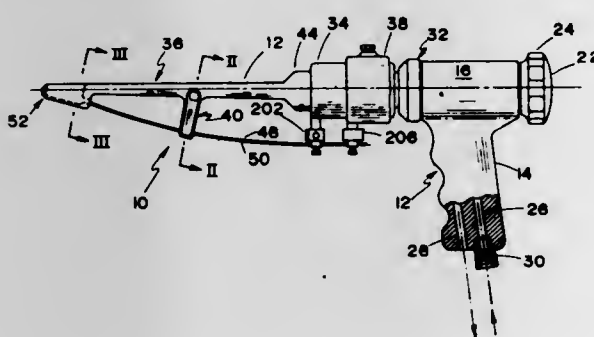
14 Claims



A living body duct may be mechanically blocked in a manner to enable unblocking of the duct when desired, by inserting into the duct a flow-blocking device, and more particularly a device having a valve maintaining the blocked condition of the duct as long as desired and which may be opened to resume normal flow through the duct.

3,613,662
COLD CONIZATION INSTRUMENT
Stavro A. Chrysostomides, Rt. 1, Box 124, Columbia, S.C.
Filed Feb. 27, 1970, Ser. No. 15,192
Int. Cl. A61b 10/00, 17/32; B26b 07/00; E21b 01/02; F15b 13/04; F01d 15/06
U.S. Cl. 128-2 B

10 Claims

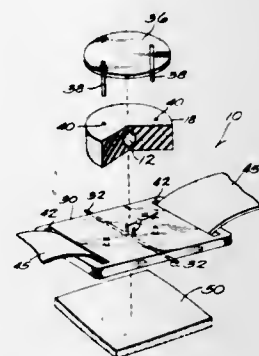


A medical instrument for removal of a conical section of tissue from the cervical is including the endocervical canal for obtaining a biopsy specimen in a procedure known as cold conization. The instrument utilizes a pistol grip on the body portion and a pneumatic air motor for reciprocal

movement of a pair of coating arcuate blades which may be rotated about the longitudinal centerline of the instrument and are positioned to remove a uniform conical biopsy section.

3,613,663
APPARATUS TO PROVIDE COMMUNICATION WITH THE VEINS OF A PATIENT
Roger P. Johnson, 5930 W. Siegfried Place, Milwaukee, Wis.
Filed Sept. 9, 1968, Ser. No. 758,504
Int. Cl. A61b 10/00
U.S. Cl. 128-2 R

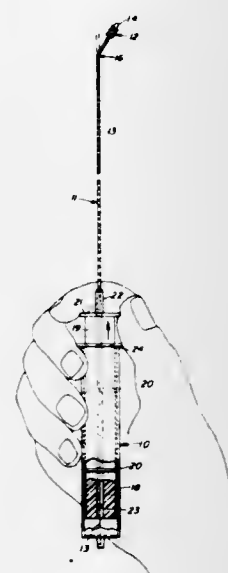
12 Claims



An apparatus for obtaining blood specimens from a patient which includes a needle adapted to be temporarily injected and retained in communication with a vein of a patient and a body made of a self-sealing material with a cavity or void formed therein, which is in communication with the needle.

3,613,664
CONTROLLABLE TIP BRUSH FOR MEDICAL USE
James K. V. Willson, and Marshall Eskridge, both of Mobile Infirmary P. O. Box 7544, Mobile, Ala.
Filed June 25, 1969, Ser. No. 836,507
Int. Cl. A61b 10/00
U.S. Cl. 128-2 R

3 Claims

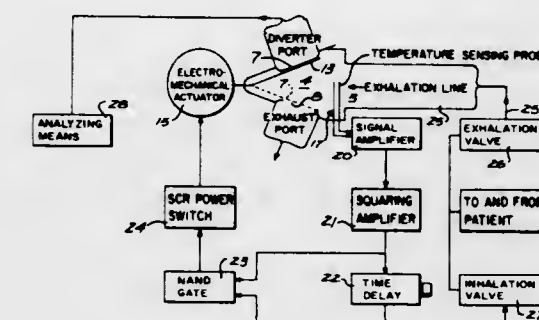


A flexible probe including a series of bristles at its extremity for exploring and collecting specimens from the labyrinthine passages of internal organs is formed by attaching a series of bristles to the extremity of a tightly wound coil of fine wire, a section of wire coil near the bristles having adjacent turns whose cross sections are reduced at one side of the coil so that when the coil is put under tension by a core wire extending from one end to the other of the coil the extremity including the bristles will be turned in the direction of the reduced cross section, one element of a

two-piece handle being attached to the other end of the coil, the other element of the handle being attached to the core wire and the two elements being in frictional engagement so that any degree of inclination of the bristles can be accomplished and maintained with one hand.

3,613,665
SAMPLING MEANS FOR EXHALED AIR
Reynolds G. Gorsuch, Suite 402, 642 W. 6th St., Los Angeles, Calif.
Filed Aug. 8, 1969, Ser. No. 848,587
Int. Cl. A61b 10/00
U.S. Cl. 128-2 R

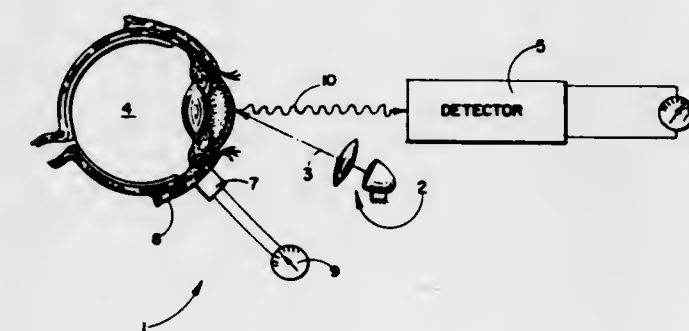
5 Claims



A valve and control therefor for separating the end tidal air or alveolar gas from air exhaled from a human or animal, wherein a valve, having two ports, is inserted in the exhalation line forming part of a breathing apparatus, the first port discharging to atmosphere, the second port discharging into a collection receptacle or analytical device; and wherein a control, including a temperature sensor, is located ahead of the valve to sense movement of exhaled air, is electrically connected to a variable time delay means operable to close the first port and open the second port after a preselected portion of the exhaled air has passed so a desired portion of the end tidal air may be collected or analyzed.

3,613,666
SYSTEM FOR DETECTING GLAUCOMA
Milo Oldell Hobbs, Torrance, Calif., assignor to North American Rockwell Corporation
Filed Aug. 11, 1969, Ser. No. 848,798
Int. Cl. A61b 3/16, 3/16, 3/00
U.S. Cl. 128-2

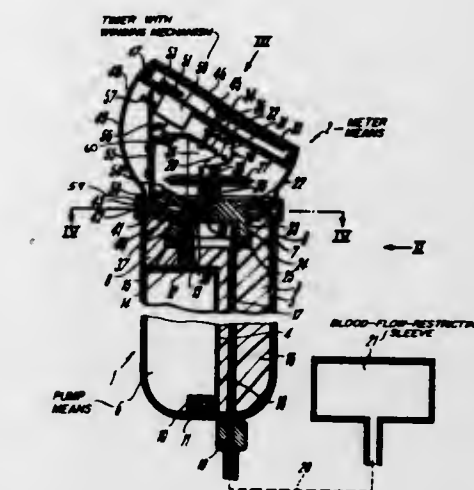
6 Claims



A light beam is directed at an eye being tested. The light is reflected to a detector. The eye is vibrated simultaneously by a vibrator placed adjacent to an eyelid. The response of the eye to the vibration as measured by the detector is calibrated to indicate pressure.

3,613,667
BLOOD-PRESSURE-MEASURING DEVICE WITH PULSE-RATE TIMER
Charlotte Beck, Stuttgart-Möhringen, Germany, assignor to Waller Beck KG. Kontroll- und Fernmessgeräte, Stuttgart-Möhringen, Germany
Filed Apr. 1, 1969, Ser. No. 811,833
Claims priority, application Switzerland, Apr. 1, 1968, 4944
Int. Cl. A61b 5/02
U.S. Cl. 128-2.05 G

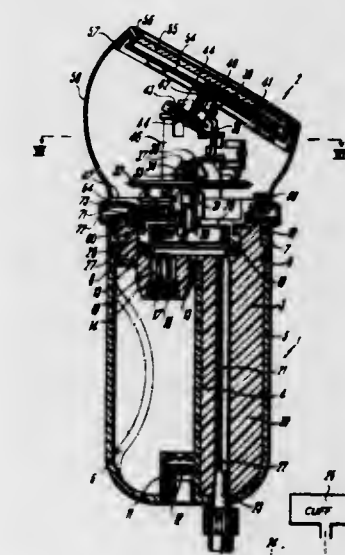
6 Claims



A sphygmomanometer for use with a pressurizable, blood-restricting sleeve has a cylindrical housing comprising a core formed with a lateral hollow and an elastic skin stretched over the core spanning the hollow to form a hand-actuatable pump for pressurizing the sleeve. A short-interval timer (clock) and a pressure indicator responsive to pressure in the sleeve are mounted on one end of the housing and each has a scale on a common dial plate. Turning a rotatable control ring surrounding the housing in one sense actuates a valve for bleeding the sleeve to measure blood pressure, and turning it in the other sense starts the timer for measurement of pulse rate.

3,613,668
SPHYGMOMANOMETER WITH BUILT-IN TIMER
Charlotte Beck, Stuttgart-Möhringen; Karl Roll, Oberaichen, Württemberg, and Fritz Kummer, Stuttgart, all of Germany, assignors to Waller Beck KG. Kontroll- und Fernmessgeräte, Stuttgart-Möhringen, Germany
Filed Apr. 1, 1969, Ser. No. 811,940
Claims priority, application Switzerland, Apr. 1, 1968, 4943/68
Int. Cl. A61b 5/02
U.S. Cl. 128-2.05 G

17 Claims



A sphygmomanometer operable with one hand has a cylindrical housing in which a pump for inflating a blood-

flow-restricting sleeve is formed by a deflectable wall of the cylindrical housing. A meter for monitoring pressure is removably fitted on the end of the housing, and a control ring surrounds the housing axis between the meter and pump. A valve for bleeding the air from the sleeve is operated by rotation of the control ring. Means are provided for centering the pointer of the meter at a zero indication and for establishing the desired ratio of pressure to meter displacement. A timer is also provided which has a dial on the meter face and which is controlled by the ring.

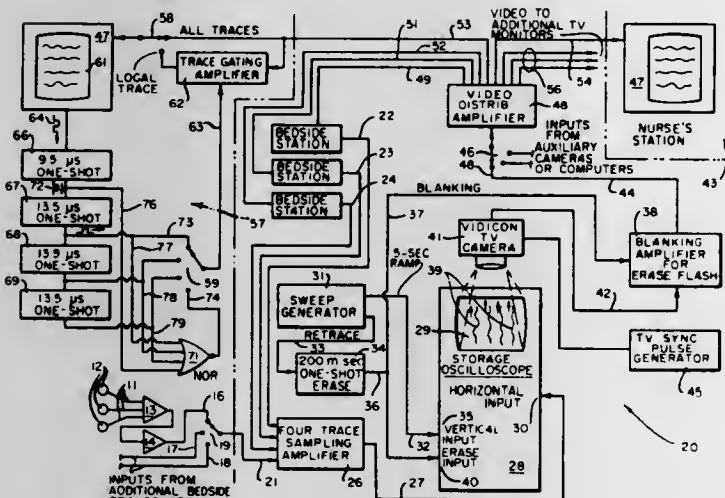
3,613,669
SYSTEM AND METHOD EMPLOYING VIDEO EQUIPMENT FOR REMOTE MONITORING OF BODY FUNCTION ACTIVITIES

Thomas H. Corbin, and Martin E. Kienitz, both of Palo Alto, Calif., assignors to Smith Kline Instruments, Inc., Palo Alto, Calif.

Filed Feb. 5, 1969, Ser. No. 796,732
Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 R

12 Claims



A plurality of body function activities such as cardiac conditions are monitored from a single remote station and electric signal representations of each activity so monitored are stored temporarily in an associated storage register such as a given related trace appearing in avial display of several such traces. Scanning means, such as a television or vidicon camera scans the visual display of such signals and transmits them all to each of a number of additional viewing stations assigned to various locations remote from the scanning apparatus. At each scanning location, a portion of the visual display can be eliminated whereby only a given pertinent portion is displayed at that station.

3,613,670
HEARTBEAT MONITOR WITH AUDIO AND VISUAL OUTPUTS

Harry J. Edenhofer, Southampton, Pa., assignor to Princo Instruments, Inc., Southampton, Pa.

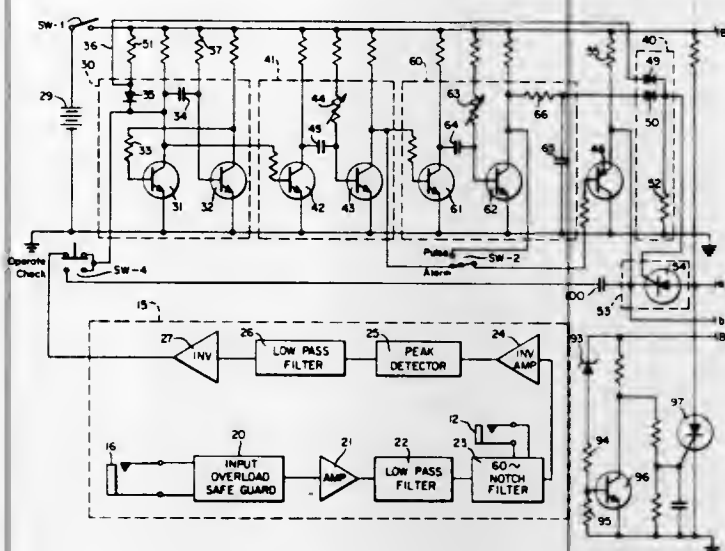
Filed Feb. 12, 1969, Ser. No. 798,676
Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 F

3 Claims

A pocket size, self-contained cardiac monitor for on-patient or central station monitoring by visible and/or audible signals related to the beat of a patient's heart, the monitor

having the features of: using its own circuitry for calibration; having a time delay to mask out spurious signals; and having

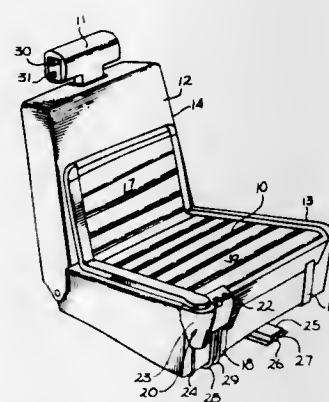


circuit means to drive a monitor lamp and speaker with a minimum of power.

3,613,671
INFLATABLE MASSAGING PAD FOR A SEAT
John H. Poor, 32582 Crete Drive, Laguna Niguel, Calif., and Charles H. Logan, 4828 Tilden Ave., Sherman Oaks, Calif.
Filed Aug. 7, 1968, Ser. No. 750,987
Int. Cl. A61h 1/00

U.S. Cl. 128—24 R

15 Claims



A seat pad having a fabric cover attached to a pad base and a plurality of inflatable cells spaced parallel within the cover. Each of the inflatable cells is closed at one end and connected at the other end to an air tube which communicates with a compressed air source and the atmosphere. A distributor is interconnected between the air tubes, and the compressed air source and atmosphere to sequentially distribute the compressed air to the air tubes to alternately distribute the compressed air to the air tubes to alternately inflate and deflate each of the cells, thereby producing a translational pressure wave along the seat. The distributor includes a plate member having a plurality of ports communicating with the air tubes, a portion of these ports being relatively larger than the remaining portion to produce a differential in the translational inflating time and a varying volume and pressure of inflation in the air tubes. A padded headrest is also provided with a plurality of inflatable air chambers which are sequentially inflated and deflated in the same manner to produce a massaging effect.

3,613,672
MECHANICAL VENTRICULAR ASSISTANCE CUP
Peter Schiff, R.D. #2, Lambertville, N.J.

Filed July 9, 1969, Ser. No. 840,253
Int. Cl. A61h 29/00

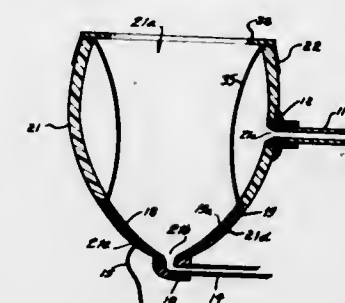
U.S. Cl. 128—24.5

11 Claims

An improved mechanical ventricular assistance cup for assisting a heart in the performance of its pumping

operations or for aiding the heart in achieving normal pumping rhythm, which cup assembly is provided with a semiflexible or inflatable powder shell to reduce the size of the incision required for implanting the mechanical pump

base are adapted to fold over the cast and firmly secure the support to the cast to provide a forward and rearward

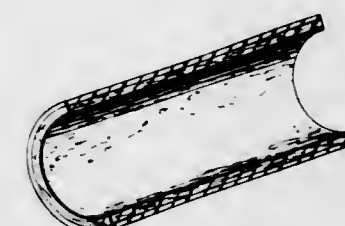


rocking motion on the curved base by the wearer and thereby afford the wearer a more normal gait.

3,613,675
PHOTOCURABLE RESIN IMPREGNATED BANDAGE FOR FORMING RIGID SURGICAL CASTS
Donald Wayne Larsen, 208 Ashlawn Drive, Ashton, Md., and Raymond John Ceresa, Alpine 2 St. Andrews Park, Histon, Cambridge, England
Filed May 22, 1969, Ser. No. 818,238
Int. Cl. A611 13/04

U.S. Cl. 128—90

5 Claims



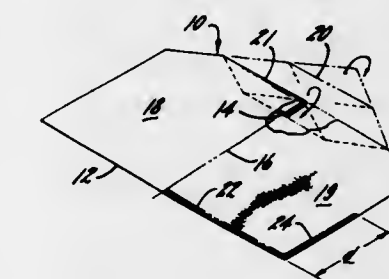
A lightweight strong cast for the repair of broken bones is made by impregnating a fibrous felt with a photocurable resin, wrapping the felt in bandage form around the injured member until a sufficient thickness is built up, then curing the resin by exposing the wrapped "cast" to actinic radiation for a time sufficient to convert the impregnated wrapping into a rigid substance.

3,613,676
GENERAL PURPOSE DISPOSABLE OBSTETRICAL AND SURGICAL LEGGINGS
Dan D. Endres, and Ronald D. Carter, both of Neenah, Wis., assignors to Kimberly Clark Corporation, Neenah, Wis.

Filed Aug. 15, 1969, Ser. No. 850,379
Int. Cl. A61f 13/00; A611 15/00

U.S. Cl. 128—132

2 Claims

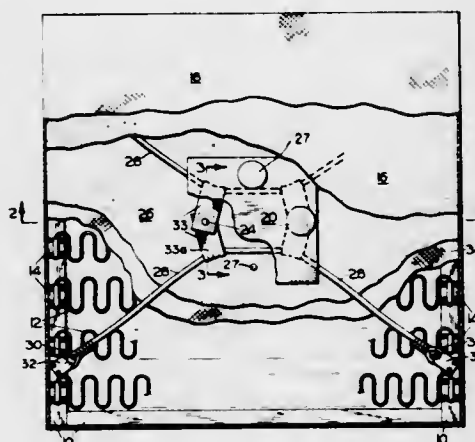


Disposable surgical leggings are provided for covering the upraised legs of a surgical patient. The leggings are made of a single sheet of flexible nonwoven material so folded and adhesively secured in order to form a compact package that is readily opened to afford an envelopelike leggings structure closed at one end.

3,613,673
VIBRATING THERAPEUTIC CUSHION
Joseph E. La Hue, 3806 S.E. Lincoln, Portland, Oreg.
Filed Feb. 10, 1969, Ser. No. 797,842
Int. Cl. A61h 1/00

U.S. Cl. 128—33

7 Claims



A vibrating therapeutic cushion having vibrating means therein connected within a frame of the cushion by resilient tension members. The vibrating unit supported by the tension member includes a resilient base pad to which is secured a vibrating motor. Soft resilient padding is disposed between the motor and the base pad. The vibrating unit is applied independently of the upholstery springs and by its structure produces a substantially uniform vibration throughout the entire cushion.

3,613,674
FOOT-AND-LEG WALKING CAST SUPPORT
Robert G. Volz, 1750 Race St., Denver, Colo.
Filed Nov. 29, 1968, Ser. No. 779,669
Int. Cl. A61f 5/01, 5/04

U.S. Cl. 128—83.5

8 Claims

A walking support is adapted for attachment to the bottom of a leg-and-foot walking cast and includes an elongated base spanning a substantial portion of the length and width of the bottom of the foot cast together with a convex, curved ground engaging surface. Flap extensions on each side of the

3,613,677

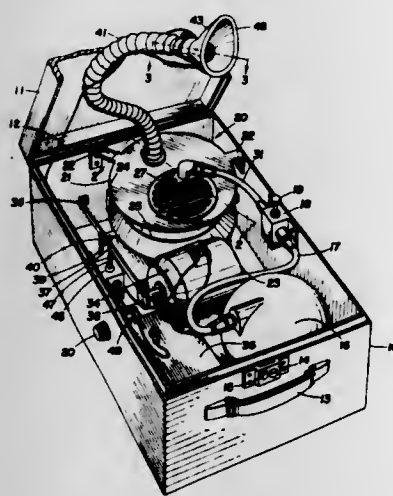
PORTABLE RESUSCITATOR

Joseph Blasko, Toronto, Ontario, Canada, assignor to Abbott Laboratories

Filed Dec. 7, 1964, Ser. No. 416,204
Int. Cl. A62b 7/02

U.S. Cl. 128—145.6

2 Claims



A portable resuscitator comprising: an open top casing; a lid hingedly mounted on the casing; a container of oxygen under pressure removably positioned in the casing; a bellows-type pump in the casing having an air inlet; a conduit connecting said container and pump and including an adjustable regulator valve; a motor operatively connected to the pump; a battery powering the motor; a flexible hose having one end connected to the pump and a deformable face mask at the other end; a one-way valve at the juncture of said hose and mask; an exhalation valve carried by the mask; and an electric circuit including said battery, motor, a lid operated switch and a second switch operated by the deformable edge of the mask.

3,613,678

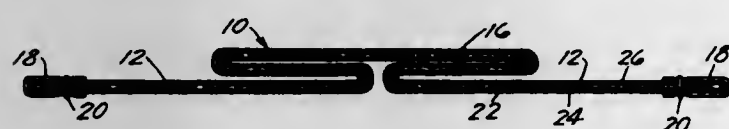
FILTRATION MASK

Delbert J. Mayhew, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of application Ser. No. 623,369, Mar. 15, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 14,210
Int. Cl. A62b 23/06

U.S. Cl. 128—146.2

10 Claims



A face mask having high and prolonged filtering efficiency specially adapted for surgical use formed from a filtering web composed entirely of synthetic organic fibers including filtering fibers 0.5 to 6 microns in diameter and a nonfuzzy face contacting layer formed from a porous smooth-surfaced thermoplastic film.

3,613,679

ELASTIC BANDAGE WITH TENSION INDICATOR

Patricia W. Bijou, P.O. Box 254, Brookhaven, N.Y.

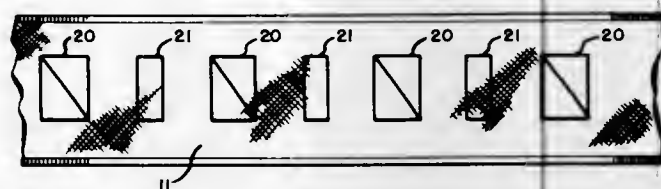
Filed Oct. 1, 1969, Ser. No. 862,714
Int. Cl. A61f 13/00

U.S. Cl. 128—169

7 Claims

A series of figures forming an overall pattern is applied to the surface of an elastic bandage. When the bandage is

stretched, the contours of the figures and/or their position relative to each other are altered. The degree of such

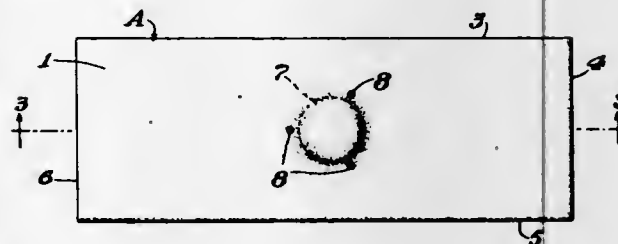


alternation is an indication of the amount of tension existing in the bandage and the pressure applied by the bandage.

**3,613,680
DISPOSABLE BAG WITH POCKET FOR SOLUBLE SUBSTANCE**Paul A. Zamorra, Lake Road, Far Hills, N.J.
Filed Mar. 4, 1969, Ser. No. 804,234
Int. Cl. A61m 3/00

U.S. Cl. 128—224

1 Claim



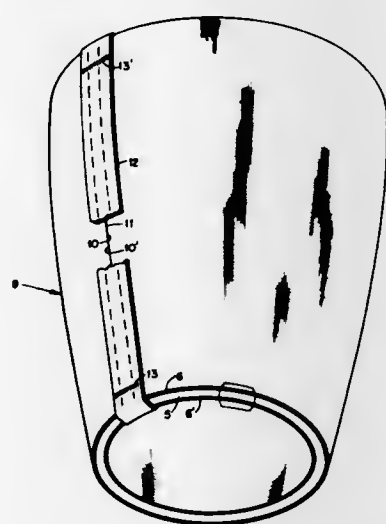
A disposable bag, for example, a liquid container for a syringe has on or between opposed portions of its thin, flexible and collapsible wall a pocket for preloading or storing a soluble substance, so that said substance is dissolved merely by placing a liquid in the bag.

3,613,681

THERAPEUTIC AIDJoe R. Adams, P.O. Box 489, Cookeville, Tenn.
Filed Sept. 10, 1969, Ser. No. 856,774
Int. Cl. A61f 7/00

U.S. Cl. 128—293

7 Claims



A therapeutic aid comprising a closed cell, resilient, foamed elastomeric sheath dimensioned to be received in circumscribing relation about an afflicted body area, said elastomer being not more than about one-fourth inch thick and forming an effective thermal and moisture barrier between the afflicted body area and ambient atmosphere, and inner and outer isotonic surface coverings integrally bonded to and covering substantially the entire inner and outer surfaces of said elastomer sheath, said isotonic surface coverings being substantially equally tensioned with respect to each other and substantially tensioned with respect to said elastomer sheath.

3,613,682

DISPOSABLE CAUTERIES

Richard Norman Naylor, Clearwater, Fla., assignor to Concept, Inc., St. Petersburg, Fla.

Filed Feb. 5, 1970, Ser. No. 8,878
Int. Cl. A61n 3/00

U.S. Cl. 128—303.1

6 Claims



A disposable hand-held portable cautery powered by self-contained energizers or batteries for energizing an electrode heating tip which is mounted in an insulating tube provided with a removable protective cap or cover encompassing the heating tip and the upper end of the tube, and the tube is further provided with a simple depressible latching or locking switch button on the tube, so that a portion of the button will frictionally overlie the adjacent end portion of the cap assembly thereon to thus prevent energization of the heating tip while the tube and cap are assembled.

3,613,683

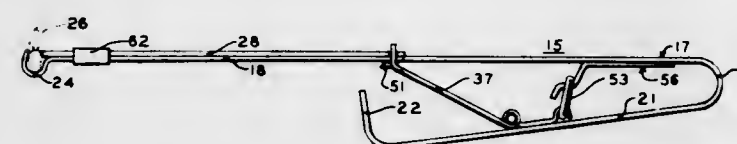
CLIP-APPLYING SURGICAL INSTRUMENT

George Kees, Jr., Box 113, Alexandria, Ky., and Horst R. Hickmann, Anderson Township, Hamilton County, Ohio

Filed June 4, 1969, Ser. No. 830,267
Int. Cl. A61b 17/12, 17/30; B23p 19/04

U.S. Cl. 128—325

2 Claims



A surgical instrument for applying an occlusion clip to a blood vessel including a pair of telescoping members, a hook on one of the members, the other member having an end portion adjacent the hook, the hook and the end portion being adapted to engage and operate arms of the clip for opening and closing the clip and means for telescopically moving the members to operate the clip.

3,613,684

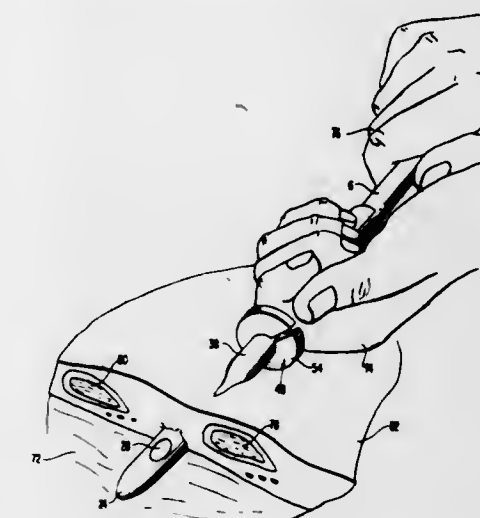
TROCAR CATHETERSDavid S. Sheridan, Hook Road, Argyle, N.Y.
Filed Sept. 19, 1969, Ser. No. 859,413
Int. Cl. A61b 17/34; A61m 27/00

U.S. Cl. 128—347

3 Claims

A trocar catheter is formed with a rigid shaftlike stylet and an encircling catheter made of plastic material. The catheter has a molded rigid distal end member with a conical shape, a closed rounded tip fixed to a flexible tube, and at least one fluid opening through the side. The rigid distal end member has an interior that conforms to the shape of the stylet tip.

The device may be used in emergency cases where the catheter is forced through the chest wall of a patient over the



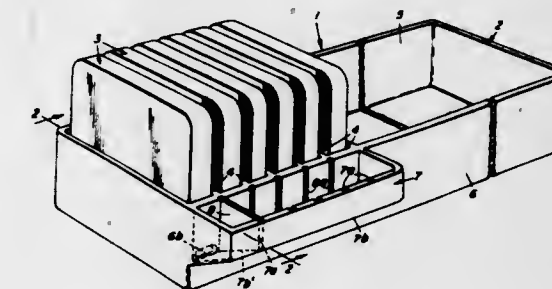
stylet which is then withdrawn to let fluid pass through the catheter or for suprapubic cystostomy procedures.

3,613,685

SURFACE-CONFORMING DISPOSABLE SURGICAL PREPARATION APPLICATOR AND TRAY THEREFORVerne J. Reynolds, 148 East Jefferson, Boise, Idaho
Filed July 8, 1969, Ser. No. 839,963
Int. Cl. A61m 35/00

U.S. Cl. 128—269

12 Claims



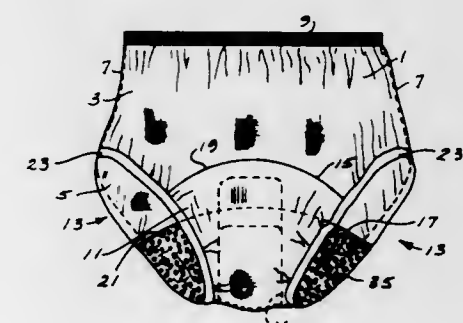
A combined surgical preparation compartmentalized applicator tray feeding solution to and individually storing therein ready for use hand-gripped surgical preparation applicators. Each of the surgical applicators is flexibly constructed to be surface conforming to the body areas being prepared for surgery. Each applicator after use is disposable.

3,613,686

SANITARY PANTY GARMENTIrvin S. De Woskin, St. Louis, Mo., assignor to Beltz Corporation, St. Louis, Mo.
Filed Feb. 25, 1970, Ser. No. 14,039
Int. Cl. A61f 13/16

U.S. Cl. 128—288

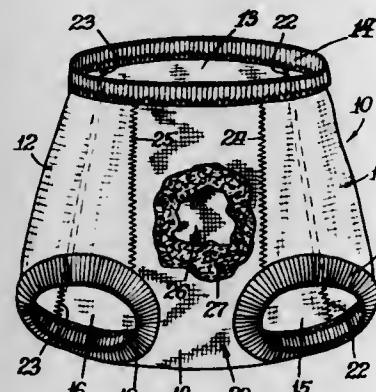
10 Claims



A sanitary panty garment having a crotch section formed from a laminate having an inner layer of a flexible stretchable

plastic foam material with a high coefficient of friction and an outer layer of stretchable synthetic fabric material, the layers being bonded together to form a material having a high-coefficient-of-friction inside surface and sufficient elasticity frictionally to engage and form a secure pocket around a sanitary napkin to hold it in place within the crotch section of the garment without fasteners or other attachments to stabilize its position therein.

3,613,687
QUICK-DRYING, ABSORBENT NETHER GARMENT
William J. Kennedy, Charlotte, N.C., assignor to The Kendall Company, Walpole, Mass.
Filed June 13, 1969, Ser. No. 833,036
Int. Cl. A61f 13/16
U.S. Cl. 128—288 15 Claims



A highly liquid-retentive, quick-drying nether garment, such as a diaper or training pant for infants or adults, having a crotch area (which may be specifically defined) for covering the main excremental body orifices, including at least three flexible thicknesses each of one or more similar or dissimilar layers: (1) a centrally disposed thickness substantially of integrated hydrophobic fibers; (2) an innermost predominantly hydrophilic fiber thickness of one or more integrated layers; and (3) a thickness including one or more layers selected from those integrated layers consisting of hydrophilic fibers, hydrophobic fibers, mixtures of hydrophilic and hydrophobic fibers, substantially impervious films, microporous and apertured films and porous nonfibrous accretions and foams.

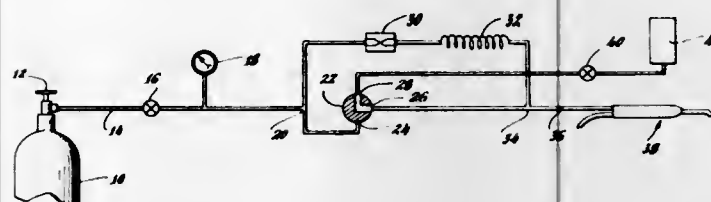
3,613,688
SANITARY TOWEL
Gunnar Dahlsten, Gothenburg, Sweden, assignor to Molnlycke Aktiebolag
Filed Sept. 21, 1964, Ser. No. 397,698
Claims priority, application Sweden, Sept. 25, 1963, 10,485/1963
Int. Cl. A61f 13/16
U.S. Cl. 128—290 3 Claims



The sanitary towel is provided with fastening means at the end portions of the envelope enclosing the absorption body by which the conventional end loops may be omitted. The fastening means consists at each end portion of a narrow ring

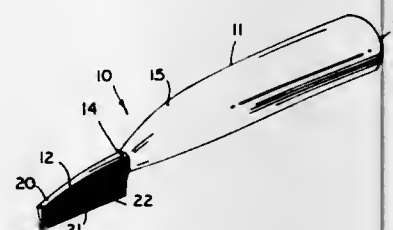
encircling said portion but leaving the terminal thereof uncovered. The portion between the ring and the absorption body is also uncovered. The ring may consist of artificial resin intimately united with the material of the envelope.

3,613,689
CRYOSURGICAL APPARATUS
Ralph E. Crump, Trumbull; Frank L. Reynolds, Monroe, and Carl R. Tillstrom, Fairfield, all of Conn., assignors to Frigitrone of Conn., Inc., Bridgeport, Conn.
Filed Jan. 13, 1970, Ser. No. 2,491
Int. Cl. A61b 17/36
U.S. Cl. 128—303.1 10 Claims



A cryosurgical apparatus primarily adapted for use with gases which cool when expanded from a high-pressure state to a low-pressure state. The apparatus includes an expansion chamber which receives gas through a supply tube. The gas is supplied from a selector valve at either a high pressure or a low pressure. The supply tube includes a self-acting valve which is normally biased open when gas is supplied at low pressure but is forced closed by gas under high pressure. With the valve open, the expansion chamber is filled with the low-pressure gas and is substantially at room temperature. When the valve closes, high-pressure gas bypasses the automatic valve and enters the cooling chamber through a small orifice, expanding to a low-temperature state and cooling the expansion chamber.

3,613,690
HAIR REMOVAL TOOL
Francis Lee Newell, 5825 Harbord Drive, Oakland, Calif.
Filed July 25, 1969, Ser. No. 844,761
Int. Cl. A61b 17/00; A01k 13/00
U.S. Cl. 128—355 6 Claims



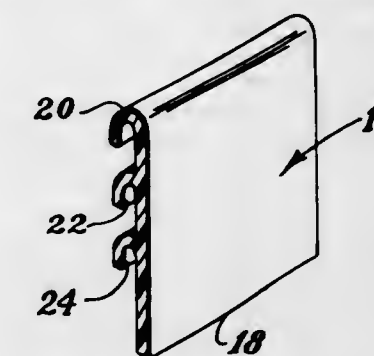
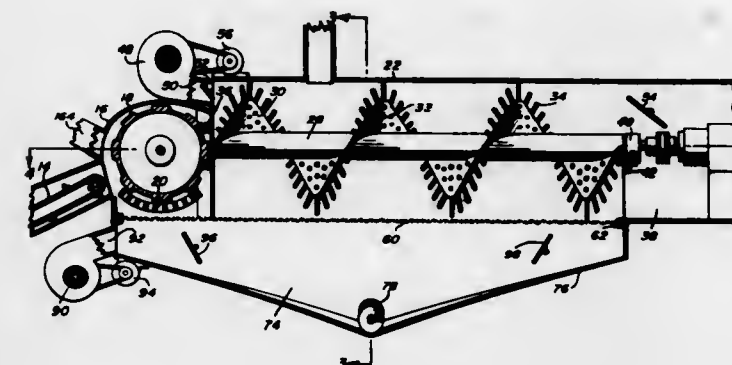
A hair removal tool comprising a handle having at one end a short blade having a stiff body with a relatively thin, blunt edge and sidewall surfaces that are serrated by crossing surfaces not perpendicular to the blunt edge.

3,613,691
GRAIN SEPARATOR FOR COMBINES
Albert R. Wilshusen, 116 East Cedar St., Liberal, Kans.
Filed Nov. 4, 1969, Ser. No. 873,910
Int. Cl. H01f 12/32
U.S. Cl. 130—23 9 Claims

A grain separator disposed at the discharge of the threshing cylinder receiving grain, straw and chaff therefrom and separating the grain from the straw and chaff including a perforated auger with rake teeth on the periphery thereof disposed in overlying relation to a grain sieve together with

fans and a collecting pan and auger assembly for the grain and a recleaner which will recirculate a portion of the grain

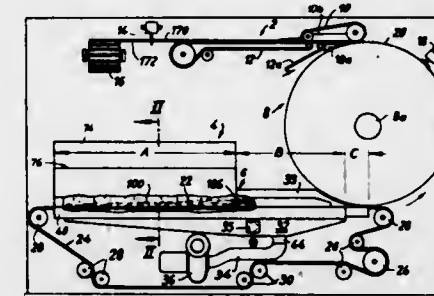
3,613,694
GROOMING AID
Jack W. Benjamin, 257-27 149th Road, Rosedale L.I., N.Y.
Filed Jan. 23, 1969, Ser. No. 793,423
Int. Cl. A45d 24/36
U.S. Cl. 132—45 3 Claims



which has been incompletely cleaned to the threshing cylinder.

A plate having a guide edge and means for establishing the location of the guide edge in relationship to a fixed reference is provided for cutting sideburns.

3,613,692
APPARATUS FOR BUILDING A CONTINUOUS TOBACCO STREAM
Jurgen Gomann, Hamburg-Lohbrügge, Germany, assignor to Hauni-Werke Koerber & Co. K. G., Hamburg, Germany
Filed June 1, 1966, Ser. No. 554,505
Claims priority, application Germany, June 2, 1965, H 56203
Int. Cl. A24c 05/18
U.S. Cl. 131—84 B 2 Claims

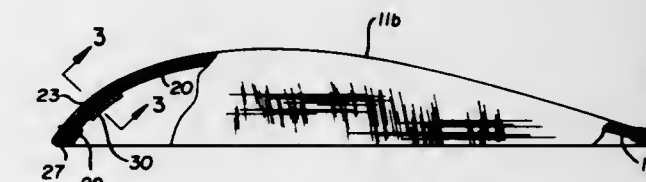


A tobacco stream is formed by showering tobacco particles into a current of suction air which flows across an elongated stream building zone defined by a channel wherein a foraminous belt travels lengthwise to transport the particles of the resulting growing tobacco stream. The flow of air across the conveyor is throttled by a valve which is adjacent to the conveyor and whose throttling action decreases in the direction of tobacco travel all the way between the ends of the stream building zone.

3,613,693
RECONSTITUTED TOBACCO
Matthew Sallee Monte, Stratford, Conn., assignor to AMF Incorporated
Filed July 24, 1969, Ser. No. 844,631
Int. Cl. A24b 03/14
U.S. Cl. 131—140 2 Claims

A process for manufacturing a reconstituted tobacco composition wherein a foamed slurry is created from tobacco, a foaming agent or adhesive and ethylhydroxyethyl cellulose having an ethoxyl D.S. of 1.2 to 1.6 and a hydroxyethyl M.S. of 0.5 to 1.2. The foamed slurry is shaped while maintaining the temperature thereof below the gelatin temperature of the ethylhydroxyethyl cellulose and dried to form a shaped sheet or rod of predetermined moisture content. The foaming agent employed may be a synthetic or natural gum or water dispersible protein.

3,613,695
HAIRPIECE AND LAMINATED BASE THEREFOR
Ronald S. Kazdin, 4675 Walford Road, Apt. 13, Warrensville Heights, Ohio
Filed Dec. 23, 1968, Ser. No. 786,101
Int. Cl. A41g 3/00
U.S. Cl. 132—53 5 Claims

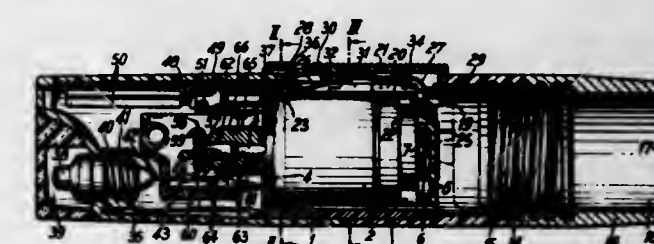


A base portion for hairpieces or toupees characterized by a laminated construction of plastic layers that provide a maximum of flexibility while retaining the originally formed contour of the base.

The base is additionally characterized by the use of layers of various colored plastic in the laminate for aesthetic purposes with alternate layers being of different characteristics so as to give the overall completed product a distinct and unique appearance.

It is also contemplated to further improve the unit by a new and unique method of tying the hair strands in place so as to permit the same to be combed in any direction.

3,613,696
ELECTRICAL MANICURING APPARATUS
Kurt Paule, Stuttgart-Obertuerkheim; Fritz Schädlich, Stetten A. F., and Alfred Hettich, Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed July 31, 1969, Ser. No. 846,447
Claims priority, application Germany, Sept. 20, 1968, P 17 82 586.4
Int. Cl. A45d 29/05
U.S. Cl. 132—73.6 17 Claims



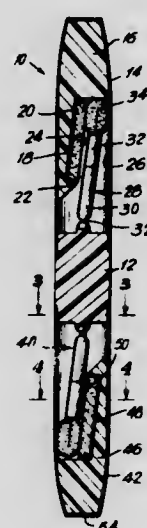
An electrical manicuring apparatus comprises a housing and a cover detachably connectable to the housing for

closing an open end of the latter. A motor is arranged in the housing and receives its energy from a self-contained source of electrical energy. A plurality of manicuring tools are removably received in the cover and can be selectively connected with the output shaft of the motor when the cover is removed so that the device can then be used as a manicuring apparatus. In addition to this, the apparatus is provided with an electrically operated device on the cover which is operatively associated with the source of electrical energy when the cover is connected with the housing so that, in this connected state, the apparatus is usable for purposes other than manicuring, for instance as a flashlight or the like.

3,613,697
DEVICE TO BE USED WHEN APPLYING A COSMETIC
Maurice Andrews, 2400 Johnson Ave., Riverdale, N.Y.
Filed June 9, 1970, Ser. No. 45,093
Int. Cl. A45d 40/00

U.S. Cl. 132-79 C

12 Claims

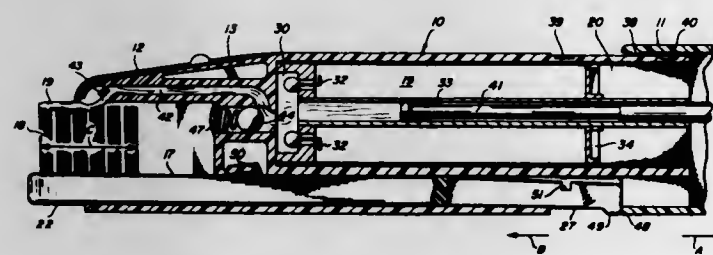


A device to be used when applying a cosmetic. The device has a base and a removable hollow tubular cover carried thereby. The base and the cover coact to compel the cover to move longitudinally onto and off from the base. A support in the hollow interior of the cover supports therein a body of cosmetic material having an exposed surface which extends generally longitudinally of the cover. A cosmetic applicator is carried by the base and extends into the cover in engagement with the body of cosmetic material when the cover is in its closed position on the base. As a result the movement of the cover onto and off from the base result in frictional rubbing of the cosmetic applicator with respect to the body of cosmetic material, so that whenever the cover is removed there will automatically be on the applicator an amount of cosmetic suitable for application.

3,613,698
DENTAL HYGIENE UNIT
Daniel W. Fox, 2108 West Northview Ave., Phoenix, Ariz.
Filed Sept. 26, 1969, Ser. No. 861,438
Int. Cl. A45d 44/18

U.S. Cl. 132-84

6 Claims



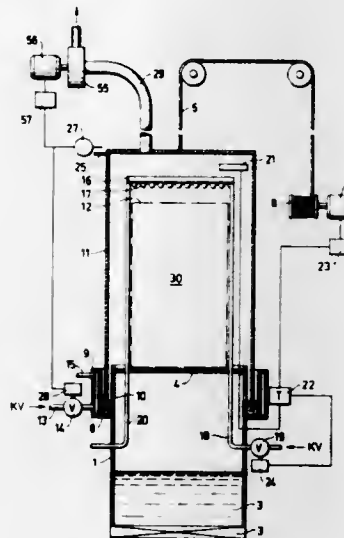
An inclusive dental hygiene unit adapted to be carried on one's person. Within the compact case is a toothbrush and a replaceable disposable dispenser of paste dentifrice. A sliding action of the case end deposits a measured amount of the

dentifrice upon the bristles of the toothbrush and simultaneously ejects the upper portion of the brush into usable position.

3,613,699
APPARATUS FOR DEGREASING OBJECTS BY MEANS OF A SOLVENT
Kur Anders Holm, Skoghall, Sweden, assignor to Uddeholms Aktiebolag, Uddeholm, Sweden
Filed July 29, 1969, Ser. No. 845,751
Claims priority, application Sweden, Feb. 4, 1969, 1486/69
Int. Cl. B01d 3/00

U.S. Cl. 134-57 R

16 Claims

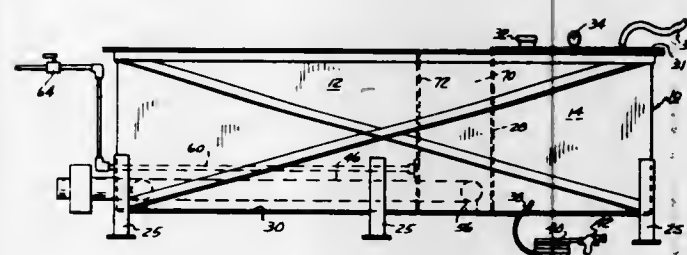


An apparatus for removing grease, oil and fat from articles consists of means for boiling a solvent so that the vapor fills a chamber in which the cool articles are placed. The wall of the chamber is designed as a lid which can be lifted for facilitating the insertion and removal of the articles. A spraying means for liquid solvent is arranged in the upper part of the treating chamber to spray liquid solvent over the articles.

3,613,700
FILTER CLEANING APPARATUS
Lawrence A. Werth, 6070 Hubbell, Dearborn Heights, Mich., and David W. De Remo, 14047 Artisan, Detroit, Mich.
Filed Dec. 15, 1969, Ser. No. 885,082
Int. Cl. B08b 3/02, 3/08, 3/10

U.S. Cl. 134-57 R

9 Claims

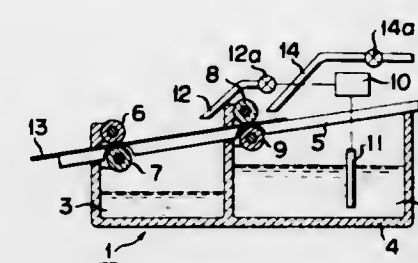


An apparatus for cleaning filters and the like having a pair of containers in a side-by-side relationship, one of the containers having a liquid solvent heated to a predetermined temperature for cleaning filters submerged therein; the other container being a storage tank adapted to dispense a pressurized solution for spray rinsing the cleaned filters; the two containers having a common partition adapted to transfer heat from the liquid solvent holding container to the storage tank for maintaining the temperature of the rinsing solution at a value less than the predetermined temperature of the liquid solvent. In a second embodiment, a dip rinse container is disposed intermediate the liquid solvent holding container and the storage tank, the dip rinse container and the storage tank having the common partition for the transfer of heat to the storage tank while the liquid solvent holding container and the dip rinsing container utilize a common heating means.

3,613,701
DEVICE FOR CLEANING DEVELOPED ELECTROSTATIC PHOTOGRAPHIC COPY SHEET
Sadanao Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 14, 1969, Ser. No. 824,417
Claims priority, application Japan, May 17, 1968, 43/33225
Int. Cl. B08b 1/02

U.S. Cl. 134-64

7 Claims

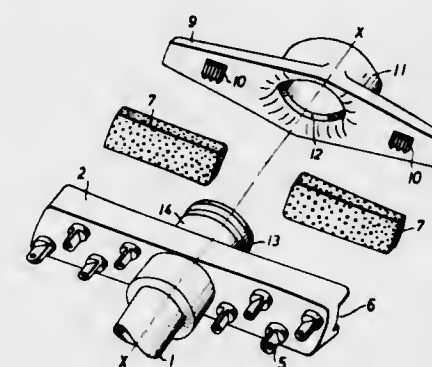


A device for cleaning excess toner from an electrostatic photographic copy sheet that is advanced on an upward incline over a supply chamber that discharges cleaning liquid over the copy sheet to be collected in a storage chamber. Rollers are provided to advance the copy sheet, and the rollers act as a weir to retard the liquid flow and improve the cleaning.

3,613,702
UMBRELLA HAVING A FLAT CROSS-SECTIONAL SHAPE IN CLOSED CONDITION THEREOF
Heinz Weber, Hilden, Rhineland, Germany, assignor to Bremskey & Co., Solingen-Obbigs, Germany
Continuation-in-part of application Ser. No. 748,661, July 30, 1968, now abandoned. This application June 11, 1970, Ser. No. 45,338
Int. Cl. A45b 25/10

U.S. Cl. 135-20

15 Claims



Umbrella having a flat cross-sectional shape in closed condition thereof includes an umbrella stick, a relatively flat crown mounted at one end of the stick, roof-supporting ribs articulately connected to the crown, a relatively flat cap carried by the crown, a portion of an umbrella roof covering disposed between the crown and the cap, and means for clamping the crown and the cap together with the roof covering therebetween so as to form lock the crown and cap against rotation with respect to the axis of the stick and force lock the crown and cap against displacement along the axis of the stick.

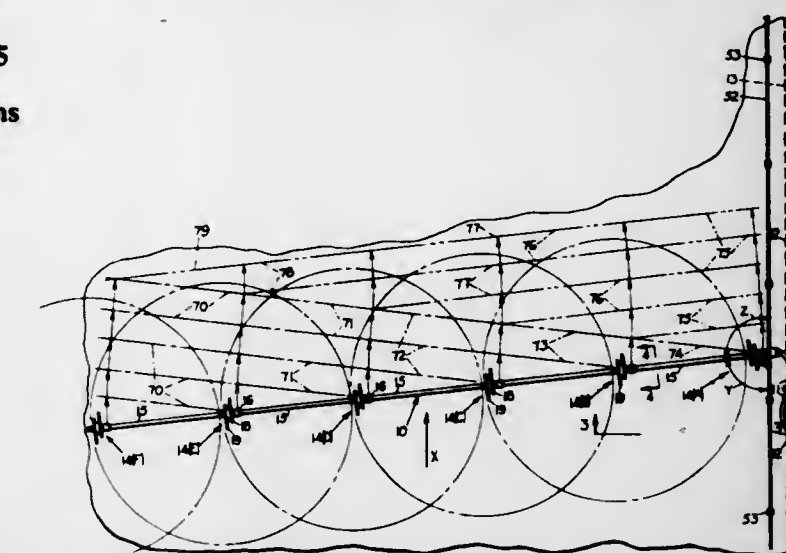
3,613,703
MOVING IRRIGATION SYSTEM
William H. Stout, 223 N. Jessup St., Portland, Oreg.
Filed Dec. 22, 1969, Ser. No. 886,816
Int. Cl. E03b 1/00; F17d 1/00

U.S. Cl. 137-1

5 Claims

A composite, mobile, laterally moving sprinkling pipeline so arranged and controlled that each end of the composite line alternately can be caused to travel a predetermined

distance along an arcuate path with the opposite end of the composite line temporarily being substantially at the center of curvature of such arcuate path and with the entire line

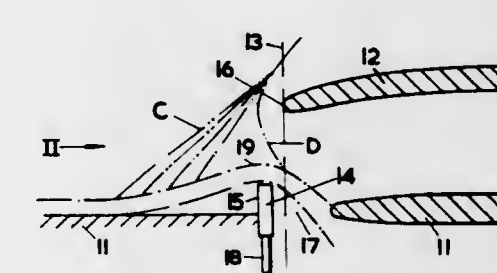


thus swinging forwardly in alternate angular direction, the composite pipeline being flexible and comprising connected sections with each section automatically moving to maintain alignment with an adjacent section during line travel.

3,613,704
AIRCRAFT ENGINE INTAKE STRUCTURES
Eustace Laurence Goldsmith, Harrold, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United States of Great Britain and Northern Ireland, London, England
Continuation-in-part of application Ser. No. 705,370, Feb. 14, 1968, now Patent No. 3,524,458, dated Aug. 18, 1970. This application May 11, 1970, Ser. No. 36,255
Int. Cl. F02b 27/00; F02c 7/04

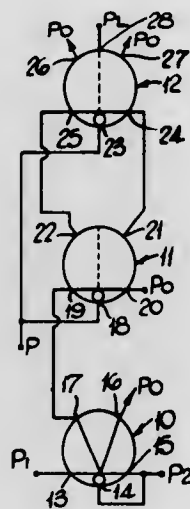
U.S. Cl. 137-15.2

1 Claim



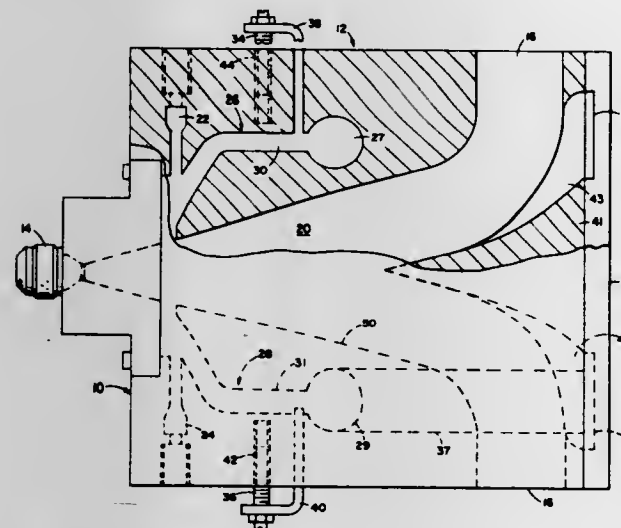
Application Ser. No. 705,370 filed on Feb. 14, 1968—now U.S. Pat. No. 3,524,458 issued Aug. 18, 1970—describes an invention relating to fluid flow intake ducts particularly for aircraft engines for aircraft required to operate throughout a speed range embracing both subsonic and supersonic speeds. According to the earlier invention an intake duct has a bluff forward facing wall or step movable transversely across the duct to deflect the boundary layer from an aerodynamic surface forward of said wall, said surface comprising for example part of the intake or the surface of a centerbody extending forward from the duct, and having a bleed aperture extending through the wall of the duct downstream of said movable wall through which some at least of the deflected boundary layer which passes over said movable wall flows away from the free mass of fluid flowing through the duct downstream of said wall. According to the present invention in a fluid flow intake duct of the type having, forward of the duct, structure over which air flows towards the duct at least when the duct mounting is in forward motion, a movable wall has its upstream face positioned upstream of the inlet plane of the duct by a distance not greater than the maximum transverse distance between the structure and a corresponding leading edge of the duct. Preferably the distance between the upstream face and the inlet plane is 0.25 said maximum transverse distance.

3,613,705
FLUIDIC SWITCHING CIRCUITS
 Ronald Alfred Heath, Harborne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
 Filed Sept. 22, 1969, Ser. No. 859,740
 Claims priority, application Great Britain, Sept. 30, 1968, 46266/68
 Int. Cl. F15c 1/12
 U.S. Cl. 137-81.5



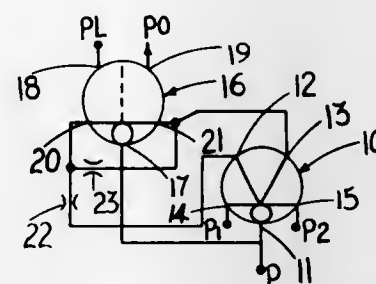
The invention relates to a fluid pressure-ratio switching circuit which provides an output only when one of a pair of independent control signals is greater than the other. Switching is effected in a bistable fluidic device, one or both of the outputs of which are used to provide control signals for two subsequent stages of amplification. Amplification is effected by a pair of fluidic proportional amplifier devices, the arrangement being that the circuit output is taken from the vent port of the final amplifier device.

3,613,706
FEEDBACK PNEUMATIC AMPLIFIER
 William H. Hodges, 1038 Toney Drive, S.E., Huntsville, Ala.
 Filed Jan. 5, 1970, Ser. No. 748
 Int. Cl. F15c 1/16
 U.S. Cl. 137-81.5



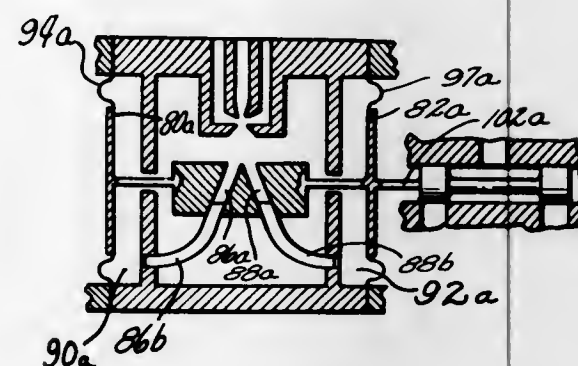
A fluid amplifier having mechanism for providing increased gain in amplification. The mechanism includes feedback means interposed between the output and control ports of the amplifier. The feedback means is provided with adjustable gates and to obtain maximum gain, the feedback is adjusted to a point slightly below that required for oscillation, for any selected main supply flow. At this point the mass flow of gas, through the control ports, which is necessary to cause the amplifier to switch is very small.

3,613,707
FLUIDIC SWITCHING CIRCUITS
 Ronald Alfred Heath, Harborne, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
 Filed Sept. 17, 1969, Ser. No. 860,165
 Claims priority, application Great Britain, Sept. 30, 1968, 46264/68
 Int. Cl. F15c 1/12
 U.S. Cl. 137-81.5



The invention relates to a fluidic pressure-ratio switching system, which gives an output pressure signal when one control pressure is higher than another in which the output pressure is a high of an input pressure which is used to drive the system. A fluidic bistable device performs the switching function and a fluidic proportional amplifier provides the pressure recovery, the outputs of the bistable device being used to provide control pressures for the proportional amplifier. A flow restrictor is connected in one output of the bistable device and a further flow restrictor is connected between the proportional amplifier control connections. A predetermined pressure ratio therefore exists between these control connections. In order to prevent feedback of pressure from the proportional amplifier to the bistable device a further bistable device may be connected in each line between the switching bistable and the amplifier. Alternatively, a monostable device may be connected in one of the lines and the other of the lines exhausted to atmosphere.

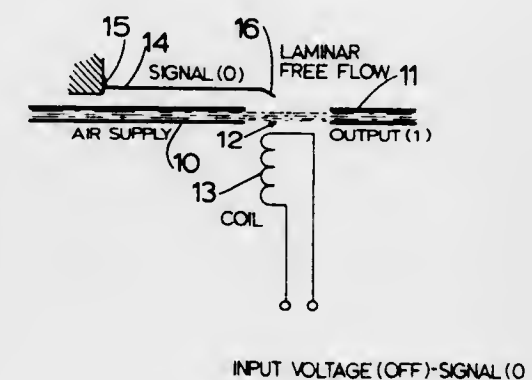
3,613,708
FLUIDIC DISPLACEMENT TRANSDUCER
 Robert F. Kampe, West Hartford, and Albert H. White, Wethersfield, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.
 Filed Nov. 7, 1969, Ser. No. 874,856
 Int. Cl. F15c 1/14, 3/10
 U.S. Cl. 137-81.5



A fluid amplifier is provided with pressure surfaces which are movable in response to the pressure differential between two opposed chambers. A power stream impinges on a splitter element which separates two channels which respectively communicate with the chambers, so that a control stream may direct the power stream into either channel and create a pressure differential between the chambers. When the pressure surfaces move, the splitter element again impinges on the power stream annulling the initial pressure differential. Either the splitting element or the orifice of the power stream is connected to the pressure surfaces so as to be movable therewith to change the relative location of the splitter element and orifice. The amplifier

may be employed as either a position or force to pressure transducer or a pressure to position or force transducer. A fluidic closed-loop pneumatic actuation system incorporates the amplifier to position a servovalve controlled actuator.

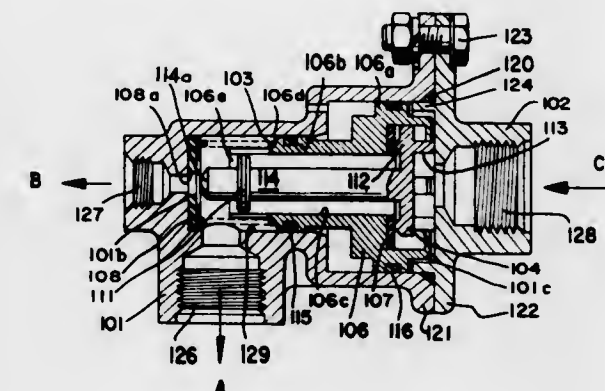
3,613,709
ELECTRIC TO FLUIDIC SIGNAL TRANSDUCER
 Paul M. Blaiklock, Newton Center, Mass., assignor to The Foxboro Company, Foxboro, Mass.
 Filed Feb. 19, 1970, Ser. No. 12,558
 Int. Cl. F15c 1/18
 U.S. Cl. 137-81.5



1 Claim

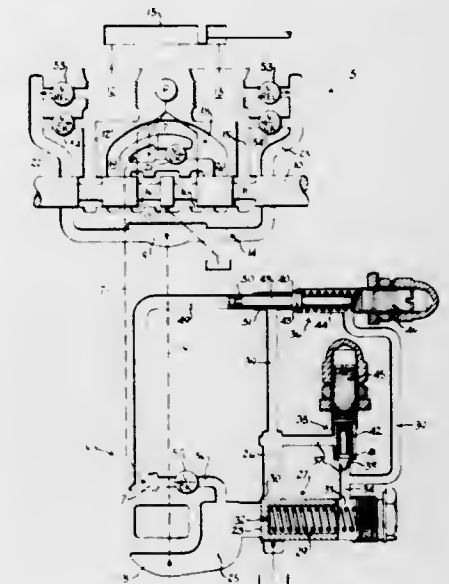
A fluidic diffusion amplifier. An electromagnetic reed flexibly mounted for movement into diffusing contact with a laminar fluid stream in the flow path of the diffusion amplifier. An electromagnetic coil for receiving an electrical signal to produce a magnetic field in the area of the reed, to cause the movement of the reed into the flow path of the diffusion amplifier. An electrical input signal to the coil causes a logic output change in the diffusion amplifier.

3,613,710
SWITCHOVER VALVE FOR PNEUMATIC INSTALLATIONS
 Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to Alfred Teves G.m.b.H., Frankfurt/Main, Germany
 Continuation of application Ser. No. 668,462, Sept. 18, 1967, now abandoned. This application Nov. 26, 1969, Ser. No. 873,746
 Int. Cl. F16k 15/14
 U.S. Cl. 137-102



A fluid-operated switchover valve having an outlet communicating with a gas chamber (e.g. of a charging cylinder for a hydrodynamic brake system), a first inlet communicating with a source of gas (e.g. an air pressure tank or the atmosphere) and another control inlet subjected to reduced pressure (e.g. from a suction reservoir), the valve having a housing forming an elongated bore for a valve piston bearing against a spring with the pressure of the first inlet and a valve member slidable in the piston and cooperating therewith to form a valve with alternatively connects the suction inlet and the air inlet with the chamber.

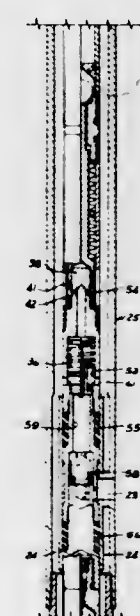
3,613,711
FLUID MOTOR CONTROL MECHANISM
 Raul A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.
 Filed Dec. 23, 1969, Ser. No. 887,480
 Int. Cl. G05d 11/00; F15b 11/08
 U.S. Cl. 137-115



7 Claims

A normally closed pilot controllable exhaust valve mechanism governs the discharge of return fluid from the exhaust passage of a fluid motor control mechanism. A first pilot instrumentality effects opening of the exhaust valve mechanism in consequence of rise in pressure of fluid in the exhaust passage to a predetermined value. A second pilot instrumentality effects opening of the exhaust valve mechanism at times when the pressure of fluid in a source connected supply fluid passage rises to a predetermined value exceeding the first, to assure that there will be substantially no obstruction to discharge of exhaust fluid from the exhaust passage at times when a hydraulic motor governed by the control mechanism is under heavy load.

3,613,712
GAS LIFT VALVE AND SYSTEM
 Henry U. Garrett, Houston, Tex., assignor to Udell Garrett, Inc., Houston, Tex.
 Division of Ser. No. 822,911, May 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 819,608, Apr. 28, 1969, abandoned. Filed June 24, 1970, Ser. No. 49,463
 Int. Cl. F04f 1/08
 U.S. Cl. 137-155



4 Claims

This patent discloses a system for gas lift of petroleum wells in which when the well is shut-in, the formation liquid

will not rise above a selected level in the tubing. The patent also discloses a gas lift valve in which the bellows is protected against an excess pressure differential thereacross.

3,613,713

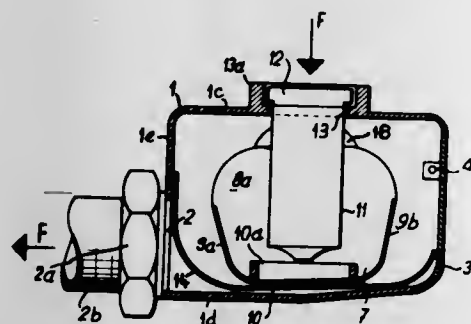
SANITARY DRAIN SIPHON

Meneglier G. Gaston, Saint Marcel Les Valence, France, assignor to Alexandre Piquas, Pivas, France
Continuation-in-part of application Ser. No. 708,579, Feb. 27, 1968, now abandoned. This application July 7, 1970, Ser. No. 52,921

Int. Cl. E03c 1/10

U.S. Cl. 137-216.2

16 Claims



A sanitary siphon providing a gas seal in the drain line of a washbasin, sink or other appliance, has an inlet tube extending down into a collecting vessel which is freely disposed in a casing having an outlet connected to the sewer and is tiltable in one direction from a normal upright position in the casing to empty the vessel and in the opposite direction to provide access through a closable opening in the casing for removal of any solid object that may accidentally have been dropped in the drain. The collecting vessel is tilted by means of an actuating knob connected with the vessel by a cam-actuating mechanism and is guided so as to tilt about a movable axis permitting a large angle of tilt without interference with the inlet tube.

3,613,714

MIXING APPARATUS

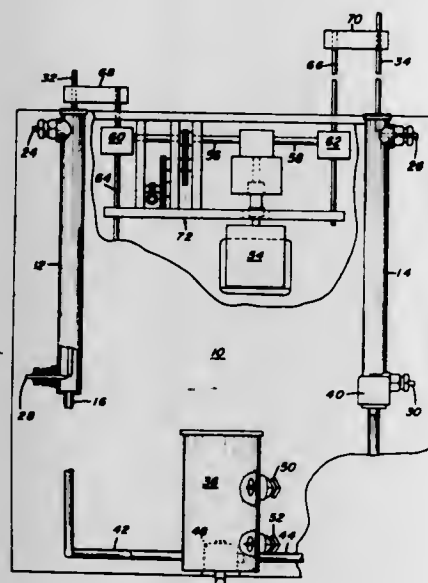
Paul B. Frank; Thomas R. Mangan, Sr., and John C. Mcfall, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 15, 1970, Ser. No. 46,052

Int. Cl. G05d 9/12

U.S. Cl. 137-263

9 Claims



for present invention is directed to a liquid-mixing apparatus comprising a first container and a second container. Means is provided for supplying liquids to the containers with valve means arranged to control the supply

of liquid to each of the containers. A liquid-level-sensing means is disposed in each of the containers which is arranged to control the respective valve means. Means is provided to selectively vary the position of each liquid-level-sensing means in the containers whereby the position of the sensing means in the first container is varied directly inversely to the position of the sensing means in the second container. A receiver means is arranged to receive the liquid from the first and second containers. And a control means is operably connected to the liquid-level-sensing means and the valve means whereby a preselected liquid mixture is continuously prepared.

3,613,715

FLUID VALVE MEANS

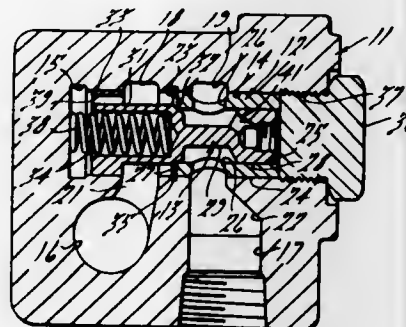
Charles E. Johnson, Ann Arbor, Mich., assignor to Double A. Products Company

Filed May 1, 1970, Ser. No. 33,783

Int. Cl. F16k 17/10, 15/06

U.S. Cl. 137-269

35 Claims



A fluid valve arrangement consisting of three basic elements; a valve housing, a valve sleeve and a valve spool; that may be assembled in a variety of ways to provide several different valve functions. By adding other components to the three basic elements still further valve functions are provided.

3,613,716

PRESSURE-RESPONSIVE CONTROL VALVE

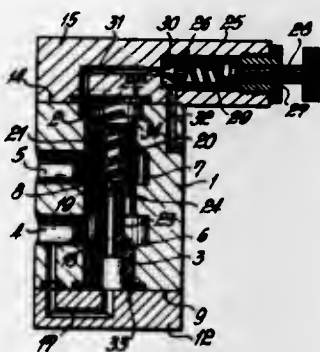
Rainer Hoheisel, Kornwestheim; Berthold Fischer, Nuertlingen, and Gunter Ackermann, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 13, 1970, Ser. No. 27,800

Int. Cl. F16k 17/10

U.S. Cl. 137-491

8 Claims



A pressure-responsive control valve has a biased valve slide with a longitudinal duct forming a throttle which connects a pressure conduit with a biased pressure-responsive closure valve so that the valve slide assumes a balanced open position when sufficient pressure is applied to the pressure conduit.

3,613,717

REMOTE ELECTRICALLY MODULATED RELIEF VALVE

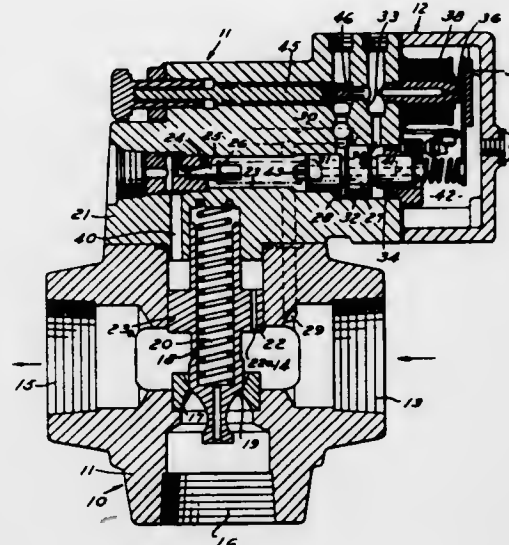
Robert Harvey Smith, Warren, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed May 20, 1970, Ser. No. 38,999

Int. Cl. F16k 31/12

U.S. Cl. 137-491

13 Claims



A remote electrically modulated relief valve comprising a main stage valve, a pilot stage valve, and a control stage. The pilot stage is responsive to the pressure through the main stage and includes spring loading operable upon exceeding a predetermined pressure to actuate hydraulically the main stage. The control stage hydraulically varies the spring loading on the pilot stage in accordance with an electrical signal that is supplied thereto to vary the pressure at which the pilot stage will function to operate the main stage.

3,613,718

PRESSURE-VACUUM CONTROL VALVE

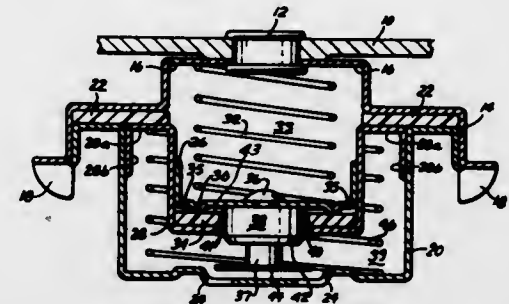
J. R. Ballinger, Setauket, N.Y., assignor to All-O-Matic Manufacturing Corporation, New Hyde Park, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,303

Int. Cl. F16k 17/18

U.S. Cl. 137-493

18 Claims



A pressure-vacuum control valve system, particularly for use in sealing hydrocarbon fuel containers, for equalizing the pressure within and without such a container by controlling air and fuel venting, comprises telescoping valve members defining a single seat valve adapted to vent fluid in both directions. A restriction adjacent the single valve seat is adopted to inhibit the venting of large quantities of fuel during short periods of tank pressure increase by lowering the pressure adjacent said valve seat in response to flow through said restriction. A time lag in valve actuation is provided by the free travel of said valve members in at least one direction, said free travel also providing momentum to assist the subsequent valve actuation.

3,613,719

COMPRESSOR VALVE ARRANGEMENT

Friedrich Bauer, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft

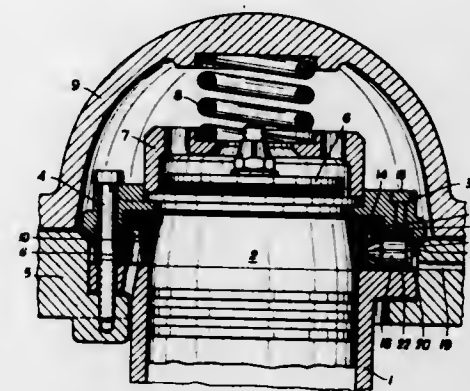
Filed Oct. 7, 1969, Ser. No. 864,392

Claims priority, application Austria, Oct. 16, 1968, A10129/68

Int. Cl. F16k 15/00

U.S. Cl. 137-522

5 Claims



A compressor valve arrangement having a device for regulating delivery quantities and wherein a valve plate can be raised from a valve seat against a closing force by means of control pistons displaceable in cylinder bores in the valve seat.

3,613,720

CHECK VALVE ASSEMBLY

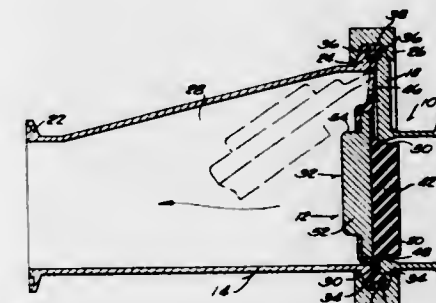
Elmer Scott Welch, Silver Lake, Wis., assignor to G & H Products, Inc., Kenosha, Wis.

Filed Jan. 27, 1969, Ser. No. 794,205

Int. Cl. F16k 15/14

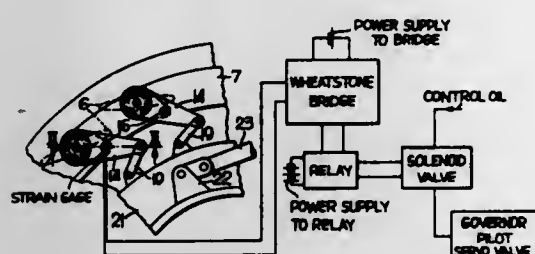
U.S. Cl. 137-527.8

4 Claims



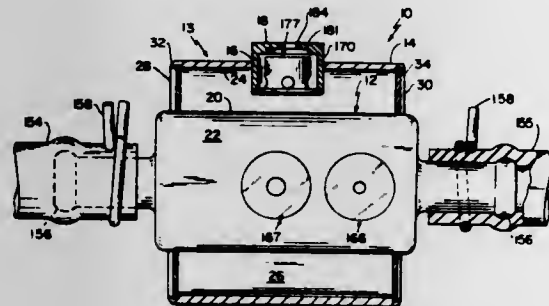
A check valve assembly comprising an inlet body, a valve plug assembly and an eccentric reducing outlet body. The inlet and outlet bodies are removably connected together with the valve plug assembly mounted between the two body portions. The valve plug assembly is preferably of rubber material and is comprised of a circular gasket portion and a centrally disposed flapper valve portion formed integrally with each other. The gasket portion serves to seal the connection between the inlet and outlet bodies, and the flapper valve portion is comprised of a swingable valve member connected to the gasket portion by a pair of hinge portions located at the top portion of the valve member. The inlet body has a seat formed thereon against which the swingable valve member is adapted to seat and thereby block flow from the outlet to the inlet. Such swingable valve member is also adapted to swing upwardly away from the seat to allow flow from the inlet to the outlet. The flapper valve is provided with a metal core member molded into the valve member which serves as a weight to aid in the closing action of the valve.

3,613,721
WICKET GATE OVERLOAD SENSOR AND PROTECTOR
 John M. Horn, York, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
 Filed Dec. 17, 1969, Ser. No. 885,847
 Int. Cl. F16k 37/00, 31/44
 U.S. Cl. 137—551 3 Claims



A strain gauge is provided in the mechanical linkage which operates the hydraulic turbine wicket gates. When the force exerted by the linkage in operating the wicket gates approaches that force which will cause the linkage to fail the change of resistance in the strain gauge initiates a signal which either indicates to the operator that the closing operation should be stopped or stops the closing operation automatically.

3,613,722
CONDITIONING FLUIDS
 Nathaniel Hughes, Beverly Hills, Calif., assignor to Energy Sciences Incorporated, El Segundo, Calif.
 Filed Mar. 9, 1970, Ser. No. 17,484
 Int. Cl. B01f 5/02
 U.S. Cl. 137—599 18 Claims

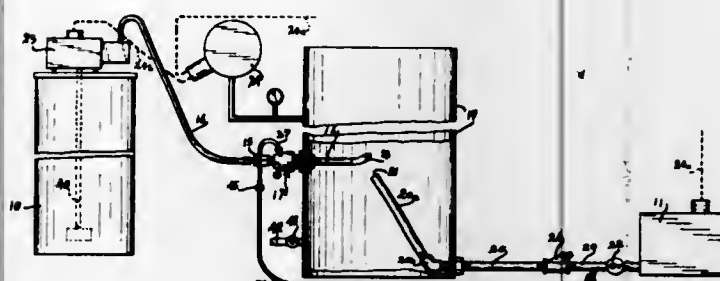


In a fluid-conditioning apparatus having a fluid conditioner, having an axial flow passage between an axial inlet, an axial outlet, a nozzle mounted axially in this flow passage, and a nozzle mounted radially of the flow passage defining a radial inlet to the flow passage, the improvement comprising a fluid preconditioner comprising a structure defining a fluid source in communication with the inlet end of the radially mounted nozzle of the conditioner providing the fluid supply to this nozzle, the source-defining structure having a fluid inlet, and a fluid-supply nozzle mounted in the source inlet to supply fluid therethrough to the source, the fluid supply nozzle comprising a body defining an axial flow passage having inlet and outlet ends and an even plurality of radial orifices into this passage between its ends, with the radial orifices arranged in coaxial pairs 180° apart.

3,613,723
CHLORINE INJECTION MEANS
 Max E. Witt, 803 North Renville, Winthrop, Minn.
 Filed Feb. 3, 1970, Ser. No. 8,323
 Int. Cl. F16k 19/00
 U.S. Cl. 137—604 9 Claims

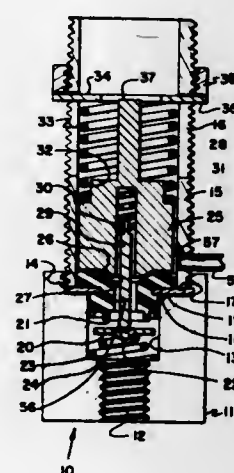
Apparatus for injecting chlorine into a water system including an elongated injection nozzle composed of a

flexible material and angularly positioned with respect to the direction of waterflow or turbulence so that the nozzle is



intermittently flexed thereby preventing mineral deposition on the nozzle.

3,613,724
ADJUSTABLE PRESET PRESSURE-ACTUATED MECHANICAL PRIME MOVER
 Forrest L. Carson, Box 1594, Borger, Tex.
 Continuation-in-part of application Ser. No. 683,293, Nov. 15, 1967, now Patent No. 3,465,647. This application Sept. 8, 1969, Ser. No. 856,139
 Int. Cl. F15b 15/22, 13/042; F01b 11/02
 U.S. Cl. 137—612.1 3 Claims

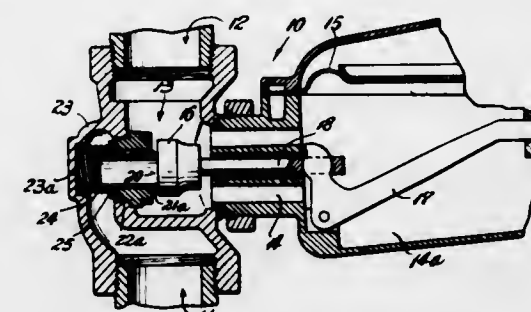


The disclosure involves a snap acting mechanical prime mover which is actuated by a preset fluid pressure and can be adjusted to be actuated by any desired preset pressure within the range of the prime mover. The prime mover will move outwardly and return when the actuating pressure reaches a preset level. Upon release of the actuating pressure the prime mover resets for another cycle.

3,613,725
SAFETY CONTROL FOR FLUID PRESSURE REGULATORS
 George C. Hughes, Anderson, Ind., assignor to Textron Inc., Providence, R.I.
 Filed Jan. 9, 1970, Ser. No. 1,701
 Int. Cl. F16k 15/02, 25/00
 U.S. Cl. 137—613 9 Claims

A safety control for fluid pressure regulators having means for restricting high-pressure fluid from flowing downstream in the event that foreign matter or structural defects in the orifice or valve seat of the valve means prevents the valve

from completely sealing off the flow of fluid or locking up under the action of the regulator. Such a safety control will



prevent and eliminate the need to discharge into the surrounding air a large volume of fluid, such as gas, through the usual vent in the regulator.

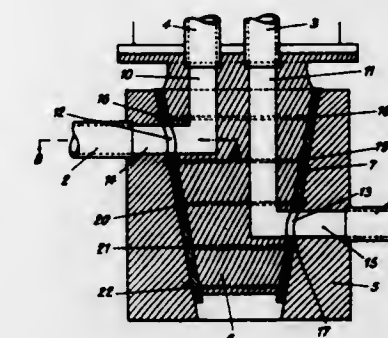
3,613,726
BALANCED PRESSURE COUPLING
 Jorge Torres, Newbury Park, Calif., assignor to Purolator Products, Inc., Rahway, N.J.
 Continuation-in-part of application Ser. No. 38,634, June 24, 1960, now abandoned. This application Dec. 2, 1965, Ser. No. 517,208
 Int. Cl. F16l 37/22
 U.S. Cl. 137—614.03 19 Claims



A coupling assembly for releasably interconnecting a first passage means and a second passage means for flow of pressurized fluid between the two passage means, comprising: a first coupling means and a second coupling means for mounting on the ends of said first and second passage means respectively, said two coupling means being adapted to mate to place the two passage means in fluid communication with each other, said two coupling means when mated having opposed surfaces of equal area exposed to the pressure of the confined fluid with equal central portions of said opposed surfaces on the two coupling means respectively with said central portions vented to the atmosphere to keep the pressurized fluid from creating separation pressure between said equal central portions of the opposed surfaces, the remaining portions of said opposed surfaces being of equal area and being connected to only one of said coupling means when the two coupling means are mated to transmit the opposite fluid pressures to the same coupling means to keep the opposite fluid pressures from exerting separation pressure between the two coupling means over the area of said remaining portions of the opposed surfaces, said two coupling means when mated forming a continuous fluid passage in which the direction of flow at the juncture of the two coupling means is perpendicular to the common axis of the two coupling means.

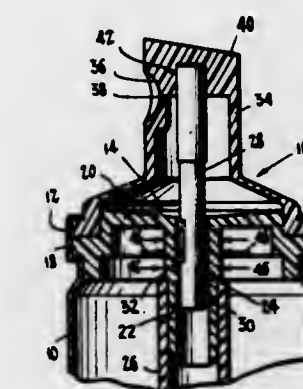
3,613,727
TUBE-CONNECTING DEVICE
 Pierre P. Orleux, Paris, France, assignor to Compagnie Francaise Des Petroles Societe Anonyme, Paris, France
 Filed Aug. 14, 1969, Ser. No. 850,035
 Int. Cl. F16k 11/12
 U.S. Cl. 137—614.17 8 Claims

A tube-connecting device which can be used to connect or disconnect tubes without requiring the use of auxiliary devices such as valves located upstream and downstream of the connection to stop the flow of liquids through the tubes. The tube-connecting device includes a movable jacket having openings therethrough placed between a fixed body to which is attached a first set of tubes and a removable body to which



removal of the removable body and second set of tubes without the use of valves located upstream of the connection.

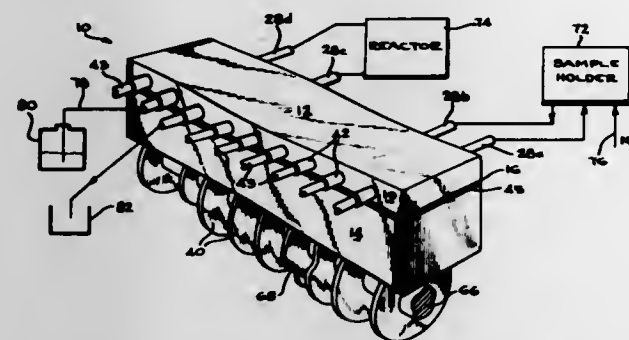
3,613,728
DIAPHRAGM-ACTUATED AEROSOL VALVE
 Wolf Steiman, Fairfield, Conn., assignor to Valve Corporation of America, Bridgeport, Conn.
 Filed Sept. 29, 1969, Ser. No. 861,697
 Int. Cl. B65d 83/14, 39/00; F16k 21/04
 U.S. Cl. 137—614.19 13 Claims



An aerosol valve construction comprising a tubular valve housing in which there is axially movable a valve stem cooperable with a seat in the housing. The valve stem is connected, in one embodiment of the invention, to an actuator button which is carried by an exterior resilient diaphragm having an outwardly crowned shape. Pressing the depress button flattens the diaphragm and depresses the valve stem, effecting an opening of the valve whereby product is discharged through an orifice in the button. The diaphragm tends to restore itself to the full crown shape due to its elasticity and also due to the pressure of product on its underside. When depressing force is removed from the button, the return of the diaphragm raises the valve stem and shuts off the valve. In other embodiments of the invention the resilient diaphragm which carries the depress button has a tubular portion acting as the valve housing and which is provided with a valve seat. The valve stem which extends into the valve housing and which is cooperable with the valve seat, is stationarily mounted. When the depress button is forced downward, flattening the diaphragm, it shifts downward the valve housing (portion of the diaphragm) while the valve stem remains stationary. This results in an opening of the valve. The valve closes when downward force is removed from the button, enabling the diaphragm to raise and restore itself to the original crowned shape or configuration. By use of the resilient crowned diaphragm to restore the valve to the closed position there is not needed the usual helical valve return spring which has been heretofore almost universally used.

3,613,729
VALVE SYSTEM
 Ralph A. Dora, Santa Barbara, Calif., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.
 Filed Feb. 16, 1970, Ser. No. 11,537
 Int. Cl. G01n 31/08; F16k 19/00
 U.S. Cl. 137—624.18

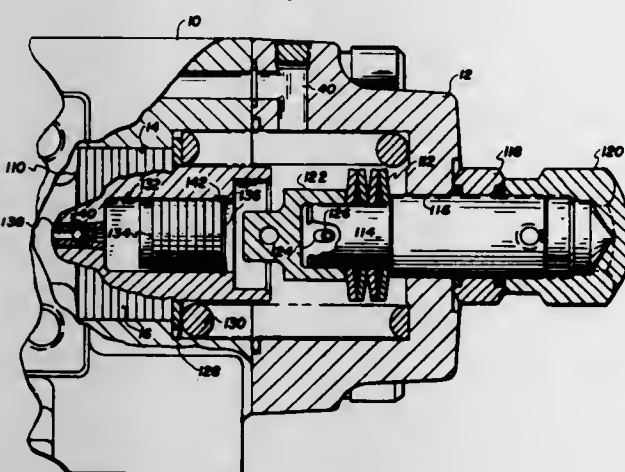
7 Claims



A valve system adapted to automatically add solvents and/or reactants to a sample and a reactor by connecting multiple fluid inlets or outlets to a main flow path has an upper body with an open trough formed in the bottom surface thereof, a flexible, elastically deformable, membrane clamped between the bottom surface of the body and a lower block to close the open trough and provide a longitudinal flow path, and a plurality of ports extending into the body terminating at spaced points on its bottom surface, each port being separated from the flow path by surrounding partitions. Reciprocating actuators in the block below each port normally hold the membrane against the partitions to close the ports, and are selectively released to permit fluid flow between the flow path and various of the ports.

3,613,730
POWER TRANSMISSION
 Robert H. Breeden, Metamora, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
 Filed May 4, 1970, Ser. No. 34,008
 Int. Cl. F16k 11/00
 U.S. Cl. 137—625.6

12 Claims

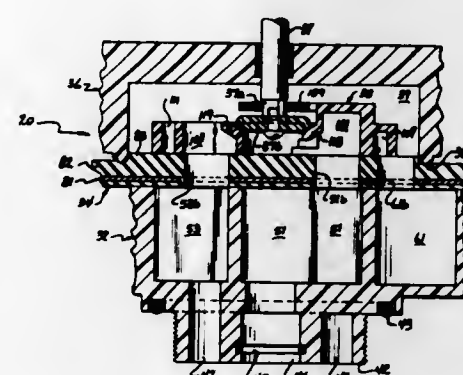


Remote control of a directional control valve in a hydraulic power system is achieved through a pilot control circuit carrying a continuous flow of fluid through a fixed and a variable orifice in series. The variable pressure intermediate the orifices is applied in opposition to a spring system for achieving precise degree of opening of the directional valve and thus modulating the flow therethrough. The spring system achieves a fine and a coarse control of the output flow through the use of a high rate spring effective during initial opening travel of the valve. A flow rate limiter responsive to the pressure drop across an orifice in the main return flow line acts when this pressure drop becomes too high to override the remote control system and shift the main

valve toward closed position. The control system is especially useful in hydraulic systems having a central power supply operating at a constant pressure to make fluid available selectively to any of a number of independent hydraulic motors, as for example for operating deck machinery on a ship.

3,613,731
MULTI-PORT VALVE
 Robert A. Whitlock, Rockford, Ill., assignor to AquaMatic, Inc., Rockford, Ill.
 Filed June 12, 1970, Ser. No. 45,708
 Int. Cl. F16k 11/02
 U.S. Cl. 137—625.29

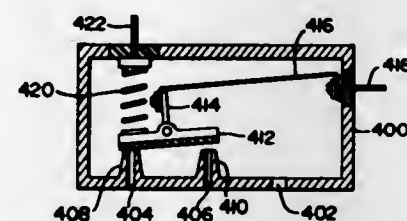
18 Claims



The valve is of the lift-turn type and includes a plastic stator, a plastic cover overlying the stator, a plastic rotor cooperable with the stator to control the flow of fluid through the valve, and a resilient gasket between the stator and the rotor and cover. The stator is arranged for mounting directly in a top opening of the treatment tank and all external connections are to the stator. The major flow chambers in the stator are arranged in four quadrants thereof and the flow ports at the inner face of the valve all lie within an imaginary circle having its center at the center of rotation of the rotor. Smaller auxiliary ports are located radially outwardly of the imaginary circle for controlling brining, refill of the brine tank, and one or more service valves, if used. The same channel in the rotor which interconnects the auxiliary ports for the brining operation is also utilized for interconnecting two auxiliary ports during service to relieve the service valve connection to drain.

3,613,732
TEMPERATURE-RESPONSIVE VALVE OPERATORS
 James R. Wilson, Garden Grove; Keith T. Krueger, Garden Grove; Hugh J. Tyler, Santa Ana, and Wilbur F. Jackson, Rolling Hills, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
 Filed July 17, 1969, Ser. No. 842,483
 Int. Cl. F16k 31/00; F03g 7/06
 U.S. Cl. 137—625.44

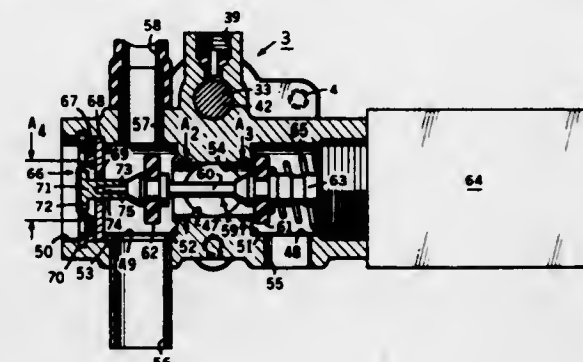
62 Claims



Temperature-responsive valve operators including a control member controlling the position of a valve member and constructed of a material having a temperature-actuated shape memory, the control member having an initial shape and a distorted shape, bias means biasing the valve member into a first position when the control member has the distorted shape, and temperature-controlling means for reverting the control member to the initial shape to move the valve member to a second position.

3,613,733
ANTISKID MECHANISM
 John A. Machek, 11803 Spruce Haven, Creve Coeur, Mo.
 Division of Ser. No. 823,087, May 8, 1969. Filed Aug. 17, 1970, Ser. No. 64,195
 Int. Cl. E03b 1/02
 U.S. Cl. 137—625.65

11 Claims



An antiskid device is provided with a control valve actuated in response to signals from a sensing mechanism of impending vehicle skid conditions to respectively subject a control member to atmosphere and selectively subject said control member to vacuum for controlling the application of supplied fluid pressure to the vehicle brakes, and a resiliently urged member is provided for disabling said control member in the event the vacuum is lost.

3,613,734
HYDRAULIC ACCUMULATOR WITH FLOATING PISTON
 Adam Elmer, Charlottenstr. 87, 4 Dusseldorf, Germany
 Filed Sept. 25, 1969, Ser. No. 860,909
 Claims priority, application Germany, Oct. 18, 1968, P 18 03 849.8
 Int. Cl. F16l 55/04
 U.S. Cl. 138—31

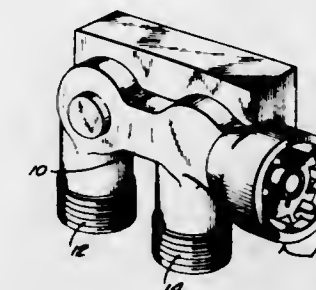
4 Claims



A hydraulic accumulator cylinder encloses an elastically compressible and expansible gas cushion separated from the hydraulic fluid by a floating piston having sealing and guiding rings. The cylinder has one end wall formed with a substantially central hydraulic fluid inlet and outlet opening, the inner surface of this one end wall defining a bowl shape concavity. An additional ring on the piston constitutes a dirt stripper, and the face of the piston toward the one cylinder end wall is formed with a frustoconical protrusion which, when the maximum amount of fluid has been withdrawn from the cylinder, enters the opening. The piston is formed with an annular bearing surface around the protrusion and engageable with a stationary sealing ring on a countersurface in the concavity, the sealing ring acting as a seal only when the piston is pressed against the countersurface by the gas pressure. In this position of the piston, the piston and the one cylinder end wall define an annular chamber in which there remains a residual amount of fluid serving as a liquid barrier against the gas enclosed in the cylinder.

3,613,735
MOUNTING FOR FLOW CONTROL AND OUTLET NIPPLE ON WATER VALVE
 Edwin A. Ostrowski, Mount Prospect, Ill., assignor to Controls Company of America, Melrose Park, Ill.
 Filed June 25, 1970, Ser. No. 49,763
 Int. Cl. F15d
 U.S. Cl. 138—45

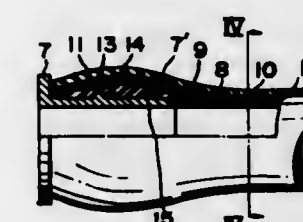
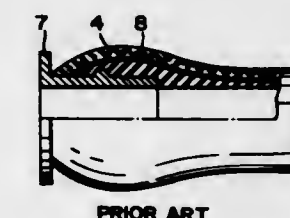
5 Claims



The outlet fitting provides an internal seat for the flow control washer and is retained in the valve body by the splined shear plate which is pressed against the fitting to compress the gasket and then rotated to shear through the internal projections or splines in the body.

3,613,736
STRANDED WIRE REINFORCED FLUID TRANSPORTING HOSE
 Masayoshi Kuwabara, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Kyobashi, Chuo-ku, Tokyo, Japan
 Filed Dec. 2, 1969, Ser. No. 881,468
 Claims priority, application Japan, Dec. 4, 1968, 43/105186
 Int. Cl. B32b 31/00; F16l 9/00
 U.S. Cl. 138—109

3 Claims



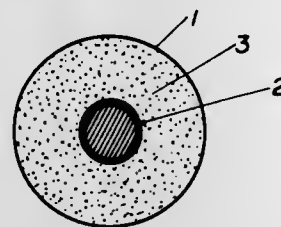
A stranded wire reinforced fluid-transporting hose comprising a plurality of wire elements having its diameter about 0.1 to 0.5 mm. and extending along the axial direction of the hose. One element of the hose is provided with metal flanges at the both ends for series connection. The hose element is particularly suitable in a use of jointing a hose line to a tanker ship or a buoy in a transporting system of fluid, such as oil, by a reason of its high flexibility and its large tensile strength.

3,613,737
METHOD AND SYSTEM FOR INSULATING PIPES
 Werner Peter Schoening, 10906 Green Arbor, Harris, Tex.
 Filed Feb. 10, 1969, Ser. No. 797,919
 Int. Cl. F16l 9/14
 U.S. Cl. 138—149

7 Claims

A method and system for insulating pipes comprising a tubular sheath of reinforced plastic film which is supported by a helical wire stiffener which encompasses the pipe. A

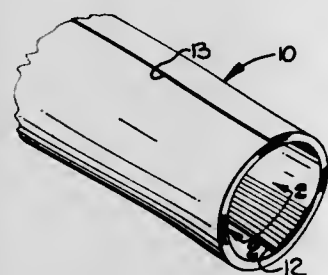
space between the sheath and pipe is filled with insulating material. The sections of the sheath correspond to the length of the pipe and can be readily attached to the adjoining



sheath section. This system can be easily adapted to serve the function of temperature regulation of the pipes by employing a hose-type structure for the helical supporting member of the sheath which allows the circulation of liquids.

3,613,738
CONVOLUTELY WOUND TUBE HAVING READILY CONFORMABLE INSIDE EDGE PORTION AND METHOD FOR MAKING SAME
Werner Witzig, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.
Filed July 29, 1969, Ser. No. 845,847
Int. Cl. F16I 9/18

U.S. Cl. 138—156



A convolutely wound tube having a portion adjacent the inside edge thereof more pliable than the remainder thereof for easily conforming to the contour of the inside surface thereof and method for making same from a predetermined length of elongate sheet material having opposed first and second surfaces and first and second longitudinal side edges, wherein the method includes mechanically deforming a minor portion of the sheet material adjacent the first longitudinal edge thereof to render same more pliable than the major portion of the sheet material, convolutely winding a predetermined length of the elongate sheet material transversely of the length into a convolute tube while forming the inside edge of the tube from the first longitudinal edge of the sheet material so that the pliable portion of the sheet material adjacent the inside edge will readily conform to the contour of the inside surface of the convolute tube, and securing the convolute tube in the wound condition.

3,613,739
LOOM LETOFF AND TAKEUP MECHANISMS
Cyril M. Atkinson, Carnforth, England, assignor to Northrop Weaving Machinery Limited, Daisyfield, Blackburn, England

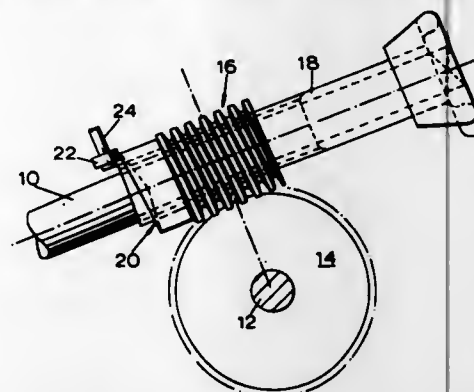
Filed Sept. 30, 1969, Ser. No. 862,400
Claims priority, application Great Britain, Oct. 12, 1968, 48,466/68

Int. Cl. D03d 49/00, 49/04

U.S. Cl. 139—1

A transmission unit for a loom letoff or takeup mechanism producing an intermittent drive comprises a driving shaft, a worm mounted on said driving shaft for rotation therewith but having freedom for axial movement relatively to said driving shaft, a driven shaft, a worm wheel fixed on said driven shaft for rotation therewith, said worm and said worm

wheel being adapted to mesh with one another, and a cam means operative on said worm to cause axial movement of

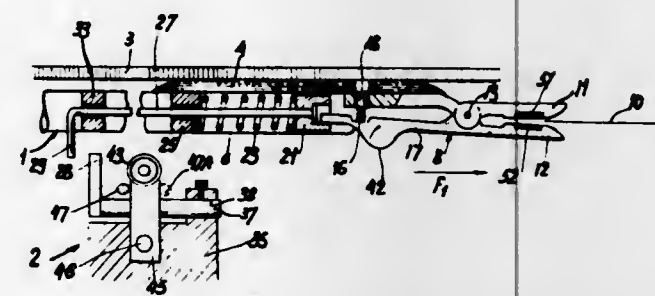


said worm during part of its rotation, said cam means comprising an annular cam surface formed on one end of said worm.

3,613,740
WEFT-PASSING DEVICE FOR A SHUTTLELESS LOOM
Bernard Gelger, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France
Filed Dec. 1, 1969, Ser. No. 881,118
Claims priority, application France, Dec. 3, 1968, PV 176,354
Int. Cl. D03d 47/20

1 Claim U.S. Cl. 139—122

8 Claims

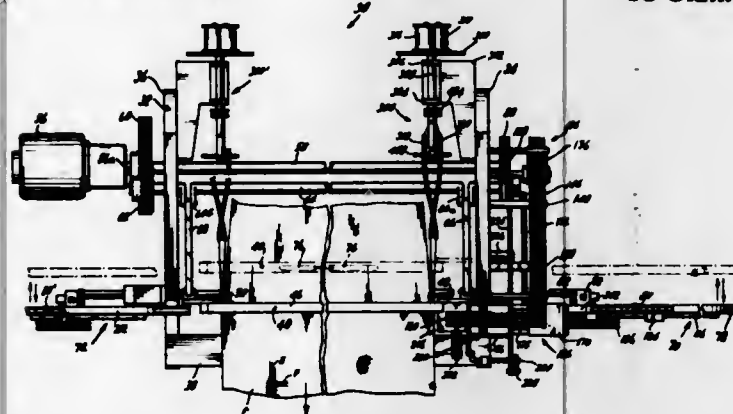


A weft-transfer device for a shuttleless loom comprises a needle having at one end a grab with a fixed jaw and a pivotal jaw spring-urged to the closed position, a spring-loaded sliding catch for engaging a tail on the pivotal jaw and holding the latter open, a cam formation on said tail for engaging an abutment to effect engagement of the catch and tail, upon movement of the needle in one direction and near the end of its passage out of the shed, a projection connected to the sliding catch, and a stop which is engaged by said projection to release the catch when the needle moves in the other direction to its position for catching a weft thread.

3,613,741
SHUTTLELESS LOOM
Arthur Ravella, Hawthorne, N.J., assignor to Boris Kroll Jacquard Looms, Inc., Paterson, N.J.
Filed Jan. 21, 1969, Ser. No. 792,252
Int. Cl. D03d 47/18

U.S. Cl. 139—127 R

18 Claims



A shuttleless loom having two filling thread carriers which move inwardly from the opposite sides of the weaving section

of the loom to a medial filling thread transfer location, with one thread carrier being arranged to pick up a selected filling thread from one of a plurality of a relatively fixed thread supplies and transport the selected filling thread to the medial transfer location and with the other thread carrier being arranged to pick up the filling thread from the first carrier and complete the filling.

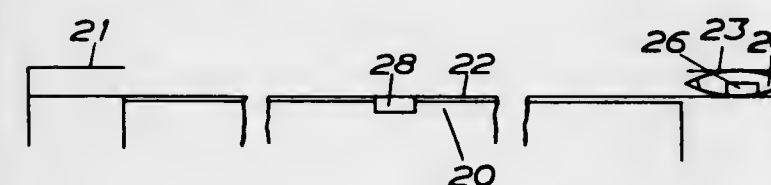
3,613,742
STOP MOTIONS FOR LOOMS
David Alnsworth, Darwen, and Cyril Millward Atkinson, Carnforth, both of England, assignors to Northrop Weaving Machinery Limited, Daisyfield, Blackburn, England
Filed Mar. 3, 1969, Ser. No. 803,827

Claims priority, application Great Britain, Mar. 2, 1968, 10273/68

Int. Cl. D03d 51/44

U.S. Cl. 139—336

18 Claims



A loom stop motion to prevent damage to the warp threads or parts of the loom if the shuttle is incorrectly picked, employs a detector 28 midway along the sley a detector 36 associated with the loom crankshaft. The detector 38 signals the passage of the shuttle and the detector 36 signals a time in the loom cycle.

A simple logic circuit is provided, and the pulses from the two detectors are fed into a bistable system A and then to comparators B and C. The pulses from the comparators are fed into a pulse lengthener D, an output amplifier E and into a relay F, the relay F, in turn, controlling a solenoid 162. The solenoid 162 trips the loom stop mechanism and causes the loom to stop. The invention works on the assumption that if the speed of travel of the shuttle is correct, then it will become properly housed in the receiving shuttle box.

3,613,743
METHOD AND APPARATUS FOR PRODUCING FABRICS OF HIGH QUALITY WITH CONSIDERABLY ENHANCED PRODUCTIVITY

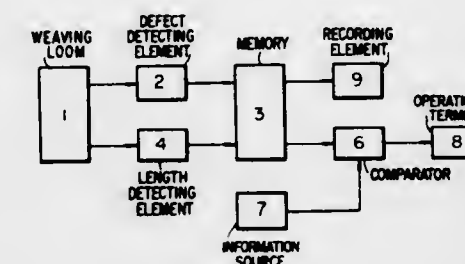
Toemon Sakamoto, Hamamatsu-shi, Japan, assignor to Enshu Limited, Kamimura Takatsuka, Hamana-gun, Shizuoka-ken, Japan

Filed Dec. 8, 1969, Ser. No. 883,172
Claims priority, application Japan, Dec. 10, 1968, 43/90483

Int. Cl. D03d 51/18

U.S. Cl. 139—348

15 Claims



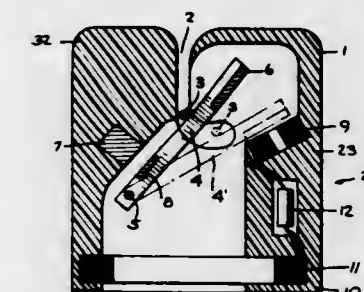
A method and apparatus for carrying out an automatic inspection of fabric quality concurrently with an advancing weaving operation by detecting the formed defect, memorizing the detected results with clear distinction as to kind, total number, formation rate and degree of the defects formed on the fabric, comparing thusly detected results with previously given data and, only when the result is not desirable, stopping the operation of the loom. Memorized results can be used for locating the formed defects in a subsequent defect retrieving process.

3,613,744
WEFT YARN CONTROL APPARATUS
Peter Doech, Jona; Reinhard Heck, Wattwil, and Ernst Hubell, Wattwil, all of Switzerland, assignors to Heberlein & Co. AG., Wattwil, Canton of St. Gall, Switzerland
Filed May 15, 1969, Ser. No. 824,812
Claims priority, application Switzerland, May 17, 1968, 7285/68

Int. Cl. D03d 51/34

U.S. Cl. 139—371

7 Claims



Weft yarn control apparatus for use in a weaving loom and having a signal generator arranged in a shuttle to generate a signal of a given resonance during normal running of the yarn, and to generate a signal of a second resonance upon yarn breakage, the signals being transferred to a receiver inductively coupled with the generator and which, upon receipt of a breakage signal, produces an impulse effective to immobilize the loom.

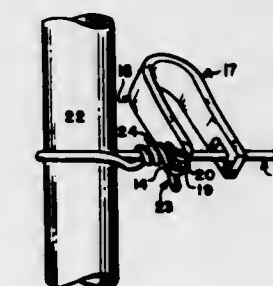
3,613,745
WIRE WINDING TOOL
Gottlieb H. Treiber, 609 Stephen, P.O. Box 821, Kerrville, Tex.

Filed Apr. 18, 1969, Ser. No. 817,417

Int. Cl. B21f 15/04

U.S. Cl. 140—118

1 Claim



A U-shaped wire winding tool, one arm including a centering slot for engaging the fixed end of the wire, the second arm includes at its end a wire winding slot bracketed by two winding claws, the tool is utilized for attaching a wire to a stationary member or post and for splicing. In operation, the preliminary cut is made and the winding initiated, the tool engages the wire with the winding claws engaging the protruding end, the rotation of the tool produces a secure wind, for splicing the process is repeated on the protruding end of the second wire.

3,613,746
CONTAINER-FILLING APPARATUS AND METHOD
Richard A. Smith, Gibsonia, and Chester L. Gutowski, Pittsburgh, both of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Filed Nov. 13, 1969, Ser. No. 876,345

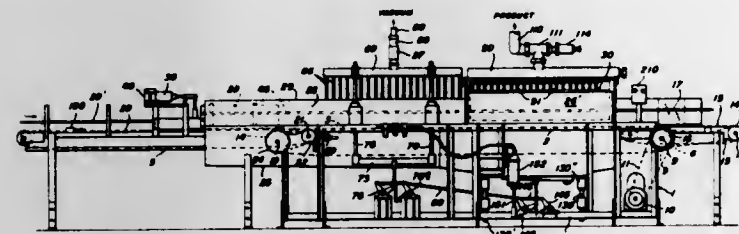
Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141—5

22 Claims

This machine for aseptically filling containers, particularly bottles and jars, with sterile, cold, sluggish flowing product, such as ketchup and chili sauce, has parallel conveyors extending through an elongated steam-filled enclosure wherein the bottles, after being preheated, move single file in groups of a specific number, first through an air-purging

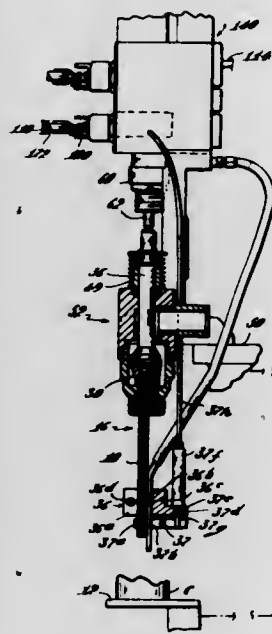
section of the enclosure where air is removed therefrom and replaced with steam, after which the group of steam-filled bottles pass into a filling section where the bottles are lifted against filling spouts, and as a product supply valve opens, an initial injection of products into each bottle condenses the steam and the resulting vacuum causes the product to almost instantly fill the bottles, which are then lowered and carried



out of the machine while another group enters from the purging section. The operations on one conveyor are 180° out of phase with those on the other, so that while bottles on one conveyor are being purged in one section and filled in the next, purged bottles on the other conveyor are moving into the filling section and the filled bottles are being conveyed out of the filling section.

3,613,747
FILLING HEAD FOR CONTAINER FILLING MACHINE
William H. Trusselle, Baintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed Sept. 12, 1969, Ser. No. 857,526
Int. Cl. B67d 5/73; B65b 57/14
U.S. Cl. 141-198

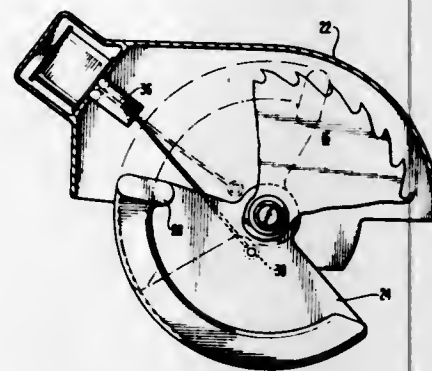
1 Claim



A filling head embodying a chamber to which is connected a conductor for supplying material thereto and a nozzle from which the material delivered to the chamber is adapted to be discharged into a container supported below the nozzle, a pneumatically operable valve in the chamber for controlling the flow of material, an air-conducting tube supported alongside of the nozzle for sensing the rise in level of the material in the container operable when the level reaches a predetermined height to close the valve and adjustable means for supporting the air-conducting tube for movement relative to the nozzle to enable predetermining the level at which the valve will be closed.

3,613,748
SAFETY GUARD ARRANGEMENT FOR CIRCULAR SAW
Dolen A. De Pue, 5109 26th Ave., Washington, D.C.
Filed Sept. 11, 1969, Ser. No. 857,079
Int. Cl. B27b 9/00; B27g 19/04
U.S. Cl. 143-43 A

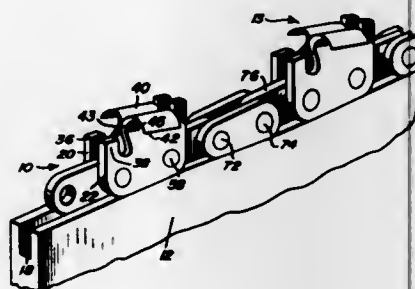
2 Claims



A safety guard arrangement for a motor-driven circular saw utilizes a weight biased guard and a solenoid actuated linkage for moving the guard. The weight normally biases the guard into either a guarding position or a storage position and the guard is moved from one position to another by pulsing of the solenoid. Pulsing of the solenoid is controlled by a switch related to a switch for control of the main motor so that the solenoid is pulsed and the guard moved to the storage position when the motor is started and the solenoid is pulsed and the guard moved back in guarding position when the motor is stopped.

3,613,749
SAW CHAIN WITH DUAL CUTTERS
Grady O. Geurian, 1305 North Front St., Dardanelle, Ark.
Filed Apr. 29, 1970, Ser. No. 32,847
Int. Cl. B27b 33/14
U.S. Cl. 143-135 R

6 Claims



A saw chain includes laterally spaced and aligned cutting teeth that have outwardly rolled cutting edges. The leading edges of the cutting teeth have pilot lugs formed therein to guide the cutting teeth along a cut. The trailing edges of the cutting teeth include stabilizing lugs for increasing the cutting efficiency of the teeth. As the cut is formed, a high center is produced at the bottom of the cut which acts as a track for the cutting teeth.

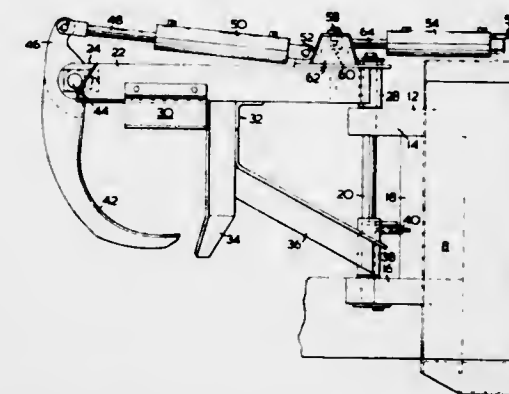
3,613,750
GRAPPLE ATTACHMENT FOR TREE PROCESSORS
William H. Bricknell, Fort William, Ontario, Canada, assignor to Hawker Siddeley Canada Ltd.
Filed Sept. 19, 1969, Ser. No. 859,409
Claims priority, application Canada, July 17, 1969, 057254
Int. Cl. A01g 23/02

U.S. Cl. 144-3 D

5 Claims

A grapple attachment for tree processors of the linear type. When the nature of a log is such that the processor operator selects it for a saw log, it is passed through a

slashing station until it reaches a substantial length and then is slashed. Instead of being stocked with the normal 8-foot



3,613,751
HOLLOW HAMMER HANDLE WITH LONGITUDINALLY TENSIONED GLASS FIBERS
Wayne Wolf, Cedar Rapids, Iowa, assignor to Vaughan & Bushnell Mfg. Co., Hebron, Ill.
Filed Apr. 21, 1969, Ser. No. 817,805
Int. Cl. B25g 1/10
U.S. Cl. 145-61 R

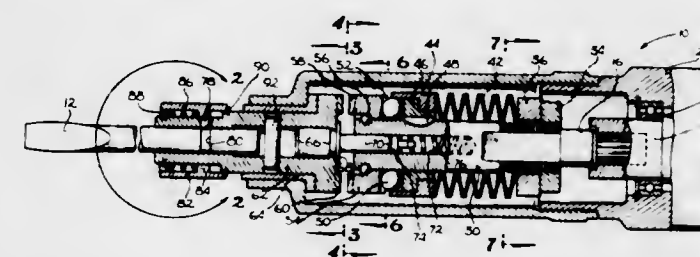
5 Claims

wood, the grapple attachment swings the saw log away from the linear path and releases it.

3,613,751
ADJUSTABLE SCREWDRIVER
Daniel P. Juhasz, Gardena, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.
Filed July 24, 1969, Ser. No. 844,428
Int. Cl. B25b 23/14

U.S. Cl. 144-32

1 Claim

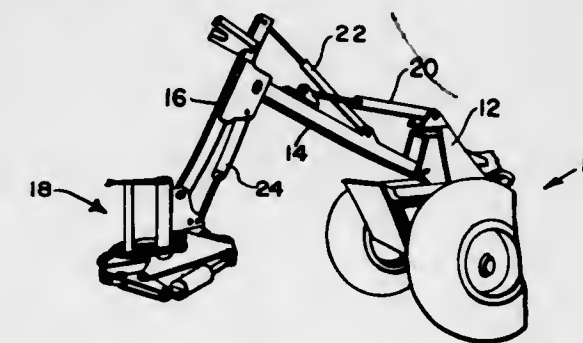


An adjustable screwdriver assembly in which an adjustable spring assembly is employed operating upon a ball slip clutch assembly, the spring assembly comprising a plurality of belleville washers. The clutch assembly is connected to a gear transmission unit which in turn is capable of effecting rotation of the screwdriver bit. The screwdriver bit is retained in place by an adjustable ball and groove connection.

3,613,752
CAM AND ROLLER GUIDE MEANS FOR TREE SHEARING BLADES
Earl Crittton Davis, Jr., Moline, Ill., assignor to Deere & Company, Moline, Ill.
Filed Mar. 28, 1969, Ser. No. 811,536
Int. Cl. A01g 23/02

U.S. Cl. 144-34 E

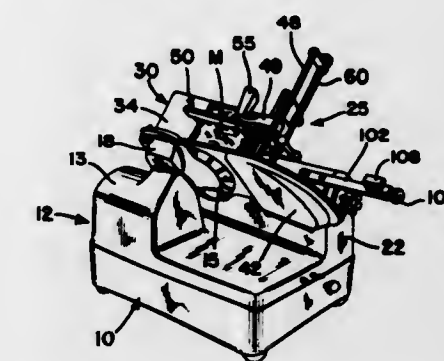
9 Claims



A tree shearing device that includes a shear blade supporting frame, a pair of levers pivotally supported on the frame for swinging movement toward and away from each other, a pair of blades pivotally supported for pivotal movement on the respective levers in a common plane, and cam means on the frame for guiding roller means carried by the blades for causing the blades to shift in a desired pattern in response to swinging the levers.

3,613,754
FOOD SLICING MACHINE
Richard S. Hartley, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed Feb. 3, 1970, Ser. No. 8,231
Int. Cl. B26d 1/28, 4/36, 5/42
U.S. Cl. 146-102 L

8 Claims



A meat slicing machine has a base which supports an inclined rotary knife and a removable reciprocating carriage having an inclined material supporting surface extending parallel to the axis of the knife. The meat is advanced down the surface by a gripper having a plurality of depending prongs engaging the meat and supported by a pivotable arm slidably mounted on an inclined guide rod. The gripper and arm are fed by a follower engaging an inclined lead screw which is indexed during each return stroke of the carriage by oscillation of a one-way clutch having a finger extending for engagement with an adjustable stop mounted on the base.

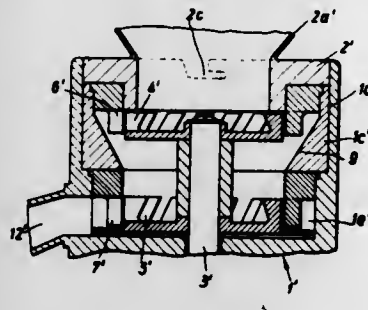
3,613,755
APPARATUS FOR FINELY COMMUNUTING MEAT OR THE LIKE
Friedrich Otto, Hameln, Germany, assignor to Belder Trust, Reg., Vaduz, Liechtenstein
Filed Mar. 28, 1968, Ser. No. 716,722
Claims priority, application Germany, Nov. 29, 1967, St 27615 III/66b
Int. Cl. B02c 18/06

U.S. Cl. 146-192

3 Claims

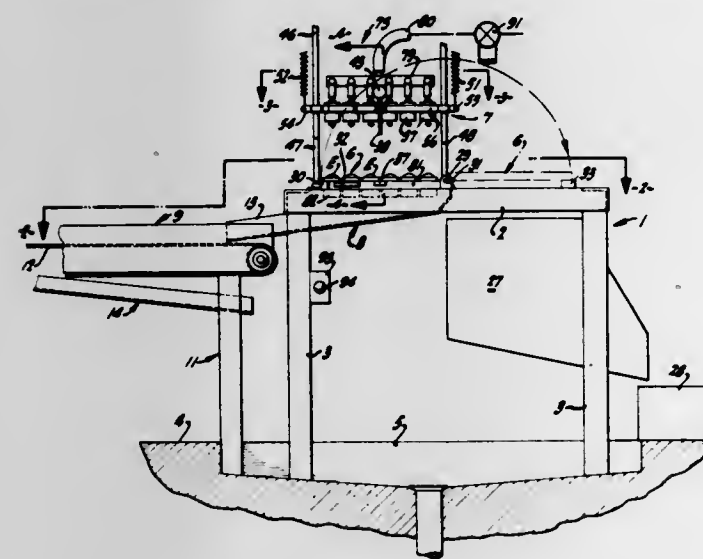
Apparatus for comminuting meat comprises a housing in which is journaled a motor-driven shaft supporting two

axially spaced rings of rotary teeth each cooperating with and surrounded by a ring of stationary teeth to comminute meat which is admitted first into the range of one ring of rotary teeth to undergo a coarse comminuting action during passage between the rotary teeth and the teeth of the corresponding



stationary ring. A cylindrical or conical internal surface of the housing guides coarsely comminuted meat into the range of the other rotary ring so that the material undergoes a fine comminuting action during passage between the teeth of the other rotary ring and the teeth of the associated stationary ring.

3,613,756
EGG-SHELLING APPARATUS AND METHOD
Roy C. Snyder, Jr. and Ralph M. Di Tore, both of San Jose, Calif., assignors to Egg Express, Inc., Mountain View, Calif.
Filed Sept. 9, 1968, Ser. No. 758,257
Int. Cl. A47j 19/28
U.S. Cl. 146—221
15 Claims

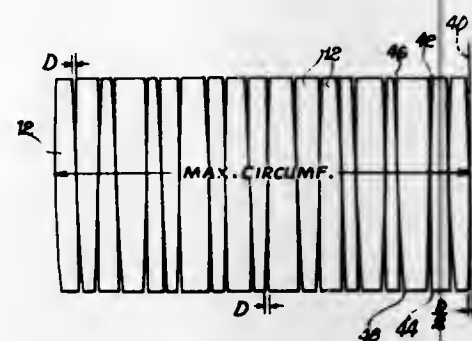


Apparatus and method for separating the bodies of hard-cooked eggs from their shells. Fluid under pressure is applied against the punctured end of an egg positioned in a restricted passageway having an internal shoulder which precludes passage of an egg in its shell therepast. Fluid introduced into the passageway enters the shell through its punctured end and forces the egg body from the shell and through the restricted end of the passageway. The restricted shoulder precludes movement of the major portion of the shell with the egg body. The membrane which normally surrounds the egg body is separated from the body with the separated shell portion. The invention is usable for shelling single eggs or a plurality thereof simultaneously.

3,613,757
MANUFACTURE OF BARREL CONSTRUCTIONS
David S. Humphrey, 117 Berkeley, Terre Haute, Ind.
Filed Sept. 17, 1970, Ser. No. 73,085
Int. Cl. B27h 5/00
U.S. Cl. 147—1
3 Claims

A system for producing wooden barrel constructions of the type including a plurality of staves assembled in side-by-side relationship with the assembly defining a generally circular

cross section. Each stave is provided with a central bilge portion whereby the finished barrel will have a large diameter central portion and smaller diameter end portions. The individual staves are characterized by a narrow end

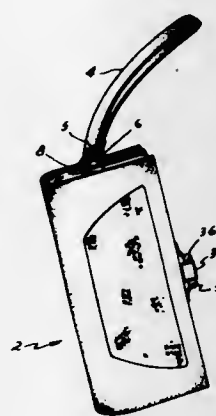


portion and a wide end portion with the width of the bilge portion exceeding one-half the sum of the widths of the end portions. The staves are assembled in the barrel so that wide and narrow end portions are located at each end of the barrel.

3,613,758
PROPAGATION PRIMER
Heinz Gawlick, Furth; Gunther Marondel, Erlangen; Hellmut Bendler, Nuremberg, and Werner Siegelin, Stein, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Jan. 2, 1969, Ser. No. 788,435
Claims priority, application Germany, Jan. 13, 1968, P 16 46 350.6
Int. Cl. C06c 3/10
U.S. Cl. 149—15
10 Claims

A propagation primer containing a primer charge having a composition comprising, by weight, approximately: 40–60 percent of barium nitrate, 10–20 percent of an aluminum-magnesium alloy, 5–20 percent of lead dioxide, 6–10 percent of zirconium hydride, and 1–5 percent of boron. The composition is substantially insensitive to friction and shock. For propagation over larger distances, additional specific primer compositions may be employed.

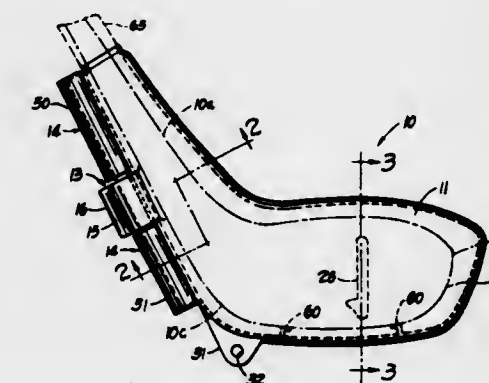
3,613,759
PURSE-CARRYING STRAP AND FRAME ASSEMBLY
Dana B. Collings, Springfield, and Douglas J. Broughton, Agawam, both of Mass., assignors to Buxton, Incorporated, Agawam, Mass.
Filed Oct. 1, 1969, Ser. No. 862,686
Int. Cl. A45c 1/04
U.S. Cl. 150—29
5 Claims



A carrying strap and purse frame assembly having purse frame members pivoted at opposite ends on hinge pin

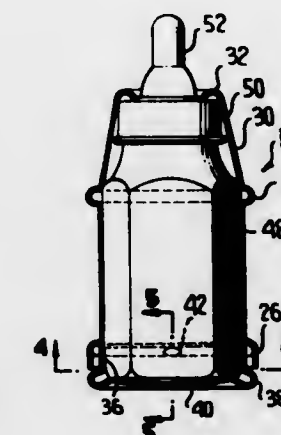
connections and a strap hung on an anchoring element fitted on one of said pins. In preferred form a French clutch purse structure has a wrist strap anchoring element pivotally mounted with respect to the pin, the strap at the user's option being concealable by inserting between a sidewall and an overlying panel section of the purse construction.

3,613,760
GOLF CLUB COVER
Ronald L. Koehnle, Bedford, Ohio, assignor to Reliable Pattern Works, Inc., Bedford Heights, Ohio
Filed July 30, 1969, Ser. No. 846,140
Int. Cl. A63b 53/00
U.S. Cl. 150—52 G
15 Claims



A cover for a golf club head is disclosed which includes first and second cover members for enclosing a head of a golf club. A nonmetallic hinge connects the members together to provide for movement of the members relative to each other for insertion and removal of the golf club head. Nonmetallic spring means urges the cover members together to enclose the golf club head and for maintaining the hinge assembled.

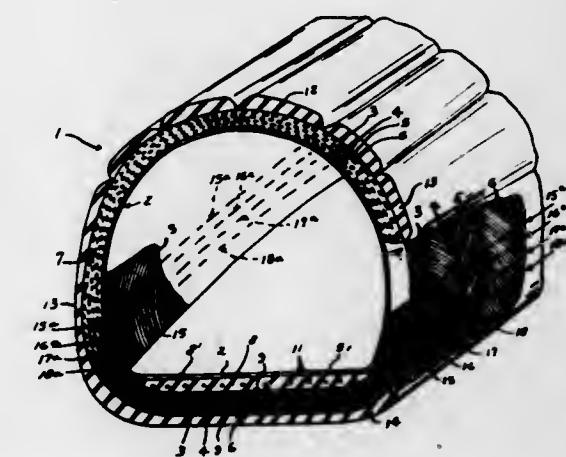
3,613,761
CONTAINER BODY
Elvin C. Moody, Wellington, Ohio, assignor to Forest City Foam Products, Inc., Wellington, Ohio
Filed Aug. 6, 1969, Ser. No. 848,048
Int. Cl. B65d 23/08
U.S. Cl. 150—52 R
4 Claims



A container body particularly adapted for containing fragile baby bottles and the like, the container body being

comprised of two pieces of thermoplastic material manufactured by a novel method and including novel interconnecting means formed upon the two pieces of material.

3,613,762
FABRIC INSERTS FOR FILAMENT WOUND AIRCRAFT TIRES
Theodore J. Reinhart, Jr., 345 Forrer Blvd., Dayton, Ohio
Filed Nov. 26, 1969, Ser. No. 880,002
Int. Cl. B60c 9/06, 15/06
U.S. Cl. 152—354
1 Claim



A filament wound aircraft tire of the toroidal type which includes annular fabric strips positioned between the circular piles of the carcass in the heel or rim area, reinforcing the heel and adjacent rim edge increasing the strength and modulus of the tire carcass in this flexure area, and preventing flexure and compression fatigue failures of the carcass piles in these highly stressed areas.

This invention constitutes an important improvement on my invention disclosed in my (T. J. Reinhart, Jr.) U.S. Pat. No. 3,171,462 for Toroidal Pneumatic Tire, dated Mar. 2, 1965, and having for an object the provision of means to increase the strength and modulus of the toroidal tire carcass in the area of the reinforcing ring or heel bead, adjacent the outer edges of the split rim or wheel.

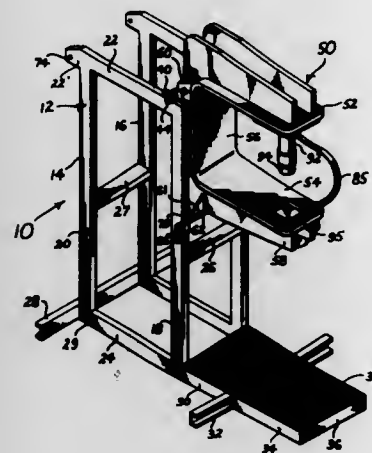
3,613,763
PNEUMATIC TIRES
Henry R. Fletcher, deceased, late of Birmingham, England (by Agnes Marion Fletcher, legal representative), assignor to Dunlop Holdings Limited
Filed July 16, 1969, Ser. No. 22,717
Claims priority, application Great Britain, July 16, 1968, 33,746/68
Int. Cl. B60c 9/12
U.S. Cl. 152—359
16 Claims



A pneumatic tire comprising at least one fold reinforcement layer e.g. a breaker formed with at least one fold, the layer comprising steel wire cords disposed in parallel side-by-side relationship, the individual wires in the cords having a diameter of substantially 0.003 of an inch or less.

3,613,764
HYDRAULIC PRESS WITH ROTATABLE C-CLAMP HEAD
 Edward Franklin Guenard, 741 Strauss St., Kamloops, British Columbia, Canada
 Filed Feb. 2, 1970, Ser. No. 7,749
 Int. Cl. B60c 25/06
 U.S. Cl. 157—1.26

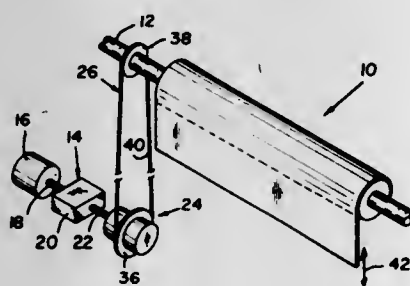
10 Claims



A hydraulic press has an open frame structure. A C-clamp head is rotatably carried by the frame structure. The head has jaws disposable in horizontal position extending forwardly of the frame structure and in vertical position inside the frame structure. One jaw carries a cylindrical ram extending axially between the jaws to press a piece of work disposed therebetween. A hydraulic cylinder carried by the frame is coupled by a flexible hose to the ram. A roller rack can be disposed inside the frame structure for rotatably supporting a tire between the jaws while the ram is operated to break the bead of the tire. A work table can be juxtaposed to the frame structure for supporting a piece of work horizontally while an extension of the ram applies pressure to the piece of work on work table.

3,613,765
FIRE DOOR DROPOUT
 Bernard J. Sivin, 15 Byron Road, Commack, N.Y.
 Filed Sept. 14, 1970, Ser. No. 72,014
 Int. Cl. E05f 15/20
 U.S. Cl. 160—1

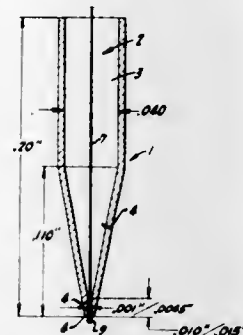
5 Claims



A fusible link dropout or disconnect device for a motor-operated fire door which is advantageously located on the motor shaft and is an integral part of the chain drive by which the motor operator powers the fire door support shaft through rotation to correspondingly urge the fire door through opening and closing movements. The chain drive, consisting of the usual endless loop of chain entrained about spaced-apart sprockets, functions effectively while permitting a degree of lateral shifting movement of the dropout which is utilized as the disconnecting movement thereof in the event of a fire.

3,613,766
METHOD OF MANUFACTURING WELD TIP GUIDE
 Robert A. Holz, La Canada, and William D. Koenig, Sylmar, both of Calif., assignors to Fansteel Inc., North Chicago, Ill.
 Division of Ser. No. 542,070, June 7, 1965, Pat. No. 3,472,443.
 Filed Jan. 15, 1969, Ser. No. 813,351
 Int. Cl. B23k 19/00; B22d 23/00
 U.S. Cl. 164—46

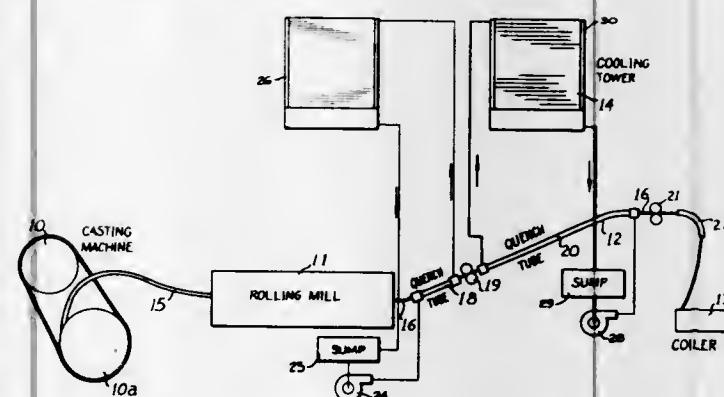
6 Claims



A weld tip for bonding fine electrical conductor wire to electrical components is formed of chemically vapor deposited high melting point refractory material, such as tungsten, free of lower melting point cementitious bonding material, by chemical vapor deposit of said material about a mold which provides a mold smooth guide passage for the wire.

3,613,767
CONTINUOUS CASTING AND ROLLING OF 6201 ALUMINUM ALLOY
 Daniel B. Cofer, Carrollton, and Joseph A. Bass, Bremen, both of Ga., assignors to Southwire Company, Carrollton, Ga.
 Filed May 13, 1969, Ser. No. 824,220
 Int. Cl. B22d 11/12
 U.S. Cl. 164—76

2 Claims



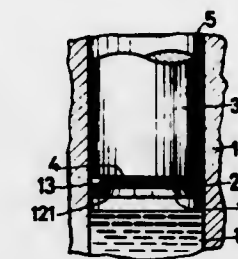
A method of continuously manufacturing a heat treatable aluminum base alloy rod, such as 6201 aluminum alloy rod containing from 0.50 to 0.9 percent silicon, from 0.6 to 0.9 percent magnesium and the balance essentially aluminum, comprising heating the metal to a molten state, continuously pouring and cooling the metal to form a cast bar at a temperature above the temperature at which the alloy metals begin to precipitate, continuously lengthening and reducing the cross-sectional area of the bar in a rolling mill to form rod and reducing the temperature of the rod to a temperature level below the crystallization temperature of the alloy metals within a time period which is short enough to keep the alloy metals from precipitating.

3,613,768
LIQUID METAL FORGING PROCESS
 Takichi Awano, and Yoshihiro Oishi, both of Nagoya-shi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Hisakata, Showa-ku, Nagoya-shi, Aichi-ken, Japan
 Filed Jan. 24, 1969, Ser. No. 793,757
 Claims priority, application Japan, Jan. 31, 1968, 43/6129
 Int. Cl. B22d 27/12
 U.S. Cl. 164—120

2 Claims

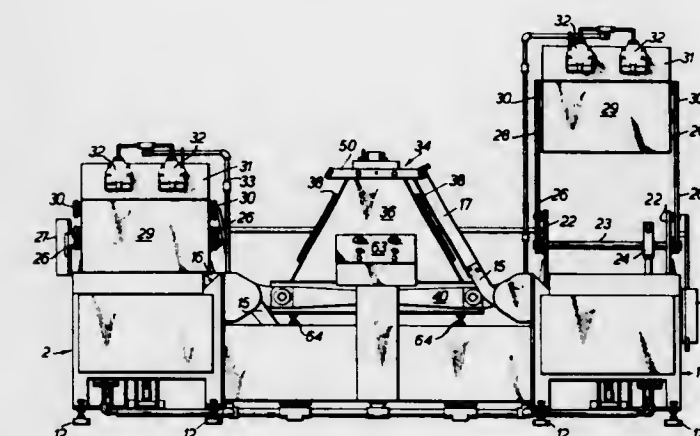
Liquid metal forging process comprising pouring liquid metal into a mold, applying high pressure by a punch to said

liquid metal through a sealing member of thin plate interposed between the pressure-applying surface of said punch and the liquid metal, wherein during pressing the rim for the sand to be blown therein, the first assembly disassembling such box and stripping the sand article therein onto a



3,613,769
SHELL-MOLDING MACHINE WITH PIVOTABLE INVESTMENT BIN
 Kenneth William Cowlam, Pembury, near Tunbridge Wells, England, assignor to Polygram Casting Company Limited, Frant, Tunbridge Wells, Kent, England
 Filed May 26, 1969, Ser. No. 827,719
 Claims priority, application Republic of South Africa, June 19, 1968, 68/3919
 Int. Cl. B22c 13/08
 U.S. Cl. 164—166

6 Claims

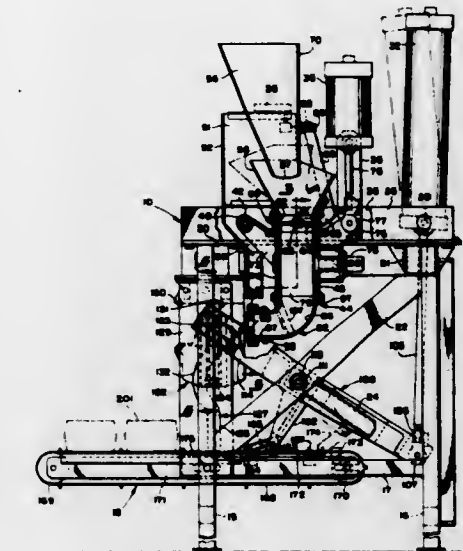


A machine for making shell molds has an investment bin for holding shell-molding material, the bin having openings in its sidewalls against which a pivotally mounted pattern plate can be locked. Once a pattern plate is in position, the plate and the bin are rocked about the pivotal axis of the pattern plate to invest the pattern plate after which the invested plate is swung away from the pin to a position in which curing of the investment is completed.

3,613,770
FOUNDRY SAND ARTICLE FORMING MACHINE WITH PIVOTAL BLOW RESERVOIR
 Gilbert J. Janke, Parma, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio
 Filed Feb. 12, 1970, Ser. No. 10,768
 Int. Cl. B22c 15/24
 U.S. Cl. 164—192

28 Claims

A machine for the production of foundry sand articles including a first piston-cylinder assembly for forming a box, a second such assembly for filling a reservoir with molding sand and clamping such reservoir laterally against such box



discharge conveyor after the second assembly has withdrawn the reservoir for filling, the first assembly also indexing the conveyor.

3,613,771
OPEN-ENDED MOLD-CASTING APPARATUS
 Hans Bieri, Oberrick, Switzerland, assignor to Erik Olsson A.G., Zurich, Switzerland
 Filed Feb. 26, 1969, Ser. No. 802,478
 Claims priority, application Switzerland, Mar. 1, 1968, 3151/68
 Int. Cl. B22d 11/12
 U.S. Cl. 164—282

15 Claims

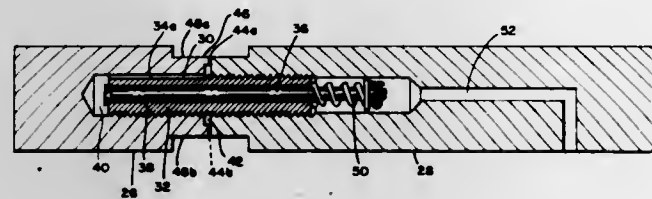


There is disclosed metal casting apparatus of the type in which molten metal entering the top of an open-ended mold emerges from the bottom as a strand having an outer skin or shell and a molten interior, and the invention relates to supports for the strand as it leaves the mold and solidification progresses. This support comprises opposed supporting frames between which the strand is confined, and one or both of them moves up and down relative to the other and relative to the axis of the strand, the motion being either rectilinear or oscillatory. The frequency of the up and down cycle and its amplitude control the rate of travel of the strand.

3,613,772
INJECTION PISTON FOR DIECASTING
 Irving A. Carr, 60 Gardner St., Hingham, Mass.
 Filed Dec. 27, 1968, Ser. No. 787,353
 Int. Cl. B22d 17/08

U.S. Cl. 164—312

10 Claims

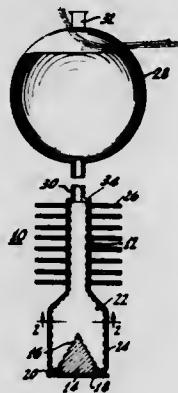


An injection piston is provided with automatic lubrication at any location in an injection chamber. A central conduit communicates with flow passages on the piston wall. Within the conduit is a spring-loaded valve to control the flow of lubricant through the flow passages and onto the chamber wall.

3,613,773
CONSTANT TEMPERATURE OUTPUT HEAT PIPE
 William B. Hall, Landisville, and Fred G. Block, Lancaster, both of Pa., assignors to RCA Corporation
 Filed Dec. 7, 1964, Ser. No. 418,946
 Int. Cl. F28d 15/00

U.S. Cl. 165—32

5 Claims

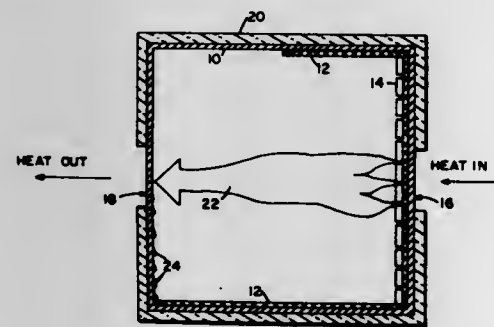


A heat pipe is provided with a noncondensable gas reservoir at the condenser end. The pressure of the gas and the size of the reservoir are selected to prevent a large change in the operating pressure, and thus the operating temperature, if the heat input to the heat pipe decreases.

3,613,774
UNILATERAL HEAT TRANSFER APPARATUS
 Frank E. Bliss, Jr., Reeds Ferry, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
 Filed Oct. 8, 1969, Ser. No. 864,777
 Int. Cl. F28d 15/00

U.S. Cl. 165—32

6 Claims



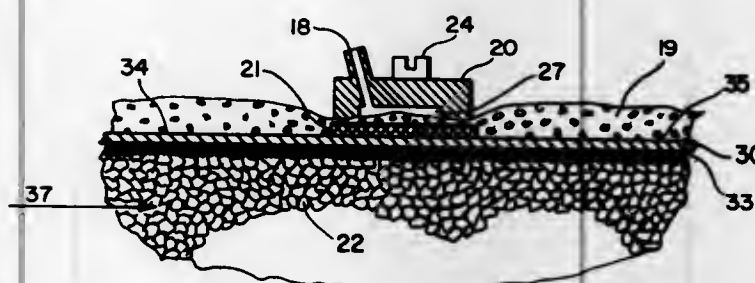
Unilateral heat transfer apparatus comprises an evacuated heat transfer chamber wherein the evaporator surface is

covered with a suitable capillary structure. Heat added to the evaporator vaporizes a working fluid and the vapors move to a condenser where they give up their heat of vaporization and condense. The condensate is returned by gravity to the capillary structure. The device conducts heat readily in one direction but has a high resistance to heat flow in the opposite direction.

3,613,775
SELF-REGULATING COOLING SYSTEM
 Daniel L. Curtis, Manhattan Beach, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
 Filed May 19, 1969, Ser. No. 825,812
 Int. Cl. F28f 7/00

U.S. Cl. 165—46

4 Claims

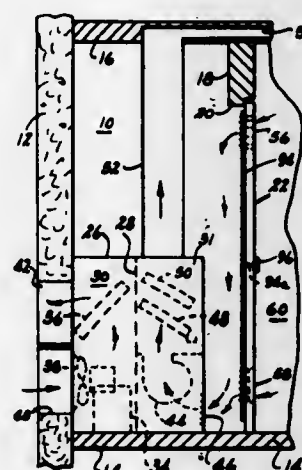


A self-regulating cooling system to remove metabolic heat from the coolant loop in a life support system used in space activity. Coolant passes through a sublimator as part of the coolant loop which also includes a pulse pump and a coolant garment. A separate water storage container provides feedwater to the sublimator where it is sublimated along a surface thermally connected to a heat exchange element through which the coolant flows.

3,613,776
CLOSET DOOR HAVING HIGH-LOW RETURN AIR SUPPLY FOR AIR CONDITIONER
 Joseph D. Loveley, Grosse Pointe Woods, Mich., assignor to American Standard Inc., New York, N.Y.
 Filed Apr. 30, 1970, Ser. No. 33,218
 Int. Cl. F25b 29/00

U.S. Cl. 165—48

4 Claims

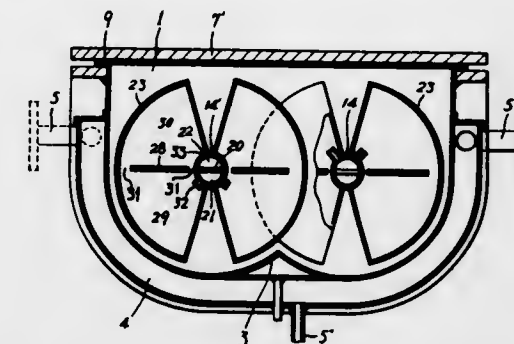


An air conditioner housed within the closet of a living space, particularly an apartment, said closet having a special door construction equipped with tapered openings adjacent its top and bottom edges. During the cooling season the air conditioner draws its supply air from the upper door openings and during the heating season the air conditioner draws its supply air through the lower door openings. The invention improves the air conditioner efficiency and minimizes stratification and temperature differentials between the floor and ceiling.

3,613,777
HEAT EXCHANGE APPARATUS FOR POWDERED MATERIALS
 Jiyuichi Nara, 7-8, Higashi-ooi 2-chome, Shinagawa-ku, Tokyo, Japan
 Filed Oct. 13, 1969, Ser. No. 865,632
 Claims priority, application Japan, Feb. 18, 1969, 44/12064
 Int. Cl. F28d 11/02

U.S. Cl. 165—86

4 Claims

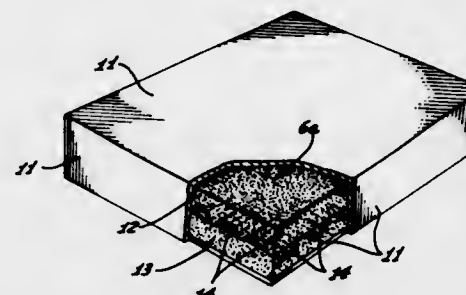


A heat exchange apparatus for powdered materials characterized by a plurality of wedge-shaped hollow revolving bodies mounted in a rotating shaft circumferentially of the shaft, a heat exchange medium being passed from said shaft into said hollow revolving bodies, powdered materials being moved in an axial direction, said powdered materials being heated or cooled by said revolving bodies.

3,613,778
FLAT PLATE HEAT PIPE WITH STRUCTURAL WICKS
 Karl T. Feldman, Jr., Albuquerque, N. Mex., assignor to Northrop Corporation, Beverly Hills, Calif.
 Filed Mar. 3, 1969, Ser. No. 803,582
 Int. Cl. F28d 15/00

U.S. Cl. 165—105

1 Claim

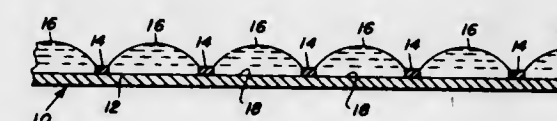


A heat pipe having a flat plate construction. One wick of screen wire honeycomb is disclosed, and another wick of porous metal layers having grooves therein for vapor flow, these wicks providing a strengthening function.

3,613,779
APPARATUS FOR OBTAINING HIGH TRANSFER RATES IN FALLING WATER FILM EVAPORATORS AND CONDENSERS
 Clinton E. Brown, Silver Spring, Md.
 Filed Oct. 6, 1969, Ser. No. 864,092
 Int. Cl. F28f 13/18

U.S. Cl. 165—133

13 Claims



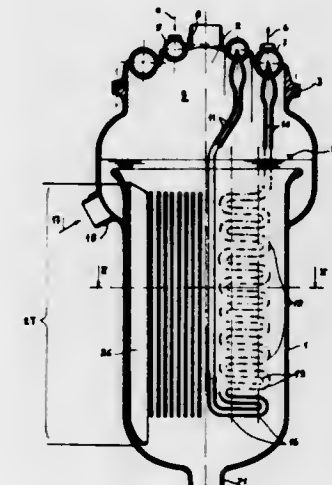
Narrow strips of very thin hydrophobic material are arranged in parallel rows on a hydrophilic heat exchange

substrate for use in fluid evaporation or condensation. Fluid rivulets of arcuate cross section form on the hydrophilic substrate between the hydrophobic strips, resulting in an improved heat transfer coefficient relative to systems employing a uniform fluid thickness. Increased fluid surface area and vertical motion of the rivulets account in part for the improved coefficient.

3,613,780
LIQUID METAL HEAT EXCHANGERS WITH PRESSURE ABSORBING MEANS
 Sergio Bruschetti, Via T. Tasso 9/8, Savona, and Eraldo Zummo, Via Dagnino 3B/3, Genoa-Pegli, both of Italy
 Filed Aug. 28, 1969, Ser. No. 853,734
 Claims priority, application Italy, Sept. 25, 1968, 7355A/68
 Int. Cl. F28f 19/00

U.S. Cl. 165—134

12 Claims

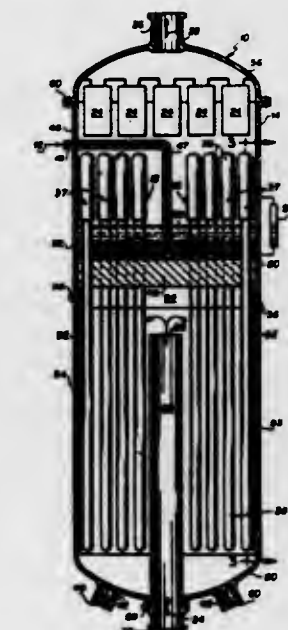


Heat exchangers of the type using liquid sodium as a heat exchange fluid contain chambers inside their casings which are susceptible of collapse and/or breakage for the purpose of limiting the consequences of a reaction of sodium with water and steam in case of damage or failure to the means separating the two fluids.

3,613,781
BAYONET TUBE BANK VAPOR GENERATOR
 Robert O. Barratt, Parsippany, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
 Filed July 22, 1969, Ser. No. 843,527
 Int. Cl. F28f 9/22

U.S. Cl. 165—145

10 Claims



This invention relates to a sodium heated vapor generator utilizing a parallel, multiple bayonet tube configuration, with

each tube configuration having an annular helical swirl chamber retained within an outer pressure baffle tube and encircling an inner water inlet tube. A fluid is circulated through the inlet tubes which in turn extend into the pressure tubes which are immersed in a body of hot sodium liquid.

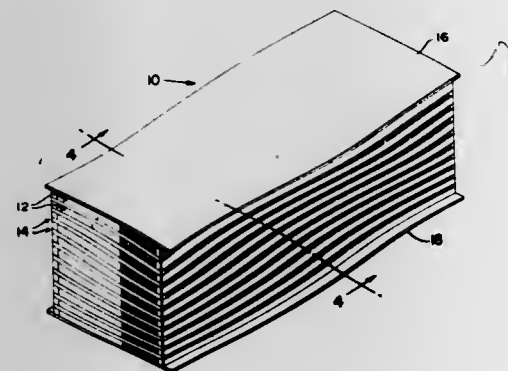
3,613,782

COUNTERFLOW HEAT EXCHANGER

John L. Mason, Palos Verdes Estates, and Robert W. Greenwood, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.
Filed Aug. 27, 1969, Ser. No. 853,248
Int. Cl. F28f 3/00

U.S. Cl. 165-166

16 Claims



A counterflow heat exchanger of the Z-flow or U-flow type in which the flow passage heights of each fluid are varied so as to minimize pressure drop.

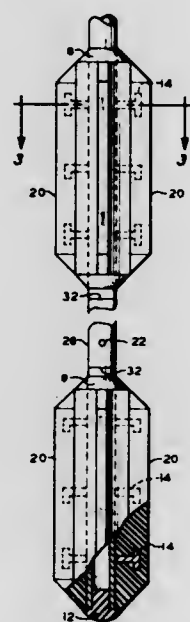
3,613,783

APPARATUS FOR INSTALLING UNDERWATER WELL EQUIPMENT

Ed O. Seabourn, Stavanger, Norway, assignor to Phillips Petroleum Company
Filed Oct. 29, 1969, Ser. No. 872,327
Int. Cl. E21b 33/035, 17/10

U.S. Cl. 166-.5

4 Claims



An apparatus having a nozzle for propulsion and rubber centralizing and guiding ribs for installing equipment on an underwater conduit.

3,613,784

SEISMIC BOREHOLE PLUG

Peppino Bassani, 127 Laurier Drive, Edmonton, Alberta, Canada

Filed Jan. 26, 1970, Ser. No. 5,836

Int. Cl. E12b 33/127

U.S. Cl. 166-187

8 Claims



A tubular inflatable bag has its lower end secured to a bottom closure cap at the lower end of an air pipe which has a lateral passage for admitting air under pressure into the bag. The upper end of the bag is secured to a top closure cap which is slidable along the pipe as the bag expands during inflation. Upward sliding of the top cap is limited by an abutment provided on the pipe above the bag, the abutment consisting of a housing which contains a valve for controlling airflow through the pipe.

3,613,785

PROCESS FOR HORIZONTALLY FRACTURING SUBSURFACE EARTH FORMATIONS

Philip J. Closmann, and Dionysios M. Phocas, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,710

Int. Cl. E21b 43/24, 43/26

U.S. Cl. 166-271

10 Claims



Horizontal fractures are formed in a subsurface earth formation which tends to fracture vertically at the naturally occurring formation temperature by a process which includes the steps of extending at least one well borehole into the formation, generating a vertical fracture by pressurizing said borehole, injecting hot fluid into at least one borehole to heat the formation, continuing the injection of hot fluid until thermal stressing of the formation matrix material causes the horizontal compressive stress in the formation to exceed the vertical compressive stress therein at a location selected for a second well, extending the borehole of the second well into the formation, and hydraulically fracturing the formation through this second well borehole to form a horizontal fracture extending therefrom into the formation.

3,613,786

OIL RECOVERY METHOD USING HIGH WATER CONTENT OIL-EXTERNAL MICELLAR DISPERSIONS
Stanley C. Jones, Littleton; Wayne O. Roszelle, Littleton, and Marvin A. Svaldi, Morrison, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Mar. 23, 1970, Ser. No. 22,087
Int. Cl. E21b 43/22

U.S. Cl. 166-273

22 Claims

Crude oil within a subterranean formation is recovered by injecting into the formation a novel high water content oil-external micellar dispersion (containing 55 to about 90 percent water) and moving the micellar dispersion through the formation to displace crude oil. The micellar dispersion contains a surfactant having an average equivalent weight of about 350 to about 525.

3,613,787

SECONDARY OIL RECOVERY PROCESS USING MICELLAR DISPERSIONS

William C. Tosch, Parker, and Charles B. Wenger, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 28, 1969, Ser. No. 853,919

Int. Cl. E21b 43/22

U.S. Cl. 166-273

17 Claims

Oil is recovered from a subterranean oil-bearing reservoir by injecting a micellar dispersion into the reservoir and displacing it toward a production means in fluid communication with the reservoir; the dispersion is comprised of hydrocarbon, aqueous media, surfactant, carbohydrate and optionally cosurfactant and/or electrolyte. Examples of useful carbohydrates include glucose and sucrose.

3,613,788

METHODS FOR THE TREATMENT OF TERRESTRIAL FLUID RESERVOIRS

George J. Kautsky, Los Angeles, Calif., assignor to Textilana Corporation, Hawthorne, Calif.

Filed June 22, 1970, Ser. No. 48,387

Int. Cl. E21b

U.S. Cl. 166-279

20 Claims

This invention relates to methods for the treatment of aquifers and oil and gas formations by injection thereto of polyalkylene polyamino polykis methylene phosphonic acids and their salts to prevent scale and inhibit corrosion.

3,613,789

METHOD USING MICELLAR DISPERSIONS IN MULTIPLE FRACTURING OF SUBTERRANEAN FORMATIONS

Marion O. Son, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 16, 1970, Ser. No. 20,102

Int. Cl. E21b 33/13, 43/26

U.S. Cl. 166-281

26 Claims

A subterranean formation is fractured by injecting under fracturing pressures a micellar dispersion comprised of hydrocarbon, aqueous medium, and surfactant. Propping agents are useful in the dispersion. The viscosity of the dispersion can be designed to obtain "low bleedoff rates" and retard settling of the propping agents. Additional, distinct fractures are obtained by sealing off previously formed fracture(s) with a diverting agent and then injecting again at fracturing pressures the micellar dispersion.

3,613,790

METHOD OF PLUGGING A FORMATION

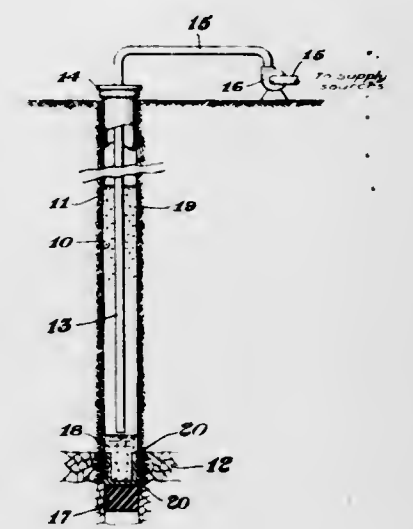
Caleb M. Stout, Tulsa; Charles F. Smith, Tulsa, and Thomas J. Nolan, III, Langston, all of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 24, 1969, Ser. No. 860,730

Int. Cl. E21b 33/138

U.S. Cl. 166-294

11 Claims



A novel composition and method is provided for temporarily plugging wellbores for extended periods of time, e.g., up to 10 years and more. The composition comprises a thickened aqueous based mixture containing water-swelling clay and inorganic, acid soluble particles, such as minerals, e.g., CaCO_3 , as solid constituents. The method comprises introducing said novel composition into a well to be plugged followed by a sufficient amount of an aqueous medium to provide a hydrostatic head over and in contact with said composition which exerts a pressure on said mixture which is greater than the formation pressure at the point of application. The plugging composition can be removed from the well when desired by contacting it with acidic solutions.

3,613,791

PROCESS FOR STIMULATION OF GAS-PRODUCING WELLS

Walter B. Kirk, Robinson, Ill., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 19, 1970, Ser. No. 21,201

Int. Cl. E21b 43/25

U.S. Cl. 166-305 R

11 Claims

Stimulation of gas-producing wells is effected by 1) injecting about 1-500 gallons of micellar dispersion per vertical foot of hydrocarbon-bearing formation into the formation, 2) injecting about 0.1-10 volumes of water per volume of micellar dispersion, 3) injecting sufficient gas to displace substantially all of the water out into the formation to a radius of at least about 7.5 feet, and 4) permitting the well to produce. The micellar dispersion is comprised of hydrocarbon, surfactant and aqueous medium.

3,613,792

OIL WELL AND METHOD FOR PRODUCTION OF OIL THROUGH PERMAFROST ZONE

John W. Hyde, Riverside, Conn., and William J. George, New York, N.Y., assignors to The British Petroleum Company Limited, London, England

Filed Dec. 11, 1969, Ser. No. 884,282

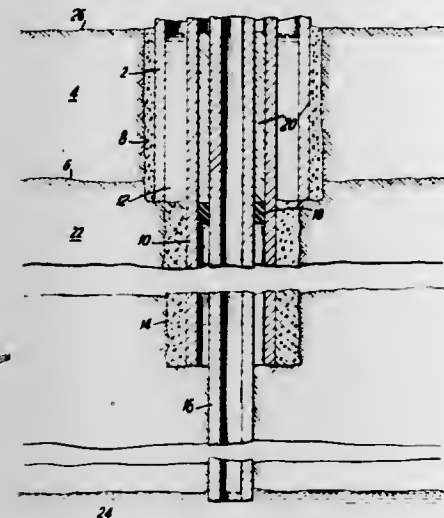
Int. Cl. E21b 43/00

U.S. Cl. 166-315

24 Claims

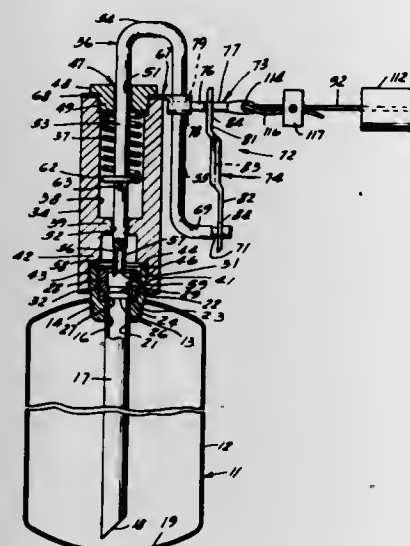
Production oil wells for extracting warm oil from ground containing a permafrost zone without causing the oil to melt the permafrost comprise a pipe extending down into the oil pool, an inner casing surrounding the pipe and running down through the permafrost zone, an outer casing running down through the permafrost zone, surrounding the inner casing and spaced to define an airgap or annulus with the inner casing and means, such as a liquid heat exchange fluid or a

refrigerating boiling liquid, in the annulus to inhibit heat transfer from the pipe to the ground surrounding the outer



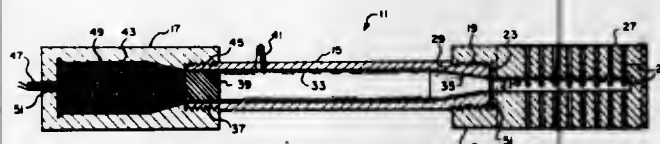
casing. In preferred embodiments a second annulus or airgap, optionally filled with insulation, is provided between the inner casing and the pipe.

3,613,793
FIRE EXTINGUISHER SYSTEM
Charles K. Huthsing, Jr., Old School Road, Libertyville, Ill.
Filed Oct. 6, 1969, Ser. No. 863,992
Int. Cl. A62c 35/36
U.S. Cl. 169-26



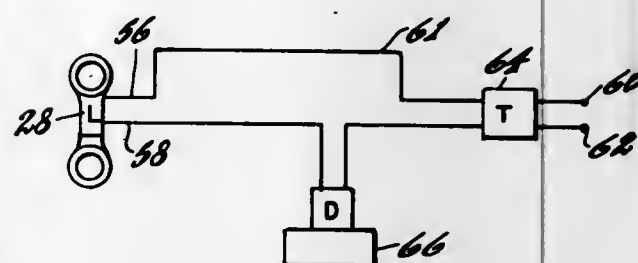
A fire extinguisher being automatically actuated upon sensing an elevated temperature or manually actuated either at the extinguisher location or from a remote location. The fire extinguisher generally includes a cylinder containing fire extinguishing material and having an outlet passageway sealed by a rupturable membrane, a puncturing means biased in a direction to puncture the membrane and normally retained against the bias in a cocked position such that triggering of the puncturing means will puncture the membrane and permit egress of the fire extinguishing material from the cylinder in a predetermined, controlled direction, and means actuating or triggering the puncturing means. The actuating means includes a fusible link retaining the puncturing means against the bias in a cocked position so that melting of the link will cause the membrane to be punctured and the fire-extinguishing material dispersed. Also, the actuating means includes a manually operated triggering device releasable at the extinguisher location or remotely and normally retaining the puncturing means in a cocked position so that release of the manually operated device will cause the fire-extinguishing material to be dispersed.

3,613,794
LIQUID AEROSOL DISPENSER
Robert J. Naumann, Huntsville, and David W. Jex, Guntersville, both of Ala.
Filed Aug. 7, 1970, Ser. No. 61,894
Int. Cl. A62c 35/08
U.S. Cl. 169-28



A liquid aerosol dispenser is disclosed having an explosively driven piston that compresses a light gas to an extremely high pressure so as to rupture a first sealer on a container holding the liquid to allow admixing of the gas and the liquid. The container has a plurality of discharge nozzles covered with a rupturable sealer and upon rupture of the first sealer and admixing of the light gas and liquid, the sealer covering the nozzles is ruptured so as to allow the liquid to be expelled through the nozzles at a very high velocity in extremely fine droplet form.

3,613,795
ELECTRICALLY AND/OR THERMALLY ACTUATED RELEASE LINK
Raymond George Amicone, Springfield; Charles T. Davey, Dresher, and Warren J. Dunning, Philadelphia, all of Pa., assignors to Air Balance, Inc., Chicago, Ill.
Filed Aug. 13, 1969, Ser. No. 849,811
Int. Cl. A62c 37/30
U.S. Cl. 169-42

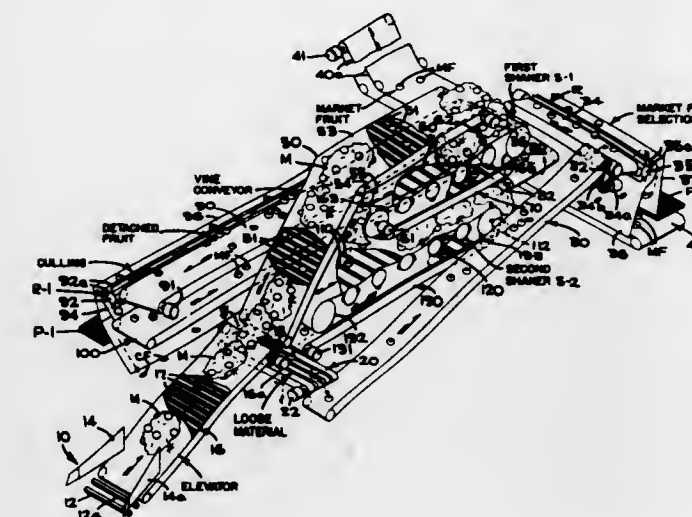


An electrothermal release detent that is equally responsive to either electrical or thermal stimuli which serves to release fire control apparatus such as a fire and/or smoke damper positioned within air-handling ducts or in other portions of building construction to thereby prevent the rapid spread of fire and smoke through the protected area.

3,613,796
SELECTIVE SORT VINE CROP HARVESTER
David W. Cayton, Cupertino, and William G. Malley, San Jose, both of Calif., assignors to FMC Corporation, San Jose, Calif.
Filed June 24, 1970, Ser. No. 49,415
Int. Cl. A01d 17/08
U.S. Cl. 171-27

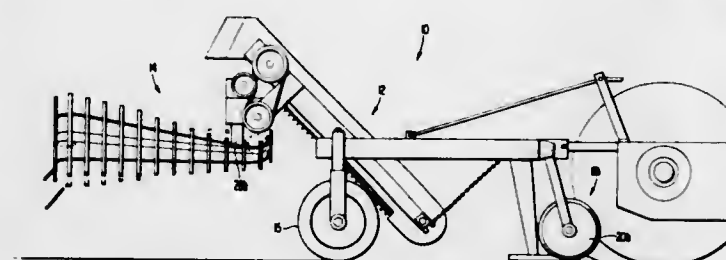
A mobile field tomato harvester picks up a mass of vines and some dirt with a double pair of weeder bars and conveys the mass to an initial shaker which detaches fruit and delivers it to a side sort culling station embodying a sorting reel. Before reaching the initial shaker, the mass passes over a gap where loose fruits and clods fall onto a loose-material-screening conveyor and are conveyed to a rear market fruit selection station which includes another sorting reel. At this reel, the market fruit is passed on to a market fruit conveyor and culls are automatically rejected. Resuming description of the vine flow, after leaving the initial shaker, the vines are

turned over and reshaken on a second shaker. The fruit implements and draft- and position-sensing means act detached by the second shaker is delivered to the same through a cam and lever arrangement for controlling the



screening conveyor that receives the loose material initially falling from the mass before the mass reaches the first shaker, as described above.

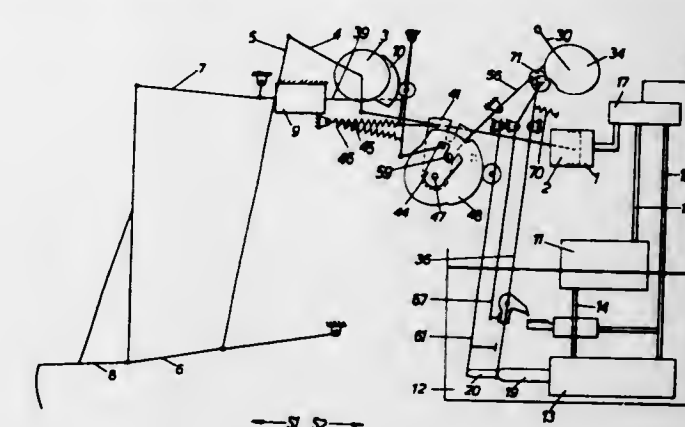
3,613,797
PEANUT DIGGER, SHAKER AND INVERTER
Carroll J. Whitfield, and Jack C. Whitesides, both of Columbus, Ga., assignors to Kelley Manufacturing Company, Columbus, Ga.
Filed Apr. 16, 1970, Ser. No. 29,137
Int. Cl. A01d 29/00
U.S. Cl. 171-61



A peanut digger-shaker-inverter apparatus for use in harvesting peanuts wherein two crop rows of peanut-laden plants are simultaneously removed from the ground, elevated above the ground as the apparatus proceeds down the crop rows, shaken to remove the dirt from the plants, and deposited back on the ground in a single row with foliage adjacent the ground and the roots and peanuts above the ground so as to be exposed to sun and air for drying. The inverter receives the plants generally in an upright attitude and in spaced-apart paths from the shaker and continues the movement of the plants in the spaced-apart paths away from the shaker and rolls or twists the plants along their direction of movement so as to move the foliage of the plants down between the paths so that the plants are deposited upon the ground in inverted positions.

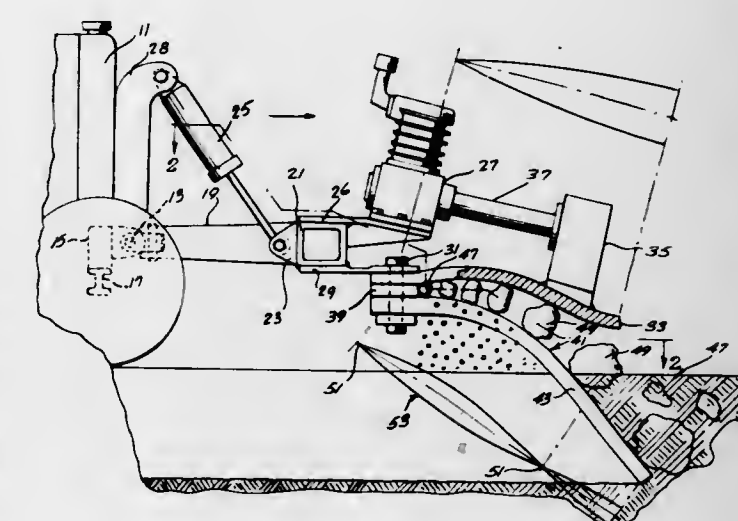
3,613,798
HYDRAULIC CONTROL SYSTEM FOR AGRICULTURAL IMPLEMENTS
Chandra Mohan; Gursharan Singh Rihal, and Balbir Singh Devgun, all of Durgapur, India, assignors to Council of Scientific and Industrial Research, New Delhi, India
Filed May 6, 1969, Ser. No. 822,252
Claims priority, application Great Britain, July 29, 1968, 36,051/68
Int. Cl. A01b 63/112; G05d 11/00
U.S. Cl. 172-9

A control mechanism for agricultural implements mounted on three-point linkages in tractors includes a valve mechanism which controls the hydraulic circuit. A single selection and operational control device operates the



operation of the valve mechanism which includes two concentrically arranged valve members for regulating the flow of the fluid in the hydraulic circuit.

3,613,799
SONIC SOIL TILLER AND ROCK REDUCER
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.
Continuation of application Ser. No. 460,628, June 2, 1965, now Patent No. 3,410,351, which is a continuation-in-part of application Ser. No. 326,419, Nov. 27, 1963, now Patent No. 3,269,039, which is a continuation-in-part of application Ser. No. 163,802, Jan. 2, 1962, now abandoned, which is a division of application Ser. No. 839,196, Sept. 10, 1959, now Patent No. 3,030,715. This application July 5, 1968, Ser. No. 742,933
Int. Cl. A01b 35/00; E21c 37/20
U.S. Cl. 172-40

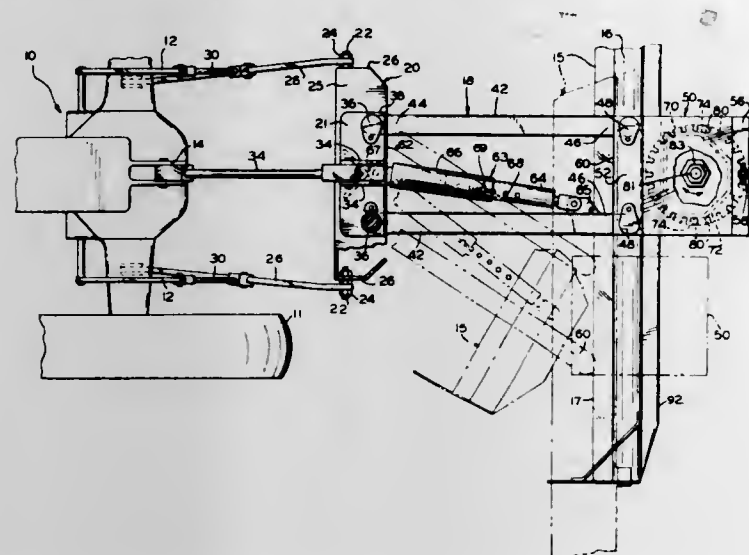


A device for cultivating earth and breaking up rocks or field stones for attachment to a tractor and the like comprising a first wide metal plate having an orbiting mass oscillator fixed thereto and a second plate divergent from the first plate having a plurality of metal tines for engagement with the ground. The two plates are coupled together at their base where they converge. A tuning fork effect is achieved through the vibration of the two plates by the oscillator crushing rocks and soil picked up by the tines.

3,613,800
MOUNTING FOR TERRACING BLADE
Calvin F. Martin, Rte. 1, Box 136, Nyssa, Oreg.
Filed Apr. 9, 1971, Ser. No. 814,741
Int. Cl. A01b 59/06, 63/00, 65/02
U.S. Cl. 172-447

A mounting for a terracing or like earth-moving blade having a first frame adapted to be attached to the rear of a tractor, a pair of transversely spaced substantially vertical pivots mounted in the first frame, a second frame disposed

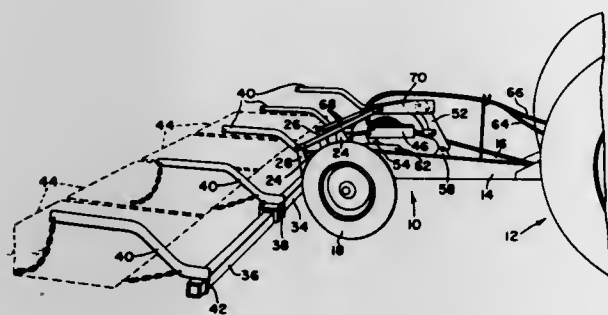
rearwardly of the first frame, a second pair of transversely spaced substantially vertical pivots mounted in the second frame, and a pair of parallel longitudinally extending members joining the first and second frames, the forward ends of the channel members being rotatably mounted one on each of the first pair of pivots and the rearward ends of the members being rotatably mounted one on each of the second pair of pivots, whereby the second frame may be



moved transversely but maintained parallel with respect to the first frame. A substantially vertical member depends from and is rotatably attached to the second frame, and an earth-moving blade is mounted on the vertical member for rotation therewith relative to the second frame. Means are also provided to permit the earth-moving blade to rotate about a horizontal axis through the vertical member.

3,613,801
IMPLEMENT CARRIER
Robert Richard Roth, Rock Island, Ill., assignor to Deere & Company, Moline, Ill.
Filed May 11, 1970, Ser. No. 36,141
Int. Cl. A01b 63/32, 63/10
U.S. Cl. 172-456

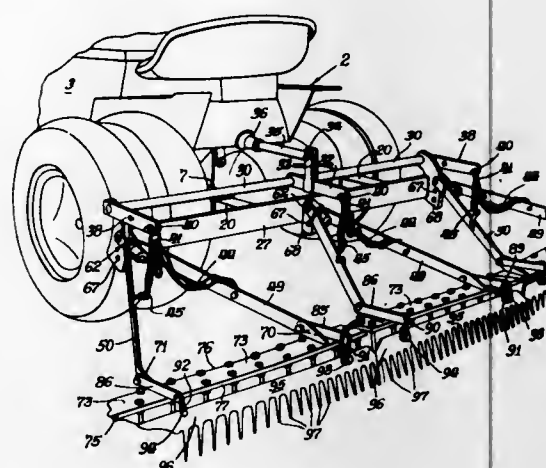
6 Claims



An agricultural implement having a tool-supporting drawbar pivotally carried on a draft frame for movement about a transverse axis between a lowered groundworking position and raised field and road transport positions. An extensible and retractable hydraulic cylinder is connected to a drawbar through a lever arm and pivoted links to move the drawbar about the transverse axis to the field transport position upon full extension of the hydraulic cylinder. A releasable locking means is provided to fixedly secure one of the links to the lever arm to form an extension of the lever arm so that upon full extension of the hydraulic cylinder the drawbar is moved about the transverse axis to the road transport position.

3,613,802
SAND TRAP RAKE FOR GOLF COURSES
V. Robert Carlson, Aurora; Joseph Dinelli, Glenview, Ill., and Joel F. Jones, Claremore, Okla., assignors to International Harvester Company, Chicago, Ill.
Filed June 16, 1969, Ser. No. 833,515
Int. Cl. A01b 19/04, 23/04
U.S. Cl. 172-197

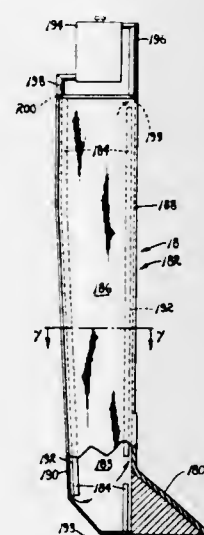
9 Claims



A sand trap rake mounted on the tractor comprising a transverse mounting member, a plurality of hitch elements spaced transversely of the mounting member and secured thereto and a V-shaped draft frame member connected to each hitch element, a rake connected to each frame member for floating movement therewith, each frame member having its apex adjacent to the respective hitch element and a universal connection fastening each draft member at its apex to the related hitch element and a toothed comb hung behind each rake for smoothing the sand, each frame being connected to the rockshaft in turn is connected to hydraulic lift of the tractor such that the operator in exiting from the sand trap may incrementally lift the rake to feather the action of the rake on the sand thereby preventing dragging it out of the sand trap.

3,613,803
RIPPER FOR DISRUPTING HARDPAN AND THE LIKE
Jackie O. Payne, 5155 N. Fresno Apt. 197, Fresno, Calif.
Filed Sept. 17, 1969, Ser. No. 858,831
Int. Cl. A01b 13/08, 3/68
U.S. Cl. 172-699

2 Claims

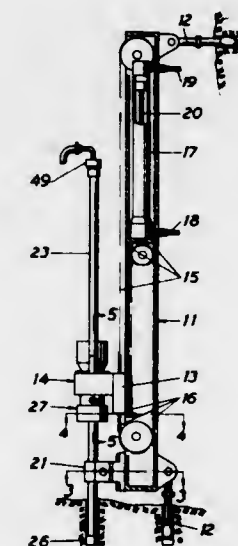


A ripper for disrupting hardpan, plowpan, compacted soil and the like, characterized by the utilization of a plurality of fluid-cooled, hardpan ripper chisels, mounted on a horizontally displaceable support, a prime mover, including a power plant mounted on a transport vehicle, and tackle interconnecting the prime mover with the support; a feature

of the invention being the employment of a power driven winch operatively coupled, through an assemblage of cables and sheaves with the support in a manner such that, as the winch is driven by the power plant, the support is drawn toward the winch for thereby causing the chisels to penetrate the work area as a closing between the support and the winch is achieved.

3,613,804
DRILLING APPARATUS FOR ROTARY DRILLING
Nils Gunnar Jonsson, Jakobsberg, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 18, 1969, Ser. No. 859,024
Claims priority, application Sweden, Oct. 4, 1968, Dec. 4, 1968, 13476/68; 13476/68
Int. Cl. E21c 1/10
U.S. Cl. 173-149

8 Claims



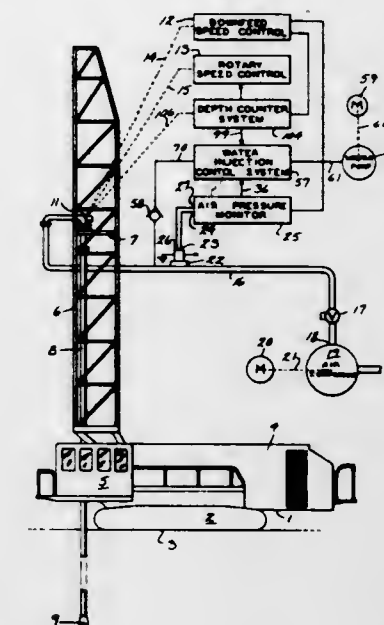
A rock drilling apparatus for rotary drilling has a chuck which is axially movable by means of a double-acting pressure fluid actuated feed motor. It has also a stationary chuck. The movable chuck grips a drill string when supplied with pressure fluid; the stationary chuck grips the drill string when relieved of pressure fluid. During inserting or withdrawing of the drill string, the supply conduits of the chucks are connected to either of the supply conduits of the feed motor so that, automatically, the chucks operate concordantly with the feed motor.

3,613,805
AUTOMATIC CONTROL FOR ROTARY DRILL
Jon R. Lindstad, South Milwaukee, and Thomas A. Stoner, Brookfield, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.
Filed Sept. 3, 1969, Ser. No. 854,963
Int. Cl. E21b 3/02; E21c 1/10
U.S. Cl. 175-27

7 Claims

An automatic blasthole drill, in addition to rotary and downfeed speed controls, has an automatic depth control to effect collaring and automatic hoist when desired depth is reached, an automatic water injection system responsive to the depth control and air pressure devices to control the amount and turnoff of water injection, and air-pressure-responsive protective devices to vary water injection and to trigger automatic shut down. The circuits and devices for

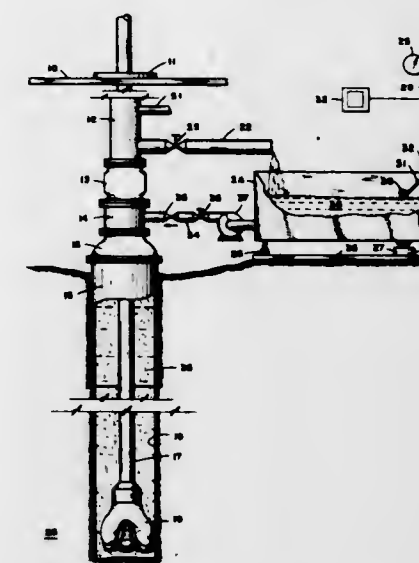
effecting the mentioned controls are disclosed in detail. A compounding application incorporated by reference discloses a



downfeed speed and force control responsive to rotary torque.

3,613,806
DRILLING MUD SYSTEM
Raymond A. Malott, Fullerton, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 27, 1970, Ser. No. 23,125
Int. Cl. E21b 35/00, 41/00
U.S. Cl. 175-48

6 Claims



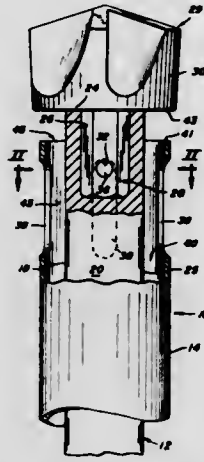
Apparatus for monitoring and maintaining the hydrostatic head of a column of drilling mud in a well bore substantially constant as pipe is pulled from or run into the hole in well-drilling operations. A mud tank is provided with weighing means to measure the weight of fluid in the tank and connected by suitable conduits to the well bore so that all fluid flowing into or out of the well bore passes through the tank.

3,613,807
DRILL ROD WITH DUST-COLLECTING MEANS
Alex J. Galka, Heatherbrae Square, Apt. 101, Indiana, Pa.
Filed Aug. 14, 1969, Ser. No. 850,080
Int. Cl. E21b 21/00; E21c 7/00
U.S. Cl. 175-209

6 Claims

A drill rod for use in rotary percussion drilling includes an elongated inner solid core member and an outer tubular member positioned coaxially around the inner core member.

The outer tubular member is spaced from the core member to provide a passageway therebetween for the flow of dust and drill cuttings therethrough. The outer tubular member has a plurality of longitudinal ports adjacent the bit through which the dust and cuttings enter the passageway. The bit is

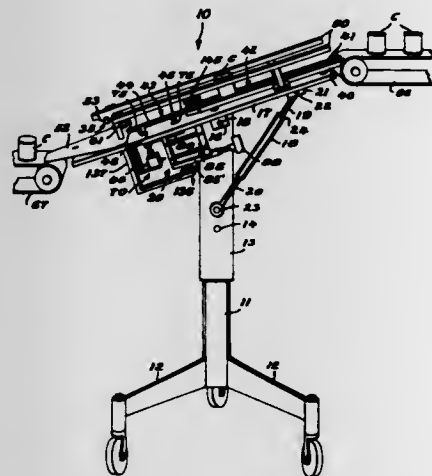


supported by the inner core member in a recessed axial bit-shank-receiving portion and the percussive and torsional forces are transmitted to the drill bit through the inner core member.

3,613,808
ARTICLE-SORTING APPARATUS WITH TRANSFER-ERROR-REDUCING ARRANGEMENT
Philip R. Bunnelle, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 18, 1968, Ser. No. 784,774
Int. Cl. G01g 13/00

U.S. Cl. 177-53

3 Claims



An arrangement for reducing weighting inaccuracies in article-sorting apparatus caused by the advancement of continuously moving articles to be weighed onto the weighing platform of a check weighing apparatus. The arrangement employs suitable lockup means, such as a fluid-activated device, that holds or locks the weighing platform in the raised position until the error-producing activity of the continuously moving article advancing onto the weighing platform has subsided. The lockup means releases the weighing platform during the weighing operation so that the platform is freely deflectable during the weighing operation.

3,613,809
SKI LEG FOR A SNOWMOBILE-TYPE VEHICLE
Guy-Noel Chaumont, 138 rue Gaulin, Princeville, Quebec, Canada

Filed June 17, 1969, Ser. No. 834,103

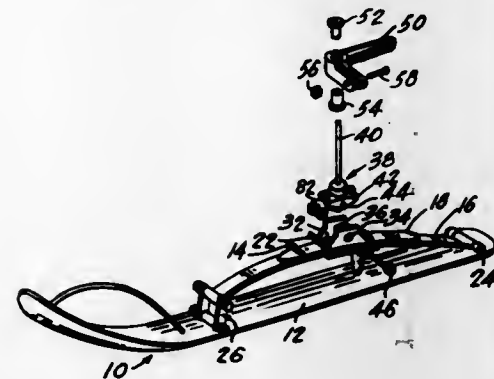
Int. Cl. B62d

U.S. Cl. 180-5 R

3 Claims

The present invention relates to the construction of the ski leg used on a snowmobile type vehicle for supporting the ski

structure which is used to steer the vehicle. The improvement consists in providing to the ordinary ski leg a

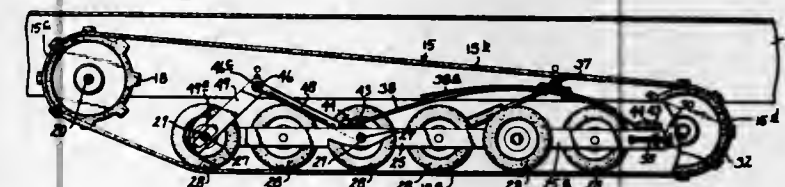


member which limits the longitudinal swing of the ski structure when the vehicle, travelling at relatively high speed, is jolted into a free-in-air position.

3,613,810
SUSPENSION SYSTEM FOR TRACKED VEHICLES
Donnelly L. Hetteen, and Gerald D. Reese, both of Roseau, Minn., assignors to Textron Inc., Providence, R.I.
Filed July 24, 1969, Ser. No. 844,316
Int. Cl. B62d 27/02

U.S. Cl. 180-5 R

6 Claims



A suspension system for a tracked vehicle including a unitary suspension frame with track wheels mounted thereon for engagement with the lower run of the drive track. Idler means mounted on the rear end of the suspension frame support the rear end of the drive track. Spring means are provided to support the vehicle body on the suspension frame. The spring means are connected such that a predetermined amount of longitudinal relative movement is permitted between the suspension frame and the body. A rearwardly and downwardly sloping control arm is pivotally connected between the body and the front end of the suspension frame so that the forwardly located track wheels are forced downwardly by the control arm when the suspension frame moves forwardly with respect to the body.

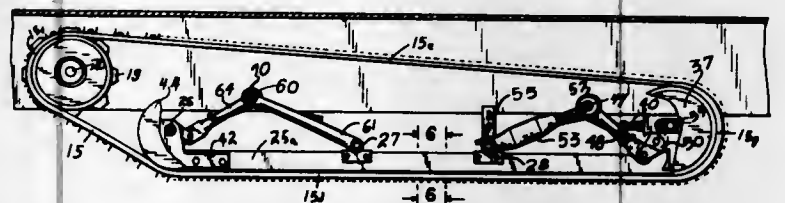
3,613,811
TRACKED VEHICLE SUSPENSION SYSTEM
Ronald I. Brandt; Lawrence E. Klema, and Gerald D. Reese, all of Roseau, Minn., assignors to Textron Inc., Providence, R.I.

Filed July 30, 1969, Ser. No. 846,153

Int. Cl. B62m 27/02

U.S. Cl. 180-5

8 Claims



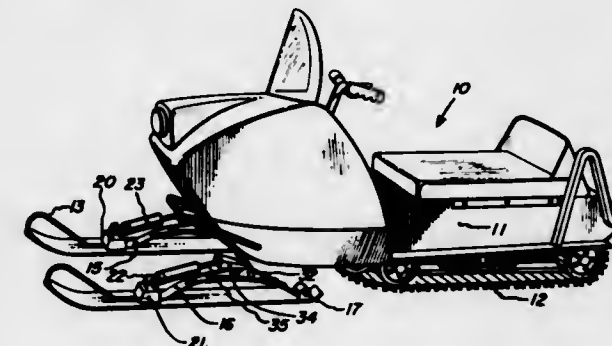
A suspension system for a tracked vehicle is shown, having a unitary suspension frame including a pair of relatively flexible slide rails for engagement with the lower run of the drive track. Idler means mounted on the rear end of the frame support the rear end of the track. Front and rear pairs

of sloping support arms are pivotally connected to the body at their upper ends and are connected to the frame at their lower ends by pivotable link members that accommodate limited relative longitudinal movements between the frame and the body. Front and rear suspension spring means are mounted between the body and the frame. Rearwardly and downwardly sloping control arm means are pivotally connected between the body and the front end portion of the frame so that the pivotal movements thereof force the frame away from the body when the frame moves forwardly with respect to the body, thereby forcing the drive track into tighter engagement with the ground. The front pair of support arms limits the pivotal movements of the control arm means.

3,613,812
SHOCK MOUNTED SKIS FOR SNOWMOBILE
Edgar E. Hetteen, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.
Filed Dec. 22, 1969, Ser. No. 887,138
Int. Cl. B62b 13/12; B62m 27/02

U.S. Cl. 180-5 R

4 Claims

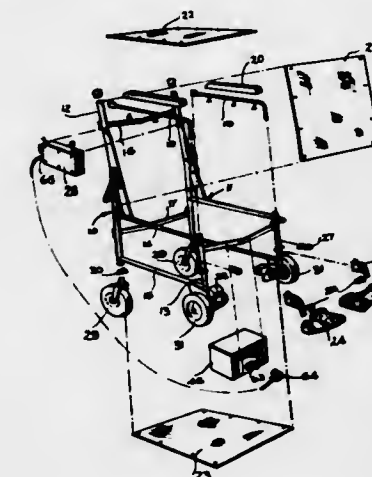


Each spindle forming a part of the steering mechanism of the snowmobile is connected to a ski through its spring mechanism and is also connected through a lever arm extending along the longitudinal axis of the ski by a shock absorber. The shock absorber is pivotally connected to the lever arm which is secured to the spindle at one end, and to the ski at the other end. The shock absorber resists any changes in substantially vertical and rotational motions of the ski with respect to the spindle. The ski is stabilized against sudden impulses by the dampening action of the shock absorber.

3,613,813
WHEELCHAIRS
Raymond G. Biddle, 29 Hillcrest Road, Romsley, Halesowen, in the county of Worcester, England
Filed May 16, 1969, Ser. No. 825,276
Claims priority, application Great Britain, May 16, 1968, 23,277/68
Int. Cl. B62d 11/04; B60k 7/00

U.S. Cl. 180-6.5

3 Claims



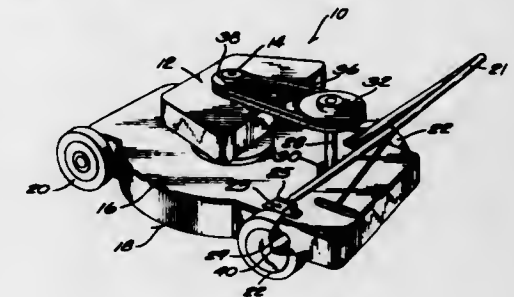
A motorized wheelchair which has a pair of driving wheels, an electric motor for driving each of the wheels, the wheels

being mounted on and supported by output shafts extending from the housings of the associated motors.

3,613,814
VARIABLE SPEED DRIVE FOR LAWN MOWER
Walter F. Prien, Jr., Woodhull, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 28, 1970, Ser. No. 32,644
Int. Cl. F16h 15/08; B62d 51/04

U.S. Cl. 180-19 H

8 Claims

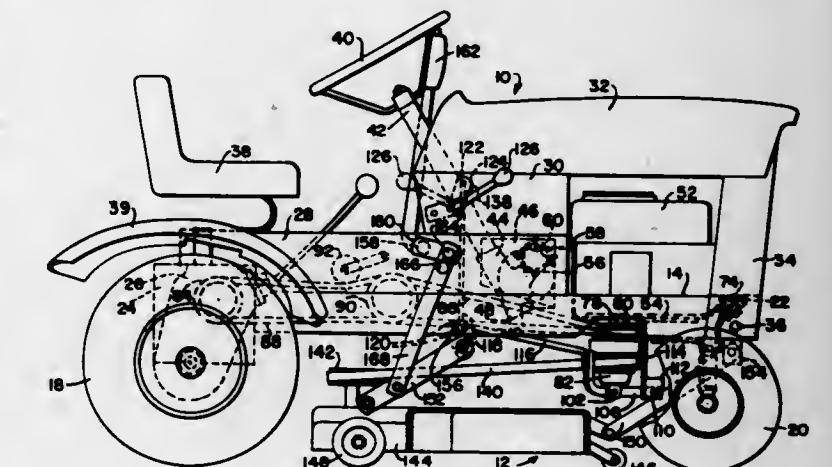


Disclosed herein is a self-propelled lawn mower with a combined clutch and variable speed drive controlled by the mower handle. The drive includes a vertical or intermediate shaft driven by the engine output shaft and a horizontal cross-shaft which is drivingly connected to the mower wheels. The vertical shaft is provided with a friction drive wheel and the horizontal shaft is provided with a friction disc. Power is transferred from the vertical shaft to the horizontal shaft by an idler wheel which is supported on the horizontal shaft for movement in a radial direction with respect to the axis of the horizontal shaft and the friction disc. The position of the idler wheel is controlled by the mower handle through a link or rod. Forward movement of the mower handle causes the idler to float axially of the horizontal shaft into engagement with the friction disc and friction roller. Further forward movement of the mower handle causes radial movement of the idler toward the center of the friction disc to vary the drive ratio and change the rate of rotation of the mower wheels. Release of the mower handle causes disengagement of the drive.

3,613,815
TRACTOR AND IMPLEMENT ASSEMBLY
John Gary Meylink, and Robert James Bishop, both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.
Filed Sept. 9, 1969, Ser. No. 856,926
Int. Cl. B60k 25/02

U.S. Cl. 180-53

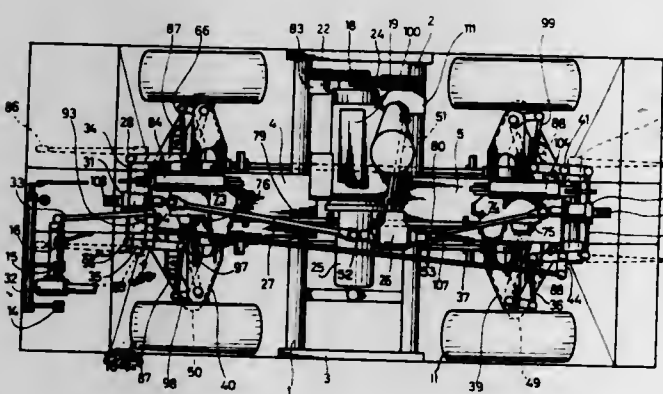
7 Claims



A tractor and driven implement assembly in which the tractor has a vertical crankshaft engine carried by an engine support frame. The support frame is carried on the tractor main frame by resilient mounts which isolate engine vibrations from the main frame. The engine crankshaft extends below the support frame and carries a pair of sheaves which are operatively connected to the tractor transmission and driven implement by endless flexible belts. The upper

sheave is fixed to the crankshaft for rotation therewith, and the lower sheave is rotatably mounted on the crankshaft and is axially shiftable into selective engagement with the upper sheave for selective rotation therewith. An actuating lever is connected to a horizontal pivot carried by a bracket depending from the engine support frame and is operatively connected to the lower sheave to vertically shift the same into selective engagement with the upper sheave. A stationary brake member for the lower sheave also depends from the engine support frame and engages the lower sheave when the lower sheave is lowered from engagement with the upper sheave.

3,613,816
SELF-PROPELLED MULTIPURPOSE VEHICLE
 Walter Gutbrod, 6601 Bubingen, Saar, Germany
 Filed Oct. 7, 1968, Ser. No. 765,454
 Claims priority, application Germany, Oct. 25, 1967, G 51431
 Int. Cl. B60k 17/28
 U.S. Cl. 180—53 11 Claims



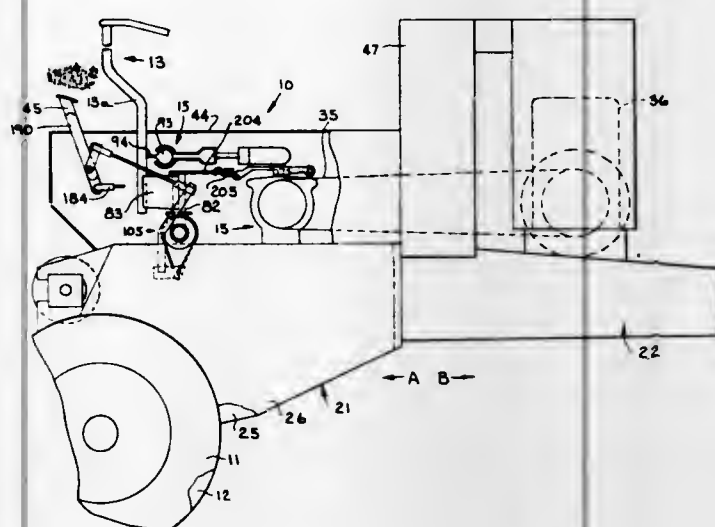
This invention relates to multipurpose, self-propelled utility vehicles of the two axle type comprising a chassis, a driving mechanism unit disposed transversely to the vehicle's longitudinal axis and mounted on said chassis intermediate the two wheel axles, wherein said mechanism comprises a fuel-burning engine and a gear shift drive or transmission disposed within a troughlike cruciform frame, and power takeoff and hoist means projecting from substantially the center of said chassis along the longitudinal axis of said vehicle, and selectively operable by V-belt pulley members.

The purpose of the above abstract is to provide a nonlegal technical statement adapted to serve as a searching-scanning tool for scientists, engineers and researchers. Accordingly, this abstract is not intended to limit the scope of the invention, hereinafter described in detail, nor is it intended to be used in interpreting or in any way limiting the scope or fair meaning of the claims appended hereto.

3,613,817
LINKAGE MECHANISM ACTUATING HYDROSTATIC TRANSMISSIONS SEPARATELY DRIVING THE FRONT WHEELS OF A TRACTOR
 Emmett F. Glass, Akron, and Bruce D. Schwalm, Leola, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
 Filed Oct. 28, 1969, Ser. No. 871,846
 Int. Cl. B62d 11/04
 U.S. Cl. 180—6.48 12 Claims

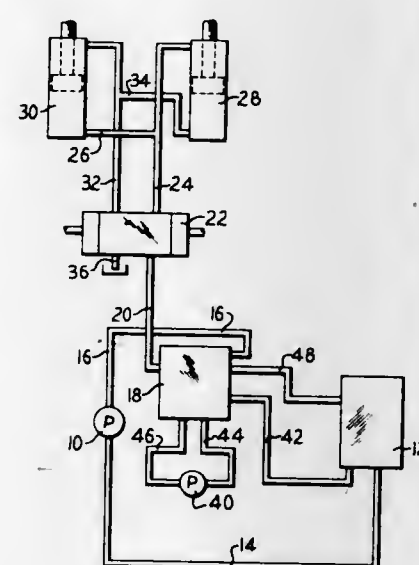
A linkage mechanism actuates two hydrostatic transmissions separately driving the two front wheels of a tractor and has a spring-biased operating lever pivotally and rotatably mounted on the main frame and two links connected between a single-bearing ball on the lever to separate bearing balls on respective pintle arms of the hydraulic transmission pumps. The lever and links actuate the pintle arms over forward and reverse. Releasable holding means retain the lever at any given forward drive position and, on release, the spring bias returns the lever to neutral as braking is applied to the driving hydraulic motors. Pivotally

mounted neutral stop arms prevent the pintle arms from moving from forward to reverse drive and are raised clear of



the pintle arms by a pedal pivotally coupled to the neutral stop arms to permit reverse movement.

3,613,818
EMERGENCY SUPPLY SYSTEM FOR VEHICLE HYDRAULIC COMPONENTS
 George Schubert, Aurora; Lloyd D. Swayze, Yorkville, and John B. Waggoner, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
 Filed Sept. 4, 1969, Ser. No. 855,343
 Int. Cl. B62d 5/06
 U.S. Cl. 180—79.2 R 7 Claims

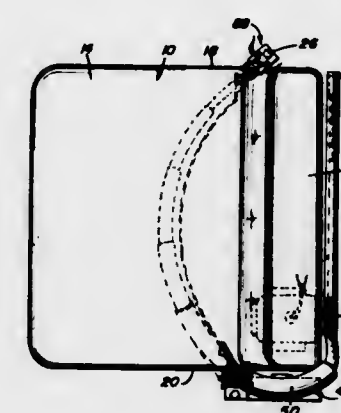


An emergency supply of fluid under pressure to the hydraulic system of a vehicle with a normal supply derived from a primary source of pressure such as an engine-driven pump. Pressure for the emergency system is derived from a secondary source or wheel-driven pump to insure a supply upon engine failure and whenever the vehicle is in motion. Flow from the emergency system supplements or replaces that in the normal system whenever the normal system flow falls below a predetermined value. Automatic valves also prevent flow from either system toward an idle pump or rupture in the other system.

3,613,819
RETRACTABLE SEATBELT ASSEMBLY
 Walter H. Maloney, 520 Ascot Ridge, Rock Hill, S.C.
 Filed Mar. 20, 1970, Ser. No. 21,234
 Int. Cl. B60r 21/10
 U.S. Cl. 180—82 9 Claims

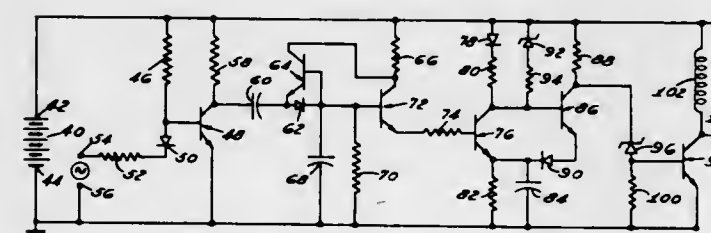
An elongated arcuate support structure composed of telescopically engaged short arcuate tubular sections

extendible and retractable relative to each other between retracted positions disposed at one side of an associated vehicle seat structure and extended positions extending across the associated seat structure in the manner of a seatbelt structure. A drive assembly is provided for extending and retracting the elongated support structure and the drive assembly includes a control assembly for automatically actuating the drive assembly to extend and retract the support structure each time an associated vehicle ignition switch is turned on and also when the ignition switch is turned off. A spring reel mounted retractable seatbelt assembly is disposed alongside the support structure and the extendible end of the latter includes a clamp releasably frictionally engageable with the extendible end of the seatbelt



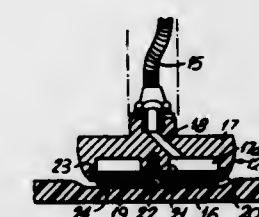
for protracting the latter upon extension of the support structure and retracting the seatbelt upon retraction of the support structure. However, an anchor assembly is supported adjacent the other side of the associated seat structure and includes a clamp structure operable to automatically anchor the retractable end of the seatbelt when initially advanced there toward whereby the seatbelt will be securely anchored and subsequent retraction of the support assembly will be accomplished independent of retraction of the seatbelt. The anchor assembly further includes means whereby the next protraction of the support structure to its extended position will automatically release the protracted end of the seatbelt for retraction together with the support structure upon its next subsequent retraction.

3,613,820
ELECTRONIC CIRCUITRY FOR VEHICLE SPEED RESPONSIVE SYSTEM
 Michael Bozolan, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed Aug. 28, 1969, Ser. No. 853,905
 Int. Cl. B60k 31/00
 U.S. Cl. 180—105 4 Claims



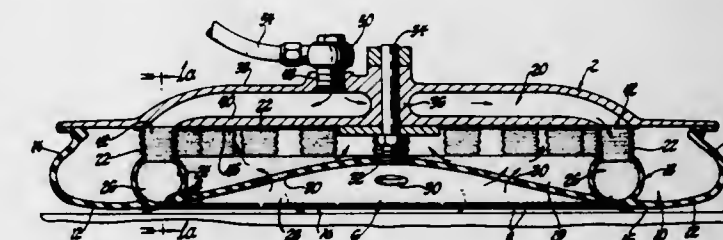
Electronic circuitry coupled to an alternating signal generator driven by a vehicle wheel converts the alternating signal into a voltage that is proportional to vehicle speed. When the voltage reaches a predetermined value, the circuitry produces a signal that actuates an item of vehicle equipment. A voltage reference diode compensates the electronic circuitry for variations in the voltage provided by the vehicle energy source to produce a system having an accuracy of about 2 percent over a vehicle speed range up to 100 m.p.h. and with source voltage variations of 10-20 volts. Other diodes compensate the circuitry for temperature variations.

3,613,821
LOAD-SUPPORTING DEVICE
 John Kerr, Cambuslang, Glasgow, Scotland, and Ian Lasbrey, Belfast, Northern Ireland, assignors to National Research Development Corporation, London, England
 Filed Feb. 27, 1969, Ser. No. 802,840
 Claims priority, application Great Britain, Mar. 2, 1968, 10268/68
 Int. Cl. B60v 1/00
 U.S. Cl. 180—125 9 Claims



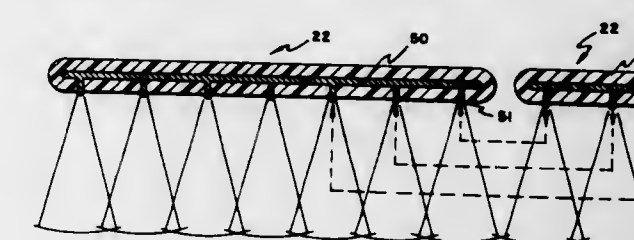
A load-supporting device comprising at least one air cushion lifting pad in combination with a compliant ground-effect surface provided by elastomeric material, and means for supplying pressurized fluid to each pad to form a fluid cushion between each pad and the compliant surface.

3,613,822
COMBINED PLENUM CHAMBER AND JET CURTAIN AIR CUSHION DEVICE
 Harry A. Mackie, Raleigh, N.C., and Howard R. Ross, Grosse Pointe Woods, Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.
 Filed Aug. 22, 1969, Ser. No. 852,286
 Int. Cl. B60v 1/02, 1/16
 U.S. Cl. 180—128 12 Claims



An air cushion device including a rigid base with means in the form of a flexible diaphragm defining a plenum chamber beneath the base for confining a first cushion of air to support the device above a surface at heights within a first range when relatively low-pressure, superatmospheric air is supplied to the plenum chamber; and nozzle means for providing a jet curtain of high-pressure air operable to confine a second cushion of air to support the device above the surface at heights within a second range greater than the first range of heights when relatively high-pressure air is supplied to the nozzles.

3,613,823
DOUBLE-BUBBLE SPARK ARRAY
 Eric C. Burrage, Pearland, Tex., assignor to Shell Oil Company, New York, N.Y.
 Filed June 30, 1969, Ser. No. 837,797
 Int. Cl. G01v 1/00
 U.S. Cl. 181—0.5 6 Claims



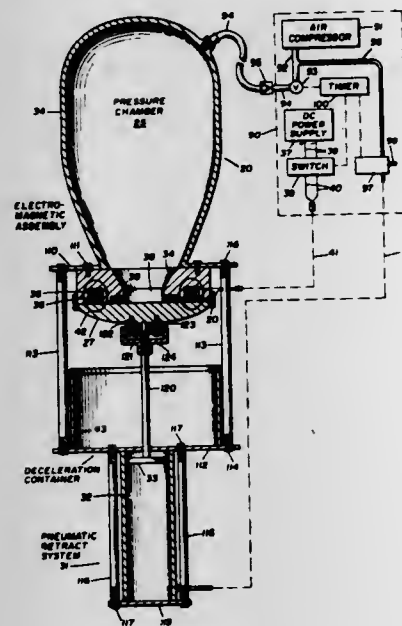
A spark-type seismic sound source for use in water.

covered areas wherein electrical power is discharged through a plurality of electrodes without the use of a ground plate.

3,613,824
PNEUMATIC ACOUSTIC SOURCE EMPLOYING ELECTROMAGNETICALLY CONTROLLED VALVE
 George B. Loper, Duncanville, Tex., assignor to Mobil Oil Corporation
 Continuation-in-part of application Ser. No. 663,800, Aug. 28, 1967, now Patent No. 3,506,085, dated Apr. 14, 1970.
 This application Jan. 27, 1970, Ser. No. 6,092
 Int. Cl. G01v 1/02

U.S. Cl. 181-5

4 Claims



The specification discloses an acoustic source having a chamber for receiving gas. A valve is provided for confining gas under pressure in the chamber. An electromagnet is employed for holding the valve in its closed position and for releasing the valve to release the pressurized gas from the chamber by way of a port extending through the electromagnet. In the valve's closed position, a seal is formed between the two opposing surfaces of the electromagnet and the valve around the port and spaced inwardly from the outer boundaries of the two surfaces. In the preferred embodiment, a cylindrical member is supported to extend from the electromagnet and to surround the valve when it is in its closed position. A clearance exists between the outer periphery of the valve and the inside diameter of the cylinder whereby there is a lack of fluid seal formed between the cylinder and the valve.

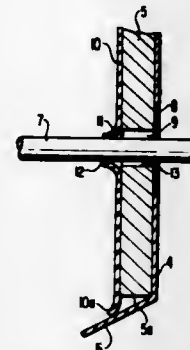
3,613,825
SOUND-ABSORBING COATING FOR THE PARTITION WALL OF A MOTOR VEHICLE
 Rolf Maier, Sladefingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
 Filed Mar. 25, 1970, Ser. No. 22,485
 Claims priority, application Germany, Mar. 28, 1969, P 19 16 097.5
 Int. Cl. G10k 11/04

U.S. Cl. 181-33 G

8 Claims

A sound-absorbing coating for the partition wall of a motor vehicle in which the partition wall and coating are provided with substantially aligned openings for the passage therethrough of a part such as a cable, a pipe, a linkage or

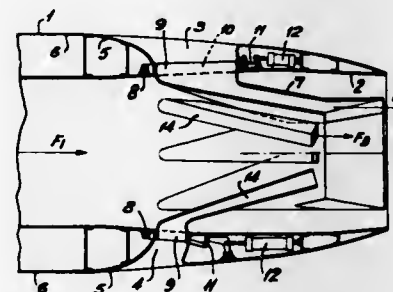
the like; the coating is provided on the surface opposite the partition wall with an elastic cover which closes off the



opening in the coating; an opening in the cover is elastically expanded when the part is extended through the same.

3,613,826
SYSTEM FOR REDUCING NOISE CAUSED BY A STREAM OF FLUID
 Andre Emile Roger Cabassut, Versailles, Yvelines, France, assignor to Bertin & Cie, Allee Gabriel-Voisin, Plaisir, Yvelines, France
 Filed June 25, 1970, Ser. No. 49,857
 Claims priority, application France, June 30, 1969, 69 21 997
 Int. Cl. B64d 33/06
 U.S. Cl. 181-33 HC

9 Claims



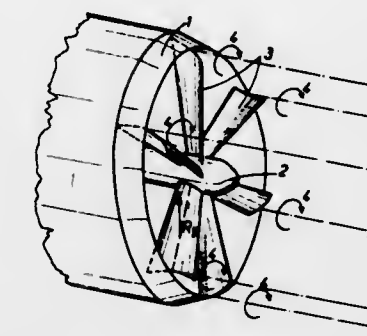
A system for reducing noise caused by a stream of fluid comprises a fluid ejection conduit comprising two series of ambient fluid intake vents distributed around its periphery; and

Two series of orientatable tubular elements respectively connected to the said vents and arranged to occupy two positions, namely a retracted position in which they are folded back adjacent the inner wall of the conduit and form along the latter a substantially continuous ring bounding a continuous passage for the stream of fluid, and a noise-attenuating position in which the said tubular elements extend obliquely rearwardly and towards the axis of the conduit, the elements of the first series abutting one another at their free end in the noise-attenuating position so as to form a substantially continuous outlet ring for the ambient fluid, while the elements of the second series in the noise-attenuating position lead into the conduit at different distances from the axis of the latter as compared to the distances of the conduits of the other series in the noise-attenuating position.

3,613,827
DEVICE FOR ATTENUATING NOISE EMITTED BY THE JET OF A JET ENGINE
 Andre Labussiere, Fontenay-le-Fleury, France, assignor to Avions Marcel Dassault, Vaucresson, France
 Filed July 8, 1970, Ser. No. 53,224
 Claims priority, application France, July 16, 1969, 69 24196
 Int. Cl. F01n 1/08; B64d 33/06
 U.S. Cl. 181-33 HC

The noise emitted by the jet of a jet engine is suppressed or

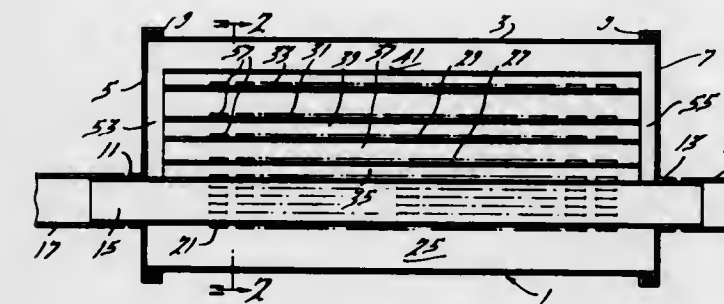
in any event attenuated by a blading fitted in the exit section of the jet engine nozzle and designed with a lift-producing



profile adapted, by virtue of said lift, to create a series of tip vortices level with and at the periphery of the blading.

3,613,828
MULTILOUVER ROUGHNESS SILENCER
 Bert DuBois, Brooklyn, Mich., assignor to Tenneco Inc., Racine, Wis.
 Filed July 27, 1970, Ser. No. 58,394
 Int. Cl. F01n 1/04, 1/10
 U.S. Cl. 181-48

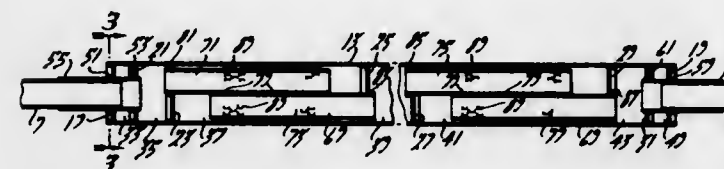
5 Claims



A muffler has a sinuous louvered partition extending longitudinally of the casing and alongside a straight-through gas flow tube to provide a series of expansion chambers that are in parallel with the gas flow through the muffler.

3,613,829
DOUBLE TRIFLOW MUFFLER
 Charles L. Palmer, Munith, Mich., assignor to Tenneco Inc., Racine, Wis.
 Filed Aug. 26, 1970, Ser. No. 67,062
 Int. Cl. F01n 1/08, 7/18
 U.S. Cl. 181-53

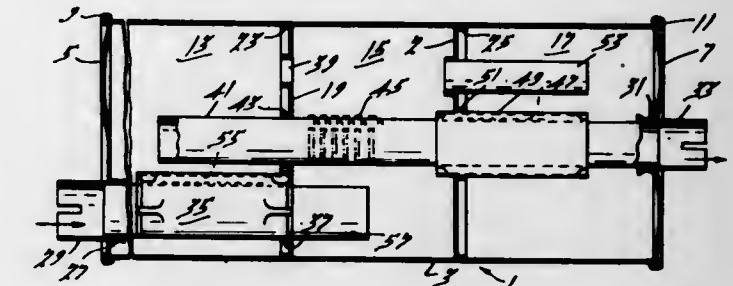
6 Claims



An exhaust muffler for external side mounting on sports cars comprises an elongated tubular housing having internal partitions which carry two pairs of overlapping perforated gas flow tubes separated by a central expansion chamber to provide a series arranged, double triflow pattern for gas flow and sound silencing.

3,613,830
ONE-PIECE TUBE AND SHELL ASSEMBLY FOR SILENCER
 Franklin R. Hubbell, III, Brooklyn, Mich., assignor to Walker Manufacturing Company, Racine, Wis.
 Filed July 18, 1969, Ser. No. 843,100
 Int. Cl. F01n 1/02, 7/18; B21d 53/06
 U.S. Cl. 181-54

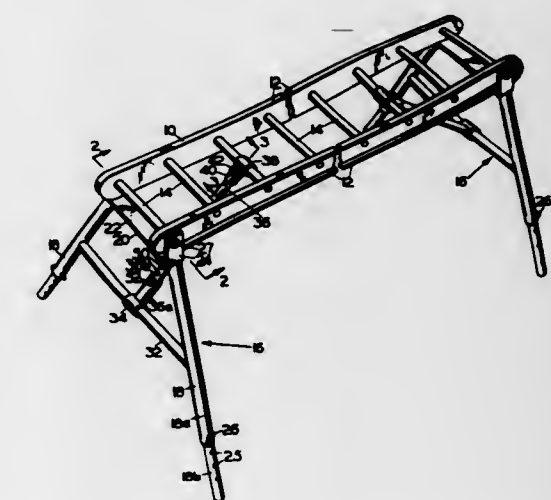
12 Claims



A T-shaped blank is rolled into telescoped inner and outer tubes to form a tube-and-shell assembly of a type that may be used in exhaust mufflers for internal-combustion engines as a split chamber and gas flow tube or as a pair of tuning tubes.

3,613,831
LADDER SCAFFOLD
 Everett C. Estep, 313 N.E. 99th St., Vancouver, Wash.
 Filed Oct. 27, 1969, Ser. No. 869,614
 Int. Cl. E04g 1/00; E06c 7/42
 U.S. Cl. 182-27

3 Claims



A scaffold is provided which employs as its platform portion a conventional straight-type ladder. The invention includes a pair of end leg assemblies each having a channel-shaped upper head portion for receiving end portions of the ladder therein and for connecting the leg assemblies to the ladder. The leg assemblies have a reinforcing crosspiece from which a strut angularly extends. Such struts have clamps at their free end for releasably engaging rungs of the ladder for holding the leg assemblies in fixed position relative to the ladder.

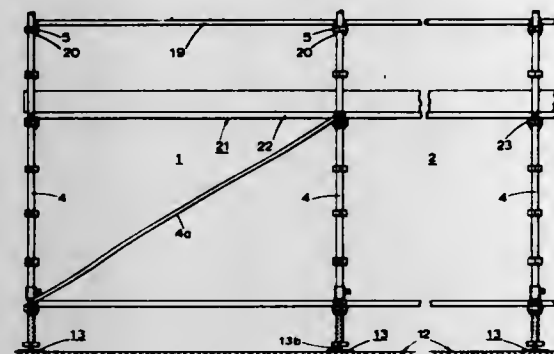
3,613,832
SCAFFOLDING
 Frederick H. Dunster, London, England, assignor to Big Ben Scaffolding Limited, London, England
 Filed Feb. 9, 1970, Ser. No. 9,662
 Int. Cl. E04g 1/08

U.S. Cl. 182-179

6 Claims

This invention relates in general to scaffolding and like structures and is particularly concerned with a unit scaffolding framework. The invention provides a unit scaffolding framework with four vertical tubular standards. Clamps are spaced along the standards. Each clamp has two shaped members held together against resilient opposition by a bolt passing through the standard to which the clamp is

attached. Baseplates are adjustably mounted in relation to the lower ends of respective standards. A horizontal ledger is connected with two of the standards by the clamps. A diagonal bracing tube is connected with two of the standards so as to lie in a plane parallel to a wall or a site of a wall to be



built. A cross-bracing tube is connected with two of the standards so as to lie in a plane transverse to the wall or wall site. A horizontal transom of inverted T-cross section is connected with two of the standards so as to lie perpendicularly to the wall or wall site. A further horizontal transom of inverted T-cross section is similarly connected with the other two of the standards. Horizontal platform boards are laid on, and extending between, the two transoms to form platforms for workmen.

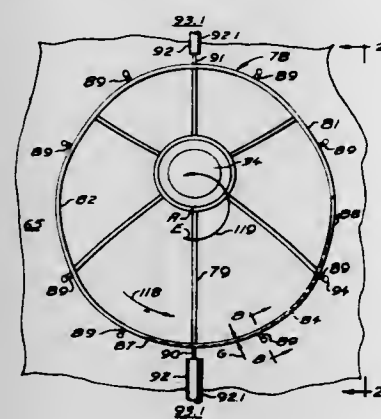
3,613,833 INTERNAL COMBUSTION ENGINE LUBRICATION MEANS

Leopold W. Llewellyn, Burnaby, British Columbia, Canada, assignor to Kal-Pac Engineering Ltd., Vancouver, British Columbia, Canada

Filed July 18, 1969, Ser. No. 843,105
Claims priority, application Great Britain, July 24, 1968, 35213/68

Int. Cl. F01m 9/06; F16n 7/36
U.S. Cl. 184-6 N

5 Claims



A lubrication system for small high-speed internal combustion engines including a crankshaft and an oil reservoir. Wick feed is used to convey oil to a grooved rotor picking up the oil and discharging it by centrifugal force through passages leading to lubrication points.

3,613,834 ELEVATOR LIFT

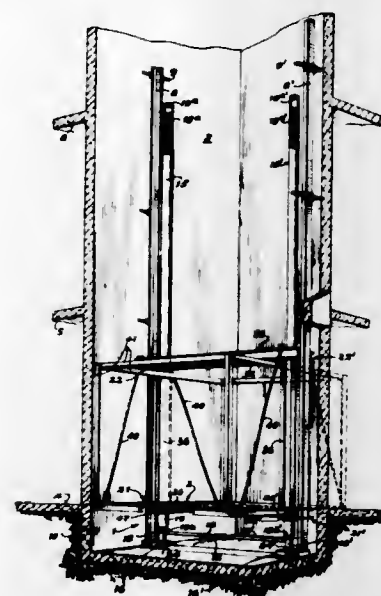
Frank Howard Field, 133 E. Virginia Blvd., Jamestown, N.Y.
Filed Aug. 28, 1969, Ser. No. 853,748
Int. Cl. B66b 11/04

U.S. Cl. 187-17

6 Claims

A pair of lifting cylinders are arranged laterally of an elevator car to be lifted thereby; each of the cylinders comprising a stationary piston and an extensible plunger cylinder slidably carried thereon. The elevator car is supportably positioned below the upper end of the plunger cylinder for vertical movement therewith so as to permit the length of that portion of the lifting cylinder which projects

above the car to be varied in accordance with height through which the car is to be lifted. The elevator car is provided with pairs of vertically spaced guide assemblies adapted to cooperate with a pair of guide rails extending vertically of the



intended path of elevator travel. Each plunger cylinder is received within one pair of guide assemblies for purposes of stabilizing the elevator car and provided with a ring member on which one of the assemblies is mounted for purposes of supporting the elevator car.

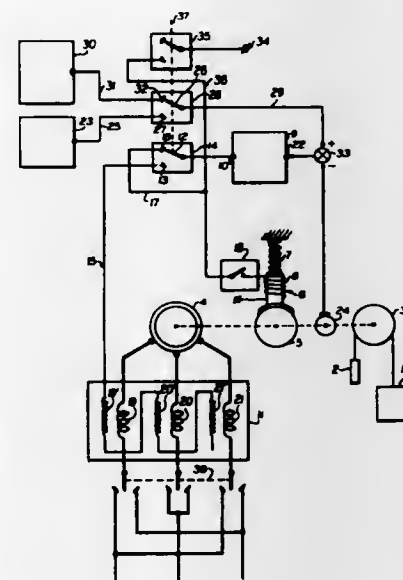
3,613,835 PROGRAMMED BRAKING FOR ELEVATORS AND THE LIKE

Raffaello Vizzotto, Milan, Italy, assignor to G. Falconi & C.S.p.A., Novara, Italy
Continuation-in-part of application Ser. No. 582,871, Sept. 29, 1966. This application Oct. 2, 1969, Ser. No. 863,186

U.S. Cl. 187-29 R

Int. Cl. B66b 1/32

20 Claims



An elevator includes a motor for accelerating a cab and a brake for decelerating it, the two being operated during mutually exclusive time intervals. The brake mechanism is biased to brake the cab and has an electrical winding to defeat the biasing spring. An amplifier is connected by means of a selector switch to control energization of the motor during acceleration and of the brake winding during deceleration. The input to the amplifier comes from a summing network which develops the difference between two control signals. One of the control signals comes from a tachometer generator and is proportional to the speed of the elevator car, while the other control signal comes from a brake program device or an acceleration program device. The program devices are designed to provide braking and

acceleration programs respectively which are functions of the distance of the elevator car from a particular floor. During deceleration the braking effort is smooth and continuous right up to the moment of dead stop.

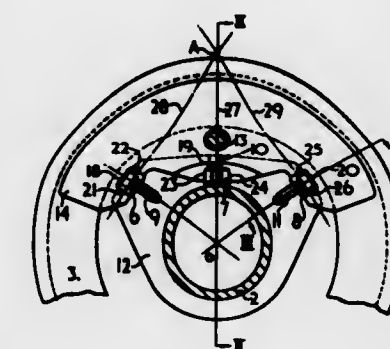
3,613,836 FRICTION ELEMENT ASSEMBLY SUPPORT AND ACTUATING MEANS FOR DISC BRAKES

Frederick Sidney Dowell, c/o Fort Dunlop, Erdington, Birmingham 24, England

Filed Oct. 15, 1969, Ser. No. 866,666
Claims priority, application Great Britain, Oct. 15, 1968, 48805/68

Int. Cl. F16d 55/224
U.S. Cl. 188-71.1

9 Claims



A disc brake in which the friction element assemblies, which are arranged to engage a minor proportion of the disc area, are guided into engagement with the disc on three pairs of guide members, each pair of guide members comprising a key and a corresponding keyway, the members of each pair being arranged to allow sliding movement in an axial brake applying direction and also a limited amount of radial movement relative to the axis of rotation of the disc, so allowing each friction element assembly to align itself in its own plane to compensate for inaccuracies in manufacture, the location of the keys and deformations and expansions occurring during braking, of which the following is a specification.

3,613,837 MECHANICAL BRAKE SYSTEM OF DISC-TYPE

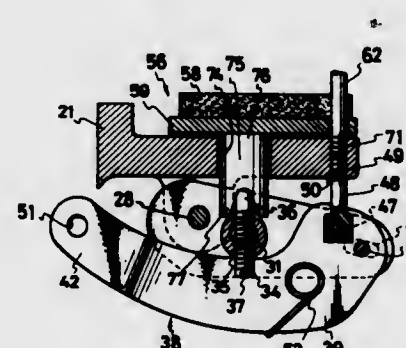
Kaoru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 11, 1969, Ser. No. 884,121
Claims priority, application Japan, Dec. 21, 1968, Dec. 27, 1968, 43/093884;44/000154

U.S. Cl. 188-72.9

Int. Cl. F16d 55/224

6 Claims



A mechanical brake system for use with a hydraulic disk-type brake device as a parking or emergency brake wherein the mechanical brake comprises a C-shaped caliper swingably mounted above the hydraulic disk brake, a pair of friction linings provided in the caliper on mutually opposite flat sides of the rotatable disk and adapted to engage therewith, a pair of lever plates pivotally mounted on the caliper, lining pressing means pivotally mounted on the lever plates and adapted to engage with one of the linings when the mechanical brake is applied independently of the hydraulic disk-type brake.

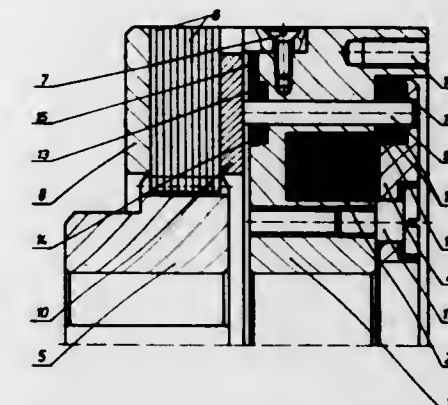
3,613,838 AUTOMATIC ADJUSTING DEVICE FOR CLUTCHES AND BRAKES

Karl-Heinz Pape, Kleinenbremen, Germany, assignor to Maschinenfabrik Hans Lanze KG, Borsingfeld Lippe, Germany

Filed Apr. 2, 1970, Ser. No. 25,084
Claims priority, application Germany, Apr. 21, 1969, P 19 20 127.5

Int. Cl. F16d 65/52, 13/75
U.S. Cl. 188-163

5 Claims



In an electromagnetic brake, clutch or the like, an automatic adjusting device compensating for the wear of the friction elements includes an armature arbitrarily movable towards and away from said friction elements; pressure bolts held in said armature and in an adjacent stationary member by unidirectionally locking spring elements so that the pressure bolts, adapted to exert a force on said friction elements through a pressure ring, are automatically moved with respect to said armature towards said friction elements by the amount of wear of the latter.

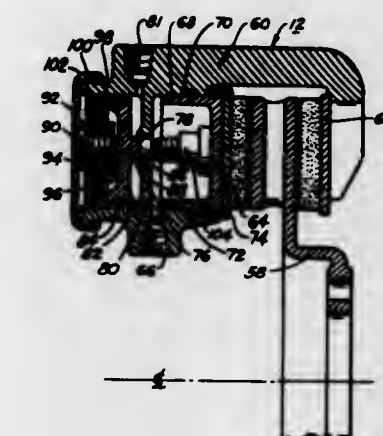
3,613,839 VEHICLE BRAKE SYSTEM

Stanley I. MacDuff, South Bend, Ind., assignor to The Bendix Corporation

Filed Dec. 31, 1968, Ser. No. 789,050
Int. Cl. F16d 65/24, 55/22

U.S. Cl. 188-170

10 Claims

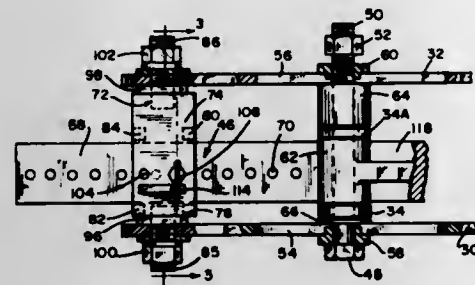


A disc brake is disclosed which includes a housing defining a bore therewithin which is divided into two compartments by an annular wall. A first piston is slidably mounted in one of the compartments and is adapted to urge a friction member against a rotor upon a brake application. A second piston is mounted in the other compartment. Resilient means yieldably urge the second piston into engagement with the first piston and thereafter urge the first and second piston as a unit toward the rotor. The resilient means is normally opposed by fluid pressure to permit the first piston to apply the brakes of the vehicle when the latter is in motion and the vehicle hydraulic system is functioning normally.

3,613,840
QUICK SLACK ADJUSTER FOR LOCOMOTIVE BRAKES
 Roy Henry Touchstone, P. O. Box 2003, Jackson, Tenn.
 Filed Apr. 10, 1969, Ser. No. 815,062
 Int. Cl. F16d 65/44

U.S. Cl. 188—197

5 Claims



A brake adjustment device for locomotives wherein slack in the brake mechanism may be quickly and easily adjusted, and the brakeshoes may be quickly removed and replaced when they have become sufficiently worn, or are otherwise damaged or in need of repair. The adjustment device includes an apertured slide bar connected with a brake lever and extending through a trunnion carried by the pull rods whereby the brake may be quickly adjusted by pulling the slide bar through the trunnion and securing the bar in the proper position by inserting a keeper pin through the slide bar and trunnion. In addition, the slide bar device facilitates release of the brake lever to provide for a quick clearance between the brakeshoe and wheel, thus reducing the time required for the replacement of worn brakeshoes.

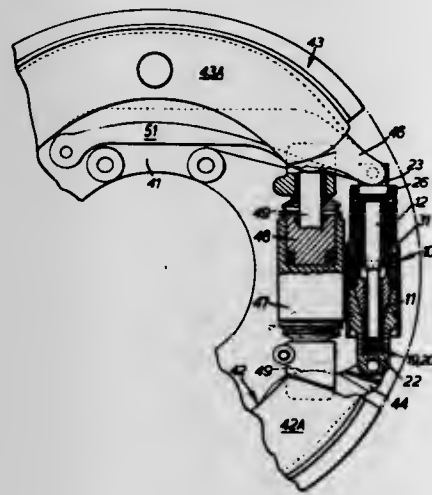
3,613,841
LOCKING MEANS FOR VEHICLE WHEEL BRAKES
 Charles Newstead, Tyseley, England, assignor to Girling Limited

Filed Apr. 13, 1970, Ser. No. 27,873
 Claims priority, application Great Britain, Apr. 11, 1969, 18,764/69

Int. Cl. F16d 51/00

U.S. Cl. 188—265

6 Claims



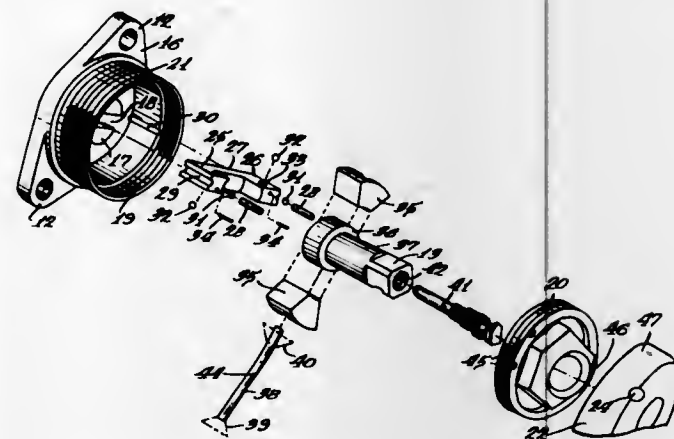
A drum brake of the type having carriers which transmit thrust from a wheel cylinder to the brake shoes is provided with a locking unit comprising a telescopic strut connected between the carrier and lockable in an extended condition to prevent shoe retraction. Overloading of the strut is prevented by a resilient overload device acting in series with the strut, and a pivoted lever operated by the wheel cylinder makes it possible to relieve the locked strut of the load transmitted by the overload device, thereby facilitating unlocking of the strut.

3,613,842
HYDRAULIC ARCUATELY OSCILLATING SHOCK ABSORBER

Peter Buciak, 2144 W. Superior St., Chicago, Ill.
 Filed Aug. 11, 1969, Ser. No. 848,917
 Int. Cl. F16d 57/02

U.S. Cl. 188—306

3 Claims



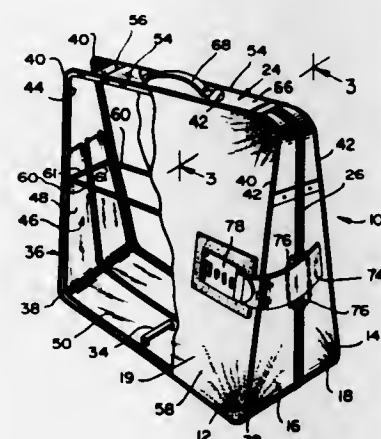
A hydraulic shock absorber for automobiles having improved method and means for constructing the base or chamber of the device and its association with a pair of fixed radially disposed arms containing at least one or an opposed pair of ball check valves, and to improved methods and means for making rotary wing shafts supporting impeller wings for disposition between said fixed arms.

3,613,843
CENTER FOLDED TRAVEL BAG
 Michael Davis, Little Neck, N.Y., assignor to Mayfab, Inc., Brooklyn, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,754
 Int. Cl. A45c 13/36

U.S. Cl. 190—50

11 Claims



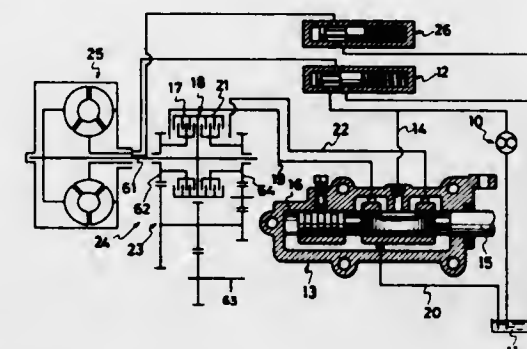
A center-folded twin compartment travel bag is provided for carrying full-length garments such as suits and dresses. A slide fastener detachably joins the compartments around registered open mouths thereof and when opened exposes the interior of the bag so that unfolded suits and dresses may be suspended by a centrally located transverse support. In its open position, the bag may be hung from an end to serve as a portable, semienclosed wardrobe. Each compartment includes a soft base panel whose edges are secured to a rectangular wire frame. When the slide fastener closes the bag, the wire frames are in a sawhorse (opposed diverging) configuration with a top slat joining the parallel upper reaches of each frame. The slat terminates short of both ends of each reach.

3,613,844
FORWARD-REVERSE AND BRAKE CONTROL VALVE
 Tadao Asano, Kariya; Hiroji Yamaguchi, Kariya, and Kazuo Ishikawa, Hoi gun, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 25, 1969, Ser. No. 879,675
 Claims priority, application Japan, Nov. 30, 1968, 43/87854
 Int. Cl. F16d 67/04

U.S. Cl. 192—4 C

9 Claims



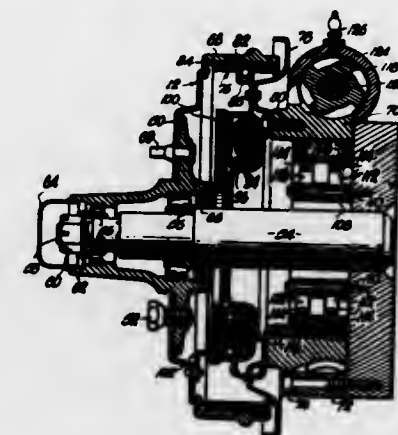
A transmission control device for use on a self-propelled vehicle such as an industrial lift truck wherein a changeover valve connected both to a manually shiftable lever and to a brake pedal is rotatable and axially shiftable thereby so as to have clutch means communicate with or cutoff from a source of pressurized fluid.

3,613,845
CLUTCH OR BRAKE WITH ELECTRIC PILOT CLUTCH
 William L. Hollander, Centuria, Mo., assignor to A. B. Chance Co., Grandview, Mo.

Filed Oct. 6, 1969, Ser. No. 863,874
 Int. Cl. F16d 43/20

U.S. Cl. 192—8 R

6 Claims



A combination brake and drive apparatus for a low-speed high-torque vehicle but which is capable of being towed at unlimited speeds. A braking component is engageable with a vehicle-supporting wheel assembly to slow the vehicle when it is being towed at road speeds. The braking component is mounted on a rotatable worm wheel which is driven by a worm within the worm housing. A fluid motor turns the worm screw to drive the vehicle when the braking component is locked in engagement with the wheel assembly. The worm gear arrangement serves to effectively lock the drive mechanism when the fluid motor is not operating to thereby permit the apparatus to be used solely as a braking mechanism.

3,613,846
HOLLOW SPRAG
 Thaddeus F. Zlotek, Center Line, Mich., assignor to Formsprag Company, Warren, Mich.

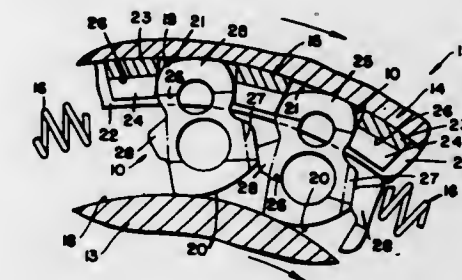
Filed Jan. 12, 1970, Ser. No. 2,078
 Int. Cl. F16d 41/07

U.S. Cl. 192—41 A

5 Claims

A torque-transmitting sprag, otherwise solid in cross section, has one or more openings extending substantially

throughout the axial length thereof between shaped working surfaces at which it engages coaxial clutch races, and front and rear surfaces of the sprag. The opening reduces the sprag weight, governs the location of its center of gravity and, more importantly, enables the sprag to flatten slightly at the race



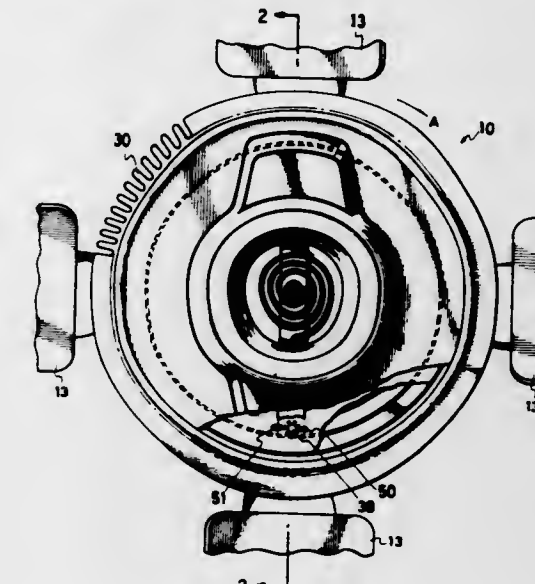
surfaces, under radial load, thereby reducing unit internal stress and, in reducing mass, permitting higher efficient operating speeds. The opening may be variously located in regard to sprag trunnion means, if present, or to the sprag's working and other surfaces.

3,613,847
FLUID DRIVE COUPLING
 Hiroto Masai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 12, 1969, Ser. No. 884,604
 Claims priority, application Japan, Dec. 21, 1968, 43/93885
 Int. Cl. F16d 31/08, 35/00

U.S. Cl. 192—58 B

5 Claims



A fluid-coupling device of temperature responsive type for automotive use, wherein fluid chamber means constituted by an output member is divided by a partition plate supported by the output member into a fluid-working chamber carrying an input member therein and a fluid reservoir or storage chamber, the partition plate radially outward comprising an impact portion, a discharge hole in front thereof and an inlet opening in back thereof relative to the direction of the inlet hole or discharge opening and being covered by a valve arm disposed axially and operated thermostatically so as to control the volume of viscous fluid supplied to the driving rotor.

3,613,848
FLUID ACTUATED AND LUBRICATED CLUTCH WITH SPLINED RELEASE SPRINGS
 Donald H. Reiff, Cedarburg, Wis., assignor to Stearns Electric Corporation, Milwaukee, Wis.

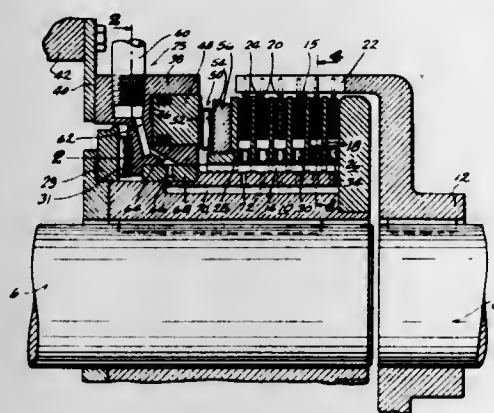
Filed Sept. 15, 1969, Ser. No. 857,867
 Int. Cl. F16d 25/00

U.S. Cl. 192—70.28

6 Claims

A stack of coupling disks for frictionally clutching relatively rotatable shafts has interleaved convoluted springs

splined to the shafts for clutch release. The disks are subjected to fluid pressure through a needle bearing from a

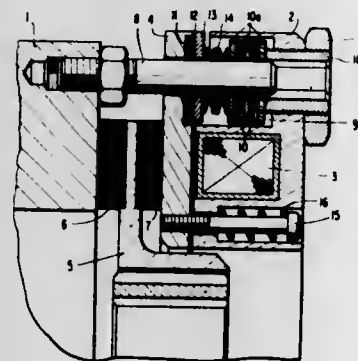


relatively fixed ram. A separate source of liquid is conducted from a fixed portion of the ram into one of the relatively movable clutch parts and fed to various disks of the stack.

3,613,849 AUTOMATIC ADJUSTING DEVICE FOR CLUTCHES AND BRAKES

Karl Heinz Pape, Kleinenbremen, Germany, assignor to Maschinenfabrik Hans Lenze KG, Bosingfeld, Lippe, Germany

Filed Mar. 27, 1970, Ser. No. 23,280
Claims priority, application Germany, Apr. 21, 1969, P 19 20 128.6
Int. Cl. F16d 27/08, 13/75, 65/52
U.S. Cl. 192-84 B 4 Claims



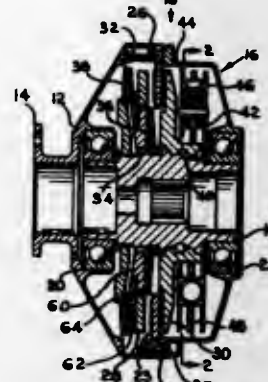
In a brake or clutch with electromagnetic release, an automatic-adjusting device, compensating for the wear of the friction elements, includes an armature and an adjacent magnetic core both axially slidable on guiding bolts towards and away from said friction elements, said adjusting device further includes locking elements which permit said magnetic core to slide freely on said guide bolts only towards said armature and which permit said armature to slide freely on said guide bolt towards said friction elements, but to slide towards said magnetic core only the distance of the armature stroke.

3,613,850 CENTRIFUGAL AND TORQUE RESPONSIVE CLUTCH

Henry Troeger, Cooperstown, N.Y., assignor to The Bendix Corporation, Utica, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,021
Int. Cl. F16d 43/06
U.S. Cl. 192-105 CP 7 Claims
A self-energizing torque limiting, governor-controlled disk clutch is disclosed herein. The clutch is an actuating member which advances on a helical spline to compress a disk pack in response to the speed-sensitive governor. Initial contact between the actuating member and the disk-pack member causes the actuating member to fully advance and lock into

engagement with the disk pack. Means are provided to permit counterrotation of the disk pack when the rotational speed of the clutch output member exceeds the speed of the

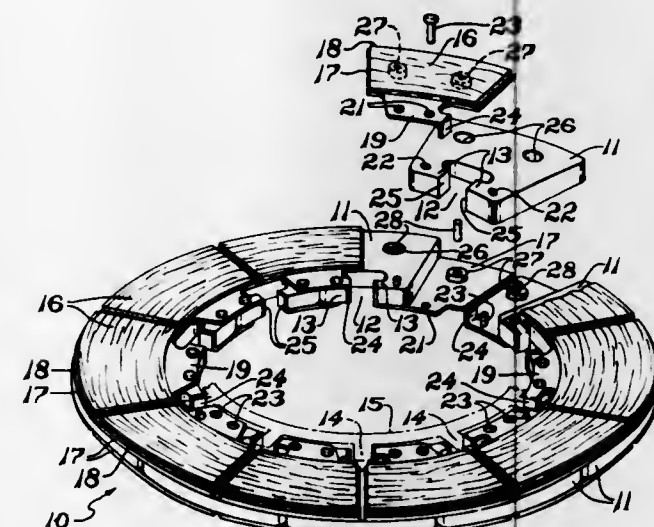


clutch input member so that the actuating member can begin to retract the helical spline thereby lowering the disk-pack compression force without requiring slippage of the disk pack.

3,613,851 SEGMENTED FRICTION MEMBER FOR BRAKE OR CLUTCH

William Edwin Ely, and Ralph R. Main, both of Troy, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,030
Int. Cl. F16d 13/60
U.S. Cl. 192-107 R 7 Claims



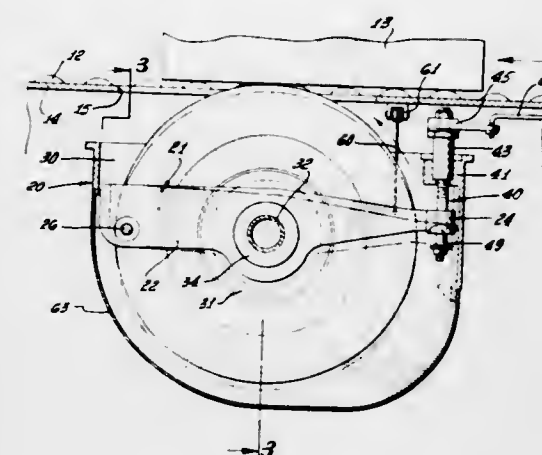
A segmented friction member for a disc-type brake or clutch in which segmental facing members overlap heat-absorbing segments keyed to the rotating or nonrotating structure. The facing members are connected to the heat absorbing segments to form an annulus and also have interlocking members extending through the heat-absorbing segments to resist turning relative to the segments. Protection of the heat-absorbing segments from wear and high stresses is provided by the facing members in the area of frictional engagement and in the area where the segments are keyed to the rotating or nonrotating structure for transmitting torque thereto.

3,613,852 RELEASABLE MOUNTING FOR POWER WHEEL

John G. Schwarzbeck, Downey, Calif., assignor to Western Gear Corporation, Lynwood, Calif.

Filed July 28, 1969, Ser. No. 845,174
Int. Cl. B65g 13/02
U.S. Cl. 198-127 R 5 Claims
Releasable mounting for a power wheel in a conveyor system which features a cargo-moving assembly wherein the wheel is normally sustained in elevated position to make

traction engagement with the bottom of the cargo, and in case of power failure or other emergency the mounting can

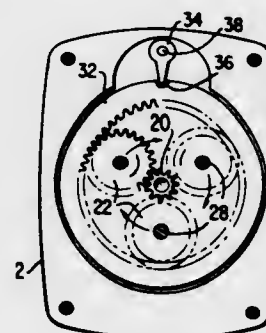


be quickly and remotely actuated to drop the wheel out of contact with the cargo.

3,613,853 ROTARY SHAFT TORQUE-LIMITING DEVICE

Harley E. Linthicum, and William B. Bronne, both of Springfield, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,670
Int. Cl. B25b 23/14; F16h 57/10
U.S. Cl. 192-150 8 Claims



A torque controlled air tool employing a planetary gear set, one element of which is held stationary by magnetic means. A snap action of the linkage between the magnet and the stationary element is obtained when the force exerted on the stationary element exceeds the magnetic holding force, the snap action of the linkage being utilized to shut off the air supply to the tool.

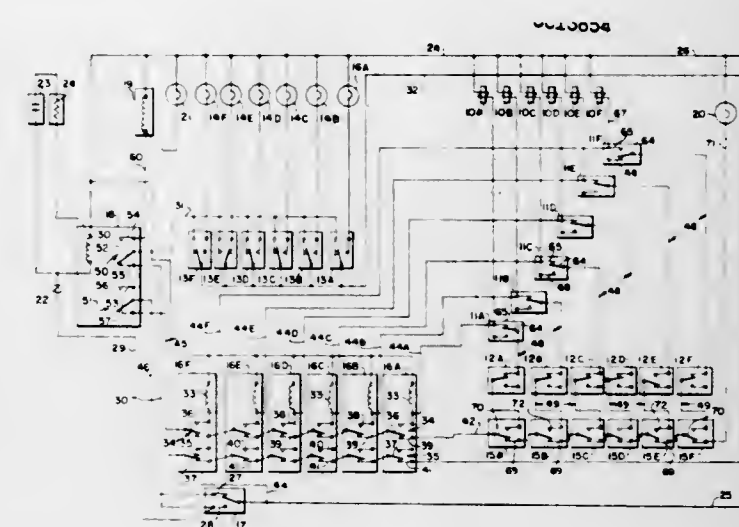
3,613,854 CHECK CONTROLLED VEND RELAY TIMING CIRCUIT

Raymond D. Bowman, Ringgold, Ga., assignor to The Seeburg Corporation, Chicago, Ill.

Filed Oct. 30, 1969, Ser. No. 872,489
Int. Cl. G07f 11/00
U.S. Cl. 194-10 19 Claims

A timing circuit provides an auxiliary source of energization for a vend relay of a multiselection coin operated vending machine wherein dispensing from one of a plurality of columns is controlled by selective energization of a dispensing solenoid. The operating coil of a selected dispensing solenoid is energized upon actuation of a selection switch adapted to be connected in circuit with a pair of normally open contacts of the vend relay which contacts are closed upon energization thereof. A timing capacitor is connected in parallel with the operating coil of the vend

relay. The charging circuit of the capacitor is through the hold circuit for the vend relay. The capacitor, upon operation of a vend select switch, which causes energization of a corresponding vend solenoid and deenergization of the

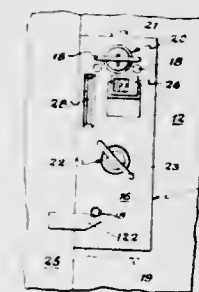


vend relay hold circuit, discharges through the operating coil of the vend relay to thereby cause the vend relay to remain energized for a fixed period after the select switch has been actuated.

3,613,855 COIN CONTROLLED LOCK FOR TWO COINS

Wells F. Stackhouse, Ashville, and Douglas A. Barth, Bemus Point, both of N.Y., assignors to American Locker Company Inc., Jamestown, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,243
Int. Cl. G07f 17/14
U.S. Cl. 194-51 11 Claims



A key lock operable only by two properly sized coins, such as quarters, deposited through a common slot including a switch mechanism operable to automatically direct the properly sized coins sequentially into outer and inner coin receiving positions; the presence in the inner receiving position of a properly sized coin permitting operation of the lock. Smaller sized coins deposited in any sequence relative to the two properly sized coins or excess properly sized coins are permitted to fall through the lock without influencing its operation.

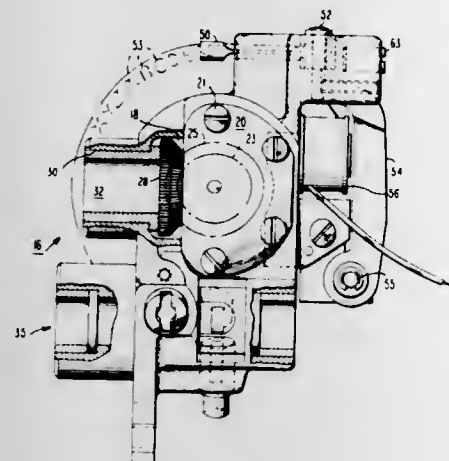
3,613,856 ANTIWEAR SHIELD FOR CONTINUOUSLY ROTATABLE-TYPE DISC PRINTER

David W. Reed, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1968, Ser. No. 787,451
Int. Cl. B41j 19/04; B41j 1/26
U.S. Cl. 197-54 2 Claims

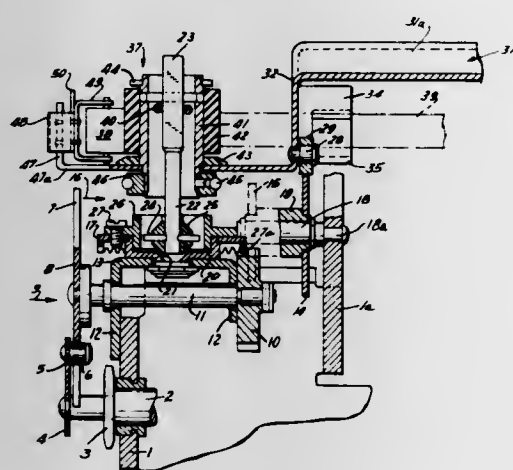
In a printer having a continuously rotating flexible print wheel or disc and a hammer for impacting the print wheel into engagement with a document of the pressure-sensitive

type which is backed by a platen, a flexible antiwear member is mounted to rotate with the print wheel between the print



wheel and the document to reduce wear on the type characters on the print wheel.

3,613,857
RIBBON TRANSPORTING AND SHIFTING MECHANISM
Paul Thevis, Oberndorf; Artur Frobel, Oberndorf, and Oskar Stoll, Aistalg, all of Germany, assignors to Olympia Werke Aktiengesellschaft, Wilhelmshaven, Germany
Filed July 10, 1969, Ser. No. 840,809
Claims priority, application Germany, July 13, 1968, P 17 61 847.2
Int. Cl. B41j 33/14, 33/58
U.S. Cl. 197-151

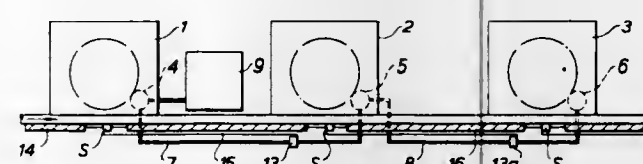


The carbon ribbon of a calculator having a line printer, is mounted on a carrier and stepwise transported in longitudinal direction past the line printer, while a multiple cam cyclically moves the carrier with the ribbon in transverse direction between three positions since three times the height of the types of the line printer correspond to the width of the ribbon. In order to fully utilize the ribbon, it is longitudinally advanced in connection with each printing operation, a distance which is substantially equal to the length of the line printer divided by three.

3,613,858
SYSTEM OF DRIVING A PLURALITY OF MACHINES
Victor Ian Malcolm Cox, Woodford Wells, England, assignor to Albro Fillers and Engineering Company Limited, Ponders End, Middlesex, England
Filed Jan. 27, 1969, Ser. No. 794,220
Claims priority, application Great Britain, Feb. 1, 1968, 5278/68
Int. Cl. B65g 37/00
U.S. Cl. 198-19

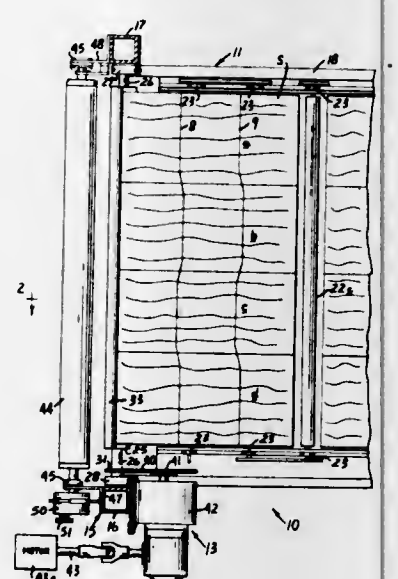
A system of synchronizing the drive of a plurality of machines comprising means for sensing when the machines

are running out of synchronism and valve means operative in response thereto for controlling the flow of hydraulic medium to which the drive of at least one of the machines responds to restore synchronism, more particularly applied to the flow treatment of articles, such as containers, through successive machines.



One machine, however driven may be treated as the master machine and the other or others, hydraulically driven as a slave machine or slave machines. The sensing means, which may be fluid operated, electrical or mechanical, may respond to relative motion between rotary monitoring components driven by the respective machines or to the articles themselves.

3,613,859
INDEXING CROSSBAND VENEER FOR AUTOMATIC PLYWOOD LAYUP EQUIPMENT
Harold Keller, and Patrick J. Young, both of Lewiston, Idaho, assignors to Potlatch Forests, Inc., Lewiston, Idaho
Filed Apr. 9, 1969, Ser. No. 814,770
Int. Cl. B65g 47/22; B65h 9/14
U.S. Cl. 198-29

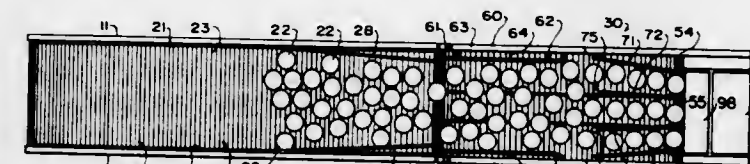


An indexing mechanism is disclosed for intermittently feeding crossband veneer sheets to a plywood layup station. The indexing mechanism includes a vacuum feeder for successively conveying crossband veneer sheets to a stop means. The stop means includes a cylinder horizontally mounted transverse to the direction of travel with a flange thereon normally extending into the path of the sheets. The cylinder is rotated by an intermittent drive to intermittently feed the crossband to the plywood layup station with considerable precision.

3,613,860
UNSCRAMBLING CONVEYOR FOR BAKED GOODS
Fred L. Waite, 66 Clinton Place, Massapequa, N.Y.
Filed July 9, 1970, Ser. No. 53,490
Int. Cl. B65g 47/26
U.S. Cl. 198-30

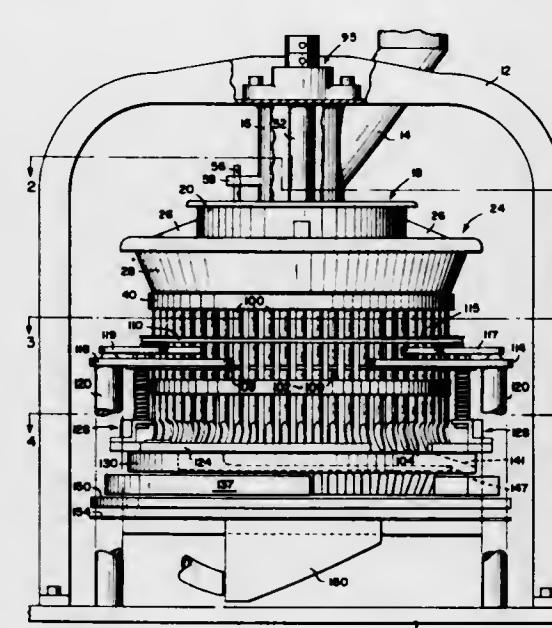
A two section conveyor receives randomly disposed baked goods thereon and delivers them aligned in rows for the simultaneous removal of the first baked goods in the aligned rows, each row being disposed in a path between longitudinal guides. The first section of the conveyor has an upwardly

inclined endless belt of rotatably mounted transverse rollers to feed the baked goods thereon with small forward pressure between converging side guides to the second section of the conveyor. The second section of the conveyor has a transverse rotating paddle to knock backward the uppermost of any accidentally stacked baked goods, pivotally mounted



oscillating side guides disposed in front of the longitudinal guides forming rows, and vertically mounted driven drums in front of longitudinal guides between adjacent rows. The second section of the conveyor has an endless belt of individually and rotatably mounted short lengths of rollers, a short length of each roller being disposed below each path for an aligned row of baked goods.

3,613,861
CAPSULE ORIENTING MACHINE
Allen E. Whitecar, Westville, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed May 15, 1970, Ser. No. 37,733
Int. Cl. B65g 47/24
U.S. Cl. 198-33

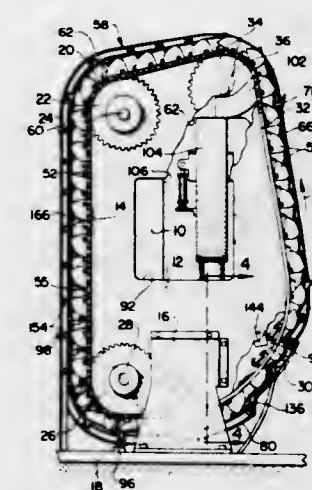


A machine for orienting capsules of the conventional type comprised of a cylindrical interfitted cap and body in which the capsules are fed from a random supply through vertically extending tubes to a means for orienting the capsule in a desired position. The capsule orienting means includes means for forcing the capsule through a restricted passage so that the cap is held by a restriction while the body is turned to a desired oriented position after which the capsule is removed from the restricted passage and discharged.

3,613,862
BOBBIN-HANDLING APPARATUS
William E. Stoppard, Warwick, R.I., assignor to Leeson Corporation, Warwick, R.I.
Filed Aug. 4, 1969, Ser. No. 847,240
Int. Cl. B65g 47/24
U.S. Cl. 198-33 AA

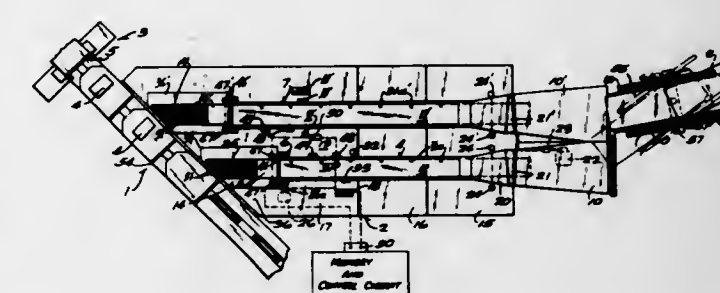
Apparatus for segregating a jumbled mass of bobbins and delivery of the bobbins one at a time in axial orientation. A chain conveyor includes a plurality of buckets for receiving bobbins. These buckets open inwardly and together form the bottom of a hopper which receives the jumbled bobbins. As

the conveyor is driven, a bucket receives a bobbin from the hopper and carries the bobbin upwardly along a substantially straight path to a discharge chute at an upper portion of the apparatus. The buckets have a particular cross-sectional configuration so that when they are on the straight upwardly



extending path they will retain only one bobbin having a rounded cross section and within a particular range of diameters varying from an empty bobbin core to a full bobbin. If a second bobbin is picked up by a bucket it will drop from the bucket along the straight path and fall back into the hopper. By varying the inclination of the buckets along the straight portion of the path, the range may be varied. A bobbin in the hopper may tend to align itself with its axis parallel to the direction of movement of the buckets and would thus block the buckets from receiving bobbins having their axes transverse to the path of movement of the buckets. Such a parallel bobbin flips into position with its axis transverse to the path of the buckets upon movement of an inclined edge of an adjacent bucket against the bobbin in a direction transverse to the general upward path of the buckets. Concurrently with such transverse movement of each bucket, a finger is moved across the inclined edge and transfers any strands of yarn extending across the edge into a cutter. Alternatively, each bucket may be provided with a cutter which is moved across the inclined edge, in lieu of the finger and common cutter. Bobbins are fed into the hopper responsive to a reduction in weight of the bobbins in the hopper and the hopper is driven intermittently to deliver bobbins one at a time responsive to an external demand.

3,613,863
INDUCTION SCHEME AND AUTOMATIC LOADER
Robert R. Hedrick, and Arthur L. Thomas, both of Milwaukee, Wis., assignors to Automatic Sprinkler Corporation of America, Cleveland, Ohio
Division of Ser. No. 686,385, Nov. 21, 1967, Pat. No. 3,491,903.
Filed Nov. 24, 1969, Ser. No. 879,025
Int. Cl. B65g 47/24, 47/26
U.S. Cl. 198-33



Induction or loading apparatus includes a pair of parallel induction lines mounted in side-by-side relation and extending at an angle from a main tilting tray sorter. The articles are fed from a single-input conveyor belt for both

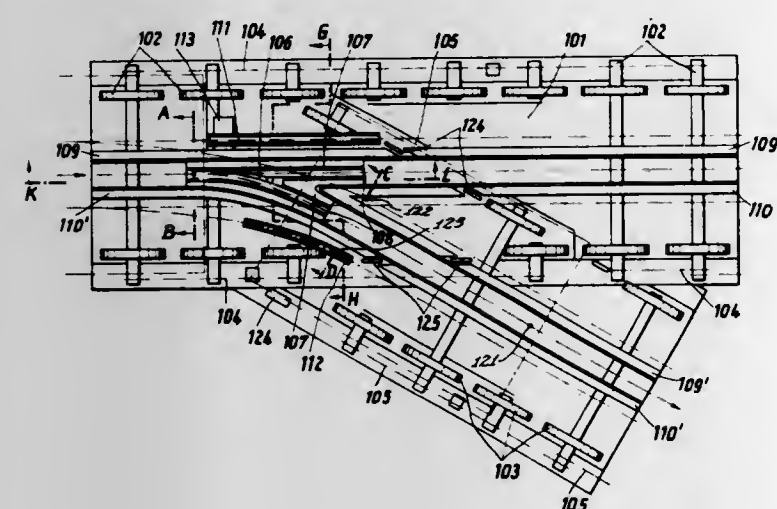
lines to a swinging conveyor belt mounted above the top of loading chutes to the lines and selectively swung between the two chutes to continuously transfer articles into the pair of induction lines. The articles are moved through a separating and infeed conveyor belt which is operated in timed relationship to the sorter.

3,613,864
TRANSPORT SYSTEM WITH ROLLER TRACKS,
CONTAINERS AND AT LEAST ONE SWITCH FOR THE
TRACKS

Gerhard Lingg, and Welsch Leimen, both of Hans-Juergen, Mannheim, Germany, assignors to Mannesmann-Geisel GmbH & Co., Mannheim, Germany
Filed Mar. 16, 1970, Ser. No. 19,636
Claims priority, application Germany, Mar. 15, 1969, P 19 13 350.7
Int. Cl. B65g 43/00

U.S. Cl. 198—38

10 Claims

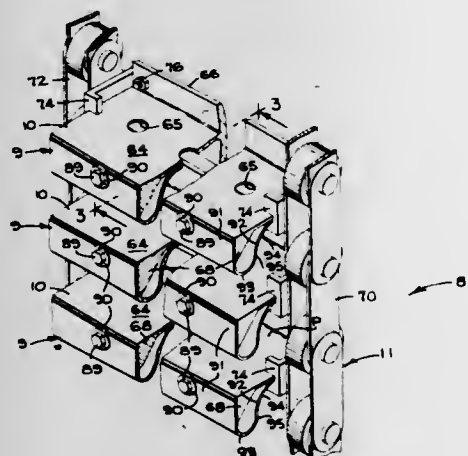


A switch in a roller track system with a single, low level switch blade controlling passage of a single guide pin in the bottom front of a container across the switch, and into the appropriate branch of the roller track; additional guide pins and guide rolls on the container run in appropriate tracks, to guide the container without bouncing.

3,613,865
CONVEYING SYSTEM
James L. Reimers, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 5, 1970, Ser. No. 16,890
Int. Cl. B65g 15/00

U.S. Cl. 198—131

10 Claims



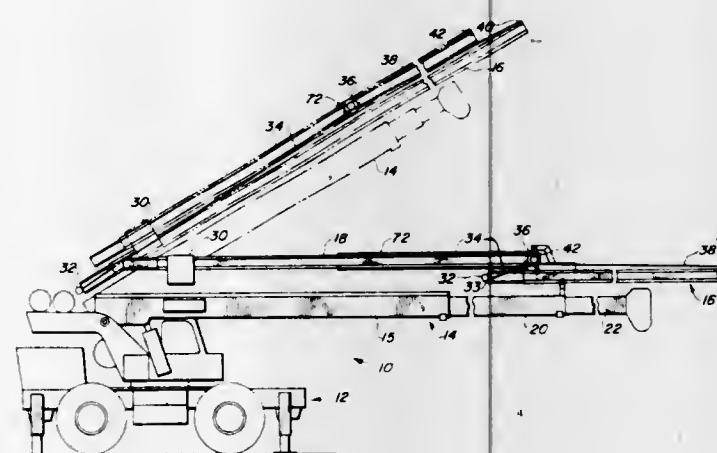
A conveying system for a hydrostatic cooker having carrier bars mounted on a processing conveyor of predetermined pitch, and having removable adapters for adapting carriers to controllably handle a wide range of container sizes, including easily deformable containers such as aluminum or plastic

containers supported on their ends. The adapters are removably mounted on the carrier bars and have a curved camming surface adapted to cam containers that are supported on their ends into positions where they will not be pinched by the articulating carrier bars. The adapters may be of different sizes and/or may be mounted on only selected ones of the carrier bars so that a single-processing conveyor will be capable of simultaneously handling more than one size range of containers.

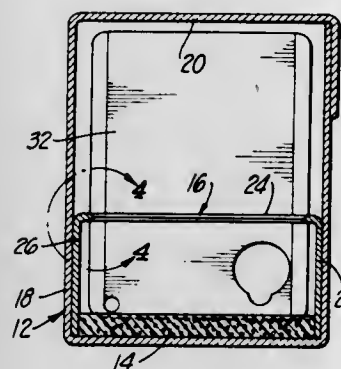
3,613,866
POWER CONDUCTOR TAKEUP SYSTEM
Charles J. Arndt, Marion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Continuation-in-part of application Ser. No. 858,298, Sept. 16, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,706
Int. Cl. B65g 15/26

U.S. Cl. 198—139

10 Claims



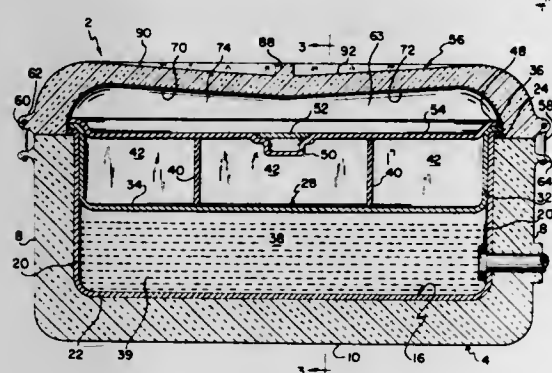
cartridge ends along which extend the exposed runs of cartridge tape, resting on the resilient pad to prevent exposed outwardly for shipment and storage and to rotate



entrance of dust into the cartridges and shield the exposed tape runs against overheating.

3,613,872
RECEPTACLE DEVICE FOR FOOD AND BEVERAGE PRODUCTS OR THE LIKE
James G. Donnelly, 5314 McBride Ave., Cleveland, Ohio
Filed Apr. 10, 1969, Ser. No. 814,994
Int. Cl. B65d 25/00; A45c 11/20
U.S. Cl. 206—4

8 Claims



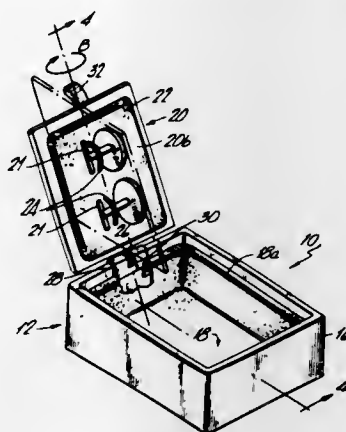
A lunchbox including a heat-insulating housing and a first container within the housing and in close-fitting engagement therewith. A second container adapted to contain food is suspended in the first container with its bottom spaced above the bottom of the first container to provide space for storing liquid. A faucet outside the first container communicates with the liquid compartment. The second container has a close-fitting cover and the housing has a removable cover. The housing cover has its bottom surface spaced from the second container cover to provide an additional compartment for food or utensils.

3,613,873
JEWELRY BOX
Harold Schulman, 15 Franklin Road, Scarsdale, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,482
Int. Cl. B65d 43/16
U.S. Cl. 206—45.15

3 Claims

A jewelry box suitable for use as a display stand in the retail sale of jewelry products includes a cover having a protective exterior face and a decorative interior face. The cover is secured to the box by a pin and socket joint which

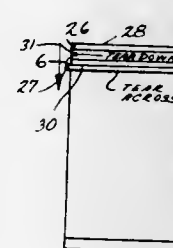
permits the cover to overlie the box with its exterior face exposed outwardly for shipment and storage and to rotate



into a display position with its interior face exposed outwardly to provide a display surface for jewelry.

3,613,874
RECLOSABLE PACKAGE
Harmon B. Miller, Atlanta, Ga., assignor to Reclosable Package Corp., Atlanta, Ga.
Filed Aug. 21, 1969, Ser. No. 851,978
Int. Cl. B65d 33/18, 77/12, 85/00
U.S. Cl. 206—46 F

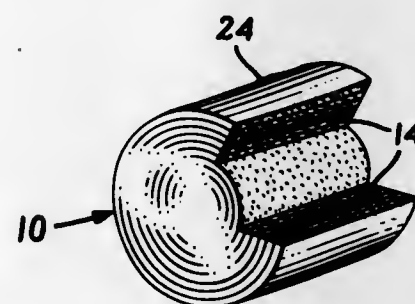
21 Claims



A tape comprising two layers of flexible sheet material bonded together by pressure-sensitive adhesive. The outer surfaces of the sheet material are coated with a permanent-type adhesive such as a heat seal material. The tape is sealed between facing members of a flexible pouch adjacent one edge. A tear strip is provided for tearing open the pouch and removing the portion of one of the facing members bonded to one side of the tape. At least a portion of the pressure-sensitive adhesive remains with the other side of the tape bonded to the other facing member of the closure. This other facing member can be folded over and adhered to the outside of the package by means of the remaining pressure-sensitive adhesive.

3,613,875
COMPRESSED FABRIC MATERIAL WITH CARRYING BAG
August L. Franke, 915 W. Front Road, Plainfield, N.J.
Filed Apr. 7, 1970, Ser. No. 26,211
Int. Cl. B65d 85/08
U.S. Cl. 206—47 R

7 Claims

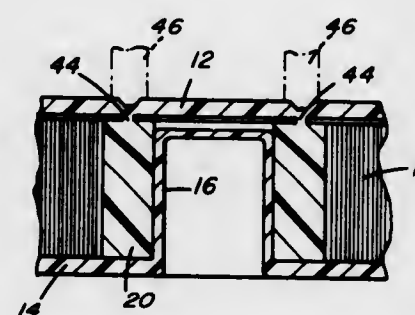


A compressed piece of fabric with a plastic carrying bag included therein is disclosed. The piece of fabric when

wetted releases the plastic carrying bag which may then be used for storage of the wetted fabric until it is next desired to use the same.

3,613,876
ANTICLOCKSPRING DEVICE AND METHOD
John C. Kohler; Robert C. Sutliff, and Corrado Zollo, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,161
Int. Cl. B29c 27/08; B65d 85/67; B65h 75/18
U.S. Cl. 206—52 F

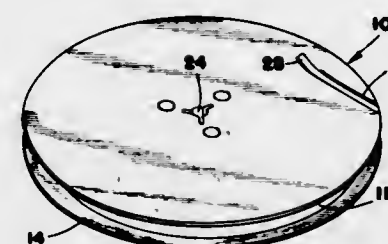
7 Claims



In a film cartridge having a core support hub extending through the film core, preventing clock-springing of a roll of film therein providing one or more spotwelds between the surface of the core and the end of the hub which has sufficient strength to prevent the core from rotating during shipping but which will break as the film is withdrawn from the cartridge, permitting the core to rotate. The spotwelds may be formed ultrasonically or by a solvent or adhesive. An alternate embodiment utilizes a paper pasteur which is glued across the core and the hub and which is torn by the withdrawal of film from the cartridge permitting the core to rotate.

3,613,877
REEL AND LOCKING MEANS FOR THE OUTER END OF THE STRIP
Ronald Jon Sorensen, Northlake, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 4, 1969, Ser. No. 830,242
Int. Cl. B65d 85/67
U.S. Cl. 206—53

11 Claims

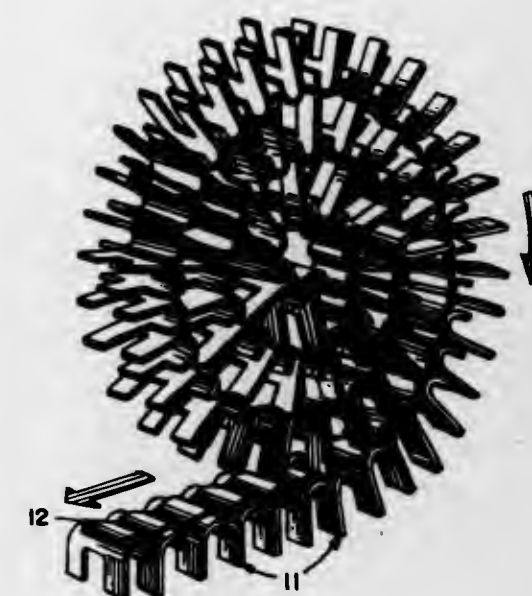


A reel for winding strip material such as magnetic tape or the like is provided with a locking means integral with the outer surface of the reel flange to hold the outer end of the wound strip in place during storage and handling. In one embodiment, the locking means also serves as a splicing jig for joining two strips.

3,613,878
U-CLIP ASSEMBLY
Arthur Langas, and Harrison C. Lingle, both of Wilmette, Ill., assignors to Hartco Company, Wilmette, Ill.
Filed Aug. 29, 1969, Ser. No. 854,037
Int. Cl. B65d 73/02
U.S. Cl. 206—56 AC

5 Claims

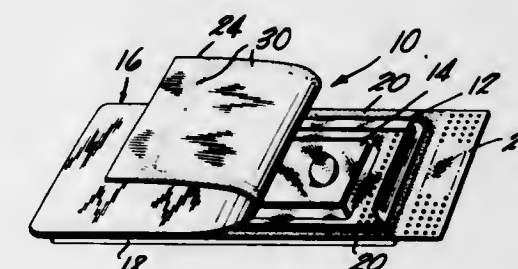
A spring retainer clip assembly in the form of a row of U-shaped sheet metal clips having arched crown portions and



mounted on the underneath side of a flexible carrier strip which bridges the crown portions and is adhesively secured to the crown portions coextensively along the row.

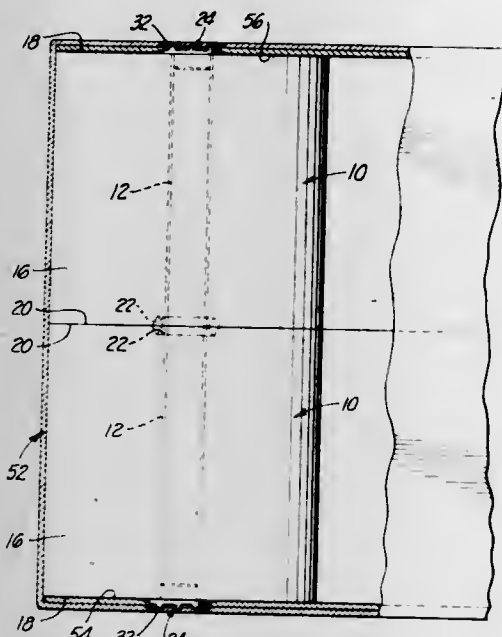
3,613,879
SUTURE PACKAGING
Mern S. Kemble, Deerfield, Ohio, assignor to Philip Morris Incorporated, New York, N.Y.
Filed Aug. 19, 1969, Ser. No. 851,166
Int. Cl. A61i 17/02
U.S. Cl. 206—63.3

1 Claim



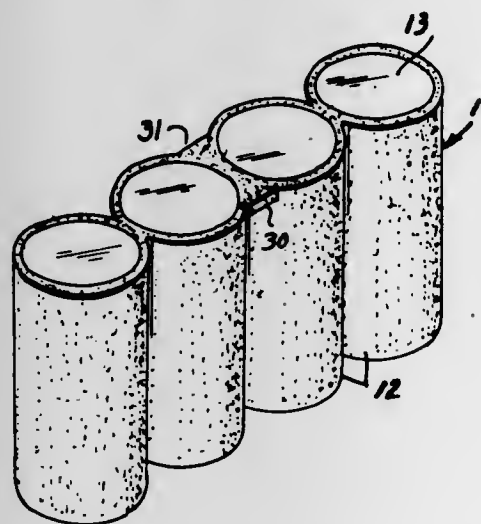
A package for sutures which are contained under conditions of complete sterilization is disclosed with a method for in-line sterilization packaging of the objects on mass production basis. The package includes a hermetically sealed inner packet in which the suture material is received and which has at least initially, a sterilizing gas confined therein, the inner packet in turn being received in an outer packet of the same general construction as the inner packet and which also is hermetically sealed and initially has a sterilizing gas confined therein. The package is made by filling the inner packet blister with the suture material, then tacking a lid onto the blister and confining the inner packet in a vacuum chamber to remove air from the inner packet. Sterilizing gas is then admitted to the chamber for killing any bacteria on the suture material. The lid is then sealed to an associated blister while still in the chamber so that a quantity of the sterilizing gas is captured within the sealed inner packet. The sealed inner packet is then removed from the vacuum chamber and placed in an outer packet blister and a closure lid tacked in place on the blister. The outer packet is then subjected to the same sterilization and packaging procedures as the inner packet.

3,613,880
STRIP MATERIAL ROLL HAVING IMPROVED TRUNNION AND METHODS OF SHIPPING AND DISPENSER MOUNTING THE SAME
 Jack L. Perrin, Los Angeles, Calif., assignor to Towlsaver, Inc., Los Angeles, Calif.
 Filed Sept. 29, 1969, Ser. No. 861,626
 Int. Cl. B65d 85/67
 U.S. Cl. 206—65 R 15 Claims



Strip material rolls have a trunnion mounted at one of the core portion ends thereof and the rolls are received in a carton for shipping with two of the rolls stacked axially aligned one above the other, the respective trunnion ends thereof oppositely facing carton walls. As carton positioned, flat end surfaces of the two rolls opposite from the trunnion ends thereof flatwise abut and the roll trunnion ends outwardly of the trunnions flatwise abut the carton walls while spaced axial projections of each of the trunnions penetrate the respective carton walls retaining the rolls against shifting within the carton and preventing axial telescopic disorientation of the strip material on the rolls. After shipping, a roll is removed from the carton and the trunnion end rotatably locked with a dispenser rotatable support member by axially inserting the trunnion projections into matching radial slot openings of the dispenser support member, while the opposite roll end is rotatably engaged with an opposite dispenser roll-mounting support.

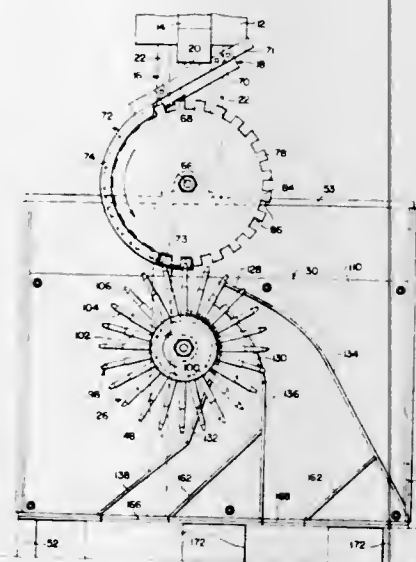
3,613,881
COMBINED CARRIER AND PACKAGE
 Kenneth F. Oldenburg, Arcadia, Calif., assignor to Fred N. Schwend, Arcadia, Calif., a part interest
 Filed Oct. 6, 1969, Ser. No. 864,035
 Int. Cl. B65d 79/00, 21/02
 U.S. Cl. 206—65 C 1 Claim



A combined carrier and thermally insulated package for a plurality of liquid containers, formed of molded plastic foam

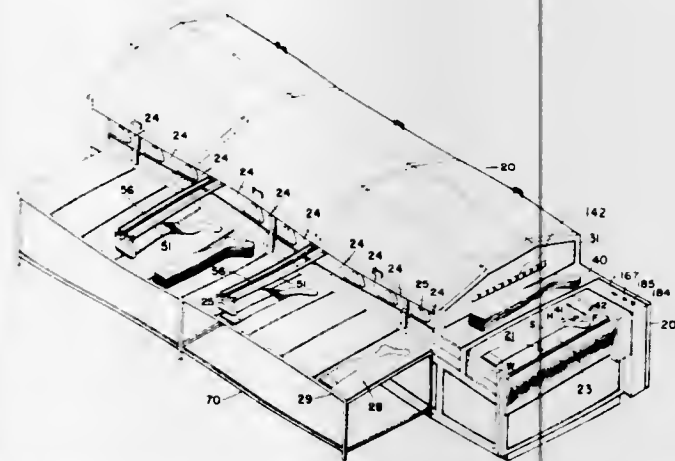
surrounding the containers and adapted to be readily separated to form individual thermally insulated containers.

3,613,882
NUT-SORTING MACHINE
 Henry M. Stampe, 9091 Gale, Pontiac, Mich.
 Filed Mar. 19, 1970, Ser. No. 21,059
 Int. Cl. B07c 5/06
 U.S. Cl. 209—73 15 Claims



This invention relates to an improved nut fastener sorting machine having a feed wheel for supplying the fasteners to a complementary spoke wheel having plug gage-type spoke members upon which the nuts are dropped one at a time from the feed wheel and from which they are removed by a split member stripper and discharged selectively into containers according to their respective positions upon the spoke members.

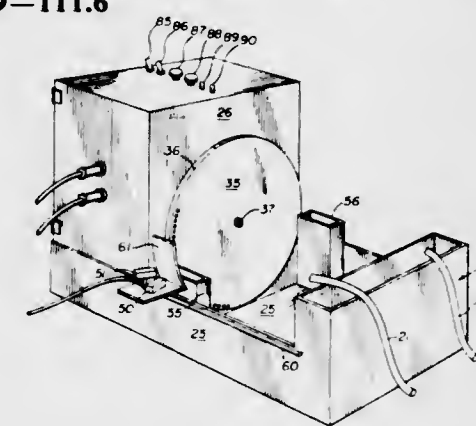
3,613,883
APPARATUS AND METHOD FOR TRANSFERRING FLACCID ARTICLES
 Leslie Starbuck, Gedling, England, assignor to Speizman Industries, Inc., Charlotte, N.C.
 Filed Aug. 19, 1969, Ser. No. 851,313
 Int. Cl. B07c 3/06
 U.S. Cl. 209—74 32 Claims



A machine for sorting stockings according to length by the use of movable suction nozzles that selectively remove stockings from a conveyor belt and transport them to transferred locations in response to sensing of the lengths of the stockings. The suction nozzles are equally spaced adjacent an edge of the conveyor belt for engagement of the welt end portions of stockings that are supported transversely on the belt at spacings equivalent to the spacing of the nozzles, which move transversely of the belt to transport stockings with the engaged welt end portions leading to transferred locations. Length sensing components are disposed adjacent each nozzle location to sense the presence

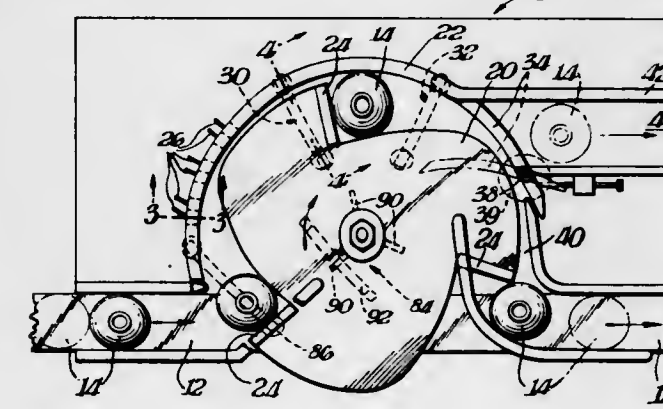
thereof of stockings of a particular length as the stockings are sequentially advanced by the conveyor belt, with the sensing components at different nozzle locations sensing the presence of stockings of different lengths. The suction nozzles are responsive to the adjacent sensing components for transfer by each nozzle of stockings that are sensed to be of the particular length that is to be transferred by that nozzle, with each nozzle being inoperable when no stocking or a stocking of a different length is at the nozzle location.

3,613,884
FISH EGG SORTING APPARATUS
 Neil Van Gaalen, P.O. Box 578, Glenwood Springs, Colo.
 Filed Apr. 13, 1970, Ser. No. 27,862
 Int. Cl. B07c 5/342
 U.S. Cl. 209—111.6 14 Claims



Fish egg sorting apparatus comprising a rotated disc provided with a series of holes extending through the disc adjacent its peripheral surface, each hole capable of containing two fish eggs, photoelectrical means for scanning two eggs at the same time, one of the two eggs being carried in the front end of a hole and the other of the two eggs being carried in the rear end of another hole, and means activated when a dead egg is scanned for ejecting the dead egg from its hole. A glass shield is located closely adjacent the periphery of the disc, between the rotating disc and scanning means, for preventing water from splattering on the scanning means and for holding a water bead between the disc and scanning means providing a clear path through which a light beam from the electrical means passes to eggs in the disc, said water bead preventing formation of film on either the shield or disc which might interfere with passage of the light beam.

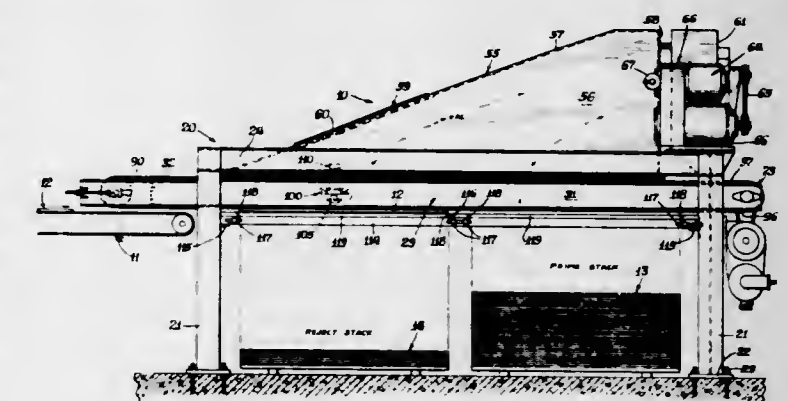
3,613,885
BOTTLE LABEL DETECTOR-LABEL INSPECTING AND SORTING APPARATUS
 Denis O. Rehse, Long Island City, N.Y.; Alfred P. Brooks, Cranbury, N.J., and Michael J. Bilello, Staten Island, N.Y., assignors to Pfizer Inc., New York, N.Y., by said Rehse and Brooks
 Filed Sept. 3, 1969, Ser. No. 854,877
 Int. Cl. B07c 5/34
 U.S. Cl. 209—111.7 21 Claims



A starwheel turntable abstracts articles from a conveyor and returns properly labeled objects to it. Inadequately

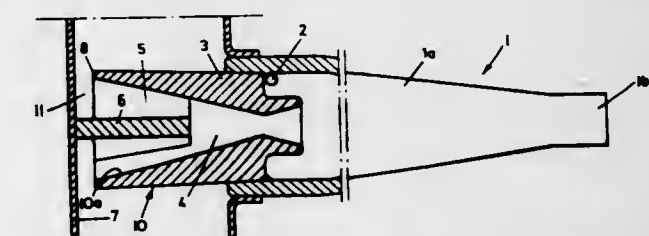
labeled objects are diverted and segregated. Labels are sensed in an initial portion of the turntable and accept signals generated thereby are advanced to the diverter when the articles pass through an advance triggering device. A verifying reject signal for the following article is generated when the immediate article is passing between the triggering device and the diverter. The release of this reject signal is delayed until after the next article has time to pass through the advance triggering device and is cancelled if such next advance triggering is accomplished. This prevents any article slipping by the signal advancing trigger without actuating it from being accepted. The reject signal is accordingly held in a bistable switch long enough to reject the following article if it does not trigger the advance of its own label detecting signal. The advance and verifying signals are conveniently triggered by photoelectric devices. Label detecting is effectively accomplished for transparent and semitransparent articles by a series of photoelectric sensing heads having illuminated scanning chambers past which the articles pass closely adjacent. A label disperses sufficient light back into the chamber to generate an accept signal, whereas, the transparent or semitransparent unlabeled wall transmits the light away without generating a signal.

3,613,886
FEEDER AND STACKER
 Loren B. Barker, Salem, Ill., assignor to Lear Siegler, Inc., Salem, Ill.
 Filed Nov. 22, 1968, Ser. No. 778,252
 Int. Cl. B07c 3/06
 U.S. Cl. 209—125 9 Claims



A machine for automatically feeding and coupling individual sheets of material to an adjacent run of an overdisposed high-speed belt conveyor by which the sheets are transferred to one or more remote locations and from which the same are selectively released, discharged and stacked in preselected groups; the feeding, coupling and the selective discharge functions being automatically carried out by selective control of the ambient atmosphere about the conveyor and sheet materials.

3,613,887
CLYCLONE SEPARATOR TO BE BUILT IN A CASING OR SIMILAR
 Nils Anders Lennart Wikdahl, 42, Bravallavagen, Djursholm, Sweden
 Filed Oct. 14, 1968, Ser. No. 767,151
 Int. Cl. B04c 5/13
 U.S. Cl. 209—211 5 Claims



A cyclone separator has in its outlet for the light fraction a vortex finder, the outwardly facing part of which is divided

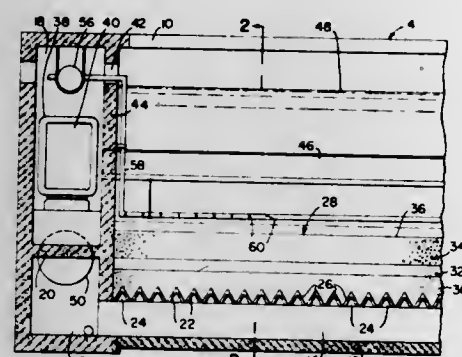
by a plurality of radially disposed partition walls joined by an elongate nave extending coaxially with the separation chamber of the separator. The nave protrudes outwardly from the outlet to constitute a distance member for a wall of a casing for the separator and also to define in conjunction with the casing wall and the end of the outlet an annular slot for radially deflecting the partial flows of the light fraction passing between the partition walls.

3,613,888 FILTER-BACKWASHING METHOD

W. Leslie Harris, Concord, Calif., assignor to Contra Costa County Water District, Concord, Calif.
Filed Apr. 13, 1970, Ser. No. 27,625
Int. Cl. B01d 23/24

U.S. Cl. 210-80

6 Claims



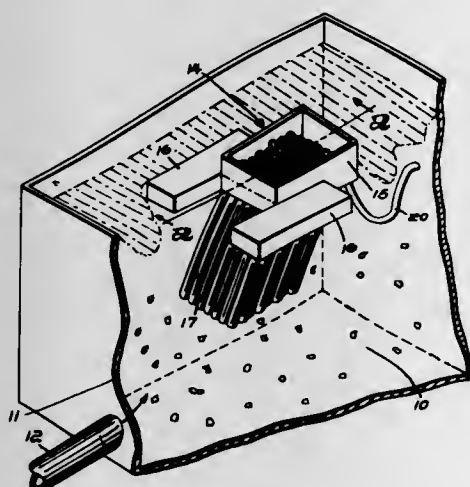
A waterplant granular filter bed is backwashed by flowing backwash water through the bed to dislodge particulate filtrate matter and suspend it in the backwash water. The water flow rate is relatively slow and by itself insufficient to raise all particulate matter as the backwash water rises above the filter bed towards a backwash water trough. Sufficient air is injected into the rising backwash water flow just above the top surface of the filter bed to at least about double the backwash water rising speed whereby substantially all particulate filtrate matter is readily discharged into the backwash water troughs.

3,613,889 FLOATING SETTLER FOR SEPARATION OF LIQUID AND SOLID PHASES

Sherwood Reed, Norwich, Vt.
Filed June 16, 1970, Ser. No. 46,712
Int. Cl. B01d 21/00

U.S. Cl. 210-84

3 Claims



In a system for separating a clear liquid phase from a combined liquid and solid phase mixture in a sedimentation container wherein the mixture is caused to pass upwardly through a bundle of parallel inclined tubes within which the settling of the solid phase out of the liquid phase is completed with the clear liquid phase passing out of the top of the tubes into a collecting vessel from which the clear liquid is then drained, the improvement comprising floating said bundle of

inclined tubes within the liquid mixture so that the clear liquid phase may be removed from the system at a steady uniform rate despite changes in the liquid level in the sedimentation container.

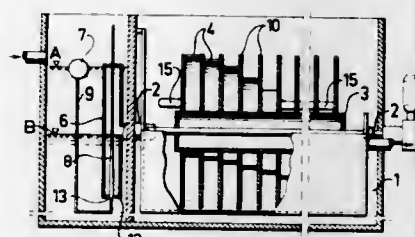
3,613,890 APPARATUS FOR BIOLOGICALLY PURIFYING SEWAGE

Ake Oscar Wilhelm Hellqvist, Djurhamn, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Sept. 10, 1969, Ser. No. 856,559
Claims priority, application Sweden, Sept. 11, 1968, 12191/68

Int. Cl. B01d 21/00

U.S. Cl. 210-150

3 Claims



There is provided an apparatus for biologically purifying sewage from which the sludge has been removed. The apparatus causes a reduction of nitrogen in the sewage with the aid of aerobic micro-organisms and includes a trough with an inlet and an outlet and in which is arranged a rotor with a plurality of plates with vanes arranged between the plates which vanes are angularly displaced in relation to each other.

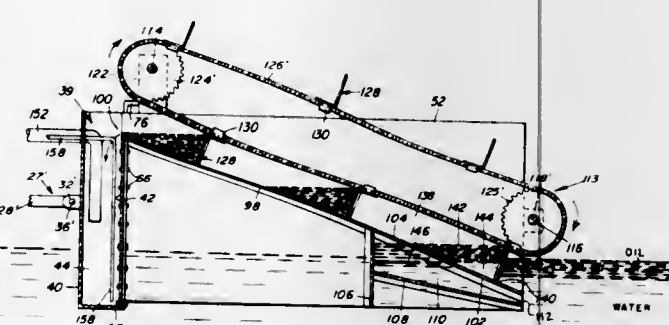
3,613,891 OIL REMOVAL APPARATUS

Charles C. Cloutier, Morgan City, La., assignor to Anti-Pollution Inc., Morgan City, La.
Filed Mar. 24, 1970, Ser. No. 22,170

Int. Cl. B01d 17/02

U.S. Cl. 210-242

36 Claims



An apparatus for removing a layer of a floating liquid such as oil from the surface of a body of water is disclosed, comprising a flexible boom which confines the liquid so that it can be removed by a scoop unit. The scoop unit has a plurality of paddles which cooperate with a bottom plate to enclose and seal off a portion of the oil slick so that the oil and water in the sealed-off portion will separate in layers. The bottom plate has a plurality of apertures which permit the water and a small amount of the oil in the sealed-off portion to flow therethrough, the water flowing back into the body of water while the small amount of oil is trapped between the surface of the body of water and the bottom plate. This portion of trapped oil acts as a check valve to permit the water enclosed on subsequent passes of the paddles to pass through the holes in the bottom plate and to prevent the oil picked up on these subsequent passes from flowing through the apertures. After separation of the oil and water, the oil is carried by the paddles to a sump, for removal to a storage area.

3,613,892 STROKE CONTROL FOR THE PUSH BOTTOM OF A PUSH CENTRIFUGE

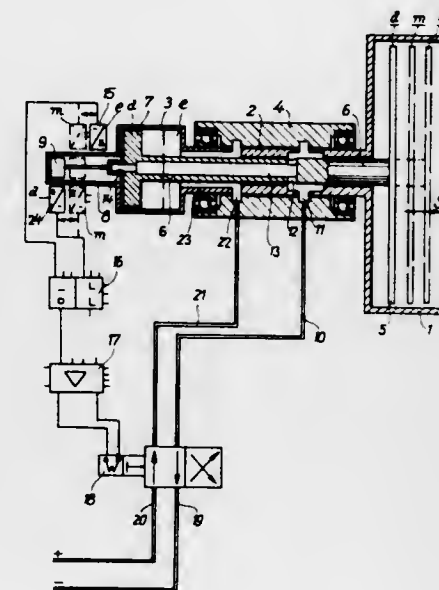
Fritz Ziller, Essen, Germany, assignor to Alfa-Laval Bergedorfer Eisenwerke G.m.b.H., Hamburg-Bergedorf, Germany

Filed Dec. 13, 1968, Ser. No. 783,631
Claims priority, application Germany, Dec. 14, 1967, P 16 32 272.8

Int. Cl. F01l 25/08; B04b 3/02

U.S. Cl. 210-374

4 Claims



A stroke control device for the push bottom of a push centrifuge having a pressure fluid drive for reciprocating said push bottom, and valve means adapted to reverse the flow of pressure fluid, said stroke control device comprising an electric impulse transmitter mounted for reciprocating movement with said push bottom and adapted for contact-free impulse transfer, two impulse-receiving initiators located along the path of said transmitter and adapted to initiate electric control pulses in response to the approach of said transmitter, and valve control means operating said valve means in response to said control pulses.

3,613,893 TREATING INSTALLATION FOR SLUDGE

August Schreiber, Bahnhofstr. 45, 3001 Hannover-Vinnhorst, Germany

Filed Apr. 8, 1970, Ser. No. 26,534
Claims priority, application Germany, Apr. 9, 1969, P 19 18 077.9; P 19 18 078.0

Int. Cl. C02c 3/00

U.S. Cl. 210-272

12 Claims



The invention relates to an installation for the drying and composting of watery sludge of the type which is prepared from sewage and comprises drying and composting beds over which a removable bridge is rotatably mounted with a conveying bucket movably mounted on the bridge and having filling discharging devices to remove and load layers of the sludge on the composting beds.

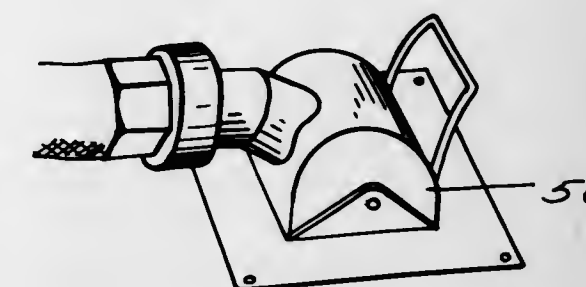
3,613,894 SUBMERGED SUCTION STRAINER FOR A WATER HOSE

Kenneth K. Clegg, Jr., Rte. 1, Box 80, High Point, N.C.
Filed Jan. 13, 1970, Ser. No. 2,634

Int. Cl. B01d 21/24

U.S. Cl. 210-456

4 Claims



A suction strainer, preferably for use in a dump and go tank such as used in firefighting, which, during liquid withdrawal, rests continually on the bottom of the tank so as to eliminate whirlpool and suction loss and which, when in place, has its intake immediately adjacent the bottom of the tank so that water can be withdrawn to a very low level in the tank. In one embodiment, a unitary coupling member rests in a shallow tray on the bottom of the tank and liquid in the tank is pulled past the tray, into the member via a mesh screen which removes foreign objects, and out the coupling member to a conventional firefighting hose which is connected to the coupling at a preset angle. In another embodiment of the invention, the member coupled to the hose is pivotally mounted to a guide plate which rests on the shallow tray and is fixed with respect to it, so that any antiswirl plates in the strainer always remain in parallel with the tank bottom regardless of the angle at which the dump and go tank is set.

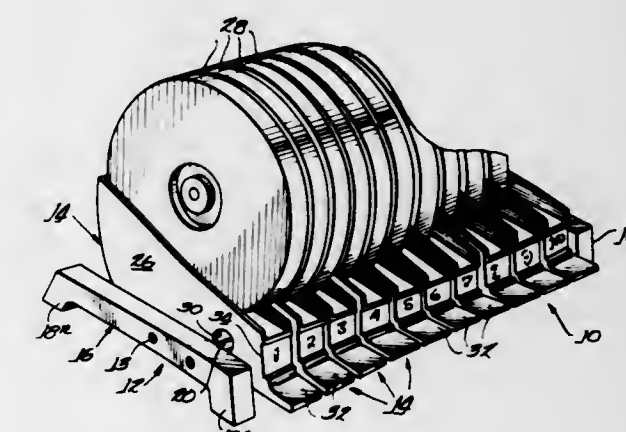
3,613,895 MAGNETIC TAPE HOLDER

Mark E. Larkin, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 2, 1969, Ser. No. 788,535

Int. Cl. A47g 29/00

U.S. Cl. 211-40

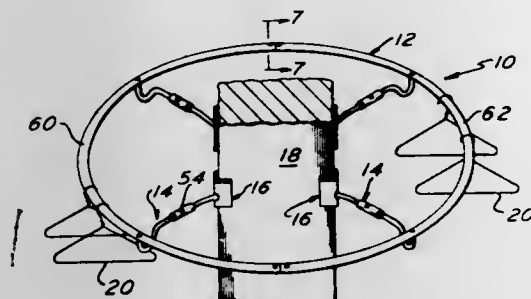
6 Claims



Elongate cradle members having arcuate support surfaces are formed so as to supportingly receive an outer peripheral portion of a magnetic tape container or the like. The cradles are pivotally mounted in axial alignment on a first transverse frame member traversing each cradle. Each cradle member may be pivotally moved out of axial alignment with the remaining cradles whereby the container supported thereby may be readily grasped and removed.

3,613,896
CLOTHING RACK
 Anthony Stanley Miller, Jr., Happy Acres, R.D. 2, Atsion-Medford Road, Vincentown, N.J.
 Filed May 25, 1970, Ser. No. 40,025
 Int. Cl. A47I 5/08
 U.S. Cl. 211-107

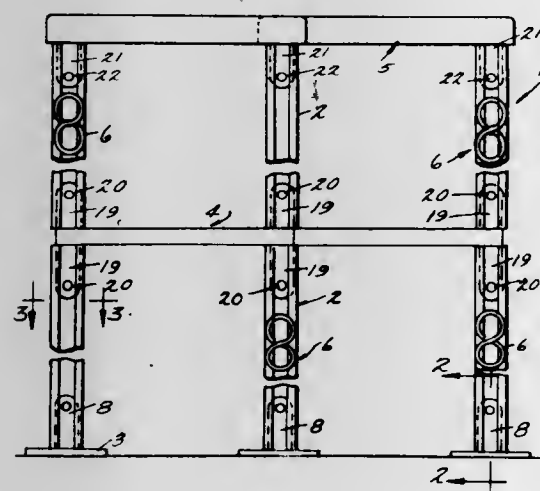
12 Claims



A clothing rack adapted to be mounted on a supporting column in a clothing store. The rack comprises a continuous loop that surrounds the column, and a plurality of bars which connect the loop to the column. Each of the bars includes a mounting plate which abuts the column and an adjustment mechanism for increasing the effective length of the bar, whereby the bar is tightly held between the loop and the mounting plate, thus forcing the mounting plate against the column. This force will in turn maintain the horizontal and vertical orientation of the loop relative to the column.

3,613,897
SPRING CLIP RACK
 Isadore J. Filler, Atlanta, Ga., assignor to I. J. Filler Enterprises, Inc., Atlanta, Ga.
 Filed Jan. 5, 1970, Ser. No. 775
 Int. Cl. A44b 21/00; A47I 7/00
 U.S. Cl. 211-120

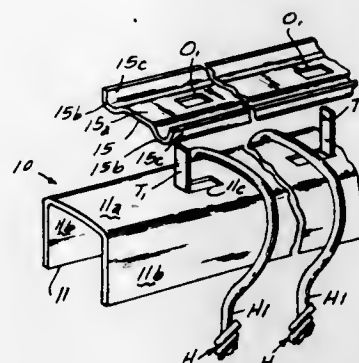
11 Claims



A display rack for supporting packaged articles that is constructed from easily assembled components. A plurality of article clamps mounted on the rack which hold the packaged articles in two ways: (1) by resiliently clamping a portion of the package between two adjacent coils of a spring and (2) by impaling the clamped portion on a pointed member.

3,613,898
CAP LOCKING MEANS FOR WARDROBE HANGER BAR
 Francis P. Brennan, 1057 Rolling Drive, Lisle, Ill.
 Filed Jan. 14, 1970, Ser. No. 2,888
 Int. Cl. B65d 85/18
 U.S. Cl. 211-124

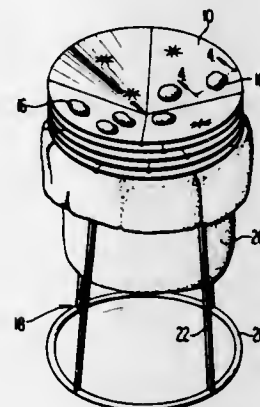
10 Claims



A portable hanger bar structure for supporting a plurality of various types of garment hangers having an overlying locking member releasably affixed to the bar structure providing a plurality of spaced support areas for the hangers.

3,613,899
APPARATUS FACILITATING THE COUNTING AND DISPOSAL OF SURGICAL SPONGES
 Thomas R. Schleicher, 1 Olde Coach Road, Glenmount, N.Y., and Robert D. Auten, Rte. #5, Juniper Drive, Ballston Spa, N.Y.
 Filed July 2, 1970, Ser. No. 51,806
 Int. Cl. A47I 3/14
 U.S. Cl. 211-133

1 Claim



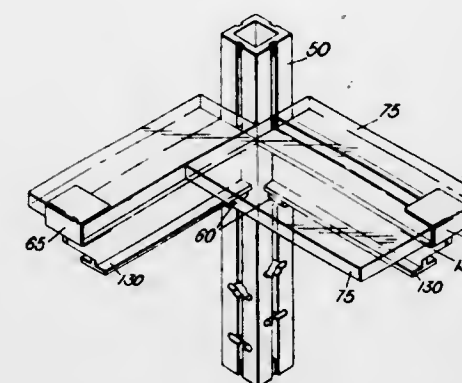
Apparatus for use in an operating room to facilitate the counting and disposal of surgical sponges includes an upright frame member for supporting a bag in vertical open position and one or more stackable sponge-holding trays on top of the frame and bag.

3,613,900
CONSTRUCTIONAL SYSTEMS
 Joseph Chak-Fai Chiu, Kowloon, Hong Kong, Great Britain, assignor to Chiu's Joint System Limited, Tai Wai, Shatin, New Territories, Hong Kong, Great Britain
 Filed June 24, 1969, Ser. No. 835,990
 Claims priority, application Great Britain, July 2, 1968, 31,605/68
 Int. Cl. A47b 9/08; A47I 5/00
 U.S. Cl. 211-148

5 Claims

A readily assembled and demounted shelving system having a hollow post with channelled faces, and projection-

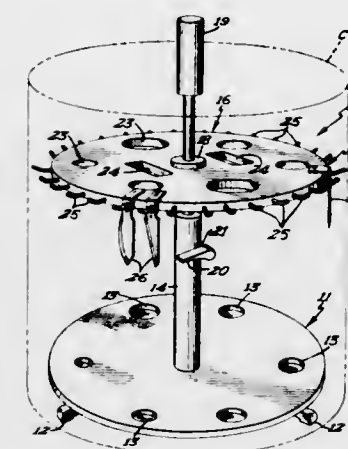
receiving slots interrupting the channels, there being an arrowheaded connecting member which is insertable into the with a top spherical surface on the butt that engages a



slots and thereafter slidable along the channels and which is supported by fastener elements in a final desired position.

3,613,901
SURGICAL INSTRUMENT SUPPORT DEVICE
 George Alfred Montelius, 2405 Euclid Place, Minneapolis, Minn.
 Filed July 7, 1969, Ser. No. 839,566
 Int. Cl. A47I 5/02
 U.S. Cl. 211-166

3 Claims

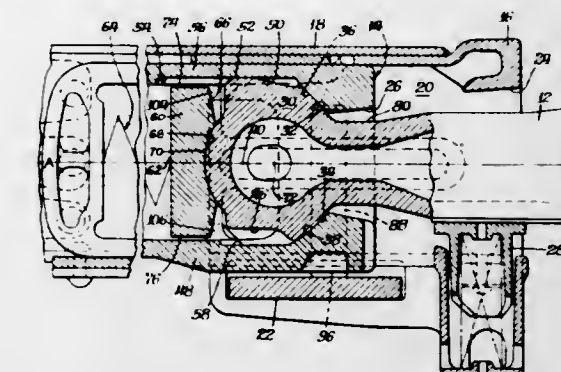


A device for supporting surgical instruments comprises a base and a support member which are releasably interconnected by telescopic posts. The support member is provided with a plurality of supporting pins which support apertured surgical blades. The entire device, with instruments supported thereon, may be placed in a sterilizing jar or container containing a sterilization fluid and may be readily removed therefrom as desired.

3,613,902
ROTARY DUMP COUPLER
 Russell G. Altherr, Chicago, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
 Filed Nov. 6, 1969, Ser. No. 874,492
 Int. Cl. B61g 9/04
 U.S. Cl. 213-72

11 Claims

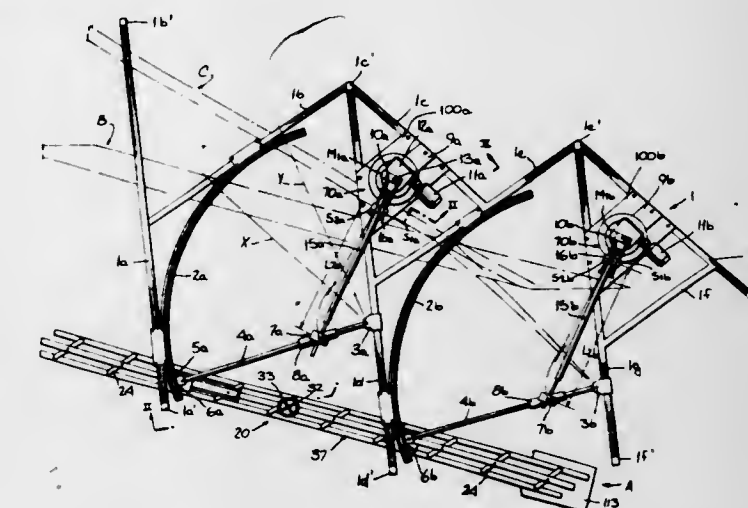
In a rotary coupler assembly, the butt of a coupler is retained within a pocket in a yoke by spaced keys. Spherical surfaces on the butt engage corresponding surfaces on the yoke and keys during rotation of the coupler. A follower plate contacting a draft gear is rotatably engaged with the rear of the butt through mating concave-convex surfaces. Stops on the yoke straps limit forward movement of the



cylindrical surface on the yoke resists drooping of the coupler head.

3,613,903
TRANSFER APPARATUS
 Jean Leblond, and Jean Biet, both of Compiègne, France, assignors to Uniroyal Engiebert France S.A., Paris, France
 Filed Jan. 28, 1969, Ser. No. 794,706
 Claims priority, application France, Apr. 16, 1968, 148,266
 Int. Cl. B65g 47/34
 U.S. Cl. 214-1 BH

13 Claims



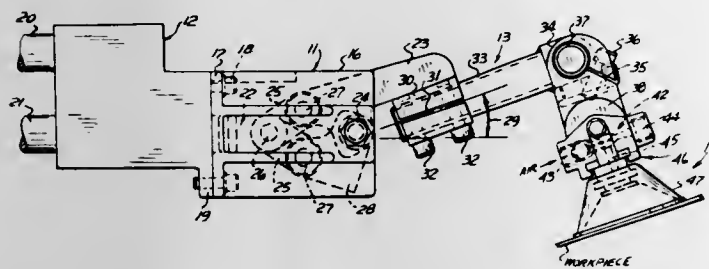
A transfer apparatus for transferring an article from a first location, in which the article is in a first position, to a spaced second location, in which the article is in a second position spaced from and angularly shifted with respect to the first position thereof. The transfer apparatus includes a stationary frame supporting a pair of parallel arcuate guides extending between the aforesaid first and second locations, an article support structure extending between and being movable along these guides, and a pair of drive mechanisms simultaneously independently moving spaced portions of the article support structure different distances along the arcuate guides. Each of the drive mechanisms includes a drive crank, a connecting rod pivotally connected to the drive crank, and a mechanism for changing the location along the drive crank of the pivotal connection of the connecting rod.

3,613,904
VACUUM HOLDER AND CONTROL ASSEMBLY
 Leland F. Blatt, 24121 Mound Road, Warren, Mich.
 Filed Sept. 12, 1969, Ser. No. 857,412
 Int. Cl. B65g 47/91
 U.S. Cl. 214-1 BV

3 Claims

A work-engaging vacuum gripper including vacuum means for creating a vacuum within a vacuum cup and adapter assembly adjustably mounted upon a power-pivoted boom assembly projecting from a combination jaw body and actuating unit whereby longitudinally reciprocal power

means from said actuating unit acting through said jaw body stem. Toggle levers are connected to the carriages and effects corresponding pivotal movements of the jaw arm and moved by a power source, connected to one set of toggle

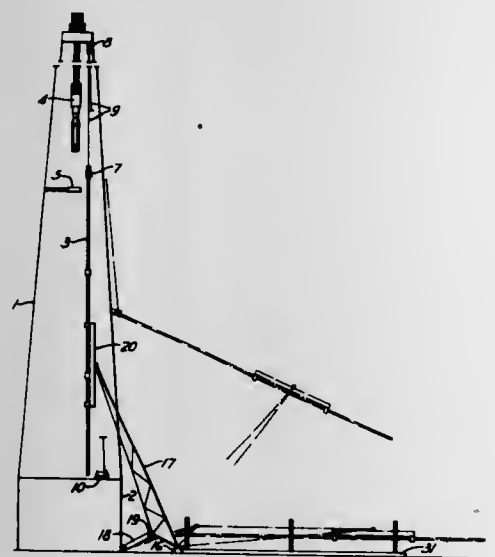


attached boom assembly which adjustably mounts the vacuum-operated workpiece-engaging gripper.

3,613,905
METHOD AND APPARATUS FOR HANDLING DRILL PIPE
Homer J. Woolslayer, Tulsa; Joseph R. Woolslayer, Tulsa; Cecil Jenkins, Tulsa, and Erwin A. Campbell, Bixby, all of Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.
Filed Apr. 6, 1970, Ser. No. 25,644
Int. Cl. E21b 19/00

U.S. Cl. 214-2.5

10 Claims



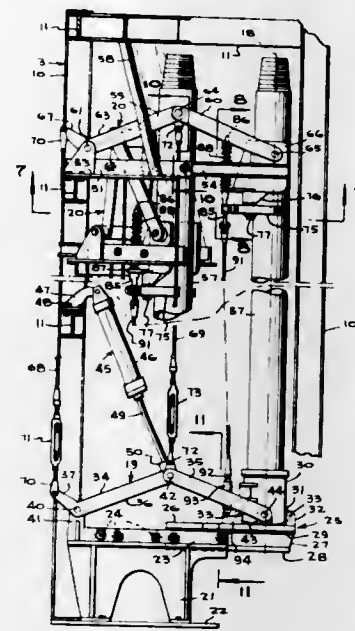
Pivotaly supported beside an oil well is the inner end of a boom that can be swung in a vertical plane toward and away from the well. Clamping means for gripping a group of drill pipes are pivotaly connected to the outer end of the boom on a horizontal axis in such a position that pipes gripped by the clamping means can swing across the boom as the outer end of the boom is raised or lowered, whereby the clamping means can extend downwardly when the boom is in its lower position and laterally toward the well when the boom is in its upper position.

3,613,906
DRILL STEM STORAGE AND HANDLING MECHANISM
Bruce Deyo, 686 Brightwood Drive, and Frank J. Klaus, 1244 Woodside Drive, both of Marion, Ohio
Filed May 20, 1970, Ser. No. 38,945
Int. Cl. E21b 19/14

U.S. Cl. 214-2.5

12 Claims

Drill stem storage and handling rack for rotary blasthole drills including means in the drill mast for storing and handling a plurality of stem sections, wherein each stem storing and handling mechanism has lower and upper tracks with carriages mounting stem holding means movable horizontally along the tracks radially toward and from the axis of the drill

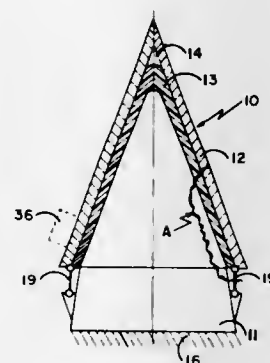


levers, and means interconnecting the two sets of levers. The movement of the stems is in a horizontal direction only.

3,613,907
MEANS FOR SEPARATING, EJECTING AND PROPELLING OVERLYING MEMBERS
Albert J. Spada, Wilmington, Mass., assignor to Avco Corporation, Cincinnati, Ohio
Continuation of application Ser. No. 701,461, Jan. 29, 1968, now abandoned. This application Aug. 6, 1969, Ser. No. 848,415
Int. Cl. B65g 1/14

U.S. Cl. 214-10.5

7 Claims



The invention is directed to a means for separating members that overly one another. The separating means comprises a flexible bag that is placed between the members that are to be separated. The bag contains a gas under pressure. The pressure of the gas is greater than the ambient pressure at the time the members are to be separated. The two members are tied together by clamps. When the clamps are released, the bag inflates thereby causing the members to separate.

3,613,908
VEHICLE PARKING EQUIPMENT
Lewis Multz, Washington, D.C., assignor to Potomac Iron Works, Inc., Hyattsville, Md.
Filed Mar. 18, 1970, Ser. No. 20,636
Int. Cl. E04h 6/06

U.S. Cl. 214-16.1 A

4 Claims

A substantially skeletonized, welded vehicle storage system in which vertical columns support above an underlying storage area parking bay means comprising storage bays produced from parallel channel-shaped trackways in which

the trackways extend radially from an elevated turntable and comprise first and second generally parallel sets of trackways for accommodating different length vehicles, i.e., "compacts" and "conventional" lengths, and in which an inclined ramp is provided to direct vehicles to a conveyor ramp on the turntable whereby vehicles can be readily transferred to and from the storage bays; and further in which the conveyor ramp may include lift means and a

3,613,910
WAREHOUSE SYSTEM WITH INFEED AND DISTRIBUTING CONVEYORS SERVING STACKER CRANES IN A COMMON AISLE
Stanley M. Weir, Palo Alto, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 18, 1970, Ser. No. 20,711
Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 A

16 Claims

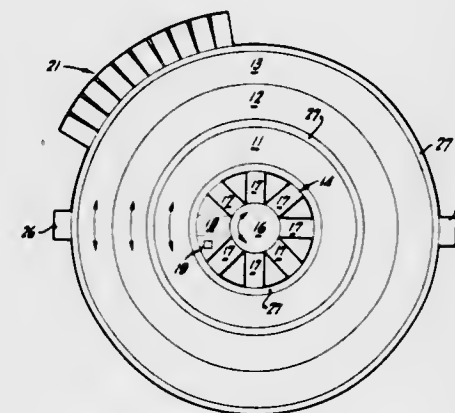


plurality of storage decks, substantially duplicating the lower storage bays, and which are accessible to the conveyor ramp as it is elevated; and in which the conveyor ramp is tiltable about its pivot axis whereby the center of gravity shifts to appraise one as to when a vehicle is substantially centered thereon; and in which a generally closed path of bearings are provided for engagement beneath the conveyor ramp, and the bearings generally comprise wheel elements disposed on an axis of rotation extending radially from the vertical axis of rotation of the conveyor ramp of the turntable.

3,613,909
VEHICLE-PARKING SYSTEM
Charles R. Salloum, 154 Ellis St., San Francisco, Calif.
Continuation-in-part of application Ser. No. 404,622, Oct. 19, 1964, now Patent No. 3,378,151, and a continuation-in-part of 646,671, June 16, 1967, now Patent No. 3,382,990. This application Apr. 12, 1968, Ser. No. 720,952
Int. Cl. E04h 6/06

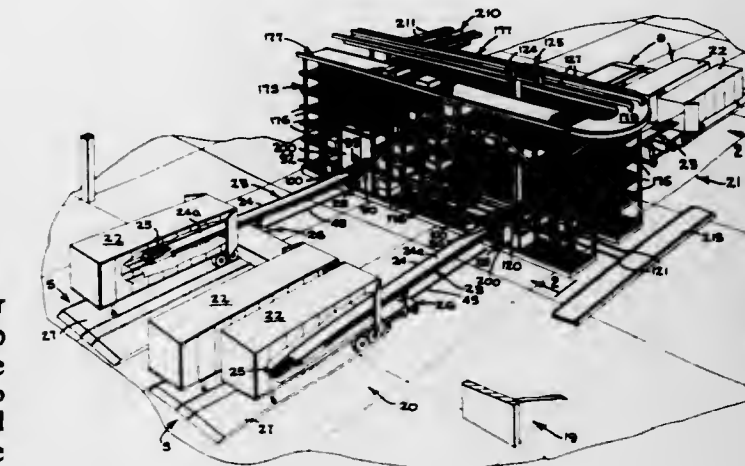
U.S. Cl. 214-16.1 A

5 Claims



The invention disclosed and claimed herein comprises an improved system for the efficient parking of automobiles and the like. The invention provides a plurality of vertically separated parking levels with each being composed of a plurality of concentric rotatable parking platforms. Of particular importance herein is the location of access and egress means for these parking levels. Elevators, or the like, are herein provided in a circular, or semicircular, array extending vertically through the plurality of parking levels about a central platform at each level. Such central platform may comprise a turntable to turn vehicles for ready movement outwardly to parking stalls.

By the above-noted arrangement, the present invention provides for minimizing the required number of elevators employed, while at the same time maximizing available parking space and facilitating fully automated vehicle parking or storage.



An automatic freight-handling terminal is disclosed with conveyor booms for loading and unloading freight to/from such transported containers, or carriers, as truck trailers, railcars, and aircraft igloos. Computer controlled equipment sorts, accumulates and moves freight from one loading-unloading conveyor boom to another. The loading-unloading conveyor boom is vertically adjustable with a ramp pivotally attached at one end that can be independently tilted up or down. The ramp has a set of movable wedge-shaped finger members for moving freight from its wedge-shaped finger tips to the conveyor boom or vice versa. All motions of the loading-unloading conveyor boom are controlled by an operator working in the vicinity of the ramp. The loading-unloading boom is of fixed length, and is pivoted by a motorized cart that also moves an air-bearing supported platform on which a freight carrier or container rests, backward or forward and sideways left or right.

Shipments are conveyed from loading-unloading booms to transfer stations where they are picked up by extendable stacker crane fingers of computer controlled stacker cranes which move back and forth between two rows of shipment-holding compartments and shift articles to and from holding compartments, transfer stations and the distribution conveyor.

The distribution conveyor is an endless continuously running conveyor loop located on top of the shipment-holding compartments. A magnetic belt coordinated with the distribution loop conveyor is used to record shipment-sorting instructions. A sorting instruction on a magnetic belt escorts each shipment while on the distribution conveyor to assist computer control of shipment disposition to another stacker crane for transfer to a compartment or another conveyor boom.

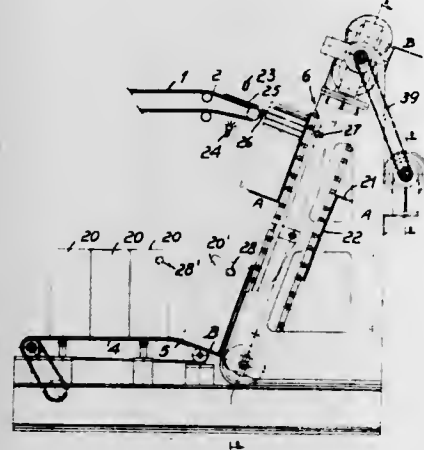
3,613,911
APPARATUS FOR AUTOMATIC DEPOSITING OF GLAZED TILES IN MAGAZINES ARRANGED FOR SUBSEQUENT FIRING
Ulrico Walchhuter, Quartiere Fiori, Edilnord Brugherio, Milan, Italy
Filed Oct. 7, 1969, Ser. No. 864,433
Claims priority, application Italy, Oct. 12, 1968, Sept. 26, 1969, 22419 A/68; 22540 A/69
Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 R

15 Claims

Apparatus for automatically depositing tiles onto shelves of magazines in which successive magazines are upwardly transported in a row by a pair of conveyors in upright condition with the shelves thereon spaced upwardly from each other from a lower conveyor belt to and beyond a loading station in which tiles arriving at an upper belt are

loaded onto the shelves of a magazine at the loading station, in which the pair of conveyors are driven in such a manner so that successive magazines will move toward and away from

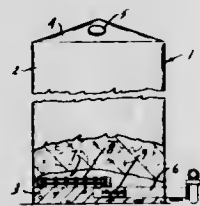


each other so that one magazine may be transported stepwise at a low speed at the loading station to permit insertion of the tiles into the shelves without interfering with the following magazine.

3,613,912
UNLOADING MECHANISM FOR SEALED STORAGE STRUCTURE
Fred W. Dissmeyer, Elgin, and George E. Olson, Arlington Heights, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Oct. 31, 1969, Ser. No. 872,814
Int. Cl. B65g 65/42

U.S. Cl. 214—17 DA

16 Claims



A mechanism for unloading a stored material from a sealed storage structure. The structure is supported on a foundation having a trough extending radially from the center of the structure to the exterior. Conveying members are located along the sides of the trough, while a stationary backbone or frame of a cutter arm assembly is positioned within the trough between the conveying members. The cutter arm assembly also includes a cutter arm which is adapted to rotate over the foundation and dislodge the stored material and convey the dislodged material to the center of the structure for delivery to the conveyors located within the trough. The conveyors act to convey the material within the trough to the exterior of the structure. The cutter arm assembly and conveying members are separate units and are independently driven so that the cutter arm assembly can be independently installed and removed from the storage structure.

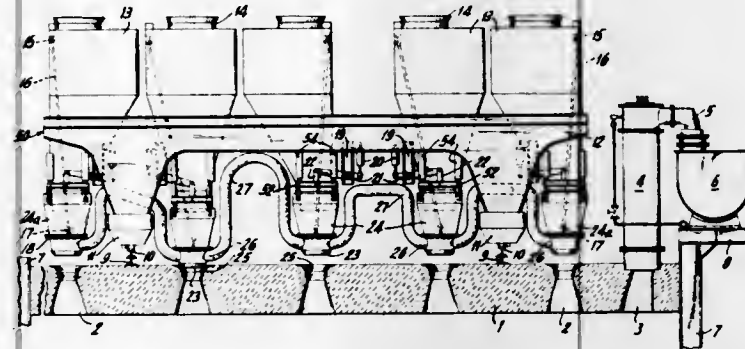
3,613,913
CHARGING TRUCK FOR COKING FURNACE
Johannes Knappstein, Recklinghausen, Germany, assignor to Firma Carl Still, Recklinghausen, Germany
Filed July 18, 1969, Ser. No. 843,085
Int. Cl. C10b 31/04

U.S. Cl. 214—35 R

8 Claims

A charging truck particularly for charging coke to a coking furnace comprising a body portion which is adapted to be moved over the ground or over a rail structure and which carries a plurality of coal bunkers having outlets with

extensions which are lowerable over the outer cases of a coking furnace and wherein the lowermost ends of the

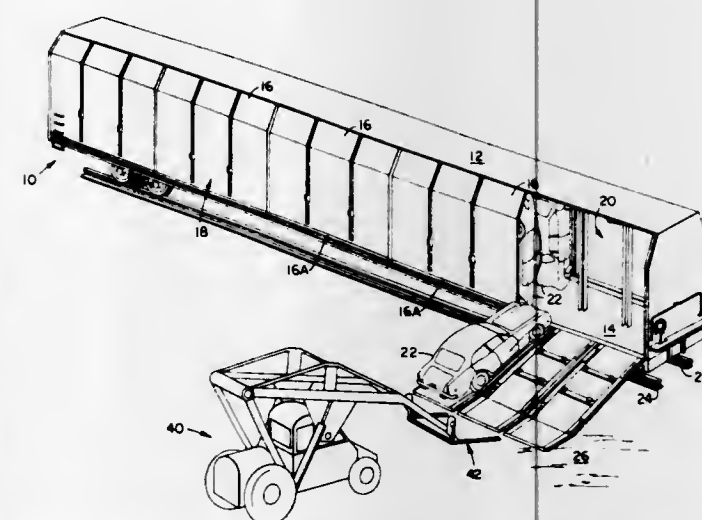


extendable portions are interconnected by means of flexible pipe connections between adjacent bunker outlets.

3,613,914
APPARATUS FOR OPENING AND CLOSING DOORS PIVOTALLY ATTACHED TO A RAILWAY CAR
William M. Jaekle, 18 Tarry Ave., Orinda, Calif.; Paul V. Garin, 1836 Lake St., San Francisco, Calif.; William E. Thomford, 1176 Glenwood Drive, Millbrae, Calif.; Wallace M. Greb, 1139 Oakes Blvd., San Leandro, Calif.; Nicholas N. Udaloff, 141 16th Ave., San Francisco, Calif.; and Stephen H. Peery, Jr., 714 Birch Ave., San Mateo, Calif.
Filed Aug. 15, 1969, Ser. No. 850,491
Int. Cl. B65g 67/02

U.S. Cl. 214—38 R

14 Claims



In conjunction with a railway car having doors on either side which pivot downward to an open position and upward to a closed position, arm means raisable and lowerable and movable toward and away from the car to cooperate with slots in each door to raise and lower that door. Such arm means may enter the slots at openings at the tops and bottoms thereof but cannot be removed from the slots when in between these openings. Means are included to ensure that the arm means, after raising a door, cannot be removed from the bottom openings of the slots unless that door is locked in its closed position.

3,613,915
GARBAGE COLLECTION SYSTEM
Lawrence Vita, 1521 S.W. 21st St., Fort Lauderdale, Fla.
Filed Nov. 7, 1969, Ser. No. 874,928
Int. Cl. B65g 67/20

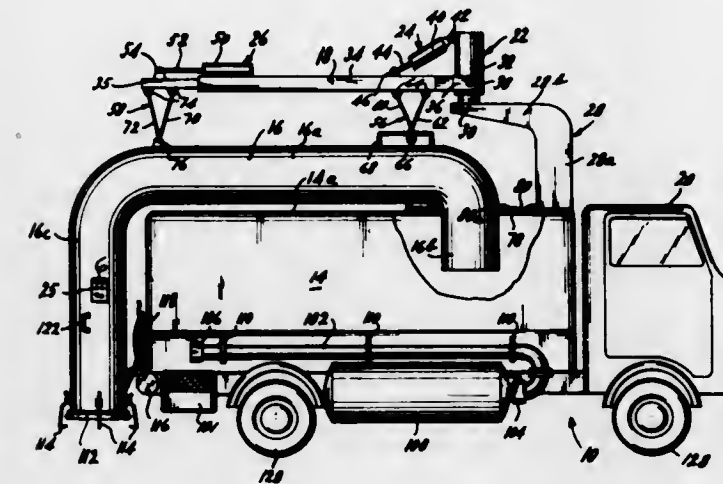
U.S. Cl. 214—41

11 Claims

A mechanized garbage collection system comprises a sunken ground receptacle for storing garbage and a truck-mounted installation for extracting the accumulated garbage therefrom and conveying the same to the truck storage tank for eventual disposal at the dump. The truck-mounted installation includes a garbage intake pipe which is

connected to the mouth of the sunken receptacle and means for applying a vornado-type airstream at the bottom of the

a pair of lift arms, and the other end of each of the lift arms is in turn pivotally secured to a housing slidably mounted on a generally vertical support post. A hydraulic piston is operatively connected to each of the housings for sliding the

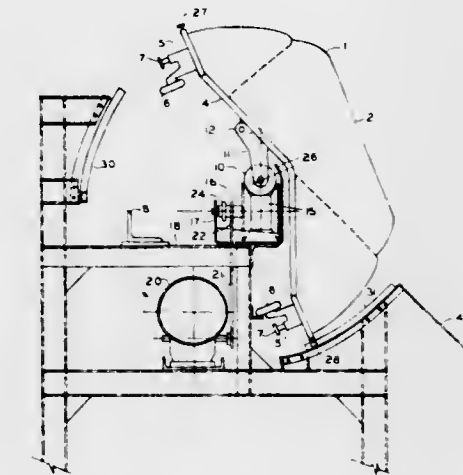


sunken receptacle to drive the garbage out of the receptacle, through the intake pipe and thence into the truck storage tank.

3,613,916
LUGGAGE CARRIER UNLOADER
Bernard Bradbury, Chico, Calif., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Dec. 19, 1969, Ser. No. 886,520
Int. Cl. B61d 9/14

U.S. Cl. 214—62 A

8 Claims



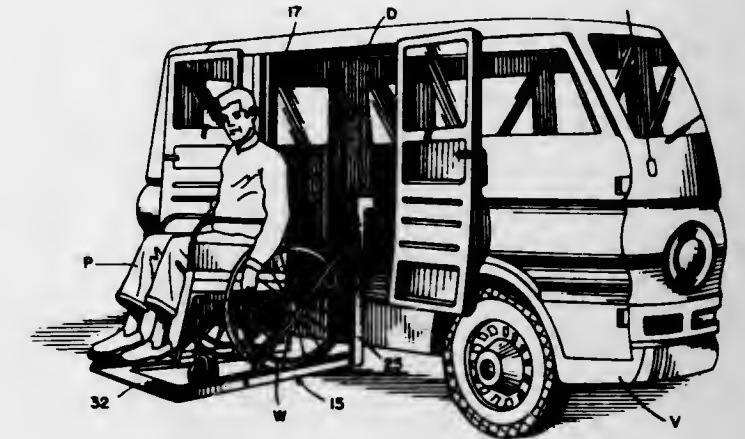
A mechanism for unloading individual open top cars of a baggage-transporting system comprises an unloading station having a series of power-driven rollers arranged to engage and support a longitudinally extending member of the car frame about which the car pivots as the car moves through the station. The car tips as cam followers extending laterally from the car engage cam tracks mounted along the path of the car. A plurality of cam tracks may be provided to tip the car at selected discharge points and hold the car in tipped position during the remainder of its travel through the unloading station.

3,613,917
LIFT DEVICE WITH A PIVOTAL ELEVATOR PLATFORM
John H. Fowler, Jr., 2648 Hillside Lane, Evanston, Ill.
Filed Nov. 5, 1969, Ser. No. 874,273
Int. Cl. B60p 1/44

U.S. Cl. 214—75 R

9 Claims

A lift device particularly suitable for lifting wheelchairs and the like into a vehicle. The lift device includes a platform which can be used to raise and lower objects between the ground and the floor of the vehicle, and when the lift device is not being used, the platform can be folded compactly into the vehicle. The platform is pivotally supported at the ends of

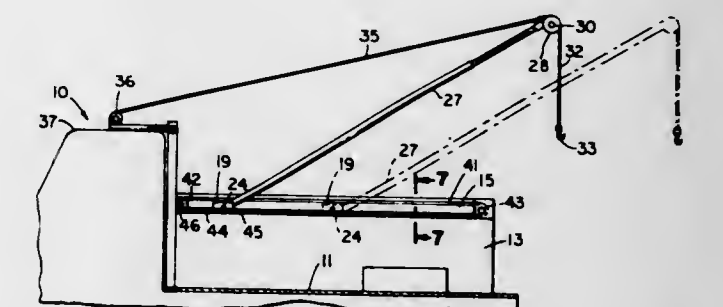


housings along their respective support posts to raise and lower the platform and the lift device may be folded by pivoting the platform about its connection to the lift arms and by pivoting the lift arms about their connections to the housings.

3,613,918
FIELD SERVICE VEHICLE
Melvin W. Kruschke, 37756 Duvall Court, Fremont, Calif.
Filed Dec. 10, 1969, Ser. No. 883,923
Int. Cl. B60p 1/54

U.S. Cl. 214—75 H

17 Claims



A field service truck having a boom that is movable fore and aft relative to the truck, along a pair of tracks lying above and at the sides of the truck bed, so as not to interfere with the holding capacity of the truck bed. A boom motor and winch acts through a cable to raise and lower the boom by swinging it about its lower ends; a hoist motor and winch control a cable for raising and lowering the load picked up by the hoist; and a travel motor acts through a chain drive to move the boom fore and aft of the truck. The travel motor is connected by differentials to the hoist winch and the boom winch, so that the boom can be moved fore and aft without substantially changing its height or the height of the load.

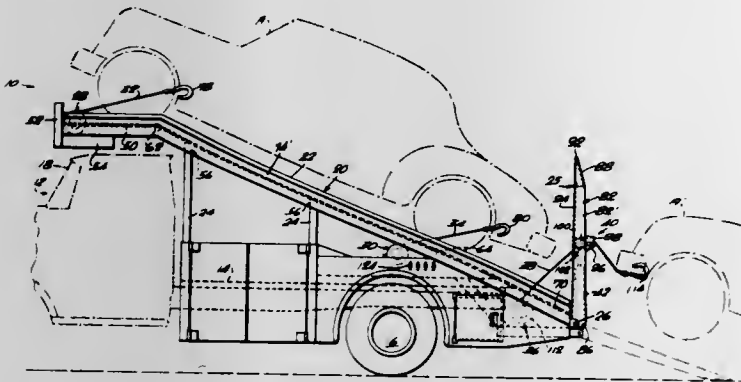
3,613,919
RAMP-TYPE WRECKER SERVICE VEHICLE
Arvo H. Ceppo, 7485 S.W. 128th St., Miami, Fla., and John Paul Jones, 121 N. E. 209th Terrace, Miami, Fla.
Filed Apr. 13, 1970, Ser. No. 27,627
Int. Cl. B60p 3/12

U.S. Cl. 214—85.1

8 Claims

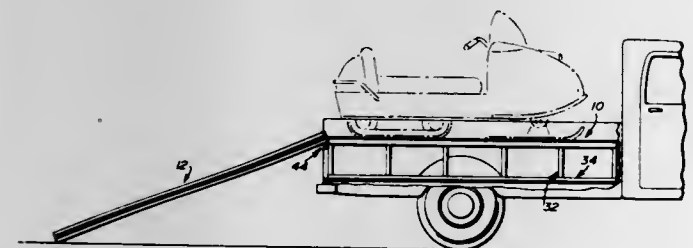
Load handling apparatus adapted to be mounted on an automotive service tow truck or wrecker truck configuration. The load-handling apparatus includes a primary ramp section extending upwardly and forwardly over the truck chassis unit and a secondary rampway section hingedly supported adjacent the lower end portion of the primary rampway

section. The secondary rampway section may be moved to a lowered inclined disposition defining substantially a continuation of the primary rampway section and providing bridgelike ramp means for permitting a disabled automobile load mass or the like to be drawn across the secondary rampway section and to a disposition bodily supported on the primary rampway section; the secondary rampway section may be moved to a raised disposition thereby permitting a



disabled vehicle or the like to be trailing drawn in a semisupported disposition behind the automotive truck chassis unit. The secondary rampway section also supports a pulley over which a winch cable is reeved when the secondary rampway section is in a raised disposition and affords lifting and support pulley means for lifting and trailing conveying a damaged or disabled automobile or the like.

3,613,920
EQUIPMENT DECK AND RAMP
James R. Flamm, 227 E. Main, Rexburg, Idaho
Filed Feb. 18, 1970, Ser. No. 12,193
Int. Cl. B60p 1/44
U.S. Cl. 214-85 10 Claims

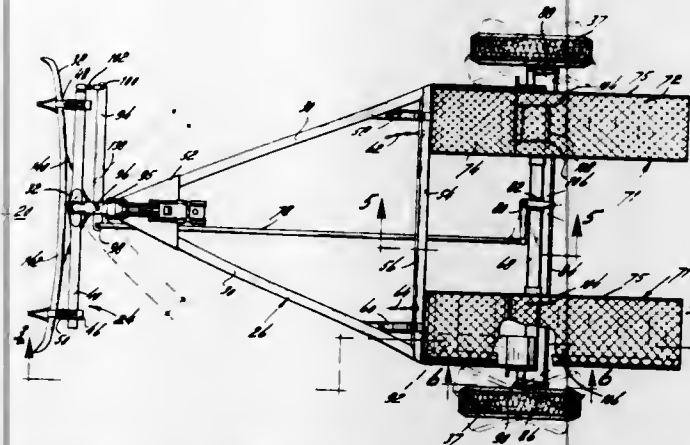


Auxiliary support structure for a pickup truck box or the like consisting of a rectangular deck positionable between the sides of the box in overlying relation to the wheel covers and maintained by depending legs units or upwardly extending support straps for providing a full width support surface. An elongated ramp is selectively bracket engaged with the rear end of the deck for the introduction and removal of equipment. The ramp is selectively storable beneath the elevated deck.

3,613,921
TOW DOLLY FOR WHEELED VEHICLES
James W. Ryden, Phoenix, and John C. Abromavage, Tempe, both of Ariz., assignors to Arcoa, Incorporated, Phoenix, Ariz.
Filed Aug. 26, 1969, Ser. No. 853,127
Int. Cl. B60p 1/44
U.S. Cl. 214-85 6 Claims

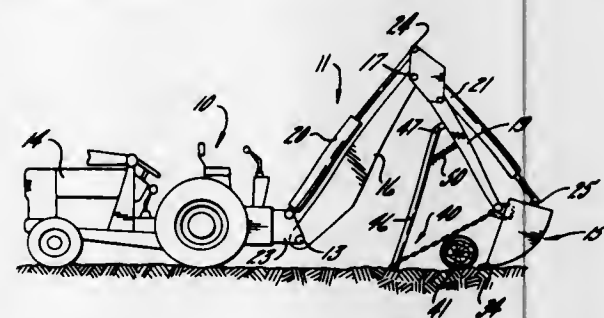
A tow dolly for wheeled vehicles of the type embodying a chassis having a pair of arms converging as a trailer tongue at its forward end and supporting an axle and pair of wheels at its aft end. The chassis includes a pair of towed vehicle wheel ramps pivoted to act as a ramp for loading of the towed vehicle front wheels onto the chassis and configured to confine the front wheels during towing. The structure

distinguishes from the prior art in combining these features with surge braking and linked steering mechanisms for



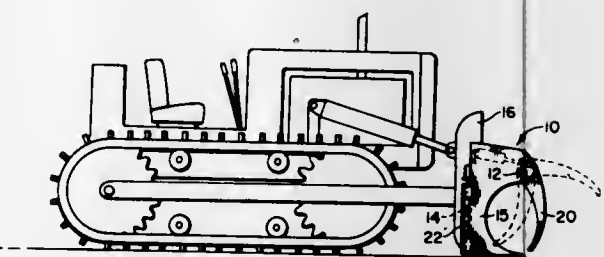
turning the two dolly wheels as the towing vehicle turns, as well as a compression means damping the pivoting of the wheel ramp during loading and towing.

3,613,922
ARTICLE-LIFTING ATTACHMENT FOR AN EXCAVATOR
Harry C. Clark, 226 W. Perry St., Belvidere, Ill.
Filed May 15, 1970, Ser. No. 37,535
Int. Cl. E02f 3/00
U.S. Cl. 214-138 7 Claims

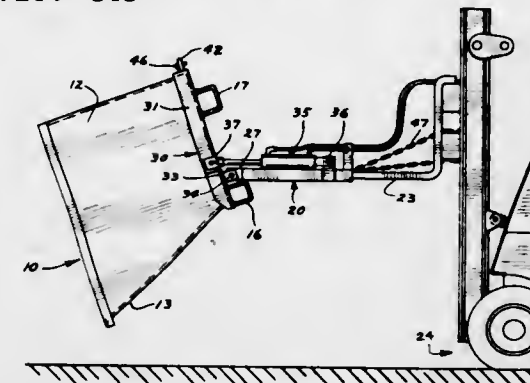


An attachment for a backhoe to enable the digging bucket thereof to pickup and lift articles such as boulders and logs which are too large to fit inside of the bucket. The attachment includes a chain fastened to the rear of the bucket, extending forwardly across the open side of the bucket and anchored to a pipe which is pivoted on and urged away from the dipper stick of the backhoe. The chain automatically wraps around the article and cinches the article onto the bucket as the latter is swung forwardly into lifting engagement with the article.

3,613,923
PICKUP ATTACHMENTS FOR LOADERS AND BULLDOZERS
Alva Z. Albright, P.O. Box 367, Port Barre, La.
Filed May 19, 1969, Ser. No. 825,599
Int. Cl. B66c 3/16
U.S. Cl. 214-147 1 Claim

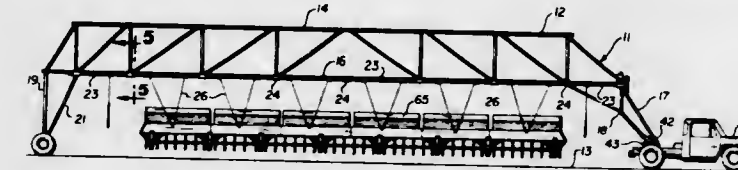


3,613,924
MATERIAL-HANDLING SYSTEM
Charles D. Monson, Coon Rapids, Minn., assignor to Inventors Engineering Inc., Minneapolis, Minn.
Filed July 9, 1969, Ser. No. 840,325
Int. Cl. B65b 21/02
U.S. Cl. 214-313 2 Claims



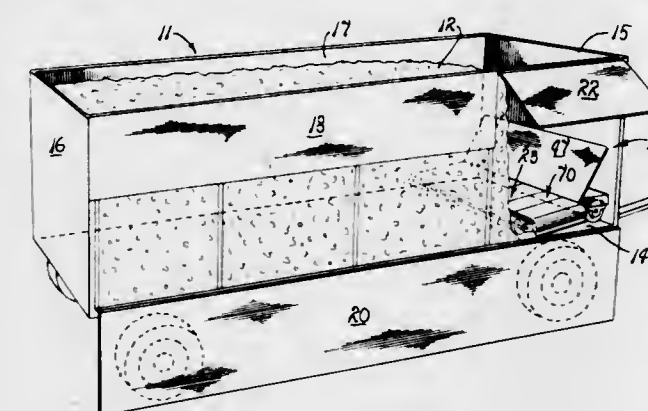
A material-handling system for factory or plant use wherein a plurality of scrap storage bins can be positioned in places where waste is to be accumulated, and a forklift mounted subframe can be used for picking up each of the bins separately, and tilting them to dump them.

3,613,925
IMPLEMENT CARRIER
Linly R. Stum, Box 297, Towner, Colo.
Filed Aug. 7, 1969, Ser. No. 848,157
Int. Cl. B60p 3/00
U.S. Cl. 214-394 4 Claims



A wheel mounted unit for carrying farm implements from site to site with the implements hoisted above ground contact and suspended from an elevated bridge-type support structure by powered retractable chains or cables. A fifth wheel towing attachment and steered rear wheels are provided to support and guide the unit, which is of substantial length. Remote controls are provided for steering operations and for powered positioning of the implement suspension elements.

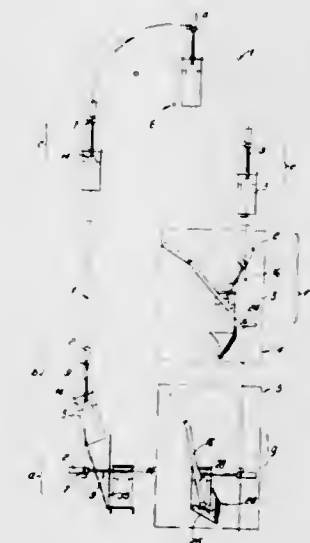
3,613,926
MATERIAL-CONVEYING MACHINE
Haskell C. Scroggins, 7701 E. Huntsman, Selma, Calif.
Filed Oct. 20, 1969, Ser. No. 867,849
Int. Cl. B60p 1/38
U.S. Cl. 214-520 4 Claims



A material-conveying machine for substantially nonflowable materials having a tendency to cluster in an agglomerate mass such as cottonseed, moisturized grain, pelletized animal feed and the like, comprising a self-propelled frame adapted to move in a predetermined forward direction into a pile of such material including material discharge means mounted on the frame for transporting and depositing such material transversely outwardly from the pile

and a material excavating member borne by the frame in forwardly edgewardly disposed relation to the discharge means to undermine a relative small portion of the material beneath the major portion of the pile during forward movement of the machine so that the major portion of the pile is left unsupported for immediate unrestricted gravitational descent upon the discharge means.

3,613,927
SYSTEMS FOR LOADING AND UNLOADING ELEVATORS
Claude Carlier, Montreuil S/Bois, and Andre Gravez, Montigny-les-Cormeilles, both of France, assignors to Saunier Duval
Filed Sept. 4, 1969, Ser. No. 855,115
Int. Cl. B65g 17/16
U.S. Cl. 214-622 17 Claims



An automatic loading and unloading device for an elevator of the paternoster type in which an endless chain is provided with a number of load supporters spaced along its length. The chain is driven in a vertical plane so that the load supporters may be driven vertically past spaced loading and unloading stations such as when transferring a load between different stories of a building. Each station includes mechanism for transferring a load between the station and the load supporters on the chain. Each such mechanism is actuable in response to the presence of a selected load carried by the chain.

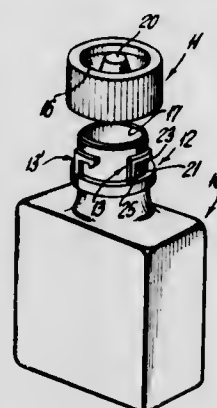
ERRATUM
For Class 214-778 see:
Patent No. 3,614,273

3,613,928
SAFETY-CLOSURE DEVICE
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Continuation-in-part of application Ser. No. 70,749, Sept. 9, 1970. This application Dec. 28, 1970, Ser. No. 101,879
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215-9 27 Claims

The invention contemplates selectively openable closure means that is tamperproof, in the sense that a correct sequence of two deliberate and independent movements of two parts is necessary in order to achieve access to the contents of the bottle or the like which is protected by the closure.

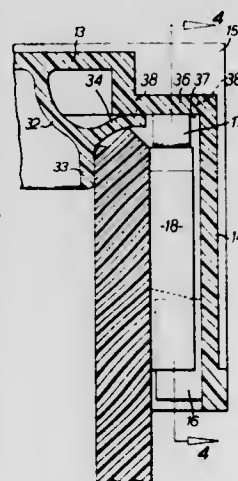
The specific construction that is described involves a bottle with a neck having a circular opening, and a closure cap having a cylindrical wall to overlap and lock to the outer surface of the neck. The closed end of the cap has an axially tapering yieldable section which engages the circular neck

opening in the course of closing the bottle. The nature of the lock is such as to preload the yieldable engagement and to



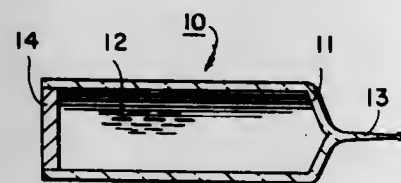
utilize the resilient action to retain the lock and to establish a liquid seal of the bottle contents.

3,613,929
SAFETY CLOSURE WITH SEAL
Eugene J. Treanor, The Cloisters, 94 Berrow Road, Burnham-on-Sea, Somerset, England
Filed Jan. 7, 1970, Ser. No. 1,276
Claims priority, application Great Britain, Jan. 7, 1969, 918/69
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9



A childproof closure for a container including a top and complementary neck which cooperate together to provide a leak proof seal. The closure is characterized by having two locking positions with it being necessary to press the closure in twice while twisting in order to unlock the closure for removal.

3,613,930
EASILY DISINTEGRABLE STRUCTURES
David Z. Lippmann, 3411 Speedway, Apt. D4, Austin, Tex.
Filed Apr. 9, 1970, Ser. No. 26,830
Int. Cl. B65d 1/02, 17/00
U.S. Cl. 215—32

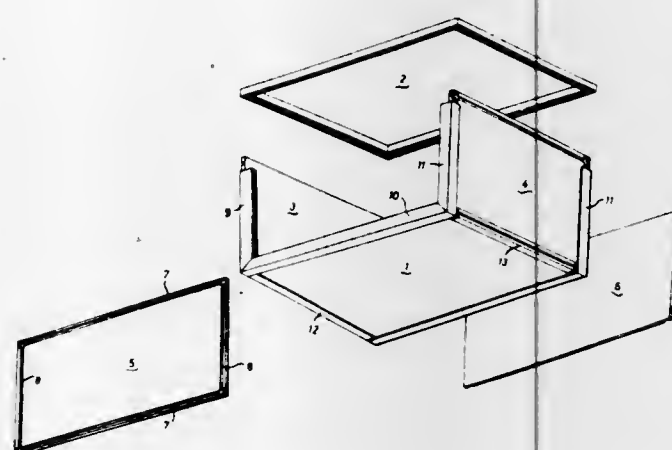


Disclosed is a structure having a main body portion substantially entirely composed of a frangible material, as tempered glass, having a narrow integrally joined tip member

projecting from said main body portion, the fracturing of the tip resulting in the complete disintegration of the main body portion, the main body portion being extremely resistant to shocks thereto while said tip is integrally joined to it. Specific embodiments utilizing this structure are disclosed as containers, bolts, normally closed valves, and connecting rings.

3,613,931
COLLAPSIBLE CRATE OR BOX
Peter Schifferle, Rheinfelden, Switzerland, assignor to Holzwerke AG, Zurich, Switzerland
Filed June 9, 1969, Ser. No. 831,348
Claims priority, application France, Oct. 18, 1968, 170,567
Int. Cl. B65d 9/12
U.S. Cl. 217—12

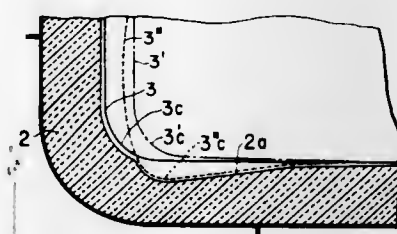
4 Claims



There is disclosed a collapsible crate or box including a bottom panel, sidewall panels and connecting strip means for connecting adjacent ends of adjacent side panels to one another and for connecting the side panels to the bottom panels. One face of all the panels is provided with grooves extending parallel to and in close proximity to the edges of the panels and each connecting strip means includes two channel-shaped strips disposed at an angle of 90° with respect to each other and having resilient legs and being narrowed at their mouths for cooperation with the grooves in the panels when the latter are inserted within the channels. Further, at least those connecting strip means associated between the sidewall panels and the bottom panel constituting hinge-forming connecting strip means and including a flexible web interconnecting the two channel-shaped strips of such connecting strip means.

3,613,932
LOW-TEMPERATURE LIQUEFIED GAS STORAGE EQUIPMENT
Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company Limited, Tokyo, Japan
Filed Apr. 16, 1970, Ser. No. 29,139
Claims priority, application Japan, May 1, 1969, 44/33395
Int. Cl. B65d 25/18
U.S. Cl. 220—9 LG

5 Claims

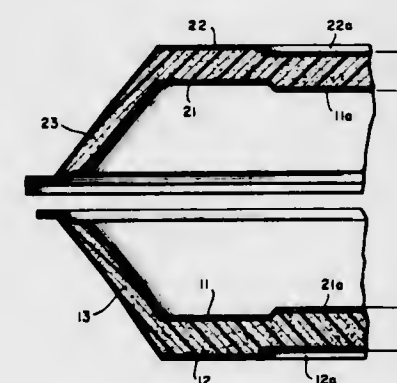


A storage tank and tanker for storage of low-temperature liquids such as liquefied gases. The tank is constructed as an inner container or vessel made of flexible metallic material supported or contained in an outer vessel or tank provided

with a thermal insulation lining. The inner tank has its walls joined by elongated areas of jointure which are arcuate in cross section defining rounded edges of the tanks. The corners of the inner tank each have a configuration of a portion of a sphere and the arcuate areas of jointure join the corners to the walls merging therewith smoothly. The outer tank is rigid and has a lining interiorly thereof made of a rigid thermal insulation material provided with four recesses in the lining of the bottom of the tank. The recesses are spanned by the bottom of the inner tank when it is free of a cold liquid and when it is loaded or filled the four corners are received in respective ones of the recesses. These recesses allow deformation of the inner tank without concentration of stresses.

3,613,933
WARMTH-MAINTAINING UTENSILS
Erwin Pilz, Rastatt; Klaus Vetter, Offenburg; Rudolf Pankratz, Rastatt, all of Germany, and Stierlen-Werke Aktiengesellschaft, Rastatt, Baden, Germany
Filed Jan. 28, 1969, Ser. No. 802,312
Claims priority, application Germany, Jan. 30, 1968, P 17 53 152.1
Int. Cl. B65d 7/00
U.S. Cl. 220—4 R

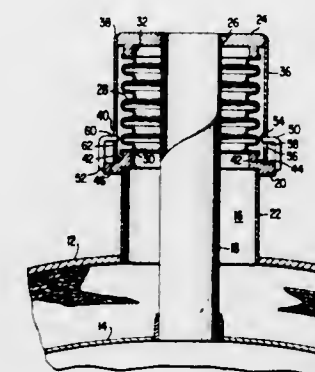
3 Claims



A two-sectional implement for retaining the heat of food to be served, which includes a bottom section adapted to receive a plate with food, and a top section adapted to fit and to be placed upon said bottom section to form a closed chamber therewith adapted selectively to be opened and closed, each of said sections comprising an inner wall and an outer wall arranged in spaced relationship to said inner wall and defining therewith a permanently closed chamber, and synthetic hard foam material filling said permanently closed chamber.

3,613,934
INNER CONTAINER SUPPORT STRUCTURE FOR DEWAR VESSEL
Kenneth R. Leonard, Boulder, Colo., assignor to Cryogenic Engineering Company, Denver, Colo.
Filed Jan. 3, 1969, Ser. No. 788,799
Int. Cl. B65d 25/00
U.S. Cl. 220—14

12 Claims

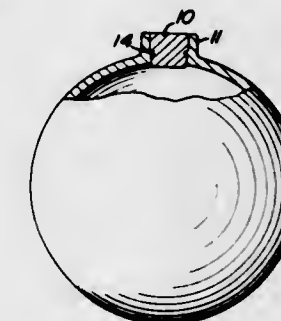


A dewar container has one end of a bellows supported above the outer wall and the other end connected to a

closure plate affixed to the top of the inner container's neck tube so that the inner storage container is pendularly suspended from the outer wall by the neck tube and bellows. A cylindrical support surrounds the bellows and extends downwardly from the closure plate to a support adapter on the outer wall. The cylindrical support is free to move up and down with respect to the outer wall's support adapter as the inner container undergoes its pendular motion, but a tab and slot arrangement prevents more than a predetermined amount of both upward and rotational motion of the support with respect to the outer wall, while engagement of the support with the adapter limits downward motion of the inner container with respect to the dewar's outer wall.

3,613,935
CLOSURE AND METHOD OF MAKING THE SAME
Bernard Rogge, Baldwin, Md.
Filed Mar. 28, 1967, Ser. No. 627,253
Int. Cl. B65d 39/00
U.S. Cl. 220—24 A

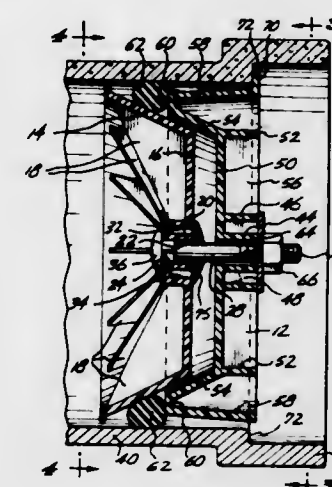
15 Claims



A seal for receptacles having generally a cylindrical opening closed by an unthreaded plug requiring no packing or compressible material to prevent leakage. The seal is accomplished by the sheared metal formed in an internal undercut of the plug of highly compressed metal and the contiguous surfaces of the sealing plug and wall of the cylindrical opening.

3,613,936
ADJUSTABLE DIAMETER PIPE CLOSURE PLUG
Arthur E. Kaiser, 17200 Brookside Blvd. N.E., Seattle, Wash., and Jefferson M. Fluke, 1811 10th W., Kirkland, Wash.
Filed Apr. 20, 1970, Ser. No. 30,077
Int. Cl. B65d 39/12
U.S. Cl. 220—24.5

8 Claims



An elastomeric sealing ring is supported on a frustoconical support surface which surrounds a radial closure wall. A sealing-ring-positioning member is located axially endwise of the small diameter end of the sealing ring support. It includes an axial extension which concentrically surrounds the small-diameter end portion of the sealing ring support and a generally radial end wall in contact with the sealing ring. A

bolt extends axially between the radial closure wall and the sealing-ring-positioning member. A nut on the bolt is tightened to cause the sealing-ring-positioning member to move the elastomeric sealing ring up the frustoconical surface, to change its effective diameter. The large diameter end of the frustoconical support is faced towards pressure in the pipe so that pressure on the radial closure wall will make the sealing ring tend to roll further up on the frustoconical support and engage the pipe more tightly.

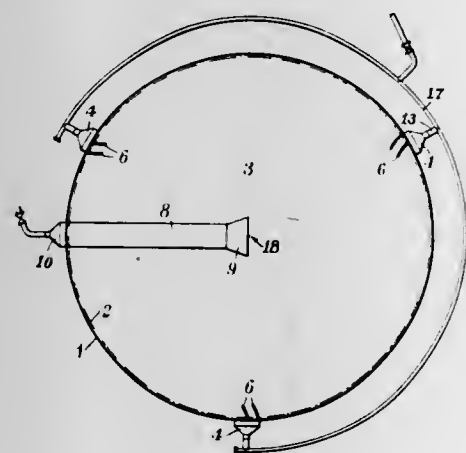
3,613,937

FLOATING ROOF HYDROCARBON TANK

Francis Schlecht, Versailles, France, assignor to Constructeurs Associes pour le Montage D'Ouvrages Metalliques, Paris; Constructions Metalliques de Provence, Levallois-Perret and Compagnie Industrielle Maritime, Paris, all of, France
Filed Apr. 15, 1970, Ser. No. 28,634
Claims priority, application France, Apr. 15, 1969, 69 11556
Int. Cl. B65d 87/18

U.S. Cl. 220—26 R

3 Claims



A hydrocarbon tank of the cylindrical vessel and floating roof type comprising at its base, on the tank skirt, fluid inlet nozzles in the form of flattened, ducts disposed near the bottom and provided with vertical curvilinear parallel baffle plates leaving a small gap between their outermost vertical edges and the adjacent tank wall in order to produce a whirling motion in the fluid, and a nozzle of same type connected to the discharge or draining pipe and to a radial duct in the form of a flattened tunnel.

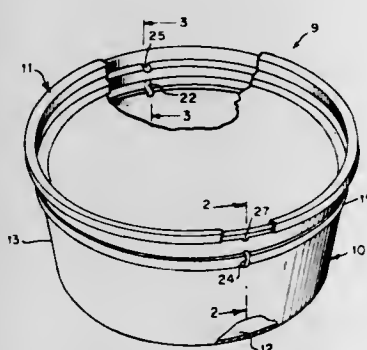
3,613,938

VENTED PACKAGE

Robert F. Westcott, Hillsboro, Ill., assignor to International Paper Company, New York, N.Y.
Filed May 14, 1970, Ser. No. 37,096
Int. Cl. B65d 51/16

U.S. Cl. 220—44 R

4 Claims



A plurality of venting means are provided in an annular, radially outwardly directed channel in the sidewall of a plastic container permitting the egress of gases formed by the contained foodstuffs while preventing deformation of the snap-on plastic closure lid.

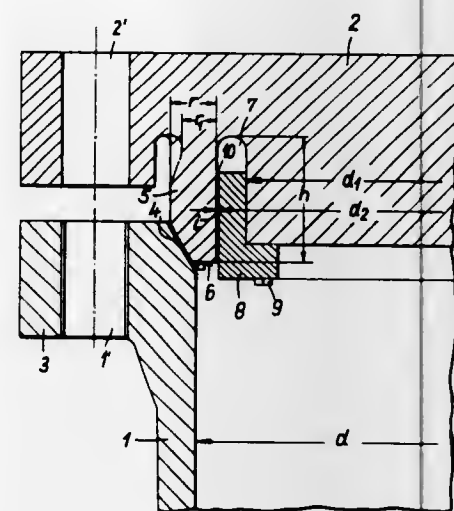
3,613,939

CLOSURE FOR HIGH-PRESSURE CONTAINER

Joachim Ehle, Essen, Germany, assignor to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Germany
Filed Dec. 8, 1969, Ser. No. 883,246
Claims priority, application Germany, Dec. 14, 1968, P 18 14 721.2
Int. Cl. B65d 53/00

U.S. Cl. 220—46

9 Claims



A sealing arrangement for high-pressure container and pipes, in which one of the sealing surfaces of a sealing structure forms a part of the cover or the container to be sealed and extends in axial direction of said cover or container while being elastically deformable in response to the pretightening pressure exerted upon said cover and in response to the full operating pressure developed in said container.

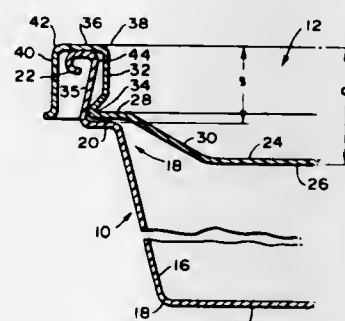
3,613,940

SLICE FEEDING LID

Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed Mar. 31, 1970, Ser. No. 24,280
Int. Cl. B65d 43/10, 21/00

U.S. Cl. 220—60

10 Claims



A slice feeding lid designed for use in automatic handling equipment and having a closure wall with a central portion offset from the plane of the periphery of the central portion and joined thereto by a camming surface which cooperates with an identical adjacent lid in a stack to cause the stacked lids to displace axially when the bottom lid is sliced from the stack.

ERRATUM

For Class 220—64 see:
Patent No. 3,613,957

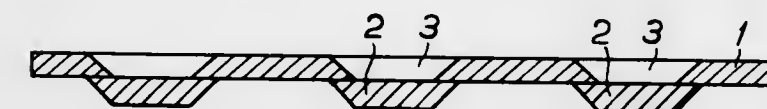
3,613,941

TRANSFORMER TANK

Robert Koranyi, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Nov. 21, 1969, Ser. No. 878,806
Claims priority, application Sweden, Dec. 5, 1968, 16616/68
Int. Cl. B65d 7/42

U.S. Cl. 220—71

4 Claims



In a transformer tank the bottom is strengthened by cutting out rectangular plates with tapered edges so that the plates have the shape of truncated pyramids. The plates are placed under the holes formed when the plates are cut out of the bottom, the largest flat surface of each plate facing the side of the bottom where each hole is smallest. The plates are then welded to the bottom.

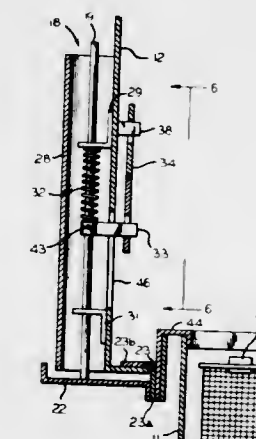
3,613,942

SAFETY CLEANING TANKS

Clarence E. Williams, Chicago, Ill., assignor to Justrite Mfg., Co., Chicago, Ill.
Filed July 24, 1969, Ser. No. 844,302
Int. Cl. B65d 25/00

U.S. Cl. 220—88 R

9 Claims



A cleaning tank featuring a safety cover having biasing means for automatic closing. A fusible link restrains the biasing means to enable the cover to remain open unless excessive ambient heat melts the link. When the link melts, the cover is automatically forced to close.

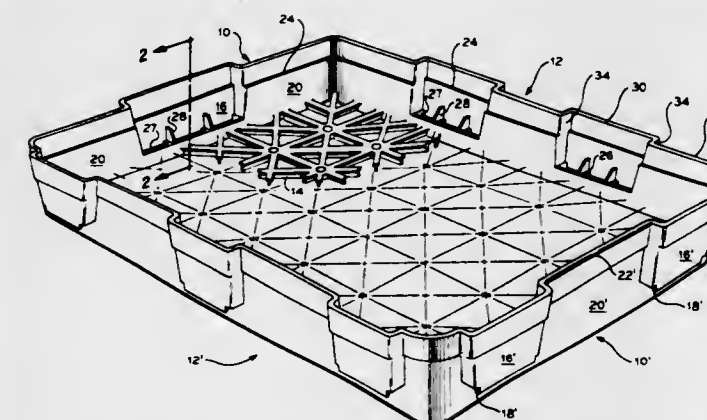
3,613,943

NESTING AND STACKING CONTAINER

Orville J. Bridenstine, Wayzata, Mich., assignor to Phillips Petroleum Company
Filed Dec. 31, 1969, Ser. No. 889,537
Int. Cl. B65d 21/04

U.S. Cl. 220—97 D

12 Claims



A nesting and stacking container provided with means to secure the containers together in stacked position. In a

preferred embodiment, the container is also provided with means to prevent longitudinal and/or transverse movement when in stacked position.

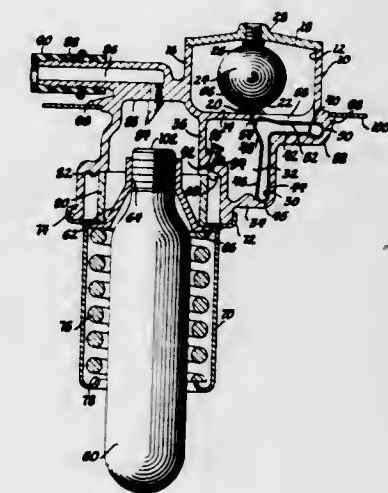
3,613,944

SENSOR AND FRAGMENTIZABLE GLASS MEANS FOR RELEASING A PENETRATOR

Philip B. Zeigler, Pittsford; James C. St. Amand, Spencerport, and Ernst L. Ranft, Webster, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 5, 1969, Ser. No. 882,668
Int. Cl. B67b 7/24

U.S. Cl. 222—5

9 Claims



A sensor and trigger mechanism includes a ball of predetermined weight held against a pedestal-type seat by an adjustable screw. A sealed pressure vessel is biased axially toward a hollow penetrator pin and normally located in spaced relationship to the penetrator pin by a hollow frangible glass cylinder having a compressively stressed continuous outer surface skin or layer. A fragmentor pin is movably positioned to engage an outer edge of the glass cylinder to fragmentize the glass cylinder into segments and permit the seal of the vessel to be ruptured or penetrated by the penetrator pin so that the supply of pressure fluid within the cylinder can escape through the penetrator pin and into a manifold to inflate a restraint cushion. A spring member includes a first arm for engaging the fragmentor pin and a second arm which includes an integral detent portion for holding the first arm out of engagement with the fragmentor pin. The detent portion of the second arm is held in engagement with the first arm when the ball is seated. Upon application of a predetermined rate of acceleration change to the ball over a predetermined time duration, the ball slides off the seat and from underneath the adjustable screw to release the second arm and in turn release the first arm to engage the fragmentor pin and drive the pin into engagement with an outer edge of the cylinder to fragmentize the cylinder.

3,613,945

CAN-VENDING AND FEED MECHANISM

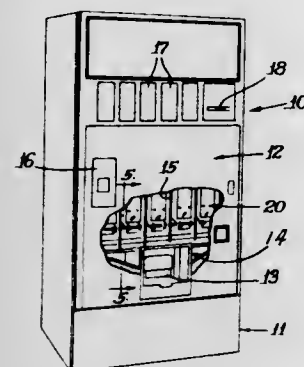
Donald C. Rockola, Chicago, and Floyd V. Bookout, Long Grove, both of Ill., assignors to Rock-Ola Manufacturing Corporation, Chicago, Ill.
Filed Aug. 21, 1969, Ser. No. 851,832
Int. Cl. B65g 59/00

U.S. Cl. 221—295

2 Claims

Solenoid-operated vend and feed gates interlocked with a linkage-actuated cam which is responsive to periodic actuation of an electrical solenoid; the mechanism being unified as a removable compact module located at the discharge end of a storage rack containing canned goods; the

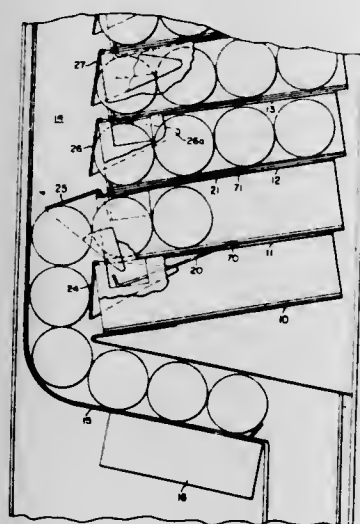
same being operable, in response to customer selection and preconditioning coin deposit, to dispose canned items one at a time and position a succeeding canned item in a vend or release position.



3,613,946
SLANT SHELF VENDING MACHINE MAGAZINE
Franklin D. Klem, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 29, 1970, Ser. No. 32,925
Int. Cl. G07f 1/128

U.S. Cl. 221-109

6 Claims



A slant shelf vending machine magazine is comprised of a plurality of superposed inclined shelves having their lower ends discharging into a substantially vertical passageway with an article control member associated in the storage space of the lower end of each shelf and movable in response to the presence of an article in the associated shelf into the shelf next above in a manner to block movement of an article therefrom into the passageway thus assuring substantially first-in and first-out delivery of articles to be vended.

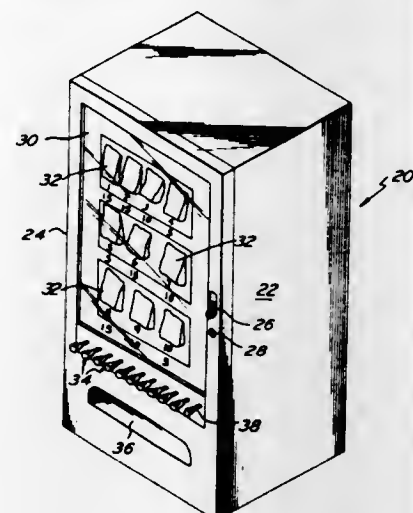
3,613,947
POUCH VENDING MACHINE
Henry Verbeke, Chester, N.J., assignor to Universal Vendors, Inc., Philadelphia, Pa.
Filed Nov. 19, 1969, Ser. No. 878,117
Int. Cl. B65g 59/00

U.S. Cl. 221-125

14 Claims

A vending machine adapted to vend commodities that are packed in bags or pouches. The pouches are loaded in a spaced vertical alignment on a plate of a column of the machine. The bags are supported by retainers at their tops. A pivotally mounted pawl is provided for each spring clip, and all of the pawls are supported on a pawl bar, with one pawl bar for each plate. The pulling of a plunger permits the lowermost pawl to engage a retainer on a column, and disengage the retainer from its associated pouch. Each time the plunger is pulled, the next lowermost retainer will be disengaged from its associated pouch. When all of the bags in

the column have been vended, the column will automatically be locked out against further vending. The vending machine

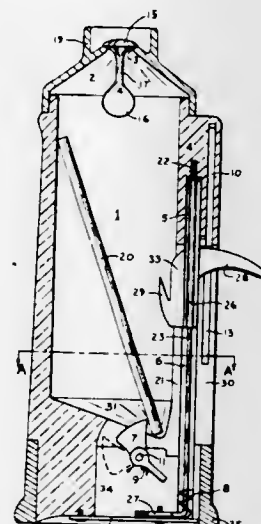


contains a plurality of columns, with a separate plunger for each column.

3,613,948
SANITARY SIPPING-STRAW DISPENSER
Leonard Atlee Wills, P. O. Box 7354 Benjamin Franklin Station, Washington, D.C.
Filed Oct. 20, 1969, Ser. No. 867,734
Int. Cl. B65g 59/00; B65h 3/00

U.S. Cl. 221-250

4 Claims

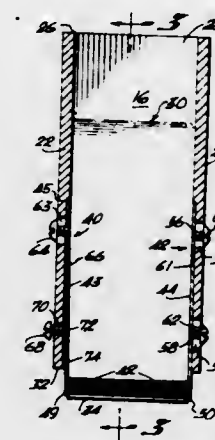


A sanitary straw dispenser, of the type having vertically reciprocable straw-dispensing means and wherein straws are supported standing on end within a receptacle, is provided with a combination straw retention and straw discharge opening closure member. The straw retention closure member rests on the receptacle at the straw discharge opening and is adapted to provide a cover for the opening, and has a stem portion extending downwardly through the discharge opening into the interior of the receptacle with a widened portion at its end which serves to prevent detachment of the member from the receptacle top wall and adds weight at this location for proper operation. The member is adapted so that a straw being elevated into the discharge opening by the straw-dispensing means, displaces the member from its cover position sufficiently to permit passage of the straw; but at the same time the member is pressing the straw against the edge of the discharge opening (gravitationally resisting displacement), so that after the ejector is lowered, the straw is retained at its elevated position by friction for withdrawal by a user. Upon withdrawal of the straw, the member returns to its closed position over the opening by operation of gravity.

3,613,949
DISPENSING APPARATUS FOR PLIABLE SHEET FORM MATERIAL IN STACKED RELATION
Peter R. Tripodi, Miami, Fla., assignor to Liggett & Myers Incorporated, New York, N.Y.
Filed Apr. 23, 1970, Ser. No. 31,119
Int. Cl. A47f 1/04

U.S. Cl. 221-310

6 Claims

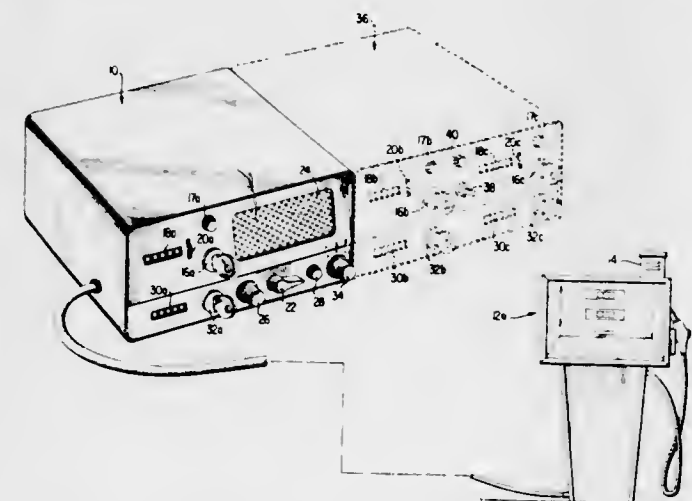


A dispenser for cyclically dispensing sheet material arrayed in stacked relation within the dispenser onto an assembly line during a packaging operation. The dispenser includes a receptacle having an open end partially spanned by a floor at one side only so that the main portion of the lowermost member of the stack is generally unsupported and tends to cantilever or bow downwardly of its own weight. Gripper fingers are provided embracing the sides of the stack to hold the unsupported end of the stack. Adjustment means are provided to vary the tension with which the unsupported end of the stack is restrained from withdrawal from the dispenser.

3,613,950
SYSTEM FOR REMOTELY CONTROLLING AND MONITORING FUEL-DISPENSING PUMPS
Charles R. Sauber, Raleigh, N.C., assignor to Aerotron, Inc., Raleigh, N.C.
Filed Aug. 25, 1969, Ser. No. 852,848
Int. Cl. B67d 5/30

U.S. Cl. 222-16

9 Claims

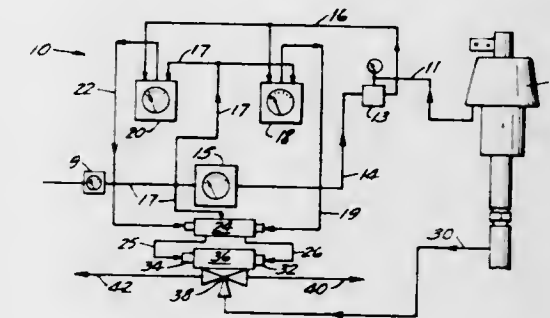


A system is provided for controlling and monitoring a plurality of remote fuel-dispensing pumps from a central location. An intercom circuit between the dispenser pumps and a control console will inform the console operator when to start operation of the system. When started, a transaction counter indicative of the dispenser pump selected by a pump selector switch will reset to zero and begin registering until a controlled preset time after pulses from a telemeter within the dispenser pump are no longer received. At this time, the system will turn off until again manually reactivated by the console operator. The central station communicates with the remote fueling stations by way of a single pair of wires impedance matched to the system.

3,613,951
PNEUMATICALLY CONTROLLED DISPENSING SYSTEM
Wilfred L. Muir, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 1, 1970, Ser. No. 33,627
Int. Cl. B67d 5/22

U.S. Cl. 222-36

5 Claims

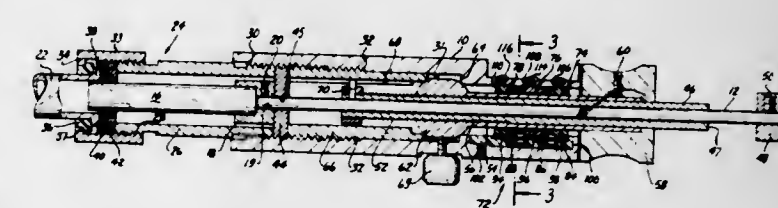


The invention provides a pneumatically controlled dispensing system wherein the strokes of an air-operated fill pump, which is adapted to deliver a predetermined amount of fill material on each directional stroke, are sensed and a flow valve at a fill station is thereby controlled, which dispensing system comprises: (a) air-operated signal means for sensing each stroke of said pump and for producing an air pulse corresponding to each air pulse corresponding to each said stroke; (b) air-operated counter means for counting each air pulse produced by said signal means for producing an air pressure response signal after receiving a predetermined number of said air pulses; (c) flow valve means movable between a first and a second position for directing the flow of fill material delivered thereto from said pump between a first and a second outlet line; and (d) actuator means operated by said response signal of said counter means for moving said valve means between said first and second positions.

3,613,952
FLUID DISPENSER WITH ADJUSTABLE STROKE PISTON AND REGISTER
Roger Gilmont, Douglaston, N.Y., and Raymond E. Portyrata, North Haven, Conn., assignors to Cole Parmer Instrument Company, Chicago, Ill.
Filed Apr. 23, 1970, Ser. No. 31,088
Int. Cl. B67d 5/22

U.S. Cl. 222-43

18 Claims



A digital dispenser comprises a cylinder-plunger assembly for accurately dispensing a measured amount of fluid from said cylinder. A rotatable screw jack is adapted to adjust the position of a stop member to define the length of the plunger stroke. A numbered wheel assembly is operatively connected to the screw jack through a rotatable knob whereby the stroke is set by rotating the knob and the desired volume appears on the numbered wheel assembly as a digital readout.

3,613,953

METHOD AND APPARATUS FOR FEEDING CIGAR FILLER AND THE LIKE

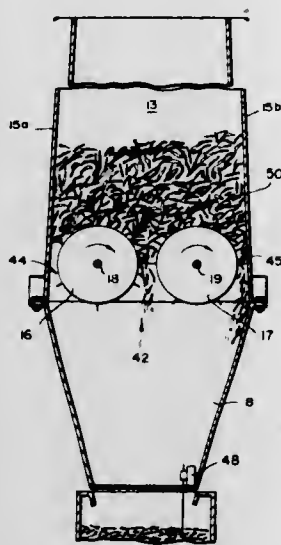
Eugene H. Paules, Red Lion, Pa., assignor to Yoe Leaf Tobacco Co., Yoe, Pa.

Filed Aug. 15, 1969, Ser. No. 850,398

Int. Cl. B67d 5/08

U.S. Cl. 222-56

11 Claims



A system is disclosed of feeding filler for cigars to cigar-making machines. The bulk filler is fed to a hopper having sidewalls which slant outwardly from top to bottom, so that the filler does not bridge the sidewalls. At the bottom of the hopper there are two cylinders which have parallel horizontal axes, and which have feed pins or teeth which separate the filler and feed it downwardly through slots between the cylinders and also along the hopper sidewalls. The cylinders are rotated together in one direction, and they are started and stopped frequently and their direction is reversed each time they are stopped. The filler is picked apart and fed downwardly without objectionable breakage and in a precisely controlled manner.

3,613,954

DISPENSING APPARATUS

Peter D. Bayne, Shorewood, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 574,971, Aug.

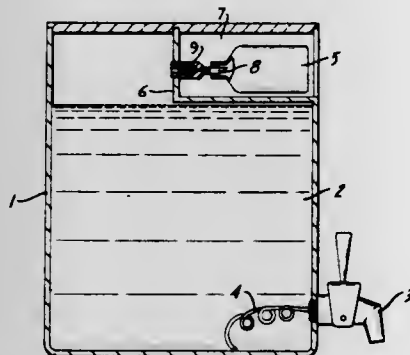
25, 1966, now abandoned. This application June 20, 1968,

Ser. No. 747,061

Int. Cl. B67d 5/08; B65d 83/14

U.S. Cl. 222-61

61 Claims



The invention relates to a dispensing unit for dispensing a beverage containing dissolved carbon dioxide and which utilizes a liquified fluorocarbon gas as a pressurizing medium. The unit includes a closed container containing a beverage having dissolved carbon dioxide. The liquified fluorocarbon gas is contained in a separate reservoir which communicates directly with the headspace of the container above the liquid level. As the beverage is drawn from the container, the volume of the headspace increases, thereby decreasing the

pressure in the headspace and resulting in the vaporization of additional quantities of the liquified fluorocarbon gas which act to maintain the desired counterbalancing pressure within the headspace to keep the carbon dioxide in solution in the beverage.

3,613,955

COMPARTMENTALIZED CONTAINER PACKAGE

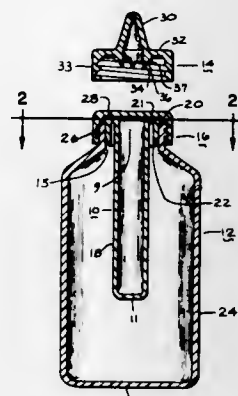
Richard B. Wetherell, Jr., Tolland, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed July 15, 1969, Ser. No. 841,819

Int. Cl. B67b 7/24

U.S. Cl. 222-83

6 Claims



A compartmentalized container package for storing, mixing and dispensing ingredients which must be segregated prior to use including an inner container releasably supported within an outer container, a removable closure over the mouth of the inner container, and a dispensing cap having a projection which forcibly separate the containers when the cap is screwed onto the outer container to permit mixing of the contents. The releasable support means in a preferred embodiment has a frangible bridge section connected to the inner container and a laterally projecting surface resting on the wall of the outer container.

3,613,956

DISPENSING PACKAGE AND CONTAINER THEREFOR

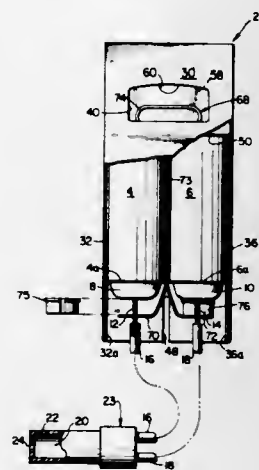
Roger L. McCulloch, Elmhurst, Ill., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Nov. 10, 1969, Ser. No. 875,366

Int. Cl. B67d 5/56

U.S. Cl. 222-136

7 Claims



Carton means adapted for use in connection with dispensing apparatus including a plurality of container means for simultaneously discharging separate pressure fluids, respectively, characterized by the provision of support means for supporting the containers in vertical side-by-side relation within and spaced from the ends of said carton, and carrying handle means adjacent the top of said carton for the manual

3,613,959

LIQUID DISPENSER

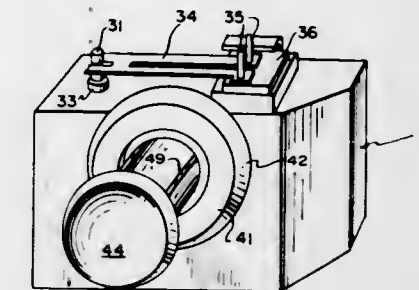
Anthony Mason, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed July 18, 1969, Ser. No. 842,989

Int. Cl. B67d 3/00

U.S. Cl. 222-187

11 Claims



transport thereof in a vertical orientation. In accordance with one feature of the invention, valve-operating means are provided adjacent the handle means for operating the discharge valves of all the containers to permit a user with one hand to both carry the apparatus and to simultaneously operate all the discharge valves associated therewith. According to a second feature, the carton includes improved container support means comprising additional bottom panel means and handle panel means arranged at the lower and upper ends of the carton, respectively, for achieving a greatly strengthened rugged carton construction.

3,613,957

RESINOUS ENCLOSURE MEMBERS RENDERED IMPERMEABLE BY SULFONATION AND NEUTRALIZATION

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 25, 1968, Ser. No. 770,848

Int. Cl. B65d 25/34, 25/00

U.S. Cl. 220-64

17 Claims

Resinous enclosure members are disclosed which are surface sulfonated and neutralized to the extent that they contain about 0.001 milligram to about 50.0 milligrams of sulfonate groups per square centimeter wherein the groups are selected from ammonium sulfonate, metal sulfonate and substituted quaternary nitrogen sulfonate groups. The treated enclosure members are rendered substantially impervious to the penetration of various solvents, gases, and vapors by this treatment. The enclosure members are useful to retain or transport hydrocarbon solvents, perfumes, fuels, etc. and thus can be used as gasoline tanks, perfume bottles, plastic hoses, etc.

A liquid dispenser in which liquid is transferred from a container as by capillary action to a retaining member such as a spongy mass and then expressing means selectively compressing the retaining member at the desired time to force expressed liquid therefrom and conveying means such as a trough structure for conveying the expressed liquid away from the retaining member and the container.

3,613,960

REFILLABLE AEROSOL CONTAINER

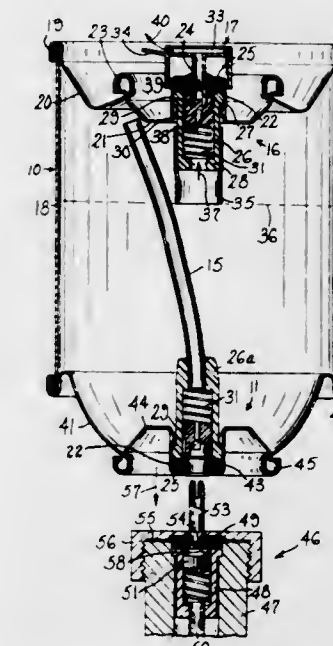
Walter C. Beard, Middlebury, Conn., assignor to Aerosol Systems, Inc., Middlebury, Conn.

Filed Dec. 6, 1968, Ser. No. 781,819

Int. Cl. B65d 83/14

U.S. Cl. 222-330

11 Claims



3,613,958

MERCHANDISING AND DISPENSING CONTAINER

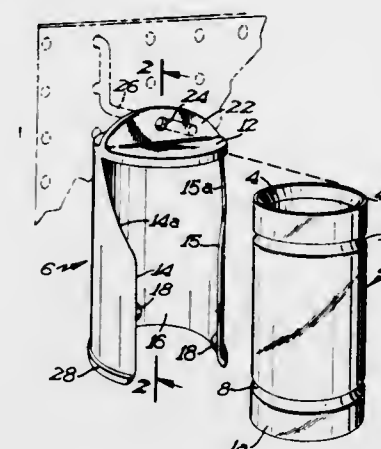
Theodore L. Opp, 825 8th Ave. South East, Aberdeen, S. Dak.

Filed Jan. 21, 1970, Ser. No. 4,505

Int. Cl. B67d 5/06

U.S. Cl. 222-180

4 Claims



A cylindrical merchandising and dispensing container closed at one end and open at the opposite end is slidably housed within a generally cylindrical closure element having a transverse end wall which covers the open end of said container, said closure element having a longitudinally extending access opening in the cylindrical sidewall thereof, which serves as a dispensing receptacle for the material or articles in said container. Locking lugs at the opposite ends of said closure element releasably hold said container securely therein, and an apertured hanger flange peripheral support flange on opposed end portions of said closure element provide for the mounting and suspension of the container device in either an upright or an inverted position.

A refillable aerosol container capable of being filled with a liquid formulation to a predetermined level, comprising a cylindrical shell having a first annular disc connected to one end of the shell and a second annular disc connected to the other end of the shell. A first valve cap having a two-way dual-purpose valve positioned therein for receiving and dispensing liquids is connected to the first annular disc and a second valve cap having a second dual-purpose valve located therein for dispensing liquids is connected to the second annular disc. Nozzle heads may be added to the dual-purpose valves so that the valves can be used to spray liquids. Additionally, a dip tube having an internal diameter of one thirty-second to eight thirty-seconds of an inch is located on the first dual-purpose valve and a straight dip tube having an internal diameter of three-sixteenths to ten-sixteenths of an inch is located on the second dual-purpose valve. In place of the straight dip tube, a U-shaped dip tube having an internal diameter of one thirty-second to eight thirty-seconds of an inch may be used on the second valve.

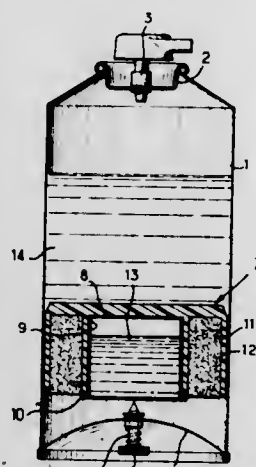
3,613,961

DISPENSING CONTAINER

Bruno Morane, Paris; Charles Paoletti, Aulnay sous Bois; Louis Merrien, Fontenay sous Bois; Robert Sathicq, Villepinte, and Manlio Maurelli, Vaujours, all of France, assignors to L'Oreal, Paris, France
 Filed Feb. 2, 1970, Ser. No. 7,691
 Claims priority, application France, Feb. 3, 1969, Mar. 12, 1969, 69 02290; 69 06986
 Int. Cl. B65d 83/14

U.S. Cl. 222-389

13 Claims



A container for fluids which are to be pressurized at the moment of use comprising a dispensing valve at one end, a free piston slidable within the container, and a base encircling a slidable pin at the bottom of the container. The lower face of the piston carries a separate rupturable cartridge of pressurizing fluid positioned to be ruptured when the pin is forced inward, and a flexible peripheral flange which is urged against the wall of the container by a ring of resilient foam material.

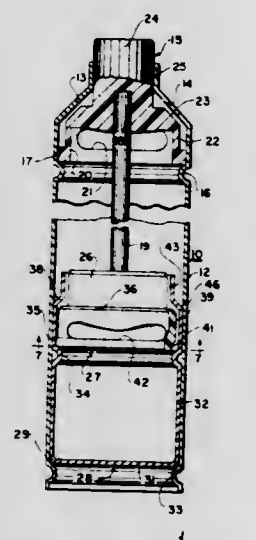
3,613,962

DISPENSING CONTAINER FOR FLOWABLE PASTY MATERIAL AND THE LIKE

Frank L. Boone, 3448 Driftwood Circle, Cincinnati, Ohio
 Filed Sept. 24, 1969, Ser. No. 860,499
 Int. Cl. B65d 83/14

U.S. Cl. 222-389

5 Claims



A dispensing container for flowable or pasty material which includes a pressure fluid container mounted in a body of a dispensing container at one end thereof. A resilient closure fitting is mounted at the other end and normally closes a discharge opening. When the resilient closure fitting is deformed, the discharge opening is opened. An actuator rod mounted in the closure fitting actuates the pressure fluid container to release gas under pressure which drives a piston along the dispensing container to discharge contents thereof.

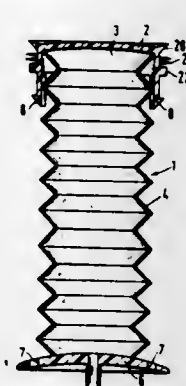
3,613,963

CONTAINER FOR THE STORAGE AND DELIVERY OF A FLUID OR PASTY MATERIAL

Otto Berkmueller, 14a Willibaldstrasse, 8 Munich 21, Germany
 Filed Oct. 27, 1969, Ser. No. 869,670
 Claims priority, application Germany, Oct. 31, 1968, P 18 06 461.4
 Int. Cl. B67d 5/42

U.S. Cl. 222-389

8 Claims



A tube or like hollow cylindrical container for the storage and delivery of a fluid or pasty material has an insert fitted into one end. The insert comprises a piston axially movable along the tube, a bottom for the container, a bellows-type bag containing gas under pressure and acting between the container bottom and the back of the piston and spring hooks on the piston engageable with holes in the container bottom so that the piston is prevented from moving away from the container bottom, the hooks being releasable from the outside when material is to be delivered from the container. Various modifications of this construction are described and illustrated.

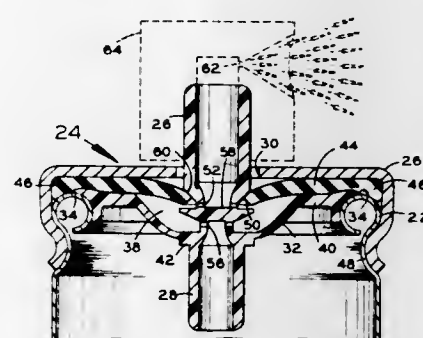
3,613,964

VALVE AND MOUNTING

Erich W. Gronemeyer, 2100 S. Ocean Lane, Fort Lauderdale, Fla., and Louis F. Kutik, 8720 S. W. 23rd Place, Fort Lauderdale, Fla.
 Filed June 9, 1969, Ser. No. 831,374
 Int. Cl. B65d 83/14

U.S. Cl. 222-402.24

5 Claims



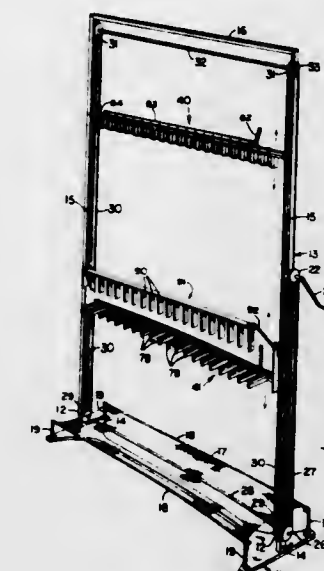
A valve for discharging the pressurized contents of a container and including a valve stem having extending from its outer surface a flexible flange or membrane, and a sealing ring butting against the membrane on the upper side thereof, the sealing ring and the membrane being clamped against an open mouth of the container by an annular retainer which encircles the peripheral portions of the sealing ring and membrane and is attached to the container. In one embodiment, a second sealing ring is interposed between the membrane and the mouth of the container, and in another embodiment the peripheral portions of the first sealing ring and the membrane are clamped directly against the mouth of the container. The membrane has a relatively thin, flexible portion shaped to urge a sealing portion of the valve stem

3,613,967

DRAPERY PROCESS MACHINE

Vernon D. Clement, 5939 Mack Road, Sacramento, Calif.
 Filed Mar. 16, 1970, Ser. No. 19,657
 Int. Cl. A41h 43/00; D06j 1/00, 1/06
 U.S. Cl. 223-32

8 Claims



A drapery-processing machine includes an endless loop elevator drive associated with opposite sides of a vertical rectangular frame with a drapery support bar and a pleater bar connected to the elevator drive in a manner causing them to simultaneously move away from and toward a central point while tracking on the sides of the frame and which also includes an indexing system to continuously register their relative separation. Included in the drapery support bar are a plurality of special locking lugs which can be independently or simultaneously released for securely holding the top pleats of a drapery and the pleater bar includes several pleater combs which are shifted laterally to grip the bottom pleats on both sides of their respective folds on opposite sides of an associated pleating paddle inserted between each fold whereby the drapery can be properly stretched to the proper length without damaging the fabric during finishing operations.

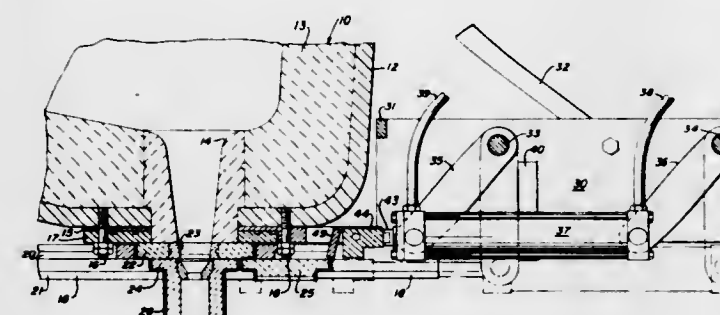
3,613,965

OPERATING AND LOADING MECHANISM FOR SLIDABLE GATES

Earl P. Shapland, Champaign, Ill., assignor to United States Steel Corporation
 Filed June 25, 1969, Ser. No. 836,323
 Int. Cl. B67d 3/00

U.S. Cl. 222-505

4 Claims



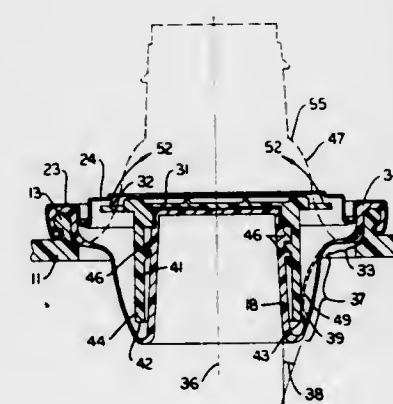
An operating mechanism for slidable gates used to control flow of material from a bottom-pour vessel. Mechanism includes a cylinder and reciprocable ram for shoving gates into vertical alignment with vessel outlet. Gate may be either a blank for closing the outlet, or provide a nozzle to permit pouring. As each gate is shoved into alignment with the outlet, it shoves the preceding gate on past. Cylinder is supported on pivoted links, whereby it can swing out of the way to facilitate loading a new gate into a "ready" position.

3,613,966

NESTABLE POURING SPOUT WITH WALL-SUPPORTING CAP

Kenneth L. Summers, Hudson, Ind., assignor to Rieke Corporation, Auburn, Ind.
 Filed Apr. 17, 1969, Ser. No. 817,007
 Int. Cl. B67d 3/00, 5/06
 U.S. Cl. 222-529

9 Claims



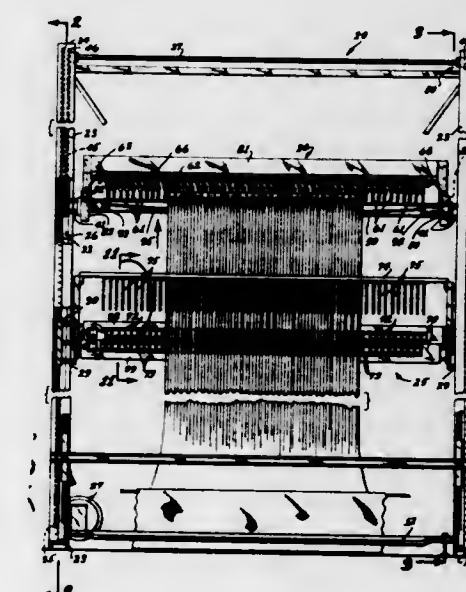
A nestable pouring spout has a flexible wall with a portion reversible in curvature upon extension of the spout, and which is circumferentially supported by a portion of a spout-closing cap when the spout is in nested position.

3,613,968

DRAPERY PLEATING, FOLDING AND STRETCHING APPARATUS

Robert M. Kirche, 411 W. Arbor Vitae, Inglewood, Calif.
 Filed Dec. 4, 1970, Ser. No. 95,068
 Int. Cl. D06j 1/00, 1/10, 1/12; A41h 43/00
 U.S. Cl. 223-32

16 Claims

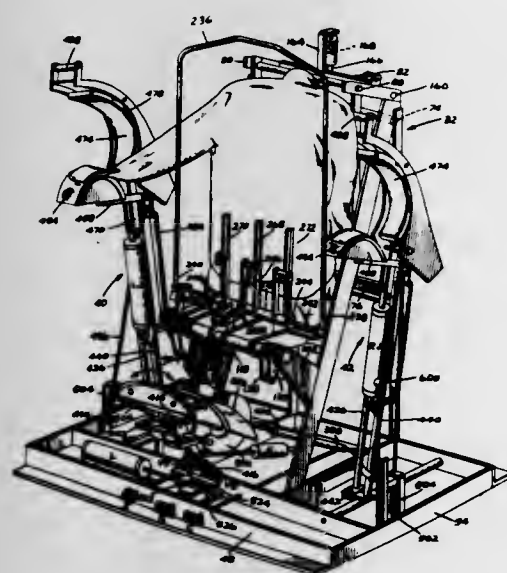


An apparatus for pleating, folding and stretching a drapery including a drapery support assembly that is extendible

thereby increasing the drapery length capacity of the apparatus, and a new and improved drapery clamping assembly for applying a firm and uniform clamping to the lower folds of a drapery supported on the apparatus for stretching purposes.

3,613,969
SHIRT PRESS
Harry D. Forse, 220 Woods Road, Anderson, Ind.
Filed May 5, 1970, Ser. No. 34,819
Int. Cl. A41h 43/00; D06f 71/00, 73/00
U.S. Cl. 223-57

41 Claims



A machine for pressing and finishing an entire shirt including the front, remainder of the body, sleeves, cuffs and collar. The machine includes a vertical, heated, shift front pressplate and a buck adapted to have the body of a shirt dressed thereon with the front of the shirt engaging a surface of the buck. An inflatable bag is attached to the buck, the bag being adapted to have the portion of the shirt body which is not in engagement with the buck surface dressed thereon. The buck is movable between a horizontal dressing position, and a vertical pressing position with the shirt front in pressing engagement between the pressplate and the buck surface. A blower forces air into the bag when the buck is in the pressing position thereby to inflate the bag and the body portion thereon to dry the same. A pair of cuff pressing assemblies each including a buck and heated pressplate are provided on opposite sides of the shirt front pressplate. A collar pressing assembly including a heated press plate and buck are provided beneath the body buck. The shirt body is dressed on the body buck and bag in its dressing position; the body buck and bag with the shirt body thereon being then raised to the vertical, pressing position. The cuffs are then respectively arranged on the cuff pressing assemblies and the pressing and air-blowing operation is then commenced. Meanwhile, the collar of another shirt is being pressed on the collar pressing assembly.

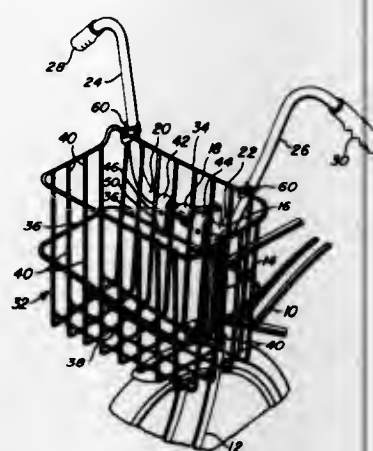
3,613,970
MOUNTING MEANS FOR BICYCLE BASKETS
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Mar. 30, 1970, Ser. No. 23,711
Int. Cl. B62j 7/06

U.S. Cl. 224-36

14 Claims

The bicycle basket receives support solely from the "high-rise" handlebar, and is suspended in part below the level of

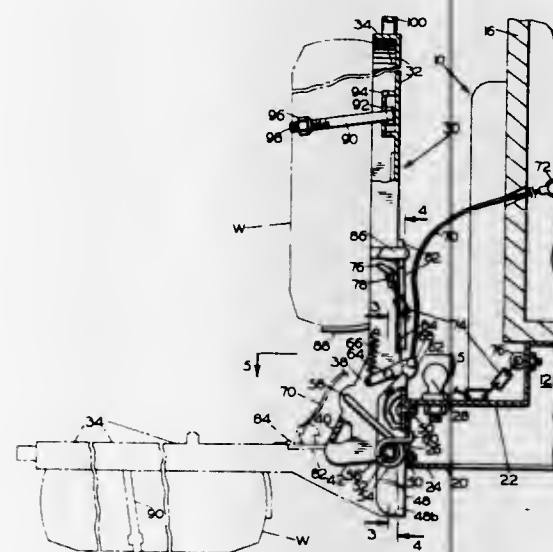
the steering post so as to lower the center of gravity of the basket and its contents. The basket mounting means and the



basket itself are simplified, and involve no cutting or weakening of the basket frame wires.

3,613,971
COMBINATION SPARE WHEEL HOLDER AND STEP FOR PICKUP TRUCKS
George J. Betz, 4720 N.E. 31st Ave., Portland, Oreg.
Filed May 12, 1969, Ser. No. 823,720
Int. Cl. B60r 3/00
U.S. Cl. 224-42.01

8 Claims

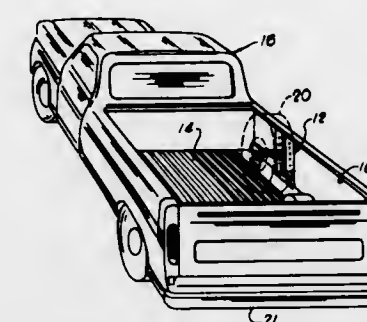


A flat platelike holder has a threaded lug for securing a spare wheel flatwise thereagainst. This holder has lower extensions pivotally connected to brackets in turn arranged to be secured to the bumper of a pickup truck. A spring operated catch is used for maintaining the holder in a vertical position and when released allows the holder to lower to a horizontal position. The vertical supporting position of the wheel holder comprises the normal or travelling position and the horizontal position of such holder comprises a position for use as a step. The lower extensions of the holder have a bottom edge adapted to serve as a stop against the bumper mounted brackets to hold the step in a substantially horizontal position, and springs are provided between the holder and the bumper mounting brackets to resist partly the lowering rotatable movement of the wheel and its holder. A release cable secured to the spring operated catch extends into a portion of the truck for emergency release of the step if necessary, and a safety chain is connected between the vehicle and an upper portion of the step to limit the amount of downward rotation of the step when desired.

3,613,972
SPARE TIRE BRACKET APPARATUS
Daniel W. Daughhetee, Hazelton, Kans.
Filed Nov. 17, 1969, Ser. No. 877,086
Int. Cl. B60r 9/02

U.S. Cl. 224-42.24

10 Claims

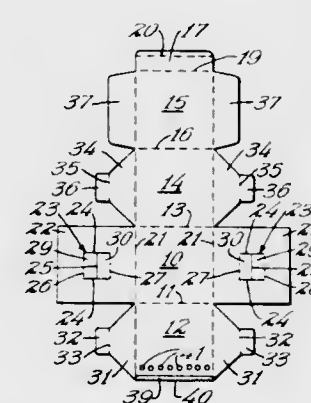


This invention relates to a spare tire bracket apparatus mountable within the rear end of a pickup truck or the trunk of an automobile including a support assembly secured to a support surface by an anchor assembly and a tire connector assembly secured to the anchor assembly which is readily mountable within a wheel member on a spare tire structure and movable into a locked condition preventing the same from being removed. More particularly, this invention relates to a tire connector assembly including a yoke assembly secured to a support assembly and having a threaded member operably connected to a lock clamp assembly wherein the lock assembly is movable from a nonuse to an attachment condition to secure a tire member thereto.

3,613,973
TAPE DISPENSING CARTON
Harold R. Jaeschke, Milwaukee, Wis., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.
Filed July 25, 1969, Ser. No. 844,957
Int. Cl. B26f 3/02; B65d 85/00

U.S. Cl. 225-47

10 Claims



A carton is provided for rotatably supporting a wide roll of material such as tape so that the tape may be dispensed. The full sized end flaps hinged to one carton wall are provided with opposed inwardly foldable flaps which are held in inwardly projecting position by flaps hinged to the ends of end wall flaps hinged to adjoining carton walls. Hollow rectangular supports are provided which extend into the core of the tape roll to rotatably support the same.

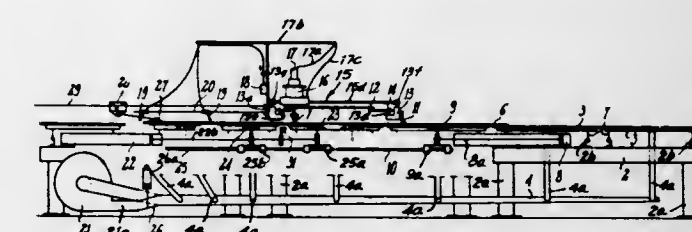
3,613,974
APPARATUS FOR CUTTING GLASS
Roger Chatelain, and Hugues Bouis, both of Thourotte, France, assignors to Compagnie De Saint-Gobain, Neuilly-sur-Seine (Seine), France
Division of Ser. No. 429,802, Feb. 2, 1965, Pat. No. 3,474,944.
Filed Mar. 10, 1969, Ser. No. 829,823
Int. Cl. B26f 3/06

U.S. Cl. 225-93.5

13 Claims

An apparatus to cut a length of flat glass into useful panels

of any desired shape with as little as 1 cm. between contiguous scores of successive panels. Wastage of glass by

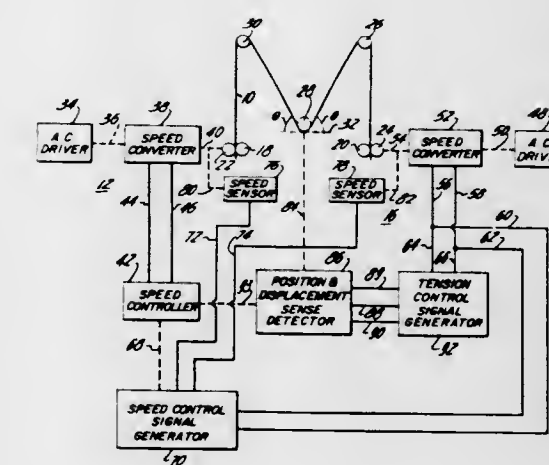


inefficient cutting is reduced. Heat is applied adjacent the scored line to effect the separation.

3,613,975
MATERIAL TRANSPORT TENSION CONTROL SYSTEM AND APPARATUS
Jack B. Knight, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,173
Int. Cl. B65h 23/22

U.S. Cl. 226-25

10 Claims



A system for controlling tension in transported material in continuous form involving detection of positional displacement and last sense of movement of a tension roller in continuous contact with the material and generation of tension control signals compensating affecting material supply or takeup rate, said control signals being generated only upon occurrence of particular conditions of roller displacement and last sense of movement. The system also includes means for generating said tension control signals in digital steps of time duration controlled by system tension correction performance.

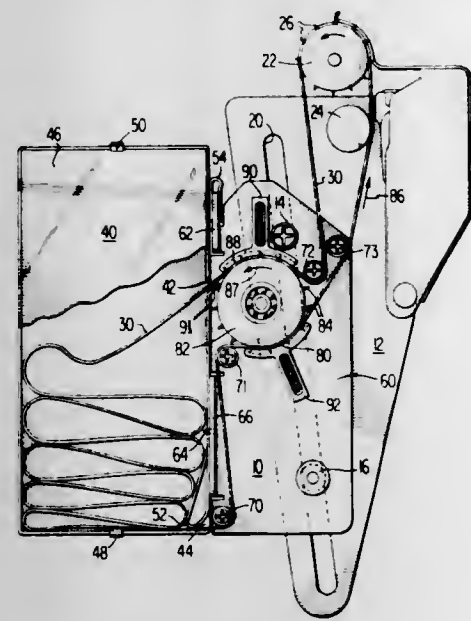
3,613,976
APPARATUS FOR HANDLING ENDLESS TAPE
Michael Carl Guerrero; Robert Earl Justice, and Richard Miller Rudy, all of Palm Beach Gardens, Fla., assignors to RCA Corporation
Filed Feb. 19, 1970, Ser. No. 12,618
Int. Cl. G11b 23/06

U.S. Cl. 226-78

7 Claims

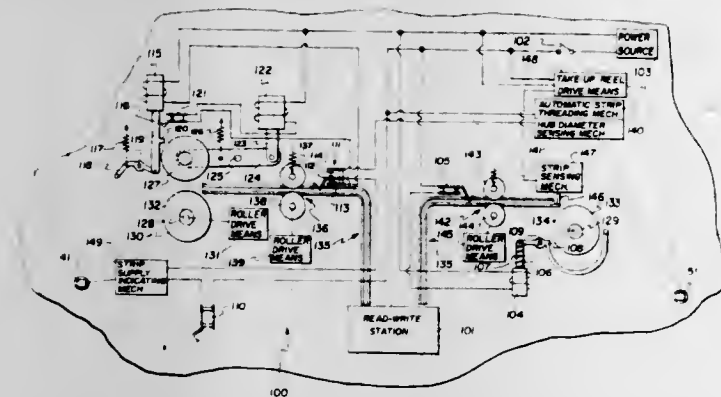
A relatively long endless tape is loosely stored in a relatively small container as a stack of loops lying one over another. One additional loop leading to opposite ends of the stack extends from the container. In use, the loop extending from the container is threaded over a drive roller which pulls the tape off one end of the stack and past a transducer. One

portion of the pulled tape engages and drives an idler mechanism. The latter, in turn, engages another portion of



the tape and drives the tape back into the container at the other end of the stack.

3,613,977
MEANS FOR SECURING AND RELEASING STRIP END PORTIONS
John F. Egan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 8, 1970, Ser. No. 35,802
Int. Cl. G11b 15/66
U.S. Cl. 226-91 20 Claims

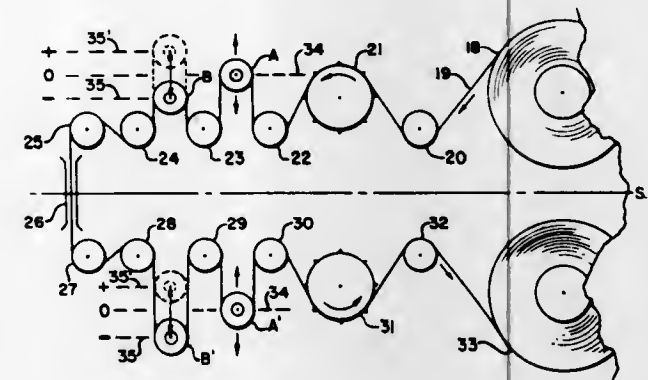


In a strip transport apparatus which is adapted for use with a cartridge of the type having a strip retaining member comprising a finger and barb that releasably engage one edge of an aperture in the leading end portion of a strip of web material wound on a reel in the cartridge interior, first and second members are actuatable to sequentially release such an engaged strip portion respectively from the barb and finger. In operation, the first member frees the engaged strip portion from the barb, and the second member feeds such partially free strip portion out of the cartridge interior while simultaneously drawing it off the finger. Thereafter, the released strip is fed into the interior of an empty cartridge of the same type, and one edge of an aperture in the trailing end portion of such feeding strip is sequentially engaged by the latter cartridge's finger and barb upon actuation of a strip guiding member of the apparatus.

3,613,978
APPARATUS FOR INTERMITTENTLY MOVING FILM
Walter Renold, 7044 Mary Ellen Ave., North Hollywood, Calif.
Filed Oct. 7, 1969, Ser. No. 864,350
Int. Cl. G03b 1/24
U.S. Cl. 226-117 3 Claims

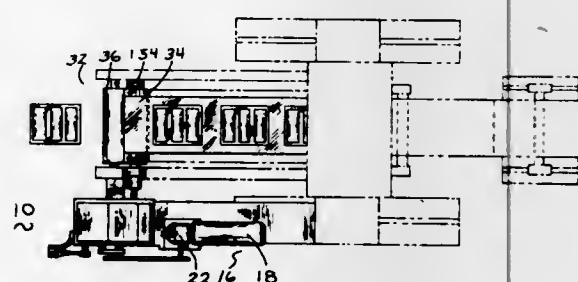
An apparatus for intermittently moving film through a film gate for purposes of either exposure or projection

particularly suitable for high-speed motion picture cameras, utilizes first and second roller arrangements on either side of the film gate in place of the conventional film loops. These rollers are caused to oscillate sinusoidally in such a manner as to increase the path length of film moving into the film gate and simultaneously decrease the path length of film leaving the film gate and thence reverse this motion to decrease the path length of film fed into the film gate and simultaneously increase the path length film leaving the film gate. With this arrangement the film may be payed out and taken up at constant speed while intermittent movement of film in the gate takes place and further the film is always



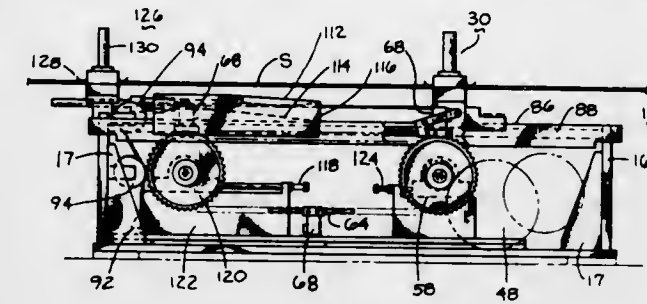
captured. By properly adjusting the oscillation speed of the rollers relative to the payout and takeup constant speed, a portion of the film in the gate is stationary during a period when the path length of film into the film gate is increasing and the path length of film from the film gate is decreasing, and moving at a speed substantially twice the constant payout and takeup speed during another period when the path length of film into the film gate is decreasing and the path length of film from the film gate is increasing. Pulldown claw arrangements are thus eliminated as well as free-type storage loops heretofore used and the instability problems associated with such loops when the camera or projector is operating at high speed.

3,613,979
SHEET ADVANCE APPARATUS
Bruce T. Jope, South Glastonbury, and Leonard J. Witkowski, Windsor Locks, both of Conn., assignors to Monsanto Company, St. Louis, Mo.
Filed Sept. 25, 1969, Ser. No. 860,874
Int. Cl. B65h 17/22
U.S. Cl. 226-142 5 Claims



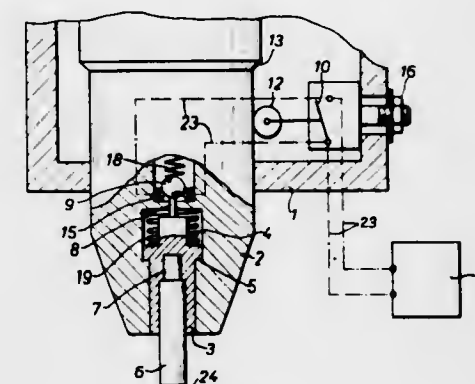
Apparatus for intermittently advancing successive equivalent length portions of a generally continuous sheet through an upstream article forming station. A gear assembly intermediate drive means and a sheet advance roll includes a Geneva assembly which, in combination with a brake on the roll, controls its acceleration and deceleration to provide smooth sheet movement. The extent of sheet displacement may be quickly changed by means of a lever having a portion mounted exterior to the housing of the gear assembly which, when rotated, changes the center distance between a rotary crank in the input drive train and a pivot shaft of the Geneva assembly which receives power from the input drive train.

3,613,980
SHEET ADVANCE APPARATUS
Frank M. Kulig, Bloomfield, and Lee R. Layman, Windsor Locks, both of Conn., assignors to Monsanto Company, St. Louis, Mo.
Filed Aug. 13, 1969, Ser. No. 849,780
Int. Cl. B65h 17/36
U.S. Cl. 226-162 12 Claims



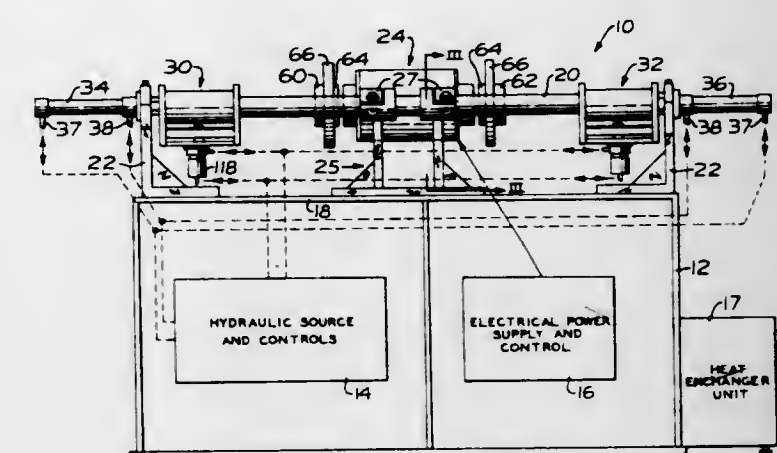
Apparatus for intermittently advancing successive equivalent length portions of a generally continuous thermoplastic sheet through upstream article forming and trimming stations. An indexing mechanism in the drive train controls the forward velocity of a carriage on which the sheet is clamped. Fixed stops precisely define the extent of forward movement of the carriage. A resiliently biased plunger in the means for interconnecting the drive train to the carriage absorbs the incremental and variable additional movement of the drive train caused by tolerances therein, after forward movement of the carriage and therefore of the sheet have been positively terminated through contact with the fixed stops.

3,613,981
SAFETY DEVICE FOR MACHINE TOOLS
Paul Ramseier, Pfaffikon, Switzerland, assignor to Bracker AG
Filed Dec. 11, 1969, Ser. No. 884,122
Claims priority, application Switzerland, Dec. 13, 1968, 18577/68
Int. Cl. B21j 15/16
U.S. Cl. 227-1 11 Claims



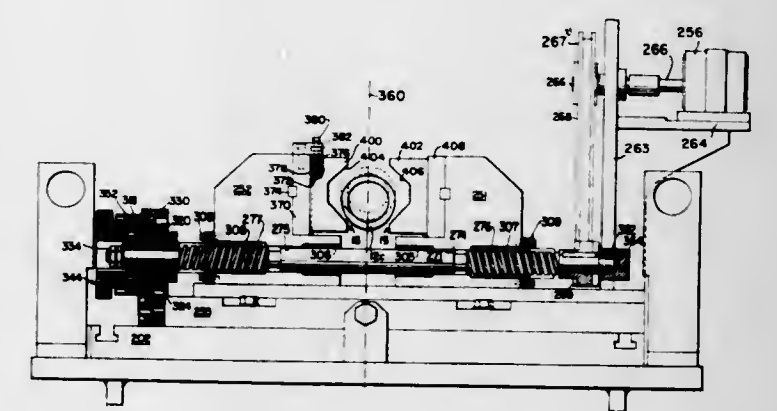
A safety device for machine tools with a tool advancing member in the form of a tool holder performing a tool operating motion during operation and having mechanism for the interruption of the operating motion in the presence of adverse or anomalous operating conditions. According to important aspects of the invention a primary switching or control means is provided for the purpose of interrupting the tool operating motion of the tool holder during a portion of its operating stroke if there is exerted on the tool member a pressure opposing the operating motion. Additionally, secondary switching or control means bridge the primary switching or control means or prevent such from moving into a breaking position as soon as the portion of the operating stroke of the tool has exceeded a predetermined value.

3,613,982
FRICITION WELDER
Dale W. Hollenberg, Rolla, Mo.; Calvin D. Loyd, Peoria, and Ronald L. Satzler, Metamora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 13, 1969, Ser. No. 799,049
Int. Cl. B23k 27/00 16 Claims



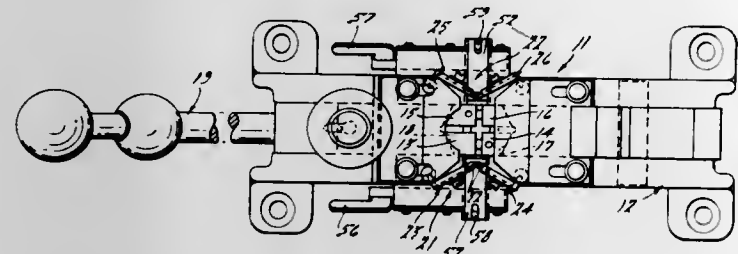
A friction welding machine has a direct center drive means wherein the rotor of the drive means functions as the workpiece holding spindle for one or more center driven workpieces; the machine is adapted for use as a dual welder wherein a movable tailstock is employed on each side of the center drive means and also for use with a single tailstock on one side of the center drive and a supplemental thrust bearing means on the other side of the center drive. One embodiment of the machine incorporates a free-floating center drive means. A special workpiece holding device is also provided wherein a special adjustable toggle linkage arrangement is adapted to provide gripping means for a large number of variously sized workpieces.

3,613,983
APPARATUS FOR HOLDING A STATIONARY WORKPIECE IN A FRICTION WELDING MACHINE
Arthur F. Gage, Warren, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed June 6, 1969, Ser. No. 831,827
Int. Cl. B23k 27/00 7 Claims



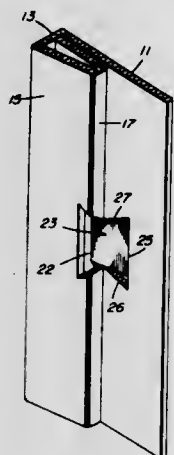
Apparatus and method for holding a stationary workpiece to be friction welded to a rotatable and axially movable workpiece, the apparatus including a pair of axially spaced-apart end clamps, a center clamp, and means for sequentially operating the clamps such that the end clamps initially grip the ends of the stationary workpiece at relatively low contact pressure, the center clamp then gripping the workpiece at relatively high contact pressure, and the end clamps then increasing the contact pressure with the workpiece to a relatively high level.

3,613,984
ADJUSTABLE GATE FOR BUTT WELDING MACHINE
 Walter J. Rozmus, Hubbardsville, N.Y., assignor to Kelsey-Hayes Company
 Filed Jan. 27, 1969, Ser. No. 794,171
 Int. Cl. B23k 21/00; B23p 3/02
 U.S. Cl. 228—3 9 Claims



A multiple upset pressure welding apparatus particularly adapted for cold welding wire ends together. The mechanism includes pairs of dies that are supported for relative movement toward and away from each other with the dies of the pairs also being relatively movable toward and away from each other. Gates or restraining devices are juxtaposed to each of the pairs of dies for permitting movement of the wires toward each other during the welding process and for precluding reverse movement of the wires when the pairs of dies are retracted. The restraining gates are adjustable so as to accommodate different size wires and to permit gripping of the wires adjacent the respective dies.

3,613,985
CORNER POST
 James R. Goodsite, Sandusky, Ohio, assignor to Westvaco Corporation, New York, N.Y.
 Filed June 3, 1969, Ser. No. 830,001
 Int. Cl. B65d 5/50
 U.S. Cl. 229—14 C 6 Claims

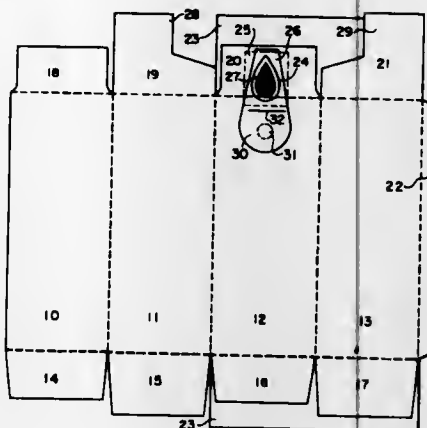


The present invention is embodied in a corner post construction for reinforcing shipping containers wherein the corner post comprises a plurality of panels of multi-ply corrugated paperboard or the like which panels are folded adjacent one another in face-to-face contact and secured together using an integral means which includes an aperture cut in one panel and a tab element formed from one or more of the other panels.

3,613,986
ARRANGEMENT IN PACKAGES FOR LIQUIDS WITH POUR OPENING
 Od Wikar Christensson, Stockholm, Sweden, assignor to CEKA Packaging Limited, Zurich, Switzerland
 Filed Sept. 18, 1969, Ser. No. 858,926
 Claims priority, application Sweden, Oct. 29, 1968, 14603/68
 Int. Cl. B65d 5/70

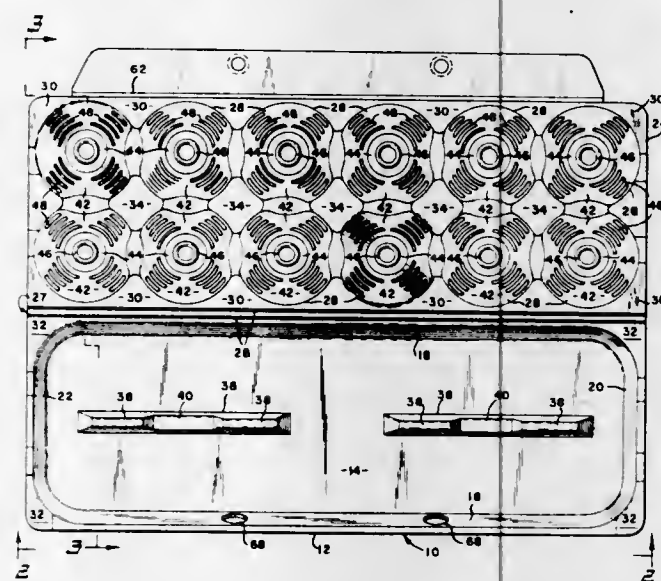
U.S. Cl. 229—17 R 11 Claims
 A tubular cardboard liquid container having a plastic liner. End flaps form a flat top and a flat bottom. On an innermost

top flap is formed a pouring opening comprising a hole through the cardboard and the plastic liner and a pair of additional plastic layers, one on the inside of the opening and



one on the outside of the opening, the two layers welded to each other at the opening. A grip tongue is provided for tearing away the parts of the two additional plastic layers which are welded together at the opening to form the pour opening.

3,613,987
EGG CARTON
 Robert Laidman, Orange, N.J., assignor to Plastimetrix Corporation and Alvin S. Bass, Washington, D.C., part interest to each
 Filed July 10, 1969, Ser. No. 840,624
 Int. Cl. B65d 85/32
 U.S. Cl. 229—44 R 16 Claims

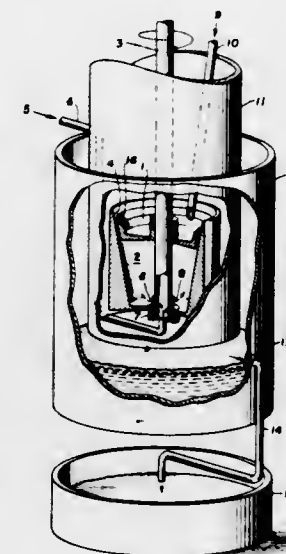


A molded egg carton made from a foam plastic material which includes integrally hinged cover and tray portions. Support beams protrude from the internal surface of said cover and cooperate with posts protruding upwardly from the interior of the tray portion when the container is in a closed position so as to protect against vertical stress, and separate the contents. The tray portion includes a plurality of cells having annular segmented cushion rings integrally formed therein in a stepped ascending manner towards the top of the cell in order to protect the contents against breakage.

3,613,988
CONTROLLED-FORM CENTRIFUGAL PRECIPITATION APPARATUS
 James S. Tapp, Kettering, Ohio; Robert E. Colwell, Simsbury, Conn., and Myron K. Toney, Greenwood, S.C., assignors to Monsanto Company, St. Louis, Mo.
 Filed Mar. 19, 1969, Ser. No. 808,604
 Int. Cl. B04b 3/00

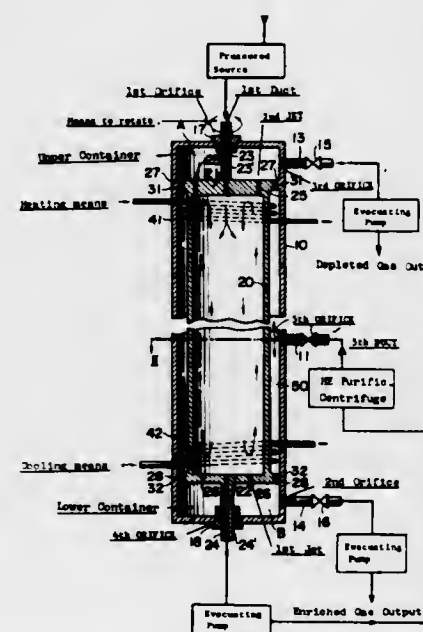
U.S. Cl. 233—2 4 Claims
 An apparatus for controlling the form of a precipitate is comprised of two coaxially rotating cuplike containers so

disposed and shaped that centrifugal force causes spillage of the contents of one container to contact spillage of the contents of the other container. The device is also provided with supply means for each of the containers, collection



means for the liquids centrifuged from the containers and the solids precipitated during the centrifuge operation, and means for separating the precipitated solids from the centrifuged liquids.

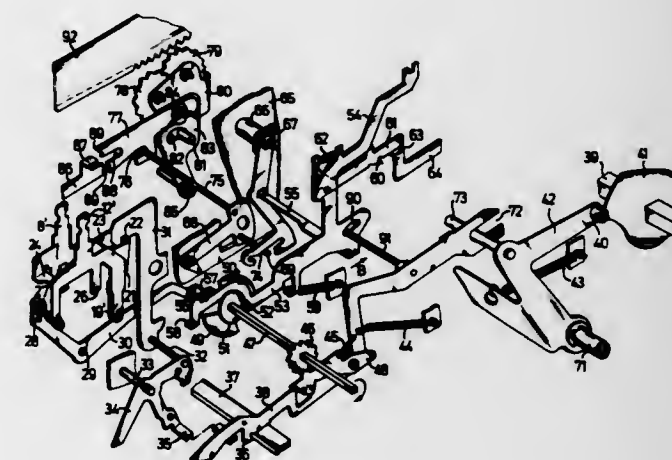
3,613,989
GAS CENTRIFUGES, THEIR ASSEMBLY AND A PROCESS FOR ENRICHING URANIUM 235
 Yoshitoshi Oyama; Yoichi Takashima, and Shigebumi Aoki, all of, Tokyo, Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyadan, Tokyo, Japan
 Filed Oct. 21, 1968, Ser. No. 768,981
 Claims priority, application Japan, Oct. 26, 1967, 42-68490
 Int. Cl. B04b 15/08
 U.S. Cl. 233—13 27 Claims



A gas centrifuge unit for assembly into a system for separation and enrichment of mixtures of gases according to minute differences between mass numbers of isotopes, each unit having an elongated rotor rotating at a high velocity within an outer cylinder, holes in each end of the rotor for the jetting of respectively enriched gas and depleted gas, calculated to establish a ratio of 1:1 of enriched uranium 235, containing gas mixture, to be jetted out of the upper holes to an upper chamber to depleted uranium 235 gas mixture jetted through the lower holes to the lower chamber, means to heat the upper rotor region and to cool the lower rotor region, an upper and a lower container and a circumferential chamber between them formed by the walls of the centrifuge housing and the rotor within it; orifices and

means to supply a gas mixture into the rotor, and to withdraw gas mixture from the central region of the rotor, conduit means in the upper and the lower ends of the rotor to duct gas mixtures from the upper and lower regions of the rotor in the adjacent upper and lower containers, respectively, an orifice in the circumferential chamber to duct thereto gas withdrawn from the lower region of the rotor, orifices in the upper and lower chambers to withdraw therefrom, respectively, the gases collected there, and conduit means connecting each centrifuge unit with a successive centrifuge unit with means to controllably withdraw the enriched gases. A process for the separation and enrichment of uranium 235 comprising steps analogous to the above described means, whereby mixed uranium gas 235 is mixed with helium under high speed centrifugal force, simultaneously cooled at one end and heated at the other, thus aiding in its separation into different regions of gases of different mixtures and different mass numbers of isotopes and recycling some of the gases controllably into the system in a cascade of steps, by returning the depleted uranium 235 gas with the inner light gas back to the rotor and by feeding the enriched gas of uranium 235 with inert light gas to the rotor of the subsequent centrifuge.

3,613,990
APPARATUS FOR AUTOMATICALLY STORING BY MEANS OF A PROGRAM CONTROLLED SHAFT A PRODUCT OR QUOTIENT IN A CALCULATING MACHINE
 Wilhelm Machmer, Moorenbrunn, Germany, assignor to DIEHL, Nurnberg, Germany
 Filed Feb. 20, 1970, Ser. No. 12,971
 Claims priority, application Germany, Feb. 21, 1969, P 19 08 667.0
 Int. Cl. G06c 7/02, 23/00
 U.S. Cl. 235—60 R 6 Claims



The specification discloses a calculating machine having function keys which include an actual value key and a storage key. The keys are coupled together so that the actual value key can be actuated alone while actuation of the storage key is prevented, but actuation of the storage key will also actuate the actual value key.

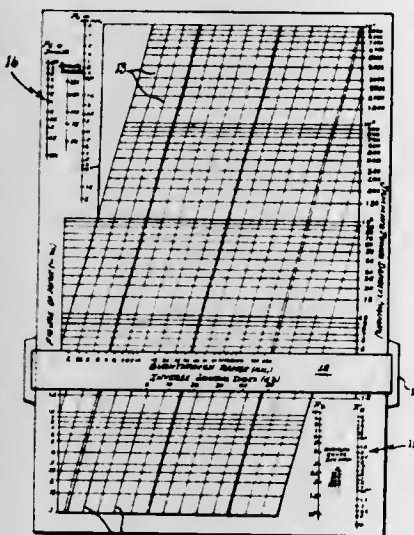
Actuation of the storage key releases a lever which, upon movement by a spring, couples a storage device to a value rack. According to the present invention, movement of the lever is prevented if the capacity of the machine is exceeded. Movement of the lever is also prevented except when the machine is in condition to provide the result of a multiplication or division operation. In the first instance of preventing movement of the lever, a capacity checking device interposes an abutment for the lever and in the second instance the program shaft of the machine interposes an abutment except when the program shaft is in certain rotated positions.

3,613,991 BACKLOBE-JAMMING BURNTHROUGH RANGE CALCULATOR

John S. Quinn, and Walter G. Murch, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed Mar. 10, 1969, Ser. No. 805,553
Int. Cl. G06c 3/00

U.S. Cl. 235-85 R

1 Claim



A calculator having a flat surface having two vertical scales thereon and a slideable rule having two horizontal scales thereon. The rule is capable of slideable motion in a direction parallel to the vertical scales. The flat surface further has a plurality of equally spaced parallel lines with a positive slope of four. By entering known values for three of the scales, the fourth scale determines the range at which radar can detect a target when the radar is being jammed in the backlobes by multiple standoff jamming platforms.

3,613,992
WEATHER MODIFICATION METHOD
Robert G. Knollenberg, Mattoon, Ill., assignor to The United States of America as represented by the Director of the National Science Foundation
Filed Mar. 25, 1966, Ser. No. 538,904
Int. Cl. A01g 15/00

U.S. Cl. 239-2

18 Claims

The present invention provides a method for producing rain or snow from natural atmospheric clouds using seeding agents characterized by a high solubility in water and a large endothermic heat of solution in water. Typical examples of materials suitable for use in practicing this invention are urea, potassium nitrate, potassium nitrite, and ammonium nitrate. Laboratory experiments have shown urea to be effective in producing ice crystals in a vapor cloud having a temperature as high as +6° C. In field experiments, urea has been observed to cause snow showers in supercooled clouds.

3,613,993
ELECTROSTATIC PAINTING METHOD AND APPARATUS

Meredith C. Gourdine, West Orange; Edward L. Collier, Morris Plains; Gerald P. Lewis, West Orange; Harold McCrae, Upper Montclair, and Donald H. Porter, Carlstadt, all of N.J., assignors to Gourdine Systems, Inc., Livingston, N.J.

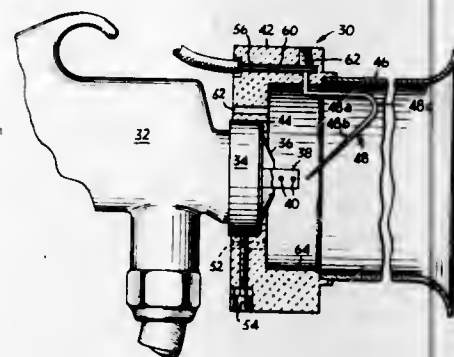
Filed Oct. 28, 1968, Ser. No. 771,135
Int. Cl. B05b 5/02

U.S. Cl. 239-3

22 Claims

Apparatus and method for electrostatically charging a stream of atomized paint particles discharged from a spray gun. An emitter electrode is positioned in spaced relation to the end of the spray gun to establish a corona discharge from the electrode tip to a conductive portion of the gun end so that the direction of the discharge is opposite to the direction

of flow of the particle stream. The apparatus may comprise an attachment unit for converting conventional spray guns to

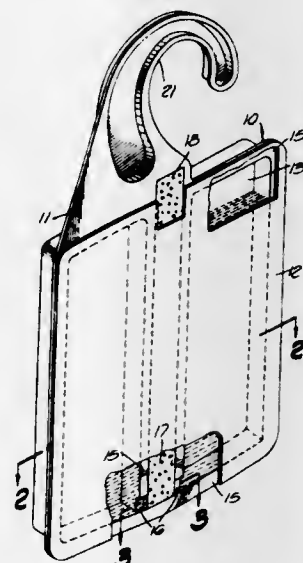


electrostatic spray guns, including a dielectric flow path-defining member downstream of the spray gun.

3,613,994
VAPOR-DISPENSING DEVICE
Richard E. Goodman, 1053 Roscomare, Los Angeles, Calif.
Filed June 23, 1969, Ser. No. 835,669
Int. Cl. A611 9/04

U.S. Cl. 239-44

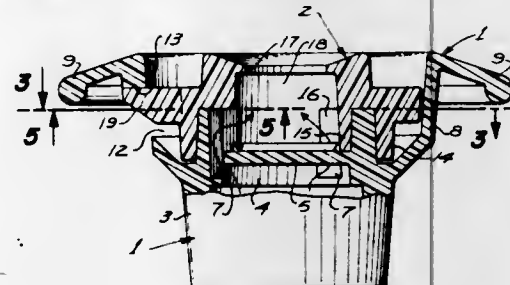
10 Claims



An insecticide or deodorant vapor dispenser comprised of a sheet formed with separate wick and fluid receiving depressions with restricted communication therebetween and a flat sheet secured to the formed sheet to enclose the depressions, with a portion of such sheets removable for exposing a portion of the wick for dispensing the fluid vapors.

3,613,995
ADJUSTABLE SPRINKLER HEAD
Neil G. Kane, Hacienda Heights, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Mar. 18, 1970, Ser. No. 20,576
U.S. Cl. 239-200

5 Claims



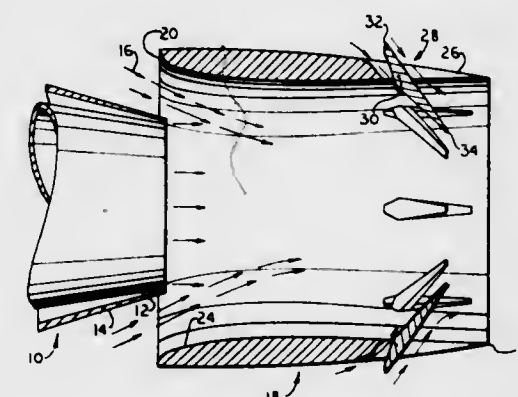
An adjustable sprinkler head formed of two injection molded plastic or die cast metal parts, including a body

member arranged for connection to a riser and having a ring of upwardly directed water passages, and a nozzle member capping the passages and having a central outlet; the nozzle member being rotatably adjustable to control the volume of water discharge and the radius of the spray pattern.

3,613,996
EJECTOR WITH SUPPRESSOR CHUTES
Carole S. Tanner, San Diego, Calif., assignor to Rohr Corporation
Filed July 3, 1969, Ser. No. 838,851
Int. Cl. B64d 33/04

U.S. Cl. 239-265.13

3 Claims

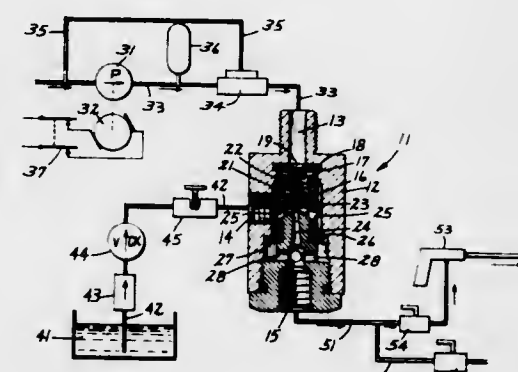


System includes ejector ring mounted behind nozzle of jet engine is to induce ambient air and mix it with exhaust gas stream. Mixing is increased as further air added and mixed by injecting discrete streams of air into interior of ring from points spaced around periphery. Streams enter transverse to flow of gaseous mixture. In preferred form, ring has longitudinally extending air passages with transversely pivoted vanes which swing to transverse angle to open passages and induce the additional air streams. Vanes lie flush with wall of injector ring in retracted position and extend inwardly and outwardly of the wall in deployed position.

3,613,997
ACID ASPIRATOR SYSTEM
Richard G. Thompson, Stillwater, Minn., assignor to L & A Products, Inc., St. Paul, Minn.
Filed May 18, 1970, Ser. No. 37,954
Int. Cl. B05b 7/26

U.S. Cl. 239-310

22 Claims



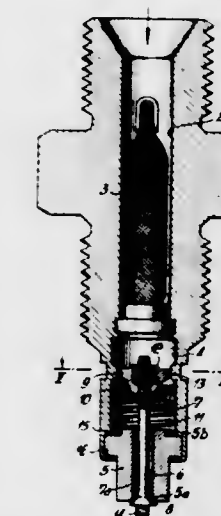
A hydraulic system which receives and pumps water at high pressure to a spray nozzle for washing and cleaning purposes. The system includes an aspirator-transfer valve downstream of the pump which functions to receive water from the pump and direct it to the spray nozzle under one cycle of operation, and, under a second cycle of operation, to block the major flow of water from the pump and aspirate cleaning acid from a separate source to be mixed with water in the valve and on to the nozzle without passing through the pump.

3,613,998
CLOSING SPRING ADJUSTING MEANS FOR A FUEL INJECTION VALVE
Rudolf Krauss, Stuttgart-Glebel, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 28, 1969, Ser. No. 871,865
Claims priority, application Germany, Nov. 23, 1968, P 18 10 544.7

U.S. Cl. 239-453

Int. Cl. B05b 1/32

6 Claims

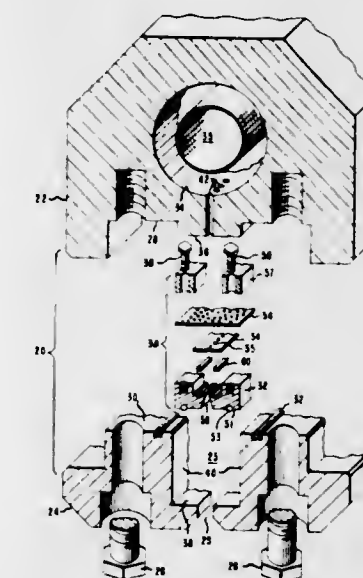


A fuel injection valve which includes a valve needle urged against a valve seat by a closing spring which is disposed between a fixed part of the valve and a spring seat disc supported by a nut threadedly secured to the stem of the valve needle. For varying the preload of the spring, the valve needle is rotated, whereby said nut is axially displaced changing the extent to which said spring is compressed.

3,613,999
APPARATUS FOR JETTING LIQUID ONTO FIBROUS MATERIAL
Thomas P. Bentley, Wilmington, and Donald F. Miller, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 29, 1970, Ser. No. 32,979
Int. Cl. B05b 1/14

U.S. Cl. 239-553.3

6 Claims



An apparatus for jetting high-pressure liquid streams into fibrous materials that includes a quick change cartridge device loosely fitted into a body member. The cartridge includes an orifice plate to produce the liquid streams and a filter between the source of pressurized fluid supplied to the jet and the plate. A seal between the cartridge and the jet body relies on internal operating pressure within the jet body to effect sealing action.

3,614,000
METHOD FOR THE COMMINUTION OF PARTICULATE SOLID MATERIALS

George E. K. Blythe, 37 Ashlawn Road, Hillmorton, Rugby, Warwickshire, England

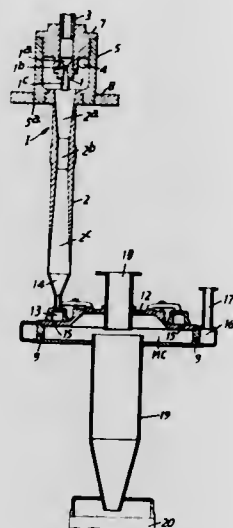
Filed June 12, 1969, Ser. No. 832,779

Claims priority, application Great Britain, June 19, 1968, 29083/68

Int. Cl. B02c 19/06

U.S. Cl. 241—5

5 Claims



A process and apparatus for grinding particulate material to micron or fractional micron size. A high velocity stream of high pressure grinding fluid is passed through a multistage Venturi system into which the material is fed to result in self-attrition of particles by impact. Fluid and entrained material are injected into a mill chamber wherein particles of different sizes are separated and classified. Mill preferably shaped to provide an endless path. Patterns of hydrodynamic flow and vortex motion are produced in the chamber so that a solid particle makes many collisions, these conditions being effected by dispositions of high pressure fluid nozzles, design of solid boundary surfaces and regulation of pressure and temperature of oncoming high velocity fluid.

Provision is made for recycling the oversized particles either to the aforementioned multistage Venturi system or to a similar but separate system for regrounding and reintroduction into the chamber.

3,614,001
METHOD AND APPARATUS FOR PULVERIZING MATERIALS

Hans Beike, 15 Danziger Weg, Kronberg, Taunus, Germany

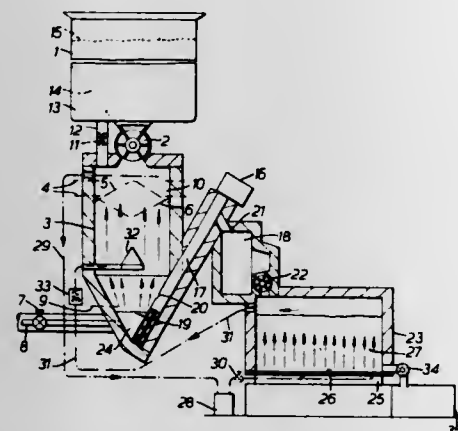
Filed Dec. 23, 1968, Ser. No. 786,179

Claims priority, application Germany, Dec. 27, 1967, P 16 07 462.7

Int. Cl. B02b 1/08; B02c 11/08

U.S. Cl. 241—23

10 Claims



Material to be pulverized is passed into a countercurrent heat-exchanging relation with cold vapors produced by

evaporation of a low-temperature liquefied gas. The material is then immersed into the liquefied gas and is pulverized in a mill.

3,614,002
DRY FINE CRUSHER

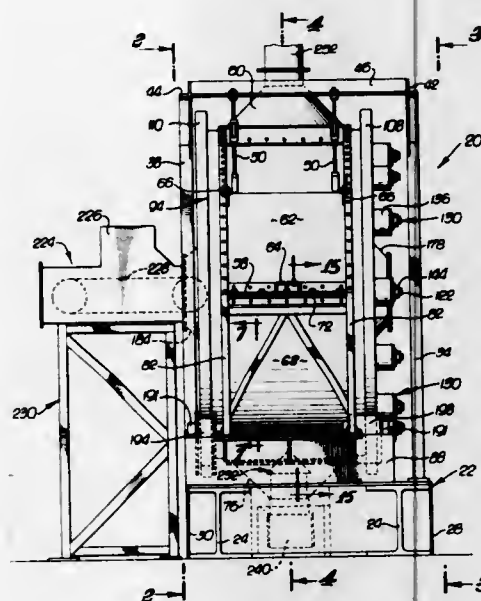
Robert F. Dore, Los Angeles, Calif., assignor to D'Ore Mills, Inc., Los Angeles, Calif.

Filed July 7, 1969, Ser. No. 839,498

Int. Cl. B02c 17/02, 17/10, 21/00

U.S. Cl. 241—51

14 Claims



A dry fine crusher adapted to crush and partially grind portland cement "clinkers" and similar materials such as pozzuolana or other rocklike materials. The crusher includes a single entry port for the material to be crushed and partially ground as well as an upper exit port for finished dust material and partly finished material known as "fines," and a lower exit port for the discharge of material for further processing. The crusher includes a plurality of aligned crushing ring liners spaced apart a preselected distance and a weighted crushing roller freely rotatable within the rings to crush and partially grind material therebetween for discharge through one of the respective exit ports.

3,614,003
APPARATUS FOR SELECTIVELY CRUSHING OF STORAGE BATTERIES AND SEPARATING THE COMPONENT MATERIALS

Gustavo Tremolada, Milan, Italy, assignor to A. Tonolli & C. S.p.A., Milan, Italy

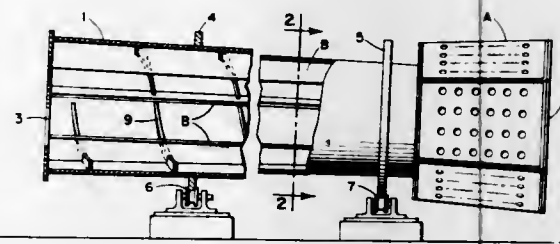
Division of Ser. No. 497,375, Oct. 18, 1965, Pat. No. 3,456,886. Filed Sept. 10, 1968, Ser. No. 785,409

Claims priority, application Italy, Nov. 19, 1964, 24722/64

Int. Cl. B02c 17/02, 17/04

U.S. Cl. 241—79.3

5 Claims



Apparatus for breaking up scrap lead storage batteries and for the screen separation of the active material thereof in a substantially pure state as powder or fine granules, from the other material of the batteries, comprising a revolving drum the axis of which is inclined towards the discharge end, the walls of the drum being furnished with lifting wings extending

ERRATUM

For Class 241—202 see:
Patent No. 3,614,023

3,614,004

CONCAVE RING FOR CONE CRUSHERS

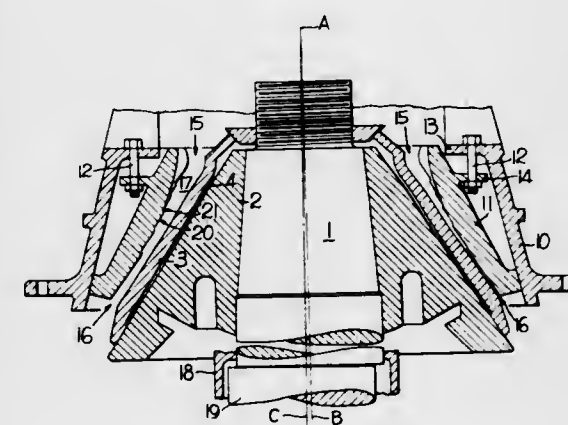
Edgar S. Burkhardt, Wauwatosa, and James D. Torrence, Milwaukee, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 26, 1969, Ser. No. 827,712

Int. Cl. B02c 2/04

U.S. Cl. 241—214

10 Claims



A crusher is disclosed of the type having a crushing chamber defined between a vertical conical head and a surrounding replaceable concave ring. The inside of the concave ring is provided with a stepped surface comprising alternately, annular crushing surfaces and annular connecting surfaces. The inside of the concave ring is also provided with vertical corrugations defined by alternate grooves and ridges which begin at the top and material inlet end of the concave ring, and extend downwardly to one of the annular crushing surfaces at a horizontal level above at least the lowermost annular crushing surface. The ridges of the corrugations provide a proper nip angle for crushing at the top of the chamber while the grooves provide a larger area feed opening than could be provided by a noncorrugated surface making a proper nip angle for crushing. The bottom crushing surface, which is below the corrugations, provides a smooth annular surface for fine crushing. When wear of this bottom crushing surface requires the cone to be raised, to restore predetermined spacing, the size of the feed opening at top is not reduced because wear is deliberately accelerated at the top of the chamber by providing the corrugations which cause the feed material to be nipped only by the ridges of the corrugations which are thereby worn away at a relatively rapid rate. Thus, the wearing away of the ridges of the corrugations means that when the cone is raised to compensate for wear at the bottom of the chamber the feed opening is not thereby made smaller than when the ring was new.

3,614,005
WINDING MACHINE FOR MAKING TUBING

Andre Maurice Chartier, Paris, France, assignor to R.D.T. Societe pour L'etude, La realisation et al. diffusion des techniques modernes

Filed Apr. 23, 1968, Ser. No. 723,404

Claims priority, application France, Apr. 25, 1967, 104,015

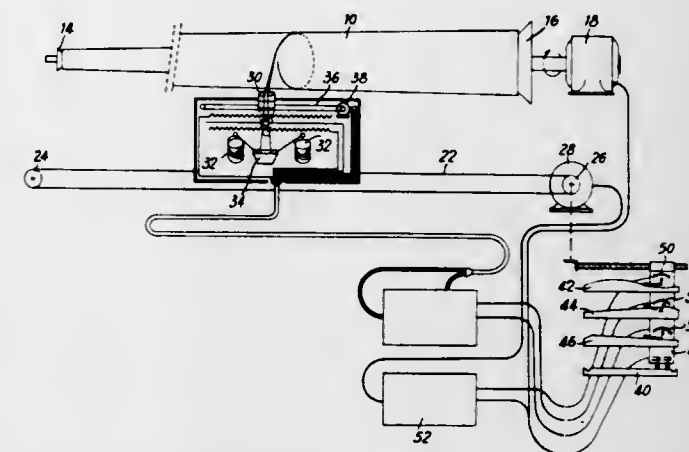
Int. Cl. B31c 13/00; B65h 81/06; F17d 1/08

U.S. Cl. 242—7.22

2 Claims

Tubing is formed by glass fibers wound around and bonded together on a motor driven mandrel. The fibers can be wound in a honeycomb pattern having overlapping turns by a reciprocating guide carriage. The carriage includes a support reciprocated parallel to the mandrel axis by an endless belt

driven in alternate directions by a first motor. The support carries the fiber guide also reciprocable by an endless belt driven in alternate directions by a second motor. A plurality



of cams operate associated variable resistors to control the first and second motors and thereby the relative position of the carriage and the guide on the carriage with respect to the mandrel.

3,614,006
THREAD CONTROLLER DEVICE

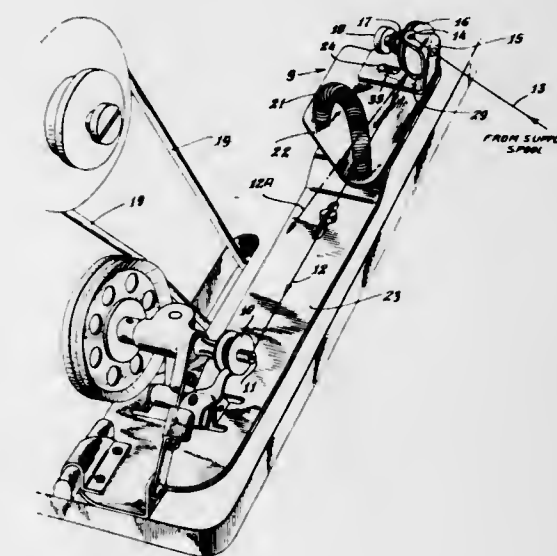
Julius Pararra, Bethel, Conn., assignor to William Deitch, New Haven, Conn., a part interest

Filed Nov. 14, 1969, Ser. No. 876,691

Int. Cl. B65h 54/00; D05b 65/00

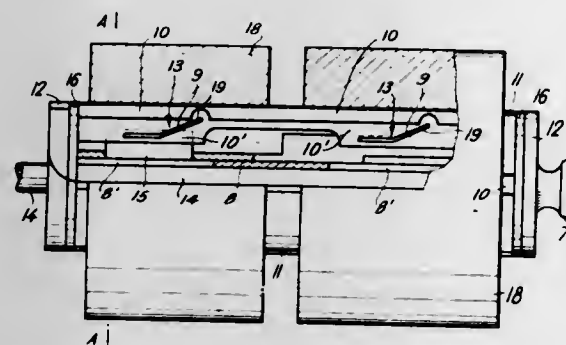
U.S. Cl. 242—20

7 Claims



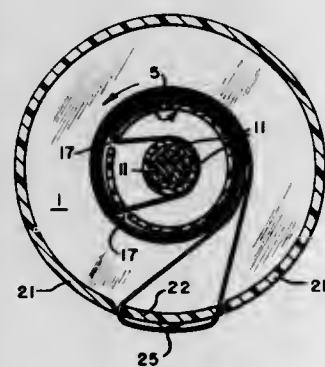
Thread controller devices for incorporation in bobbin winding mechanisms and other strand- or thread-carrying machines where a fast moving strand may be inadvertently caught and seized by a rapidly moving drive belt or gear train, which often develops a charge of static electricity strongly attracting the nearby thread, quickly drawing in large quantities of thread and producing a tangled jam of thread in the drive mechanism of the device before the operator can react to stop the machine. A helical coil spring is arched in an arcuate configuration with the radially innermost portions of the spring turns in contact while the radially outermost portions of the spring turns are angularly separated, creating a fanned array of wedge-shaped apertures with their openings presented laterally toward the endwise-moving strand rapidly passing the device. Inadvertent deflection of the strand from its path of endwise movement deflects the endwise-moving strand into one of the wedge-shaped apertures between the spring turns, producing immediate, automatic halting and breaking of the deflected moving strand, and thus avoiding tangled masses of thread tightly jammed on sheaves and drive belts.

3,614,007
YARN-WINDING ASSEMBLY
 Ferdinand Lenorak, Bratislava, Czechoslovakia, assignor to
 Chemické závody Julia Dimitrova marodni podnik,
 Bratislava, Czechoslovakia
 Filed Dec. 4, 1968, Ser. No. 780,962
 Int. Cl. B65h 75/30, 54/54
 U.S. Cl. 242—46.4 7 Claims



A yarn-winding assembly enabling a cake of wound yarn to be quickly removed from a spool core. The assembly includes an inner shaft and two sets of axially extending spool core components distributed circumferentially about the shaft with the components of one set alternating with the components of the other set. A manually operable means is movable axially of the shaft and coacts with one of the sets of components for displacing this one set inwardly toward the shaft to an inoperative position upon movement in one axial direction and outwardly away from the shaft to an outer operative position upon movement in an opposite axial direction. An elastic means coacts with the other set of components for constantly urging them inwardly toward the shaft to their inoperative positions while the one set of components displaces the other set outwardly to their operative positions in opposition to the elastic means.

3,614,008
CAPSULE REEL ASSEMBLY FOR TAPES
 Robert J. Stark, 124 Walnut St., Somerville, Mass.
 Filed June 30, 1969, Ser. No. 837,505
 Int. Cl. G11b 23/06; B65h 75/02
 U.S. Cl. 242—55.16 14 Claims

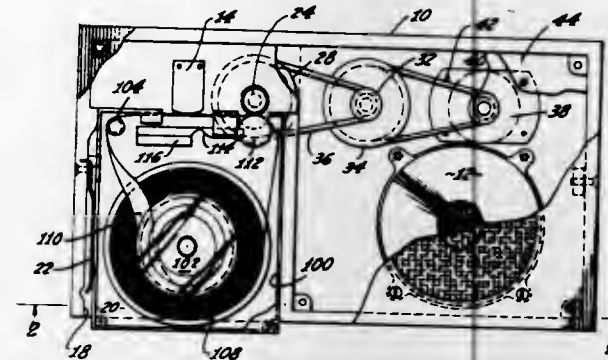


A capsule reel assembly for tapes having a pair of flanges rotatably mounted with respect to each other in spaced-apart parallel relationship, a hub extending between said flanges for supporting a length of tape trained therearound, and a spool disposed about the hub for winding a length of tape into the space between the flanges for storage.

3,614,009
MAGNETIC TAPE CARTRIDGE
 Jerry P. Ramult, 715 Encino Drive, Arcadia, Calif.
 Filed Feb. 23, 1967, Ser. No. 618,061
 Int. Cl. B65h 17/48
 U.S. Cl. 242—55.19 A 6 Claims

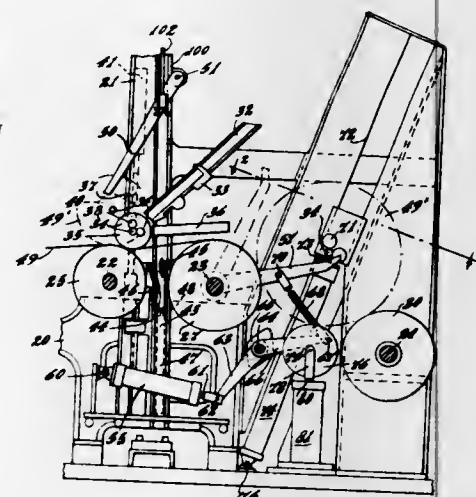
This invention relates to a driving system for magnetic tape which may be used with a magnetic tape cartridge system and wherein the driving system includes a nonrotatable pinch surface in combination with a rotatable capstan to provide

for the movement of the magnetic tape. The invention also relates to the use of a relief ledge in a rotatable hub used in an endless coil-type magnetic tape cartridge to reduce



friction and flatten the magnetic tape as the magnetic tape emerges from an inside portion of the endless coil of magnetic tape supported by the rotatable hub.

3,614,010
CLOTH WINDER HAVING CUTTER AND PRESSURE BAR
 Walter E. Aulen, Woodstown, N.J., assignor to Eddystone Machinery Company, Chester, Pa.
 Filed Sept. 3, 1969, Ser. No. 854,986
 Int. Cl. B65h 19/20
 U.S. Cl. 242—56 R 11 Claims

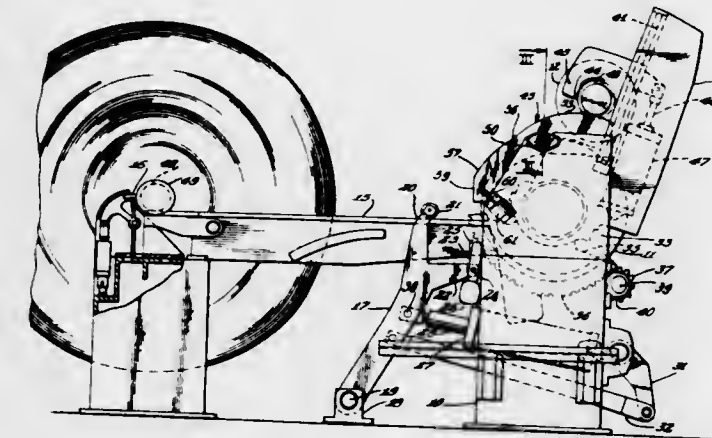


In a cloth winder for sheet material, the cloth is pushed down or engaged from above by a pressure bar or the like at two zones, one forward and one rearward in the direction of progression of the sheet material with respect to the location of the cutter. In one embodiment the cutter has a pusher abutment which engages the fabric opposite a foot on the pressure bar so that the pressure bar initially raises as the cutter raises, and then moves rapidly away from the cutter to permit the new roll to start.

3,614,011
NIP RELIEVING APPARATUS FOR A REEL
 Gerald W. Karr, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.
 Filed Dec. 22, 1969, Ser. No. 886,813
 Int. Cl. B65h 75/34
 U.S. Cl. 242—64 9 Claims

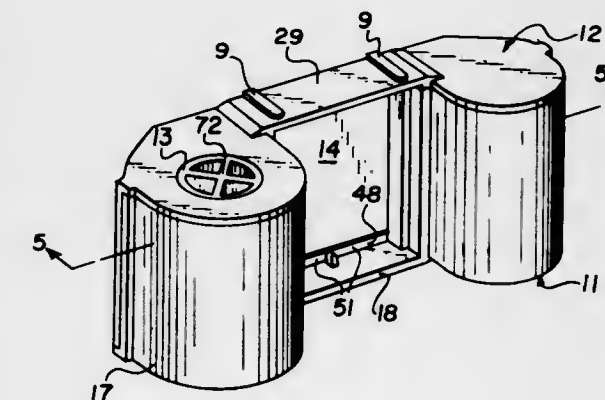
Apparatus for reeling or winding light grades of paper webs such as tissue. A reel drum having a pair of parallel-spaced horizontal rails extending from the delivery end portion of the reel drum, winds the web onto a spool. Primary transfer arms at each end of the reel drum transfer the spool downwardly along the periphery of the drum onto the rails. The spool is supported at its opposite ends on cam tracks pivoted about axis parallel to the axis of the reel drum. Air cylinders are connected with the cam tracks to position

the cam tracks to hold the spool out of engagement with the periphery of the drum and pivot the tracks to engage the spool with the drum with a preselected minimum nip pressure. The tracks have incoming curvilinear portions formed about one axis and dropping off at their outgoing ends, to lower the partially wound spool onto the rails. The



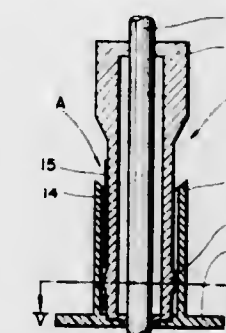
air cylinders cooperate with the outgoing portions of the cam tracks to provide a uniform minimum nip pressure between the spool and reel drum as the spool advances along the outgoing curvilinear portions of the cam tracks. The partially wound spool is delivered from the cam tracks onto the rails, along which the reeling operation is continued under the control of secondary transfer arms.

3,614,012
ELIMINATION OF BACKING PAPER SHORTAGE IN ROLL FILM CARTRIDGES
 Robert I. Edelman, Rochester, and Evan A. Edwards, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Filed Apr. 6, 1970, Ser. No. 25,864
 Int. Cl. G03b 1/04
 U.S. Cl. 242—71.2 9 Claims



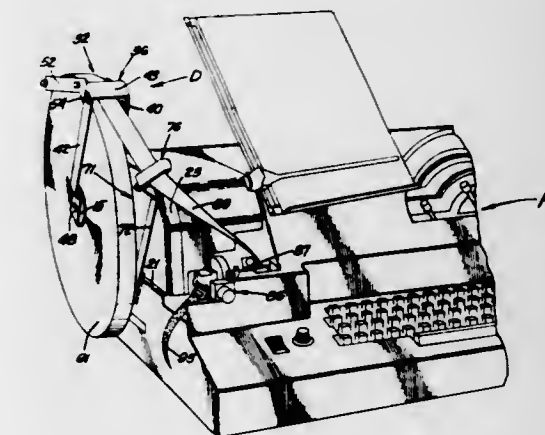
In a double compartment-roll film cartridge loaded with a length of paper-backed film adapted to be wound from a supply roll in a film supply chamber onto a rotatable winding core in a film takeup chamber, the minimum effective diameter of the winding core is at least as large as the maximum diameter of the film supply roll defined by the internal size of the supply chamber. This arrangement avoids the occurrence of film buckling in the exposure gate attributable to the development of more film than paper between the film supply and takeup rolls as a result of the unequal rate at which film and paper are unwound and absorbed by those respective rolls during the film-winding process.

3,614,013
SPOOL FOR WINDING FILMS
 Yoshio Kuramoto, Sakai, and Toshio Kobori, Izumichitsu, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
 Filed July 24, 1969, Ser. No. 844,345
 Claims priority, application Japan, Aug. 22, 1968, 43/72370
 Int. Cl. B65h 75/28
 U.S. Cl. 242—74 9 Claims



A spool for winding films, having a holding means disposed at a position engageable with perforations of a film, which holding means is both engageable with and disengageable from the perforations when the film moves lateral to the longitudinal centerline thereof, but only engageable with the film when the film moves longitudinally.

3,614,014
TAPE DISPENSING MEANS
 William A. Nichols, 5617 Hawthorne, Montclair, Calif., and Ralph E. Simpson, 604 E. Arrow Hwy., Upland, Calif.
 Filed Jan. 6, 1970, Ser. No. 855
 Int. Cl. B65h 23/10, 19/00
 U.S. Cl. 242—75.2 10 Claims



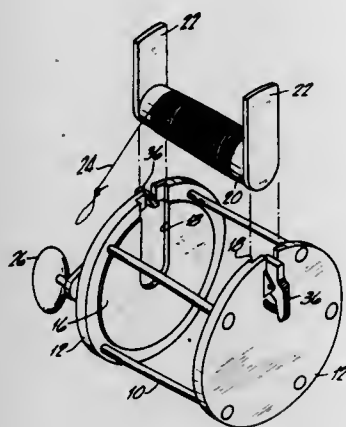
A dispenser for a 14-inch roll of perforator tape with a hollow core. The dispenser has a tape-holding central portion and cooperating tape control and guidance parts. The central tape-holding portion of the dispenser is fastenable to a perforator, and has a backplate to which an outwardly extending axle is affixed. It also has a lightweight metal hub, sized to fit into the hollow core of the tape roll, slidably mounted on the axle. Fixedly secured to the backplate is the first of a pair of arms of a U-shaped roll guard. The two arms of the guard are pivotally joined so that the second is rotatably movable relative to the first. The outer end of the rotatably movable arm has a notch and the outer end of the hub axle a groove, by means of which the arm and axle can be latched together to insure against excessive sideways slippage of a mounted tape roll along the axle. Pivotally mounted on the U-shaped guard is a swinging arm with a riding roller attached. The riding roller is positioned to ride against the edge of a tape roll mounted on the axle and prevent the unraveling of tape spirals therefrom.

The dispenser is loaded by swinging the rotatably movable arm of the U-shaped guard out of the way, pushing a roll of tape onto the hub, then swinging the rotatably movable arm

down until the notch in its outer end latches with the groove in the axle.

3,614,015
EASY-LOADING FISHING REEL
Irving Sussman, 540 E. 80th St., Brooklyn, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,299
Int. Cl. A01k 89/00
U.S. Cl. 242—84.1 R

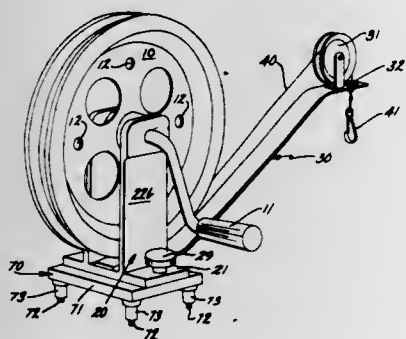
10 Claims



A fishing reel is provided with a detachable spool about which the line is wound and unwound whereby spool and line can be removed and replaced with another spool and line as desired. The fishing reel includes a cylindrical cage provided with a pair of oppositely disposed rotatable parallel-spaced wheels. The wheels are provided with radially extending opposite slots to receive transversely extending flanges provided on opposite ends of the spool to detachably secure the spool to and between the wheels whereby the spool and wheels rotate together to wind and unwind the line. Preferably, catches at opposite ends of the cage hold the flanges in their associated slots. The cage may be provided with elements for aligning the wheels to maintain the slots in aligned parallel positions for easy insertion and removal of the spool.

3,614,016
APPARATUS FOR CONTROL DEPTH FISHING
James E. Rieth, 2315 Okemos, S.E., Grand Rapids, Mich.
Filed Mar. 19, 1970, Ser. No. 20,934
Int. Cl. A01k 89/02, 89/04
U.S. Cl. 242—106

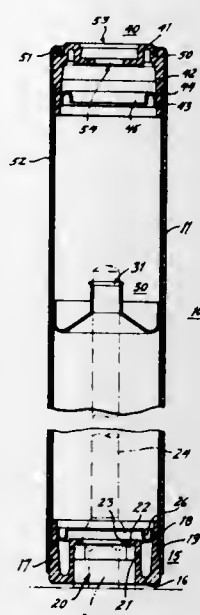
17 Claims



A reel of large diameter and having a handle is mounted on a base. It includes indexing apertures in its side which are arranged in a circular fashion, equidistant from each other on the circle. Line can be wound onto and unwound from the reel. Reel rotation can be stopped by a pin, mounted on the base, which is biased towards engagement with any one of the apertures. A blocking surface is provided on the base which can engage a handle on the pin when the pin is rotated to one position and thereby prevent the pin from engaging an indexing aperture. When the pin is rotated, the handle moves out of engagement with the blocking surface and the pin moves towards the indexing apertures. The base can be secured to a transom-type mounting bracket or to a deck mounting plate.

3,614,017
PIRN
Robert Julien, Verviers, Belgium, assignor to Steel Heddle Manufacturing Company, Philadelphia, Pa.
Filed Oct. 15, 1969, Ser. No. 866,578
Int. Cl. B65h 75/10
U.S. Cl. 242—118.3

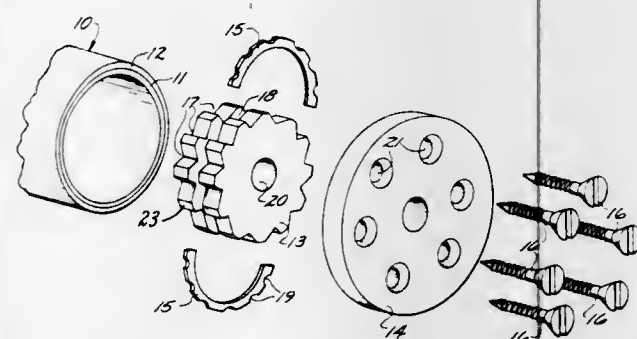
5 Claims



A pirn is provided having a central tubular portion and an end cap which is retained in the tubular portion by an annular interior ferrule in engagement with a flange of the end cap. The pirn may also be provided with a central bearing and an additional end cap.

3,614,018
TEXTILE SPOOL
James Elmo Jones, P.O. Box 6627, Greensboro, N.C.
Filed Dec. 29, 1969, Ser. No. 888,775
Int. Cl. B65h 75/14
U.S. Cl. 242—118.61

5 Claims



An attaching means for securely fastening the flange of a textile spool to the cylinder upon which the yarn is wound comprising a molded plastic end plug having a peripheral groove receiving a metallic annular disc with a plurality of notches spaced around its outer periphery coinciding with cooperating notches in the periphery of the plug itself. The plastic plug is inserted into the end of the cylinder and the flange attached by screws, whereupon the disc urges the screws into threading engagement with the inner wall of the cylinder, thereby securely locking the flanges onto the spool.

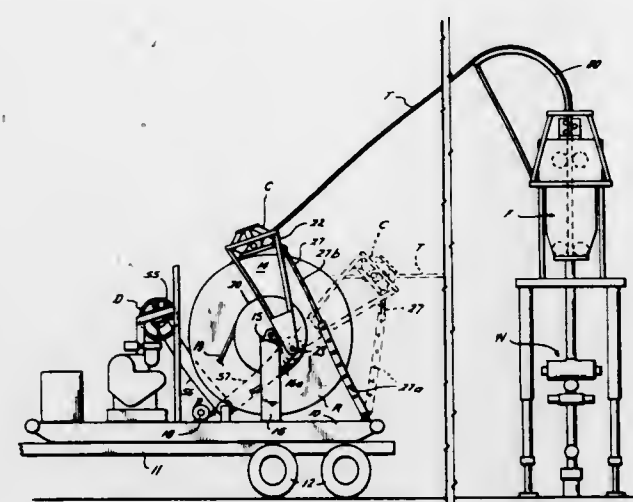
3,614,019
APPARATUS FOR CONTROLLING THE WRAPPING OF TUBING ONTO A REEL
Damon T. Slaton, and Archie Wilson, both of Houston, Tex., assignors to Bowen Tools, Inc.
Filed May 13, 1970, Ser. No. 36,780
Int. Cl. B65h 57/28
U.S. Cl. 242—157.1

10 Claims

Apparatus for controlling the wrapping of tubing onto a reel to obtain substantially uniform- and level-wrapped layers

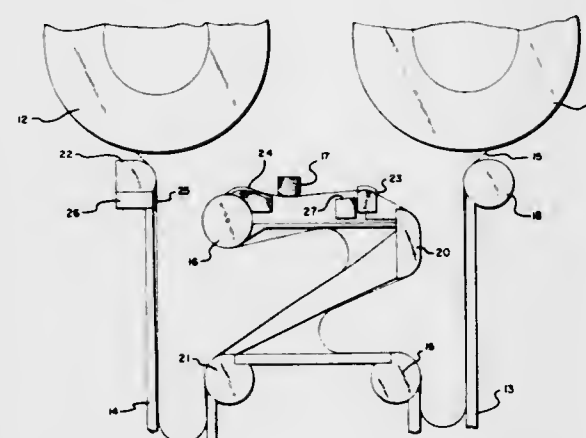
on the reel, wherein the wrapping is normally accomplished by a free-wheeling or substantially unrestrained feeding of

adjoining record frames on a web past the transducer. Means in the accessory, in response to frame-defining means in the



3,614,020
TAPE REWIND SPEED CHANGE SYSTEM
Zoltan L. Herger, Northglenn, Colo., assignor to Storage Technology Corporation, Boulder, Colo.
Filed Apr. 27, 1970, Ser. No. 32,120
Int. Cl. B65h 59/38; G03b 1/04; G11b 15/06
U.S. Cl. 242—188

4 Claims

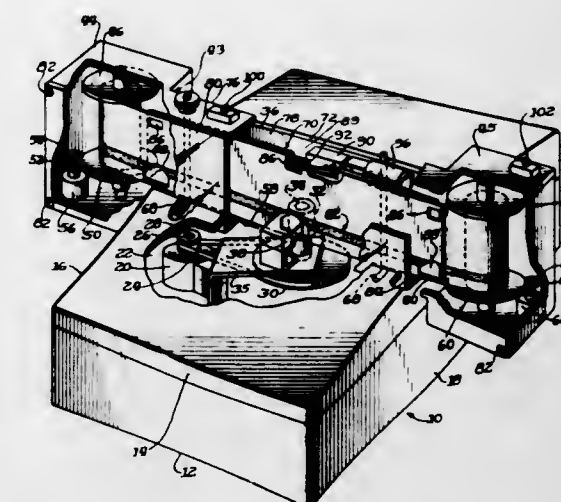


In a magnetic tape recording and reproducing system a light-reflective marker is positioned at the beginning of each reel of tape. The tape is driven between a file reel and a machine reel, through vacuum columns, and past magnetic heads. A control system includes means for controlling the tape drive in a high-speed rewind and a low-speed rewind. A sensor is positioned at the opening of the vacuum column on the machine reel side of the magnetic heads. This sensor produces an output upon passage of the reflective marker. The output is connected to the control system to switch in from a high-speed rewind to a low-speed rewind upon passage of the marker. In this manner a significant decrease in rewind time is obtained.

3,614,021
RECORD-HANDLING DEVICE
Richard M. Davidson, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Nov. 29, 1968, Ser. No. 780,096
Int. Cl. B65h 25/00, 25/32; G03b 1/42
U.S. Cl. 242—188

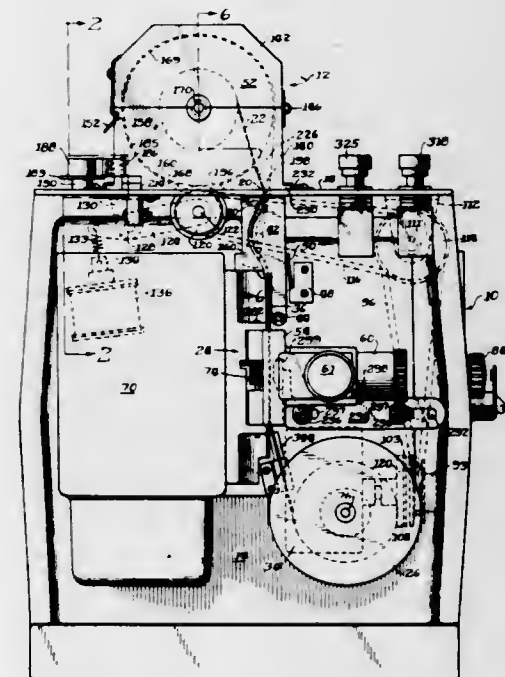
13 Claims

An accessory enables a device with a drive for moving successive record cards past a transducer, to advance



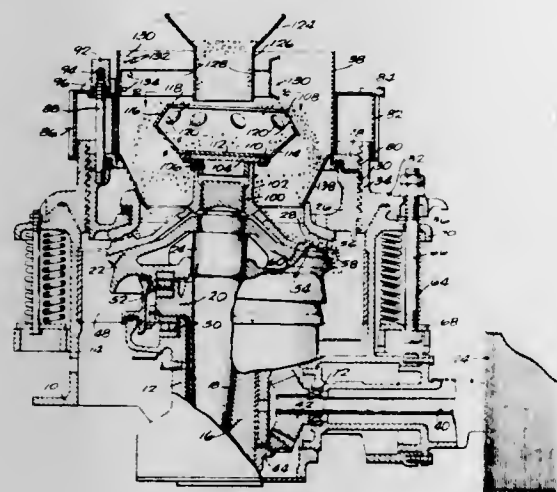
3,614,022
PROJECTOR FOR AUTOMATICALLY THREADING, REWINDING, AND INDEXING A PLURALITY OF FILM SPOOLS AND A MAGAZINE
Elmer C. Henriksen, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Continuation of application Ser. No. 439,210, Mar. 12, 1965, now abandoned. This application Feb. 19, 1968, Ser. No. 706,239
Int. Cl. G03b 1/04; G11b 15/32, 23/04
U.S. Cl. 242—198

16 Claims



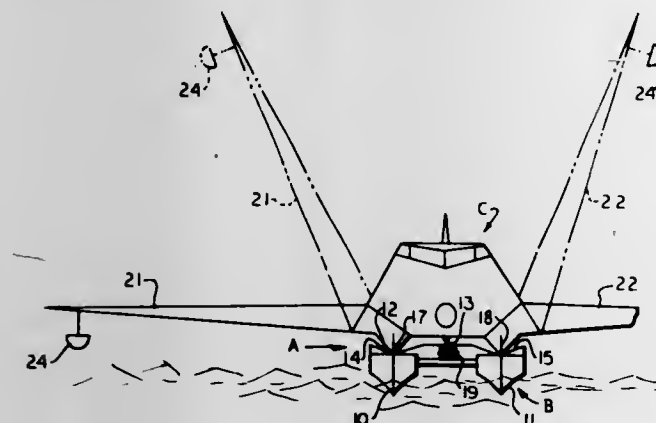
A magazine having a plurality of adjoining reel compartments supplies film from successive reels in a film path for forward projection and receives film returned from the path during reverse projection and rewind following forward projection according to the condition of means for moving film between the magazine and a takeup member. During projector threading and rewind, the film path is enlarged and a shuttle for moving film intermittently during projection is prevented from film engagement. Sensing means at the film path condition the projector for (1) forward projection following threading, (2) rewinding following forward projection, and (3) terminating rewinding.

3,614,023
GYRATORY CRUSHER
 Fred Curtis Archer, Whitefish Bay; Ronald B. DeDiemar, Brown Deer, and LeRoy J. Schuman, Milwaukee, all of Wis., assignors to Barber-Greene Company, Aurora, Del. Division of Ser. No. 720,676, Apr. 11, 1968, Pat. No. 3,533,568. Filed Mar. 30, 1970, Ser. No. 24,467
 Int. Cl. B02c 2/04
 U.S. Cl. 241—202



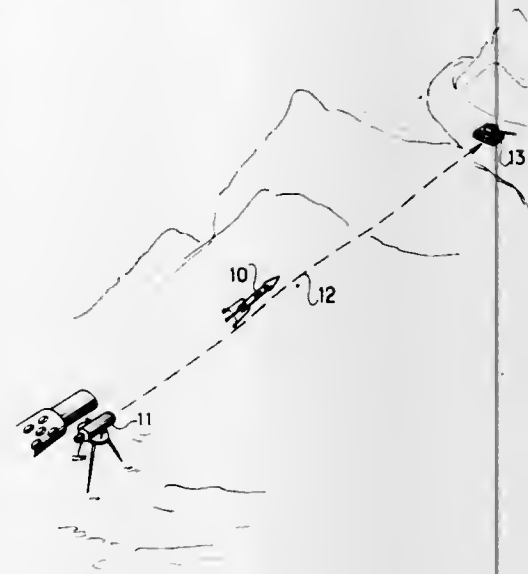
A gyratory or cone-type crusher embodying an improved feed distributor for supplying material to be processed uniformly to the crushing chamber or zone.

3,614,024
COMBINED WATER SURFACE AND AIR CRAFT
 Victor Millman, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
 Filed Apr. 6, 1970, Ser. No. 25,776
 Int. Cl. B64d 3/00
 U.S. Cl. 244—2



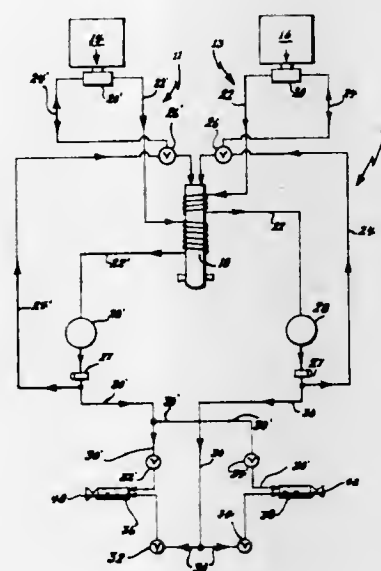
A motorless aircraft carrying a pilot, and, if desired, one or more passengers, is mounted on a high-speed water surface craft having servocontrolled propulsion and steering mechanism. Each of one or more power winches in the surface craft controls the reeling out and in of a towing cable and, optionally, electrical conductors. Electrical pilot controlled means in the aircraft are operatively connected to electrically responsive individual servo means controlling the propulsion, steering and winch means in the surface craft, so that a pilot in the aircraft can maneuver the surface craft with the aircraft mounted thereon on the surface of the water, and can take off from the water craft at a determined minimum air speed upon unreeling the tow cable. He then flies the aircraft in the manner of a towed glider, while still maintaining full operational control of both the surface and air craft.

3,614,025
MACHINE GUIDING SYSTEM
 Henry Maillet, Sceaux, France, assignor to Compagnie Generale D'Electricite, Paris, France
 Filed July 17, 1968, Ser. No. 745,644
 Claims priority, application France, July 19, 1967, 114 851
 Int. Cl. F41g 9/00, 7/00, 7/14
 U.S. Cl. 244—3.13



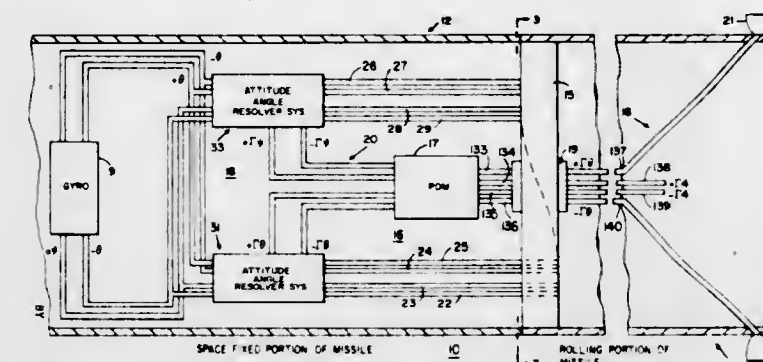
Determining the instantaneous position of a rotating machine moving at high speed along a trajectory path by impinging a fine light beam of generally flat form which rotates about an axis parallel to the direction of light propagation onto a plurality of detectors carried by the rotating machine in a plane perpendicular to the trajectory axis and measuring the time intervals separating the generated signals.

3,614,026
SELF-SUSTAINED ATTITUDE CONTROL SYSTEM
 Louis N. Montanino, Tonawanda, and William E. Pearson, E. Amherst, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force
 Filed Apr. 29, 1969, Ser. No. 821,167
 Int. Cl. F42b 15/18
 U.S. Cl. 244—3.22



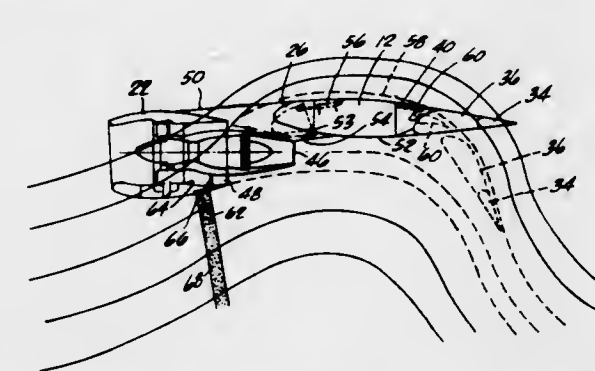
A self-sustained attitude control system having a propellant tank, a pump, a heat source and an accumulator. The accumulator stores the superheated vapors expelled from the heat exchanger after being pumped therethrough. The superheated vapors released from said accumulator are used for (1) attitude control, (2) actuation of the pump, and (3) as the heat source in the heat exchanger.

3,614,027
PNEUMATIC RESOLVER FOR MISSILE CONTROL
 Charles Lynn Lewis, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army
 Filed July 8, 1969, Ser. No. 839,829
 Int. Cl. F42b 15/02; G06f 1/00; F15d 1/02
 U.S. Cl. 244—3.22



A pneumatic attitude control system for an artillery-type missile which is spin stabilized during flight. The control system includes a sensor portion which is roll stabilized and, thus, will not roll with the missile. Thus, attitude angles measured by the roll stabilized sensors will be space fixed. Control valves for providing restoring torques on the missile are mounted on the rotating part of the missile for rotation therewith. A resolution system is provided for resolving the space-fixed signals from the roll-stabilized sensors into the rolling missile's coordinate system for desired operation of the control valves.

3,614,028
TURBOFAN-POWERED STOL AIRCRAFT
 Harold F. Kleckner, Pacific Palisades, Calif., assignor to McDonnell Douglas Corporation
 Filed Jan. 12, 1970, Ser. No. 2,109
 Int. Cl. B64d 27/18
 U.S. Cl. 244—15

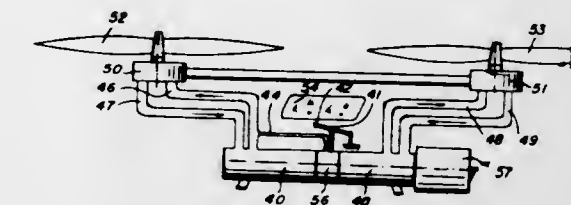


A short takeoff and landing (STOL) aircraft employing turbofan engines and a wing and flap arrangement to provide propulsive lift, a high lift capability, and a steeper landing approach flight path. Improvements in these characteristics are achieved by a particular positioning of the engine fan and primary exhaust efflux flow relative to the wing and by locating the flaps for operation in consort with the engine-derived gaseous flow and the wing.

3,614,029
ADDED FLUIDFLOW CONTROL MEANS FOR GOVERNING THE ATTITUDE OF FLUIDBORNE VEHICLES
 Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan
 Continuation of application Ser. No. 770,912, Oct. 28, 1968, Continuation-in-part of application Ser. No. 552,608, May 24, 1966, now abandoned, Continuation of application Ser. No. 328,395, Dec. 5, 1963, now Patent No. 3,320,898, dated May 23, 1967. This application June 12, 1970, Ser. No. 48,863
 Int. Cl. B64c 27/08
 U.S. Cl. 244—17.23

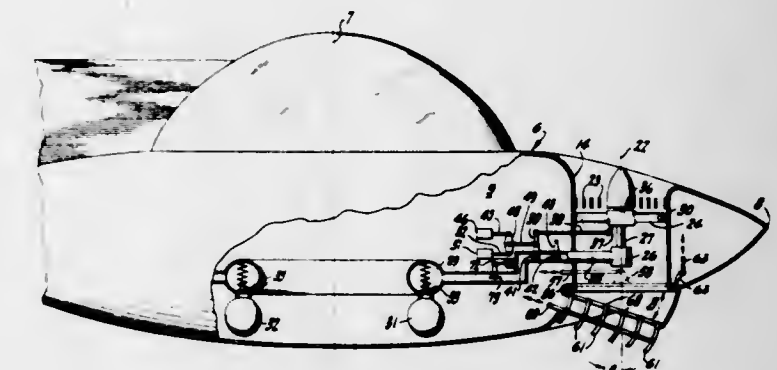
A fluidborne vehicle, such as an aircraft, has two propellers positioned symmetrically on either side of a

longitudinal centerline of the vehicle, or has two pairs of propellers, with the pairs positioned symmetrically on opposite sides of the longitudinal centerline. The propellers are driven by respective hydraulic motors and each motor is connected by supply and return flow lines to a source of



hydraulic fluid under pressure and independently of each other hydraulic motor, the hydraulic flows to all of the motors being equal or in a fixed proportion to each other. An additional source of hydraulic fluid under pressure has control means for selectively augmenting or decreasing the flow to a selected hydraulic motor.

3,614,030
AIRCRAFT
 Paul S. Moller, 1308 "B" St., Davis, Calif.
 Filed Dec. 10, 1969, Ser. No. 883,980
 Int. Cl. B64c 29/04
 U.S. Cl. 244—23 C

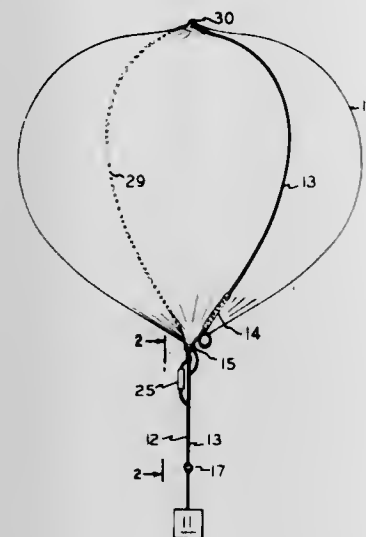


A disclike aircraft body is substantially a figure of revolution about a main axis and has a plurality of air ducts extending through the body in a direction parallel to said axis, the ducts being arranged in arcuate series except in the foremost and rearmost positions. Each of the ducts has individually controlled means for inducing airflow downwardly therethrough such as a fan rotating on an airflow axis parallel to the main axis or a thrust augmentor supplied with pressure gas from a common source. Downstream of the inducing means is an individually controlled rotary member movable about the airflow axis and having deflectors movable about transverse axes to govern the discharge of air from the ducts.

3,614,031
BALLOON DESTRUCT DESCENT AND RECOVERY SYSTEM
 Henry Demboski, 5302 N. Washington Blvd., Arlington, Va.
 Filed Apr. 9, 1970, Ser. No. 27,095
 Int. Cl. B64b 1/48
 U.S. Cl. 244—32

A structure for recovering the instrument package of a high-altitude balloon by providing means for destroying a

portion of the balloon, inverting the balloon and allowing the escaping gas to provide a controlled descent until such time



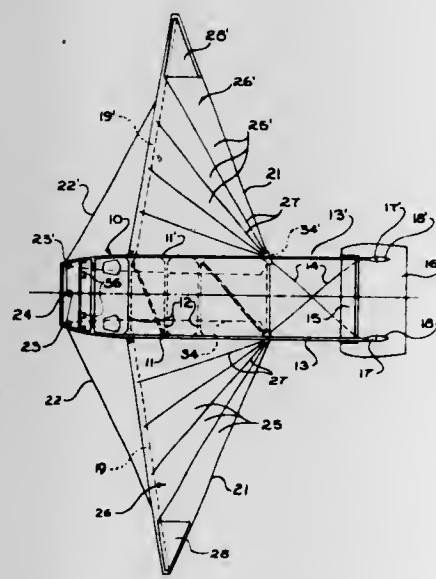
as the balloon is deflated and a parachute then provides a means for returning the entire package to the earth.

3,614,032 AIRCRAFT

Thomas H. Purcell, Jr., 2709 Everett Ave., Raleigh, N.C.
Filed Apr. 28, 1969, Ser. No. 819,749
Int. Cl. B64c 1/00

U.S. Cl. 244—36

10 Claims



In abstract, a preferred embodiment of this invention is an aircraft design capable of being built by amateurs in stages as time and money become available while at the same time being readily adaptable for assembly line production. This aircraft uses a new concept of designing the upper portion of the fuselage to conform to the shape of the plane formed at the junction of two intersecting cylinders disposed angularly to each other. This fuselage shape in combination with a minimum flotation system gives an extremely stable aircraft on both water, land and in the air which has a tremendous load carrying capacity for the size power plant required.

3,614,033 TANDEM WING AIRCRAFT WITH FREELY PITCHING WING SURFACES

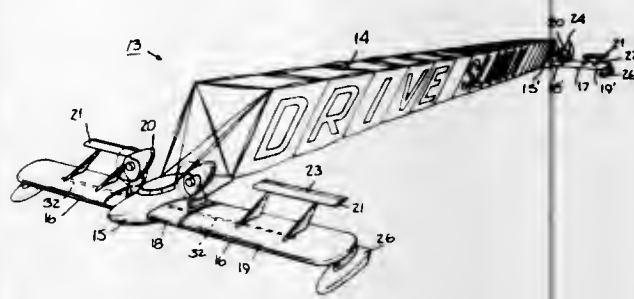
Lewis C. McCarty, Jr., Thornton-le-Dale, England, assignor to Central Aircraft Manufacturing Company, Inc., Washington, D.C.

Filed June 14, 1968, Ser. No. 737,046
Int. Cl. B64c 3/38, 3/08

U.S. Cl. 244—48

The lifting surfaces of the wings are freely pivotal to maintain a stable trim and are provided with pilot-actuated

flaps for controlling the attitude of the lifting surfaces. The wings are arranged in tandem at the front and rear of the aircraft and enables the fuselage to be of great length. The



aircraft is capable of damping out turbulence to a significant large degree while placing large power control forces at the pilot's disposal for maneuvering.

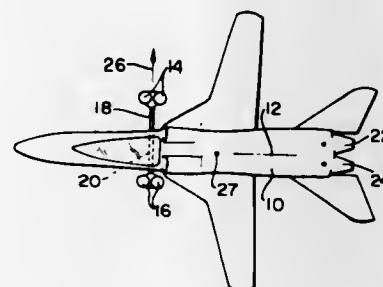
3,614,034 V/STOL AIRCRAFT

Richard E. Townsend, Huntington, Long Island, N.Y., assignor to Fairchild Hiller Corporation, Farmingdale, L. I., N.Y.

Filed July 9, 1969, Ser. No. 840,202
Int. Cl. B64d 27/20

U.S. Cl. 244—56

8 Claims



A V/STOL aircraft includes retractable lifting jet engines adapted to be stored in the fuselage and extendable to opposite sides of the aircraft with their respective thrust axes being adjustable between horizontal and vertical positions. Each of the lifting jet engines is mounted on a pivotable arm with an extendable tilt rod secured to the mounting structure to pivot the lifting jet engines from a horizontal stowage position to an operating position where they can be adjusted for vertical thrust. The arms and tilt rods are mounted on a movable carriage so that the engines may be translated horizontally in a direction transverse to the fuselage axis to provide roll control. By pivoting the engines on the mounting arms, variable-pitch control may be provided. The lifting jet engines are also mounted for rotation relative to their associated arms about axes generally parallel to the fuselage axis, with means for simultaneously rotating the lifting jet engines about these axes to provide yaw control.

3,614,035 CHANGE DETECTOR

George R. Buynak, Cuyahoga Falls; Nicholas D. Diamantides, Cuyahoga Falls, and Richard H. Smith, North Canton, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

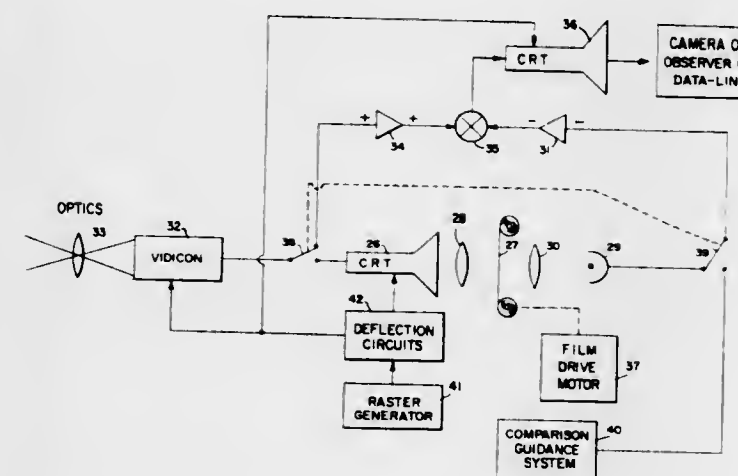
Filed Feb. 10, 1964, Ser. No. 343,675
Int. Cl. B64c 13/50

U.S. Cl. 244—77

2 Claims

1. In a target change detector adapted for combination with a reconnaissance aircraft, the combination of a reference transparent scene film, a film drive means, a cathode-ray tube adapted to scan the total area of the transparent film with nominal raster technique, a photomultiplier adapted to receive the scanning beam of the cathode-ray tube through the transparent film, lens means to properly direct the scanning beam of the cathode-ray tube to the transparent film and to the photomultiplier to produce

video signals, a vidicon adapted to electronically image a comparison scene of the earth beneath the aircraft and produce video signals, a pair of wide-band electronic amplifiers adapted to receive the video signals from the vidicon and the photomultiplier respectively, the amplifier for the vidicon being set for a positive output signal, the amplifier for the photomultiplier being set for a negative output signal, a summer unit adapted to receive the video signals of opposite polarity from the amplifiers to produce a difference signal, said difference signal being the difference between the reference transparent film signal and the



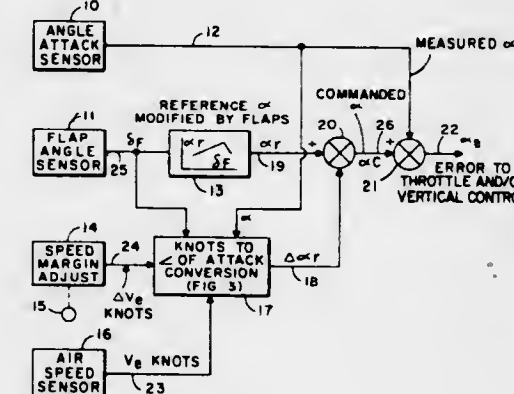
comparison vidicon signal, a comparison guidance system section adapted to compare the vidicon image with the film image to keep the aircraft flying on the proper course, switch means between the vidicon and its amplifier, said switch adapted to switch the vidicon signal to the cathode-ray tube input, switch means between the photomultiplier and its amplifier, said second-mentioned switch adapted to shift the photomultiplier signal to the comparison guidance system and means to change the switches synchronously together to change the apparatus from the change detector section to the comparison guidance system.

3,614,036 CONVERSION PRINCIPLE-ANGLE OF ATTACK TO AIRSPEED

Jimmie L. Foster, Granada Hills, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed Oct. 13, 1969, Ser. No. 865,842
Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

6 Claims



A conversion principle and implementation means for permitting linear airspeed input increments to be introduced into an angle of attack referenced control system for an aircraft by means of which the normal margin over stall speed controlled by the system, such as 1.3V, may be increased by a desired incremental airspeed ΔV . The selected incremental airspeed ΔV is converted to an equivalent incremental angle of attack parameter which is added to the reference angle of attack parameter normally used in the system control computations.

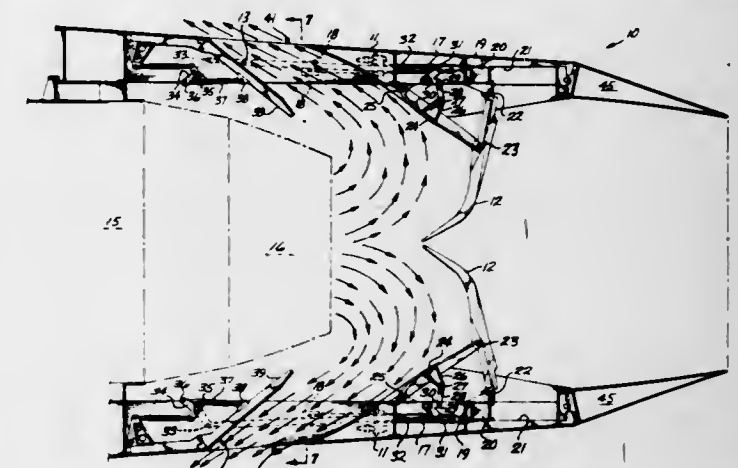
3,614,037 AIRCRAFT COMBINATION THRUST REVERSER AND SOUND SUPPRESSOR AND A PARTICULAR FULL RANGE BALANCED THRUST REVERSER

Alexander V. Vdolek, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 22, 1969, Ser. No. 859,937
Int. Cl. B64d 33/04

U.S. Cl. 244—110 B

4 Claims



A new thrust reverser is so shaped that sound suppressor chutes may be positioned between the thrust reverser doors and within the fore and aft limits of the thrust reverser doors to form a compact, efficient combination thrust reverser and sound suppressor. A modulating thrust reverser, the elements of which being supported at their centroids for effortless movement to all positions between retracted position for providing zero reverse thrust from a reaction engine exhaust to fully extended position for generating maximum reverse thrust for use as (1) a modulating thrust reverser as a braking device on the ground subsequent to landing or prior to an aborted takeoff, (2) a modulating thrust reverser for inflight reversing for rapid descent, and (3) a thrust-modulating device for rapid thrust adjustments as may be required during a landing approach. The balanced doors require only a small actuating force for movement thereof, and for holding thereof in the end positions or any position intermediate thereof, independent of the thrust setting of the engine. Likewise, noise attenuation of the jet exhaust results from the intermediately positioned thrust reverser doors, during thrust modulation during landing approach.

Tertiary doors which are located on the outer surface of a secondary nozzle provide aerodynamically smooth air ducts for supplying ambient cooling air and for improving the efficiency of the secondary nozzle during takeoff and through subsonic flight. Further, tertiary doors comprising fore and aft portions covering the air ducts adjacent the engine air intake, are connected to the thrust reverser doors for opening only the aft portion of the tertiary door to accordingly eject away from the aircraft to prevent attachment of the hot exhaust gases to the nacelle skin and the accompanying scorching and sooting thereof and to prevent reingestion of the exhaust gases into the engine air intake. Some of the tertiary doors are further responsive to the thrust reverser doors for being held closed during reverse thrust to adjust the exit area for proper engine area matching. Some doors are closed to prevent impingement of the exhaust gases against adjacent aircraft surfaces. The shape of the new thrust reverser doors provides adequate room for the positioning of sound suppressor chutes between the thrust reverser doors to accordingly form a compact and efficient combination thrust reverser and sound suppressor unit.

3,614,038 POROUS METAL PANEL TO DISTRIBUTE DEICING FLUID ONTO THE LEADING EDGE OF A SURFACE

Gerald L. Nichols, Farmington, Mich., assignor to Ace Filtercraft, Inc., Farmington, Mich.

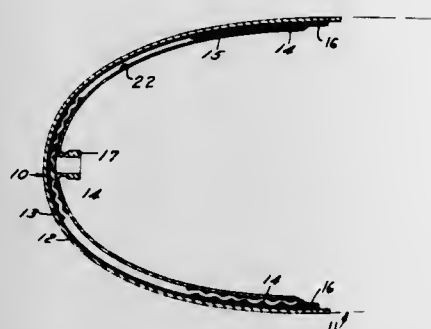
Filed Jan. 8, 1970, Ser. No. 1,421
Int. Cl. B64d 15/08

U.S. Cl. 244—134 C

7 Claims

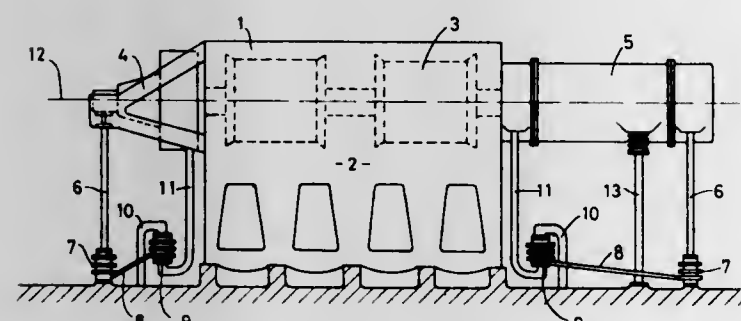
A porous metal panel for use in distributing deicing fluid onto the leading edge of a surface, such as the wings and tail

of an airplane or other vehicle, that requires protection against ice. The porous metal panel includes a porous outer metal plate, a nonporous inner metal plate, a porous metal membrane having a porosity finer than the porosity of said porous outer plate disposed on the inner surface of said porous outer plate, a separator member comprising a sheet of metal wire mesh disposed between said metal membrane and said inner nonporous metal plate, said separator member



having a porosity coarser than the porosity of said porous metal membrane, the peripheral edges of said inner plate and membrane being bonded in a fluidtight condition to the outer plate to enclose said separator member and form a fluid chamber, and means for connecting said fluid chamber to a source of pressurized deicing fluid for admission of said fluid into said chamber for distribution through said membrane and outer porous plate onto said surface.

3,614,039
DEVICE FOR AUTOMATICALLY ADJUSTING THE EFFECTIVE LENGTH OF A STAY OR SUPPORT
Lars Arvid Norberg, Finspong, Sweden, assignor to Stal-Laval Turbin Aktiebolag, Finspong, Sweden
Filed Apr. 30, 1969, Ser. No. 820,458
Claims priority, application Sweden, May 7, 1968, 6108/1968
Int. Cl. F16c 35/00
U.S. Cl. 248-2
1 Claim

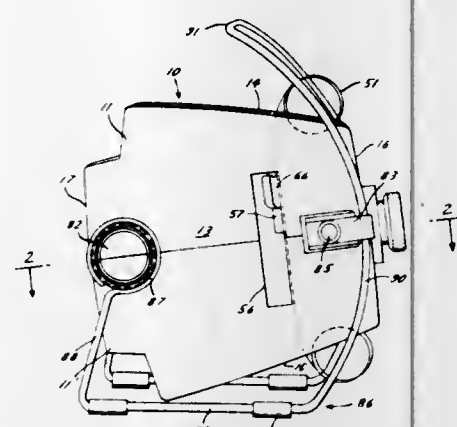


A device for automatically adjusting the effective length of a stay or supporting post such as is used for the support of parts of or associated with a steam turbine, the stay being connected at one end to the turbine or other part and connected at its other end to an oil-containing compensator. The said compensator communicates with a second similar compensator, the latter compensator being connected at its lower end to a strut that extends to and attaches to the turbine or other element thereof to which the first compensator is attached.

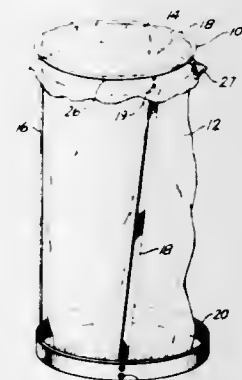
3,614,040
STAND FOR PROJECTOR
Eugene Martinez, Irvington-On-Hudson, N.Y., assignor to Robert H. Reibel, Croton-On-Hudson, N.Y., a part interest
Division of Ser. No. 715,621, Mar. 25, 1968, Pat. No. 3,522,943.
Filed Feb. 11, 1970, Ser. No. 10,345
Int. Cl. F16m 13/00
U.S. Cl. 248-11
10 Claims

A projector having a molded plastic outer case which is supported by a curved steel stand which also serves as an elevating device and carrying handle. The projector can be tilted simply by sliding it up on the curved stand and locking

it with two knobs. An electric lamp is mounted at a center location within the case and a pair of heat dissipating baffle plates are positioned on opposite sides of the lamp. A cover is positioned over the lamp and baffle plates to direct the



3,614,041
TRASH BAG HOLDER
Everett L. Koger, 9331 Glendon Way, Rosemead, Calif.
Filed Nov. 10, 1969, Ser. No. 875,038
Int. Cl. B65b 67/12
U.S. Cl. 248-97
7 Claims

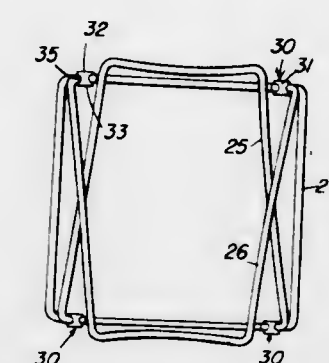


A holder for trash bags and the like comprising a hoop with an elongated circumferential channel in its rim and a support structure mounting the hoop in an essentially horizontal position. A releasable fastening device, preferably a spring loaded cable, is secured to the hoop for engagement with the channel in the rim of the hoop. A trash bag is secured to the hoop in an upright position by folding its open end down over the rim of the hoop and engaging the cable with the rim and its outer channel to tightly clamp the bag to the hoop. The hoop support structure is arranged so that the trash bag can be removed from the holder laterally with respect to the hoop without being obstructed by the support structure.

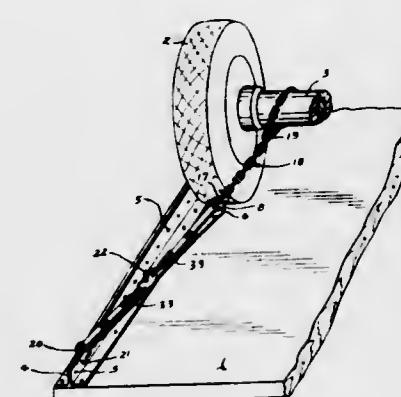
3,614,042
FOLDABLE FRAME STRUCTURE FOR COMBINATION WITH A LIMP BAG OF PLASTIC MATERIAL TO RETAIN THE BAG IN EXTENDED POSITION ABOVE A SUPPORT SURFACE
David R. Jensen, Pittsford, N.Y., assignor to Mobil Oil Corporation
Filed Jan. 2, 1970, Ser. No. 1
Int. Cl. B65b 67/12
U.S. Cl. 248-97
5 Claims

A closed rim, for example a squared-off ring of stiff wire material has four clips formed thereon, essentially of U-shape leaving a space the width of the wire rim therebetween; a pair of U-shaped leg structures are resiliently snapped into

the clips, the legs being held in extended position by the U-shaped clips and having angled-off ends fitting between the clips to bear against the rim; upon resiliently spreading the legs, they can be slid out from between the U-shaped clips, the ends remaining therein and the legs folded over to form a

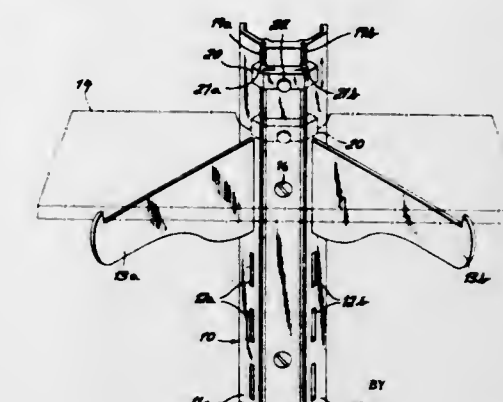


3,614,043
RESTRAINING DEVICE FOR AIR DROP LOADS
Michael H. Reagan, Dayton, Ohio
Filed Nov. 5, 1969, Ser. No. 874,194
Int. Cl. B60p 7/06
U.S. Cl. 248-119 R
1 Claim



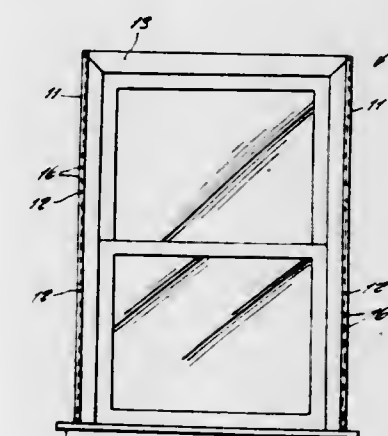
The disclosure relates to tie-downs for securing loads to a platform which can be carried on moving vehicles or dropped from a plane by parachute. These platforms, usually made of wood, are reinforced at their edges by lengths of angle iron or rails having openings along the upper leg for receiving the tie-downs. Strips of woven plastic webbing are used as the tie-down elements on account of its tensile strength and ability to yield under stress. The tie-down webbing is threaded through the eye of a clevis, the bolt of which passes through one of the openings in the longitudinally extending rail of the platform. At the load end, the webbing is received by a slot in an improved adaptor or webbing link. The lower edge of the slot has a curved shape so that the webbing can be looped around this surface without abrasion. From this point, the webbing is returned toward its starting point to form, in effect, two parallel lengths of the webbing with the clevis at one end of the double length and the adaptor at the other end. A belt tightener of standard design is inserted in one of these lengths. Each end of the webbing length, where the tightener is employed, is provided with a metal loop attachment sewn into the webbing material for detachably receiving the oppositely disposed hooks of the belt tightener. The adaptor has an opening therein for receiving the closed end link of a grab chain terminating in a load attachment hook which can be attached to one of the binding straps encircling the load or attached to a mechanical part of the load in any suitable manner.

3,614,044
SHELF MOUNTING WITH LOCKING SLIDER
Martin Bard, 4318 8th Ave., Brooklyn, N.Y.
Filed Mar. 31, 1970, Ser. No. 24,230
Int. Cl. A47g 29/02
U.S. Cl. 248-243
7 Claims



A standard with mounting slits for shelf-supporting arms has two relatively inclined longitudinal faces formed with a pair of vertical grooves for the guidance of a slider adapted to be locked in position, against an intervening third face, to hold down an edge of a shelf carried by a pair of divergent arms.

3,614,045
SNAP-IN DRAPERY BRACKETS
Rudolph J. Cegielski, Jr., 7426 Random Ridge Drive, Tucson, Ariz.
Filed Jan. 21, 1969, Ser. No. 792,519
Int. Cl. A47h 1/10
U.S. Cl. 248-262
1 Claim

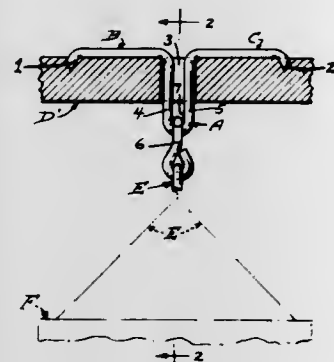


An improved support means for drapery at a window, the device comprising a pair of vertical aluminum channels secured along opposite sides of a window sash frame, each aluminum channel being provided with a plurality of vertically spaced-apart slot scores which may be selectively punched out so as to receive a drapery rod bracket, thereby eliminating the necessity of securing the drapery rod bracket directly to the window frame.

3,614,046
HANGER FOR SUPPORTING LIGHT FIXTURES, ETC.
Melvin T. Lehman, 565 Grove Way, Hayward, Calif.
Filed Nov. 12, 1969, Ser. No. 875,690
Int. Cl. E04g 17/18; E04b 5/52
U.S. Cl. 248-343
3 Claims

A hanger for supporting light fixtures, electrical conduit, etc., that consists of a single member provided with pointed ends which may be driven into a supporting member, such as plywood, and which has a central depending U-shaped portion for supporting a jack chain. In one form of the bracket the depending U-shaped portion extends through an

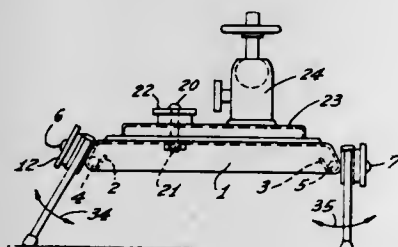
opening in the plywood and in a modified form the U-shaped



portion registers with the plywood opening while the jack chain extends through the opening.

3,614,047
STAND FOR CAMERAS, MICROPHONES OR THE LIKE
Werner Hitz, Am Puttenser Felde 2, 3 Hannover, Germany
Filed Jan. 23, 1969, Ser. No. 793,297
Claims priority, application Germany, Feb. 1, 1968, P 16 73 912.1

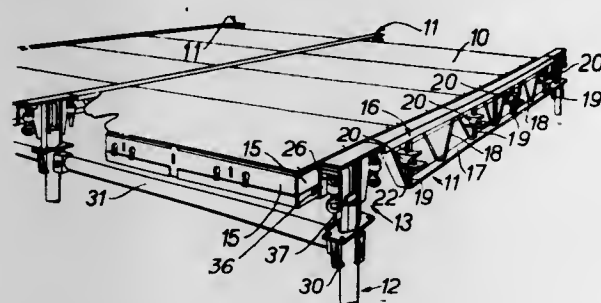
Int. Cl. F16m 11/38
U.S. Cl. 248-439 18 Claims



A stand for mounting objects such as cameras or the like is disclosed in which a base element has two pairs of legs which are mounted at opposite sides of the base element for pivoting the legs of a pair in unison, as well as individually, and for folding them under the base plate. An auxiliary support for the object holder proper is mounted on the base element for angular and radial adjustment (in a horizontal plane) of the center of gravity.

3,614,048
ARRANGEMENTS FOR USE IN THE SUPPORTING OF FORMWORK FOR THE CASTING OF CONCRETE SLABS
George B. A. Young, Wheaton Aston, England, assignor to Rapid Metal Development Limited, Aldridge, Walsall, Staffordshire, England
Filed Nov. 6, 1968, Ser. No. 773,821
Claims priority, application Great Britain, Nov. 7, 1967, Feb. 26, 1968, 50567/67; 9135/68
Int. Cl. E04g 11/52

U.S. Cl. 249-18 8 Claims

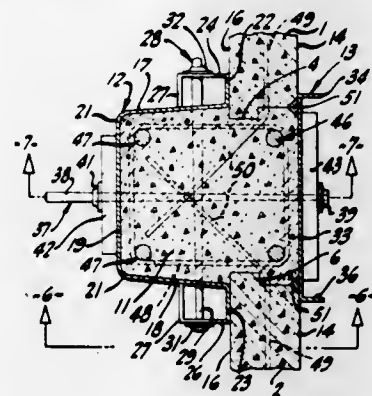


A concrete slab-casting system includes props with heads beams extending between the heads and panels resting on elements slidable vertically on the beams. The elements can be locked in raised positions for the casting operation and

lowered for removal of the panels one at a time. The joints between the beams and the heads permits removal of the beams without lowering the heads.

3,614,049
COMBINED BUILDING WALLS PANELS AND ASSOCIATED FORM STRUCTURE
David H. Keyston, Burlingame, Calif., assignor to Anza Pacific Corporation, Burlingame, Calif.
Division of Ser. No. 662,265, Aug. 8, 1967, Pat. No. 3,547,395.
Filed June 26, 1969, Ser. No. 871,382
Int. Cl. E04g 11/00, 13/02

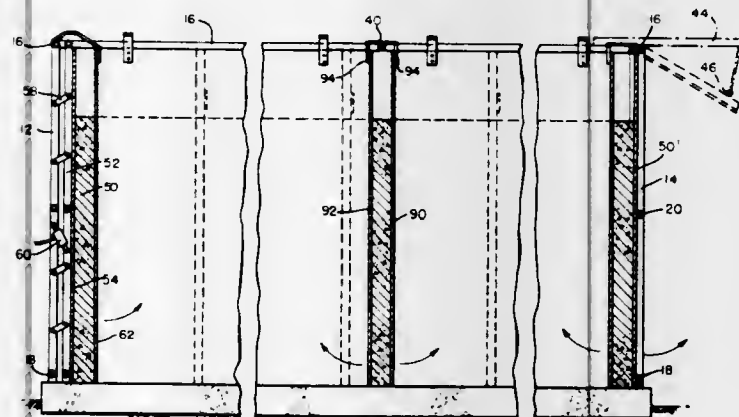
U.S. Cl. 249-19 2 Claims



A reusable building form structure defined by two rigid, preformed, self-supporting unitary form members, used in combination with a pair of building wall panels to bridge a space therebetween so that a settable construction material introduced into such space may be held in place while setting. At least one form member is channel shaped having tapered walls to facilitate its separation from the column formed by the settable construction material.

3,614,050
REUSABLE FORMING UNIT
William Greenhalgh, P.O. Box 521, Oshawa, Ontario, Canada
Filed Oct. 7, 1969, Ser. No. 864,461
Int. Cl. E04g 11/02

U.S. Cl. 249-26 5 Claims



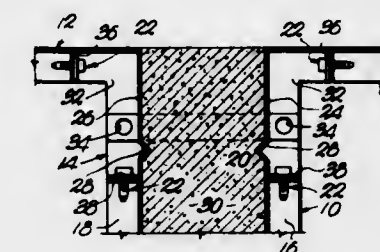
Reusable forming unit for pouring enclosed wall structures in situ including a movable frame supporting inner and outer wall panels. One wall section is pivotally mounted for vertical swinging movement, the remainder of the sections including pivotally mounted inner wall forming panels and positioning means for effecting a selective outward and upward movement of the outer wall forming panels.

3,614,051
LEDGER FORM FOR CONCRETE STRUCTURES
James E. Trimmer, Kansas City, Mo., assignor to Precise Forms, Inc., Kansas City, Mo.
Filed Dec. 15, 1969, Ser. No. 885,251
Int. Cl. E04g 11/02

U.S. Cl. 249-27 7 Claims
An intermediate form section interconnects the vertical and horizontal form sections of a concrete wall and ceiling

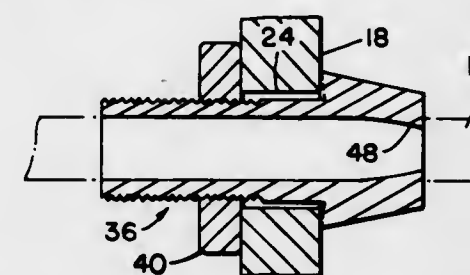
form, and concrete-engaging ledger means on the intermediate section allows the latter to support the horizontal section when the vertical wall section has been removed. The intermediate section is also provided with horizontal and vertical segments which abut the horizontal and vertical sections respectively, and also has inner and

and pivotally mounted on the respective mold parts. As the mold parts are moved together to define a casting cavity, the riser parts simultaneously define a riser cavity and are urged into sealing engagement with the mold parts.



3,614,052
TIE ROD SEAL FOR PREFABRICATED WALL FORMS
William C. Babbage, Gross Pointe Woods, Mich., assignor to Rocform Corporation, Southfield, Mich.
Filed Jan. 31, 1969, Ser. No. 795,478
Int. Cl. E04g 17/06

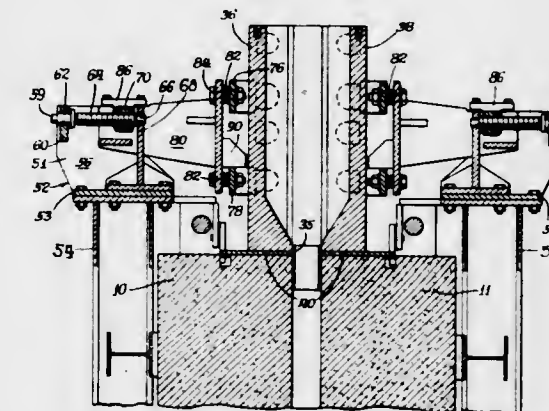
U.S. Cl. 249-43 4 Claims



A tubular sealing member for sealing the hole in a wall panel through which a tie rod extends to connect the panel to a second panel of a form for composition walls. The tubular member has an enlarged head for sealing the panel around the hole, and may have an internal formation for sealed engagement with the rod. The head may be so shaped as to produce any desired architectural detail in the surface of the composite wall.

3,614,053
RISER CONSTRUCTION FOR CASTING APPARATUS
Richard O. Peck, Elk Grove Village, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Oct. 10, 1969, Ser. No. 865,459
Int. Cl. B29c 9/08

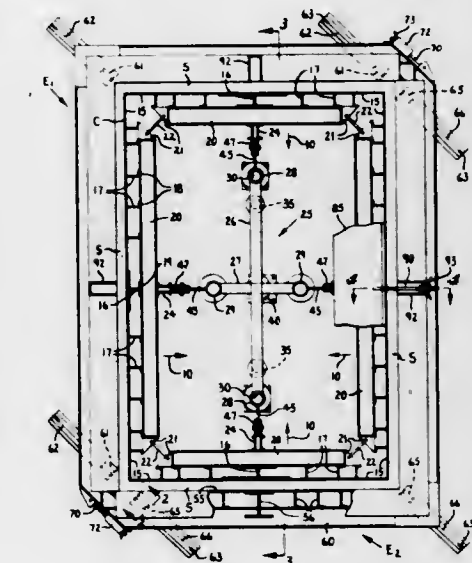
U.S. Cl. 249-105 3 Claims



A riser assembly for use with a mold having a pair of separable parts includes a pair of sections that are resiliently

3,614,054
FORM FOR PORTABLE CONCRETE BUILDING MODULE
Robert W. Beasley, Newberg, Oreg., assignor to Ted Nelson Company, Portland, Oreg.
Filed Dec. 5, 1968, Ser. No. 781,554
Int. Cl. B28b 7/30

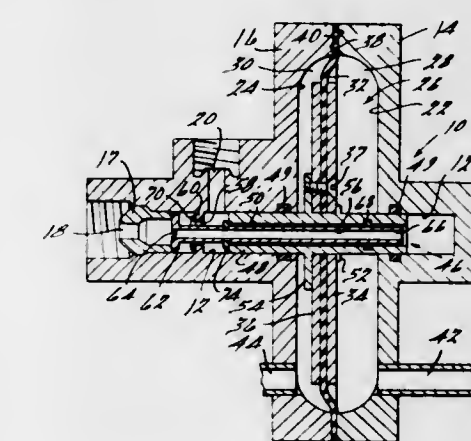
U.S. Cl. 249-179 3 Claims



The form is used for casting wall portions of a single rectangular room as a modulator unit to be assembled with other such units and floor and ceiling structure to build homes, apartment houses and other buildings. The form comprises a core form and two exterior forms. The core form is contractable in all directions for stripping. The two exterior forms are L-shaped, each embracing one end wall and one sidewall of the room, these forms being supported by trolleys on diagonal tracks for movement away from each other in stripping.

3,614,055
PRESSURE-REGULATING VALVE
Joseph W. Douglas, Chelsea, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Continuation-in-part of application Ser. No. 677,442, Oct. 23, 1967, now abandoned. This application Oct. 1, 1969, Ser. No. 864,289

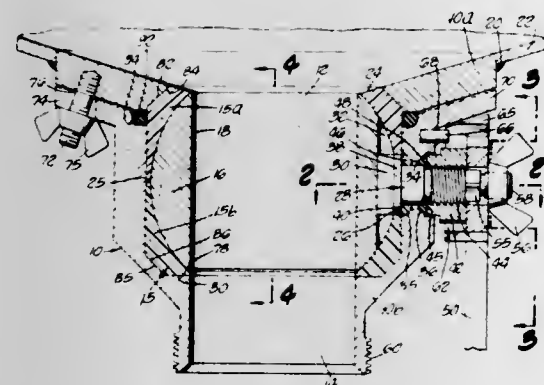
Int. Cl. B60t 8/12; F16k 31/145
U.S. Cl. 251-61.2 4 Claims



A valve for reducing pressure in a hydraulic brake line upon skidding of a vehicle wheel. The valve is constructed with a bore having one end portion interconnected with the

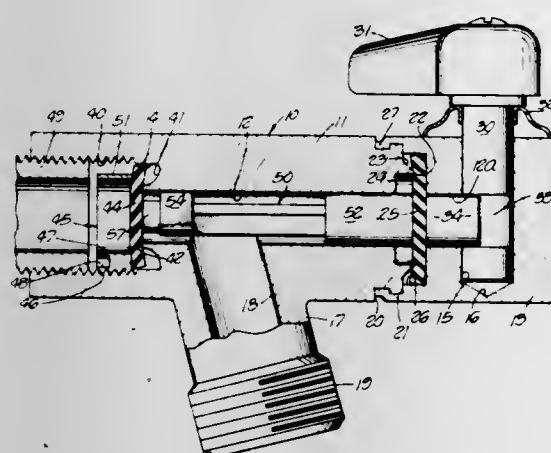
brake line, and a piston slidably disposed in the bore so as to form a chamber in communication with the brake line. The opposite end portions of the bore are in communication so that equal brake actuating hydraulic fluid pressure is exerted on each end of the piston. The valve contains a pressure differential operated member such as a piston or diaphragm which is operable to move the piston so as to seal the brake line and increase the volume of the chamber thereby reducing pressure in the brake line.

3,614,056
FLUSH BOTTOM TANK BALL VALVE
William Alvarez, Placentia, Calif., assignor to Jonathan Manufacturing Company, Fullerton, Calif.
Filed Feb. 12, 1970, Ser. No. 10,780
Int. Cl. F16k 5/02
U.S. Cl. 251-144 31 Claims



A valve body with coaxial inflow and outflow ports confines under pressure a plastic cage and a ball element having a diametrical passage therethrough rotates in the cage. Fluid pressure at the inflow port additionally pressurizes the cage and the sealing pressure of the cage is concentrated in two annular zones near the two ports. A radial operating stem is journaled in plastic seals that are pressurized by a nut on the stem. A valve handle which normally interlocks the nut with the stem may be removed to serve as a wrench for the nut.

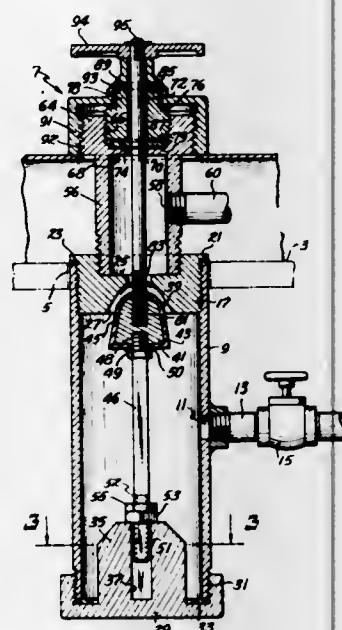
3,614,057
FLOW CONTROL VALVE
Louis Hospe, 2603 Senator Ave., Harbor City, Calif.
Filed Oct. 22, 1969, Ser. No. 868,545
Int. Cl. F16k 31/52
U.S. Cl. 251-251 10 Claims



A control valve for fluids having a body with a cylindrical bore in which is mounted an actuating plunger. The body has an inlet port in one end of the cylindrical bore and a lateral outlet port. The inlet port has a flexible seal sealing against a valve seat and a retainer seat and dislodging from said valve seat on sliding movement of said plunger within said bore to engage the center of said flexible seal and push it away from said seat. The plunger has portions relieved to permit fluid

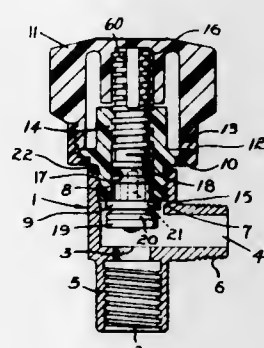
passage around the plunger to the outlet port. A head is provided with a shaft rotatably mounted therein and carrying a valve handle and an eccentric portion. The eccentric portion engages a slug mounted in line with said plunger to force said plunger to open position on turning of said handle to open position. The head and the valve body confine between them a flexible seal for said head.

3,614,058
LEAKPROOF WATER SPIGOT
Phillip L. Crisp, 624 Lail St., Marion, N.C.
Filed Sept. 1, 1970, Ser. No. 68,636
Int. Cl. F16k 31/50
U.S. Cl. 251-266 6 Claims



The valve head is mounted in the inlet casing for reciprocation but is prevented from rotating by being fixed on the upper end of a mounting rod which has a noncircular lower end extending into a cooperating noncircular recess with a sliding, nonrotating fit. The valve stem and the valve head have cooperating threads and the valve stem is held against axial movement so that rotation of the valve stem results in reciprocation of the valve head.

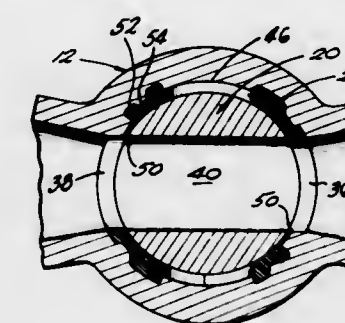
3,614,059
TAPS
Charles Rothaus, North Adelaide, and Bruce R. Thompson, Tranmere, both of Australia, assignors to Caroma Sales Proprietary Limited, Norwood, Australia
Filed Nov. 25, 1969, Ser. No. 879,852
Claims priority, application Australia, Dec. 2, 1968, 47134/68
Int. Cl. F16k 31/50
U.S. Cl. 251-267 5 Claims



In a tap of the type comprising a hollow body with an inlet thereto and an outlet therefrom and a seat on the inlet and in which a sealing member can be moved down onto or retracted from the seat the improved construction comprising a knob rotationally supported from the body

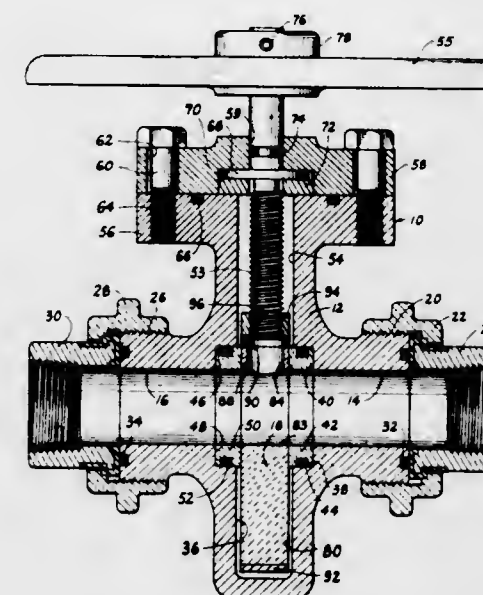
preferably through a detachable member but confined axially in relation to the body so that rotation of the knob does not change its axial position, the knob nonrotationally engaging a control member which actuates the sealing member, the control member being in screw threaded engagement with a part of the body preferably the detachable member so that rotation of the knob moves the control member toward or away from the seat.

3,614,060
SLEEVED PLUG VALVE
Jacob B. Freed, and Donald R. Disbrow, both of Battle Creek, Mich., assignors to Union Pump Company, Battle Creek, Mich.
Filed July 22, 1969, Ser. No. 843,563
Int. Cl. F16k 5/04
U.S. Cl. 251-317 17 Claims



A sleeved plug valve having flow-throttling lug members at the ports in the valve body, such lug members constituting raised, islandlike projections from the walls of the valve chamber located immediately adjacent the side edge of the ports in the direction of throttling or closing plug movement, such lug members extending circumferentially of their respective ports only along such side edge and having a length which is only a minor portion of the total port circumference, and such lug members having a minimum width at their widest point which is a function of the maximum port dimension of the valve.

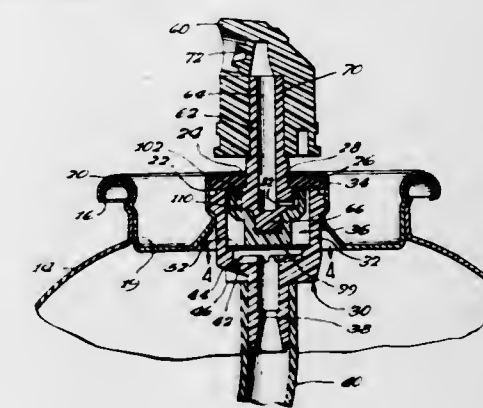
3,614,061
CERAMIC GATE VALVE
John R. Fitzpatrick, Tulsa, Okla., assignor to Charles Wheatley Company, Tulsa, Okla.
Filed Mar. 3, 1969, Ser. No. 803,622
Int. Cl. F16k 3/02, 3/314
U.S. Cl. 251-327 7 Claims



A gate valve having the gate member and valve seating portions constructed from a ceramic material for hardness and density qualities and extremely high resistance to chemical action and resistance to high temperatures. The

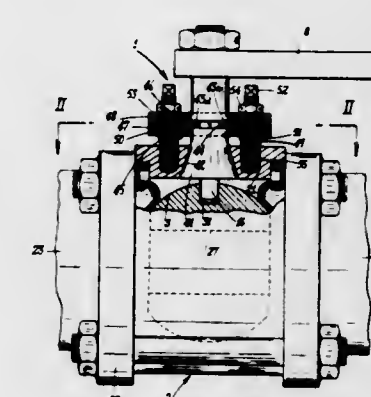
valve gate member is particularly designed and constructed to maintain the ceramic material under compression at all times to assure excessive strength for the valve. In addition, the coaction between the ceramic gate and ceramic-seating members provides an optimum coefficient of static friction during operation of the valve for facilitating opening thereof.

3,614,062
AEROSOL VALVE
Clarence O. Kuffer, Niles, Ill., assignor to Valve Corporation of America
Filed July 18, 1969, Ser. No. 842,845
Int. Cl. F16k 31/524
U.S. Cl. 251-354 15 Claims



An aerosol valve assembly including a valve member disposed within a chamber defined by a body, the body being in sealing engagement with a gasket. The valve member is normally biased into engagement with the gasket and has a stem extending through the gasket to define an outlet. The biasing means for maintaining the valve in its normally closed position is a generally flat spring element disposed and supported transversely in the shell and in expansive bearing contact with the lower end of the valve member.

3,614,063
COCK WITH A ROTATABLE PLUG
Jean Gachot, 179 Avenue de la Division Leclerc, 95 Enghien (Val d'Oise), France
Filed Nov. 19, 1969, Ser. No. 878,055
Claims priority, application France, Nov. 26, 1968, 175,338
Int. Cl. F16k 41/02
U.S. Cl. 251-355 5 Claims



A cock comprising a body, a rotatable plug accommodated within said body, a rotatable stem passing through the wall of said body to control the angular position of said plug, said stem including an enlarged portion defining a bearing surface engageable with a seating defined by an aperture in the body wall, a tightening flange to urge said bearing surface into sealing engagement with said seating, said bearing surface having a circular cross section which decreases towards the outside of said body and being coated with a self-lubricating sealing material.

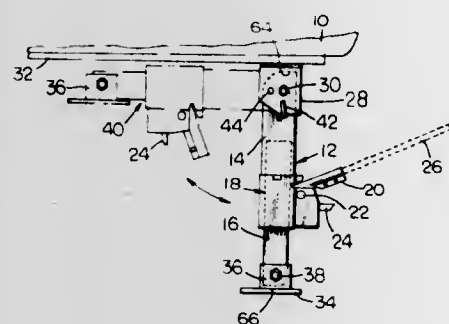
The stem is provided with an annular projection located outside of the body and the tightening flange is located between the body and the annular projection and bears on the latter. This arrangement affords improved fluidtightness and safe operation at high pressures.

3,614,064
STABILIZING JACK STRUCTURE FOR MOBILE VEHICLE

Winton J. Bennett, 1500 S. Dallas, Auburn, Ind.
Filed May 19, 1969, Ser. No. 825,561
Int. Cl. B60s 9/02

U.S. Cl. 254—86 R

4 Claims



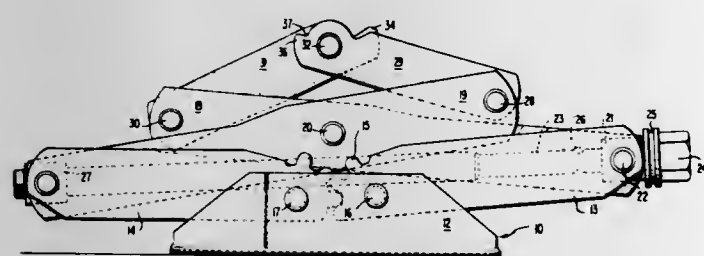
The invention pertains to a stabilizing jack structure for mobile vehicles and the like, in which two telescopically arranged members are interconnected by a lever-operated actuating mechanism which can be operated to vary the degree of telescopic engagement of said members. The upper end of said telescopic members is arranged for pivotal connection to the underside of a mobile vehicle, while the lower end of the members carries a ground-engaging member. The jack structure is swingable as a unit from a working position, wherein it extends vertically downwardly from the vehicle on which it is mounted up to a transport position wherein it is disposed parallel to and closely adjacent the bottom of the vehicle. The jack structure is arranged to be locked in each of its said positions on the vehicle.

3,614,065
VEHICLE JACK MECHANISM
Joseph Adamski, Brooklyn, Mich., and James W. Grim, Toledo, Ohio, assignors to Dura Corporation, Oak Park, Mich.

Filed Aug. 7, 1969, Ser. No. 848,147
Int. Cl. B66f 3/22

U.S. Cl. 254—122

2 Claims



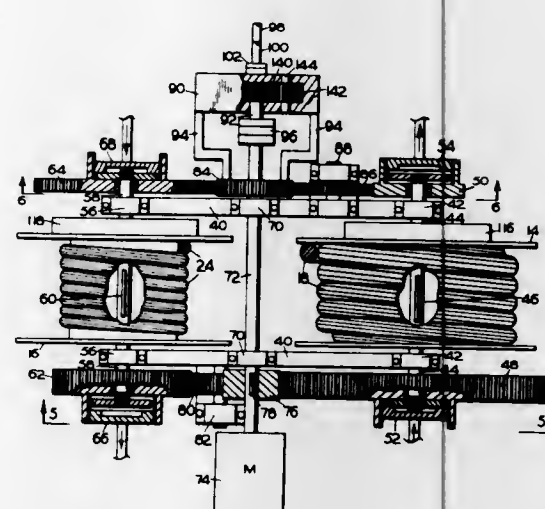
A scissors-type screw-actuated lift jack mechanism in which a secondary pair of links is mounted on the extended ends of the primary cross links to provide a substantial extended raised height of the lift jack while the mechanism in the retracted or lowered position is a more compacted and shortened package for storage purposes. The lift jack mechanism has a unique embodiment of a notch mechanism for engaging and retaining contact with the underbody structure of an automotive vehicle.

3,614,066
VARIABLE TENSIONING CABLE DRIVE FOR YARDERS AND THE LIKE

Veal Day, 1335 S. W. Huntington Ave., Portland, Oreg.
Filed May 9, 1969, Ser. No. 823,342
Int. Cl. B66d 1/26, 1/44, 1/48

U.S. Cl. 254—185

1 Claim



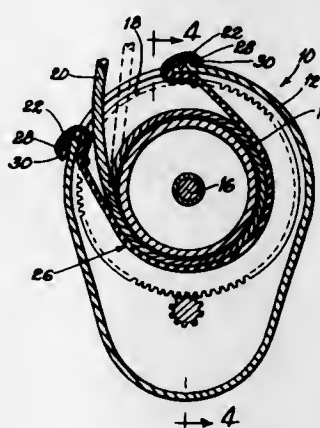
Main and haulback cable drum gears are coupled to a power-driven shaft through a coupling gear mounted on the shaft for independent rotation and connected to the shaft through the relatively rotatable housing and output shaft of a hydraulic motor. The drum gears are connected releasably to the associated drums by independently operable clutches.

3,614,067
MEANS FOR RETAINING A WOUND CABLE ON A DRUM IN A TAUT POSITION AND TO PREVENT CRISSCROSSING OF THE CABLE WINDS
Howard H. Vermette, 7 143rd St., Hammond, Lake County, Ind.

Filed July 22, 1969, Ser. No. 843,415
Int. Cl. B66d 1/36

U.S. Cl. 254—190

6 Claims

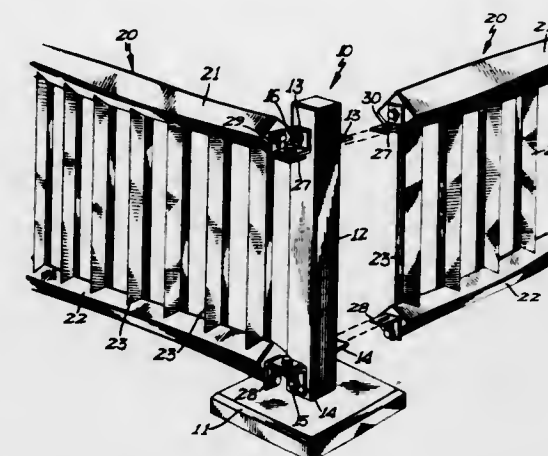


Means for use in connection with a drum, reel or spool on which a cable has been wound, such as a winch and the like, which serves to maintain the wound cable in a taut position on the drum or reel to prevent slackening of the cable and to maintain the successive cable turns in their relative positions to prevent crisscrossing of the cable turns. The said means includes a flexible and stretchable member which maintains a constant pressure or stress on the wound cable around the drum or reel.

3,614,068
PORTABLE LIVESTOCK PEN
Douglas E. Koehl, Hancock, Minn.
Filed Mar. 30, 1970, Ser. No. 23,616
Int. Cl. E04h 17/14

U.S. Cl. 256—19

7 Claims



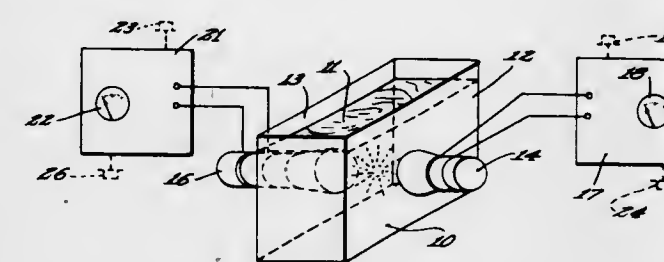
A livestock fence of concrete is provided which collectively has sufficient mass to obviate the need for embedded post members and is formed of segments that are light enough to be readily movable. The preferred form utilizes steel reinforcing in the concrete. Joined to the reinforcing rod are metallic members to be used in joining sections of the fence.

3,614,069
MULTIPLE FREQUENCY ULTRASONIC METHOD AND APPARATUS FOR IMPROVED CAVITATION, EMULSIFICATION AND MIXING
Edward J. Murry, Palos Park, Ill., assignor to Fibra-Sonics, Inc., Chicago, Ill.

Filed Sept. 22, 1969, Ser. No. 859,731
Int. Cl. B01f 1/102

U.S. Cl. 259—1

21 Claims



Method and apparatus for obtaining a state of cavitation, emulsification and mixing wherein materials are subjected to a band of ultrasonic frequencies which are gradually shifted downwardly to cause bubbles in the material to grow and then applying a second set of ultrasonic frequencies but of a much lower frequency and of a higher intensity than the first ultrasonic frequencies for causing the bubbles to expand to a size such that catastrophic collapse takes place. The low-frequency ultrasound is also varied in frequency so as to cause the bubbles to collapse and implode. In this case, the lower frequency is caused to increase in frequency by periodically sweeping the lower frequency upward. The method and apparatus provide improved cavitation, emulsification and mixing of substances as, for example, water-in-oil.

3,614,070
MULTIPLE ORBITING SCREW MIXING APPARATUS
Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins, Inc., Saginaw, Mich.

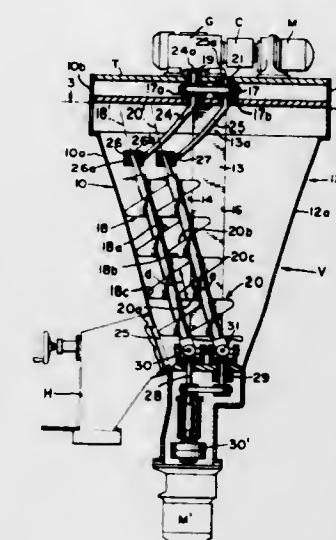
Filed May 26, 1969, Ser. No. 827,563
Int. Cl. B01f 7/02

U.S. Cl. 259—102

10 Claims

A mixing apparatus for use with a mixer housing having generally conically-shaped sidewalls including a pair of

orbitally mounted screws which cyclically wipe portions of the conical sidewalls to remove material adhering thereto. Each of the screws is also mounted for rotation about its own longitudinal axis, the longitudinal axes of the two screws



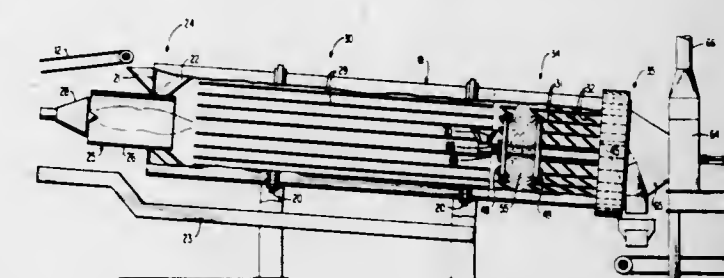
being parallel to each other, and also generally parallel to the conically-shaped sidewalls. The two screws are in intermeshing relation so that portions of the two screws are in wiping engagement to effect a mutual wiping and cleaning.

3,614,071
ASPHALT PLANT DRYER-MIXER
James D. Brock, Chattanooga, Tenn., assignor to CMI Corporation, Oklahoma City, Okla.

Filed May 25, 1970, Ser. No. 41,145
Int. Cl. B28c 5/06

U.S. Cl. 259—147

15 Claims



An asphalt plant dryer-mixer is disclosed wherein the aggregate of the mix is delivered to the upper end of an inclined rotatable cylinder, a fan induces a flow of air through the cylinder from its upper end to its lower end, an open flame burner is positioned at the upper end to heat the air and aggregate, and a bituminous liquid spray device is positioned within the cylinder to apply the bituminous liquid to the aggregate within the cylinder and to spray the particles of dust and airborne debris from the aggregate with the bituminous liquid so that the dust and debris become a part of asphalt mix. Temperature sensors are positioned within the cylinder and are arranged to regulate the burner intensity and rate of aggregate input to the cylinder so that the aggregate is properly heated and dried before the bituminous liquid is applied to the aggregate.

3,614,072
HYDRAULIC FLOW INDUCER
James H. Brodie, 2258 Fairmount Ave., Saint Paul, Minn.

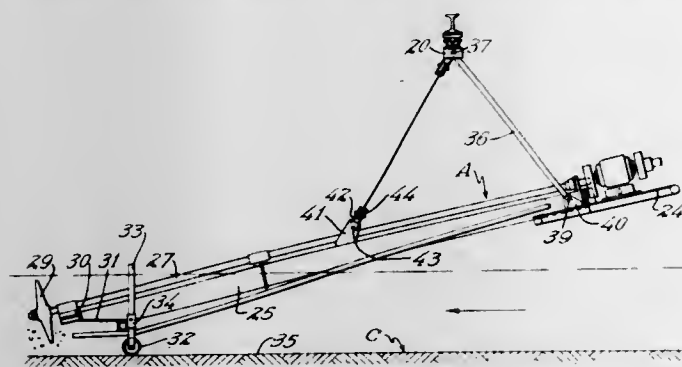
Filed Jan. 2, 1969, Ser. No. 798,242
Int. Cl. B01f 7/06; B01d 21/18

U.S. Cl. 261—36

13 Claims

A method and apparatus for aerating and propelling sewage in an oxidation channel includes a support designed to extend into the channel in inclined position. A propeller shaft is supported on the support having a screw propeller on one (the lower) end and having a drive mechanism at the

upper end above the liquid level. The carrier liquid is circulated in the channel by the propeller. Air is discharged



into the liquid on the suction side of the propeller and is drawn into the propeller slipstream for intimate mixing with the liquid.

3,614,073

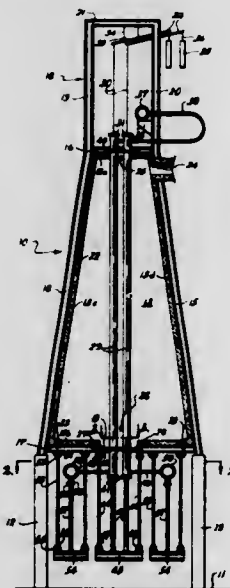
FIRE HEATER CONSTRUCTION

Sidney Born, Tulsa, Okla., assignor to Born Engineering Company, Tulsa, Okla.

Filed Dec. 17, 1969, Ser. No. 885,894

Int. Cl. F231 15/04

U.S. Cl. 263-20



A direct fired heater having a furnace chamber and a plurality of vertical tubes disposed therein which are extended through a sliding seal in the chamber floor and are engaged by a plurality of spring loaded legs mounted on swingable cradles. Beneath the chamber, each vertical tube has a small connector tube which is attached to an outlet manifold supported on legs extended upwardly from swingable manifold cradles. Each outlet manifold is connected to a centrally disposed collector conduit which is suspended from a transverse structural member by a plurality of sliding anchor supports.

3,614,074

DIRECT-FIRED KILN FURNACE CONTROL SYSTEM

Walker L. Wellford, Jr., Memphis, Tenn., assignor to Moore Dry Kiln Company of Oregon, North Portland, Ore.

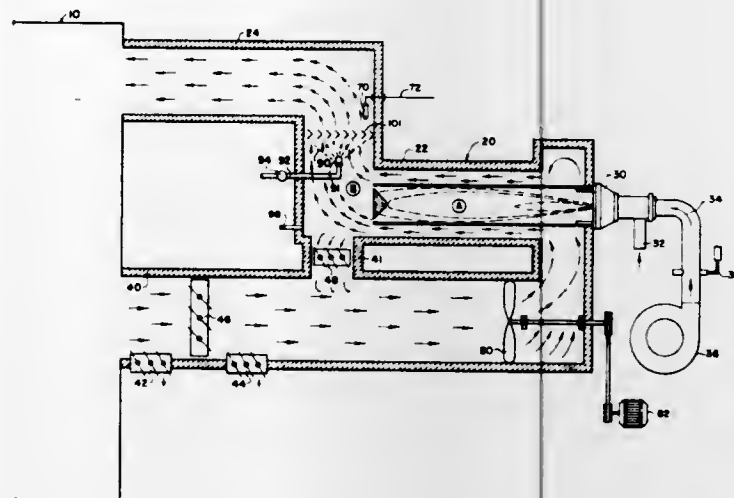
Filed Nov. 14, 1969, Ser. No. 876,733

Int. Cl. F27b 3/02

U.S. Cl. 263-40 R

A direct-fired kiln furnace control system for lumber and like material utilizing a natural gas or oil burner with provision for spraying water into the furnace gases for humidification purposes wherein the furnace operation is controlled in response to not only a pair of sensor signals reflecting the dry bulb and wet bulb conditions in the kiln proper, but also in response to a sensor signal reflecting the

temperature of the gases at the outlet of the furnace, so as to thereby insure the rapid, safe and effective vaporization of water introduced into the furnace gases. The three sensor signals are utilized to selectively control the combustion rate



7 Claims

of the furnace burner, as well as a combination of vent, damper and air fan means regulating the flow rate and recirculation of the heated gases through the kiln furnace, to thereby achieve and maintain required temperature and humidity conditions in the kiln.

3,614,075

VISCOSITY REDUCTION OF KAOLIN BY HYDROTHERMAL TREATMENT

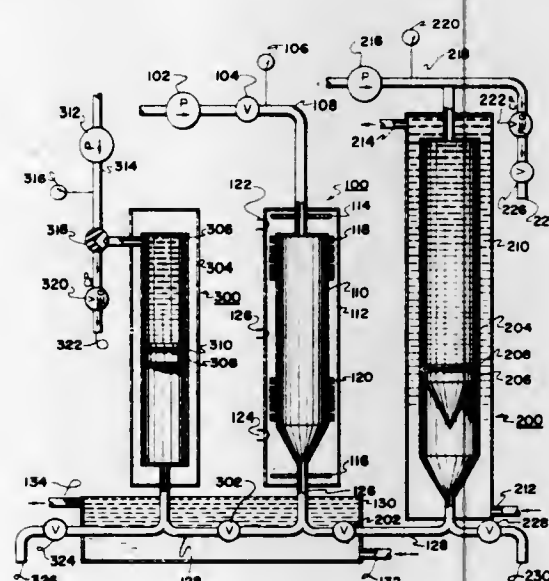
Vernon J. Hurst, Athens, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed July 22, 1969, Ser. No. 843,656

Int. Cl. F27b 9/00

U.S. Cl. 263-52

7 Claims



A hydrothermal treatment for processing kaolin clay slurries containing from 5-60 percent solids in which the plastic crudes are treated between 200° C.-460° C. at pressures up to 30,000 pounds pressure per square inch for from 1-60 minutes reduces the viscosity of the kaolin slurry at least 20 percent and often as much as 50 to 90 percent, producing viscosities on the order of 100 c.p.s. at 20 r.p.m. Brookfield or lower. A particularly advantageous embodiment of the present invention is the continuous hydrothermal treatment of kaolin slurries.

3,614,076

OPEN BURNER MACHINES FOR SINTERING ORES

Werner Schmidt, and Rudolf Hess, both of Frankfurt am Main, Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

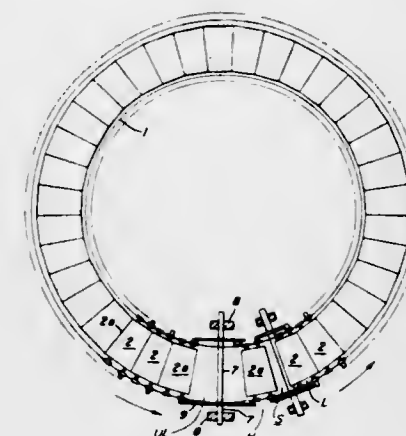
Filed Aug. 8, 1969, Ser. No. 848,527

Claims priority, application Germany, Aug. 10, 1968, P 17 58 805.5

Int. Cl. F27b 21/00

U.S. Cl. 266-21

5 Claims



A circular traveling grate machine comprising a circular track over which a series of burner cars for forming sintered ore are moved, is disclosed. Each car has a trapezoidal burning surface upon which the sinter is burned. Each car is equipped with a first axle extending transversely of the track and equipped with two spaced nonflanged wheels engaging the track. A second axle of the car has mounted on each end thereof a wheel having an inner annular portion engaging the track and an annular outer portion, equipped with an enlarged inner flanged portion to be engaged by a rotating member which separates individual cars upon the track and advances them for discharge of their contents.

3,614,077

UNIVERSAL PIPE CUTTING AND HANDLING MACHINE

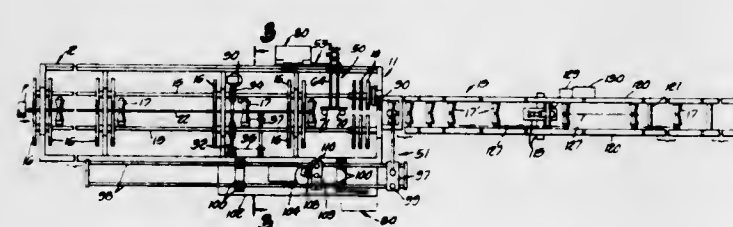
Marvin J. Blackburn, Pasadena, and Harry E. Criner, Walnut, both of Calif., assignors to Vernon Tool Company, Alhambra, Calif.

Filed Feb. 5, 1970, Ser. No. 8,872

Int. Cl. B23K 7/04

U.S. Cl. 266-23 N

31 Claims



A one-man universal pipe mitering, bevelling, cutting and contouring machine, including power means for feeding uncut pipe therefrom to a classifying station, all operable by one man from a control console readily movable between two principal cutting stations. One cutting station is equipped with cutting torch means for making straight or bevelled cuts normal to the pipe axis and the other is equipped with contour generating mechanism for guiding the cutting torch means while making any of a wide variety of cuts in other than a normal plane and suitable for use in joining together two misaligned pipes. The machine includes two sets of power-driven rollers, one for rotating the pipe and one for moving the pipe axially forwardly or rearwardly as well as power means for raising the pipe off the pipe rotating rollers while being positioned opposite a selected cutting torch. Power-driven conveyor means delivers finished pipe to a classifying station and discharges the pipe to a selected

receiving zone lengthwise of the conveyor and disposed to either side of the conveyor following which power means automatically restores the conveyor to its normal transporting position.

3,614,078

PLATE-CUTTING MACHINE AND THE LIKE

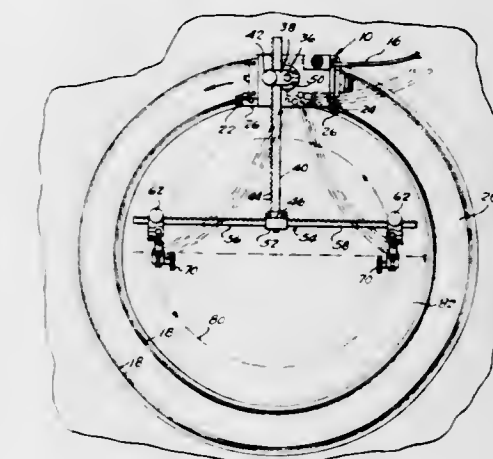
Ralph M. Hepler, 239 Pennsylvania Ave. West, Warren, Pa.

Filed Oct. 24, 1969, Ser. No. 869,200

Int. Cl. B23k 7/10

U.S. Cl. 266-23 K

10 Claims



A machine for cutting patterns in a plate member comprising a self-propelled member with spaced wheel means thereon, track means for guiding said wheel means, said base member carrying adjustable bar means with a pair of cutting means disposed on the ends of said bar means for cutting a pattern in a plate member and the like in accordance with a master pattern.

3,614,079

METHOD AND APPARATUS FOR MELTING METAL CHIPS

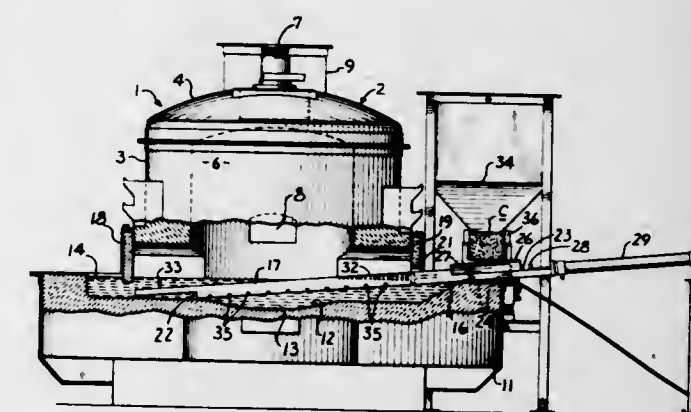
George Harrison, 6901 W. 30th St., Berwyn, Ill., and Nelson K. Harrison, 432 Shanstone Road, Riverside, Ill.

Filed Oct. 16, 1968, Ser. No. 768,054

Int. Cl. C21b 11/00

U.S. Cl. 266-33 S

9 Claims



Method and apparatus for melting oil-contaminated brass chips comprises a reverberatory furnace and a melter tube that projects through the side of the furnace and into the bath of metal therein. Oil-contaminated metal chips are repeatedly charged into the tube by a plunger. The tube is perforated to expose the chips to the liquid metal of the bath and to the combustion chamber of the furnace. The chips are heated by the bath, vaporizing the oil and expelling it into the combustion chamber for burning and thereby maintain the chips and bath subjected to a reducing atmosphere. The heat of the bath melts the chips, the liquid metal from the melted chips flowing out of the tube.

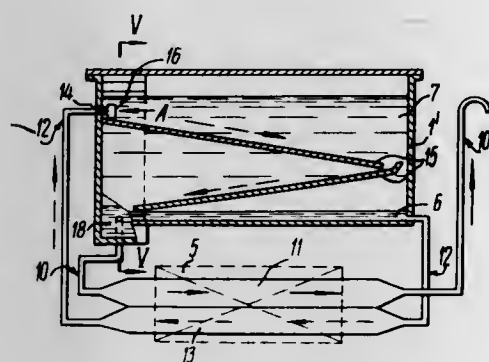
3,614,080
DEVICE FOR MIXING CONDUCTIVE LIQUIDS WITH REAGENTS

Vladimir Mikhailovich Foliorov, ulitsa Gorkogo, 145/4, kv. 85; Boris Nikolaevich Ukrantsev, ulitsa L. Paegle, 24, kv. 6; Georgievich Sirotenko, ulitsa Strelkovaya, 19, kv. 3; Aivar Eduardovich Tinte, ulitsa Moskovskaya, 266/3, kv. 5; Boris Lvovich Birger, ulitsa Kranorarmayskaya, 6, kv. 3; Aivar Yanovich Vilnits, ulitsa Daugavgrivas, 132/6, kv. 21; Nikita Mikhailovich Nadezhnikov, ulitsa Ersikas, and Mark Illich Grinshteyn, F. Engelsa, 19, kv. 13, all of Riga, U.S.S.R.

Filed June 11, 1969, Ser. No. 832,341
Int. Cl. C21c 7/00, 7/10

U.S. Cl. 266—34 A

7 Claims

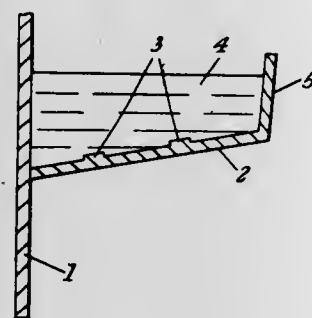


A device for mixing conductive liquids with reagents in which a vessel is provided with a discharge pipe. A reversible electromagnetic inductor is installed near the discharge pipe so that the mechanical force created due to the interaction of the magnetic field developed by the inductor with the currents induced in the conductive liquid is sufficient for discharging the liquid through the discharge pipe.

3,614,081
SPIRAL LAUNDERS
Leon Stocks, and John Frederick Castle, both of Avonmouth, England, assignors to The Broken Hill Associated Smelters Proprietary Limited, Melbourne, Australia
Continuation-in-part of application Ser. No. 661,397, Aug. 17, 1967, now abandoned. This application Dec. 9, 1969, Ser. No. 883,657

Int. Cl. C22b 9/04
U.S. Cl. 266—34 V

6 Claims



When flowing molten metal down a spiral channel within an evacuated vessel to effect rapid distillation of, say, zinc from zinc-contaminated molten lead, splashing occurs and much lead is carried over with the zinc distillate. To overcome this, brakes in the form of upstanding ridges running along the spiral path within the spiral channel are provided to increase the wetted perimeter of the channel which maintains the internal turbulence of the molten metal and also renders the surface thereof adequately smooth to minimize splashing. When the molten metal is zinc-contaminated lead, it is necessary that the speed be no greater than 5 ft./sec.

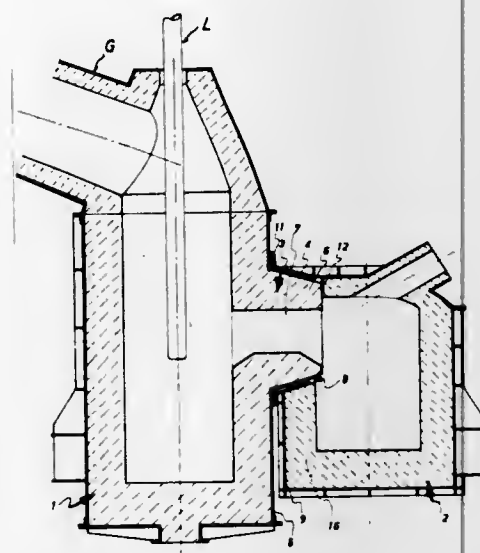
3,614,082
METALLURGICAL APPARATUS

Claude Tymbal, Metz, France, assignor to Institut de Recherches de la Siderurgie Francaise, Germain en Laye, France

Filed Aug. 27, 1969, Ser. No. 853,253
Claims priority, application France, Aug. 28, 1968, 164458
Int. Cl. C21b 7/14

U.S. Cl. 266—38

11 Claims



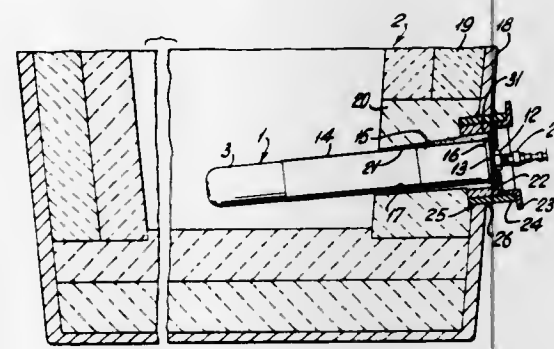
The refining vessel wherein molten pig iron is refined by top blowing is provided with a nozzle which is removably fitted into a complementary opening provided in the sidewall of a decantation vessel into which the metal and slag overflow. The refining vessel is moved away from and thus withdraws its nozzle from the opening of the decantation vessel when the refractory material of the spout and/or refining vessel requires replacement or overhauling.

3,614,083
OUTSIDE CHANGE TUYERE
Ronald L. W. Holmes, New Providence, N.J., assignor to Union Carbide Corporation

Division of Ser. No. 653,929, July 17, 1967, Pat. No. 3,495,815.
Filed May 2, 1969, Ser. No. 864,233
Int. Cl. C21c 5/46

U.S. Cl. 266—41

6 Claims



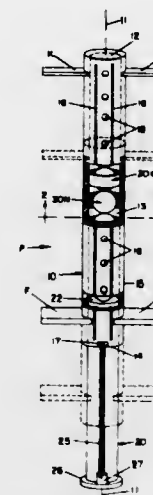
Blowpipe assembly for introducing gas below the surface of a molten metal bath which is capable of rapid removal and installation in an opening in the wall of a refractory lined processing vessel. The assembly consists of a metal blowpipe having a nozzle capable of discharging a sonic velocity gas stream, and refractory protection substantially surrounding and secured to the blowpipe so that the blowpipe and refractory constitute an integral assembly. The vessel opening is provided with wear and erosion resistant refractory lining forming a socket for the blowpipe assembly. The assembly can be inserted into, removably secured to, and removed from the vessel from the outside.

3,614,084
RESILIENTLY COMPRESSIBLE SPRING MECHANISM

Richard L. Brown, 1812 Pelton Ave., Bellevue, Nebr.

Filed July 11, 1969, Ser. No. 841,021
Int. Cl. A63b 25/08; F16f 1/44, 3/08
U.S. Cl. 267—153

14 Claims

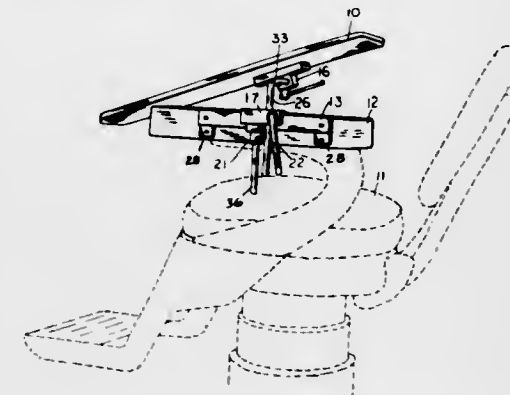


A resiliently compressible spring mechanism utilizing a plurality of separate resiliently compressible compressive units slidably associated and longitudinally consecutively disposed within an elongate hollow housing having a pair of endwalls adapted to longitudinally resiliently compressibly deform and translate the intervening compressive units when one endwall is moved under load conditions toward the other end wall. Each compressive unit includes a collar portion longitudinally slidably associated with the housing and a lengthier resinous mass portion providing spacing between the collar portions of adjacent compressive units. Convergent resinous mass portions afford an exceedingly lively pogo or jumping stick amusement device.

3,614,085
ADJUSTABLE ARM BOARD
John B. Cunningham, 425 West 10th St., Erie, Pa.
Filed May 12, 1969, Ser. No. 823,724
Int. Cl. A61g 13/00

U.S. Cl. 269—328

1 Claim



An arm board and arm member combination which can be supported on the arm rest of a dental chair and whereby the arm of a patient may be adjusted to incline up and down or laterally.

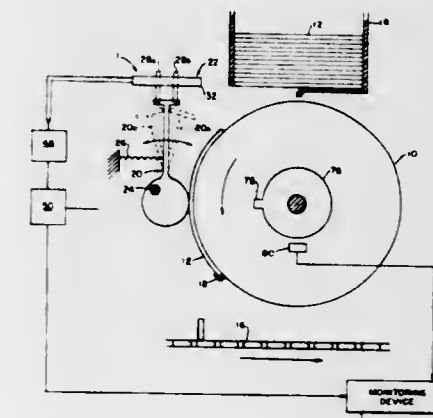
This disclosure contains a description of the preferred form of an arm board which is suitable for use by anesthetists in connection with their practice in holding a patient's arm in the desired position for intravenous anesthesia at the chair. The board is supported for forward and rearward movement on a track member that is fixed to the side of the chair arm; a bracket is supported on the track and may be adjusted forward and rearwardly on the track. The bracket has a vertically extending bore which receives the vertically extending portion of a rod. The rod may be locked in selected vertical position in the bracket by a handle connected to a clamping screw. A second bracket is fixed to

the bottom of the arm board and the second bracket has a laterally extending bore which receives the laterally extending part of the L-shaped rod. The arm board can rock forward and rearward and can be adjusted laterally on the lateral part of the rod. A clamp screw with suitable handle is provided to lock the arm board in the desired inclined lateral position to best suit the convenience of the anesthetist. The arm board likewise has utility when mounted on the side rail of a surgical table for anesthesia during operating procedure.

3,614,086
FLUIDIC CALIPER
Thomas Wilbur Bushnell, E. Aurora, N.Y., assignor to J. W. Clement Company, Depew, N.Y.
Filed June 25, 1969, Ser. No. 836,469
Int. Cl. B65h 43/02

U.S. Cl. 270—56

6 Claims



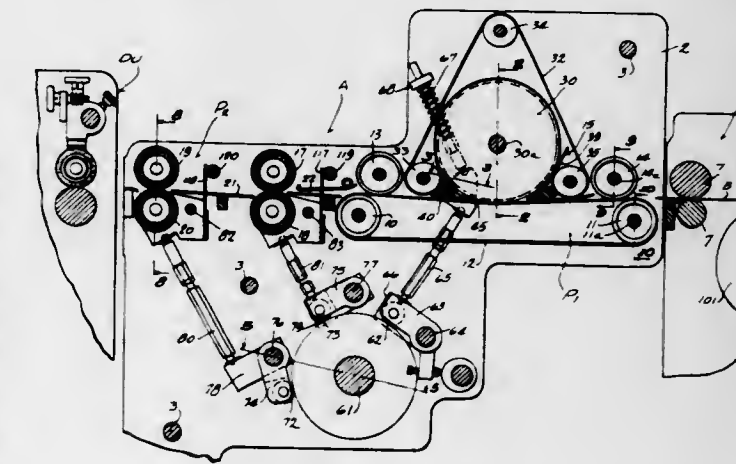
A fluidic caliper adapted for use with a signature- or sheet-collating system, wherein the caliper is adapted to detect a malfunction in delivery of a signature by a feeder onto a collating conveyor. The caliper includes a feeler arm positionable in accordance with the feeding condition of the feeder, and a feeler arm detector having a pair of proximity sensors cooperating to produce a signal indicative of the position of the feeler arm. The caliper includes means associated with the feeler arm, which is adapted to permit the caliper to be readily adjusted in accordance with the thickness of a signature whose presence is to be detected.

3,614,087
CARTON BLANK HANDLING APPARATUS
Raymond Swansen, Jr., West Allis, and Peter Zernov, Wauwatosa, both of Wis., assignors to Zerand Corporation, New Berlin, Wis.

Filed Oct. 22, 1969, Ser. No. 868,378
Int. Cl. B65h 39/08

U.S. Cl. 270—60

8 Claims



Apparatus for handling carton blanks or the like as they are being delivered through carton-making equipment, such as from a stripper unit to a delivery unit in in-line paper-

converting equipment. The apparatus consists of a diverter mechanism which diverts every other one of the blanks into a circuitous path where it is then deposited on the succeeding blank, thereby doubling up on the blanks, that is arranging them in stacked pairs. Thus, the linear speed of the blanks as they leave the apparatus can be only half as fast as the linear speed of the blanks when they enter the apparatus.

3,614,088
ARTICLE-PROCESSING SYSTEM WITH FEEDER SHUTTLE DISCONNECT

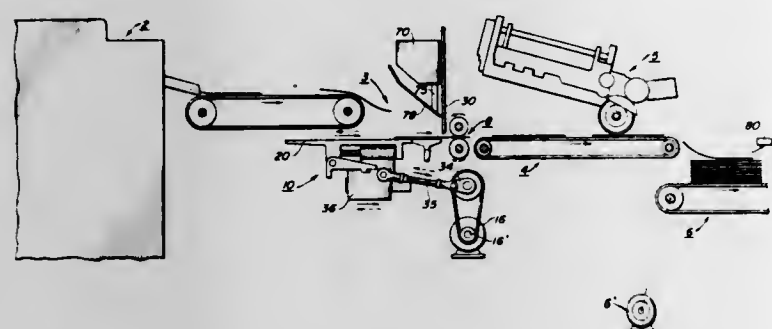
Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 12, 1968, Ser. No. 774,957

Int. Cl. B65h 29/22

U.S. Cl. 271-4

2 Claims



A driving apparatus for shuttle-type article feeders, the apparatus including a latch mechanism adapted to couple the shuttle with a reciprocating driving element, abutment means selectively interposed in the path of movement of the latch mechanism and contactable with an operating arm of the latch mechanism to cause release of the latch mechanism and uncoupling of the shuttle, means to restrain the shuttle against movement when uncoupled, and control means limiting uncoupling of the shuttle to a predetermined shuttle-operating position.

3,614,089
AUTOMATIC ORIGINAL FEEDER FOR COPYING MACHINE

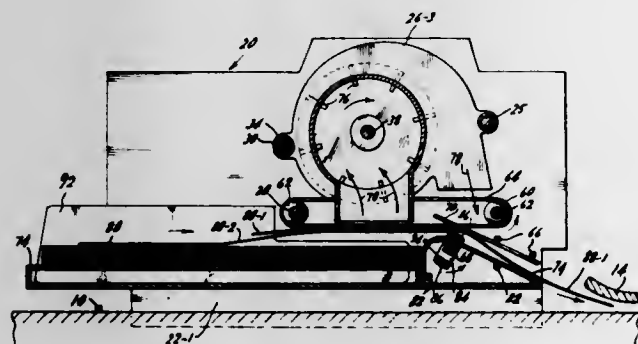
John A. Van Auken, Miami Beach, Fla.; Christopher Rush, Ithaca, N.Y.; Fritz A. Blank, Hollywood; Lionel Hoffman, Fort Lauderdale, Fla., and Robert Barto, Des Peres, Mo., assignors to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed June 16, 1969, Ser. No. 833,530

Int. Cl. B65h 3/12

U.S. Cl. 271-26 R

21 Claims



An automatic feed mechanism for feeding individual sheets in succession from a stack of sheets. A series of blowers decreases the pressure above the uppermost sheet in the stack so that it is raised. The sheet strikes against a series of rotating belts which cause it to move forward. A series of stripper wheels, rotating in the same direction as the belt, is disposed forward of the forwardmost edges of the sheets in the stack and below the belt. In the event more than one sheet have been lifted from the stack and are moving in the forward direction, the stripper wheels bear against the lower

surface of the lowermost sheet and force it back into the stack. The force imparted by the stripper wheels is greater than the normal friction force between two adjacent sheets. The stripper wheels have no effect on a single sheet moving in the forward direction because the reverse force imparted by the wheels to this sheet is less than the forward force imparted by the belts.

3,614,090
DOCUMENT CONVEYOR

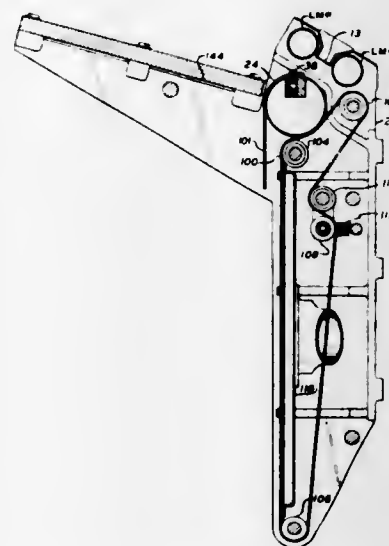
George D. Del Vecchio, Briscoe Cove, North Rose; Edward A. Schwartz, Fairport, N.Y., and Norman L. Yarger, Marengo, Ill., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,608

Int. Cl. B65h 5/12

U.S. Cl. 271-51

11 Claims



A document conveyor assembly for moving a document past a work station. The assembly includes a drum for releasably supporting the leading edge of the document, drive means to rotate the drum so that at least a portion of the document is moved past the exposure slit and supplemental conveyor belts to continue the movement of the document past the exposure slit even though the conveyor drum is stopped. Programming means are also employed to cause a predetermined number of passages of the document past the work station prior to its release.

3,614,091
DOCUMENT FEEDING DEVICE

Francesco Bernardis, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.p.A., Ivrea (Torino), Italy

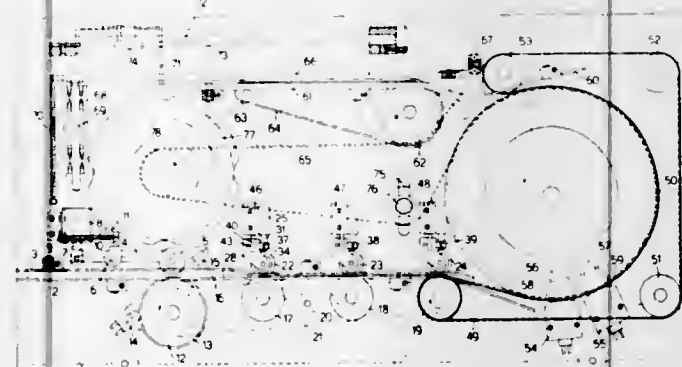
Filed July 22, 1969, Ser. No. 844,739

Claims priority, application Italy, July 30, 1968, 52633-A/68

Int. Cl. B65h 9/16

U.S. Cl. 271-52

1 Claim



A device for feeding and reading documents is disclosed. The documents are introduced one at a time into the receiving means of the device and fed to an aligning means moving each received document along an aligning path. The

aligning means comprise a driven first plurality of rollers adapted to act frictionally on a side of the received document and a plurality of second rollers acting frictionally on the opposed side of the same document. The second rollers have their spindles resiliently skewed obliquely with respect to the aligning path so as to urge the moving document transversely of the path against a reference surface. The apparatus includes also means for conveying the moving document past a reader and delivering it to a collecting pocket disposed in the opposite direction to the aligning path. The pocket collects and presses the successive documents as delivered by the conveying device.

3,614,092
SHEET TRANSFER MECHANISM FOR SHEET FED ROTARY PRINTING PRESSES

Franz Moos; Gerhard Löffler, and Arthur Brechtel, all of Frankenthal/Upper Palatinate, Germany, assignors to Schnellpressenfabrik Frankenthal Albert & Cie, Aktiengesellschaft, Frankenthal-Pfalz, Postfach, Germany

Filed Sept. 3, 1968, Ser. No. 756,960

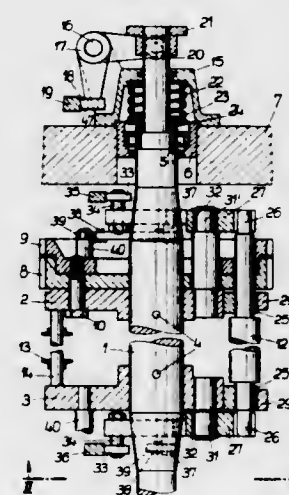
Claims priority, application Germany, Sept. 4, 1967, P 16 11

287.1

Int. Cl. B65h 9/12

U.S. Cl. 271-52

17 Claims



This invention provides a sheet transfer mechanism for sheet fed rotary printing presses. A conventional transfer drum is provided with an angular lever mechanism for controlling the axial direction of the transfer drum. The angular lever mechanism is operated in conjunction with a control gear mechanism to provide separate operations on specific revolutions of the transfer drum. Gripper support spindles are mounted on the transfer drum with a control gear mechanism to effect a shift in a substantially circumferential direction to place the sheet being transferred in the desired position with respect to the transfer drum.

3,614,093
SUPERVISORY DEVICE FOR A SHEET FEEDER

Adolf Schwebel, Offenbach am Main, Germany, assignor to Mabeg Maschinenbau GmbH Nachl. Hense & Pleines GmbH & Co., Offenbach am Main, Germany

Filed Oct. 13, 1969, Ser. No. 865,567

Claims priority, application Germany, Dec. 7, 1968, P 18 13

300.1

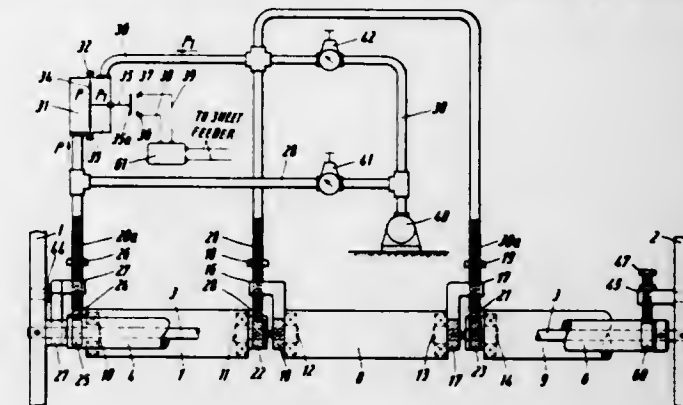
Int. Cl. B65h 7/06

U.S. Cl. 271-56

11 Claims

A supervisory device for protecting a sheet feeder against damage or operational failure as may be caused by sheets with turned-over edges or the presence of foreign material such as wastepaper pieces, etc. on sheets conveyed by the sheet feeder, has swingably mounted probe rollers which let the sheet flow past without being acted upon by the same but one or more which are lifted out of a normal or rest position by engagement with a sheet with a turned-over edge or with

foreign material. Lifting of any one of the probe rollers initiates suitable control functions such as stopping the sheet feeder. The device also includes means neutralizing the effect



of temporary shocks or vibrations experienced by the probe rollers of the device upon engagement of the leading edges or the trailing edges of sheets with the rollers.

3,614,094
DATA PROCESSING AND CARD ASSORTING APPARATUS

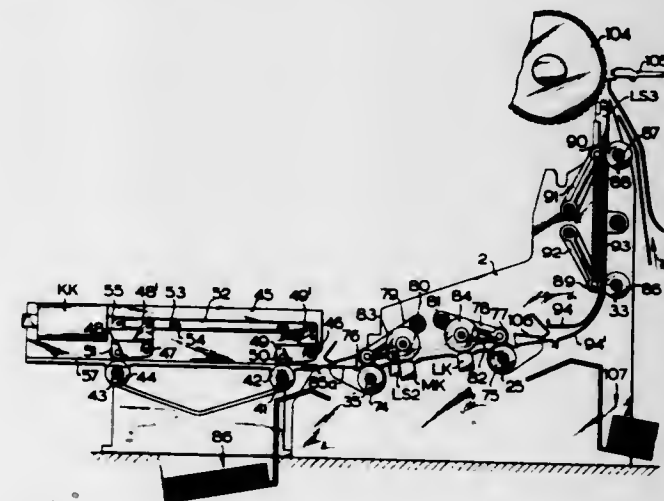
Gerhard Mutz; Bernhard Hettich, and Werner Moser, all of Villingen, Germany, assignors to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed Apr. 23, 1969, Ser. No. 818,523

Int. Cl. B65h 9/00

U.S. Cl. 271-59

13 Claims



Cards are transported by reversible transporting means between an input station, a readout station, and a printing station. Routing means are disposed between the input station and the readout and recording station for discharging returned cards, and other routing means are located between the readout and recording station and the printing station for discharging readout cards which need not reach the printing station. The card has a magnetizable record carrier strip, and also control strip with line marks which are sensed by photoelectric sensing means for placing a free line of the card in the printing position at the printing station after the line information has been read out at the readout station. A programmed data processing computer including a storage, and manually operated keys, control the sequence of operations.

3,614,095
SEPARATOR FOR JUXTAPOSED SHEETS

Christian A. Beck, Ridgefield, and Franz A. Tomasch, Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 27, 1970, Ser. No. 23,215

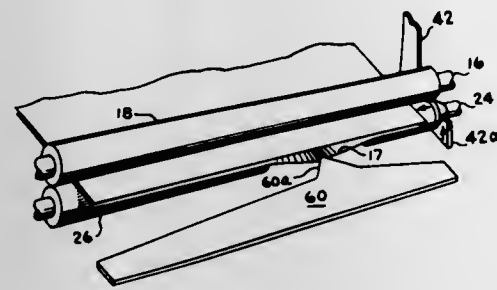
Int. Cl. B65h 29/64

U.S. Cl. 271-64

12 Claims

A pair of feed rollers is arranged transversely to the path of travel of a pair of juxtaposed sheets. One feed roller has

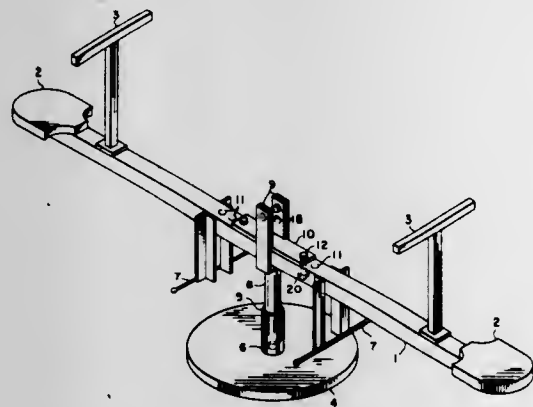
spaced surface portions in peripheral surface contact with the other feed roller. One surface portion is momentarily axially shifted toward the other by actuator means to create a



buckle in the leading edge of one sheet. A separator element intercepts the buckled leading edge of the one sheet to separate the pair while in transit.

3,614,096
COMBINATION SEESAW AND CARROUSEL
John E. Ely, 1605 Atlas, Dallas, Tex.
Filed July 22, 1969, Ser. No. 843,721
Int. Cl. A63g 1/32, 11/00
U.S. Cl. 272-30

5 Claims



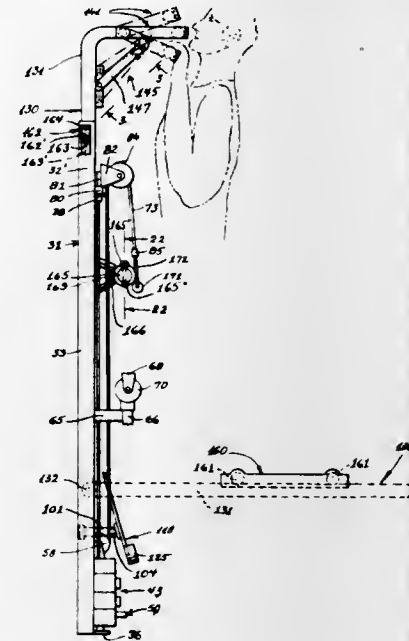
A combination seesaw and carousel which allows the participant to experience the effects of forceless weights. The device is capable of two axial motions at the same time with the ability in the participants to combine the motions as desired. The vertical axle spins laterally on ball bearings inside a vertically suspended housing attached to a base. Contrary to prior art devices the fulcrum or pivot is located above the suspension bar, so that a line connecting the centroids of the participants intersects the fulcrum and all resultant forces pass vertically downward through the vertical axis so that the device is stable without the need of being permanently anchored whether spinning, swinging, or dipping. Adjustability is provided to compensate for vast differences in the weights and heights of the participants.

3,614,097
WEIGHT LIFTING EXERCISING APPARATUS
Harry Blickman, New York, N.Y., assignor to S. Blickman Inc., Weehawken, N.J.
Filed Jan. 28, 1969, Ser. No. 794,506
Int. Cl. A63b 21/06
U.S. Cl. 272-72

9 Claims

An exercising apparatus for toning up various parts of the human body including pulley weights, chinning bars, parallel horizontal bar, rowing seat, hand strengthening roll and foot exerciser. The apparatus has an upright stationary frame, adapted to be mounted on a wall or closet door, and a U-shaped frame pivotally mounted on the stationary frame. Pulleys, ropes and weights are mounted on the stationary frame as well as pivotable rests for the feet, and rollers for hand exercising, and rowing seat on the pivotable frame. The

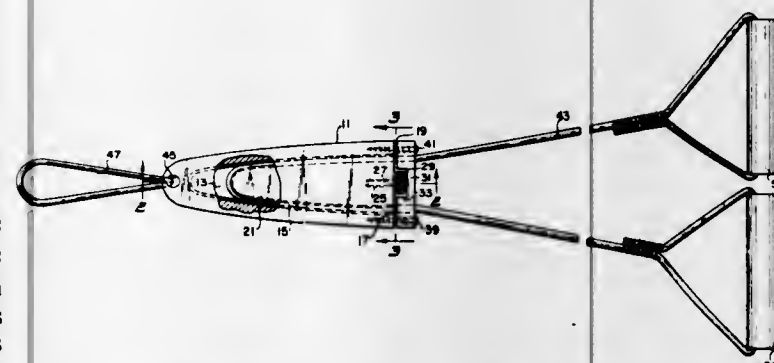
weights slide on laterally spaced vertically extending bars supported in the side posts of stationary frame. The weights



are cylindrical members which are combined with one another by moveable pins to provide variable amounts of weights.

3,614,098
FRICTIONAL-RESISTANT-TYPE EXERCISING DEVICE
Byrle H. Carr, 133 Larkspur Drive, Twin Falls, Idaho
Filed July 8, 1969, Ser. No. 839,856
Int. Cl. A63b 21/00
U.S. Cl. 272-79 R

9 Claims



An exercising device having an outer sleeve with a wedge-shaped hollow interior and a solid wedge which is insertable within the sleeve. A rope passes about the solid wedge so as to be frictionally engaged between the wedge and the interior of the sleeve. The position of the wedge is adjustable so as to vary the frictional drag on the rope.

3,614,099
RETRACTABLE OVERHEAD BASKETBALL BACKBOARD SUPPORT STRUCTURE
Richard L. Sarno, New Berlin, Wis., assignor to "Automatic" Sprinkler Corp. of America, Cleveland, Ohio
Filed Feb. 26, 1969, Ser. No. 802,422
Int. Cl. A63b 63/04
U.S. Cl. 273-1.5 R

4 Claims

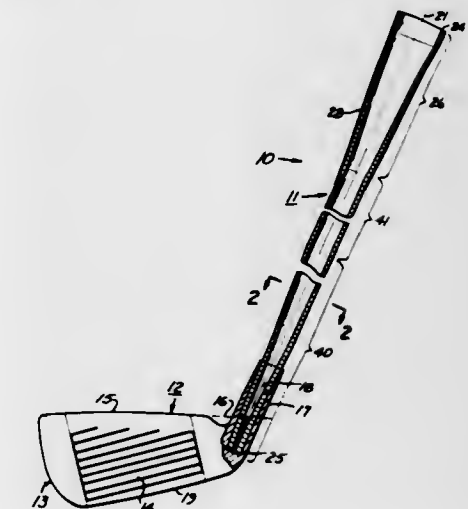
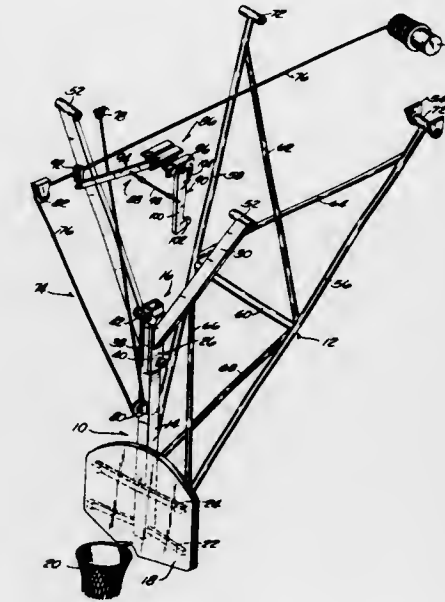
A retractable basketball backboard support structure supported from an overhead ceiling support structure including a front support assembly having a lower unitary post member on which the backboard is mounted. The lower post member is telescopically engaged with the collar of an upper yoke assembly having antifriction rollers which assembly is pivotally connected to the overhead support structure. A rear support assembly is pivotally connected at its upper end to the overhead support structure and pivotally connected at its lower end to the lower portion of the post

member on which the backboard is mounted. A hoist means is provided to raise and lower the backboard support structure between playing and storage positions, and the present invention contemplates both a forward fold and a backward fold arrangement. In the forward fold embodiment, the rear support assembly is rigid from end to end and the hoist means is adapted to pivot the front and rear support assemblies forwardly as the backboard support structure is

comprised of an inner tube surrounded by an outer tube. The inner tube is elastic so that it may be stretched over the racquet handle. The outer tube is of terrycloth and has a longitudinal split with unconnected edges so that it can expand when the tubes are placed on the racquet handle.

3,614,101
GOLF CLUB, SHAFT, AND HEAD
Charles G. Hunter, 57835 Yucca Trail, Yucca Valley, Calif.
Filed Jan. 13, 1969, Ser. No. 790,602
Int. Cl. A63b 53/02, 53/12
U.S. Cl. 273-80.2

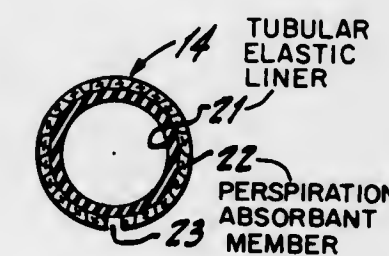
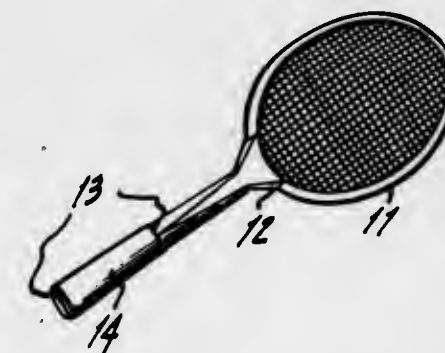
9 Claims



raised from playing to storage position. In the backward fold embodiment, the rear support assembly is comprised of a pair of separate sections pivotally connected together, which sections collapse upwardly during the backward folding operation. A safety latch mechanism is provided to prevent the support structure from swinging downwardly in an unrestrained manner from storage position in the event of a failure in the hoist means.

3,614,100
PERSPIRATION ABSORBANT SLEEVE FOR A RACQUET HANDLE
Harvey D. Spitz, 459 Barton Pl., N. Brunswick, N.J.
Filed Nov. 4, 1968, Ser. No. 786,794
Int. Cl. A63b 49/00
U.S. Cl. 273-75

3 Claims

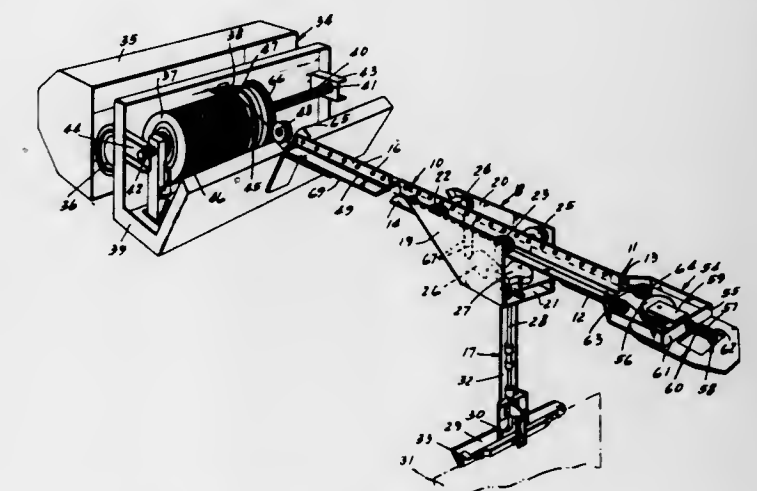


A removable sleeve for a racquet handle comprises a form fitting, elastic, perspiration absorbent body. The body may be

A golf club shaft having an axis, an inner wall and an outer wall, both axial, circular in cross section, a major portion of it adjacent to the club head tapering so as to narrow toward the head end of the shaft, the wall thickness thereby increasing. The shaft has throughout its entire length a substantially constant cross section area in planes normal to the longitudinal axis thereby providing uniform linear distribution of the shaft weight throughout its length. The shaft may be expanded beyond an extension of the taper to form a handle, to which a lightweight wrapping may be applied as a grip. A club head includes a body, a striking face on the body with an upper margin, and a hosel with a bore to receive the shaft extending below an extension of the upper margin.

3,614,102
AUTOMATIC TARGET CONTROL SYSTEM
Joseph Nikoden, Sr., Miami, Fla., assignor to Detroit Bullet Trap Corporation, Schaumburg, Ill.
Filed July 24, 1969, Ser. No. 844,372
Int. Cl. A63b 63/06
U.S. Cl. 273-105.6

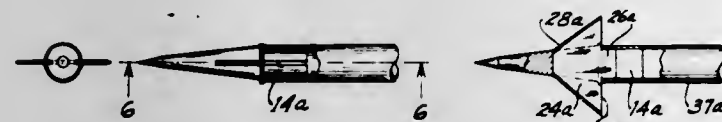
10 Claims



A target carrier system including a target carrier which is mounted for longitudinal movement along a track and which

has means for manipulating the target. The target carrier includes a target turner motor which is moved with the target along the carrier track by means of a cable drive system. The cable drive system includes a housing which supports a cable spool on a threaded shaft. The shaft is fixedly positioned within the housing, and means are provided to rotate the cable spool, thereby allowing the spool to translate along the threaded shaft. The threaded shaft is positioned generally perpendicularly of the carrier track so that the cable spool is translated in such a manner as to allow a cable to unwind from the spool at a point which is generally fixed with respect to the track. The cable which drives the target carrier is wound about the cable spool, and a loop portion of the cable extends along the length of the track and is fixed to the target carrier to move the same as the spool rotates. This cable is an electrical conductor and is coated with an electrical insulating material to allow the conductor to act both as the drive force for the target carrier and also as the power line to the target turner motor. The carrier track also has an insulation lining which acts to insulate and guide the cable in its sliding movement along the track.

3,614,103
ARROWHEAD
Cornelius F. Carroll, 1310 Tuxedo Ave., Parma, Ohio
Filed Nov. 24, 1969, Ser. No. 879,401
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 B 10 Claims

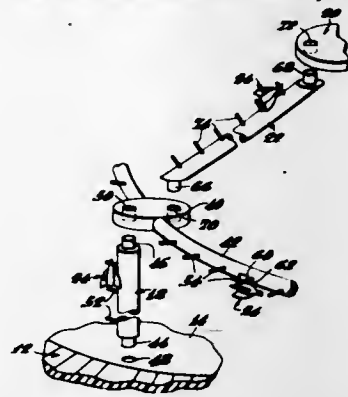


A broadhead for an arrow comprising an elongated conical body member having a forward pointed end and a cylindrical rear extension attached to the base of the conical member and adapted to be entered into a tubular arrow shaft or adapter. There is an axial slot extending forward from the rear end of the cylindrical rear extension, and into the elongated conical body through a portion of its length, into which is fitted a flat cutting blade. The forward end of the blade is spaced rearward from the forward end of the body to provide a relatively long leading spike, the blade having a forward edge abutting the forward end of the body slot, a rear shoulder at the point of juncture between the conical body member and the cylindrical rear extension, abutting the end of the hollow arrow shaft and a rearwardly extending tang entering the hollow arrow shaft. The front end of the blade and the front edge of the slot have a cooperating tang and reentry portion to prevent lateral displacement of the blade. In a second embodiment there is a second slot at right angles to the first slot, and of lesser extent, extending the conical member, the cylindrical rear extension and the first blade. A second blade, similar to the first blade is fitted in the second slot.

3,614,104
THREE-DIMENSIONAL SPACE GAME
Joseph E. Gregory, 834 Dupont Bldg., 169 East Flagler St., South Miami, Fla.
Filed July 18, 1969, Ser. No. 842,955
Int. Cl. A63f 3/04
U.S. Cl. 273—134 AA 9 Claims

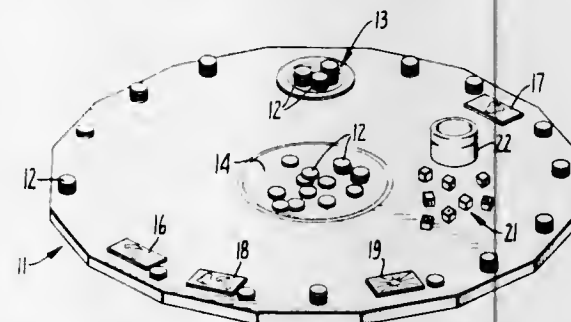
A three-dimensional space game in which rocket ship configured play pieces are first individually moved on a primary play surface, by the participants, from home base areas designated "rocket factories" to "hanger areas," and then along a path consisting of a plurality of delineated "move" areas to "launch pad" areas. From the "launch pad" areas, the play pieces are moved individually upwardly along riser means to an "orbital tract" and "space stations" from which they "blast off" and are moved further upwardly along additional riser means to a final goal, positioned thereabove,

which may be designated "Mars" or any other well-known space body. The movement of the play pieces about the



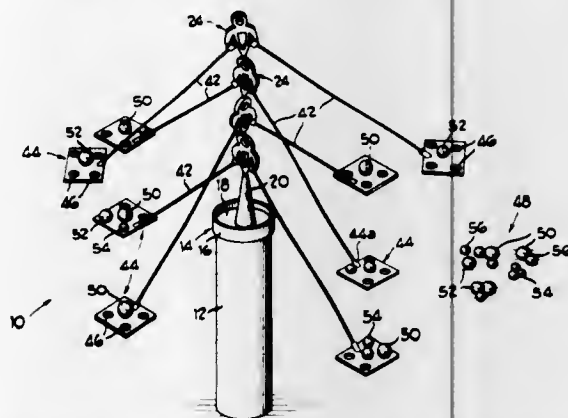
three-dimensional play area is controlled by the numbers appearing on a pair of thrown dice, a number indicating spinner means or the like.

3,614,105
GAME APPARATUS UTILIZING DICE AND CARDS
Juliana S. Dandini, 101 Greenridge Drive, Reno, Nev.
Filed Jan. 3, 1969, Ser. No. 788,732
Int. Cl. A63f 9/04, 1/04
U.S. Cl. 273—146 4 Claims



A game apparatus in which a specific form comprises a plurality of value pieces such as poker chips for division among the players and placement in one of two playing trays during the game, a plurality of cards containing picture elements, one of said cards containing at least two picture elements, one of which elements corresponds to a picture element of another card and the other of which elements corresponds with a picture element of a second separate card, and a special set of dice exemplified by eight cubical dice, each die having five blank faces and one face containing a marking, said markings on the eight dice indicating the numbers one through six and the pair of picture elements corresponding to the two picture elements carried on said cards.

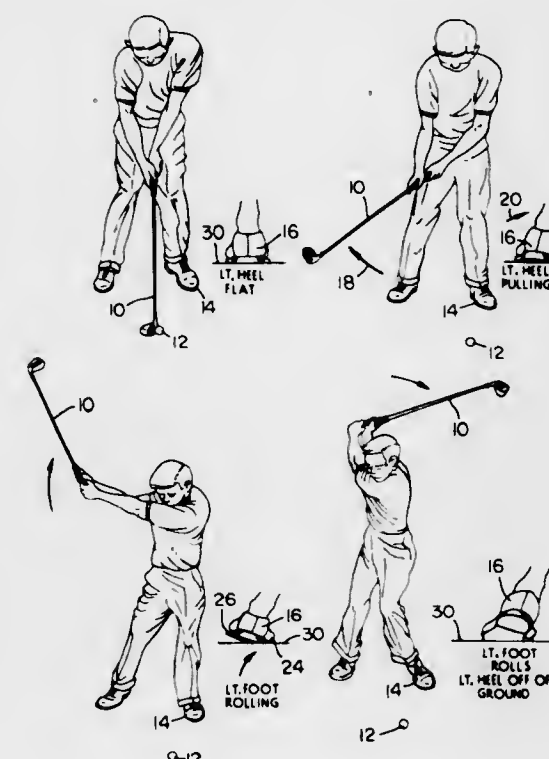
3,614,106
BALANCING PUZZLE DEVICE
Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates
Filed Aug. 6, 1970, Ser. No. 61,714
Int. Cl. A63h 13/12; A63f 9/06
U.S. Cl. 273—156 12 Claims



A puzzle game of the type wherein balancing members are to be stacked in vertical tandem orientation from a base and

include outwardly extending arms having weight-receiving trays at the ends thereof with weight members of different weights for deposit on the trays to balance the vertically oriented assembly of the members. The weight members are variously of different sizes and correspondingly different weights, and of the same size but of different weights.

3,614,107
GOLF TRAINING DEVICE
James M. Kinsey, 4125 North Clinton St., Fort Wayne, Ind.
Filed May 13, 1970, Ser. No. 36,908
Int. Cl. A63b 69/36
U.S. Cl. 273—188 A 4 Claims

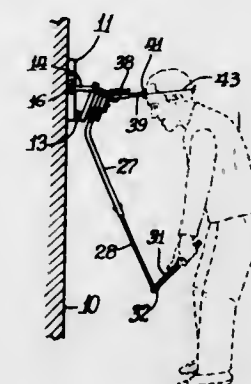


The golf training device limits movement of the golfer's foot so that during the backswing and power swing, the pivot foot is confined to rolling from the inner edge to the outer edge of the shoe. This is accomplished by means of a locator which is either a permanently fixed post or a post which can be removably imbedded in the ground and has a locating surface against which the back of the shoe is brought. An attachment which is received on the golfer's shoe has a projection which bears against the lower edge of the locating surface, thus preventing lifting of the shoe and thereby maintaining the proper foot position of the golfer at his pivot foot during both the backswing and the power swing. During the golfing swing, the projection on the attachment which is carried by the golfer's shoe engages the undersurface of the locator, and confines the foot to the described rolling action from the inner shoe edge to the outer shoe edge, thereby insuring a proper swing of the golfer, and, in particular, prevents lifting of the heel off the ground and spoiling the swing.

3,614,108
GOLF PRACTICE DEVICE
Ernest Garten, 411 S. Vail, Arlington Heights, Ill.
Filed Apr. 9, 1970, Ser. No. 26,906
Int. Cl. A63b 9/36
U.S. Cl. 273—190 R 12 Claims

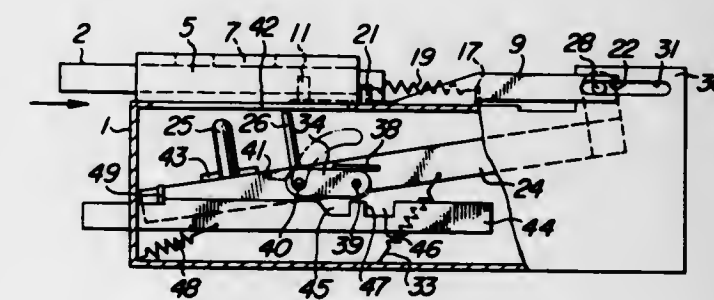
A plate is connected at its bottom by a hinge to a vertical support. Brackets at the top of the plate can be connected to the support in various positions to change the angle of inclination of the plate. An arm is rotatably connected to the plate for rotation about an axis normal to the plate. The

frictional drag of the rotation of the arm may be adjusted. On the distal end of the arm is a simulated golf club handle.



Immediately above the axis of rotation of the arm is an adjustably positioned headrest.

3,614,109
MAGNETIC TAPE RECORDER OF MAGAZINE TYPE
Kozo Yamamoto, Hirakata, and Morihisa Naito, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 711,677, Mar. 12, 1968, Pat. No. 3,540,738.
Filed July 8, 1970, Ser. No. 53,165
Int. Cl. G11b 15/00
U.S. Cl. 274—4 E 5 Claims

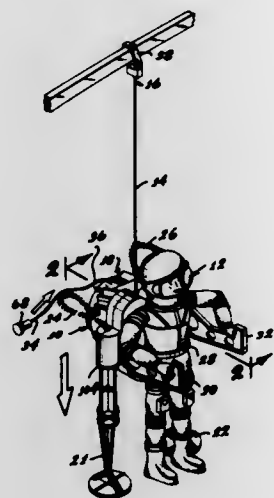


A magazine-type tape recorder wherein there are relative pivotal and linear movements between a movable body having a tape drive system and a magazine load system, comprising means for pivotally and linearly movably supporting one end of the movable body, a locking means for holding the movable body in an operative position, arcuate guide slots on the sides of a casing for guiding other ends of the movable body in the operative position or an inoperative position, means disposed on said casing and slidable along slots thereon by being engaged by said inserted magazine, first resilient means disposed between the movable body and said casing for urging the body towards the inoperative position, and second resilient means disposed between said slidable means and said casing for urging said slidable means towards said magnetic insertion opening, whereby the tape magazine can be ejected sufficiently out of the magazine insertion opening in response to an unlocking operation for the withdrawal of the tape magazine from the tape recorder.

3,614,110
VOICE UNIT BACKPACK
James E. Marshall, Westminster, and Richard E. Henderson, Huntington Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 13, 1969, Ser. No. 876,341
Int. Cl. G11b 3/00
U.S. Cl. 274—9 R 4 Claims

Apparatus in the form of a backpack for holding an astronaut figure, which plays a recorded saying as the pack and figure are lowered to the ground. The pack has a phonograph with a turntable that is rotated to play the record by pulling a string out of the pack. The string is pulled out by holding an outer end of the string and allowing the pack to

slowly fall to the ground. The phonograph is contained in a housing, and the housing is supported on a pair of elongated



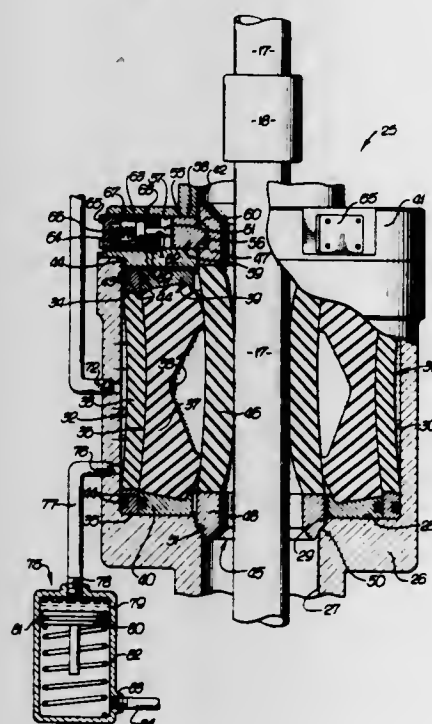
members representing struts, the members having an integral strap for holding the toy figure to the housing.

3,614,111
TOOL JOINT STRIPPING STATIONARY BLOWOUT PREVENTER WITH A RETRIEVABLE PACKING INSERT
John Regan, 26923 Diamondhead Lane, Palos Verdes Peninsula, Calif.

Filed Oct. 23, 1969, Ser. No. 868,870
Int. Cl. F16j 15/00, 15/40

U.S. Cl. 277-3

9 Claims

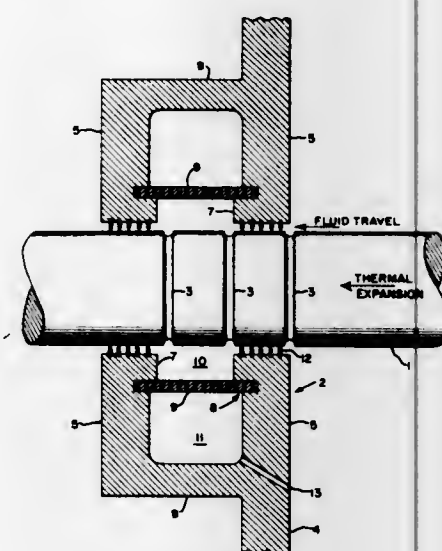


A stationary blowout preventer having a balloon-type packing unit with a central opening therein, a retrievable packing insert positioned within said opening by the engagement of a lower ring with the preventer and releaseably secured therein by hydraulically releaseable dogs latchingly engaging a latching notch in an upper ring, whereby a central rubber portion of the packing insert sealingly engages the pipe tool therethrough when the packing unit is pressurized by fluid. The blowout preventer has a fluid accumulator which absorbs the surge pressure and excess fluid to maintain a constant pressure on the packing insert as a pipe tool joint is stripped therethrough to maintain the sealing engagement between the insert and the pipe.

3,614,112
FLUID DEFLECTOR APPARATUS
Josef Herzog, Scotia, and Francis D. Ryan, Schenectady, both of N.Y., assignors to General Electric Company
Filed Feb. 14, 1969, Ser. No. 799,185
Int. Cl. F16j 15/54

U.S. Cl. 277-19

7 Claims



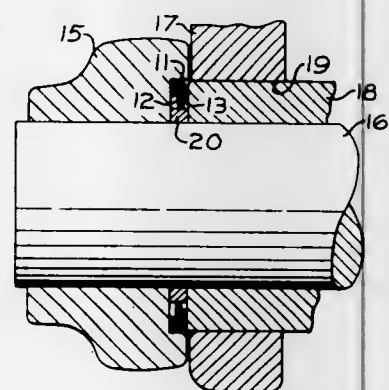
Fluid deflector apparatus of the annular type used on rotating shafts which has a perforated circumferential barrier to separate the annulus into two concentric annuli in order to slow the circumferential velocity of the deflected fluid and facilitate drainage.

3,614,113
BOOT-BELLEVILLE SEAL
Duane L. Burk, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 4, 1970, Ser. No. 16,312
Int. Cl. F16j 15/38

U.S. Cl. 277-94

7 Claims



A track pin seal for the space between pin-connected track elements comprises a resilient boot encompassing the outer diameter of a pair of frustoconical springs positioned back to back and biasing the ends of the boot into sealing engagement with the respective track elements.

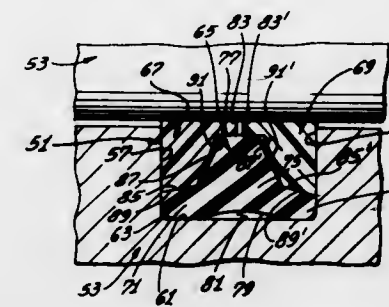
3,614,114
SEAL ASSEMBLY
Henry A. Traub, Pacific Palisades, Calif., assignor to W. S. Shamban & Co., West Los Angeles, Calif.
Filed July 14, 1969, Ser. No. 841,372
Int. Cl. F16j 9/00, 15/32

U.S. Cl. 277-165

18 Claims

This disclosure describes a seal assembly for sealing between two relatively movable members. The seal assembly is positionable in a groove formed in one of the members and is sealingly engageable with the other of the members. The

seal assembly includes a resilient sealing ring and, in the embodiment illustrated, first and second plastic sealing rings

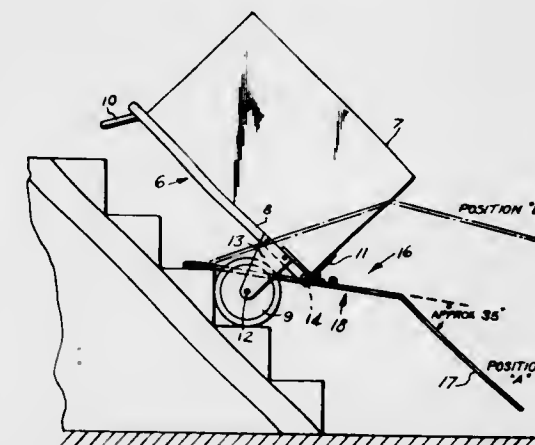


cooperable with the resilient sealing ring to form a fluidtight seal.

3,614,115
STAIR TRUCK
Malcolm F. Berglund, 4056 N. Leamington Ave., Chicago, Ill.
Filed Sept. 22, 1969, Ser. No. 859,687
Int. Cl. B62b 9/02

U.S. Cl. 280-5.32

1 Claim

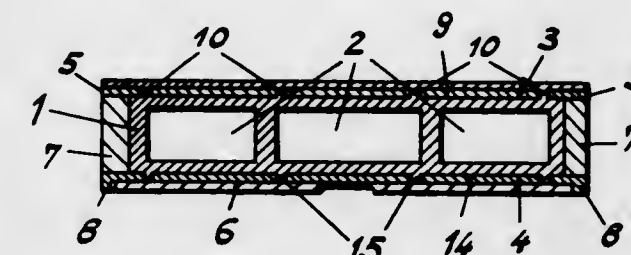


Leverage means adaptable for use in combination with a conventional type of hand truck in moving heavy objects up and down stairs with a minimum of effort.

3,614,116
SKI
Gaston Haldemann, Stansstad, Switzerland, assignor to Haldemann S.A., Geneva, Switzerland
Filed Aug. 26, 1969, Ser. No. 853,056
Claims priority, application Switzerland, Sept. 12, 1968, 13628-68
Int. Cl. A63c 5/04

U.S. Cl. 280-11.13 L

1 Claim

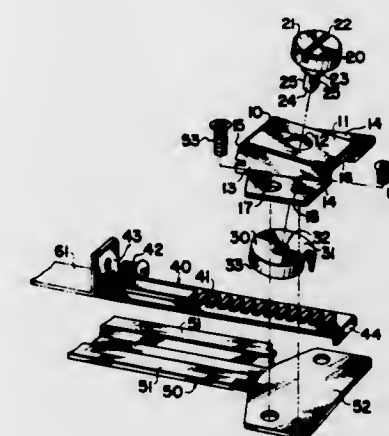


The ski core is covered with an upper and a lower metal reinforcing blade, of which the upper blade has front and rear parts with four and two longitudinal slots, respectively, and an unslotted intermediate part; and the bottom blade has front and rear parts, each with two longitudinal slots, and an unslotted intermediate part.

3,614,117
SLIDING DEVICE FOR SKI HEEL BINDING
Michio Iizuka, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 14, 1970, Ser. No. 2,755
Claims priority, application Japan, Oct. 23, 1969, 44-100277
Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 H

4 Claims

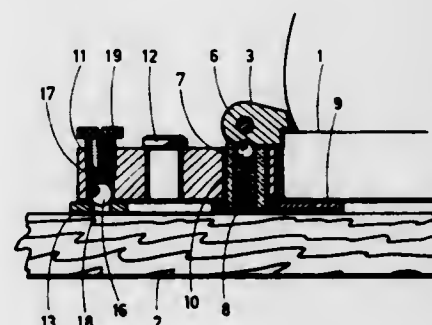


A sliding plate having a ski heel binding fixed at the fore end thereof and comprising tooth-shaped projections aligned at a fixed interval is moved back and forth above a base by rotating a rotary member engaged with the projections. The rotary member has a vertical sleeve so spaced that the starting point and the terminating point thereof may correspond to the interval between the projections. The rotary member is fixed to a pin through a hole of a cover which is fixed to the base; thereby each complete rotation of the pin rotates the rotary member and moves the slide plate a distance equal to the interval between the projections.

3,614,118
REAR HOLDING DEVICE FOR SKI BOOTS
Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Annecy, Haute-Savoie, France
Filed Jan. 8, 1969, Ser. No. 789,680
Claims priority, application France, Jan. 10, 1968, Dec. 20, 1968, 135,562; 1094/74
Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

6 Claims



A pivotable rear holding device for a ski boot on a ski which includes a pivotable jaw for vertically holding down the heel of the boot, and a horizontally pivotable plate for supporting the heel of the boot, the pivotable jaw is mounted on the pivotable plate and follows the lateral displacement of the latter.

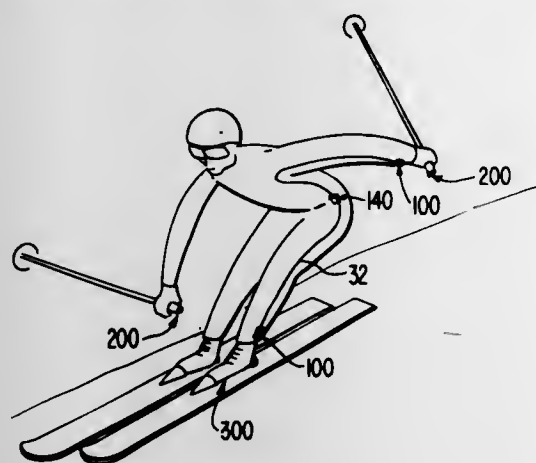
3,614,119
RELEASABLE SKI BINDINGS AND ACCESSORIES
John D. Wilkes, 1024 Wisconsin Ave., Washington, D.C.
Filed July 3, 1969, Ser. No. 838,873
Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 R

34 Claims

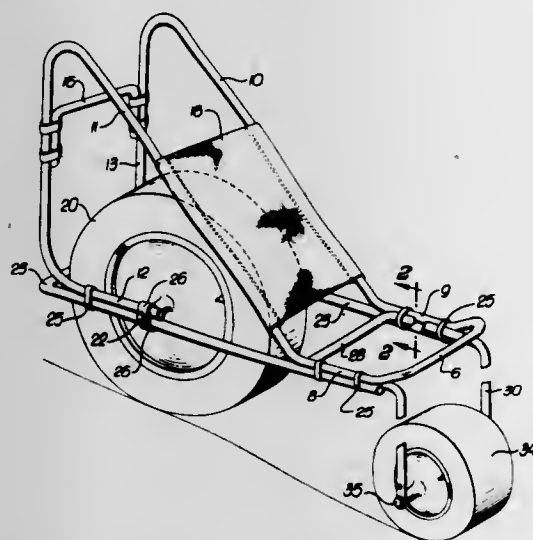
A ski binding releasing the skier's boots from the ski on command of the skier by release of mechanical switches positioned in the grips of the skier's ski poles and connected

to the ski bindings by cables in the skier's garments. A backup release system is actuated automatically when the



tension or torsional forces between the bindings and the skier's boots exceed preset limits.

3,614,120
FARM EQUIPMENT
Frank Cicero, 217 South Berendo St., Los Angeles, Calif.
Filed May 29, 1969, Ser. No. 828,834
Int. Cl. B62m 1/00
U.S. Cl. 280—32.5

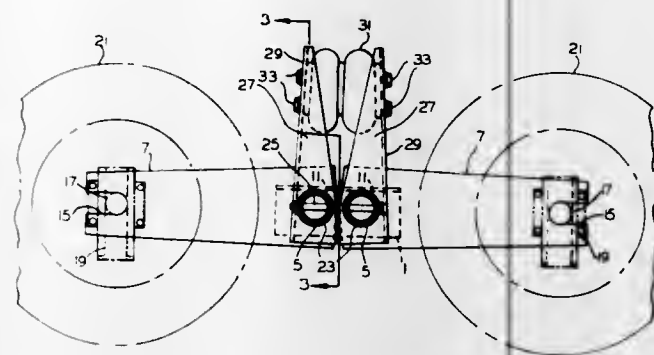


A farm "Chair Cycle," having the frame and related supports preferably of tubular material, whereupon a worker or rider may sit and propel himself with his feet on the ground to pick low-growing fruits and even weeds and crawlers (if herbicides and pesticides were outlawed). The chair is supported by one back wheel, its axle transversing at about the seat bottom level a horizontal U-shaped frame, and by a front wheel mounted underneath a rider's knees on an axle carried by a pair wheel legs protruding from the seat bottom. The front wheel assemblage is firm, whereas the rear one should be pivotal.

3,614,121
TANDEM AXLE SUSPENSIONS
Lloyd J. Wolf, 2425 Irving Blvd., Dallas, Tex.
Filed July 24, 1969, Ser. No. 844,325
Int. Cl. B60g 19/02, 19/08
U.S. Cl. 280—104.5

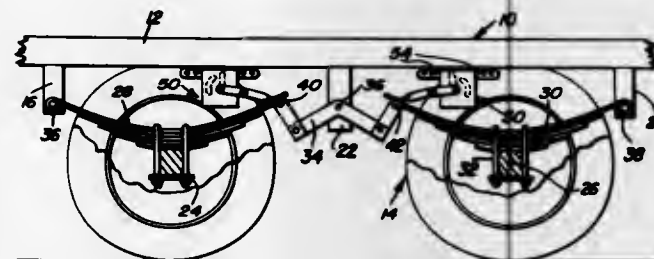
Tandem axle suspensions comprising transversely spaced pairs of bellcranks fulcrumed on adjacent transverse axes to a vehicle frame and having platelike substantially horizontal arms extending longitudinally in opposite directions from their fulcrums, and upright arms having means resiliently biasing the upright arms away from each other through axles secured to corresponding outer ends of the horizontal arms, the horizontal arms lying in longitudinal substantially vertical

planes and being torsionally sufficiently flexible to permit transverse tipping of the through axles for operation over irregular surfaces. In one embodiment of the invention, the upright arms are rigid members, with longitudinally acting



springs compressed between their upper ends, while in another embodiment the upright arms are semielliptic leaf springs rigidly secured at their lower ends to the horizontal arms and connected by a short strut to each other at their upper ends.

3,614,122
LOW TIRE PRESSURE WARNING SYSTEM FOR TANDEM AXLE ASSEMBLIES
Donald Gene Herren, Box 85, Pawhuska, Okla.
Filed Aug. 27, 1969, Ser. No. 853,284
Int. Cl. B60g 19/02
U.S. Cl. 280—104.5

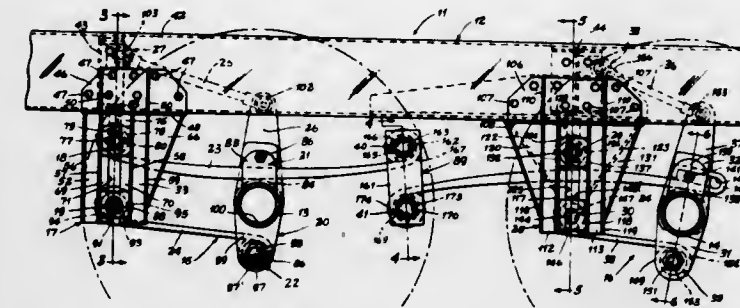


A pair of movement-sensing signal-actuating mechanism for a tandem axle assembly of the type including a walking beam supporting adjacent ends of a pair of corresponding leaf springs of the axle assembly. The mechanisms are stationarily mounted relative to the frame of the associated vehicle and include movement-sensing portions operative to sense excess tilting of the walking beam such as occurs when the wheels on one end of one of the axles of the axle assembly are overloaded in proportion to the air pressure within the tire portions of the wheels. Further, the mechanisms also includes structure operative to actuate signals in response to their sensing such excess tilting of the associated walking beam in either direction.

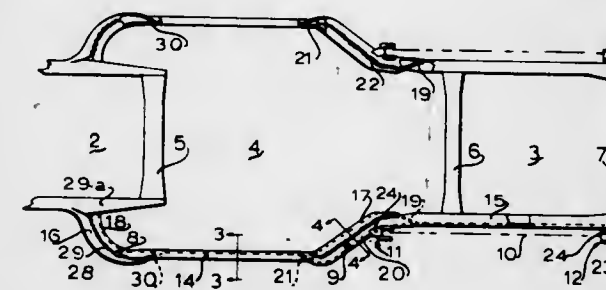
3,614,123
TRAILING AXLE SUSPENSION
John E. Raidel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.
Filed Oct. 14, 1969, Ser. No. 866,203
Int. Cl. B60g 5/04
U.S. Cl. 280—104.5

A suspension assembly for a vehicle having front and rear axles. Front and rear hanger assemblies depending from the vehicle chassis. A free-floating shackle assembly between the axles. A front leaf spring extending between the front hanger assembly and the shackle assembly and bearing downwardly

against a bearing in the rear hanger assembly. The rear leaf spring bears downwardly against the rear axle.

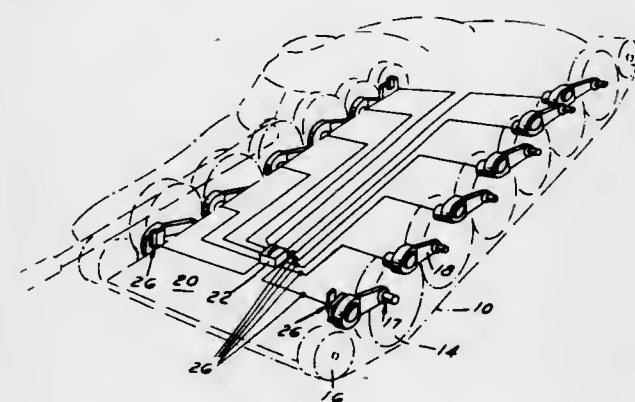


3,614,124
VEHICLE FRAME UNIT
Carl W. Schwabenlander, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed July 28, 1969, Ser. No. 845,383
Int. Cl. B62d 21/00
U.S. Cl. 280—106



This disclosure includes a vehicle frame having a single center rail member and a separate single rear rail member in each side of the frame structure. The rail members are channel shaped and open in horizontally opposite directions. The members have complementing curved adjacent and telescoped ends which produce an interconnecting box section. The side rail units are interconnected to the body and to the suspension system to remove the torsion deflection from the rear rail member and as a result of shifting such force inputs, obtain the desired torsional and flexural strength in the frame.

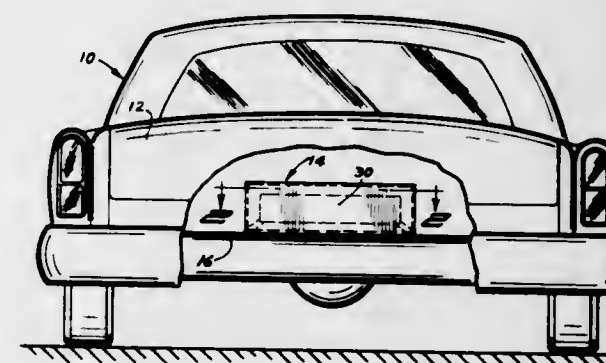
3,614,125
UNITIZED HIGH-MOBILITY SUSPENSION AND DRIVE SYSTEM FOR TRACK VEHICLES
Alex H. Sinclair, Southfield, and Robert J. Otto, Grosse Pointe Woods, both of Mich., assignors to The United States of America as represented by the Secretary of the Army
Filed Mar. 31, 1970, Ser. No. 24,291
Int. Cl. B60g 3/12
U.S. Cl. 280—124



A hydraulically actuated, independent roadarm suspension system wherein hydraulic fluid is supplied to any individual

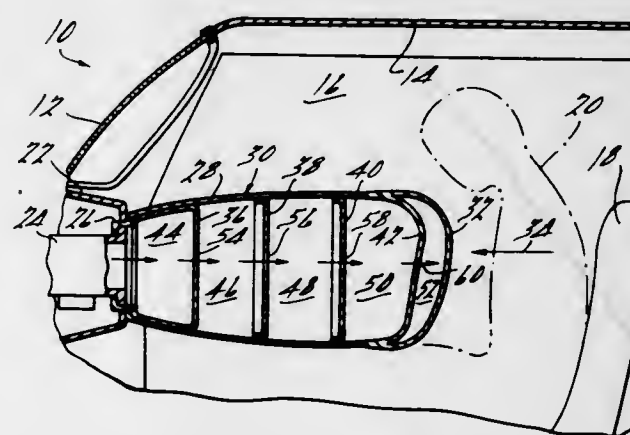
roadarm actuator by a hydraulic pump and reservoir contained within the roadarm. This provides vehicles, such as military tanks, with a suspension system that keeps to a minimum the requirement for interior body space for suspension components and eliminates the need for hydraulic fluid conduits within the hull.

3,614,126
STABILIZING DEVICE FOR AUTOMOTIVE VEHICLES
Norman C. Carlson, c/o Auto Safety, Inc., Chetek, Wis.
Continuation-in-part of application Ser. No. 808,393, Mar. 19, 1969. This application Aug. 11, 1969, Ser. No. 857,267
Int. Cl. B60r 27/00
U.S. Cl. 280—150 D



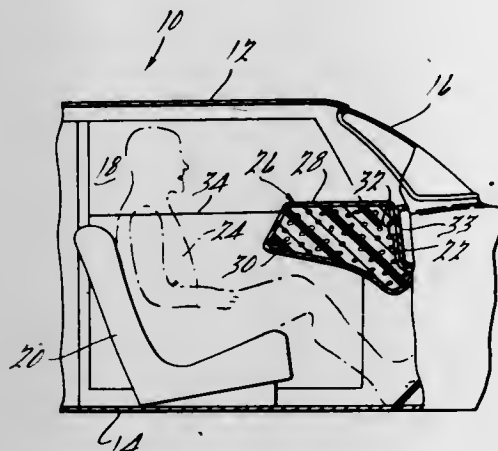
Apparatus for stabilizing and reducing the tendency of a vehicle to skid in response to transient forces that may be exerted upon the vehicle which consists of one or more masses adapted to be disposed upon the vehicle so that substantially universal pivotal movement of the center of gravity of the mass about a point may be realized as the vehicle is subjected to such transient forces.

3,614,127
VARIABLE PRESSURE AIR BAG RESTRAINT DEVICE
Patrick M. Glance, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 20, 1969, Ser. No. 867,476
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB



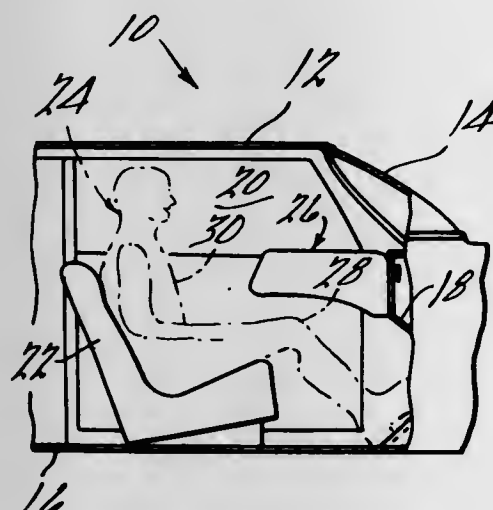
A variable pressure air bag restraint device adapted to be positioned in a motor vehicle passenger compartment forward of a passenger to be restrained. Remote from the passenger, the interior of the bag is connected to a source of pressurized gas capable of inflating the bag. With the bag in the inflated condition, separating walls divide the bag interior into a plurality of compartments that extend progressively between the gas source and the passenger. The compartments are interconnected by orifices in the walls. The size of each one of these orifices varies inversely with the distance between each orifice and the gas source.

3,614,128
STATIC AIR BAG RESTRAINT DEVICE
 William J. Sobkow, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed Sept. 29, 1969, Ser. No. 861,853
 Int. Cl. B60r 21/08
 U.S. Cl. 280—150 AB 6 Claims



A motor vehicle passenger restraint device including a static air bag mounted within the vehicle passenger compartment forward of a seated passenger. The air bag is adapted to be impacted by and limit the forward movement of the passenger during periods of rapid vehicle deceleration. The air bag normally is inflated at atmospheric pressure and is given shape by resiliently deformable, open cell foam located within the bag. Also, the air bag normally is located vertically so that it does not interfere with the line of sight of the passenger through the vehicle windows. A first embodiment of air bag is dimensioned and is sufficiently deformable so that following an initial impact thereupon by the knees of the passenger, a portion of the bag is deformed upwardly to a position forward of the face of the passenger. According to a second embodiment of the invention, the air bag pivotally is secured to vehicle body structure near the top surface of the bag so that an initial impact upon the bag by the knees of the passenger will cause pivotal movement of the bag to a position forward of the face of the passenger.

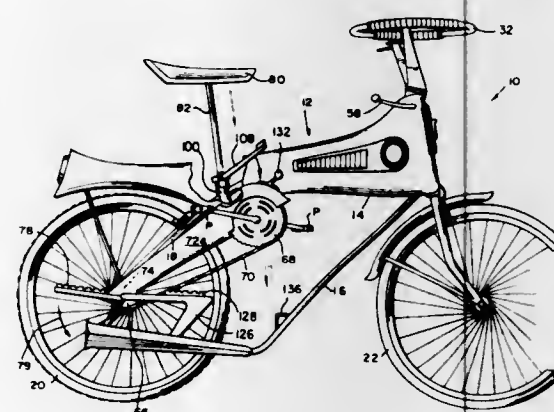
3,614,129
VEHICLE PASSENGER RESTRAINT ARRANGEMENT INCLUDING A COMPARTMENTALIZED AIR BAG
 William J. Sobkow, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed Sept. 29, 1969, Ser. No. 861,854
 Int. Cl. B60r 21/04
 U.S. Cl. 280—150 AB 2 Claims



A motor vehicle passenger restraint arrangement including an air bag divided into compartments and adapted to be impacted by the body of a vehicle passenger during periods of rapid vehicle deceleration. These compartments are of

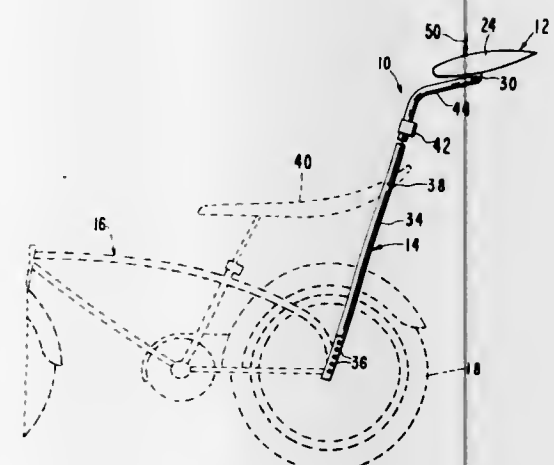
various sizes with large compartments positioned to be impacted by parts of the body of the passenger having relatively large areas such as the chest. Small compartments are positioned to be impacted by body areas having relatively small areas such as the knees. This arrangement of compartments provides that the resistance to passenger movement offered by the air bag when the bag is deformed due to impact thereupon substantially is equalized regardless of the area of the impacting body part.

3,614,130
BICYCLE
 Harry D. Forse, 220 Woods Road, Edgewood Addition, Anderson, Ind.
 Filed Nov. 10, 1969, Ser. No. 875,409
 Int. Cl. B62m 1/02
 U.S. Cl. 280—261 13 Claims



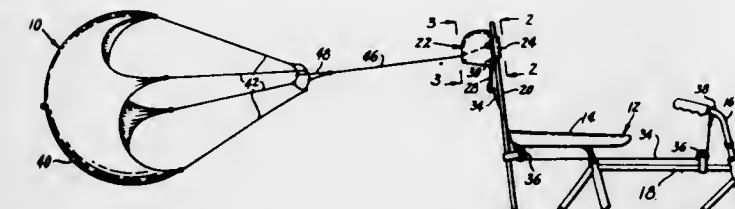
A bicycle comprising a frame, seat, rear and front wheels, and a chain drive assembly. The drive assembly includes a rear sprocket conventionally connected to the rear wheel and a front sprocket which is conventionally rotated by means of pedals. The means supporting the front sprocket and the seat are connected together so that the front sprocket and seat can be selectively and simultaneously raised and lowered. A steering wheel is provided in lieu of conventional handlebars, the steering wheel being connected to the conventional steering post by means of a universal joint.

3,614,131
AIRFOIL FOR TWO-WHEELED VEHICLE
 Jack L. Lopez, P.O. Box 1061, San Carlos, Calif.
 Filed Jan. 27, 1970, Ser. No. 6,183
 Int. Cl. B62j 39/00
 U.S. Cl. 280—289 8 Claims



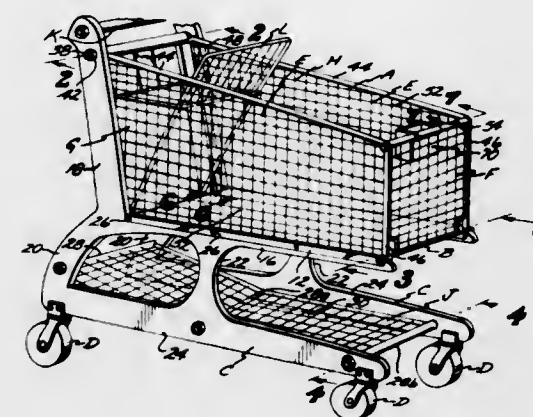
A stabilizing device for a two-wheeled vehicle wherein the device includes an airfoil and means for mounting the airfoil on the vehicle at a location to cause an air force to be developed during movement of the vehicle with the air force serving to produce a moment about the axis of rotation of one of the wheels of the vehicle, tending to rotate the latter in a predetermined direction.

3,614,132
BICYCLE PARACHUTE
 Donald T. Ashworth, 15 Hammett St., Anderson, S.C.
 Filed Oct. 17, 1969, Ser. No. 867,215
 Int. Cl. B62j 27/00
 U.S. Cl. 280—289 1 Claim



A housing having a pivoted bottom retaining a collapsed and folded drag parachute therein. The housing is mounted near the rear of a bicycle and a remote release cord is attached to the bottom to release the parachute so that it will deploy and billow out to the rear and slow the bicycle and simulate a drag parachute used to slow a drag racer or other fast moving vehicles.

3,614,133
SHOPPING CART
 Edward Ganci, 3243 Magnolia Ave., Long Beach, Calif.; Joseph V. Gance, 4823 Carfax Ave., Lakewood, Calif., and Gerald H. Anderson, 3056 Chestnut St., Long Beach, Calif.
 Filed Feb. 13, 1970, Ser. No. 11,063
 Int. Cl. B62b 11/00
 U.S. Cl. 280—33.99 R 4 Claims

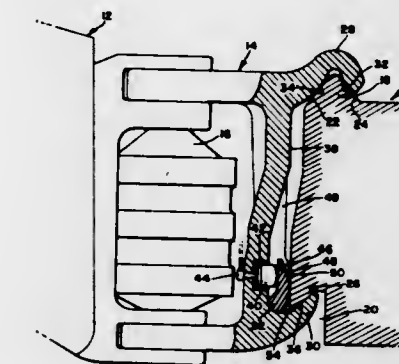


A substantially horizontal goods or grocery support and two laterally spaced vertical side pieces that are preformed as integral units from a rigid plastic material, and are removably held together by a plurality of spacing elements to form the major portion of a shopping cart assembly.

The shopping cart assembly further includes end and sidewalls removably secured to said support and side pieces and cooperate therewith to define an enclosure in which merchandise such as groceries or the like may be disposed. Casters are mounted on the lower portions of said side pieces to permit said cart to be rolled over a floor surface.

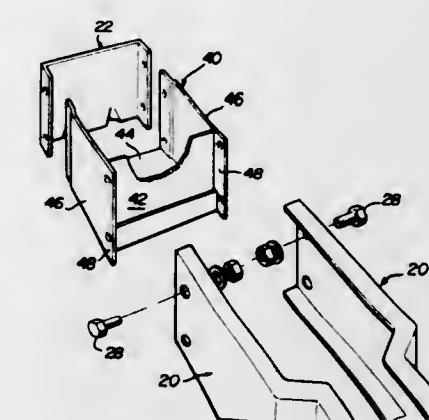
The market cart is capable of being shipped in a compact, knockeddown condition and the components easily assembled into a cart configuration by the use of conventional, readily available hand tools. In the event any one of the cart components is damaged, the damaged component is easily removed from the cart assembly and replaced by a new or undamaged component, all in a minimum of time.

3,614,134
HYDRAULIC CLAMPING APPARATUS AND PIVOTAL MOUNTING FOR A SIDE SHIFTABLE MECHANICAL DIGGER SLIDE FRAME
 Pierre Moriceau, Saran, and Jean Pierre Baudet, Orleans, both of France, assignors to Deere & Company, Moline, Ill.
 Filed Mar. 30, 1970, Ser. No. 23,729
 Claims priority, application France, Sept. 1, 1969, 6,929,784
 Int. Cl. B60d 1/00
 U.S. Cl. 280—456 13 Claims



A mechanical digger support assembly includes a boom-supporting slide frame mounted for transverse sliding and limited vertical pivoting or rocking on a tractor-supported transverse main frame. Hydraulically applied clamping apparatus are provided for causing abutment surfaces on the slide frame to pivot into locking engagement with abutment surfaces on the main frame to secure the slide frame against movement at selected positions along the main frame.

3,614,135
WEIGHT BOX ATTACHMENTS FOR TRACTORS
 John S. Eid, Winneconne, Wis., assignor to J. I. Case Company, Racine, Wis.
 Filed Apr. 15, 1970, Ser. No. 31,050
 Int. Cl. B60d 1/00
 U.S. Cl. 280—491 E 2 Claims

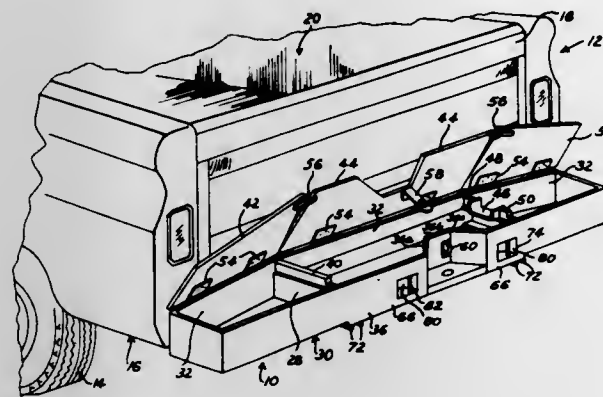


An attachment for tractors which provides a weight box at the ends of the tractor frame rails and which may be optionally used as desired and which has a drawbar or hitchplate at its end.

3,614,136
COMBINED BUMPER AND TOOL BOX
 Calvin J. Dent, Klamath Falls, Oreg., assignor to David Lynn White, Sunnyvale, Calif.
 Filed Dec. 9, 1969, Ser. No. 883,571
 Int. Cl. B60r 1/02; B60d 1/06
 U.S. Cl. 280—500 7 Claims

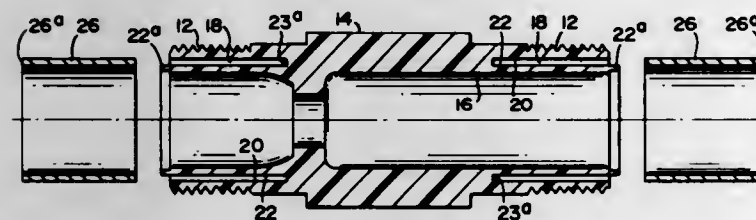
A combined bumper and tool box is provided having a rigid tray which is completely open at the top. A three section hinged cover for the tray is provided comprising a central section and two side sections. The closed central

section covers projections on the side sections so that locking the central section closed can lock all three sections closed.



The cover sections have interengaging parts through which all three sections may be detained in open positions.

3,614,137
REINFORCED PLASTIC FITTING
Irvin D. Jacobson, Cleveland, Ohio, assignor to Perfection Corporation, Madison, Ohio
Filed Apr. 9, 1970, Ser. No. 27,021
Int. Cl. F16l 15/00
U.S. Cl. 285—390 5 Claims

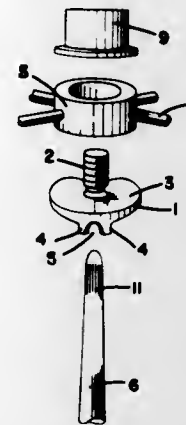


Disclosed is a reinforced plastic fitting including a sleeve member having connection means at either end. A fluid passageway extends through the sleeve member. An internal elongated longitudinally extending recess is provided in the sleeve at each end thereof. The recess is defined by radially spaced cylindrical surfaces coaxial with the axis about which the respective ends of the sleeve are defined. A radial end wall connects the respective cylindrical surfaces and defines a bottom for each recess. The opposite end of each recess is open in order to receive a rigid generally annular reinforcing insert of metal or plastic. A flap is formed adjacent the open end of each respective recess whereby after insertion of the reinforcing insert in the recess, the flap may be folded over the recess and the reinforcing insert to thereby encase the insert in the fitting end.

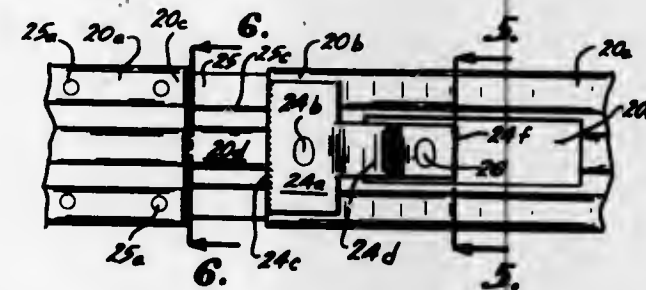
3,614,138
LAMP HARP SWIVEL
John Steyr, 15 Newberry Lane, Downsview, and Ernest Topler, 526 Glen Grove Rd., Toronto, Ontario, both of Canada
Filed Jan. 20, 1970, Ser. No. 4,268
Int. Cl. F16b 9/00
U.S. Cl. 287—20.3 9 Claims

An improved swivel for use in mounting a lampshade on the wire frame of a lamp harp which swivel is formed of a resiliently flexible solid resinous material and comprises a base, a stud extending outwardly from one face of said base for attachment of the lampshade thereto and a channel extending across the opposite face of said base and dimensioned to accommodate the wire of said frame, the areas of said one face on opposite sides of said channel being

inclined towards each other whereby pressure applied to said inclined surfaces by clamping of the lampshade on said stud

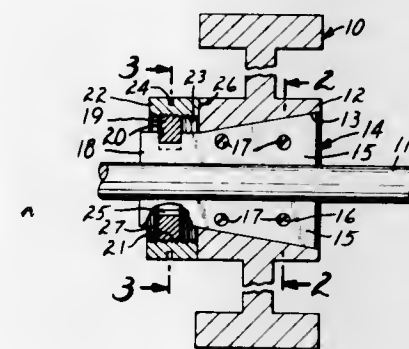


3,614,139
WELL CASING STOP COLLAR
James E. Harrison, Weatherford, Tex., assignor to Trojan, Inc., Panama
Filed June 11, 1970, Ser. No. 45,472
Int. Cl. F16d 1/06
U.S. Cl. 287—52 4 Claims



A stop collar comprising an interrupted, circular band with opposed ends, a deformable knockdown buckle mounted on the exterior at one end of the band, and a drawplate extending from the opposite end of the band. The end of the band having the knockdown buckle includes an extension tongue slidably projecting through a window in the drawplate to engage the interior side of the opposite end of the band.

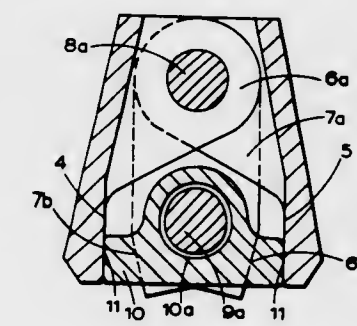
3,614,140
GRIPPING DEVICE AND METHOD OF MAKING
Leonard R. Nestor, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Aug. 22, 1969, Ser. No. 852,322
Int. Cl. F16d 1/06
U.S. Cl. 287—52.06 11 Claims



A gripping device useful in mounting a wheel on a shaft and for other purposes comprising a ringlike array of resiliently interconnected platelike wedge-shaped blades

having slotted end extensions, in combination with a thrust ring for applying force to said array at said extensions and in an axial direction.

3,614,141
HINGE CONNECTIONS
Norbert Holken, and Gerhard Sprenger, both of Altlunnen, Germany, assignors to Gewerkschaft Eisenhütte Westfalen, Westfalen, Germany
Filed Oct. 13, 1969, Ser. No. 865,633
Claims priority, application Germany, Feb. 7, 1969, P 19 06 015.2
Int. Cl. F16c 11/00
U.S. Cl. 287—99 5 Claims



A hinge connection, especially for the interconnection of mine roof support bars, and composed of interleaved plate members having a connecting member extending through apertures therein. A recess is formed by shortening some of the plate members beneath the apertures receiving the connecting member so that an apertured pressure piece can be received in the recess. The remainder of the plate members, which are nonshortened, each have a further aperture and a further connecting member can extend through these further apertures and through the aperture in the pressure piece to rigidly lock the bars together when desired.

3,614,142
CONNECTOR FOR SECURING AN ELONGATE MEMBER TO A CONSTRUCTION PILE
Ludwig Muller, Heinrich-Heine-Strasse 44-46, 355 Marburg, Lahn, Germany
Continuation-in-part of application Ser. No. 706,083, Feb. 16, 1968, now abandoned. This application Mar. 4, 1970, Ser. No. 16,324
Int. Cl. F16b 7/00
U.S. Cl. 287—108 7 Claims



There is disclosed a connector for securing the lower end of a post such as a pylon carrying power lines to the upper end of a pile driven into the ground. The connector comprises a generally tubular structure the walls of which are formed by a latticework composed of vertical corner bars and preferably horizontal crossbars, the corner bars being fixedly secured to the pile or a metal sleeve thereon,

preferably by welding. The lower part of the latticework is fitted upon and secured to the pile and the upper part constitutes a receiver for receiving therein the lower end of the post spaced apart therefrom. The resulting space is filled with concrete which thus forms a jacket for the post end reinforced by the latticework.

3,614,143
FERRULE UNIT FOR FISHING RODS AND METHOD OF CONSTRUCTION
Milton J. Stevens, 1812 Crestmont Court, Glendale, Calif.
Filed July 13, 1970, Ser. No. 54,217
Int. Cl. F16d 7/00
U.S. Cl. 287—126 5 Claims



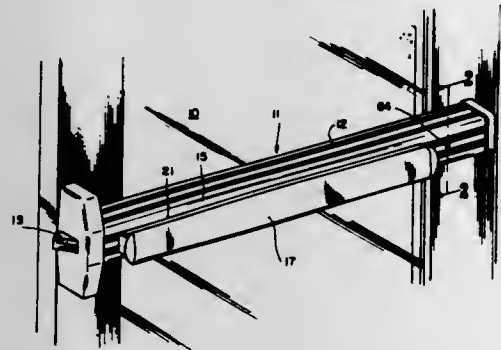
A ferrule unit for connecting sections of a fishing rod formed of male and female ferrules that have a telescopic interfit which is on an extremely small taper and is cushioned by an O-ring provided on the end of the male ferrule and engaged with the tapered surface of the female ferrule, and a method for producing such a ferrule unit.

3,614,144
EXPANSION CLIP AND METHOD OF INSTALLING RECESSED FIXTURES WITH SUCH CLIPS
Ralph R. Hodges, Belleville, Ill., assignor to Empire Stove Company, Belleville, Ill.
Filed May 26, 1969, Ser. No. 827,539
Int. Cl. F16b 2/04
U.S. Cl. 287—189.35 2 Claims



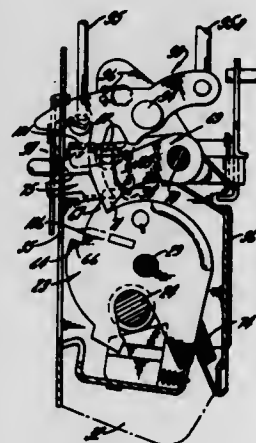
An expansion clip includes a pair of angularly related legs which intersect at a fold line and are provided with laterally turned ears at their opposite ends. The expansion clip fits at the corner formed by the intersection of a sidewall and an outwardly turned flange on a recessed fixture, and is secured to the fixture by a screw which extends through the flange and threads into the far end of the clip. When the screw is tightened, the angle between the legs decreases so that the clip transversely expands and lodges between the sidewall of the fixture and the portion of the wall construction bounding the recess into which the fixture is installed.

3,614,145
DOGGING DEVICE FOR PANIC EXIT LATCH AND ACTUATOR ASSEMBLY
 George Z. Zawadzki, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.
 Filed Aug. 19, 1970, Ser. No. 65,201
 Int. Cl. E05b 65/10; E05c 3/16, 15/02
 U.S. Cl. 292-92 16 Claims



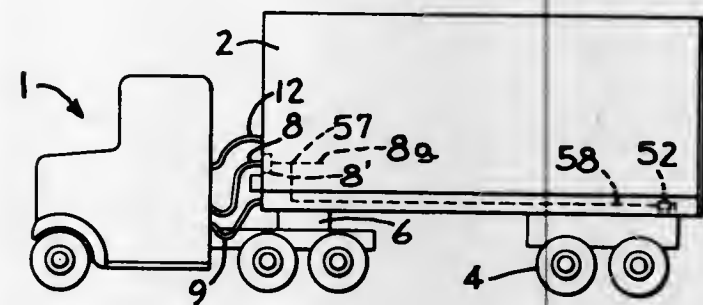
A panic exit latch and actuator assembly comprising housing means, a latchbolt movable between a projected position and a retracted position, an actuator element operatively connected to the latchbolt and arranged to move the latchbolt to its retracted position in response to movement of the actuator element, and control means including a control member movable between a first position and a second position and cooperating means for locking the actuator element in its latch-projected position. The control member and the actuator element are connected to the latchbolt by lost-motion connection means so that the latchbolt can be retracted by the control member without changing the position of the actuator element and so that the latchbolt can be retracted by the actuator element without changing the position of the control member. The said cooperating means is operated by movement of the control member to lock the actuator element against movement which, in turn, locks the panic bar against movement.

3,614,146
VEHICLE DOOR LATCH
 Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.
 Filed Aug. 15, 1969, Ser. No. 850,524
 Int. Cl. E05c 3/06
 U.S. Cl. 292-216 9 Claims



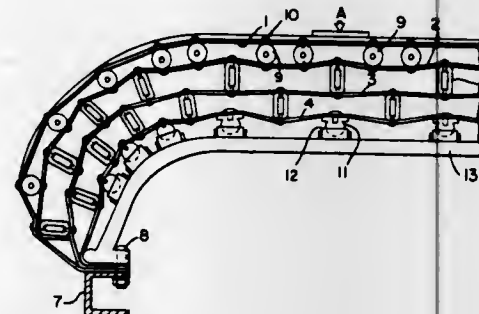
A freewheeling, dual preset vehicle door latch with a force-transmitting pin mounted for controlled floating within slots formed in a side-by-side contactor and locking lever. The latch is of the "impulse" type in that the second preset operation may be performed completely while the door is open so that the door may be closed and locked simply by being swung shut in a normal fashion.

3,614,147
SAFETY LOCK FOR TRAILER DOORS
 Morris Spector, Highland Park, Ill., assignor to Sara K. Silverman, Miami Beach, Fla.
 Filed July 29, 1969, Ser. No. 845,736
 Int. Cl. E05c 13/04
 U.S. Cl. 292-254 5 Claims



A freight trailer, or similar freight container; the door of which automatically locks when it is fully shut and is released by a pneumatic motor that receives operating power from a tractor when the trailer is coupled to a tractor. The purpose is to inhibit pilfering from the trailer when it is unattended, as for instance during piggyback rail shipment.

3,614,148
SHOCK ABSORBING VEHICLE BUFFER
 Ethelbert Favary, 1246 North Laurel Ave., Los Angeles, Calif.
 Filed Aug. 28, 1968, Ser. No. 756,352
 Int. Cl. B60r 19/04; B61f 19/00; F16f 7/00
 U.S. Cl. 293-72 8 Claims

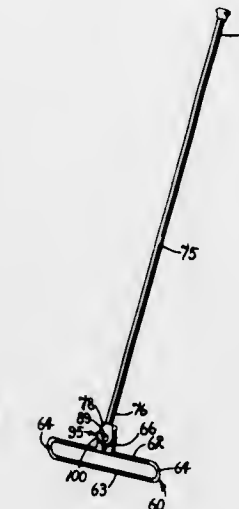


A safety device for motor vehicles for preventing damage to the vehicle and injury to passengers when in collision with other objects. The device consists of a number of strong pliable bands in great tension and attached at their opposite ends to solid supports. The tension in the bands resists the impact forces and absorbs the energy generated by the collision. In addition, for very high impact forces other means, like springs, are used to further absorb the energy of the collision.

3,614,149
COMBINED GOLF BALL RETRIEVER AND RAKE
 Walter L. Clark, Fresno, Calif., assignor to Edward J. Derderian, Fresno, Calif., a part interest
 Filed Aug. 1, 1969, Ser. No. 846,775
 Int. Cl. B25f 1/04
 U.S. Cl. 294-19 A 3 Claims

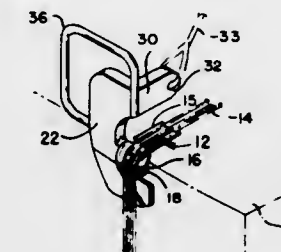
A combined golf ball retriever and rake having an elongated raking head provided with a golf ball receiving member and an elongated handle pivotally mounted on the

head for movement between a raking position extended in substantially right-angular relation from the head and a ball compression spring biasing the link to the maximum length. A hydraulic cylinder is connected to the knee of the toggle



retrieving position extended substantially longitudinally coextensively along the head.

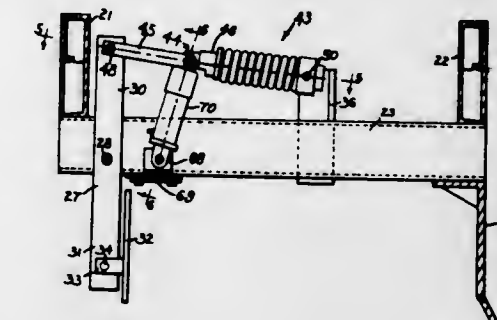
3,614,150
LIFTING HOOK
 James A. Pasic, Aberdeen, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.
 Filed May 14, 1970, Ser. No. 37,196
 Int. Cl. B66c 1/34
 U.S. Cl. 294-78 R 8 Claims



A lifting hook is provided with a hook finger engageable with a corner clip strapped to a pulp bale. Below the lifting finger the hook has a clamping foot comprising an enlarged substantially flat surface for pressing against the side of a pulp bale. A lifting ear is provided on the hook above the hook finger and extends inwardly overlying the pulp bale so that a lifting force applied to the ear will cause the clamping foot to pivot about the corner clip inwardly against the bale. A handle is secured to the hook for positioning the hook finger within the corner clip. A plurality of such lifting hooks are used simultaneously in a lifting apparatus with the clamping feet engaging opposed pulp bales.

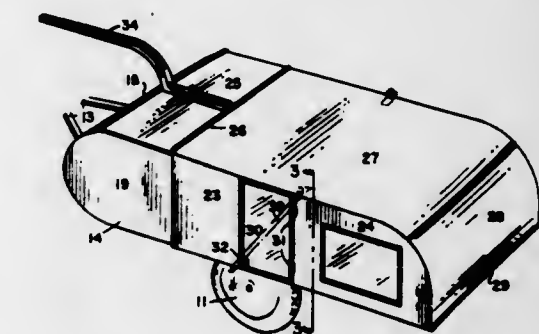
3,614,151
GRIPPING ELEMENTS FOR CARBON ANODE STACKER
 Donald H. Shadle, Spokane, Wash., assignor to General Machinery Company, Spokane, Wash.
 Filed Aug. 21, 1969, Ser. No. 851,814
 Int. Cl. B66c 1/00
 U.S. Cl. 294-104 4 Claims

Gripping elements are mounted on an anode stacker for grasping carbon anode blocks and releasing the blocks at a desired location. Each of the gripping elements has a drive means for operating the gripping element. The drive means includes a toggle joint having two pivotally interconnected links in which one of the links has an adjustable length with a



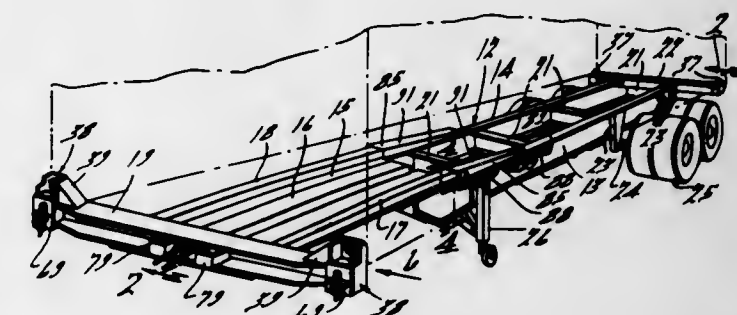
joint for straightening and bending the knee to operate the gripping element.

3,614,152
FOLDING MOBILE SHELTERS
 Allan C. W. Hancock, 134 Eugenie St., St. Boniface, 6 Manitoba, Canada
 Filed July 3, 1969, Ser. No. 839,013
 Int. Cl. B60p 3/34 4 Claims



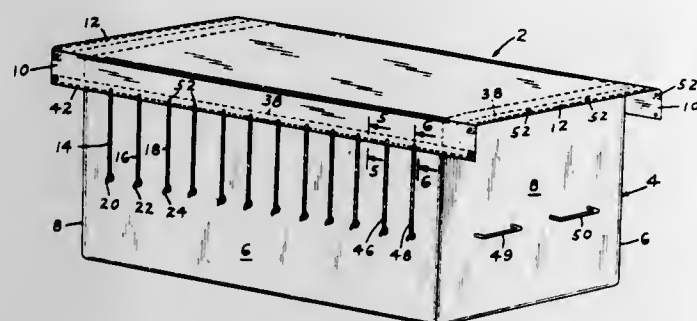
A mobile shelter wherein a portable rectangular open box is telescopically covered by an inverted open box which projects slightly therepast; one end wall of each box is free of the sides thereof at the corners, has one side hinged to its respective box and the other side hinged to the adjacent end wall of the opposite box for swinging movement of the covering box on said end walls to a position above the covered box and for enlargement of the interior of the shelter.

3,614,153
UNIVERSAL TRAILER CHASSIS
 Keith W. Tantlinger, Grosse Pointe Shores, and Adam D. Sweda, Grosse Pointe Farms, both of Mich., assignors to Fruehauf Corporation, Detroit, Mich.
 Filed June 2, 1969, Ser. No. 829,811
 Int. Cl. B62d 27/06
 U.S. Cl. 296-35 A 9 Claims



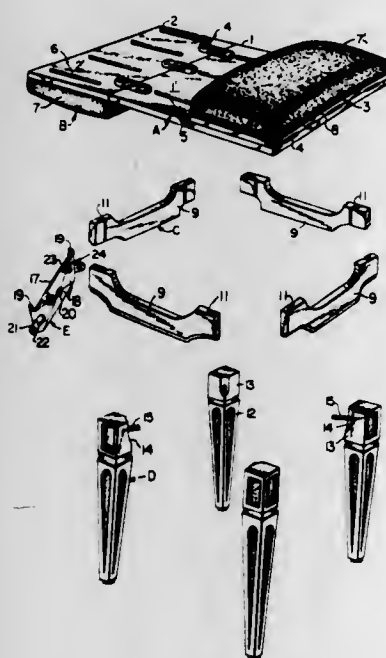
The universal trailer chassis is so constructed as to be able to transport containers of the tunnel and standard types when secured thereon. The container rests upon the rear chassis frame bolster and abuts the front chassis frame bolster to which it is releasably secured.

3,614,154
FLEXIBLE SHEET COVER MATERIAL FOR AN OPEN-TOPPED VEHICLE
 Clarton F. Evans, Warwick, N.Y., assignor to International Paper Company, New York, N.Y.
 Filed June 4, 1970, Ser. No. 43,453
 Int. Cl. B60j 7/10
 U.S. Cl. 296—137 R 10 Claims



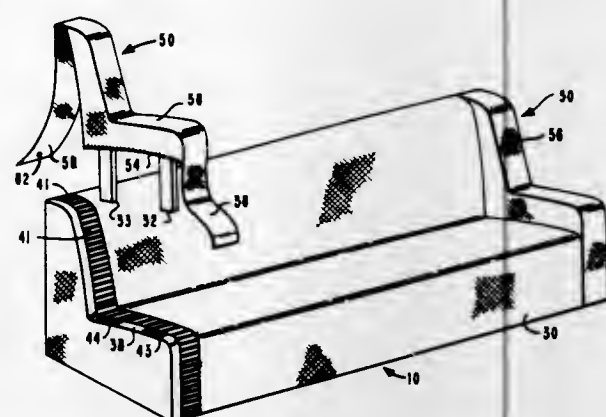
The invention pertains to a novel flexible sheet cover material for an open top vehicle. It also concerns a combination of (1) the vehicle having tiedown cleats or equivalent devices on its sides and (2) the sheet cover material. The cover edges have edge stiffeners which in combination with tiedown cords serve to hold the cover on the vehicle in place.

3,614,155
COMBINATION VANITY STOOL OR SEAT AND LUGGAGE RACK
 William L. Turner, 3153 Estes, Memphis, Tenn.; William H. Campbell, 3008 Highland Drive N.E., Cleveland, Tenn., and Robert E. Mercer, 2797 Treasure Island W., Memphis, Tenn.
 Filed July 7, 1969, Ser. No. 839,606
 Int. Cl. A47c 13/00
 U.S. Cl. 297—129 7 Claims



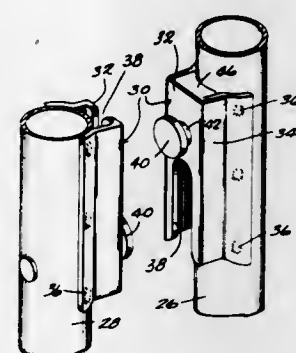
A combination vanity stool and luggage rack including components providing a frame, leg members, a top deck structure, means interconnecting the components together and the top deck structure including a main portion and auxiliary leaf portions displaceable through 180° and having cushions on one face so that in one position, the cushions are uppermost and in another position an increased luggage-supporting area is provided.

3,614,156
FURNITURE UNIT
 Maynard C. Sarvas, 4773 Dogwood, Seal Beach, Calif.
 Filed July 16, 1969, Ser. No. 842,162
 Int. Cl. A47c 31/10
 U.S. Cl. 297—224 10 Claims



Furniture units having readily detachable but permanent appearing covers incorporate a single principal cover element which is tautened in two mutually orthogonal directions by means including interior elastic webbing members disposed along planes transverse to the length of the furniture unit. The elastic members are in turn concealed by arm members which may comprise a combination of padding, retention means and cover.

3,614,157
GANGING ATTACHMENT FOR FOLDING CHAIRS
 Philip J. Hendrickson, and Richard J. Resch, both of Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.
 Filed June 23, 1969, Ser. No. 835,569
 Int. Cl. A47c 15/00
 U.S. Cl. 297—248 2 Claims



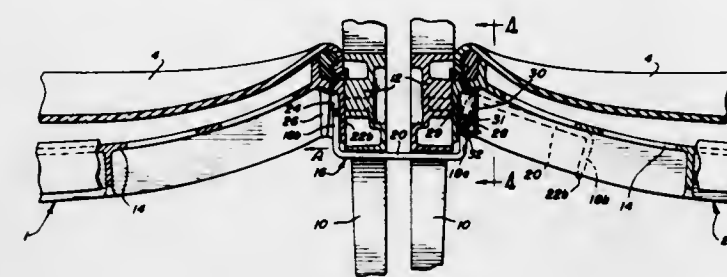
Identical fittings are attached in mutually inverted positions at vertically spaced points on the legs of folding chairs, each fitting being channel-shaped with its flanges welded to the leg and having its web provided with a headed stud at one end and a slot at the other. Relative vertical movement between the chairs so equipped will engage the slotted ends of the respective fittings of one chair with the projecting studs of the adjacent chair, thus interlocking the chairs against lateral separation.

3,614,158
CHAIR GANGING DEVICE
 Robert G. Mohr, Portage, Mich., assignor to Tiffany Industries Inc., Clayton, Mo.
 Filed Dec. 5, 1969, Ser. No. 882,653
 Int. Cl. A47c 1/124
 U.S. Cl. 297—248 3 Claims

A ganging device for interconnecting chairs and the like into rows, including a ganging member mounted beneath the chair on the underside of the seat portion thereof and swingable approximately 180° between a retracted position

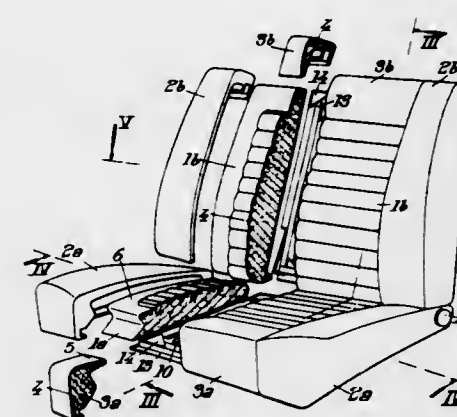
beneath the chair seat and an extended position for securement to an adjacent chair. The ganging member has self-contained resilient means which cooperates with a

respect to its universal centrally arranged socket support. Each support member carrying the supporting socket for the



portion of the chair to provide a toggle arrangement to urge and hold the ganging member in either its retracted or extended position.

3,614,159
SEAT CUSHION
 Georges Christin, Marnes-La-Coquette, France, assignor to Etablissements Bertrand Faure, Puteaux, France
 Filed Feb. 26, 1969, Ser. No. 802,601
 Claims priority, application France, Feb. 27, 1968, 141452
 Int. Cl. A47c 3/00, 7/14; B60n 1/06
 U.S. Cl. 297—452 7 Claims



The seat cushion comprises a central slab of cellular material having marginal zones, and two side members of cellular material each having a projecting edge portion with a free extremity, the projecting edge portion of each said side member covering a respective marginal zone of said central slab and said cellular material of said central slab being of greater resiliency than said cellular material of said side members.

3,614,160
DEVICE FOR BRACING A DRIVING MACHINE WITH RESPECT TO A SHAFT OR TUNNEL WALL
 Gerd Kampf-Emden, Hesel; Heinz Horst, Rheinhausen, and Friedrich Wilhelm Klapdohr, Rheinhausen, all of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
 Filed Oct. 31, 1969, Ser. No. 873,006
 Claims priority, application Germany, Nov. 9, 1968, P 18 07 970.4
 Int. Cl. E21c 29/02; E01g 3/04
 U.S. Cl. 299—1 8 Claims

A device for bracing a tunnel-driving machine with respect to the shaft or tunnel which is being formed includes a central drive machine shaft around which is mounted a carrier sleeve with a plurality of radially extending and circumferentially spaced support assemblies. Each support assembly includes a bracing claw or engaging plate which is universally pivotally mounted on a spherical socket of a radially extending support guide or cylindrical member. A plurality of holding springs engaged around the periphery of the plate are anchored at their opposite ends to the support guide and tend to urge the plate into a central position in

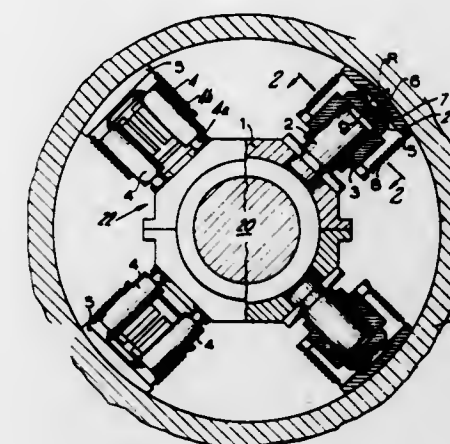
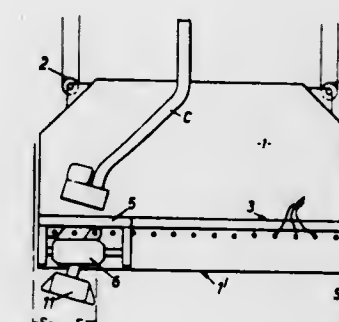


plate may be shifted radially outwardly in respect to the associated support by means of a fluid piston and cylinder combination.

3,614,161
TRENCHING IN ROCKY SOILS
 Giosue Miotti, Milan, Italy, assignor to I.C.D.S. Impresa Costruzioni Opere Specializzate S.p.A., Milan, Italy
 Filed Aug. 15, 1969, Ser. No. 850,365
 Claims priority, application Italy, May 31, 1969, 17626A/69
 Int. Cl. E21c 37/00
 U.S. Cl. 299—10 12 Claims

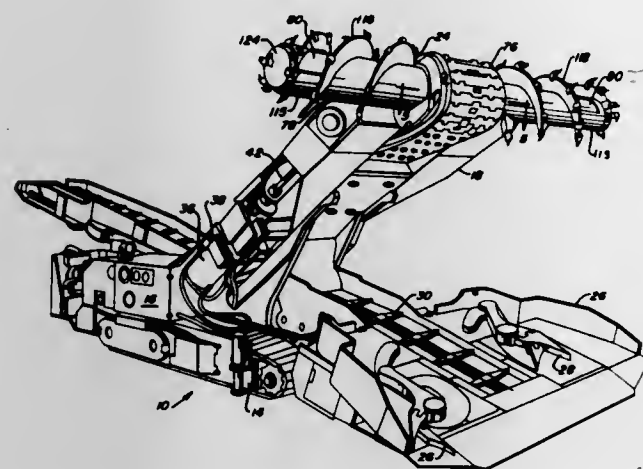


A method and apparatus for the excavation of trenches, more especially for the subsequent construction of subterranean walls, diaphragms or bulkheads, of the type in which an excavating device is caused to advance along a main axis of excavation, comprising a guide of the said device, substantially perpendicular to the said main axis, on said guide being made to run at least one excavating tool in the form of a mandrel which can be rotated about an axis substantially parallel to the said main axis and which has cutting edges on its lateral surface, the said tool discharging the reactions caused by the action of excavation almost exclusively in the transverse direction to the main axis through the said guide and against one or other lateral wall of the excavation.

3,614,162
MINING-MACHINE CUTTING STRUCTURE
 George R. Teeter, 111 Glenview Ave., Oil City, Pa.
 Filed Dec. 24, 1968, Ser. No. 786,650
 Int. Cl. E21c 25/06, 35/20
 U.S. Cl. 299—67 17 Claims

A mining-machine cutting structure and more particularly

a mining head having cutting means consisting of a single or chain of the mining machine has a recess adapted to centrally located cutter supporting chain and cutter- closely receive the projection extending from the base



supporting rotary elements extending outwardly from the sides of the cutting chain.

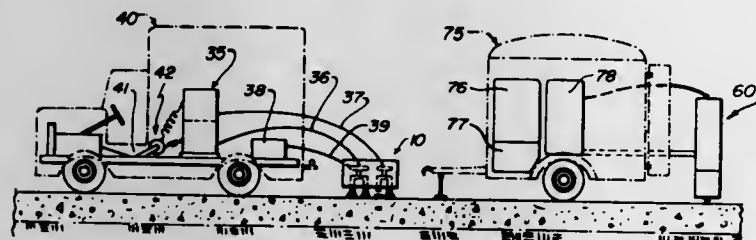
3,614,163
LOW NOISE PROCESS FOR BREAKING PAVEMENT WHICH RELIES UPON REFLECTED TENSILE PULSES TO FRACTURE THE PAVEMENT

Philip J. Anderson, Deerfield, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed July 30, 1969, Ser. No. 846,032
Int. Cl. E01c 23/09

U.S. Cl. 299-14

8 Claims



A method for breaking pavement which, in general, includes the steps of creating a continuous or discontinuous free boundary surface about and defining the area of the surface to be broken or fragmented, and then imparting to this defined area high intensity, short duration compressive wave pulses of such number, location and intensity that these compressive waves when reflected at the free surface as tensile wave pulses will exceed the tensile strength of the pavement and cause the latter to break up so as to produce fragments of a desired size for subsequent removal.

3,614,164
MINE TOOL ADAPTER

Charles S. Davis, Benton, Ill., assignor to The Carmet Company, Pittsburgh, Pa.

Filed Aug. 1, 1969, Ser. No. 846,785
Int. Cl. E21c 25/46, 35/18

U.S. Cl. 299-83

11 Claims

An adapter for mounting a mine tool cutting bit and its holding block on a powered head or chain driven by a mining machine, including a block adapter having a base portion adapted to be affixed to the holding block and a projection extending substantially perpendicularly therefrom. A receptacle portion adapted to be affixed to the powered head

portion of the block adapter and a shoulder portion upon which the base portion surrounding the projection rests.

3,614,165
A WORK HOLDER FOR PROCESSING BRUSH BODIES

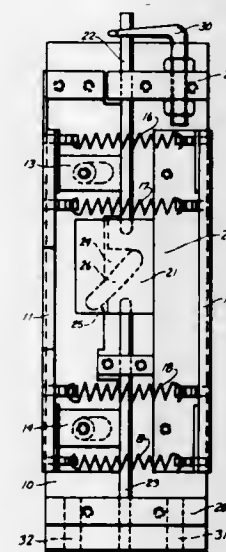
Willi Ebner, Todtnau/Schwarzwald, Germany, assignor to Gottlieb Ebner Maschinenfabrik K.G., Todtnau/Schwarzwald, Germany

Filed Dec. 9, 1969, Ser. No. 883,463
Claims priority, application Germany, Dec. 9, 1968, P 18 13 473.1

U.S. Cl. 300-10

Int. Cl. B25b 1/20

15 Claims



The individual brush body is held within a work holder having cutouts which are gripped for purposes of transporting the work holder between stations. The work holder has at least one movable wall which is caused to bear against the brush body held therein. A rotatable bolt member is actuated for purposes of opening and closing the work holder by moving the movable wall. Supporting blocks and spring brackets within the work holder support and locate precisely the work while being processed at the work stations.

3,614,166
ARTICLE-FEEDING SYSTEM

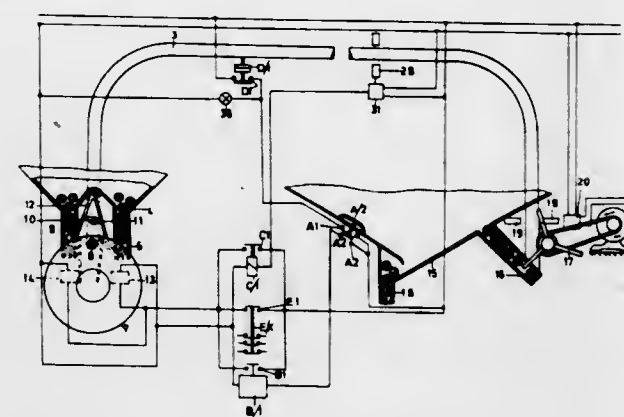
Wolfgang Spitz, Dusseldorf, Germany, assignor to Tobacco Research and Development Institute Limited, Zug, Switzerland

Filed Dec. 20, 1968, Ser. No. 785,463
Claims priority, application Great Britain, Jan. 2, 1968, 305/68

U.S. Cl. 302-2

Int. Cl. B65g 53/00

2 Claims



The invention is concerned with a pneumatic conveyance system in which rod-shaped articles such as filter rods are dispatched into a pipeline at a point of supply, pneumatically conveyed to a point of consumption, extracted from the pipeline and fed to a storage bin from which consumption takes place. In the system of the invention rods can be fed into the pipeline at two rates, one of which is higher than the expected rate of consumption and the other of which is lower. If the bin level goes too high, the second rate is applied and if the bin level drops, the first rate is applied. Thus conveyance is never completely interrupted.

3,614,167
APPARATUS FOR CONVEYING AND HANDLING ARTICLES

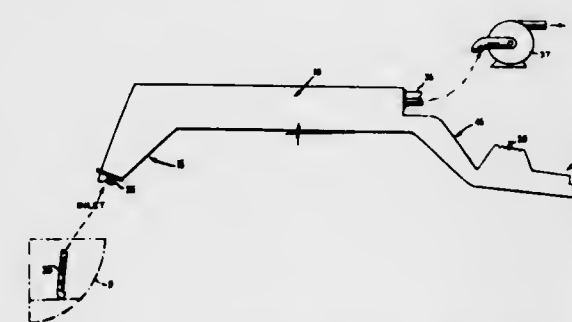
William C. Patterson, Canso, Nova Scotia, Canada, assignor to Atlantic Bridge Company Limited, Lunenburg, Nova Scotia, Canada

Filed Sept. 29, 1969, Ser. No. 861,890
Claims priority, application Canada, Oct. 8, 1968, 031,923

U.S. Cl. 302-14

Int. Cl. B65g 53/30

18 Claims



An apparatus for conveying and handling somewhat delicate objects, such as fish, which includes an elongated generally horizontally disposed chamber the interior of which is connected to the intake of a suction fan. An elongated intake pipe is connected to one end of the elongated chamber and an exit chute is connected to the opposite end of the chamber. The exit chute includes a water trap therein to permit passage of articles therethrough while preventing entry of air into the chamber. The subatmospheric pressure created within the chamber by the suction fan arrangement causes air to flow rapidly through the intake pipe to carry the articles therethrough into the interior of the chamber where they are decelerated prior to passing into the exit chute. The device is provided to flow a stream of water longitudinally of the chamber from the end connected to the intake pipe to the other end which is connected to the exit chute thereby to assist in decelerating the articles while assisting in preventing damage thereto.

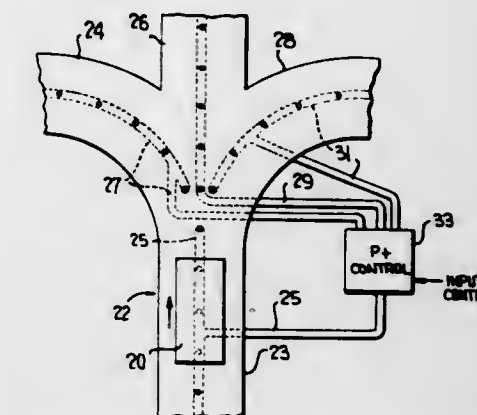
3,614,168
BERNOULLI CONVEYOR

Richard J. Range, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Sept. 30, 1969, Ser. No. 862,287
Int. Cl. B65g 53/04

U.S. Cl. 302-31

11 Claims



An improved Bernoulli conveyor comprises an endless belt supported above and propelled along a surface by angled airjets issuing from ports which are formed in the surface and define a path for the belt. In a further improvement, a plurality of paths are so defined, the ports in each path communicating with respective manifolds which are selectively pressurized to switch the path of the belt. A similar switching technique is employed for individual documents supported above and propelled along selectable paths on a surface without a belt. Additionally, an improved port configuration is disclosed for issuing the angled jets wherein the port wall flares outwardly in the conveyor surface so as to permit the Coanda phenomenon to cause the jet to issue along the surface, thereby increasing the propelling component of the angled jet.

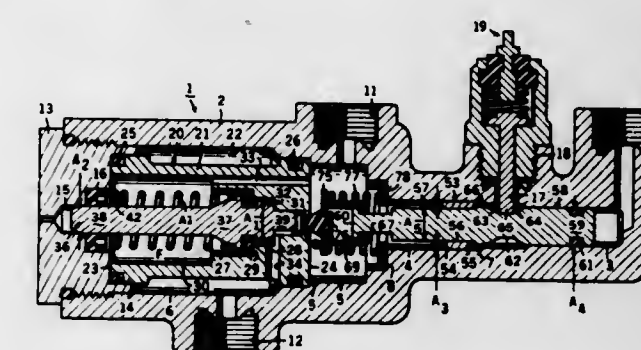
3,614,169
CONTROL VALVE

Richard C. Bueler, Glendale, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Mar. 26, 1970, Ser. No. 22,904
Int. Cl. B60t 8/26, 15/00, 17/22

U.S. Cl. 303-6 C

7 Claims



A control valve for use in a dual or split brake system having a shuttle or warning piston movable from a centered position to opposed translated positions to energize a driver-warning lamp in response to a predetermined differential between separate supplied fluid pressures acting thereon. A divider member is provided in the control valve defining a flow passage therethrough for one of the supplied fluid pressures, and a proportioning valve is movable in said flow passage to control the application therethrough of the one supplied fluid pressure. A bypass passage for subjection to the one supplied fluid pressure is also provided in the divider member connected with the flow passage in bypass relation with the proportioning valve, and a valve member is normally urged into engagement with the divider member closing the bypass passage. A lost motion connection is provided between the valve member and the shuttle piston wherein

said valve member is moved to a position opening the bypass passage upon the movement of said shuttle piston to one of its translated positions.

3,614,170

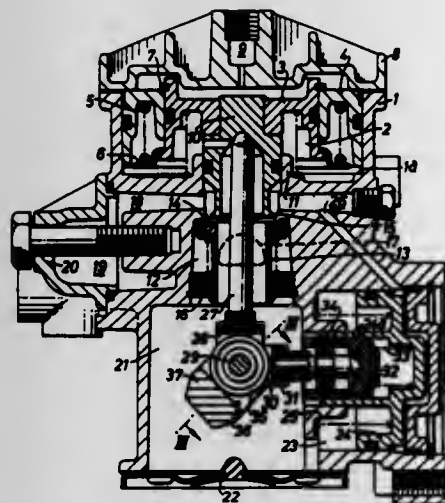
APPORTIONING VALVES FOR BRAKE SYSTEMS

Wilbur Mills Page, London, and Ralph Coupland, Lincoln, both of England, assignors to Clayton Dewandre Company Limited, Lincoln, England
Division of Ser. No. 793,763, Jan. 24, 1969. Filed Apr. 13, 1970, Ser. No. 27,703

Claims priority, application Great Britain, Jan. 29, 1968; May 16, 1968, 4489/68; 23,374/68
Int. Cl. B60t 8/18, 13/26

U.S. Cl. 303—7

5 Claims



An apportioning valve for use in an air pressure braking system comprises piston means responsive to brake line or signal pressure, valve means actuated directly by the piston means and controlling operative pressure air flow to the brake actuators, and a reaction piston responsive to the operative braking pressure and acting on the valve means in opposition to the piston means, the reaction piston acting through a member riding on an inclined plane the angle of which varies with vehicle load thereby varying the degree of reaction for a given braking effort. A relay emergency valve is mounted on or in other association with the apportioning, and it has a service port for connection to a brake control line and an emergency port for connecting to a tractor reservoir, both ports leading to the signal pressure side of the apportioning valve.

3,614,171

ANTISKID MECHANISM

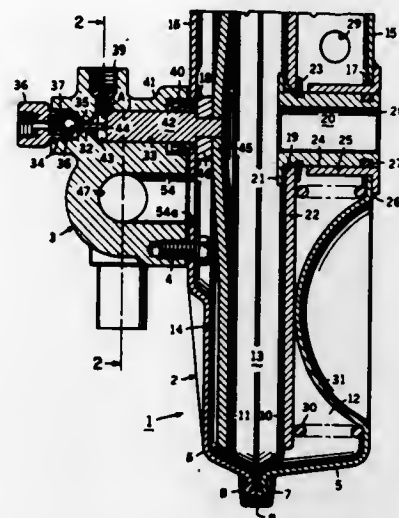
John A. Machek, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Division of Ser. No. 825,087, May 8, 1967, Pat. No. 3,556,466.
Filed Aug. 21, 1970, Ser. No. 66,026
Int. Cl. B60t 17/18, 8/02

U.S. Cl. 303—21 AF

11 Claims

An antiskid device is provided with a control valve actuated in response to signals from a sensing mechanism of impending vehicle skid conditions to respectively subject a control member to atmosphere and selectively subject said

control member to vacuum for controlling the application of supplied fluid pressure to the vehicle brakes, and a resiliently



urged member is provided for disabling said control member in the event the vacuum is lost.

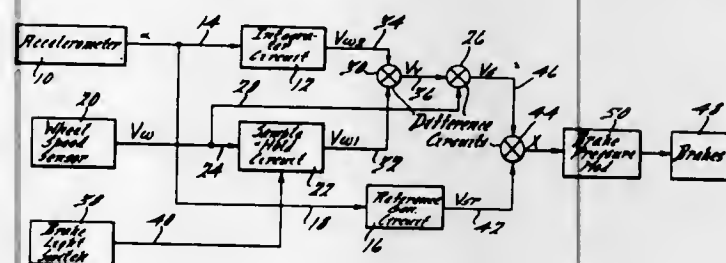
3,614,172

SKID CONTROL SYSTEM

Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Feb. 27, 1969, Ser. No. 802,992
Int. Cl. B60t 8/08

U.S. Cl. 303—21 BE

10 Claims



A skid control system for a wheeled vehicle varies the braking pressure as a function of slip speed which varies as a function of vehicle deceleration. The deceleration of the vehicle is detected and integrated to produce a signal V_{w2} representative of the actual loss of velocity of the vehicle. This signal V_{w2} is subtracted from initial vehicle velocity V_{w1} to get a signal V_v indicative of instantaneous vehicle velocity. By subtracting instantaneous vehicle velocity V_v from linear wheel velocity V_w the slip speed signal V_s is obtained. The slip speed signal V_s is fed to a difference circuit which produces an output X when V_s exceeds a reference slip signal V_{sr} which varies as the deceleration. Output signal X causes actuation of a modulator to relieve brake pressure.

3,614,173

SLIP COMMAND SKID CONTROL

Orland D. Branson, Sunland, Calif., assignor to The Bendix Corporation

Filed June 27, 1969, Ser. No. 837,067

Int. Cl. B60t 8/10

U.S. Cl. 303—21 P

20 Claims

A skid control system is described which modifies an operator's brake pressure request in such manner as to deliver maximum braking effectiveness by continuously searching the roadway surface condition to determine the percentage of tire slip at which maximum braking occurs and to modulate the brake pressure such that the percent tire slip is forced into the region resulting in maximum braking. An electrical wheel speed signal is generated in each braked wheel in which frequency varies with speed, and these signals

3,614,175

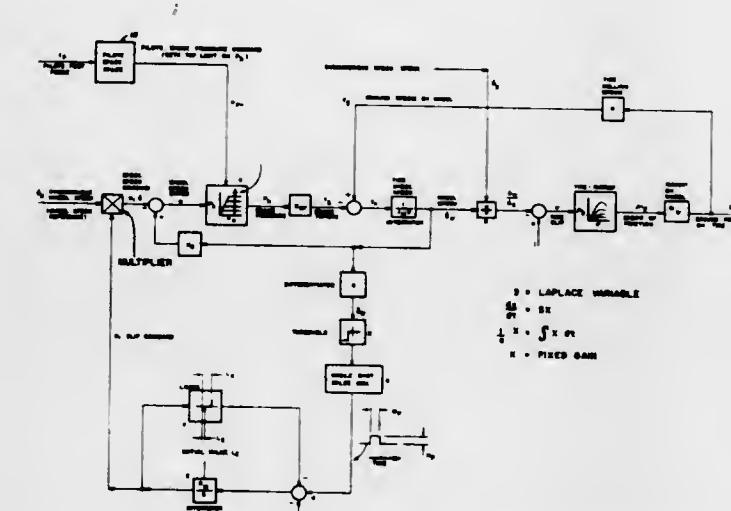
VEHICLE BRAKING SYSTEMS

Thomas G. Lawson, Tyseley, Birmingham, England, assignor to Girling Limited, Tyseley, Birmingham, England
Filed Feb. 18, 1969, Ser. No. 800,092
Claims priority, application Great Britain, Feb. 21, 1968, 8491/68

Int. Cl. B60t 8/18

U.S. Cl. 303—22 R

4 Claims



indicating the point of maximum braking has been passed, an output pulse is provided which effectively reduces the slip command signal (percent slip) to force the slip back to slightly below the maximum braking point. The percent slip command is slowly increased at a fixed rate until the cycle is repeated, thus continuously locating the point of maximum braking point. The percent slip command is slowly increased at a fixed rate until the cycle is repeated, thus continuously locating the point of maximum braking and keeping the system in this region.

3,614,174

ANTISKID CONTROL SYSTEM

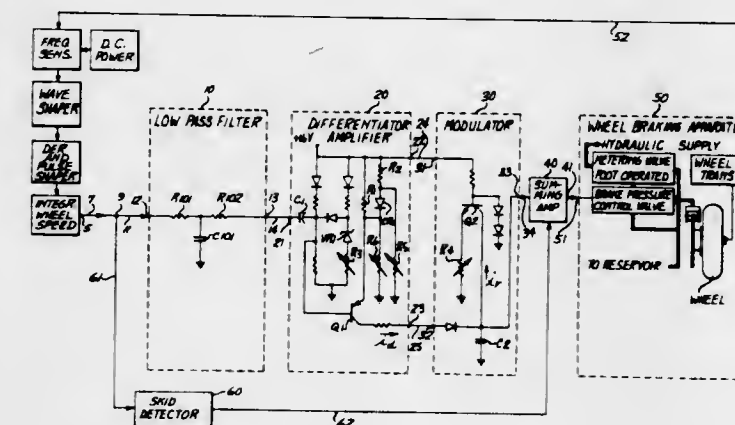
Ervin G. Romero, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 22, 1969, Ser. No. 843,569

Int. Cl. B60t 8/12

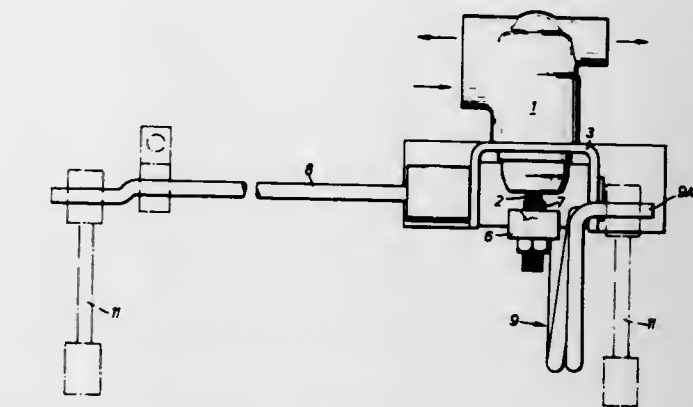
U.S. Cl. 303—21 CG

7 Claims



An antiskid control system for controlling a wheel being braked which includes circuits for causing the system to respond continuously to overtorque conditions of the wheel previous to the occurrence of larger torque imbalance conditions indicative of skid conditions. The system comprises a novel combination of circuitry, including a wheel driven generator, a differentiator circuit including an amplifier, and modulator circuits for providing a modulated valve control signal for causing a decrease or increase of applied braking effort to the wheel being braked as a function of the deceleration rate of the wheel.

The combination, with a rotatable wheel and fluid-pressure-actuated brake for braking rotation of the wheel, of a mechanical control for preventing the wheel from locking during braking in which a frequency sensitive driven vibrating system having a predetermined resonant frequency is forced to vibrate at frequencies proportional to the rotational speed of the wheel and wherein displacement of one component of the vibrating system through a predetermined amplitude during forced vibration thereof at the predetermined resonant frequency actuates a fluid flow control for precluding increase in braking effect exerted on the wheel.



The invention relates to pressure control arrangements for hydraulic brake systems on vehicles having an independent suspension for the front and/or rear wheels. The invention resides in an arrangement in which a pressure control valve (which may be an intensifying, reducing or pressure-limiting valve) and a control linkage for transmitting a force corresponding to vehicle loading to the valve for altering the cutoff pressure thereof, wherein the valve is loaded by separate spring means coupled to respective independently sprung wheel assemblies on opposite sides of the vehicle, the loadings imposed by the respective springs being additive in their control effect upon the valve. Thus, the linkage serves to average out the effects of different deflections of the sprung wheel masses on opposite sides of the vehicle and at the same time avoids the expense and characteristic difficulties involved in having two separate control valves controlled by deflections on the respective sprung wheel assemblies to which they are subject.

3,614,176

BRAKE CONTROL FOR PREVENTING LOCKING DURING THE BRAKING OF A ROTATING WHEEL

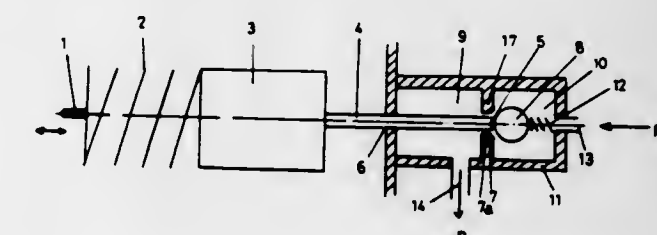
Jan-Olov M. Holst, Laduvagen 12, 75247 Uppsala; Rolf E. Nordstrom, Johan Enbergsvag 48A, 17161 Solna, and Christer U. Ekenberg, Apoteksvagen 6, 74100 Kalvsta, all of Sweden

Filed May 20, 1969, Ser. No. 826,180

Int. Cl. B60t 8/06

U.S. Cl. 303—61

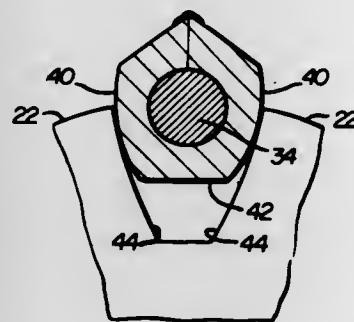
19 Claims



3,614,177
CHAIN BUSHING AND METHOD OF MAKING SAME
 Kenneth L. Magee, and John F. Wilson, both of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.
 Filed June 6, 1969, Ser. No. 831,027
 Int. Cl. B62d 55/08

U.S. Cl. 305—57

4 Claims

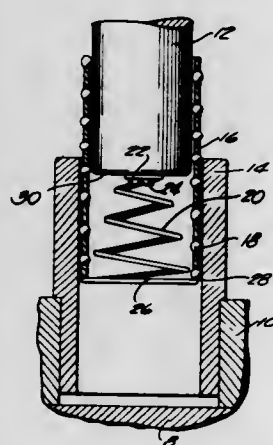


A bushing for interconnecting links of a track chain and which has inclined bearing surfaces which cooperate with corresponding surfaces defined on teeth of a drive sprocket. The bushing is formed from a blank having a first wall defined by a partially developed surface capable of defining the wall of a circular aperture in its final configuration and defined between opposite ends. The blank also includes a second opposed wall having spaced arcuate surfaces interconnected by an intermediate recessed area. The blank is deformed, as by rolling, to reposition the partially developed surface to define the wall of a circular opening and locate the surfaces angularly with respect to each other and parallel to the axis of the opening or aperture. The ends of the first wall are interconnected and the blank cut into sections with the opposite ends subsequently operated upon to produce circular hubs surrounding the opening on opposite ends of each section.

3,614,178
BALL BEARING FOR DIE SET LEADER PIN
 Richard R. Stamm, Brookfield, Wis., assignor to Superior Die Set Corporation, Oak Creek, Wis.
 Filed Jan. 20, 1970, Ser. No. 4,317
 Int. Cl. F16c 29/00

U.S. Cl. 308—4 C

3 Claims



A cage intervening between a leader pin and bushing in a die set is provided with ball bearings which guide the leader pin. As the leader pin moves in the bushing, the bearings roll between the leader pin and bushing, and the cage is caused to advance in a corresponding direction at half the rate of the leader pin. A spiral coiled spring fixed to the leader pin has its lowermost coil closely fitted within the bushing at substantially the radius of the cage where it can collapse under the leader pin in the lowest position thereof. At full length it supports the cage in elevated leader pin positions such that the cage might otherwise be released to depart from the desired relationship between the relatively movable parts.

3,614,179
BEARING CONSTRUCTION
 James C. Hosken, 15 Hobart Terrace, Newton Centre, Mass.
 Filed Oct. 1, 1969, Ser. No. 862,890
 Int. Cl. F16c 19/00, 29/00

U.S. Cl. 308—6 R

3 Claims

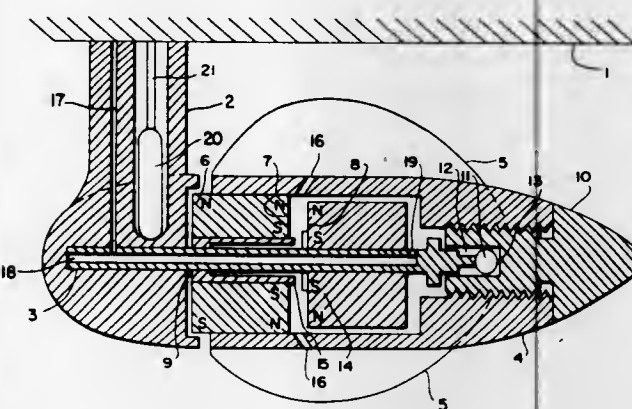


A bearing is provided between a cylindrical member and a tubular member to facilitate relative axial movement of the two members while impeding any other type of movement. The bearing consists of at least two toroids spaced from one another axially. Each toroid comprises a garter spring, that is to say, a helical arrangement which closes on itself so that it forms one closed toroid. The toroids roll in the manner of a smoke ring when relative linear movement of the members occurs.

3,614,180
BEARING ARRANGEMENT FOR A ROTOR
 Palle-Finn Beer, Lidings, Sweden, assignor to AGA Aktiebolag, Lidings, Sweden
 Filed Mar. 18, 1970, Ser. No. 20,633
 Claims priority, application Sweden, Mar. 19, 1969, 3785/69
 Int. Cl. F16c 39/06

U.S. Cl. 308—10

7 Claims



Bearing arrangement for a rotor which is rotatable around a fixed axle and subjected to a varying axial load. This load is taken up by the magnetic repulsion between a magnetic element connected to the axle and a magnetic element connected to the rotor. The axial repulsion force between the magnetic elements is counteracted by an axial pressure in an axial contact seating whereby an increasing axial load on the rotor brings about an axial pressure in the contact seating which diminishes towards zero.

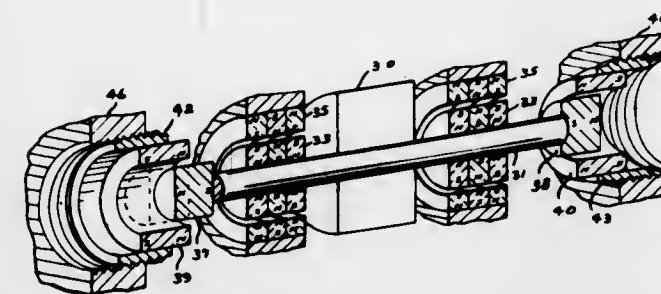
3,614,181
MAGNETIC BEARING FOR COMBINED RADIAL AND THRUST LOADS
 Crawford R. Meeks, Granada Hills, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
 Filed July 2, 1970, Ser. No. 51,789
 Int. Cl. F16c 39/06

U.S. Cl. 308—10

3 Claims

A combined radial and thrust magnetic bearing system having a shaft with a plurality of radially polarized magnets secured to the shaft. The radially polarized magnets being positioned within a plurality of corresponding magnets polarized radially opposite to the magnets on the shaft. A pair of axially polarized magnets are also secured to the

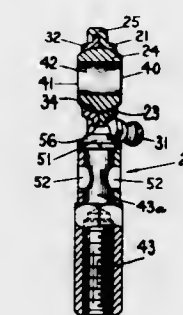
shaft. The axially polarized magnets being positioned within member and engages the flexing gasket. When force is annular axially polarized magnets which are adjustably exerted axially against the radial flange in one direction and



3,614,182
SPHERICAL BEARING ASSEMBLY
 Alfreds R. Rozentals, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.
 Filed Dec. 22, 1969, Ser. No. 887,217
 Int. Cl. F16c 9/04

U.S. Cl. 308—72

8 Claims



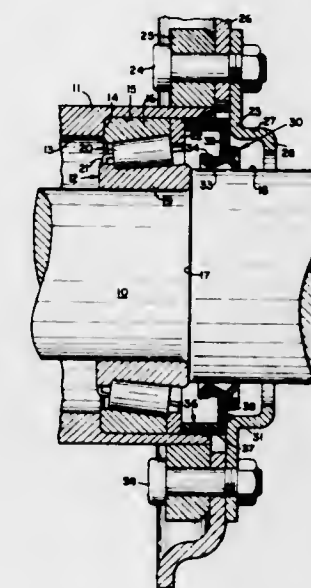
A self-aligning, spherical bearing assembly comprising a first and second housing member, each of said housing members having circular openings therethrough with each opening being defined by a spherical seating portion, a spherical ball rotatably enclosed within said housing members and in alignment with said openings and seated on said spherical seating portions, interlocking means integral with at least one of said housing members for mechanically interlocking said first housing member to said second housing member.

3,614,183
SHAFT SEAL WITH EXPANDABLE OUTER PERIPHERY
 Alfred S. Berens, Farmington; Dean R. Rainard, Novi, and George L. Corsi, Southfield, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
 Filed Feb. 19, 1970, Ser. No. 12,563
 Int. Cl. F16c 33/76

U.S. Cl. 308—187.1

21 Claims

A rigid reinforcing member has a cylindrical portion slip-fitting in the bore and an inwardly extending radial flange. An elastomeric sealing lip is supported for shaft contact by the radial flange while a cylindrical flexing gasket is supported by the cylindrical portion and extends beyond it. A separate rigid ring slip-fits inside the rigid reinforcing

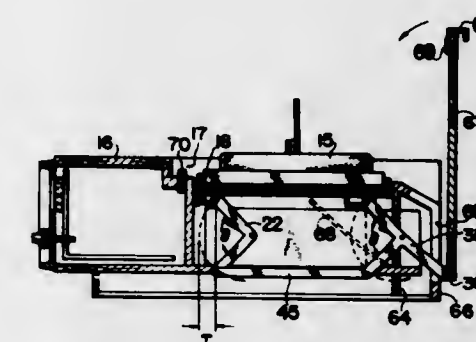


against the separate ring in the other, the gasket is forced out into sealing engagement with the bore wall.

3,614,184
RECORD PLAYER
 Yasuro Yawata, and Nobuhiro Nakae, both of Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Feb. 12, 1969, Ser. No. 798,592
 Claims priority, application Japan, Apr. 26, 1968, 35,293/68
 Int. Cl. A47b 81/06

U.S. Cl. 312—8

4 Claims



A record player in which a turntable, a pickup, a phonomotor driving said parts, etc. are combined into a unit and the cover thereof is opened or closed in conjunction with the raising and lowering of the unit, so that the unit is raised to come out of the upper surface of the cabinet of the record player when the record player is uncovered for use and the said unit is lowered to be enclosed inside the cabinet when the record player is covered and not used, thereby reducing the size of the record player as well as markedly facilitating the handling thereof.

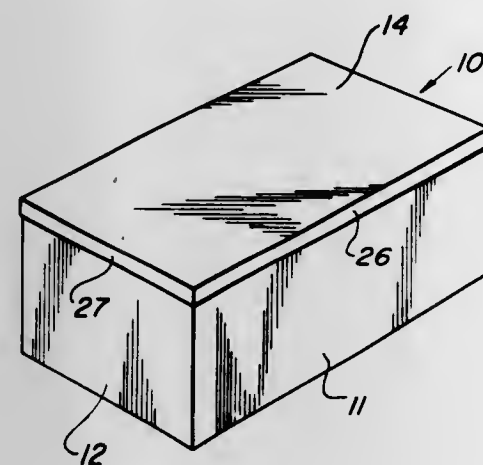
3,614,185
FILE BOX AND FILE SUSPENSION DEVICE THEREFOR
 Robert E. Splan, 730 Walkiki Drive, Des Plaines, Ill.
 Filed July 2, 1969, Ser. No. 838,538
 Int. Cl. A47b 63/00

U.S. Cl. 312—184

4 Claims

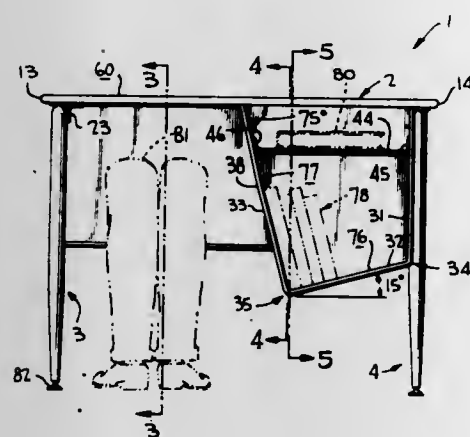
A file box and flexible, resilient suspension device therefor in which the flexible, resilient suspension device includes a body portion which is disposed adjacent the inner surface of a sidewall of the file box and has flexible, resilient clamping means at its upper end which extends laterally from the said body portion at the outer side thereof and is removably mounted in clamping engagement on and with the upper end portion of a sidewall of the file box. The body of the flexible

suspension device extends from end to end of the sidewall of the file box and has file-supporting means in the form of an intumed supporting arm or flange at its lower end and extending laterally from the said body portion on the inner side thereof. The file members are arranged in vertical parallel relationship in the file box and are removably supported by supporting means arranged at the ends of each file member and which rest on the supporting means at the



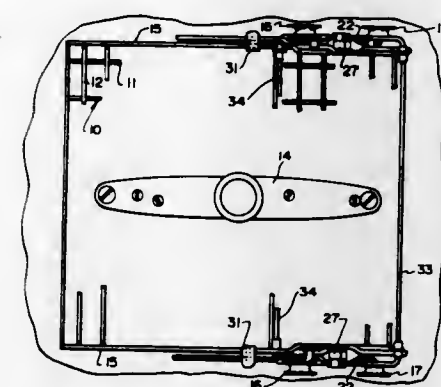
lower end of the suspension device. The construction of the file box and of the said flexible, resilient suspension device therefor are such that the file box may be closed by means of the cover or lid therefor and the file boxes stacked one upon another without interfering with or damaging or impinging upon the files in the file boxes or the said flexible, resilient suspension devices therefor.

3,614,186
STUDENT DESK
Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.
Filed Sept. 24, 1969, Ser. No. 860,509
Int. Cl. A47b 17/00
U.S. Cl. 312-194 14 Claims



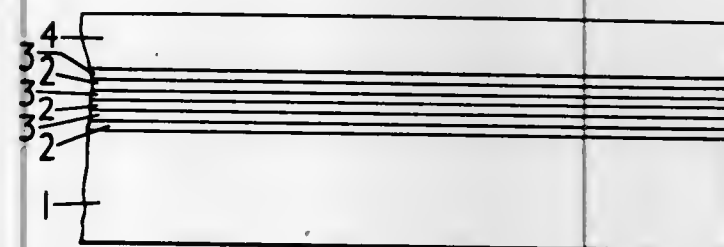
A student desk having a horizontal top, leg structures at each side of the top, and a book box offset toward one side of and below the top. The book box has a sidewall and lower wall inclined from horizontal in the same direction to support books in both a standup or laydown position. The book box is secured to the top and to the leg structure at one side of the desk, a modesty panel is secured to the book box and the leg structure at the other side of the desk, and the book box and panel strengthen the leg structures.

3,614,187
APPARATUS FOR SUPPORTING ARTICLES IN A DISHWASHER
Victor W. Cuthbert, Sodus, Mich., assignor to Whirlpool Corporation
Filed Feb. 10, 1970, Ser. No. 10,252
Int. Cl. A47b 88/04
U.S. Cl. 312-351 10 Claims



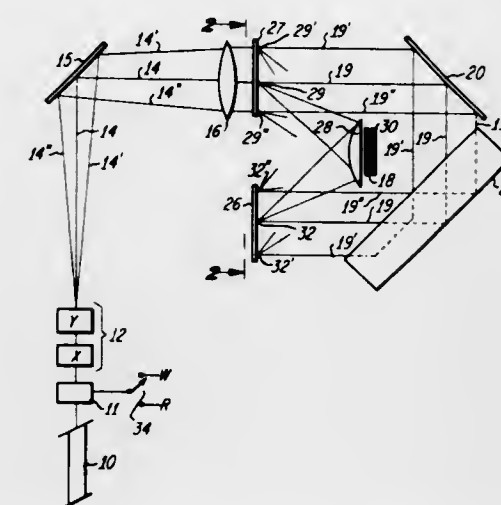
A wheeled basket for supporting articles in a dishwasher so that the basket rolls on a horizontal track and can be pulled out for loading and unloading and can be pushed into the dishwasher for the washing operation in which a pair of wheels is located on each side of the basket and with each pair of wheels being vertically spaced to engage opposite sides of a supporting guide track that forms a part of the dishwasher, a pair of levers each movable about a fulcrum on the basket at a lateral side with each lever rotatably carrying a wheel spaced from the corresponding fulcrum, a linkage of fixed length interconnecting the levers at areas spaced from the fulcrums, and with the levers being movable in vertical planes about their fulcrums for changing the vertical elevation of the wheels while still maintaining the vertical spacing between each pair of wheels. The invention also includes multiple spaced retainers on each side of the basket for holding the levers in adjusted position so that the vertical spacing of the pair of wheels on each side of the basket will be maintained until the levers are changed to a new setting. This varying of the vertical positions of the pair of wheels regulates the elevation of the basket in the dishwasher and permits the basket to accommodate articles of various height.

3,614,188
CESIUM IODIDE INTERFERENCE FILTER WITH MOISTURE RESISTANT LAYER
John Scott Seeley, 1 Churchill Crescent, Sonning Common, Reading; Stanley Desmond Smith, 21, Simon's Lane, Wokingham, Reading; and Frederick Stafford Ritchie, Walkergate, Newcastle upon Tyne 6, all of England
Filed Sept. 16, 1969, Ser. No. 858,302
Claims priority, application Great Britain, Oct. 23, 1968, 50,381
Int. Cl. G02b 5/28
U.S. Cl. 350-1 4 Claims



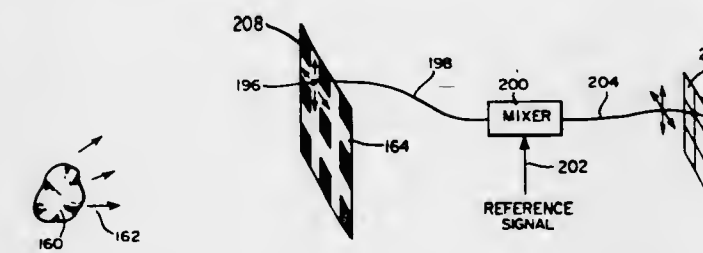
An interference multilayer filter for use with infrared radiation comprising a system of alternating layers of materials having different refractive indices deposited on a substrate at least some of the layers being of cesium iodide.

3,614,189
HOLOGRAPHIC MEMORY WITH ILLUMINATION HOLOGRAM PROVIDING REFERENCE AND OBJECT BEAMS
Wilber Clarence Stewart, Hightstown, and Louis Salvatore Cosentino, Belle Mead, both of N.J., assignors to RCA Corporation
Filed Apr. 23, 1970, Ser. No. 31,162
Int. Cl. G02b 27/00
U.S. Cl. 350-3.5 6 Claims



A holographic optical memory is disclosed which utilizes an erasable storage medium such as manganese bismuth. Light from a laser is directed to an illumination hologram, from which a diffracted beam illuminates an object. Light from the object is condensed on a small area of the storage medium. The undiffracted light passing through the illumination hologram is directed as a reference beam to the storage medium, where it interacts with the object beam to record a hologram of the object on the storage medium.

3,614,190
UNDISTORTED IMAGE DEMAGNIFICATION BY HOLOGRAPHIC INFORMATION SAMPLING
Kenneth A. Haines, Hockessin, Del., assignor to Holotron Corporation, Wilmington, Del.
Filed Mar. 28, 1969, Ser. No. 811,438
Int. Cl. G02b 27/22
U.S. Cl. 350-3.5 7 Claims

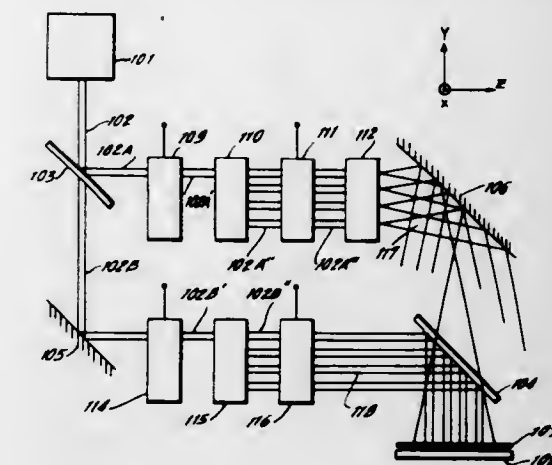


A technique of periodically sampling holographic information to construct a reduced size hologram with the sampled information being joined side-by-side from which a demagnified image of the original object is reconstructed.

3,614,191
ASSOCIATIVE MEMORY EMPLOYING HOLOGRAPHY
Mitsuhito Sakaguchi, and Nobuo Nishida, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Apr. 1, 1969, Ser. No. 812,069
Claims priority, application Japan, Mar. 29, 1968, Mar. 29, 1968, 20907; 20908; 20909
Int. Cl. G02b 27/22
U.S. Cl. 350-3.5 11 Claims

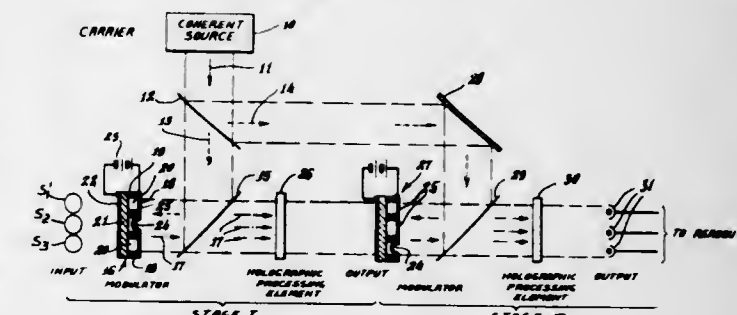
An associative memory employing holographic techniques. During read-in first and second space modulated beams are each split into true and complementary groups of binary

modulated beams. The resulting beam groups are caused to interact with one another to form a hologram. Upon readout, one or more digit positions are caused to scan many of the patterns of the hologram. Those patterns in the hologram



having digit positions which coincide with the interrogating digit positions are readout of memory in their entirety (i.e. both the coincident digit positions and the remaining digit positions of a pattern are readout of memory).

3,614,192
HOLOGRAPHIC LOGIC OPERATOR FOR AN OPTICAL DATA PROCESSING SYSTEM
Kendall Preston, Jr., New Haven, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Division of Ser. No. 736,505, June 12, 1968, Pat. No. 3,553,460.
Filed Dec. 18, 1969, Ser. No. 888,110
Int. Cl. G02b 27/00
U.S. Cl. 350-3.5 3 Claims

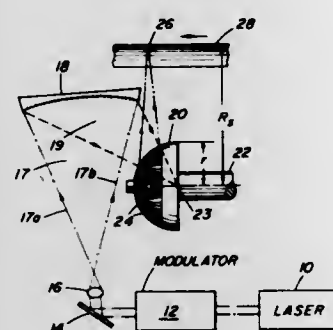


A method of processing information by combining regions of a radiant energy beam which have been modulated according to the information. The combination is performed according to a pattern of phase relationships which produces the desired function of the information. A preferred apparatus for performing this method includes a source of coherent radiation, means for phase modulating regions of the beam and a holographic processing element which corresponds to an array of points having the selected pattern of phase relationships. The output may be determined by a second modulating means associated with a subsequent processing stage or by a readout means.

3,614,193
LIGHT SCANNING SYSTEM UTILIZING DIFFRACTION OPTICS
Leo Beiser, Flushing Manor, N.Y., assignor to Columbia Broadcasting Systems, Inc.
Filed Apr. 15, 1970, Ser. No. 28,638
Int. Cl. G02b 17/00
U.S. Cl. 350-7 9 Claims

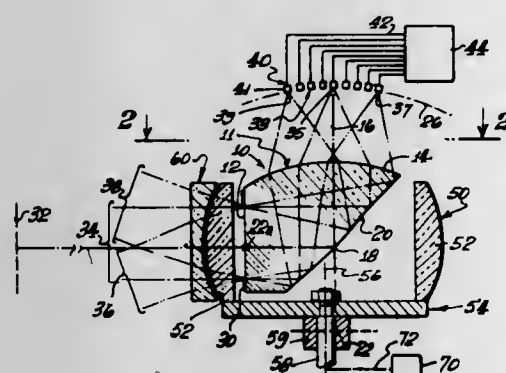
For use in apparatus for transmitting and/or recording intelligence, optical scanning means including a spinner element in the form of a partial sphere having a plurality of diffracting zone-type lenses distributed therearound and adapted for continuous rotation about a concentric axis, and

an optical system for directing onto said spherical surface light flux converging to a first focal point on the rotational axis of the spinner so that each impinging ray arrives substantially normal to the spherical surface. The individual zone-type lenses reconverge rays impinging thereon to new



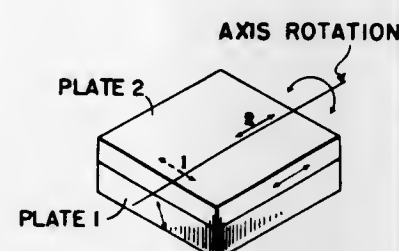
foci which scan an image surface lying along a circular locus as the spinner is rotated. The optical system which converges the incoming light onto the spinner element is preferably nonaxial with respect to the rotating system, and may comprise either a diffraction reflector or a geometrical reflector.

3,614,194
WIDE FIELD OPTICAL SCANNER
Clyde W. Harris, Santa Barbara, Calif., assignor to The Te Company, Santa Barbara, Calif.
Filed June 27, 1969, Ser. No. 837,120
Int. Cl. G02b 17/00
U.S. Cl. 350-7
5 Claims



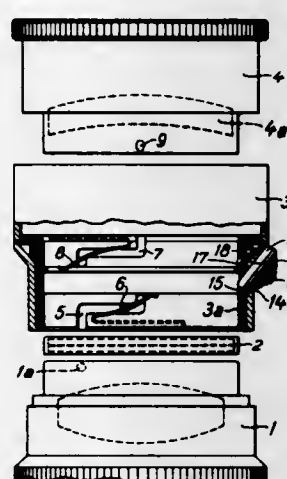
Raster scanning of a scene is produced by coaxial rotation of a ring of planoconvex refractive elements mounted with their convex faces in a common spherical surface. A complementary plano-concave window element is fixedly mounted just outward of the ring on the radial optical axis, compensating the convex curvature of the ring elements. The window and the adjacent ring element form a prism of variable angle, deflecting the optical axis in scansion in the plane of the ring. The scene is imaged by a thick optical lens fixedly mounted on the optical axis within the rotating ring, with plane entrance face closely adjacent the ring elements and with spherically convex exit face centered optically at the entrance face, which then acts as entrance pupil. The lens element has an integral totally reflective face which obliquely intersects the optical axis between entrance and exit faces, directing the axis along the axis of ring rotation. The spherical image surface can then accommodate an extended line of radiation sensors, providing an extended field in the plane perpendicular to the scanning plane.

3,614,195
RETARDATION COMPENSATOR PLATE FOR A POLARIZING MICROSCOPE
David W. Vollmer, Brighton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,465
Int. Cl. G02b 29/28
U.S. Cl. 350-13
11 Claims



A retardation plate for use in an Ehringhaus-type compensator for measuring retardation of light in a polarizing microscope, said plate being composed of two elements of plane parallel polished crystal quartz, the relative thickness of which have numerical ratio other than 1.0 and preferably have a numerical ratio of substantially 0.6.

3,614,196
COMBINED LENS HOOD AND FILTER SUPPORT
Werner Schlapp, Asslar, Germany, assignor to Ernest Leitz GmbH, Wetzlar, Germany
Filed Aug. 31, 1970, Ser. No. 68,374
Claims priority, application Germany, Sept. 12, 1969, May 29, 1970, P 19 46 284.1; P 20 26 345.0
Int. Cl. G03b 11/04
U.S. Cl. 350-58
6 Claims

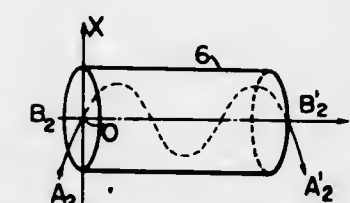


A lens hood adapted to be mounted on the front portion of an objective, to support a filter in front of the objective, to be reversibly mountable on the objective for transporting and having a friction wheel for holding and rotating the filter.

3,614,197
SOLID OPTICAL WAVE GUIDE HAVING A RADIALLY VARYING REFRACTIVE INDEX
Jun-ichi Nishizawa; Shojiro Kawakami, and Kiyasu Zen'iti, all of Sendai-shi, Japan, assignors to Semiconductor Research Foundation, Kawachi, Sendai-shi, Japan
Filed Apr. 23, 1968, Ser. No. 723,402
Claims priority, application Japan, Apr. 27, 1967, 27,054
Int. Cl. G02b 5/14
U.S. Cl. 350-96 WG
4 Claims

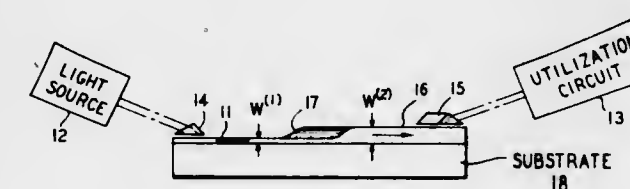
An apparatus for transmitting high-speed modulated light includes a solid optical waveguide comprising a medium having a refractive index which progressively decreases in the radial direction within the cross-sectional area of the optical

waveguide so as to minimize variations in the average of direct viewing in terms of diffuse light controlled by the transmission velocity of the light beam in the axial direction pigment and of episcopic projection onto a viewing screen in



of the guide which are caused by different routes of travel of the light beam.

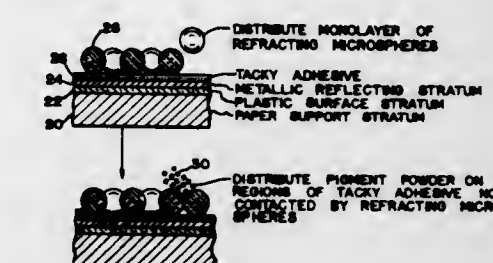
3,614,198
THIN-FILM OPTICAL DEVICES
Raymond J. Martin, Middlesex Borough, and Reinhard Ulrich, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 23, 1969, Ser. No. 835,484
Int. Cl. G02b 5/14
U.S. Cl. 350-96
17 Claims



Thin-film optical devices are disclosed which function within the plane of a thin-film as lenses or prisms. They function in two dimensions, since the thin dimension of the film serves to guide the beam with respect to the third dimension. The devices are formed integrally from the body of the thin-film by variations in its thickness either along the path of the light beam or by such variations both along the path of the beam and transversely thereto, with contours of constant thickness intersecting the light path in an orientation affecting change of the direction of propagation of at least a portion of the light. Lenses of increased thickness are convergent if provided with convex contours or divergent if provided with concave contours; but lenses of decreased thickness with respect to the surrounding film are convergent if provided with concave contours and divergent if provided with convex contours. The prisms change the path of the entire beam. They can also be made to provide total internal reflection within the prism or frustrated internal reflection if disposed sufficiently close to another thin-film optical device. It is advantageous for the efficient operation of these devices if the mentioned changes in the film thickness are not abrupt but rather are tapered smoothly over a distance of several wavelengths of the light. This minimizes reflection losses and conversion to other modes.

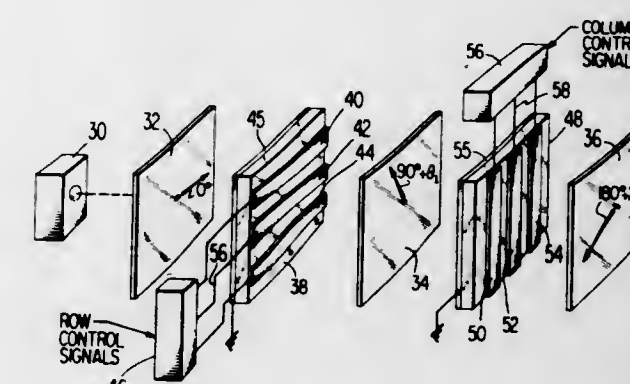
3,614,199
REFLEX REFLECTING PRODUCTS, PROCESSES AND DEVICES USEFUL WITH SUCH PRODUCTS
Gerald Altman, 41 Westminster Road, Newton Centre, Mass.
Filed July 3, 1968, Ser. No. 742,423
Int. Cl. G02b 5/12
U.S. Cl. 350-105
4 Claims

Special purpose reflex reflecting sheets are characterized by closely packed refracting microspheres and interspersed pigment particles, both of which are held in fixed optical relation to a metallic reflecting stratum by a thin adhesive stratum. In one form, the product is designed to return light without substantial diffusion when its angle of incidence is approximately normal and to return light with substantial diffusion when its angle of incidence is substantially oblique. This product is particularly useful for the combined purposes



terms of directed light controlled by the metallic reflecting stratum.

3,614,200
LIGHT VALVE MATRIX
George William Taylor, Princeton, N.J., assignor to RCA Corporation
Filed Nov. 12, 1969, Ser. No. 875,822
Int. Cl. G02f 1/26
U.S. Cl. 350-150
8 Claims

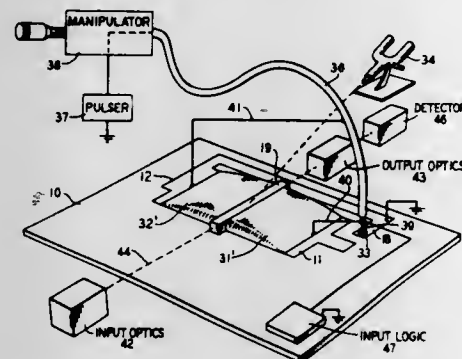


A light valve matrix having rows on a first optically active element and columns on a second optically active element in the path of a beam of polarized light. In response to a control signal applied to a row or column, the portion of the element beneath the row or column rotates or retards the plane of polarization of the light through an angle θ_1 and the remainder of the element rotates or retards the plane of polarization of the light through a different angle θ_2 , which may be zero. A polarization angle discriminator means such as a polarizer located between the two elements blocks the light at angle θ_1 and passes all or most of the light at θ_2 and a second polarizer placed after the second element blocks the light rotated through an additional angle θ_1 and passes all or most of the remaining light.

3,614,201
ACOUSTICALLY ABSORBENT MOUNTING METHOD AND APPARATUS FOR OPTICAL MODULATOR
Martin R. Blazzo, Holmdel; Bernard G. King, Rumson, N.J., and William C. G. Ortel, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 2, 1968, Ser. No. 780,347
Int. Cl. G02f 1/28
U.S. Cl. 350-160
15 Claims

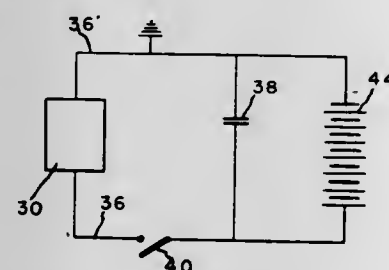
Acoustical ringing which results from piezoelectric effects in an electrooptical modulator is suppressed by mounting the modulator crystal between massive, acoustically absorbent,

support members which also provide an electric circuit interface for applying electric signals to the modulator. Solder provides such an absorbent mounting for a lithium



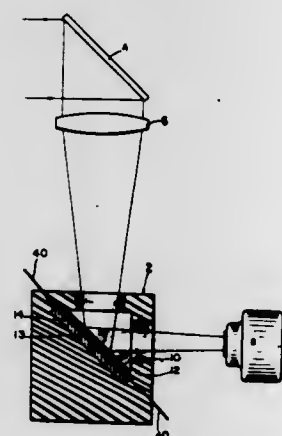
tantalate electrooptical modulator crystal. Both solder support members are flowed into place during the same heating interval and permitted to cool simultaneously.

3,614,202
ELECTRICALLY ACTUATED SHUTTER
Eugene C. Letter, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 3, 1964, Ser. No. 335,695
Int. Cl. G02f 1/34
U.S. Cl. 350-160 5 Claims



1. A reversible high-speed shutter comprising an optical element disposed at an angle greater than the critical angle of internal reflection with respect to an incident light ray, a condensable vapor adjacent said element, means producing a shock wave to thereby condense said vapor to a liquid changing the reflective characteristics of the shutter, and means vaporizing the condensed liquid to thereby return the shutter to its original condition.

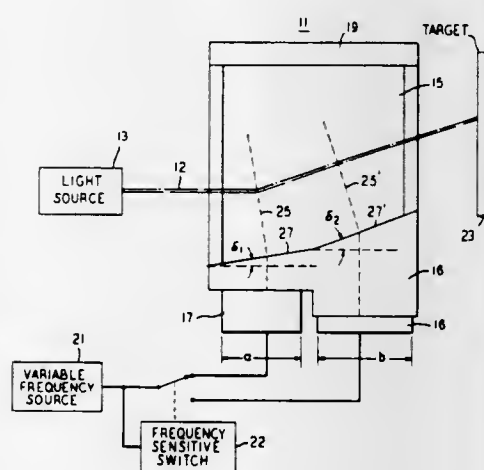
3,614,203
HIGH-SPEED OPTICAL SHUTTER
Eugene C. Letter, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed June 18, 1965, Ser. No. 465,837
Int. Cl. G02f 1/34
U.S. Cl. 350-160 11 Claims



1. A high-speed optical shutter comprising a prism of high refractive index having an internally reflecting optical surface; a layer of reflection-changing material spaced from

the optical surface of the prism, said layer including a fluid carrier having high refractive index and having radiation absorption means; an electrically conducting film contacting the layer, and means for applying an electrical potential to the conducting film; means for directing electromagnetic rays toward the optical surface at an incident angle greater than the critical angle for total reflection, as defined by the refractive index of the prism and the layer of reflection-changing material; means for discharging the electrical potential across the conductive film and contacting the layer of reflection-changing material with the optical surface of the prism to absorb the electromagnetic rays.

3,614,204
ACOUSTIC LIGHT DEFLECTION CELLS
Douglas A. Pinnow, Berkeley Heights, and Samuel R. Williamson, Irvington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 7, 1969, Ser. No. 805,189
Int. Cl. G02f 1/28
U.S. Cl. 350-161 6 Claims

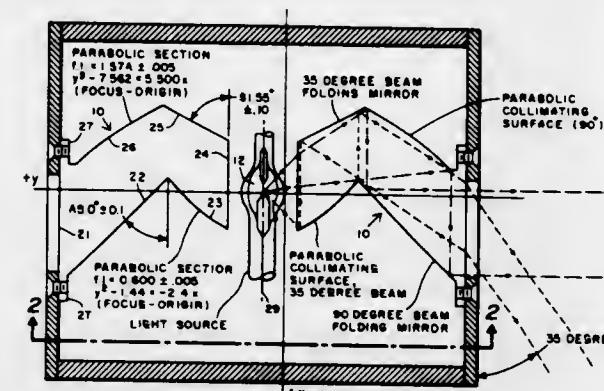


The efficiency and bandwidth of an acoustic deflection cell are increased by using two transducers tuned to adjacent frequency bands and buffer member for causing the acoustic waves from the two transducers to propagate in different directions that are separately optimized. A frequency-sensitive switch connects an AC source to only one of the two transducers. The buffer member is designed to minimize or eliminate light deflection by spurious reflected acoustic components.

3,614,205
TWO-CHANNEL OPTICAL TRANSMITTER
Wesley H. Whitman, Jr., La Sierra, and Richard D. Anderson, Riverside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 26, 1965, Ser. No. 443,110
Int. Cl. G02b 27/14
U.S. Cl. 350-171 3 Claims

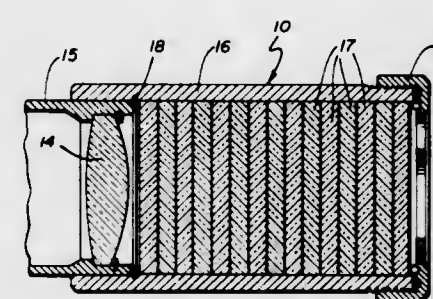
An optical prism system for obtaining two separate light

beams by collimating light from a single source, and projecting it through a beam forming and folding light guide



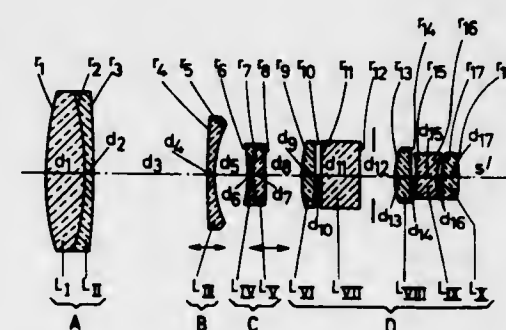
prism which forms the light into two separate fields of view.

3,614,206
APPARATUS FOR PHOTOGRAPHY
Thomas A. Kenney, Hull, Mass., assignor to Kenzof Incorporated, Hull, Mass.
Filed Mar. 23, 1970, Ser. No. 21,951
Int. Cl. G02b 1/06
U.S. Cl. 350-179 5 Claims



Apparatus for photography including solid plates of optically clear material arranged closely together with a very thin layer of liquid between.

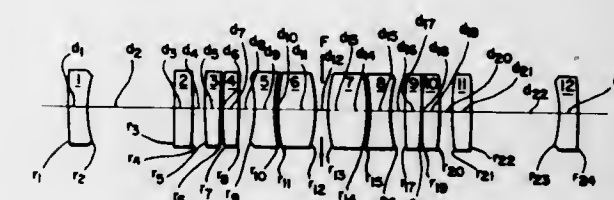
3,614,207
PHOTOGRAPHIC OBJECTIVE WITH CONTINUOUSLY VARIABLE FOCAL LENGTH
Heinrich Basista, Oberkochen, Germany, assignor to Carl Zeiss-Stiftung, Heidenheim (Brenz), Wuertemberg, Germany
Filed May 18, 1970, Ser. No. 37,993
Claims priority, application Germany, May 29, 1969, P 19 27 278.7
Int. Cl. G02b 15/14
U.S. Cl. 350-184 2 Claims



A photographic objective of variable focal length consisting of four axially aligned optical members, a first collective member, a second dispersive member, a third dispersive member and a fourth collective member, with an iris diaphragm between the third and fourth member and in which for the purpose of varying the focal length the second and third members are axially adjustable relatively to each

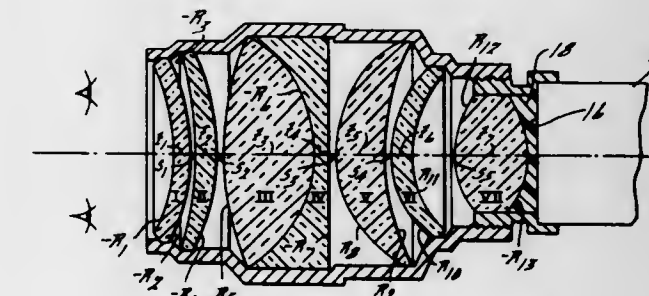
other and to the collective member. The second axially adjustable member comprises a single dispersive lens standing along by itself. A predominantly chromatically effective cemented face is provided in the dispersive third member while the dispersive second member comprises a single lens.

3,614,208
UNITARY MAGNIFICATION SYMMETRICAL LENS SYSTEM
Tohru Matsumoto, Tokyo-to, and Tomokazu Kazamaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Dec. 2, 1969, Ser. No. 881,354
Claims priority, application Japan, Dec. 4, 1968, 43/88352
Int. Cl. G02b 9/64
U.S. Cl. 350-214 4 Claims



A unity magnification lens system of focal length F comprises a symmetrical pair of similar telephoto lens systems and includes 12 lenses, the sixth and seventh lenses being singlets or doublets and the remaining lenses being singlets, the first, fifth, eighth and twelfth lenses being negative and the rest positive. The absolute value of each lens face radius of curvature exceeds 0.7F and of each positive lens exposed face exceeds F, the index of refraction of each positive lens exceeds 1.65, and the rear face of the first lens and the front face of the twelfth lens are concave with absolute radii of curvature between 0.7F and 1.5F.

3,614,209
WIDE ANGLE-BIOCULAR EYEPIECE
William J. Seaman, Center Line, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Feb. 24, 1970, Ser. No. 13,408
Int. Cl. G02b 5/16, 9/62, 25/04
U.S. Cl. 350-215 7 Claims

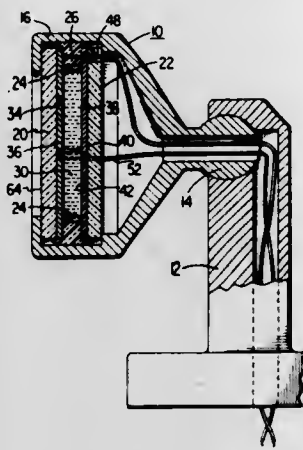


A wide-angle biocular eyepiece comprising six spaced optical elements.

3,614,210
LIQUID CRYSTAL DAY/NIGHT MIRROR
Sandor Caplan, Trenton, N.J., assignor to RCA Corporation
Filed Nov. 6, 1969, Ser. No. 874,524
Int. Cl. G02b 5/08, 1/28
U.S. Cl. 350-278 6 Claims

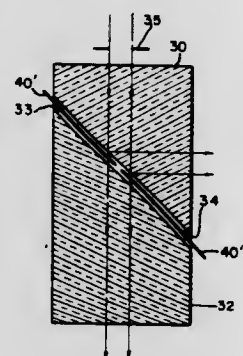
The mirror comprises front and rear substrates sandwiching a liquid crystal material therebetween. The front substrate is transparent and has, on its inner surface, a transparent electrode. The rear substrate has, on its inner surface, a metallic electrode having a specular surface. In use, the mirror is mounted relative to a viewer such that images reflected from both the outer surface of the front

substrate and the specular surface will reach the viewer. Terminal means are provided for applying a voltage between the electrodes for selectively switching the liquid crystal



material between transparent and light-scattering states. Means are provided for obtaining a mirror having a relatively low diffuse reflectance.

3,614,211
ELECTRICALLY ACTUATED SHUTTER
Eugene C. Letter, Penfield, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 3, 1964, Ser. No. 335,694
Int. Cl. G021 1/34
U.S. Cl. 350—285

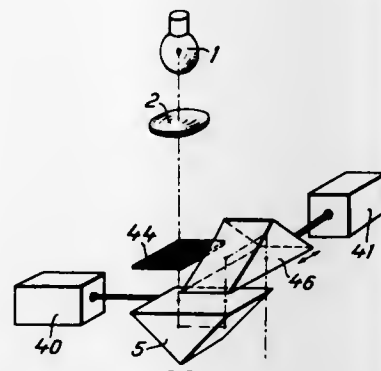


1. A shutter comprising a pair of prisms, a surface of one of said prisms disposed in a light path at an angle greater than the critical angle of internal reflection with respect to an incident light ray, means defining a fluid reservoir between said prisms, a fluid disposed in said reservoir having an index of refraction approximately equal to the index of refraction of said prisms, said fluid contacting said surface when the shutter is in a first operative position, and means ejecting said fluid from said reservoir to thereby change the reflective characteristics of said shutter.

3,614,212
OSCILLATING LIGHT BEAM GENERATING DEVICE
Friedrich Hock, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany
Filed July 18, 1969, Ser. No. 842,849
Claims priority, application Germany, Aug. 1, 1968, P 17 73 965.0
Int. Cl. G021 1/34; G01b 11/04
U.S. Cl. 350—285

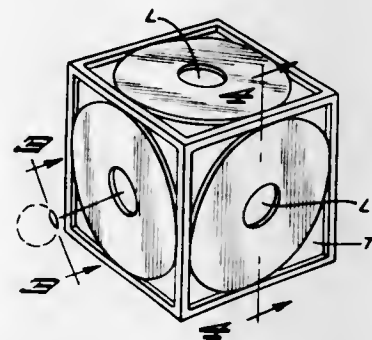
In a photoelectric position-determining apparatus a device for generating an oscillating light beam is disclosed. The device comprises a light source, a diaphragm, oscillating optical elements, and a driving mechanism therefor. The diaphragm is mounted in a stationary position and the optical elements, which may be prisms or double mirrors, are arranged behind the diaphragm in the direction of the light flux. The first optical element oscillates in a plane which is parallel to the plane of the diaphragm and almost

perpendicular to the direction of the impinging light. As a consequence of this arrangement the light beam oscillates with an amplitude double the width of the oscillation amplitude of the mechanical driving mechanism.



A second optical element is disposed in a lateral offset manner with respect to the first optical element and oscillates in the parallel plane so that the directions of oscillation of the first and second optical elements are positioned at an angle with respect to each other.

3,614,213
ARTISTIC REFLECTOR VIEWER
Timothy K. Mahoney, 4256 39th Ave. South, Minneapolis, Minn.
Filed Mar. 12, 1970, Ser. No. 18,877
Int. Cl. G02b 17/00
U.S. Cl. 350—299

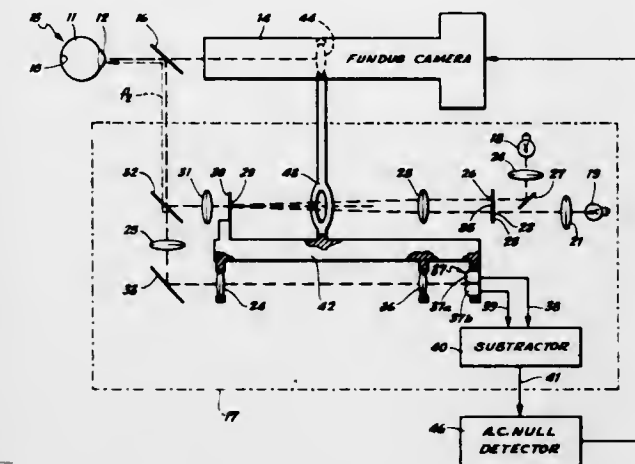


An artistic-viewing device which, through the effects of internal opposed and angularly related mirrors, produces a variety of symmetrical optical illusions. The structure includes a three-dimensional housing having at least two pairs of opposing generally transparent walls, the interiors of said walls at portions thereof being covered by at least two sets of opposing spaced mirrors. The mirrors preferably are of elongate construction diagonally disposed with reference to the shapes of the sides of the housing and in opposing sets have their longitudinal centerlines disposed in crossed relation.

3,614,214
METHOD AND SYSTEM FOR TAKING PHOTOGRAPHS OF AN EYE FUNDUS
Tom N. Cornsweet, Atherton; George J. Eilers, Redwood City, and Hewitt D. Crane, Portola Valley, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Sept. 9, 1970, Ser. No. 70,648
Int. Cl. A61b 3/10, 3/14; G01b 9/00
U.S. Cl. 351—7

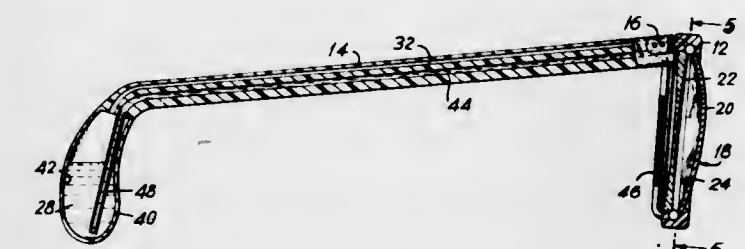
An optical system and method for photographing an eye fundus in which a fundus camera having a focus control is aligned with the position of an eyelens. An automatic optometer is coupled to the fundus camera and is adapted to sense refractive power of the eye. Means are coupled to the automatic optometer and the fundus camera for controlling

the focus of the fundus camera and activating the fundus camera to take a photograph when the focus of the fundus



camera matches the instantaneous refractive power of the eye.

3,614,215
FLUID BIFOCAL SPECTACLE
Leo Mackta, 444 Beach 132nd St., Belle Harbor, N.Y.
Filed Apr. 23, 1970, Ser. No. 31,234
Int. Cl. G02c 7/06; G02b 3/14
U.S. Cl. 351—41



A bifocal spectacle having a composite split lens with a fluid compartment therein for receiving a refractive fluid, whereby the lens will have a first focal length when the fluid compartment is filled with the fluid and a second focal length when the compartment is empty. Fluid reservoir means are provided in communication with the fluid compartment in such a manner that the fluid will automatically flow from the reservoir to the compartment under the influence of gravity when the spectacle is tilted downwardly and forwardly, as for close reading, and will return to the reservoir when the spectacle is returned to its normal, substantially horizontal position. Gravity-operated piston means may be provided for enhancing the flow of fluid responsive to a slight tilting of the spectacle.

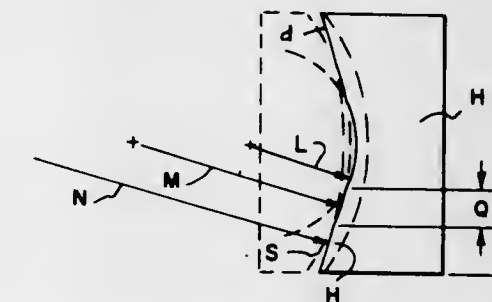
3,614,216
VISION-AIDING DEVICE
Sol Roy Rosenthal, 230 E. Delaware Place, Chicago, Ill.
Continuation-in-part of application Ser. No. 797,958, Feb. 10, 1969, now abandoned. This application Aug. 6, 1969, Ser. No. 847,871
Int. Cl. G02c 7/10, 7/16
U.S. Cl. 351—44



Sunglasses or eyeglasses made of an elongated sheetlike member of a flexible transparent material having a memory

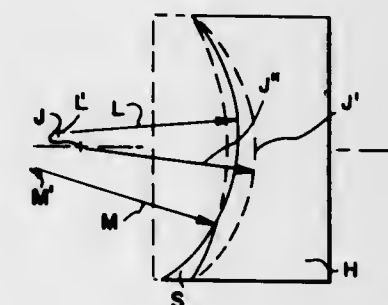
sufficient to bias it to coil itself into a roll shape whenever untensioned. End portions are shaped to fit in the orbito-temporal fossae of the human head at a location just behind the zygomatic process. For a sunshade, the device may be inverted. For eyeglasses, the member is provided with opaque regions located in the path of vision of the wearer, and a plurality of apertures between about 0.025–0.036 inch in diameter are provided in these opaque regions in rows spaced apart between 0.1 inch and 0.17 inch. Variations in the shape and form of the end portions as well as additional nose bridge anchors are utilized to provide stability and comfort for the wearer.

3,614,217
FUSED CONCENTRIC TRIFOCAL CORNEAL CONTACT LENS
Leonard Bronstein, 7457 East Vista Drive, Scottsdale, Ariz.
Division of Ser. No. 582,044, Sept. 26, 1966, Pat. No. 3,472,587.
Filed July 9, 1969, Ser. No. 840,424
Int. Cl. G02c 7/04, 7/06
U.S. Cl. 351—161



Multifocal corneal contact lenses which may be fitted in 'relationship' similar to single vision contact lenses, having anterior curve or curves based upon the necessary distance power desired; posterior curve or curves, as desired, to maintain proper relationships with the cornea; and interface curves, between the two fused-together materials of different refractive index necessary to provide the proper power effects for the various seeing positions; the far vision portion of said lenses being concentrically located in the central portion of the lens and the near vision portions being located in surrounding relation with the far vision portions and near the periphery of the lens, and the lens thus being annularly symmetrical to permit rotation of the lens on the cornea of the eye into various positions without changing the optical functions of the lens with relation to the eye.

3,614,218
FUSED ECCENTRIC TRIFOCAL CORNEAL CONTACT LENS
Leonard Bronstein, 7457 East Vista Drive, Scottsdale, Ariz.
Division of Ser. No. 582,044, Sept. 26, 1966, Pat. No. 3,472,587.
Filed July 9, 1969, Ser. No. 840,525
Int. Cl. G02c 7/04, 7/06
U.S. Cl. 351—161



Multifocal corneal contact lenses which may be fitted in relationships similar to single vision contact lenses, having

anterior curve or curves based upon the necessary distance power desired; posterior curve or curves, as desired, to maintain proper relationships with cornea; and interface curves, between the two fused together materials of different refractive index necessary to provide the proper power effects for the various seeing positions.

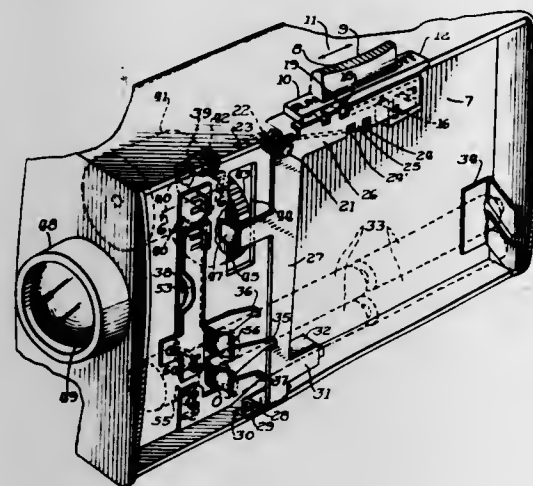
3,614,219

CONTROL LEVER SWITCHING MECHANISM

Richard K. Carlson, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,484
Int. Cl. G03b 1/00

U.S. Cl. 352-178

6 Claims



The invention contemplated concerns itself with switch structure which can be manually controlled or which may be locked to operate continuously freeing the hands of the photographer. A feature of the invention is a control lever which is fulcrummed and selectively operates with multiple electrical contacts which govern the operation of a prime mover in a motion-picture camera, and which controls a claw motivating the film in exposure through an apertured gear. A notched portion in the gear is engaged by a stop lug on the control lever to arrest the apertured gear in a position to block out all light from the film in the cartridge, when the camera is not in use.

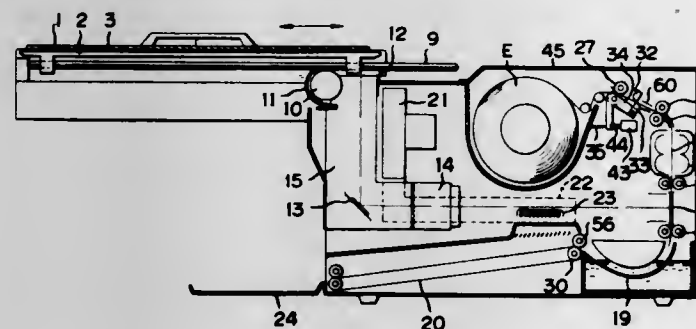
3,614,220

ELECTROPHOTOGRAPHIC COPYING DEVICE
Shigehiro Komori, Yokohama-shi; Jiro Sato, Tokyo, and Akira Kurahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha Co., Ltd.

Filed Dec. 3, 1968, Ser. No. 780,653
Claims priority, application Japan, Dec. 11, 1967, Dec. 15, 1967, 79376/1967; 105383/1967
Int. Cl. G03g 15/00

U.S. Cl. 355-3

3 Claims



An electrophotographic copying machine using a roll of sensitive paper in which the original holder for carrying the original reciprocates on the machine case of the electrophotographic copying device. While the original holder is in its backward motion, the original is illuminated so as to subject the electrophotographic-sensitive paper to a slit exposure, and the copy is obtained through subsequent

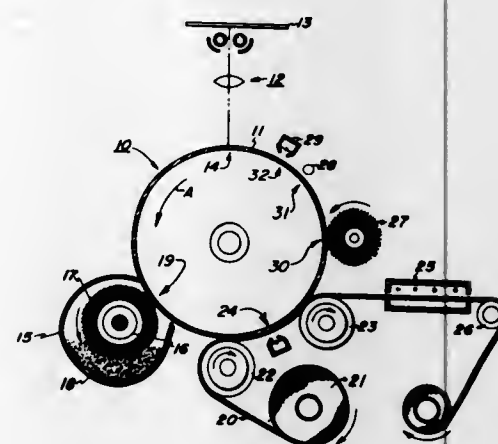
steps of developing and fixing. The reciprocating motion of the original is related to the paper feed so that the paper is cut to the length of the original. An indicator is provided for indicating the size of the roll of sensitive paper in the paper-feeding unit and for indicating the maximum size original capable of being copied.

3,614,221
IMAGING SYSTEM

Thomas W. Solarek, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 30, 1969, Ser. No. 889,072
Int. Cl. G03g 15/00

U.S. Cl. 355-3

13 Claims



A woven pile brush for the brush development of latent electrostatic images is provided with both nonconductive and conductive pile fibers. The conductive pile fibers are shorter than the nonconductive fibers, and thus, the shorter conductive fibers can function as a development electrode while avoiding contact with the latent electrostatic image carrier.

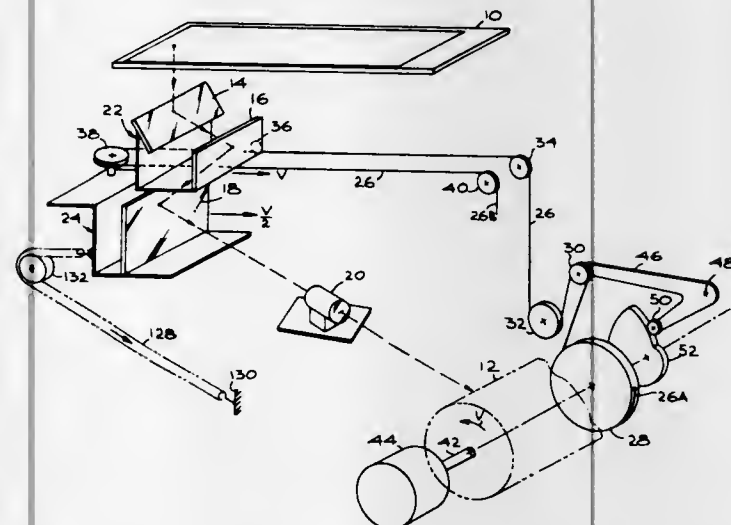
3,614,222

OPTICAL DRIVE SYSTEM FOR REPRODUCING MACHINE

Gerald Post, Kew Gardens; Charles M. Buchholtz, New York, N.Y., and Luciano Rattin, Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Apr. 24, 1970, Ser. No. 31,713
Int. Cl. G03g 15/00

U.S. Cl. 355-8

13 Claims



A copying machine which enables the choice of different magnification or reduction ratios comprising a glass plate on which the document to be copied is placed, a reproducing drum which converts light images focused thereon, into visible images on copy paper, and an optical system which scans a document on the glass plate and focuses the scanning image on the reproducing drum. The optical system includes two mirror-holding carriages that sweep across the glass

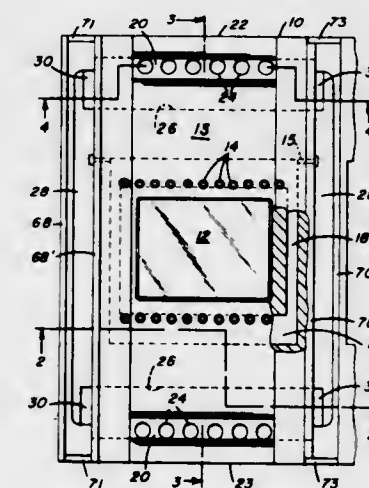
plate, for reflecting light from a document on the glass plate through a stationary lens onto the reproducing drum. The carriages are moved by a cable wound by a drum, the cable being fixed to a first of the carriages and extending around a pulley on a second of the carriages so the second carriage moves at half the speed of the first. The cable extends around a compensating pulley which can be moved by a cam to alter the speed of the carriages relative to the speed of the reproducing drum, for copying at different reduction ratios. One end of the cable is held by an arm which can be adjusted in position to vary the position of the second carriage without altering the position of the first carriage, which is required for copying at different reduction ratios.

3,614,223
LIQUID GATE

Howard F. Ott, Victor, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 3, 1969, Ser. No. 838,849
Int. Cl. G03b 27/52

U.S. Cl. 355-30

12 Claims



A film gate adapted for use in a film projection printer, wherein liquid is directed against both surfaces of a film as the film is guided through the gate. The liquid flows from jet orifices positioned near the optical windows of the gate, away from the windows, to vacuum orifices positioned adjacent the entrance and exit ends of the gate. The vacuum orifices remove the liquid from the film. The movement of the fluid from the jet orifices to the vacuum orifices "sweeps" and coats both film surfaces with a liquid layer as the film moves through the gate.

3,614,224

METHODS AND APPARATUS FOR PRODUCING FILM DISC SEGMENTS

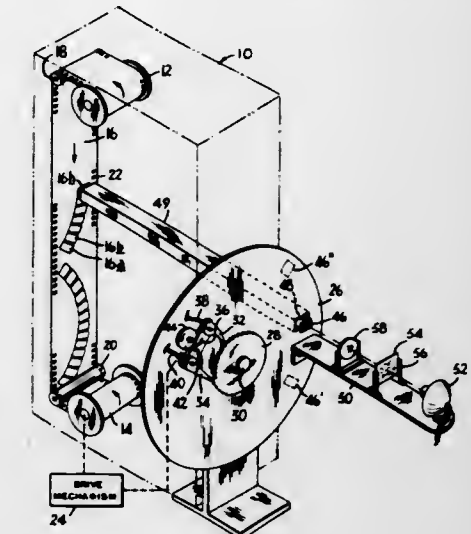
Warren C. Portman, Mahopac, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed May 14, 1969, Ser. No. 824,452
Int. Cl. G03b 27/46

U.S. Cl. 355-53

4 Claims

A camera for copying a series of transparencies onto 35-millimeter film in 90° circular arcs as a step in constructing audio-visual cartridges. These cartridges are circular discs having 52 spaced transparencies each arranged on a total of

four such strips per cartridge. The projector, transparency, and optics of the apparatus move arcuately with respect to



the stationary film segment receiving the images, driven stepwise by a cam, ratchet, and pawl mechanism.

3,614,225

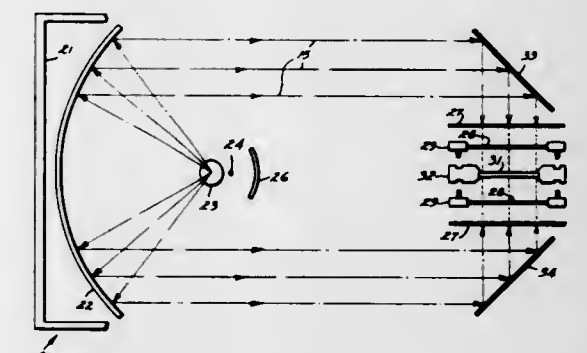
PHOTOPRINTING APPARATUS

Donald Dinella, Clark Township, Union Co., and Eckert Franz Schutz, Edison Township, Middlesex Co., both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 6, 1969, Ser. No. 874,446
Int. Cl. G03b 27/04

U.S. Cl. 355-85

7 Claims



A temperature-controlled parabolic reflector, for reflecting an essentially parallel light beam, is employed to direct light from a light source to an image master spaced a predetermined distance from a printed circuit board to expose certain portions of a photoresist to define a circuit pattern. Electrical circuits are subsequently formed by electroless copper plating to the areas exposed by the pattern.

3,614,226

PHASE-LOCKED PULSED DISTANCE-MEASURING EQUIPMENT UTILIZING A COARSE SCALE AND FINE SCALE MEASUREMENT

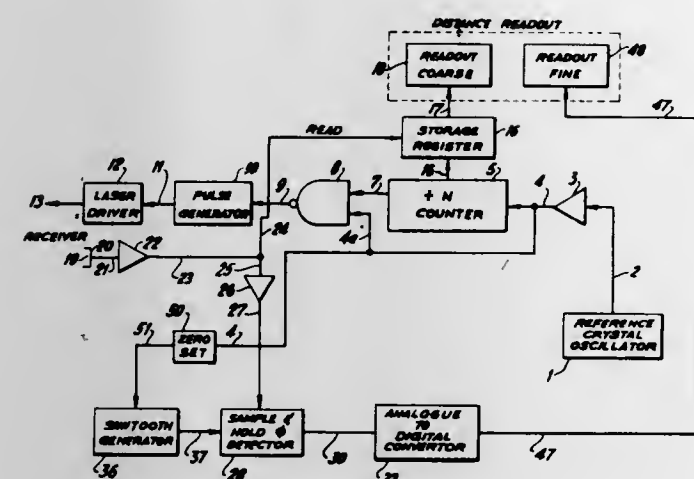
Ronald A. Vergoz, Allendale, N.J., assignor to Holobeam, Inc., Paramus, N.J.
Filed Mar. 17, 1969, Ser. No. 807,667
Int. Cl. G01c 3/08

U.S. Cl. 356-5

5 Claims

An electromagnetic distance-measuring device wherein the time of transit of signals to and from a target is measured to determine a coarse scale distance to the target. An additional fine scale measurement of the distance to the target is

provided by measuring the phase shift of the returned signal. The reflected energy, when received, triggers a counter to provide the coarse time measurement. The fine scale



increment is provided by measuring the phase shift of the returned signal relative to a high-frequency control signal.

3,614,227

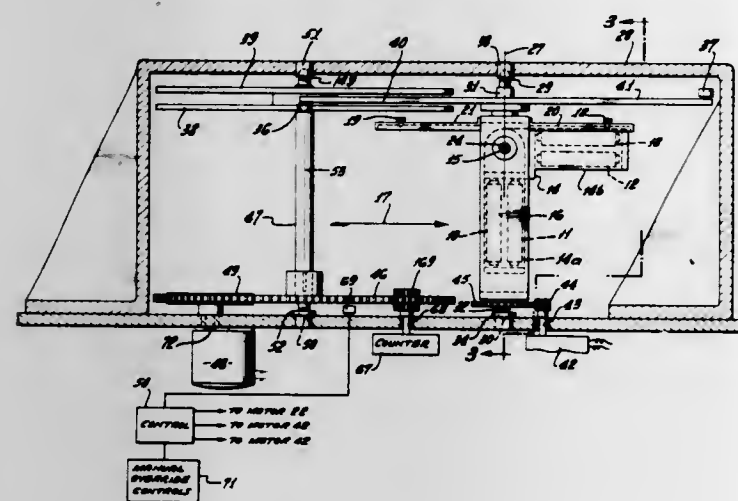
GRATING DRIVE MECHANISM

Kenyon P. George, Arcadia, and Edouard Horace Siegler, Jr., Claremont, both of Calif., assignors to Cary Instruments, Monrovia, Calif.

Filed July 25, 1969, Ser. No. 844,835
Int. Cl. G01j 3/06, 3/18, 3/42

U.S. Cl. 356-95

14 Claims



The invention concerns an optical grating drive apparatus wherein a carriage for multiple diffraction gratings is movable between a plurality of locations, there being stops to limit carriage movement at such locations in which different gratings are selectively presented in the path of an incident beam; also a plurality of cam followers are shiftable relative to rotary cam means between positions in which different followers selectively engage the cam means and are displaced in response to cam means rotation; the followers and carriage have operative interconnection such that when a selected follower is engaged with the cam means the carriage may occupy alternate locations in order to selectively present corresponding gratings to the beam path; and displacement of a selected follower in response to cam rotation effects rotation of a selected grating in the beam path.

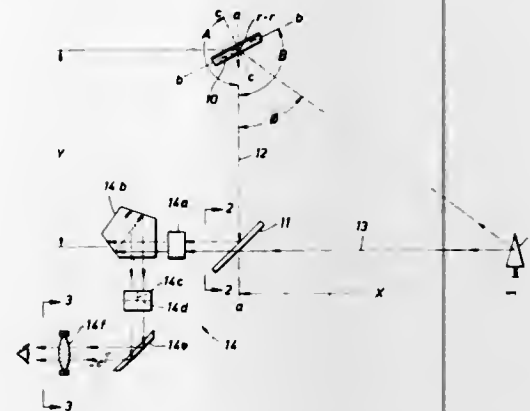
3,614,228 OPTICAL RANGE FINDER HAVING NONOVERLAPPING COMPLETE IMAGES

William E. Lyon, Seabrook, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 30, 1968, Ser. No. 763,743

Int. Cl. G01c 3/12

U.S. Cl. 356-17

1 Claim



A 90-100 percent reflective first surface mirror is disposed to direct a reflected image to a 70 percent reflective, 30 percent transmitting beam splitter which reflects the reflected image along a light path parallel to the light path of the true image to thereby produce two separate full view images. The true image and reflected image are directed through a magnifying telescope having infinite projected crossed vertical and horizontal reticles. The mirror is rotatable to change the vertical displacement of the reflected image from the horizontal reticle and when the two images are equally displaced from the horizontal reticle, the range of the image may be found by triangulation.

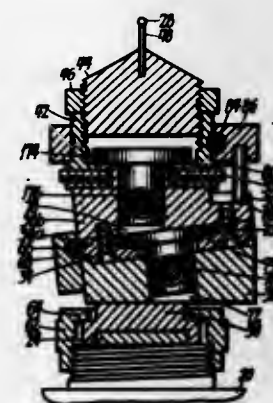
3,614,229 DEVICE FOR ORIENTING AXES OF BODIES FOR INSPECTION

William A. Denne, 43 Trevelyan St., Elsternwick, Victoria, Australia

Filed July 7, 1970, Ser. No. 52,834
Claims priority, application Australia, July 7, 1969, 57,569

U.S. Cl. 356-31

19 Claims



A goniometer head for orienting a crystal so that a plane associated therewith is normal to a predetermined directional axis comprising a support rotatable about an axis transverse to the directional axis so that the latter lies in the surface of an imaginary cone generated about the transverse axis, and a mounting for the crystal carried by the support and rotatable relative thereto about an adjustment axis which passes through the apex of the cone to cause a crystal axis normal to the plane to lie in the surface of the cone so that if the normal axis is not in the directional axis when it has been adjusted to lie in the surface of the cone the support member can be rotated about the transverse axis to move the normal axis around the cone until it lies in said directional axis.

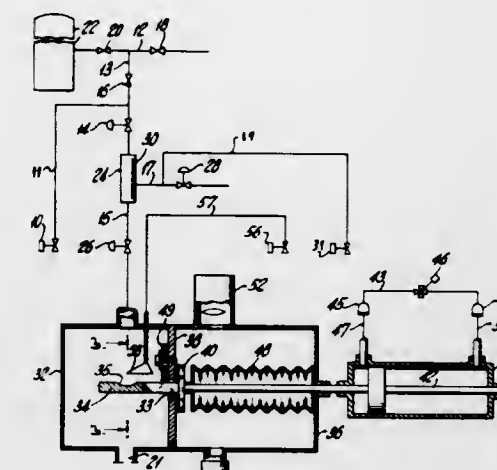
3,614,230 APPARATUS AND METHOD FOR SAMPLING AND ANALYZING FLUID SOLIDS

Harry M. Crawford, Port Murray, N.J., assignor to Esso Research and Engineering Company
Filed May 8, 1969, Ser. No. 822,967

Int. Cl. G01n 1/00, 21/00, 21/48

U.S. Cl. 356-36

6 Claims



Method and apparatus for collecting and analyzing fluidized solids samples, e.g., determining carbon content on fluid catalytic cracking catalyst, comprising means for collection and defluidizing sample, means for analyzing sample by light reflectance and means for sealing moving parts and analysis chamber from solids contamination.

3,614,231

OPTICAL AEROSOL COUNTER

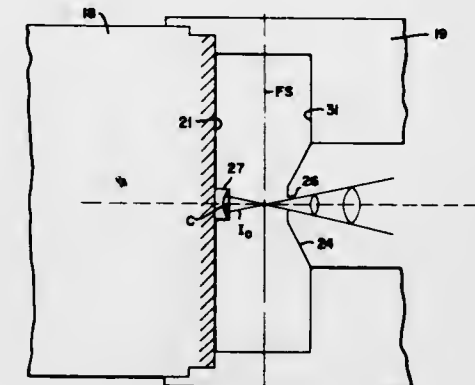
Clyde C. Shaw, Los Altos Hills, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Feb. 12, 1968, Ser. No. 704,924

Int. Cl. G01n 1/00, 21/00, 15/02

U.S. Cl. 356-37

6 Claims



An optical liquid or aerosol particle sensor of the kind in which a focused light beam is projected through a flow stream of suspended particles to determine the particle size and number concentration by measuring the scattered components of the focused light beam. A specularly reflecting or absorbing mask is located closely adjacent that portion of the flow stream intercepted by the focused light beam. This mask absorbs and specularly reflects the focused light beam and thus blocks off the illuminating light from the scattered light detection element. This mask possesses a reflecting surface which causes essentially all of the unabsorbed portion of the illuminated light to retrace its incoming path so that this part of the light beam is never received at the light measuring part of the aerosol sensor. The sensor may also include a housing having a highly reflective inner surface. The housing may be constructed to produce very nearly a 4 pi steradian collection system efficiency with respect to the scattered light.

3,614,232 PATTERN DEFECT SENSING USING ERROR FREE BLOCKING SPACIAL FILTER

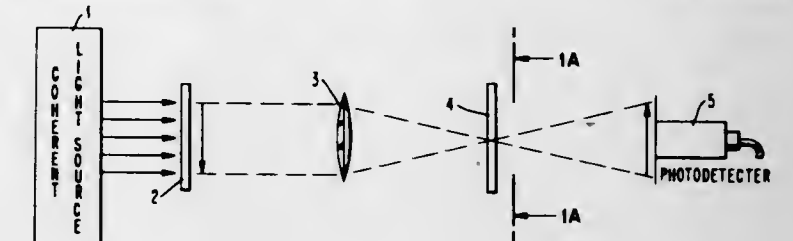
Einar S. Mathisen, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,526

Int. Cl. G01n 21/32

U.S. Cl. 356-71

6 Claims



Defects in microcircuit patterns are sensed by illuminating the pattern with monochromatic collimated light. The illuminated pattern is imaged through a lens to produce substantially a two-dimensional optical Fourier transform of the pattern at a plane on the output side of the lens. An optical filter (transparency) which includes substantially the negative of the Fourier transform of a defect-free specimen of the microcircuit is placed at the aforesaid plane to block the optical frequency components corresponding to the defect-free specimen. Light passing through the filter is processed to provide various indications of the pattern defects.

3,614,233

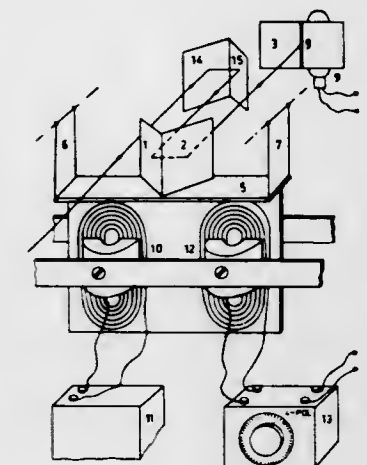
DEVICE FOR LINEAR DISPLACEMENT OF A PLANE OPTICAL IMAGE IN ITS OWN PLANE

Nils Robert Dahr Astund, Johannesbo, Sweden, assignor to Saab Aktiebolag, Linköping, Sweden
Continuation of application Ser. No. 600,189, Dec. 8, 1966, now abandoned. This application May 8, 1970, Ser. No. 35,883

Int. Cl. G01j 3/06

U.S. Cl. 356-83

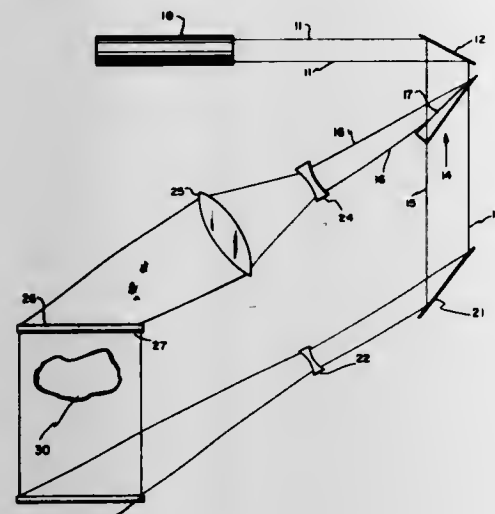
8 Claims



An optical apparatus for displaying spectral images is disclosed, the device including two reflecting planes fixed at right angles to each other but displaceable with respect to an image plane to permit a scanning of an optical image. Both reflecting planes are at a 45° angle with the image plane, and the line of intersection of the two reflecting planes oscillates in a direction which is transverse to the line of intersection of the reflecting planes, whereby the image is scanned sinusoidally past an opening in the image plane. A light-sensitive element behind the opening transforms the light into an electrical signal which corresponds in amplitude to the light intensity and which can be displayed on an oscilloscope. A sensing means tracks the swing movement, generating a signal which may be used as one coordinate axis of the oscilloscope display. A phase correction network is located between the sensing means and the oscilloscope so that the correct phase relationship between the oscillating swing and the display may be obtained.

3,614,234
FRINGE-GENERATING HOLOGRAPHIC SYSTEM
 Lee O. Heflinger, Torrance, Calif., assignor to TRW Inc.,
 Redondo Beach, Calif.
 Filed July 11, 1969, Ser. No. 840,908
 Int. Cl. G01b 9/02; G02b
 U.S. Cl. 356-106

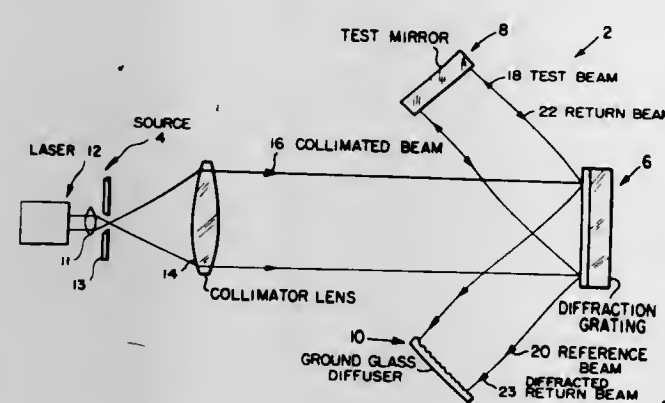
8 Claims



A double-exposure holographic system having means for producing finite fringes at the plane of an object. To this end a first hologram is made without the object and by passing the scene beam through a light diffuser. For the second exposure the object is inserted into the path of the scene beam. Alternatively the two exposures are taken with an object and then with the displaced or perturbed object. Also the light diffuser is rotated in such a manner that finite fringes appear at the plane of the object. The spacing between adjacent fringes may be controlled by the angle through which the diffuser is rotated.

3,614,235
DIFFRACTION GRATING INTERFEROMETER
 Charles R. Munnerlyn, 20 Waterworks Lane, Fairport, N.Y.
 Filed July 28, 1969, Ser. No. 845,385
 Int. Cl. G01b 9/02
 U.S. Cl. 356-106

20 Claims

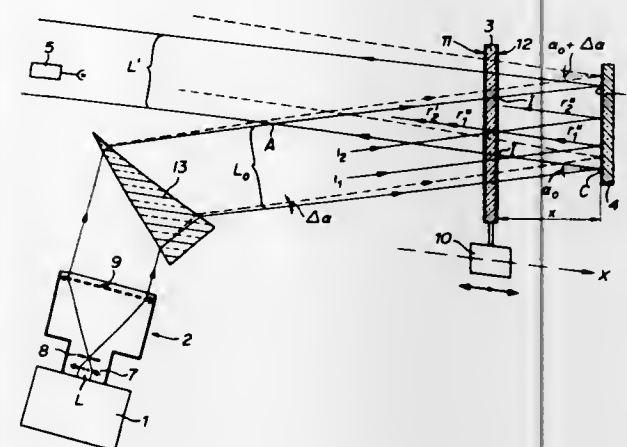


An interferometer, and preferably an infrared laser interferometer, employing a single, reflecting diffraction grating operating as both the beam splitter and the reference surface. A collimated beam from the radiation source is directed onto a surface of the diffraction grating and is diffracted into two separate beams, namely a test beam and a reference beam. The test beam is directed to the test optical system and is then reflected back, as a return beam, from the test optical system to the diffraction grating, at an angle such that a diffracted return beam is produced by the diffraction grating that coincides with the reference beam. An interference pattern is produced between the reference beam and the diffracted return beam, that can be observed, at the plane of observation, visually or recorded with an image recording device.

3,614,236
APPARATUS FOR MEASURING LENGTH BY OPTICAL INTERFEROMETRY
 Adolf Steinemann, Mollesula, Geneva, and Jack Rufenacht, Lausanne, both of Switzerland, assignors to Societe Genevoise D'Instruments De Physique
 Filed May 12, 1969, Ser. No. 823,652
 Claims priority, application Switzerland, May 17, 1968,
 7,408/68
 Int. Cl. G01b 9/02

U.S. Cl. 356-112

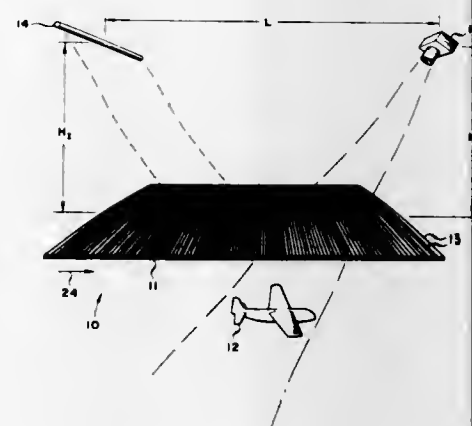
4 Claims



A broad laser beam is directed at a given slight angle of incidence onto a plane mirror for reflecting the beam to produce a zone of overlap. Interference fringes are produced on a linearly displaceable detecting surface arranged parallel to the mirror in the zone of overlap. The angle of incidence is corrected according to a given relation as a function of variations of the refractive index of the medium through which the incident and reflected beams pass, thereby to annul the effect of said variations.

3,614,237
METHOD AND APPARATUS FOR CONTOUR MEASUREMENT
 Robert J. Kyle, Decatur, and Donald M. Meadows, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
 Filed Jan. 21, 1969, Ser. No. 792,346
 Int. Cl. G01b 11/24, 11/30
 U.S. Cl. 356-120

12 Claims

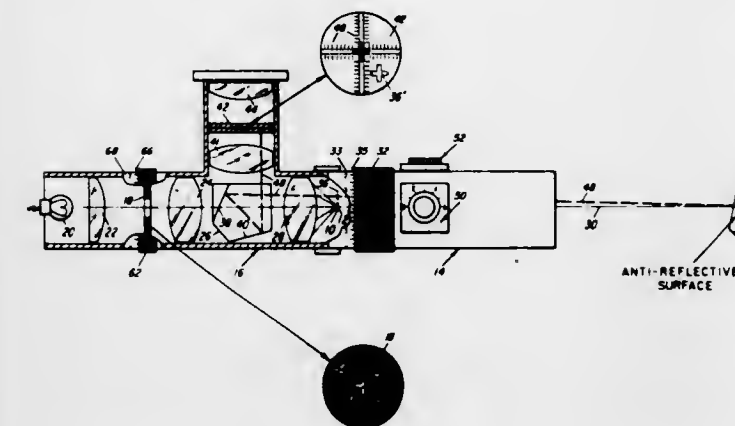


A technique for observing and measuring the contour of a surface with moire optical interference patterns. Illumination diverging from a source passes through a periodically repetitive image structure to cast a shadow image of such structure onto a surface being examined. The surface and the shadow image cast thereon are viewed through a periodically repetitive image structure to establish moire interference patterns. These moire interference patterns can be viewed as contour lines appearing on the surface and representing actual regions of equal elevation of the surface contour, and the actual increments of elevation between adjacent moire fringes can be determined.

3,614,238
BRIGHT LINE RETICLE APPARATUS AND OPTICAL ALIGNMENT METHODS
 David G. Stites, Woburn, Mass., assignor to Ittek Corporation, Lexington, Mass.
 Filed Jan. 5, 1968, Ser. No. 695,988
 Int. Cl. G01b 11/27

U.S. Cl. 356-124

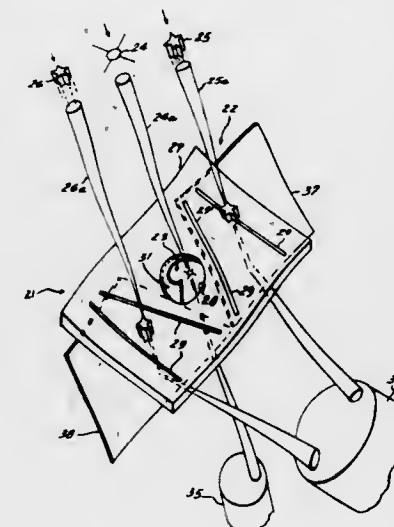
15 Claims



Apparatus for use with an alignment instrument. The apparatus includes a bright line reticle with a dark field background, condenser means for directing radiant energy through the bright line reticle, an alignment reference reticle representative of the reference axis and image projection and return means for projecting an image of the bright line reticle to the instrument and for receiving the projected image reflected back from the instrument and transmitting that reflected image to the reference reticle to provide a quantitative representation of the displacement between that reflected image and the reference reticle.

3,614,239
PHOTOELECTRIC SPACE-OBJECT POSITION MEASURING DEVICE
 Kenneth E. Kissell, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
 Filed Apr. 21, 1970, Ser. No. 30,424
 Int. Cl. G01b 11/26
 U.S. Cl. 356-152

11 Claims

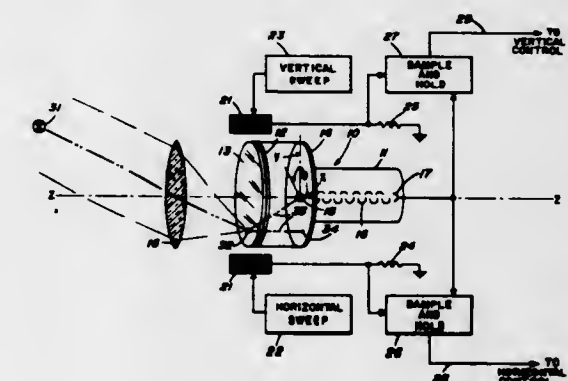


Satellite-position determining means for accurately locating the position of a spacecraft in near-earth orbit consisting of a satellite-tracking telescope; a first, fixed, star-detecting masking element mounted at the telescope focus, and including a central aperture and a plurality of slits formed in an M-shaped configuration for sequentially passing light from background stars to a first photomultiplier; and a second, rotatable, transparent disc element mounted at the central aperture and incorporating opaque radial and spiral bands for sequentially interrupting light passing from the

satellite to a second photomultiplier. From the average time of the inner light pulses and the outer light pulses resulting from starlight received at the first photomultiplier, and the proportional time interval between the passage of starlight by the inner slits and the outer slits, the instant at which the image of the star passed midway through the M-configuration and the lateral location thereof relative to the ends of the slits may be computed. Then, by noting the elapsed time between the interruptions of light from the target-satellite to the second photomultiplier, the exact position of the satellite relative to the already-determined position of the star may likewise be computed.

3,614,240
OPTICAL TARGET POSITION INDICATOR
 Conrad W. Brandts, Dahlgren; Eugene P. Stemple, King George, and Richard A. Frazer, King George, all of Va.
 Filed May 21, 1969, Ser. No. 828,099
 Int. Cl. G01b 11/26
 U.S. Cl. 356-152

1 Claim



This invention is a circuit which produces electrical signals that describe the two-dimensional position of an image on the photocathode surface of a scannable photomultiplier. The photomultiplier is provided with deflecting coils and a masking electrode with a small aperture is spaced from the photocathode. When light from a distant target impinges on the photosensitive surface of the photomultiplier, an electron stream is emitted by the surface. The deflecting coils focus this stream on the aperture in the masking electrode to cause the photomultiplier to emit a signal. This signal activates sample-and-hold circuits which detect the outputs of the deflecting coils and hold them until another signal is received from the photomultiplier. The signals detected by the sample-and-hold circuits are representative of the target position as sensed by the photomultiplier.

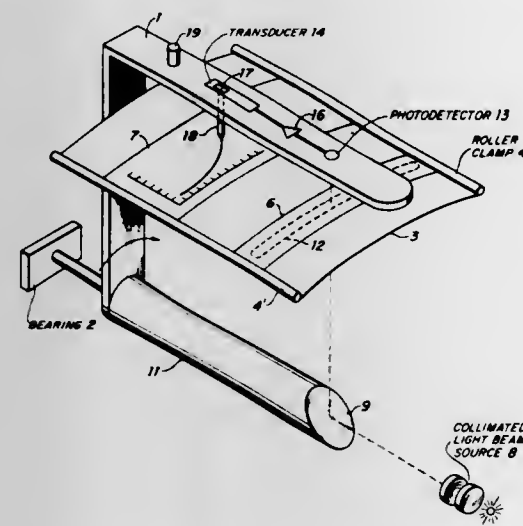
3,614,241
AUTOMATIC RECORDING DENSITOMETER WHICH SIMULTANEOUSLY DETERMINES AND RECORDS THE OPTICAL DENSITY OF A STRIP OF PHOTOGRAPHIC FILM
 Lloyd Clifford Sanford, Acton, and John Augustus O'Brien, Reading, both of Mass., assignors to Ittek Corporation, Lexington, Mass.
 Continuation-in-part of application Ser. No. 582,065, Sept. 26, 1966, now Patent No. 3,518,013. This application June 19, 1970, Ser. No. 47,704
 Int. Cl. G01j 3/50; G01a 21/22

U.S. Cl. 356-175

17 Claims

A densitometer which simultaneously determines and records the optical density of a strip of photographic film. The filmstrip is mounted on a first portion of a curved platen. A piece of graph paper is mounted on a second portion of the curved platen adjacent to the first portion. A unitary arm is mounted above the curved platen and moves in an arcuate path parallel to the surface of the support platen. The moving unitary arm scans the density of the film and simultaneously records the density on the graph paper. The second portion of the curved platen, on which the graph paper is mounted, has a larger radius of curvature than the first portion of the curved platen on which the film is mounted. The mechanical advantage of the larger radius enables the density to be

recorded on a graph having a longer abscissa than the length of the filmstrip. The densitometer has the capability of measuring both reflection and transmission density. For transmission density a light source is located in the unitary scanning arm and directs light through the filmstrip to a photomultiplier tube located below the filmstrip. The output of the photomultiplier tube is utilized to drive a recorder which plots the density on the graph paper. For reflection density a light source is located beneath the filmstrip and directs light against the lower surface of the filmstrip. The



reflected light is then directed to the same photomultiplier tube used for transmission density. The densitometer, while measuring either reflection or transmission density, has the capability of measuring the density of red, green, or blue colors in the filmstrip. This capability is added by having a cylindrical filter located around the photomultiplier tube. The cylindrical filter has green, red, and blue filter portions. The density of a particular color is measured by interposing that filter in the light path, thereby allowing only the light of that color to pass to the photomultiplier tube.

3,614,242

PHOTOELECTRIC PHOTOMETER

Jiri Hrdina, Praha, Czechoslovakia, assignor to Československá akademie věd, Praha, Czechoslovakia
Continuation of application Ser. No. 584,451, Oct. 25, 1966.
This application May 6, 1970, Ser. No. 37,364
Int. Cl. G01J 3/46

U.S. Cl. 356-181

6 Claims



A flow-through measuring cell is used in combination with an optical system which passes through the cell a light beam restricted to the central or core portion of the cell.

3,614,243

VARIABLE PATH-LENGTH GAS CELL

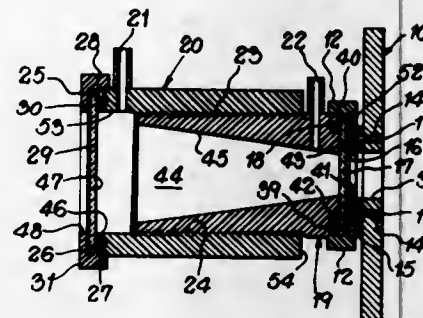
Robert J. Harvey, Ramsey, N.J., assignor to Reno A. Del Ben, Tenaflly, N.Y., a part interest
Filed Aug. 1, 1969, Ser. No. 846,778
Int. Cl. G01n 1/10

U.S. Cl. 356-246

8 Claims

A variable path-length gas cell which includes a base, an inner gas cell member coupled to said base, a crystal contained between the base and the inner gas cell member, an outer gas cell member movably mounted on the inner gas cell member, a second crystal mounted at an end of the outer

gas cell member, and an aperture which runs from one end of the gas cell to the other end of the gas cell and is blocked



3,614,244

SHOWER BATH ATTACHMENT

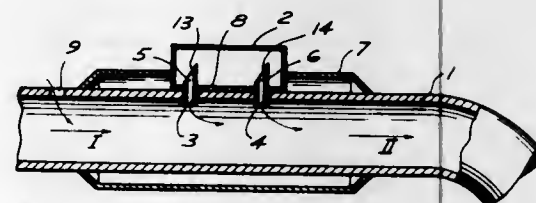
Ignaz Eck, 145 Fuerstenriederstrasse, 8000 Munich 21, Germany

Filed Oct. 21, 1969, Ser. No. 868,136

Int. Cl. A46b 11/06; B05b 7/26

U.S. Cl. 401-28

12 Claims



A device provided at the pipe conducting a liquid to the rose of a shower bath permits easy and quick attachment of a pierceable container containing the bath additive such as liquid soap, detergent, bath oil, or the like, to the pipe and causing said bath additive to come along with the liquid flowing in said pipe to the rose. A hole is provided in said pipe in the direction of flow in advance of the device which causes air to enter the liquid flowing in the pipe, the air facilitating foam formation and intimate mixing of bath additive and liquid.

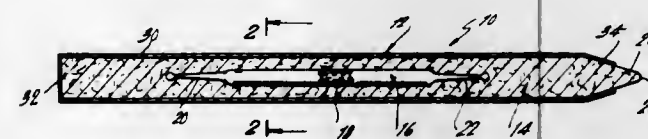
3,614,245

SINGLE-USE APPLICATOR

Gilbert Schwartzman, 20 Willmot Circle, Scarsdale, N.Y.
Filed Aug. 15, 1967, Ser. No. 660,733
Int. Cl. A61m 35/00

U.S. Cl. 401-132

1 Claim



An applicator comprising an elongated rod-shaped pad of porous material. The pad has a conical-shaped pointed end. A fluid containing frangible capsule is embedded in the pad, a fluid-proof tubular envelope surrounds the pad and has an open end of a truncated conical shape. The pointed end of the pad extends beyond the conical open end of the envelope.

3,614,246

PRESSURIZING CONSTRUCTION

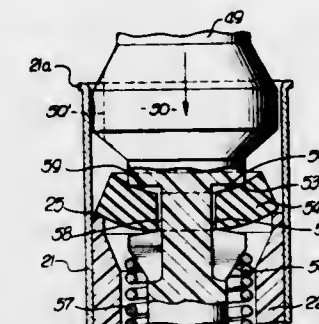
Lotfi H. Lotfallah, Hollywood, Calif., assignor to The Gillette Company, Santa Monica, Calif.

Filed Nov. 24, 1969, Ser. No. 879,253

Int. Cl. B43k 24/08, 7/02

U.S. Cl. 401-101

13 Claims



An assembly for use with ink-containing cartridges of writing instruments whereby a low-order pressure during writing automatically increases pressure on the ink in the cartridge while permitting the cartridge to vent to atmosphere when not in use. The assembly includes a movable element carrying a flexible and resilient washer, normally biased into venting position and provides air channels and sealing zones coacting with the washer for pressurizing. A writing instrument including a barrel and a project-retract mechanism as well as an ink-containing cartridge having a writing tip is also disclosed with the cartridge being provided with the assembly.

3,614,247

WRITING INSTRUMENT STRUCTURE

Katsumi Otsuka, Funabashi-shi, Chiba-ken, Japan, assignor to Teibow Company Limited, Hamamatsu-shi, Japan

Filed June 17, 1969, Ser. No. 834,045

Claims priority, application Japan, Dec. 10, 1968, Dec. 10, 1968, 43,107068; 43,107069

Int. Cl. B43k 8/00

U.S. Cl. 401-199

9 Claims



An improved nib for a writing instrument comprising a casing, an ink reservoir incased in the case, a nib holder rigidly engaged with a tip portion of the case and provided with an aperture for rigidly holding the nib. The nib of the present invention is provided with an inner capillary conduit having a lateral cross section of snowflake shape. The conduit of the nib is arranged along an axis thereof and a rear end thereof is inserted into the ink reservoir while a tip end portion thereof is extended outwards from the nib holder. The tip end portion of the nib is sharpened. Additional means for flowing ink from the ink reservoir to the tip of the nib, such as a plurality of outside capillary grooves etc. can be preferably applied to the nib.

3,614,248

PEN WICK MADE OF SYNTHETIC RESIN

Katsumi Otsuka, 1, Takanedai-cho 3-chome, Funabashi, Japan

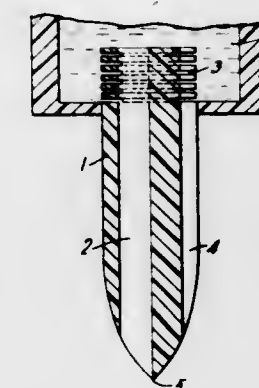
Filed July 24, 1968, Ser. No. 747,179

Claims priority, application Japan, July 25, 1967, 43/59046

Int. Cl. B43k 8/00

U.S. Cl. 401-292

4 Claims



A pen wick made of a synthetic resin material comprises a cylindrical body having a lower inwardly curved transition portion which terminates at the lower end in a writing point. A plurality of internal capillary size axially extending passages are defined in the body and they terminate around the point in respective radially extending slots. The upper end of the body, which is adapted to be located within a reservoir of ink, is provided with one or more circumferentially extending grooves and the exterior of the body is provided with longitudinally extending grooves which intersect at their upper ends with the circumferential grooves and extend downwardly into closely spaced relationship to the slots. Ink is distributed to the point through the internal passages to the slots and an additional supply is directed from the circumferential grooves downwardly along the longitudinal grooves to the vicinity of the slots for supplying an additional supply of ink to the point.

3,614,249

METHOD OF FINISHING A DISPLACEMENT CHAMBER IN A ROTARY FLUID DEVICE

Masakatu Nishioka, Tokyo, Japan, assignor to Oval Kiki Kogyo Kabushiki Kaisha, Tokyo, Japan

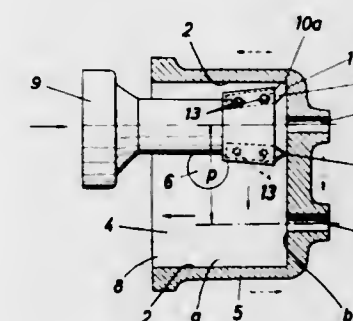
Filed Aug. 13, 1969, Ser. No. 849,815

Claims priority, application Japan, Aug. 17, 1968, 43-58295

Int. Cl. B23b 35/00

U.S. Cl. 408-1

4 Claims

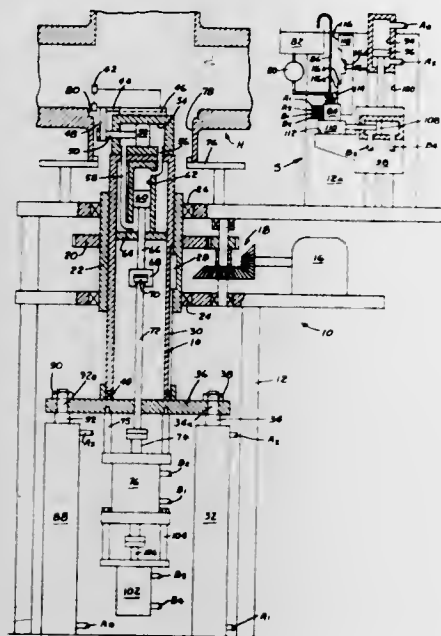


A method of finishing a displacement chamber in a rotary fluid device such as a rotary-disk meter, displacement pump and so on which carries a pair of rotors such as rotary disks, revolving gears. The displacement chamber comprises upright semicircular or semicylindrical wall sections and an oval-shaped bottom wall surface. These sections and surface are finished in a single cutting operation, utilizing a single finishing tool having at least two groups of bits provided on its driving shaft with a specific distance therebetween.

3,614,250
AUTOMATIC MACHINE TOOL
 Walter L. Connolly, Orinda; Harold C. Andree, Orinda, and
 Ralph M. Harrison, Oakland, all of Calif., assignors to
 Grove Valve and Regulator Company, Oakland, Calif.
 Filed June 19, 1969, Ser. No. 834,658
 Int. Cl. B23b 39/26, 47/18

U.S. Cl. 408-3

9 Claims



An automatic tool for machining interior surfaces of stationary work. A hollow shaft is rotated and moved axially, and a cutting member carried on a radial slide on one end of the shaft is moved by a push rod through an axial to radial motion transmitting device to vary the diameter of the bore. Axial movements of the push rod and shaft are delivered by input cylinders, the piston of which are connected to output sensing pistons which operate slave piston drive slides, indicating motion along two axes.

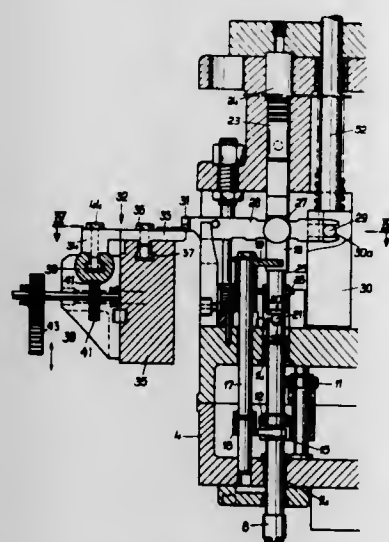
3,614,251
MULTISPINDLE CUTTING MACHINE TO PRODUCE HOLES IN SHEET METAL, FOR EXAMPLE SIEVE STRUCTURES
 Emil Karl Witzig, Greutterwaldstrasse 19, Weilimdorf, and
 Rudolf Frank, Am Zuckerberg 41, Ludwigsburg, both of
 Germany

Filed June 24, 1969, Ser. No. 836,012
 Claims priority, application Germany, July 4, 1968, P 17 52 711.6

U.S. Cl. 408-3

Int. Cl. B23b 39/04

12 Claims



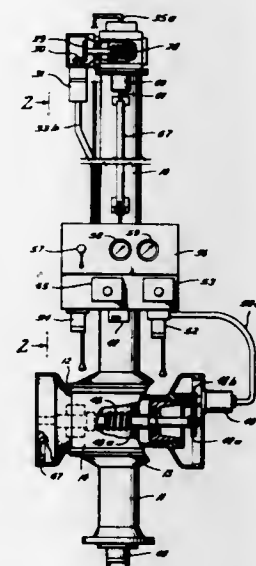
A cutting head, relatively positionable with respect to a table, carries a plurality of cutters. To disable selected cutters, for example to leave uncut spokes in a circular sieve structure, the cutters have holding arms connected thereto, which extend into a cam track path. Adjustable cams are

positioned on the cam track, by means of a pattern or guide displaced with displacement of the positioning of table and cutter. The particular pattern position is sensed, and controls the positions of the cams on the cam track, so that selected holding arms will be engaged by the cams to disable cutting of predetermined, selected cutters.

3,614,252
TAPPING APPARATUS
 Dillard L. Rose, and Coy D. Osburn, Tulsa, Okla., assignors
 to T. D. Williamson, Inc., Tulsa, Okla.
 Filed Jan. 2, 1970, Ser. No. 218
 Int. Cl. B23b 41/08

U.S. Cl. 408-9

11 Claims

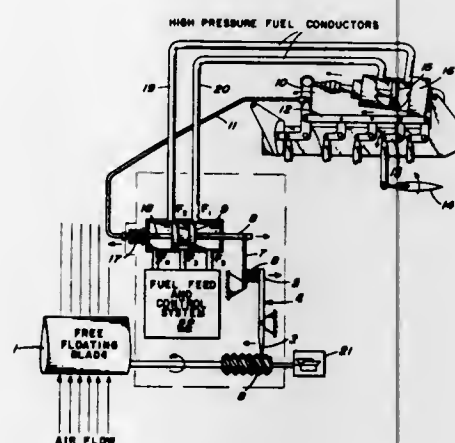


The tapping apparatus disclosed has a feed screw for moving a boring bar axially upon rotation of the boring bar relative to the feed screw. A drive sleeve rotates the boring bar to provide such relative rotation and to rotate a cutter attached to the boring bar to cause the cutter to cut a hole in a pressure vessel. Both the feed screw and the drive sleeve are rotated independently by fluid motors. The pressure of the fluid to each motor is maintained constant, after the initial relative rotation between the boring bar and the feed screw is established, to permit the feed rate of the cutter, i.e., the speed at which the boring bar is moved axially by the feed screw, to adjust itself automatically to decrease as the cutting load increases and increase as the cutting load decreases thereby automatically adjusting the feed rate to the cutting load on the cutter.

3,614,253
ENGINE STALL ANTICIPATION AND REACTION DEVICE
 Robert M. Gaertner, 9315 Queens Lane, Oxen Hill, Md.
 Filed May 29, 1969, Ser. No. 830,220
 Int. Cl. F01d 27/02

U.S. Cl. 415-23

8 Claims



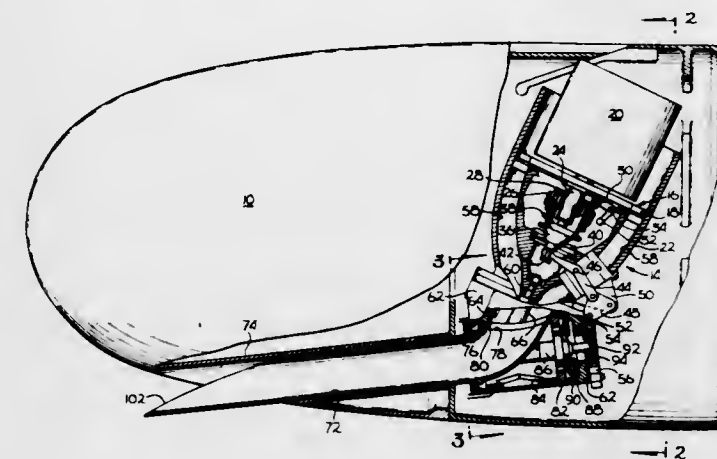
In a compressor operating near stall and utilizing the mechanism of variable pitch stator blades to prevent stall, a

floating stator blade is used to sense an imminent stall condition. The blade pivots like a weather vane in the airstream flow through the axial flow compressor. The attack angle differential between the variable pitch stator blades and the floating stator blade is sensed and utilized by electrical or fluid pressure means to change the attack angle of the variable pitch stator blades so as to prevent stall.

3,614,254
VARIABLE GEOMETRY, ROTARY VALVE, SPEED CONTROLLED TURBINE
 Alfred E. Gabrys, Canoga Park, Calif., assignor to CCI
 Aerospace Corporation, Van Nuys, Calif.
 Filed Oct. 30, 1969, Ser. No. 872,567
 Int. Cl. F01b 25/06

U.S. Cl. 415-36

7 Claims

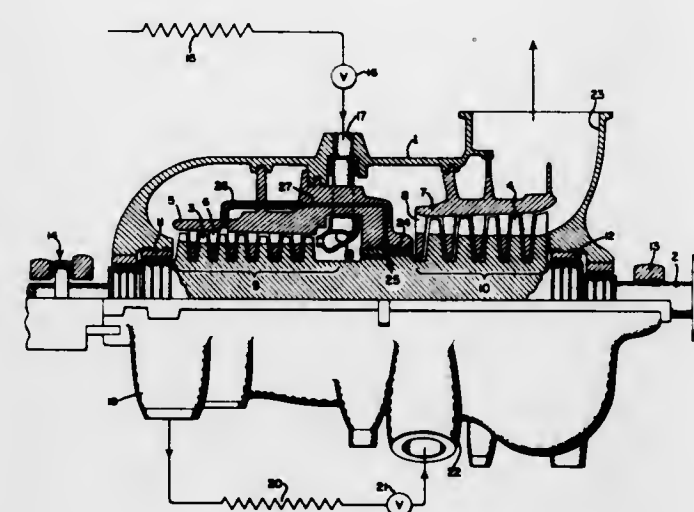


Apparatus for controlling the induction of motivating air into a turbine wherein a governing mechanism effects rotation of the air inlet tubes which is capable of simultaneously reducing the inlet capture area and changing the direction of airflow from the inlet tubes into the turbine.

3,614,255
THRUST BALANCING ARRANGEMENT FOR STEAM TURBINE
 James J. H. Rooney, Jonesville, N.Y., assignor to General
 Electric Company
 Filed Nov. 13, 1969, Ser. No. 876,363
 Int. Cl. F01d 3/02

U.S. Cl. 415-100

4 Claims

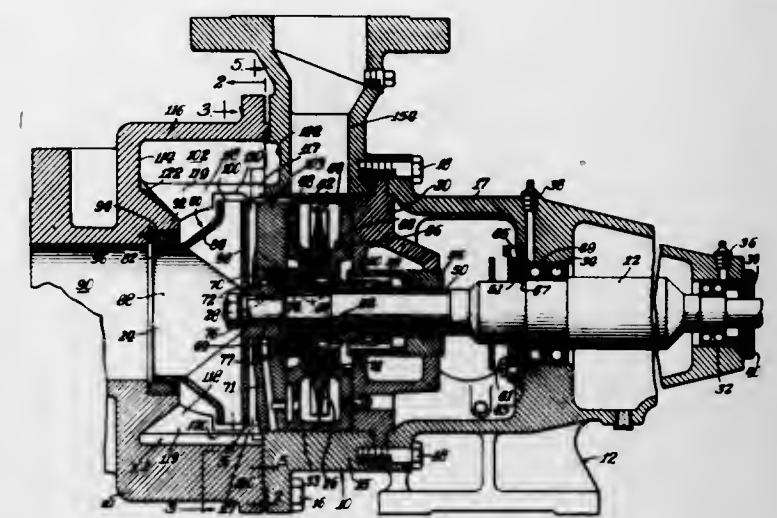


A thrust balancing piston in the midshaft packing of an opposed flow reheat steam turbine is supplied by a pipe connected to a downstream turbine stage. The thrust developed by the balance piston is small under normal operating conditions, but, under certain conditions of steam flow following valve closure, the piston compensates for loss of the thrust of one of the opposed flow turbine elements so as to reduce net thrust on the turbine shaft.

3,614,256
COMBINATION CENTRIFUGAL-TURBINE PUMP
 Leonard J. Sieghartner, Coal Valley, Ill., assignor to Roy E.
 Roth Company, Rock Island, Ill.
 Filed Mar. 19, 1970, Ser. No. 20,881
 Int. Cl. F04d 11/00, 29/08

U.S. Cl. 415-143

6 Claims

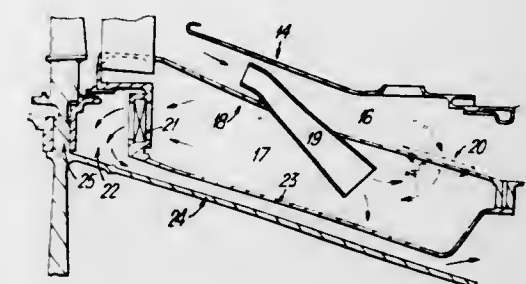


A centrifugal-turbine pump capable of pumping liquids at or near the boiling point with suction heads not greater than 1 foot having a pump casing with first and second pumping chambers laterally disposed and a drive shaft disposed axially of the pumping chambers. A high-pressure regenerative turbine impeller fixed for rotation with the driving shaft. The second pumping chamber extending angularly about the periphery of the turbine impeller and having a discharge opening radially from the turbine impeller. The casing having a suction entrance for the turbine stage opening laterally from the first pumping channel to the second pumping channel. A centrifugal impeller fixed for rotation within the first channel and with the drive shaft and turbine impeller.

3,614,257
GAS TURBINE ENGINE
 David Alexander Campbell, Derby, England, assignor to Rolls
 Royce Limited, Derby, England
 Filed July 16, 1970, Ser. No. 55,409
 Claims priority, application Great Britain, July 19, 1969,
 36458/69
 Int. Cl. F01d 25/12, 5/08

U.S. Cl. 415-176

6 Claims

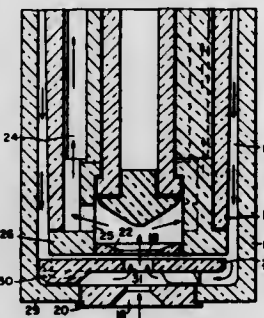


A gas turbine engine having means for reducing air frictional drag and consequent heating on a gas turbine engine compressor disc. High-pressure air is tapped from the main airflow of the engine adjacent the compressor disc and directed at an acute angle to the face of the disc. In this way a rotating mass of high-pressure air is produced adjacent to the face of the compressor disc thus cooling and reducing air frictional drag on the disc.

3,614,258
SCAVENGER PLATE FOR PUMP INLET
 Paul H. Scheffler, and Jack L. McCabria, both of Lima, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1969, Ser. No. 813,411
 Int. Cl. F04d 29/02, 3/02
 U.S. Cl. 415-208

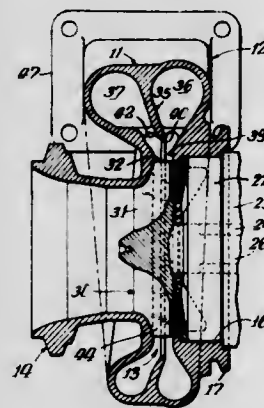
4 Claims



A plate structure disposed between the end of a pump rotor and an inlet port provided in an associated pump housing, the plate being effective to withdraw liquid from around the outside of the rotor when the rotor is rotated, and direct the liquid radially inwardly towards the axial center of the pump and rotor, and into the flow stream entering the rotor.

3,614,259
TURBINE CASING
 Joseph J. Neff, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.
 Filed Sept. 4, 1969, Ser. No. 855,270
 Int. Cl. F01d 1/02; F01k 23/14; F01d 25/24
 U.S. Cl. 415-205

4 Claims



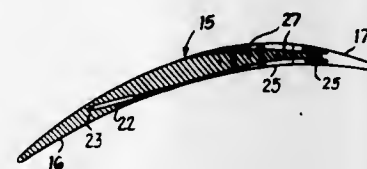
A divided turbine casing for a gas turbine is disclosed, which may be used to provide either a pulse turbine or a variable speed turbine. When used as a pulse turbine, two separate flows of pulsating gas are supplied to the divided inlet portion of the casing. The pulses in the respective flows are transmitted by the casing to the turbine wheel with minimum energy loss. When used as a variable speed turbine, a valve is provided in the inlet portion of the casing to direct gas supplied to the inlet portion into one or the other or both parts of the divided inlet to provide different ranges of gas velocity at the turbine wheel and consequently different ranges of turbine speed.

3,614,260
BLADES OR VANES FOR FLUID FLOW MACHINES
 John H. Ellinger, Mickleover, Derby, England, assignor to Rolls Royce Limited, Derby, England
 Filed Sept. 5, 1969, Ser. No. 855,668

Claims priority, application Great Britain, Sept. 12, 1968, 43367/68
 Int. Cl. F01d 7/00

U.S. Cl. 416-23

7 Claims

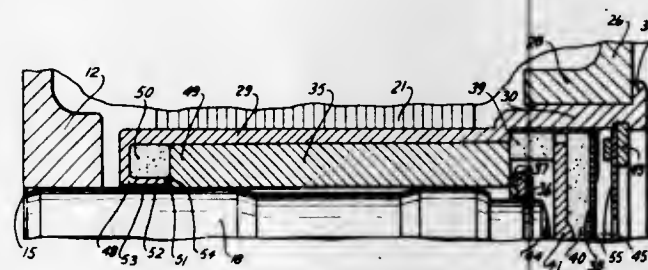


A variable geometry blade or vane particularly for use in a gas turbine engine comprises a rigid spine, a thin flexible sheet shaped to form the aerodynamic surface of the nose or tail of the blade, and actuation means adapted to move the sheet relative to the spine to vary the blade camber.

3,614,261
BEARING SEAL MEANS FOR AN ELECTRICALLY DRIVEN FAN
 Karl E. Friese, Dover, N.H., assignor to IMC Magnetics Corporation

Filed Jan. 9, 1970, Ser. No. 7,296
 Int. Cl. F04d 29/04; F16c 1/29
 U.S. Cl. 416-174

7 Claims

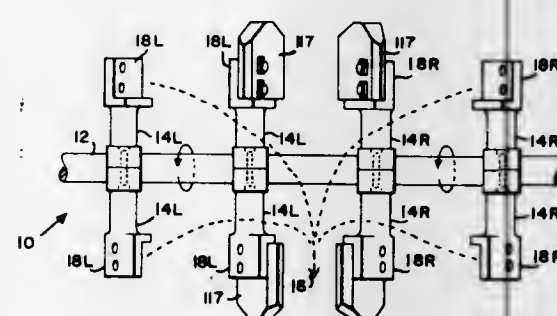


A tubular ferrule connects the fan impeller to the rotor of the fan motor. Fixed within the ferrule is a porous bearing rotatable about a shaft fixed to the fan frame. One end of the ferrule carries a cuplike member, within which may be a felt ring, for accumulating any lubricating oil seeping out from between the bearing and shaft.

3,614,262
ASPHALT MIXER TIP
 Kenneth V. Lutz, 10081 Carmen Road, Cupertino, Calif.
 Filed Nov. 24, 1969, Ser. No. 879,842
 Int. Cl. B01f 7/04

U.S. Cl. 416-224

12 Claims



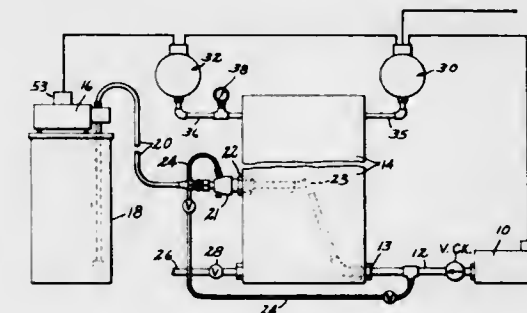
The present invention relates to tips for a heavy-duty mixer, said tips including a left side surface, a right side surface, a leading edge, a trailing edge surface and a top edge

surface interconnecting the leading and trailing edge surfaces, and a bottom edge surface interconnecting the leading and trailing edge surfaces. The tip is symmetrical about a center plane intermediate the side surfaces and carries receiving means for receiving fasteners to secure the tip to a shank which receiving means are designed to receive a fastener from either the left or the right side surface areas, thereby providing a tip interchangeable between left and right arms of the mixer.

3,614,263
CHLORINATION CONTROL APPARATUS
 Max E. Witt, 803 North Renville, Winthrop, Minn.
 Filed Feb. 3, 1970, Ser. No. 8,324
 Int. Cl. F04b 41/06

U.S. Cl. 417-7

8 Claims

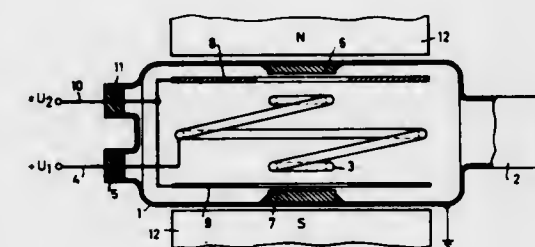


Apparatus for selectively controlling the injection of chlorine into a water pressure tank utilizing a mercury switch actuated by a Bourdon tube for commencing and terminating the chlorine injection at pressures which are correspondingly greater than and less than the pressures at which the water flow into the pressure tank commences and terminates.

3,614,264
IONIZATION GETTER PUMP
 Karl-Georg Gunther, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
 Filed June 5, 1959, Ser. No. 818,322
 Claims priority, application Germany, June 6, 1958, Int. Cl. F04f 11/00

U.S. Cl. 417-49

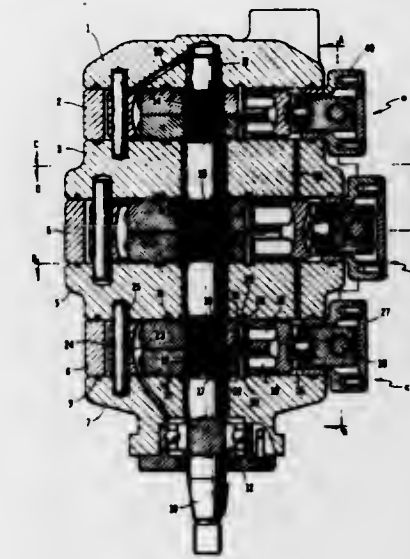
5 Claims



A pair of electrically conducting collector electrodes are disposed in a housing on either side of an anode. A cathode is disposed between the anode and each collector electrode and insulated from each. Each of the cathodes comprises a getter substance. The space between the anode and each of the cathodes defines a discharge space. Cathode-sputtering voltage is applied between the anode and the cathodes. A magnetic field is impressed upon the discharge space and has field lines extending from one collector electrode toward the other. Each of the cathodes defines at least one aperture therein having an axis parallel to the magnetic field lines and through which ions from the discharge space and material sputtered from the cathodes pass to the collector electrodes.

3,614,265
RADIAL PISTON PUMP
 Carl V. Ohrberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
 Filed Jan. 15, 1970, Ser. No. 3,084
 Claims priority, application Germany, Feb. 17, 1969, P 19 07 840.1
 Int. Cl. F04b 23/04, 19/00; F01b 1/06
 U.S. Cl. 417-62

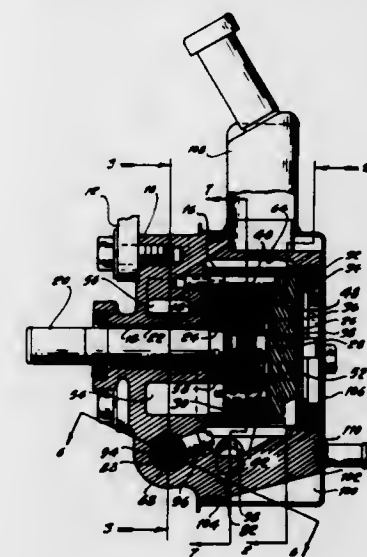
2 Claims



The invention relates to a multistage radial piston pump assembly. The assembly has two or more spaced-apart piston carriers attached to a shaft, the piston carriers having radially disposed cylinders with pistons disposed therein. A pivotally adjustable track carrier surrounds each piston carrier. Casing parts between each adjacent pair of piston carriers each has passages in fluid communication with the inlet and outlet ports of the assembly. At least one of these casing parts has the passages thereof in fluid communication with each of the piston carriers on opposite sides thereof through the sidewalls of the casing part. Regulatory means are provided for a three-stage assembly so that the eccentricity of the track carrier surrounding the middle piston carrier is always in the opposite direction of the eccentricities of the other two track carriers relative to the other two corresponding piston carriers.

3,614,266
COMPACT POSITIVE DISPLACEMENT PUMP
 Fred A. Clampa, Birmingham, and Sergio J. Mazzola, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
 Filed Dec. 24, 1969, Ser. No. 887,950
 Int. Cl. F04b 23/04, 49/00
 U.S. Cl. 417-79

3 Claims

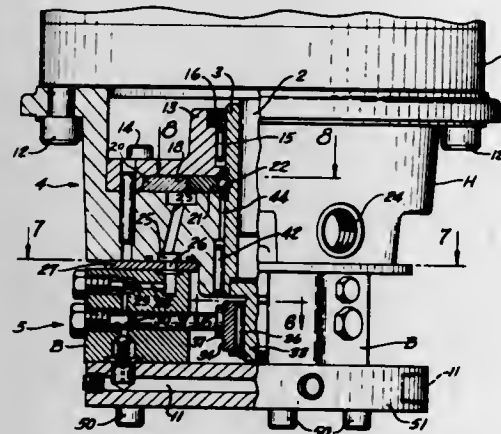


A positive displacement pump adapted especially for pumping oil in a power steering system for an automotive

vehicle, said pump comprising a rotor, slipper elements in the rotor engageable with the cam surface of a relatively stationary pump cam, a pump body surrounding the cam and having internal cavities which define a high-pressure outlet region, the low-pressure fluid inlet region of the pump being defined by other parts of the stationary housing, a reservoir surrounding the pump body and cooperating with a pump pressure plate which is subjected to a supercharge pressure obtained by the velocity pressure of fluid bypassed from a fluid control valve situated in the pump body.

3,614,267
TWO-STAGE FLUID PUMP
Eckart F. Schultze, Wauwatosa, and John R. Schultze, Milwaukee, both of Wis., assignors to Applied Power Industries Inc., Milwaukee, Wis.
Filed Oct. 31, 1969, Ser. No. 873,023
Int. Cl. F04b 23/12, 1/04, 27/04
U.S. Cl. 417-206

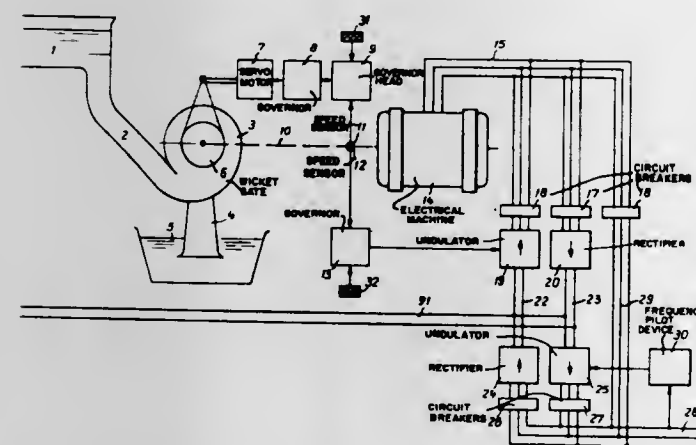
1 Claim



A two-stage pump assembly in which one of the pumping elements is a Gerotor pump and the other pumping element is a radial piston pump. The Gerotor pump acts to charge the radial piston pump and also acts as a first stage high-flow pump. Both pumps can operate together to produce a combined flow, and the Gerotor pump can be unloaded to divert its flow and thereby permitting the radial piston pump to act as a first stage pumping unit. Individual and replaceable pump bodies are provided for the piston type pump.

3,614,268
HYDRO-ELECTRIC INSTALLATION
Adrien Merenda, Clarens, Switzerland, assignor to Ateliers de Constructions Mecaniques de Vevey S.A., Vevey (Vaud), Switzerland
Filed Oct. 13, 1969, Ser. No. 865,659
Claims priority, application Switzerland, Apr. 24, 1969, 6,213/69
Int. Cl. F04b 41/04; H02k 7/18; F01d 15/10
U.S. Cl. 417-237

9 Claims

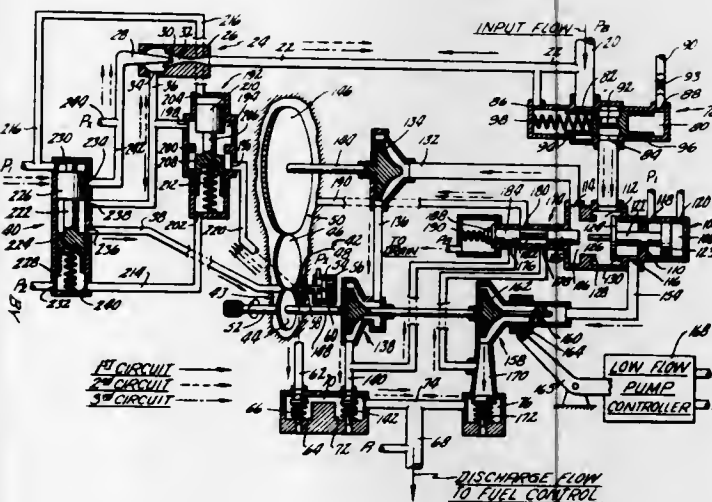


A hydroelectric installation, comprising a hydraulic machine, such as a turbine, pump or pump turbine, wherein

the rotor is coupled to the shaft of a synchronous alternating current electrical machine operating as an alternator, or as a motor. When operating as a turbine, the installation includes at least one set of rectifiers transforming the alternating current produced by the alternator into direct current. When operating as a pump, the installation includes at least one undulator transforming the direct current supplied by the electric line into alternating current and supplying the motor. In both instances the installation comprises a pilot device controlling the mechanism regulating the quantity of water flowing through the turbine, or the frequency of the current output of the undulator to maintain at any instant, the predetermined speed of rotation of the rotor of the machine regardless of the value of the hydraulic head existing at that moment.

3,614,269
INTEGRATED PUMP-CONTROL SYSTEM USING A UNITIZED PUMP
Robert S. Lancot, Long Meadow, Mass., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed Mar. 9, 1970, Ser. No. 17,748
Int. Cl. F04b 23/04, 49/00, 41/06
U.S. Cl. 417-253

26 Claims



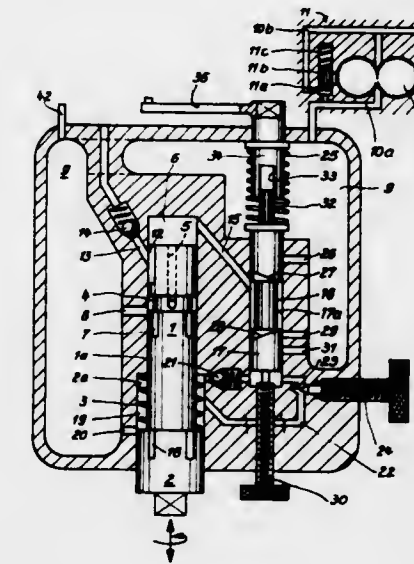
An integrated fuel pump and control system has a unitized pump which includes three pumping circuits. A first pump circuit includes a positive displacement gear pump to provide fuel to a gas turbine engine from startup to just below idle. A second pump circuit includes a high-flow centrifugal pump, and a third circuit includes a low-flow centrifugal pump. A pump switching arrangement automatically switches from the first circuit at an engine speed slightly below that of ground idle to either the second or third circuit depending on the engine fuel requirements.

3,614,270
FUEL INJECTION PUMP FOR INTERNAL-COMBUSTION ENGINES
Horst Franke, Hofherrenweiler-Aalen, and Erich Dobler, Ulm-Herlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed July 21, 1970, Ser. No. 56,865
Claims priority, application Germany, Aug. 8, 1969, P 19 40 372.6
Int. Cl. F04b 49/00; F02d 1/02, 1/06
U.S. Cl. 417-293

5 Claims

A fuel injector pump having a bypass from the pump chamber to a peripheral notch on a slide valve establishing connection to the suction chamber when the notch uncovers either one of two outlet ports. The notch is delimited by inclined edges and the slide valve is adjustable angularly and driven in synchronism with the main pump, whereby bypass intervals, during which no injection occurs, appear in the

initial and terminal phase of each stroke with a duration depending on the angular position, which is controlled by the



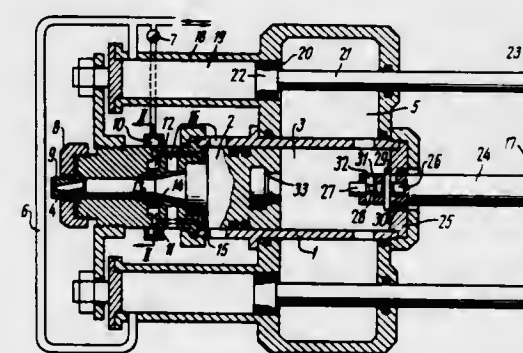
accelerator pedal with a stop being provided in dependence on the r.p.m.

ERRATUM
For Class 417,312 see:
Patent No. 3,614,384

3,614,271
DEVICE FOR BUILDING UP FLUID PRESSURE PULSES
Vladimir Semenovich Muchnik, Kemerovskoi oblasti, ulitsa Michurina 5, kv. 29; German Petrovich Chermensky, Kemerovskoi oblasti, ulitsa Nevskago 4, kv. 3; Mikhail Andreevich Nikiforov, Kemerovskoi oblasti, ulitsa Kirova, 33, kv. 19, and Jury Vladimirovich Gaiduk, Kemerovskoi oblasti ulitsa Shkolnaya, 21, kv. 13, all of Novokuznetsk, U.S.S.R.

Filed Oct. 30, 1969, Ser. No. 872,534
Int. Cl. F04b 17/00
U.S. Cl. 417-379

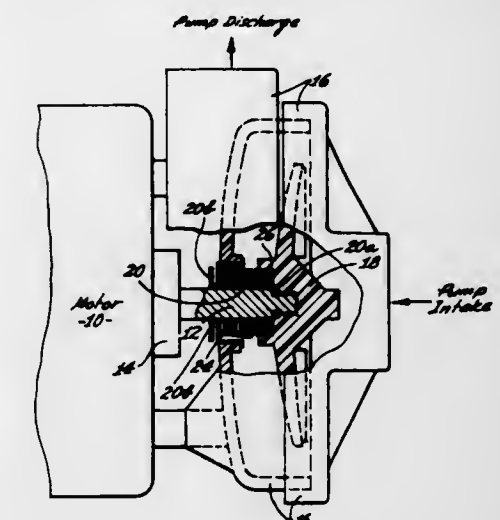
3 Claims



A device for building up fluid pressure pulses comprises a cylinder and a piston which divides the cylinder cavity into two chambers. The first of these chambers communicates with a compressed gas vessel while the second one is filled with fluid and has a hole for the discharge of the fluid under pressure when the fluid is struck upon by the piston which is accelerated by the compressed gas in the first chamber, the second chamber being in constant communication with the fluid supply line through a number of channels in the sidewall of the cylinder, some of these channels being arranged tangentially to the chamber and inclined with respect to the axis of the discharge hole while the remainder of these channels are arranged radially and also inclined relative to the axis of the hole.

3,614,272
PUMP ASSEMBLY
Richard O. Lightfoot, Pacific Palisades, and John J. Kunzweiler, Colton, both of Calif., assignors to HPE, Inc., Colton, Calif.
Filed Feb. 2, 1970, Ser. No. 7,934
Int. Cl. F04b 35/04; F03b 11/00
U.S. Cl. 417-423

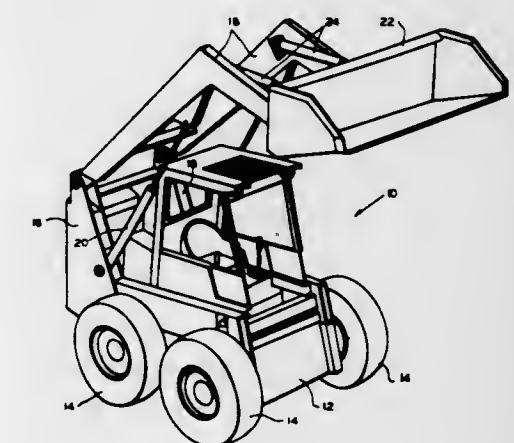
5 Claims



A pump assembly is provided which is constructed to prevent any possibility for the liquid passing through the pump to receive an electric charge due to defects in the insulation of the pump motor. The housing and impeller of the pump may be constructed, for example, of an insulating plastic material, and a sleeve of an insulating plastic material is mounted on the portion of the aforesaid shaft extending into said pump housing so as to insulate the shaft from the liquid within the pump housing. The sleeve also has an integral shoulder outside of the pump housing which extends radially outwardly and the shoulder exerts a centrifugal force on any liquid which may leak from the pump housing so as to prevent such liquid from entering the motor bearings.

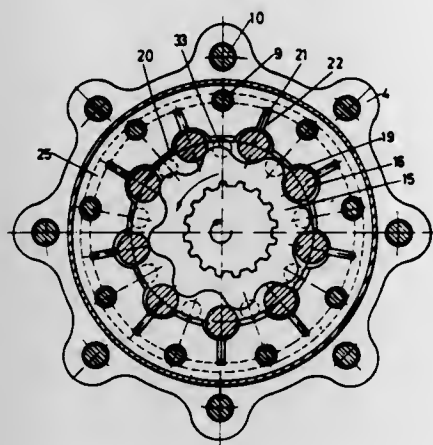
3,614,273
MECHANISM FOR CONTROLLING THE BOOM ARMS AND BUCKET OF A FRONT END LOADER
Gersen L. Wallace, Fargo, N. Dak., assignor to Clark Equipment Company
Filed Jan. 26, 1970, Ser. No. 5,755
Int. Cl. B66f 9/00
U.S. Cl. 214-778

6 Claims



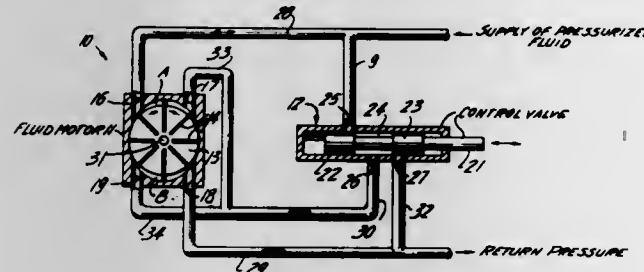
Mechanism for operating a pair of boom arms at one speed and operating a bucket pivotally mounted on the boom arms at two different speeds through manipulation of a single control handle. The mechanism includes a first valve connected to the control handle and second and third valves connected by linkage to the control handle for sequential operation.

3,614,274
HYDRAULIC ROTARY PISTON MACHINE
 Carl V. Ohrberg, Havnbjerg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
 Filed June 15, 1970, Ser. No. 46,280
 Claims priority, application Germany, June 19, 1969, P 19 31 143.4
 Int. Cl. F01c 1/02; F03c 3/00; F04c 1/02
 U.S. Cl. 418-61



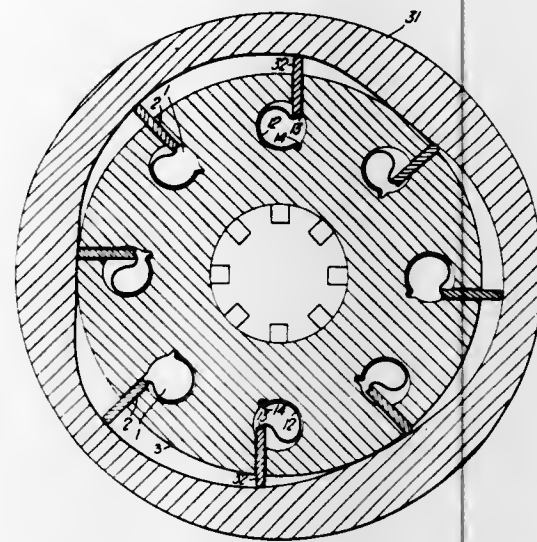
The invention relates to a rotary piston machine of the type having an externally toothed star member and a surrounding internally toothed ring member. The star and ring members have cooperably engaging teeth and are eccentrically offset relative to each other. The ring member teeth are in the form of rotatable rollers which are journaled in casing portions on opposite sides of the ring member. The ring member has slots in radially aligned and surrounding relation to the rollers and plates in the slots are biased into sealing engagement with the rollers by spring means and/or hydraulic means.

3,614,275
CONTROL MEANS FOR BIDIRECTIONAL ROTARY FLUID MOTOR SYSTEM
 Richard S. Elbsen, Hillsdale, N.J., assignor to Curtiss-Wright Corporation
 Filed Nov. 13, 1969, Ser. No. 876,247
 Int. Cl. F01c 1/18, 11/00, 21/12
 U.S. Cl. 418-206



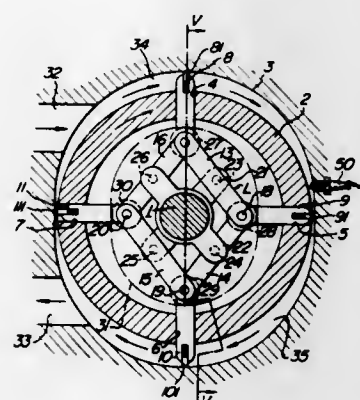
A control means for a bidirectional, rotary fluid motor means constructed and arranged to have porting and fluid working chambers to provide rotation of a rotor in one direction or the opposite direction. The control means comprises a control valve connected to communicate with the fluid motor means and a pressurized fluid supply means and a fluid exhaust or return means so that pressurized fluid fills or "floods" the fluid motor, including the ports and working chambers, in the neutral or null position of the control valve to thereby cause equal and opposite torque forces on the rotor and prevent rotation of the latter, and in another operative position of the valve effect an imbalance of torque forces on the rotor so as to cause rotation of the rotor in one direction or the other with a minimum time lapse.

3,614,276
ROTARY VANE PUMP
 Hans Erdmann, Neu-Isenburg, Germany, assignor to Industrial Electronic Hardware Corp., New York, N.Y.
 Filed Jan. 15, 1970, Ser. No. 3,136
 Claims priority, application Germany, Jan. 17, 1969, P 19 02 187.5
 Int. Cl. F01c 1/00
 U.S. Cl. 418-238



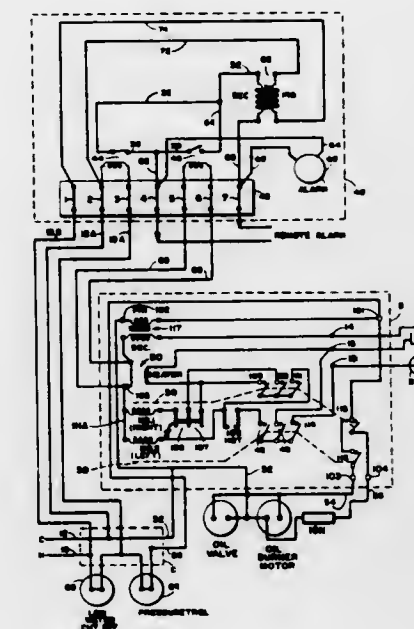
A rotary sliding vane machine in which the vane springs are positioned in chambers under the vane guide slots which are eccentrically arranged with respect to the guide slots. The springs may be either curved strip springs or cylindrical helical springs.

3,614,277
VANE-TYPE ROTARY ENGINE
 Akira Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
 Filed May 11, 1970, Ser. No. 36,130
 Claims priority, application Japan, May 14, 1969, 45/37115
 Int. Cl. F01c 1/00, 21/00
 U.S. Cl. 418-253



A rotary engine having the following construction. A rotor rotating in an elliptic cylinder is provided with four radial slots and a vane is slidably inserted through each of said slots with the root thereof pivotally connected to each apex of a quadrilateral linkage disposed in said cylinder. When the rotor rotates while being carried by the rotor, the movement of the pivot point at the root of each vane is so regulated as to draw a common elliptical locus and, as a result, the tips of each vane move while drawing a common elliptical locus. The inner peripheral surface of the cylinder in sliding engagement with the tip of each vane is shaped in an elliptical configuration conforming to the locus drawn by the tips of the vanes. By constructing as described above, the friction between the tip of each vane and the inner peripheral surface of the cylinder can be minimized and a stable high-speed running of the engine can be obtained.

3,614,278
ALARM CIRCUIT
 Charles J. Di Noto, Jr., 103 West Passaic Ave., Rutherford, N.J.
 Filed Mar. 9, 1970, Ser. No. 17,769
 Int. Cl. F23n 5/24
 U.S. Cl. 431-16



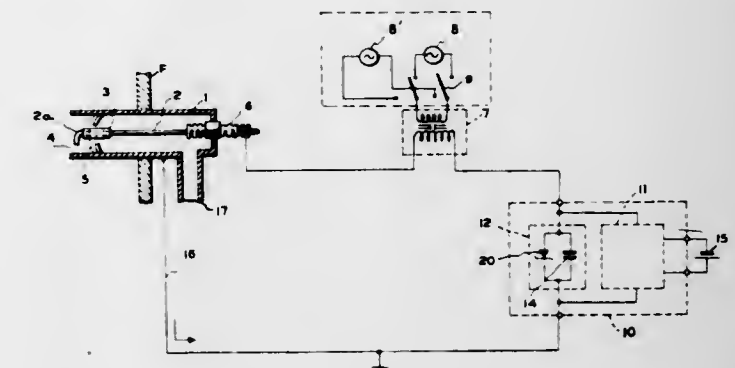
A relay circuit, in combination with malfunction controls of a domestic heating system (oil burner) energized by a standard primary control whereupon a malfunction such as low water level, in addition to the shutoff of the oil burner, an alarm circuit is operated for an aural or visual signal.

3,614,279
LIFETIME CANDLE INCLUDING FUEL SUPPLY INDICATING MEANS THEREFOR
 Reynold E. Schenke, Paradise, Pa.
 Filed Jan. 8, 1970, Ser. No. 1,514
 Int. Cl. F23d
 U.S. Cl. 431-17



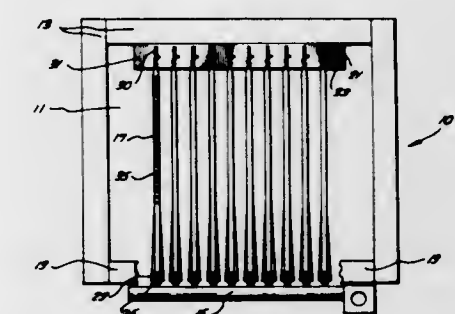
An improved lifetime candleholder having the general configuration of a candle wherein means are provided for urging the candle to the upper portion of the holder so that the entire candle may be consumed. The improvement consists essentially in means to indicate that the candle has been nearly consumed.

3,614,280
IGNITION AND FLAME DETECTION SYSTEM UTILIZING A SINGLE ELECTRODE
 Tamio Yamaguchi, Chigasaki, Japan, assignor to Tokyo Gas Company Limited, Tokyo, Japan
 Filed Dec. 22, 1969, Ser. No. 886,821
 Claims priority, application Japan, Dec. 27, 1968, Jan. 13, 1969, 44/366; 44/46562
 Int. Cl. F23n
 U.S. Cl. 431-25



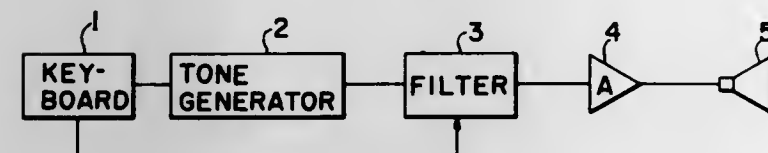
A single electrode is positioned adjacent a burner in a furnace. A single circuit supplies current to create an arc across the electrode to the burner to ignite the furnace. The same circuit detects a DC current from the electrode to the burner due to the electric conductivity of the flame. The circuit includes means to shunt any AC current from the detector. An insulation material covers the electrode adjacent the arc-creating end to stabilize the DC current.

3,614,281
DETACHABLE BURNER ASSEMBLY
 Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
 Filed July 24, 1969, Ser. No. 844,488
 Int. Cl. F23d 13/24
 U.S. Cl. 431-180



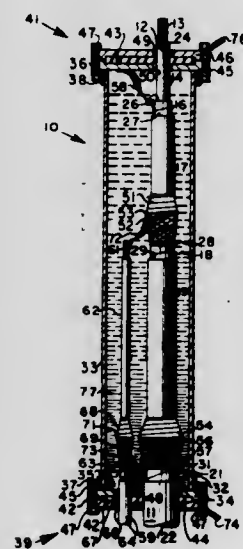
The invention disclosed herein describes a burner assembly having a plurality of burners being detachably connected to a burner manifold. The attaching means includes a spring-biased grommet connected to the mouth of each burner, each grommet having an annular portion adapted to be snapped into engagement with an annular groove of a respective gas jet which, in turn, is threadably connected to the burner manifold. The other end of each burner includes a flanged end that is insertable into a slot formed within a support bar located on the rear side of the combustion chamber. To remove a burner from the assembly the rear end of the burner is lifted out of the slot in the support bar; then the mouth of the burner is detached from the gas orifice, thereby permitting easy service access to the individual burners and their respective gas jets.

3,614,288
MONOPHONIC ELECTRONIC MUSICAL INSTRUMENT WITH VARIABLE FILTER
 Takehisa Amano, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
 Filed July 17, 1969, Ser. No. 842,547
 Claims priority, application Japan, July 19, 1968, 43/50567
 Int. Cl. G10h 1/02
 U.S. Cl. 84—1.21



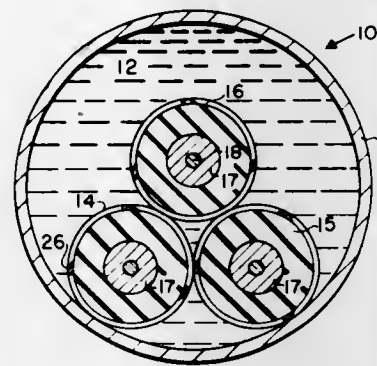
A monophonic electronic musical instrument comprising a keyboard circuit having key switches, a tone generator whose frequency is selectively determined by the key switches, a variable low-pass filter for filtering a tone signal from the tone generator, and a controlling DC voltage generator for producing a DC voltage to control the cutoff frequency of the filter. The DC voltage is so selected that the cutoff frequency is set in proportion to the frequency of the tone generator. Thus, flute tone signals of the same tone volume and color are obtained throughout the whole gamut of the instrument.

3,614,289
TERMINATION AND JOINT FOR TAP-PROOF CABLE
 Erich W. Kothe, White Plains, and Andrew C. Laird, Hastings-on-Hudson, both of N.Y., assignors to Anaconda Wire and Cable Company
 Filed Jan. 3, 1964, Ser. No. 335,518
 Int. Cl. H02g 15/22, 15/24
 U.S. Cl. 174—19



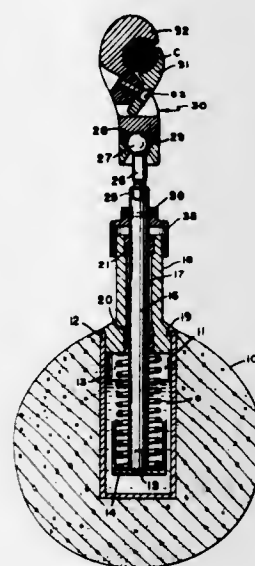
Our invention relates to cable terminations and joints and particularly to terminations and joints for tap-proof communication cables.

3,614,290
PIPE-TYPE CABLE COMPRISING ALUMINUM CONDUCTORS WITH HIGH-ELASTIC-MODULUS TENSILE STRANDS
 Walter J. Plate, Rye, N.Y., assignor to Anaconda Wire and Cable Company
 Filed Mar. 25, 1970, Ser. No. 22,460
 Int. Cl. H01b 9/06
 U.S. Cl. 174—26 R



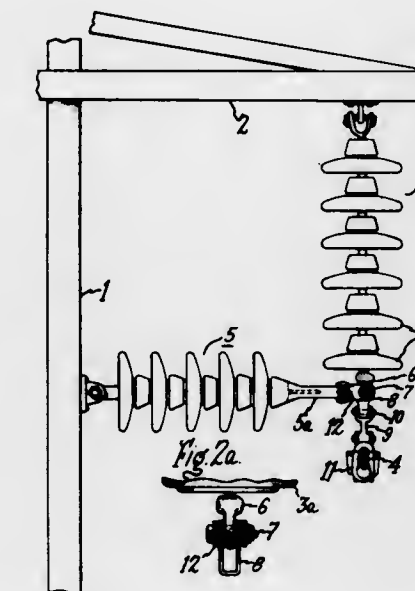
Aluminum pipe-type cable conductors comprise high elastic-modulus core strands so that long continuous lengths can be pulled into a pipe.

3,614,291
TRANSMISSION LINE CABLE DAMPER
 John Pullen, Wilton, Conn., assignor to Burndy Corporation
 Filed Aug. 14, 1969, Ser. No. 850,191
 Int. Cl. H02g 7/14; F16f 7/10
 U.S. Cl. 174—42



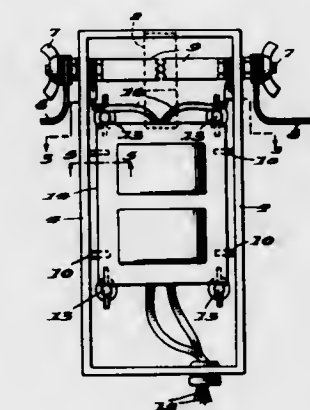
A damper for transmission line cables utilizes an outer body formed of concrete, and having an internal opening that functions as the cylinder of a fluid containing dashpot. A piston in the dashpot cylinder supports the weight of the concrete body through the intermediary of a spring in the cylinder, and a piston rod is fixed to the piston and extends out of the concrete body to be secured to a cable whose motion is to be damped. In a modification, the subassembly of a dashpot comprising a piston and piston rod, a spring and a fluid containing cylinder, is inserted into an opening of a weight mass formed of concrete, and the cylinder becomes an integral part of said weight mass.

3,614,292
STRUT INSULATOR CONNECTOR
 Russell E. Volker, Baltimore, Md., assignor to General Electric Company
 Filed June 11, 1970, Ser. No. 45,288
 Int. Cl. H01b 17/10; H02g 7/20
 U.S. Cl. 174—45 R



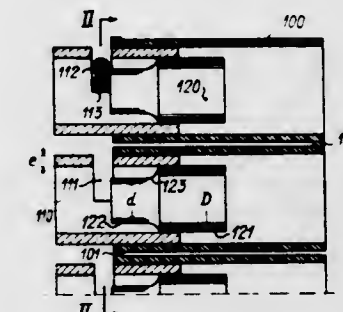
Outer end of strut insulator is connected to lower end of suspension insulator string by a clevis-eye connector whereby the strut insulator can be readily detached without removing the conductor clamp also connected to the bottom of the suspension insulator string.

3,614,293
ELECTRIC FENCE CONTROLLER
 A. C. Boyd, Knoxville, Tenn., assignor to Fi-Shock, Inc., Knoxville, Tenn.
 Filed Feb. 13, 1970, Ser. No. 11,055
 Int. Cl. H05c 1/02; H05k 5/00
 U.S. Cl. 174—52 R



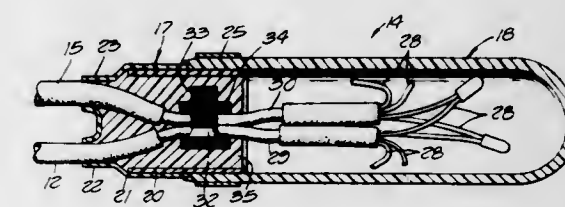
An electric fence controller having a plastic case for enclosing the power transformer. The transformer is mounted in the case, spaced from the surrounding sides, top and bottom thereof, being seated upon shoulders provided on flange support members which serve both to confine the transformer transversely of the case and as supports. The cover has depending pins which engage the transformer at the opposite side from the shoulders, thus confining the transformer on the latter and retaining it in place. Posts are also mounted in the case, spaced at intervals about the transformer to confine it lengthwise in position. These supporting parts are formed in one integral piece with the adjacent parts of the plastic case.

3,614,294
DEVICE FOR RAPIDLY INTERCONNECTING TWO INSULATED ELECTRICAL CONDUCTORS
 Jean LeRouze, Boulevard d'Armor Batiment No. 4, and Guy J. Mascarin, No. 212, Batiment G2, Z.U.P., both of Lannion, France
 Filed Mar. 17, 1970, Ser. No. 20,325
 Claims priority, application France, Mar. 20, 1969, 6908037
 Int. Cl. H02g 15/08
 U.S. Cl. 174—84 S



An article of manufacture for the rapid connection of insulated conductive wires without requiring previous preparation or stripping of the insulation to bare of the wires, the wires being clamped between a hollow metal cylinder and a piston slidable in the hollow metal cylinder; the hollow metal cylinder being formed with a radial slot extending substantially over half its diameter and this slot receiving the wires to be connected. The piston is moved to bend the wires and simultaneously tear the insulation thereof and thereby bring the wires into contact with one another. A hollow plastic cylinder surrounds the back portion of the cylinder and the piston and serves as insulation for the connection.

3,614,295
CABLE SPLICE KIT AND METHOD OF USE IN MAKING BRANCHOUT SERVICE CONNECTIONS
 George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.
 Filed Oct. 6, 1969, Ser. No. 864,065
 Int. Cl. H02g 15/08; H01b 13/00
 U.S. Cl. 174—87



A cable splice kit and method for providing a main distribution cable with service branchouts each including a separate auxiliary splice housing designed to be opened and reclosed while testing and servicing lead-in splicing operations without need for disturbing the main cable branchout splice. The branchout cable includes extra conductors spliced to the conductors of the main cable and available for connection to the lead-in cable when and as need arises. The branchout and service cables have electrical shields which are secured together in an area imbedded in potting compound at one end of the auxiliary splice housing.

3,614,296 WIRE CONNECTOR WITH FRUSTOCONICAL GRIPPING SPRING

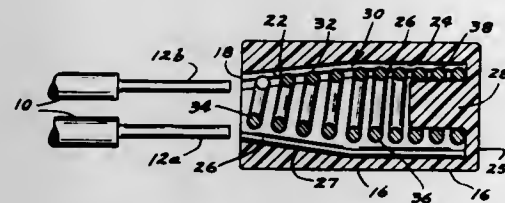
John H. Blomstrand, 214 Hazel Drive, Corona Del Mar, Calif., and Frederick W. Nyquist, 3318 Via Lido, Newport Beach, Calif.

Filed Dec. 24, 1969, Ser. No. 887,901

Int. Cl. H02g 15/08

U.S. Cl. 174-87

9 Claims



A plurality of wires are gripped by a frustoconical coil spring which forces the wires tightly against surface portions formed on a rigid member having substantially the same degree of taper as the coil spring. In one embodiment the coil spring is placed within a recess provided in the rigid member and in a second embodiment the spring encircles the rigid member.

3,614,297

ELECTRICAL CONDUIT SYSTEM

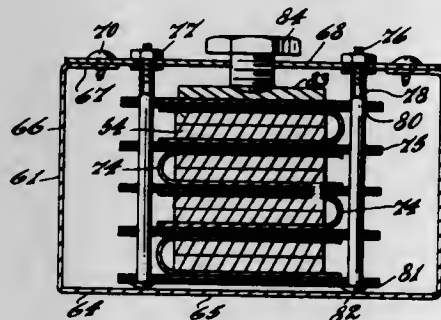
Elmer T. Carlson, Center Valley, Pa., assignor to Broadhill Development Corporation, Hartford, Conn.

Continuation-in-part of application Ser. No. 769,485, Oct. 22, 1968, now Patent No. 3,504,097, dated Mar. 31, 1970. This application Aug. 8, 1969, Ser. No. 848,541

Int. Cl. H02g 15/08

U.S. Cl. 174-88 B

7 Claims



A stack of insulated electrical conductors of rectangular external contour, each conductor preferably consisting of strip laminations, extends through a conduit which has an open position and a closed position in heat transfer relation with the insulation. In a connector a press clamps together overlapping end portions of corresponding conductors. Conduit envelopes are joined at the ends and conduits are suspended by hangers.

3,614,298

CABLE SPLICE CASING WITH CONDUCTIVE ANCHORAGE TO CABLE SHEATH AND SHIELD

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Filed Feb. 19, 1970, Ser. No. 12,819

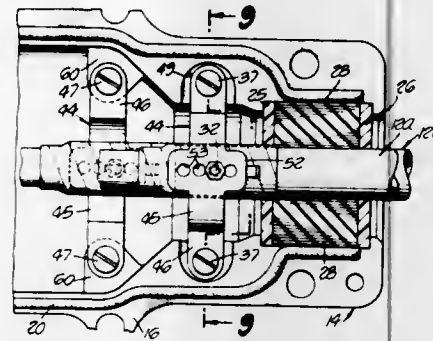
Int. Cl. H02g 15/08

U.S. Cl. 174-92

20 Claims

A cable splice casing cast in two mating halves and equipped with one or more conductive anchor assemblies for mechanically and electrically connecting the cable shield and sheath jackets to each end of the casing while the latter is open. The casing acts to interconnect the cable sheath across the splice area and to provide electrical continuity between the respective cable shield jackets. More than one cable of the same or different sizes can be readily and separately accommodated at either end of the casing. The anchorages

are spaced inwardly of a sealing gasket at each end of the casing and the latter can be opened for servicing and testing



without disturbing the cable anchorage or the grounding connection between the cables and the casing.

3,614,299

LOW THERMAL CONDUCTIVITY CABLE CORE WRAP

Thomas J. Grail, Plainfield, N.J., assignor to Esso Research and Engineering Company

Continuation of application Ser. No. 677,963, Oct. 25, 1967, now abandoned. This application July 17, 1970, Ser. No. 56,245

Int. Cl. H01b 7/18, 7/34

U.S. Cl. 174-107

2 Claims



A thermally insulating laminate as a cable core wrap wherein the laminate consists of a at least one layer of a low bulk density, high-surface area material capable of intertrapping air in said laminate to lower thermal conductivity.

3,614,300

POWER CABLE WITH POLYPROPYLENE COVERED GROUND CHECK STRAND

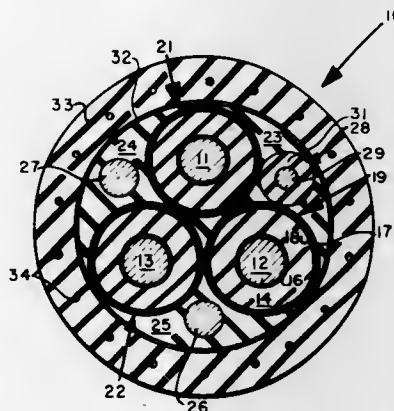
Floyd A. Wilson, Marion, Ind., assignor to Anaconda Wire and Cable Company

Filed Oct. 22, 1970, Ser. No. 83,053

Int. Cl. H01b 9/00

U.S. Cl. 174-115

1 Claim



A three-phase shovel cable having ethylene-propylene insulation on the power conductors and bare grounding

strands comprises a ground-check strand with a heavy wall of polypropylene insulation that permits the ground check to outlast the other strands in flex endurance.

3,614,301

SUPERCONDUCTING CONDUCTOR

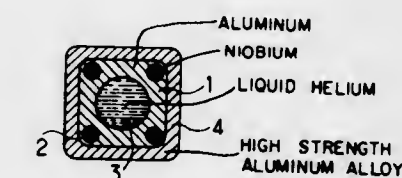
Jean Royet, Orsay, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Jan. 19, 1970, Ser. No. 3,663

Int. Cl. H01b 5/00, 7/34

U.S. Cl. 174-126

3 Claims



A stabilized superconducting conductor formed of a tube of aluminum alloy having at least one wire of superconductive material disposed therein and a sheath of high-strength material covering the outside of the tube in good thermal and electrical contact with the tube.

3,614,302

APPARATUS FOR RECORDING COLOR INFORMATION ON MONOCHROME FILM

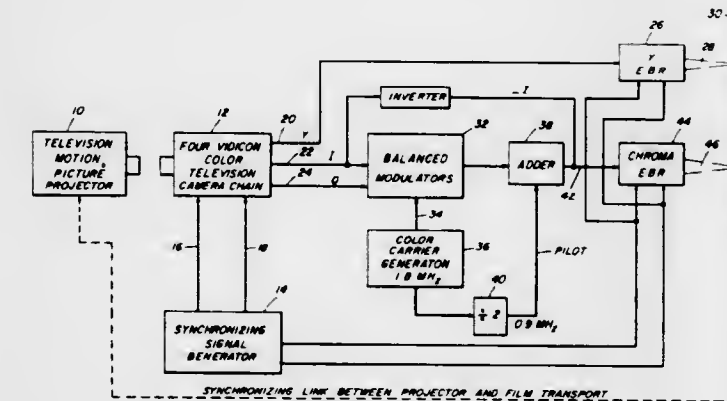
Abraham A. Goldberg, Stamford, Conn., assignor to Columbia Broadcasting System, Inc.

Filed Sept. 9, 1969, Ser. No. 856,334

Int. Cl. H04n 1/46, 9/02

U.S. Cl. 178-5.2 R

6 Claims



In apparatus for recording color picture information on monochrome film as two simultaneous sets of pictures, one for luminance information which may be in pictorial form, and the other for chroma information which takes the form of two color difference signals, suppressed carrier modulated in quadrature phase to each other and to which a pilot signal is added to facilitate playback, the available dynamic range of the film on which the information is recorded is better utilized by adding to the chroma signal, prior to recording, a signal corresponding to the NTSC "I" signal to make more symmetrical the chroma signal resulting from the vector addition of chroma and pilot.

3,614,303 ARRANGEMENT FOR CORRECTING TIMING ERRORS IN COLOR TELEVISION SIGNALS

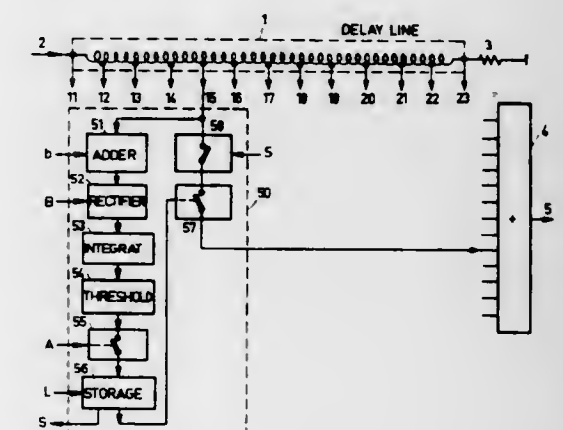
Gerhard Krause, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Continuation-in-part of application Ser. No. 507,997, Nov. 12, 1965, now abandoned. This application Nov. 25, 1968, Ser. No. 778,515

Int. Cl. H04n 9/02

U.S. Cl. 178-5.4 R

11 Claims



An arrangement for correcting timing errors in a color television signal which is reproduced after being stored on magnetic tape. The color television signal is applied to one end of a delay line having a plurality of taps. The other end of the delay line is terminated by a resistor having the characteristic impedance of the delay line. Each tap of the delay line is connected to a separate signal processing circuit. One such signal processing circuit is associated with each tap of the delay line. The signal from a tap of the delay line is superimposed upon a reference signal. A comparison of the tapped signal with the reference signal is made, and when the difference does not exceed a predetermined limit or threshold value, a switch is closed and the tapped signal is transmitted to an adding device which has a single output and an input for each one of the taps of the delay line. Superposition of the tapped signal with the reference signal may be accomplished either through an additive process or a multiplying process.

3,614,304

VECTOR OSCILLOSCOPE

Helmut Schonfelder, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

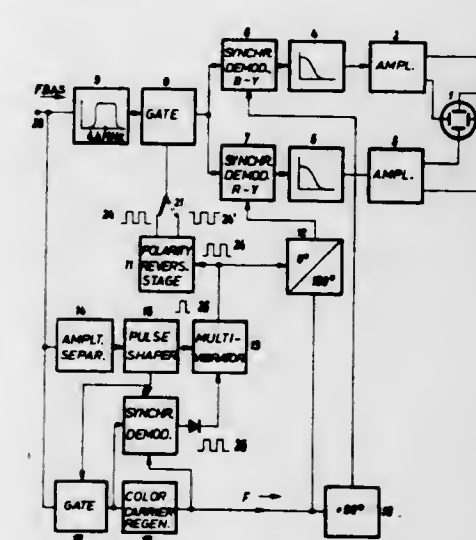
Filed Feb. 17, 1970, Ser. No. 12,892

Claims priority, application Germany, Dec. 30, 1965, F 48052

Int. Cl. H04n 9/02

U.S. Cl. 178-5.4 TE

13 Claims



A vector oscilloscope through which a PAL color television signal is displayed. The signal has two components

of which one is of known phase. The other of the components is of alternating negative and positive phase. The components last for one line of scan, and are applied to the deflection plates of an oscilloscope tube. The two components are suppressed during alternating line scans. Suppression is accomplished through two synchronous demodulators connected in parallel. The outputs of the demodulators are applied to the deflection plates of the oscilloscope tube, by way of amplifiers.

3,614,305 COLOR VIDEO SIGNAL CORRECTION FOR MECHANICAL VARIATIONS IN MAGNETIC RECORDING SYSTEM

Tsuneyoshi Hidaka, Tokyo; Akiyoshi Morita, Yokohama; Yoshihiko Honjo, Yokohama, and Takashi Nishimura, Yokohama, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

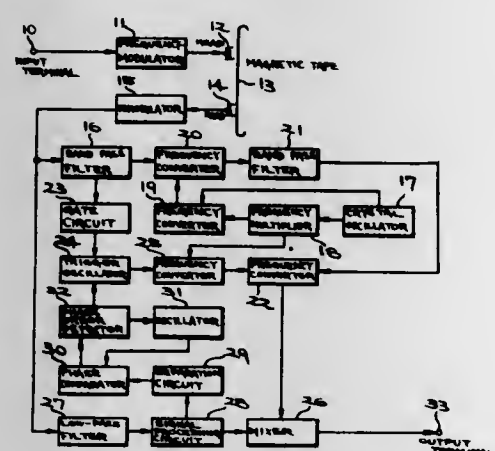
Filed Apr. 22, 1969, Ser. No. 818,223

Claims priority, application Japan, Apr. 23, 1968, Apr. 23, 1968, Apr. 23, 1968, 43/26781; 43/26780; 43/26779

Int. Cl. H04m 5/76

U.S. Cl. 178—5.4 CD

6 Claims



A color signal correction system for a video magnetic tape recorder removes differential frequency changes and differential phase shifts. The system comprises a trigger oscillator which oscillates in phase with a burst signal taken out of the color signal. A first means frequency modulates a color signal filtered out of the reproduced color video signal, and a second means frequency modulates the oscillation frequency of the oscillator. The output signals of the first and second frequency modulation means are mixed to produce a signal having the differential frequency removed therefrom. Control means is provided to control the natural resonant frequency of the tank circuit of the trigger oscillator, the control corresponding to the differential frequency changes and the differential phase shifts.

3,614,306 ENABLING MEANS FOR A PAPER CUTTER IN A FACSIMILE SYSTEM

Joel C. Goldberg, and Dudley Gray, both of Chicago, Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 11, 1968, Ser. No. 712,165

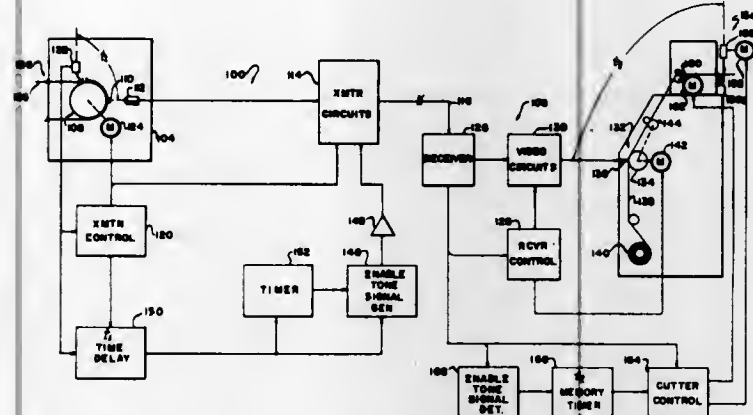
Int. Cl. H04n 1/02; F16h 35/12; B26d 5/26

U.S. Cl. 178—6

23 Claims

Apparatus for severing recording medium in a document reproduction system, such as facsimile, wherein the transmitter produces an enabling signal indicating that a document has been inserted for reproduction and the detection of the signal at the receiver enables a timer apparatus so that a medium cutting device will cut the recording medium at the proper place before and after the reproduced document to remove waste therefrom. In one embodiment a timer is provided in the transmitter to measure the time for the copy document to move from the copy inlet to the copy scanner and a separate timer is included in the receiver to measure the time for the recording medium to travel from the marking means to the paper cutter. In a second embodiment a timer is provided in the receiver which

by itself measures the time required for the copy document at the transmitter to travel from the inlet to the scanner and



the time required for the recording medium to go from the marking means to the cutter.

3,614,307 DISCHARGE LAMP MODULATION SYSTEM

Kaoru Sasabe, Ikeda-shi, and Hiroaki Kotera, Moriguchi-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

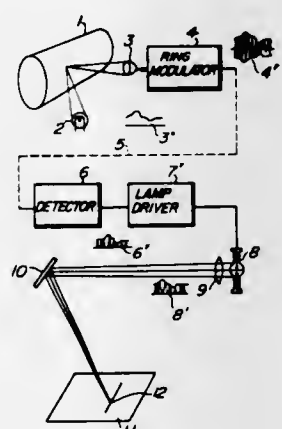
Filed Oct. 11, 1968, Ser. No. 766,784

Claims priority, application Japan, Oct. 16, 1967, 42/67093

Int. Cl. H04n 1/22, 1/40

U.S. Cl. 178—6

9 Claims



A discharge lamp modulation system in which a signal such as a picture signal is amplitude-modulated or pulsed with a frequency higher than the frequency of the picture signal, and the converted or modulated signal is used to energize a high-brightness discharge lamp such as a xenon discharge lamp for obtaining an optical reproduced signal which is an exact reproduction of the original signal.

3,614,308 MAGNETIC RECORDING AND REPRODUCING SYSTEM WITH ALTERNATING POLARITY INVERSION

Katsuyuki Iwai, Motonori Fukatsu, and Fujio Sato, all of Tokyo, Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Filed Sept. 8, 1966, Ser. No. 577,924

Claims priority, application Japan, Dec. 20, 1965, 40/78191

Int. Cl. G11b 5/02; H04n 5/78, 7/12

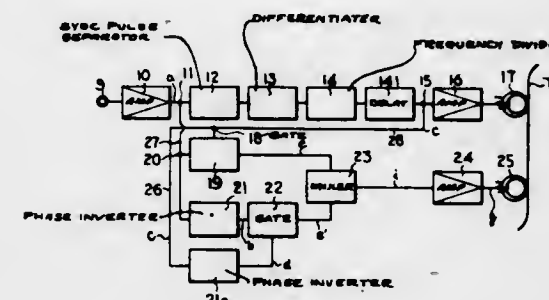
U.S. Cl. 178—6.6 A

2 Claims

Apparatus for direct-recording and direct-reproducing television video signals in longitudinal tracks on magnetic tape by reversing the polarity of the video signals at intervals

at least as long as the horizontal period of the video signal. Gating pulses are generated responsive to the blanking

transmitted through the object to develop video signals that at each instant of time represent light intensity. These video signals are fed to an image reproducer that creates an image of the object in synchronization with the scanning pattern. The apparatus further includes a filter system that effects a



signals for alternately gating the inverted and noninverted video signals.

3,614,309 APPARATUS FOR RECORDING AND REPRODUCING SINGLE FRAME VIDEO IMAGES ON A PLURAL TRACK RECORD

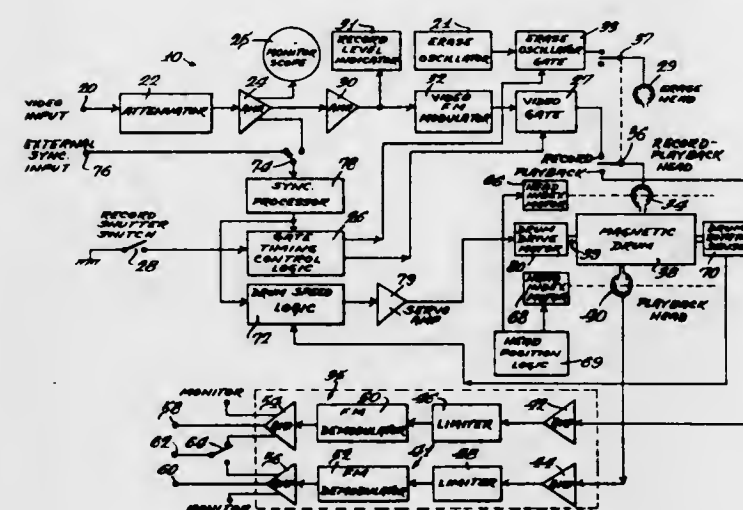
Blagio S. Presti, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Dec. 26, 1968, Ser. No. 787,115

Int. Cl. G11b 21/08; H04n 5/78

U.S. Cl. 178—6.6 DD

7 Claims



A large number of video images are stored upon the surface of a rotating magnetic drum. Image storage is carried out by applying an image bearing video signal to a stationary recording head positioned adjacent the drum surface. Individual images are stored in circumferential bands axially displaced from one another and distributed over the entire drum surface. The drum is equipped with two independently positionable reproducing heads. These two heads are mounted on opposite sides of the drum and are arranged to generate signals that are electrically synchronized so that one head may be moved to select a new image while the other head is utilized to display a previously selected image, thereby providing for rapid selection of different images in the manner of a conventional slide projector for still slides.

3,614,310 ELECTROOPTICAL APPARATUS EMPLOYING A HOLLOW BEAM FOR TRANSLATING AN IMAGE OF AN OBJECT

Adriano Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 2, 1970, Ser. No. 15,540

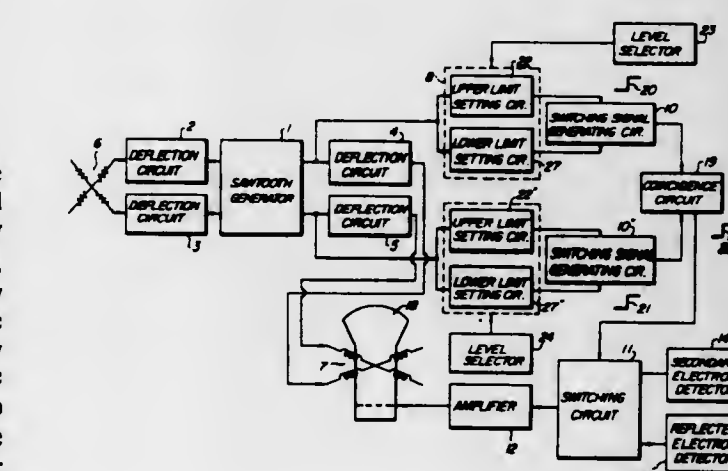
Int. Cl. H04n 5/14, 7/18

U.S. Cl. 178—6.8

12 Claims

A hollow beam of monochromatic light is deflected repetitively through a scanning pattern and focused upon an image plane in which is located an object desired to be scanned. A detector senses light reflected from or

A device for electronically displaying the state of surface or the like of an object placed in a field scanned with an electron beam, said surface state or the like being detected as any of several kinds of electromagnetic or corpuscular information and said detected information being introduced as a brightness-modulated signal to a display means such as a cathode-ray tube whose faceplate is scanned in synchronization with the above-mentioned scanning of the sample; characterized in that said device is constituted so that an optional portion of the displayed basic image representing a particular kind of information can be readily replaced with another image representing another kind of information pertaining to said surface state or the like of the sample.

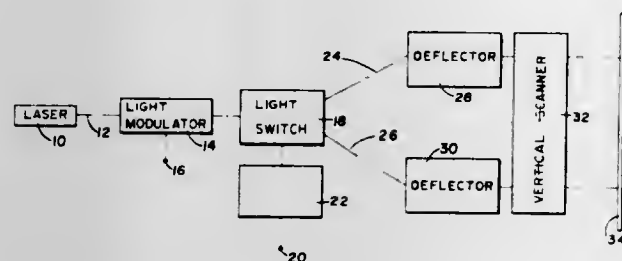


3,614,312
LIGHT BEAM DEFLECTION
 Gerald R. Fournier, and Charles E. Baker, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,259
 Int. Cl. H04n 3/02

U.S. Cl. 178-7.3 R

11 Claims



A light beam is deflected into a pattern represented by a synthesized sawtooth waveform by means of a light switch and a triangular wave generator. In a video display application, a light switch directs an intensity modulated light beam along one of two paths. When directed along either path, the modulated light beam is incident upon one or the other of a mirror pair. One mirror of the pair reflects a light beam incident thereon from along a first path to the second mirror for reflection therefrom in a pattern approximated by a triangular wave, and the second mirror of the pair reflects a light beam incident thereon from along the second path to the first mirror for reflection therefrom in a pattern approximated by a triangular wave displaced 180° from the first pattern. To generate the approximated triangular waves, the first mirror of the pair oscillates at a frequency ω to deflect a light beam incident thereon in a pattern represented by the expression $(\sin \omega t)$ and the second pair oscillates at a frequency 3ω to deflect a light beam incident thereon in a pattern represented by the expression $(\sin 3\omega t)$, where ω equals the fundamental frequency. The mirrors oscillate in a manner such that the individual patterns produced are optically added. To generate the sawtooth function, only the positive going portion of the triangular wave is selected and the resultant scan patterns are interlaced on the screen.

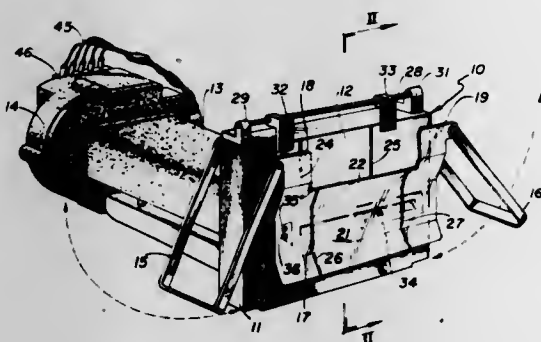
3,614,313
SCANNING APPARATUS SUPPORT STRUCTURE
 Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed Oct. 8, 1968, Ser. No. 765,762

Int. Cl. H04n 1/24

U.S. Cl. 178-7.6

11 Claims



This invention relates to scanning apparatus and, more particularly, to apparatus for converting a visual image into an electrical communications signal for reconversion at a remote station.

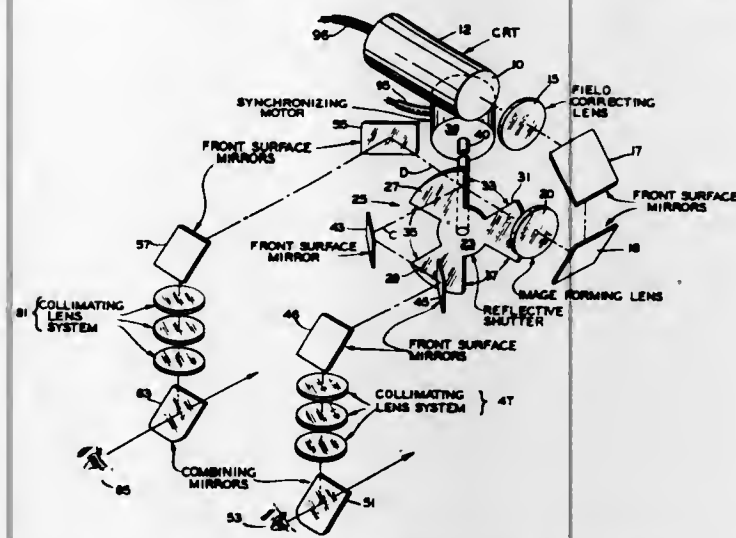
3,614,314
OPTICAL DISPLAY MEANS FOR AN ALL-WEATHER LANDING SYSTEM OF AN AIRCRAFT
 Francis Henry Sand Rossire, Salisbury, Conn., assignor to The Bendix Corporation

Continuation-in-part of application Ser. No. 315,188, Oct. 10, 1963, now abandoned. This application Mar. 21, 1967, Ser. No. 624,785

Int. Cl. H01j 29/89; G02b 27/14

U.S. Cl. 178-7.88

18 Claims



An optical means to display immediately before both eyes of a pilot of an aircraft in pictorial fashion an image of substantial spacial identity to that of a physical array of beacons on the ground combined with a view of real world information during conditions of low visibility as well as improved means in which a partially reflecting mirror means may be interposed in immediate juxtaposition before the eyes of a person in such a manner that there may be readily apprehended the real world information by looking through the mirror means, while information superimposed thereon for displaying to the pilot full data by which the landing of the aircraft may be effected or auxiliary data to that being actually used for landing to promote pilot confidence and provide a basis for the exercise of judgement on the part of the pilot in monitoring an automatic pilot system.

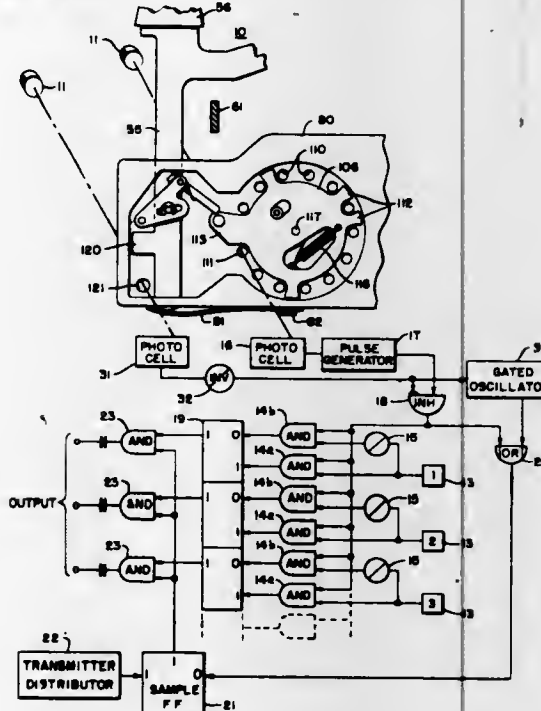
3,614,315
CHARACTER REPEAT CIRCUIT
 Charles A. Glorioso, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 26, 1968, Ser. No. 756,735

Int. Cl. H04l 15/16

U.S. Cl. 178-17 C

13 Claims



A photoelectric keyboard employing a shutter which is cocked and released upon depression of a key has the

information obtained from the shutter supplied to a storage register where it is held until a demand for it is made by a transmitting distributor. In order to repeat the information encoded by the depression of a particular key, the key is depressed farther than its normal lower position and blocks an auxiliary light channel, the output of which is detected by a photoelectric pickup device which inhibits the application of further inputs to the storage register. At the same time, a gated oscillator is triggered into operation to provide a series of reset pulses to a sample flip-flop out of phase with but in synchronism with set or sample pulses applied to the flip-flop from a transmitting distributor. The "set" output of the flip-flop is used to sample the register output each time that the flip-flop is set from a reset condition.

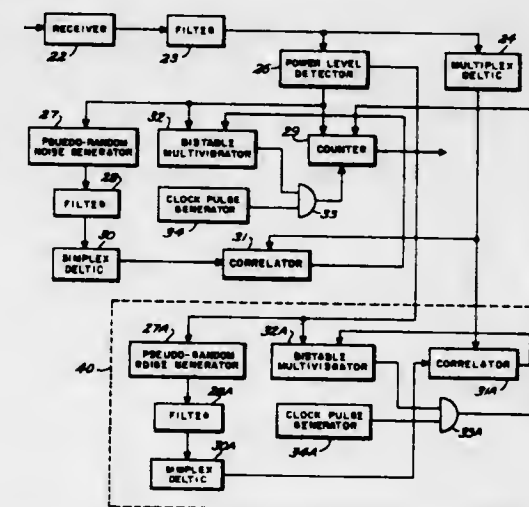
3,614,316
SECURE COMMUNICATION SYSTEM
 Daniel E. Andrews, Jr.; William E. Klund, and Robert D. Isaak, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 352,687, Mar. 17, 1964. This application May 20, 1964, Ser. No. 369,035

Int. Cl. H04l 9/00; H04k 1/10

U.S. Cl. 178-22

4 Claims



1. An improved secure communication system comprising: a first and a second pseudorandom noise generator, said generators having, respectively, a first and a second shift register, each register having N stages and having logical circuit means for randomly recirculating binary bits through the register for generating a random repeatable pattern of binary bits;
- a reset pulse source coupled to all stages of said first register to reset said first register to a predetermined starting binary number;
- a starting point switch matrix comprising N logical zero-one switches connected, respectively, between the stages of said second register and said reset pulse source, means for feeding a binary information number to said switches to reset said second register to a starting point a predetermined number different from the starting binary number of said first register;
- transmitting means for transmitting said pseudorandom noise generators outputs connected to the outputs of said pseudorandom noise generators;
- receiving means for receiving said transmitting means transmissions, said receiving means having an output;
- recycling storage means connected to the output of said receiving means for storing the receiving means output signals;
- a third pseudorandom noise generator identical in sequence to said first and second pseudorandom noise generators having an output and a reset input, said receiving means output connected to said reset input;
- a correlator having a first input connected to said storage means and a second input connected to said third pseudorandom noise generator output for generating a signal upon correlation of said storage means output and said third pseudorandom noise generator output, and;
- timing means connected to said correlator for timing the interval between outputs thereof.

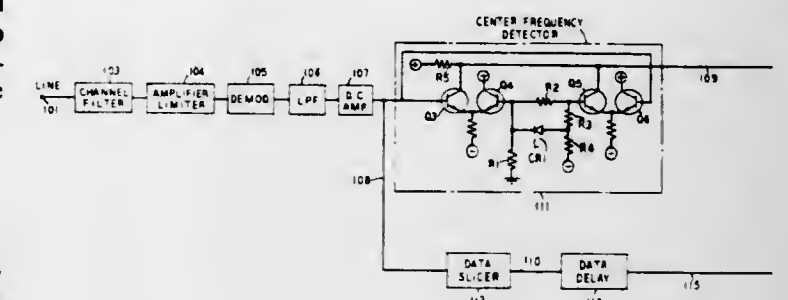
3,614,317
THREE-STATE FREQUENCY SHIFT SIGNAL RECEIVER
 Paul Benowitz, Freehold, and Helmut Kahlbrock, Edison, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 26, 1969, Ser. No. 836,732

Int. Cl. H04l 27/00; H04b 1/16

U.S. Cl. 178-66

13 Claims



A center frequency region in the signal channel band is assigned to supervisory (on-hook) signals and an upper and a lower frequency region is assigned to (mark and space) data signals whereby a greater frequency swing for increased power and bandwidth is obtained for the data signals. When incoming signals are in the center frequency region, the data signal output is blocked. Normal data signals, however, sweep through the center frequency region when a signal transition occurs. The data signal is delayed so that the delayed signal transition appears in the output after the blockage terminates.

3,614,318
DATA TRANSMISSION SYSTEM
 Ulrich Klose, Lidings, Sweden, assignor to International Business Machines Corporation, Armonk, N.Y.

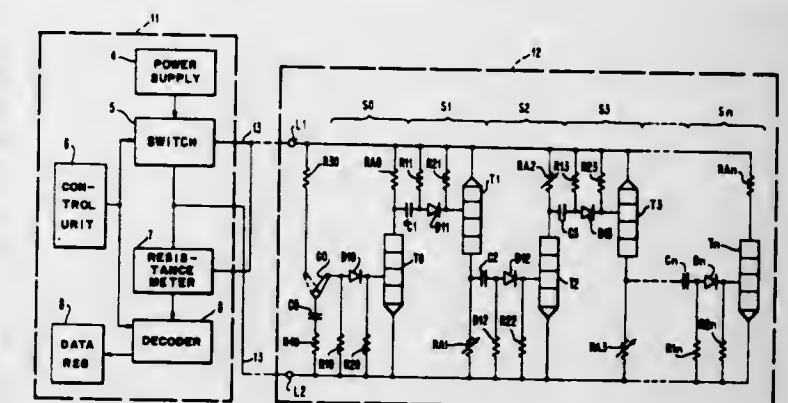
Filed Aug. 6, 1969, Ser. No. 847,858

Claims priority, application Sweden, Sept. 3, 1968, 17812

Int. Cl. H04l 27/02

U.S. Cl. 178-68

7 Claims



A transmitter and receiver for use in a two-wire transmission network in which a central station controls data flow in both directions by controlling the polarity of the line and the transmitter and receiver each include a plurality of polarity sensitive switching stages in which adjacent stages have opposite polarity orientation and each of the stages is turned "on" by one polarity orientation and "off" by the opposite polarity orientation on the transmission line.

3,614,319
TELEPHONIC TRANSMISSION OF DATA IN GRAPHIC FORM

Robert E. Krallinger; Edward G. Keplinger, and Jerry W. Terrell, all of New Milford, Conn., assignors to Graphic Sciences, Inc., Danbury, Conn.

Filed Feb. 24, 1969, Ser. No. 801,708

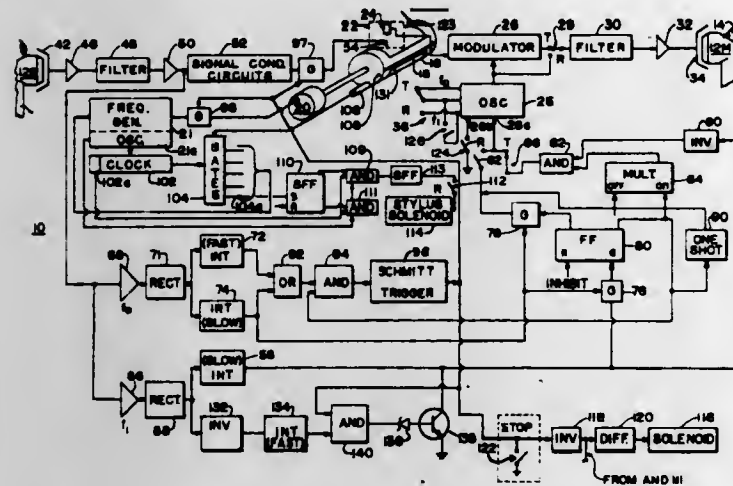
Int. Cl. H04n 1/36

U.S. Cl. 178-69.5 F

17 Claims

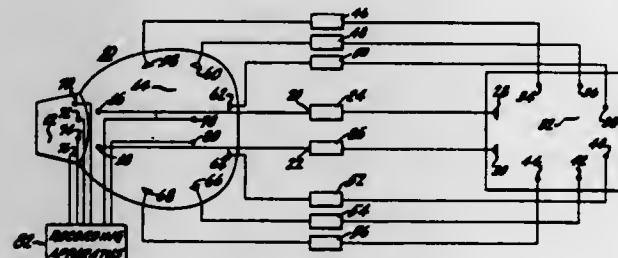
A facsimile transmission system includes an automatic signalling arrangement in which the station at one end of the

line transmits an initiating signal and the other station responds with a reply signal. After a predetermined interval following the end of the reply signal, the transmitter sends a start signal which begins document scanning at the transmitting station and facsimile printing at the receiving station. The start signal is used by both stations as a reference for synchronizing their respective operations.



During transmission of the document, the operator at the receiving station can interrupt the process by resuming transmission of the reply signal, the transmitter responding to this signal, by turning off. Similarly, the receiver responds to an interruption in the received signal by turning off, thereby providing the operators at both ends of the line with a means for rapidly signaling each other if the transmission is to end prematurely.

3,614,320
STEREOPHONIC SOUND ENHANCEMENT SYSTEM WITH REVERBERATION CHAMBER
John E. Volkman, Princeton, N.J., assignor to RCA Corporation
Filed Dec. 13, 1968, Ser. No. 783,618
Int. Cl. H04r 5/02
U.S. Cl. 179-1 J
6 Claims

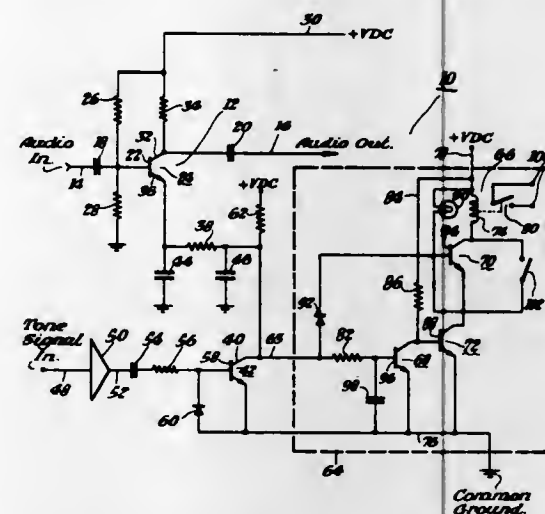


The reverberation characteristics of an auditorium or music hall are improved by picking up the sound originating in the auditorium with microphones, and reproducing the sound in a second room having a more optimal reverberation characteristic. A second set of microphones in the second room picks up the sound and its reverberations for transmission to a group of loudspeakers in the auditorium, where it is blended with the original sound.

3,614,321
REMOTE FUNCTIONAL CONTROL CIRCUIT
Henry W. Shaw, and Milton N. Lanford, both of Morrilton, Ark., assignors to Sound-Craft Systems, Inc., Morrilton, Ark.
Filed Mar. 7, 1969, Ser. No. 805,255
Int. Cl. H04m 1/28; G03b 31/00
U.S. Cl. 179-1 SW
8 Claims

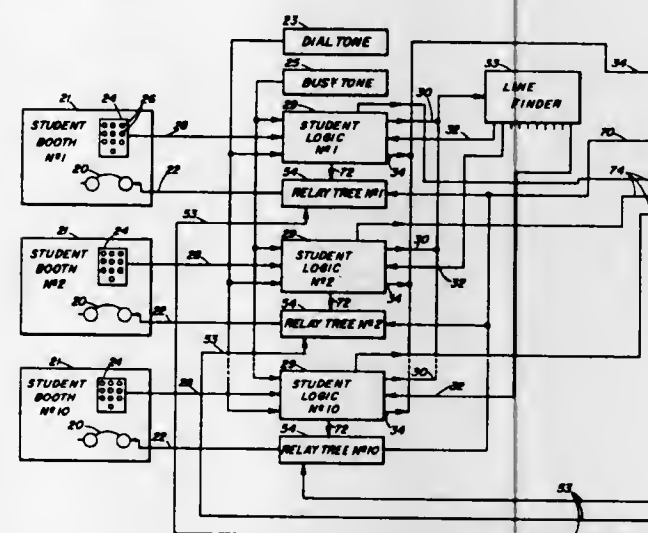
We disclose a receiver of the type having an audiocircuit portion, a functional control circuit comprising a relay switch, a tone signal circuit having semiconductor switching means sensitive to presence of a certain tone signal, and

additional series-connected semiconductor switch devices connected to the audiocircuit portion and to the first mentioned switching means, the presence of the certain tone signal causing the relay switch to be deactivated while enabling the audio circuit portion to function normally, but momentary interruption of the certain tone signal causing the



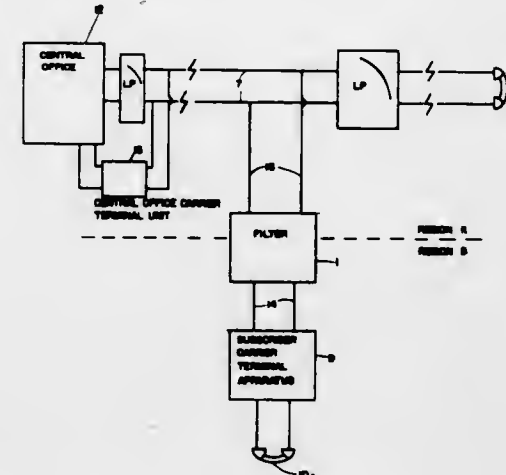
relay switch to be activated and the audiocircuit portion to be concurrently squelched. Optionally operable switch means, connected in parallel with one of the additional series-connected semiconductor switch devices, is effective in its closed position to cause activation of the relay switch coterminously with continuance of the tone signal.

3,614,322
SYSTEM FOR SELECTING AND REPRODUCING PERCEPTIBLE PROGRAMS
David L. Joslow, Chester, and John J. Bosnak, Old Saybrook, Conn., assignors to Chester Electronic Laboratories, Inc., Chester, Conn.
Filed Sept. 22, 1969, Ser. No. 859,914
Int. Cl. G09b 5/04
U.S. Cl. 179-1 B
25 Claims



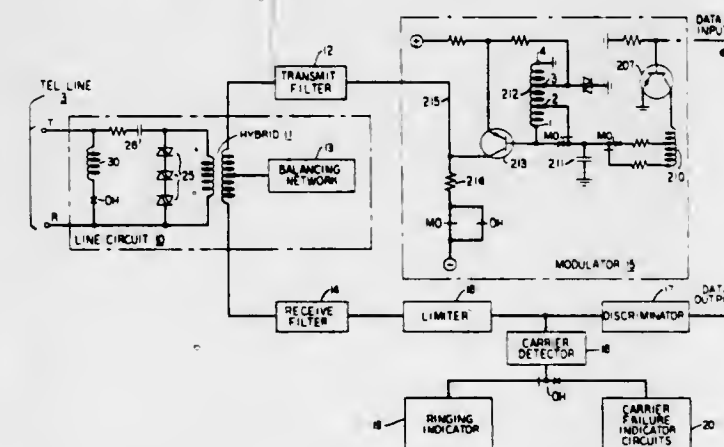
A system for selecting and reproducing audio, video, or other humanly perceptible programs comprises a program source providing a multiplicity of program signals, a plurality of stations at which individual programs may be reproduced, a switching mechanism for selectively connecting selected program signals to the reproducing means at each station, and manually operable means at each station for controlling the switching mechanism. The switching mechanism includes one or more crossbar switches and a plurality of relay trees so as to provide a hard-wired connection between the reproducing means and the program source for each selected program signal. The manually operable means for controlling the switching mechanism consists of a touch tone pad at each station, and the design of the system is such as to utilize solid-state components to a high degree.

3,614,323
FILTER TO SECURE PRIVACY OF CARRIER-DERIVED TELEPHONE CIRCUITS
Walter L. Roberts, and Henry Lynn Newton, both of Hickory, N.C., assignors to Superior Continental Corporation, Hickory, N.C.
Filed May 20, 1969, Ser. No. 826,152
Int. Cl. H04m 1/70
U.S. Cl. 179-1.5
6 Claims



Disclosed herein is a filter adapted to be used in conjunction with carrier-derived telephone circuits, so as to insure privacy of that subscriber carrier circuit from intentional eavesdropping. In service, this filter is interposed between the subscriber carrier apparatus and the physical pair, being electrically in contact with each via appropriate connections. Basically, the filter is composed of three fundamental elements, a rectifier-low-pass filter combination electrically bridged by a high-pass filter. This three-element combination does not noticeably affect either carrier frequencies passing through the filter or normal voice frequency operation on the physical pair, but does weaken voice frequency signals sufficiently upon such passing through the filter so as to prohibit eavesdropping. Additionally, the rectifier-low-pass filter combination allows passage of voltage through the filter to permit use of the filter with carrier systems, which depend upon the voltage on the physical pair to power the subscriber unit or to maintain a charge on a battery located in the subscriber carrier apparatus.

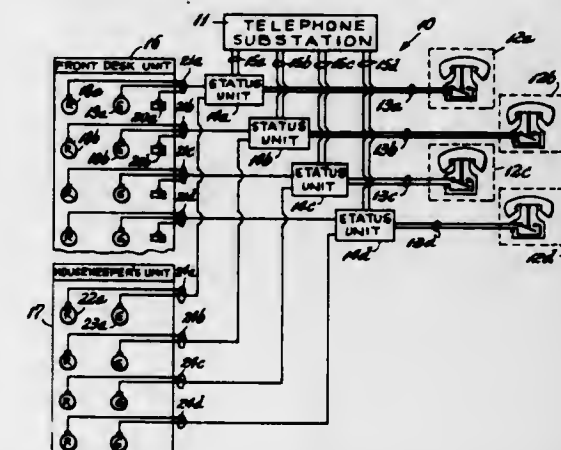
3,614,324
ARRANGEMENT FOR USING A DATA SET CARRIER DETECTOR TO DETECT INCOMING RINGING
Clair Alan Buzzard, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 6, 1970, Ser. No. 17,235
Int. Cl. H04m 11/06
U.S. Cl. 179-2 DP
7 Claims



A terminating or answer-only data set terminates a telephone line by way of a hybrid transformer whose winding on the data set side is connected between the data set transmitter and receiver to apply transmitted signals to the

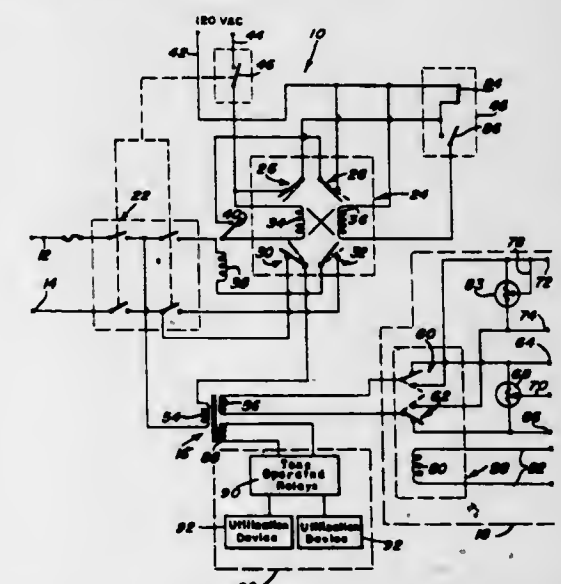
line and to apply incoming line signals to the receiver. While the data set is on-hook, the transmitter sends a steady tone. Threshold devices (reversely poled diodes) are connected across the line and conduct in response to ringing signals on the line, placing a low-impedance shunt across the line side winding of the hybrid transformer. This low impedance is reflected across to the data set side winding which thereby passes the transmitted tone to the receiver to indicate the detection of incoming ringing signals.

3,614,325
TELEPHONE AND SIGNALING SYSTEM
John N. Gailan, Trumbull, and Bruce C. Kuryla, Milford, both of Conn., assignors to Tote Systems Corporation, Bridgeport, Conn.
Filed Apr. 15, 1970, Ser. No. 28,597
Int. Cl. H04m 11/02
U.S. Cl. 179-2 R
10 Claims



A system for selectively providing connection of a telephone at a location to either a telephone substation for communication or to a signaling system with the system having an indicator and the telephone being used to alter the condition of the indicator. The system is preferably used where there are many locations, hence many telephones and with an indicator for each telephone with each telephone being capable of only controlling its indicator when the telephone is connected to the signaling system. The indicators are preferably grouped at at least one master area which also includes the control over the connection of each telephone.

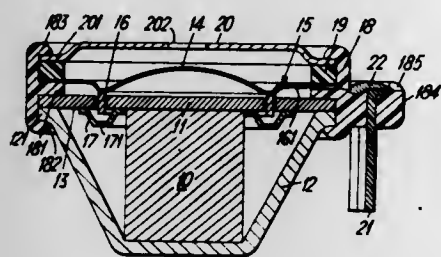
3,614,326
TELEPHONE ACTUATED SWITCH
Joe Cameron, Millbrook, Ala., assignor to International Automated Electronics Corporation
Filed July 7, 1969, Ser. No. 839,480
Int. Cl. H04m 11/00
U.S. Cl. 179-2 A
5 Claims



An electronic switch serving as a communications link between a remotely situated telephone caller and a

3,614,335
ELECTROACOUSTIC TRANSDUCER HELD TOGETHER BY THERMOPLASTIC CLAMPING RING
 Leslie Eugene Basil Dymoke-Bradshaw, Edgware, and Norman William Tester, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

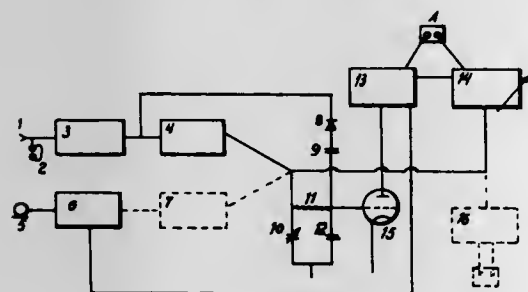
Filed July 30, 1969, Ser. No. 846,034
 Claims priority, application Great Britain, Aug. 8, 1968, 37939/68
 Int. Cl. H04r 9/02
 U.S. Cl. 179-115.5 R 7 Claims



A moving coil electroacoustic transducer is held together by a thermoplastic clamping ring. The ring has an integral flange which provides spaces between the magnetic system and the diaphragm. Acoustic damping is provided by a nonmagnetic grid located behind a voice coil and coupled acoustically to the space behind the diaphragm.

3,614,336
METHOD AND DEVICE FOR STARTING AND STOPPING A DICTATING MACHINE

Walter George Wilfrid Patey, Utsiksvelen, Nesoddtangen, near Oslo, Norway
 Filed Dec. 17, 1968, Ser. No. 784,425
 Claims priority, application Norway, Dec. 23, 1967, 168,986
 Int. Cl. G11b 15/18
 U.S. Cl. 179-100.1VC 5 Claims



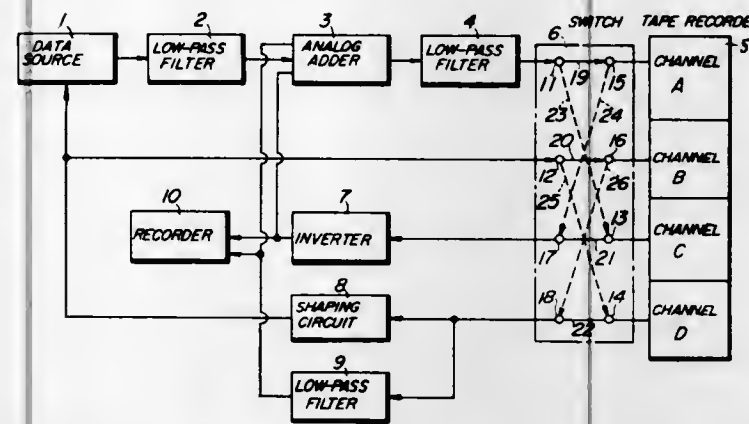
A method and a device for starting and stopping a dictating machine when transcribing on a typewriter recordings from the dictating machine, controlled on the basis of the activity of the typist at any given time, in that signals originated by the typewriter activity compared with signals derived from the recordings, determine the control parameters.

3,614,337
ANALOG DATA ACCUMULATOR PROVIDING IMPROVED SIGNAL-TO-NOISE RATIO
 Shigeo Minami, Ashiya-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 27, 1968, Ser. No. 763,334
 Claims priority, application Japan, Sept. 29, 1967, 42/62950
 Int. Cl. G11b 5/02, 5/86
 U.S. Cl. 179-100.2 K 9 Claims

An analog data accumulator which stores the first analog data from an analog data source in a tape recorder through an analog adder, reproduces the stored analog data to feed it to the adder reproduces the stored analog data to feed it

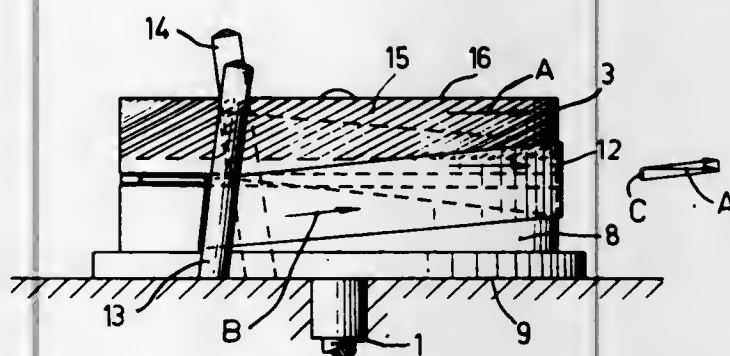
the adder which adds the reproduced first analog data and the second analog data from the analog data source, and



stores the added data in the tape, recorder, and repeats these operations a plurality of times, thereby improving the signal to noise ratio.

3,614,338
AIR BEARING HEAD DRUM WITH GROOVES TO GENERATE THE AIR LAYER
 Peter Willibrord Bogels, Emmasingel, Eindhoven, Netherlands
 Filed Feb. 28, 1969, Ser. No. 803,285

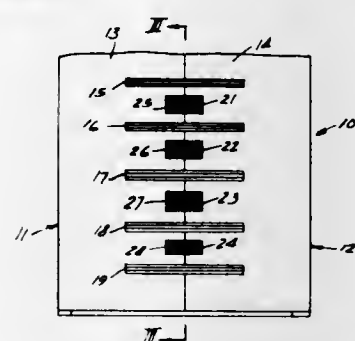
Claims priority, application Netherlands, Mar. 9, 1968, 6,803,410
 Int. Cl. G11b 5/52, 15/64
 U.S. Cl. 179-100.2 T 6 Claims



A tape recording and/or playback apparatus having a pair of drums acting as a guide member, arranged concentrically, one above the other, for helically guiding the tape therearound. One of the drums is rotatably mounted and is provided with circumferential grooves, which intersect the circumferential velocity vector of said drum. The grooves create an air layer between the tape and drum guide member. The rotating drum with grooves thereon, thus reduces the functional forces on the tape.

3,614,339
MAGNETIC TRANSDUCER WITH WEAR RESISTANT POLE TIPS

Robert A. Schneider, Del Mar, Calif., assignor to Spin Physics, Inc., San Diego, Calif.
 Filed Mar. 27, 1970, Ser. No. 23,157
 Int. Cl. G11b 5/42, 5/14, 5/22
 U.S. Cl. 179-100.2 C 5 Claims

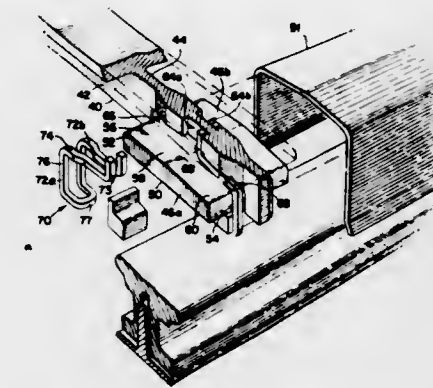


A composite magnetic transducer head for operation at frequencies in the megahertz range having pole tips made of

specially fabricated laminations formed from ingots of fusion cast or sintered iron-silicon-aluminum alloy.

3,614,340
SECURING MEANS FOR POWER RAIL AND/OR SHIELD
 Johan L. Harmsen, 68 Hawkrige, Markham, Ontario, Canada

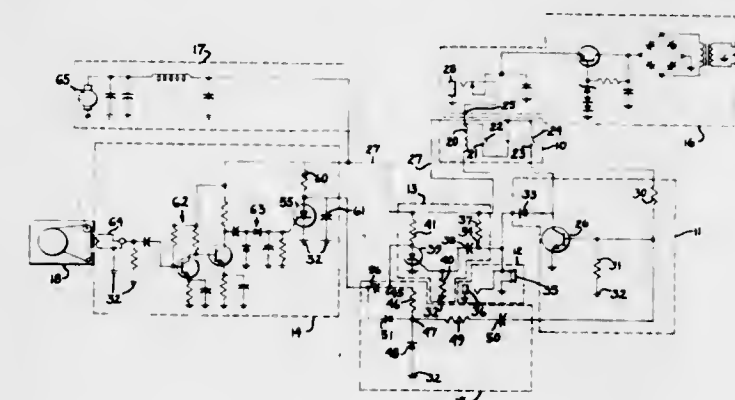
Filed Oct. 17, 1969, Ser. No. 867,139
 Int. Cl. B60m 1/30
 U.S. Cl. 191-32 8 Claims



Securing means for attaching a power rail to a support member. The support member is secured to the third rail by means of a pair of U-shaped clamps which grip opposite sides of a power rail flange and each are removably contained within grooves formed in the support member. Two protrusions disposed on opposite sides of the support member serve as guiding surfaces to attachment of the clamps to the support member and also, in one embodiment of the invention, support a power rail shield.

3,614,341
CIRCUITRY FOR PROVIDING ONE ADDITIONAL COMPLETE PLAYBACK OF A RECORDED MESSAGE FOR EACH INPUT SIGNAL

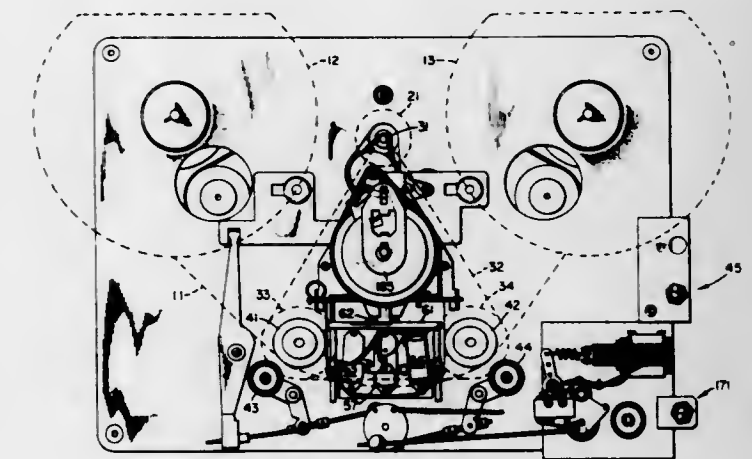
Lee E. Cannon, Bozeman, Mont., assignor to Darrell S. Smith, Cut Bank, Mont.
 Filed Aug. 6, 1969, Ser. No. 848,027
 Int. Cl. G11b 15/18; H03k 17/56; H01h 47/32
 U.S. Cl. 179-100.2 S 8 Claims



A tape playback head in conjunction with a continuous prerecorded magnetic tape for providing an output signal each time the tape makes a complete revolution, said signal being utilized to stop conduction in an SCR upon the first occurrence thereof and the second occurrence being allowed to pass through the SCR circuit to the base of a transistor to cut off the transistor and open a relay circuit to remove power from the tape-driving mechanism. Turning on the tape-driving apparatus, triggers the SCR to produce conduction therein and prevent passage of signals through the circuit thereof until conduction in the SCR is again stopped by the first signal. Thus, the continuous tape is allowed to make two complete revolutions and actuating the energizing switch during the second revolution resets the circuitry so that an additional revolution will be made.

3,614,342
BIDIRECTIONAL TAPE TRANSPORT WITH REVERSIBLE HEAD MECHANISM DRIVEN BY LAPSTAN MOTOR

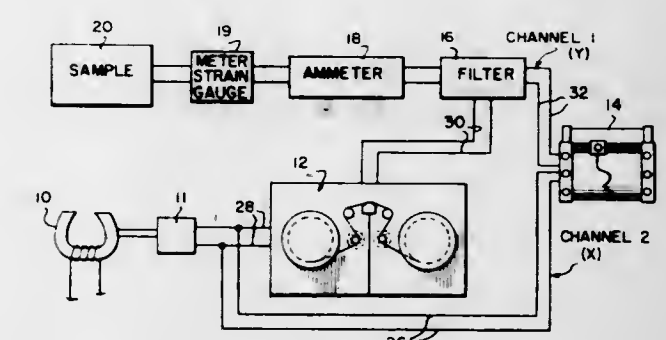
Raymond C. Siebert, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.
 Filed June 2, 1969, Ser. No. 829,565
 Int. Cl. G11b 21/08
 U.S. Cl. 179-100.2CA 10 Claims



In a bidirectional tape transport it is arranged that an erase head and a set of recording and playback heads are reversible as an assembly, as by rotation for 180° about an axis normal to the plane of the tape, so that, in each direction of tape motion (forward or reverse) the erase head is upstream from the recording head and all of the heads trace a different set of longitudinal tracks on the tape, i.e., one set of tracks in forward motion and another set in reverse motion. The tape is driven by a pair of capstans coupled to a reversible electric motor, and the motor is reversed to change the direction of the tape motion.

3,614,343
RECORDER USING SELECTIVE NOISE FILTER

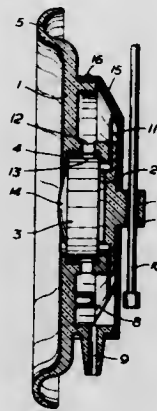
John E. Mulhern, Jr., and Dwight M. Harris, both of Durham, N.H., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
 Filed Feb. 5, 1969, Ser. No. 796,690
 Int. Cl. G11b 27/32, 27/36
 U.S. Cl. 179-100.2 K 8 Claims



A recording method and system is disclosed which provides for selective reprocessing and filtering of the data to obtain the optimum signal-to-noise ratio without a corresponding loss of the data range or fidelity. More particularly, an improved method and system is disclosed for producing a multidimensional recording of a multivariable data signal with a minimum amount of low-frequency noise and interference in the signal.

3,614,344
EARPHONE ASSEMBLY WITH RESILIENTLY RETAINED TRANSDUCER
 Rudolf Gorike, Wien, Austria, assignor to Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Austria
 Continuation of application Ser. No. 638,001, May 12, 1967.
 This application June 16, 1970, Ser. No. 48,910
 Int. Cl. H04r 1/10
 U.S. Cl. 179—182 R

8 Claims



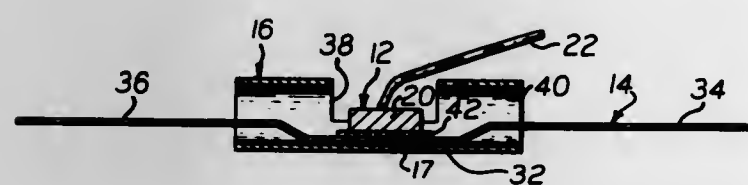
An earpiece consists of a molding of elastomeric material and has a central recess. An electroacoustic transducer capsule is captively held in said recess by resiliently interengaging with said molding. The molding includes a pluglike projection defining a passage therethrough for receiving a guide rod of a headset strap. The walls bounding the passage frictionally engage the guide rod to mount the earpiece thereon for adjustable displaceable movement.

ERRATUM

For Class 191—32 see:
 Patent No. 3,614,340

3,614,345
THERMAL SENSING DEVICE
 Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., Hackensack, N.J.
 Filed Nov. 17, 1969, Ser. No. 877,379
 Int. Cl. H01h 9/54
 U.S. Cl. 200—2

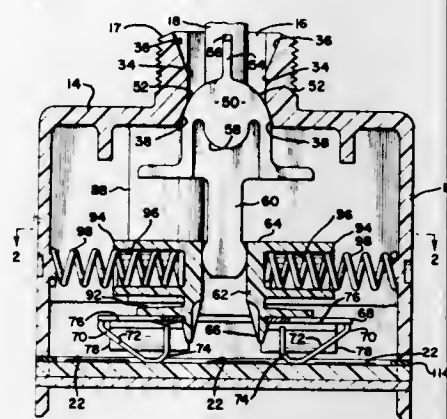
13 Claims



The device is adapted to be used with an external circuit for controlling the operation of associated equipment and comprises sensing means the impedance of which varies in proportion to the ambient temperature. The sensing means is provided with leads to connect the same to the control circuit. In energy exchanging relationship with the sensing means is the heat producing portion of a heater; said heater having terminals for connection to the associated equipment so that the temperature of the heater varies in proportion to a parameter of the associated equipment. An enclosure receives the heat producing portion of the heater and the sensing means therein to concentrate the heat generated by the heater. Additionally, a housing surrounds the enclosure to insulate the enclosure from the external temperature.

3,614,346
RECTILINEARLY MOVABLE SWITCH ASSEMBLY WITH PARTICULAR PIVOTAL ACTUATOR AND FLANGE MEANS
 Bernard Vincent Gudaitis, Wilkes-Barre, and Winfield Warren Loose, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
 Filed Jan. 12, 1970, Ser. No. 2,291
 Int. Cl. H01h 21/24, 21/68
 U.S. Cl. 200—16 R

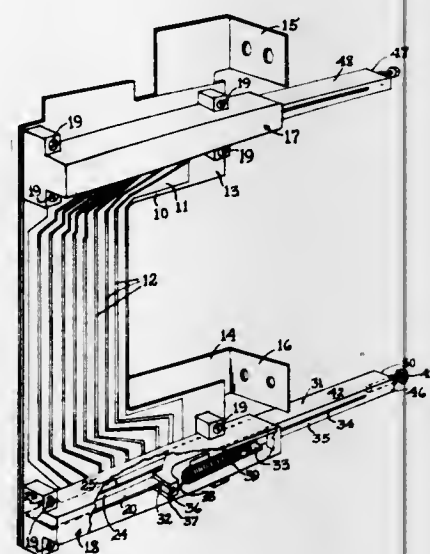
8 Claims



Disclosed is an electrical actuator of the toggle switch variety having contained therein electrical contacts which are reciprocally movable and adapted to slidingly engage the surface of a printed circuit board having circuitry thereon. The circuit board is clamped to the base of the housing, and upon movement of the actuator, the contacts will slidingly engage various circuitry on the printed circuit board surface. The actuator has two pairs of shoulder portions engaging the casing, which restrain the actuator from undesired movement while pivotally mounting it.

3,614,347
SLIDE SELECTOR SWITCH APPARATUS
 Raymond G. Castle, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill.
 Filed Aug. 25, 1969, Ser. No. 852,778
 Int. Cl. H01h 15/00
 U.S. Cl. 200—16 R

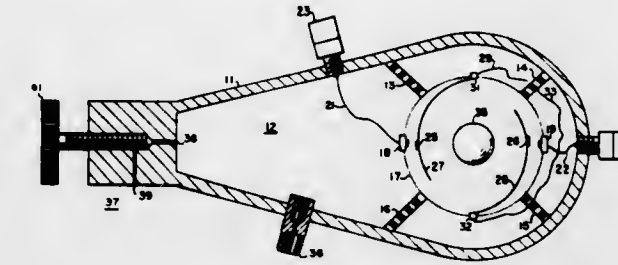
9 Claims



An electrical switching apparatus including a pair of slide switches independently movable over current conducting slider bars which by correlated actuation over printed circuit conductors will establish a common electric circuit therethrough.

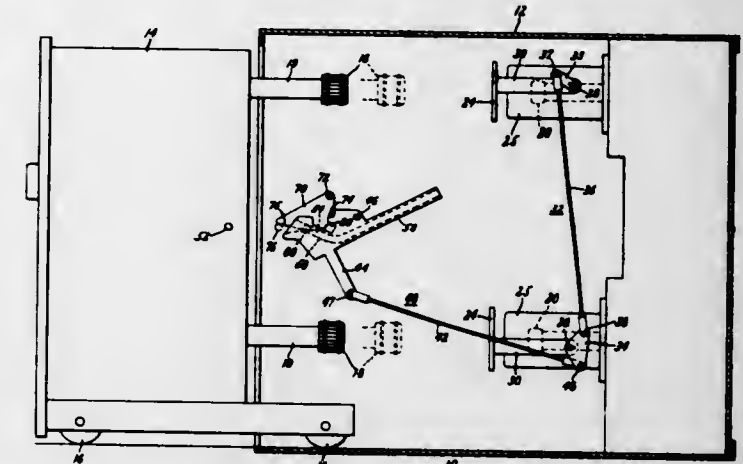
3,614,348
PRESSURE RESPONSIVE TIMING DEVICE
 Gerald E. Hart, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy
 Filed Aug. 30, 1965, Ser. No. 484,790
 Int. Cl. H01h 43/02
 U.S. Cl. 200—33

14 Claims



The present invention relates to a time-delay device or timer and more particularly to a mechanical time-delay device having a switch for opening or closing an electric circuit at a selected future time wherein an expansible member within a compressed fluid chamber actuates the switch when the pressure of the chamber decreases.

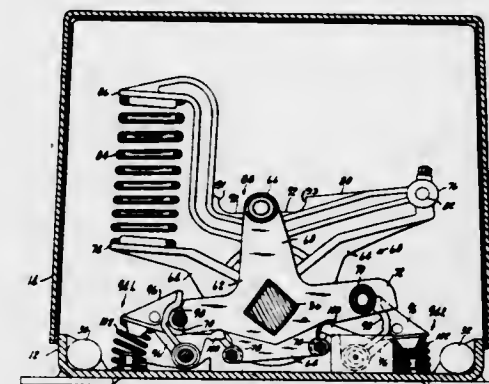
interconnecting the two shutters causes pivotal motion thereof to occur in unison and in opposite angular directions with respect to each other. The weight of one pivotally



mounted shutter counterbalances the weight of the other during their oppositely directed movement between blocking and nonblocking positions, thus reducing the force needed to operate the pivotally mounted shutters.

3,614,349
OVERHOIST LIMIT SWITCH
 Herbert Kupsis, Milwaukee, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.
 Filed Mar. 2, 1970, Ser. No. 15,505
 Int. Cl. H01h 5/10
 U.S. Cl. 200—47

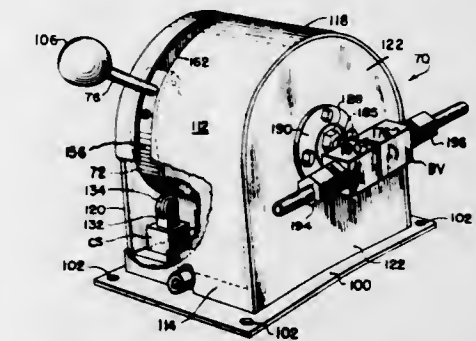
6 Claims



An overhoist limit switch including a base having a number of fixed contacts supported thereon and corresponding number of movable contacts mounted on a trip shaft which is journaled for oscillatory motion on the base, an operating shaft journaled in the housing and including a weight arm which responds to overhoist movement, and a trip assembly including a trip plate fixedly secured to the trip shaft and having a cam follower, a rocker arm fixedly secured to the operating shaft, a cam arm pivotally connected to the rocker arm and having an inverted cam positioned to engage the cam follower and a spring to provide a snap action force through the cam arm to the trip plate.

3,614,351
PRESSURE CONTROL SYSTEM FOR A GRINDING MACHINE AND ACTUATING UNIT THEREFOR
 Robert J. Wojcik, Melrose Park, Ill., assignor to Pettibone Corporation, Chicago, Ill.
 Filed Oct. 24, 1969, Ser. No. 869,071
 Int. Cl. H01h 9/06
 U.S. Cl. 200—61.86

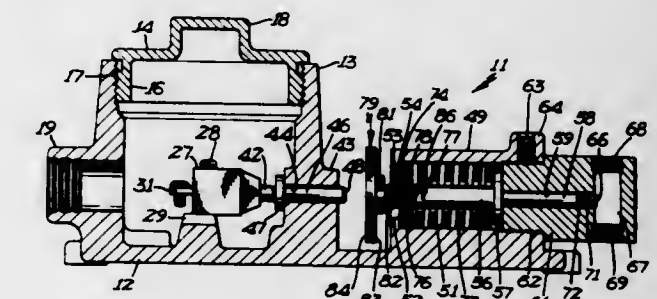
4 Claims



A mechanically operable control unit for regularly bleeding a fluid line to relieve the pressure of fluid therein. A manipulating handle functions initially to establish an electric circuit through the solenoid winding of a directional valve, the handle functioning thereafter to regulate the flow of fluid through a bleed valve which reduces the pressure by an amount proportional to the forward throw of the handle.

3,614,352
PRESSURE CONTROL ASSEMBLY WITH TWO SWITCH HOUSINGS AND AN OPEN SPACE BETWEEN THE PRESSURE SOURCE AND CONTACTS
 Richard V. Wiese, Minneapolis, Minn., assignor to Graco Inc., Minneapolis, Minn.
 Filed Mar. 31, 1970, Ser. No. 24,283
 Int. Cl. H01h 35/38
 U.S. Cl. 200—82 C

12 Claims



3,614,350
SHUTTER ARRANGEMENT FOR A SWITCHGEAR UNIT
 Charles D. Eichelberger, Ridley Park, and Lawrence J. Kosich, Glenolden, both of Pa., assignors to General Electric Company
 Filed July 20, 1970, Ser. No. 56,333
 Int. Cl. H02b 11/22
 U.S. Cl. 200—50 AA

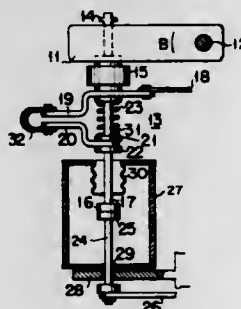
5 Claims

A switchgear unit comprises a cubicle having two groups of stationary disconnect contacts and two shutters for controlling access to the stationary contacts. The shutters are pivotally mounted on the cubicle for motion about vertically spaced horizontal axes between blocking and nonblocking positions with respect to the contacts. A linkage

A pressure control unit includes a housing having spaced wall portions defining a switch chamber and a separate

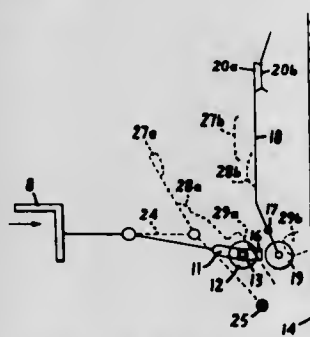
pressure responsive actuator chamber. Cooperating switch actuating and pressure responsive actuator plungers in the walls of the respective chambers are aligned with each other for operation of the switch in response to pressure responsive movement of the actuator plunger. An adjusting knob is carried by one of the plungers in the space between the chambers where such knob is accessible for manual adjustment of the switch operating pressure. The pressure chamber includes a special construction involving a spring housing portion and a cooperating plunger guide, in which the plunger guide provides a variety of functions including means for connection to a source of control pressure, a pressure chamber in which the actuator plunger may be exposed to such pressure, a guide for the actuator plunger, and a means for retaining the plunger and a suitable compression spring within the spring housing portion. The construction provides an explosion proof chamber for the switch which is separated and isolated from the pressure chamber in which the fluid whose pressure is to be controlled, or used for control, might have flammability characteristics which would represent a hazard in the presence of the electric switch contacts.

3,614,353
SWITCHING DEVICE HAVING ELECTRO-MAGNETIC MEANS FOR INCREASING EFFECTIVE CONTACT PRESSURE
Toshihiko Yoshio, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 27, 1969, Ser. No. 828,270
Claims priority, application Japan, May 30, 1968, 43/36335
Int. Cl. H01h 33/66
U.S. Cl. 200-144 B 5 Claims



A switching device comprising a pair of bent circuit members made of flexible conductive material and arranged parallel in close proximity to each other, one of which has one of its ends electrically connected in abutting relationship to one end of at least one movable member of a pair of circuit switching electrodes and the other of which is pressed downward to the other end of said movable electrode by means of its operating mechanism, whereby there is generated in the paired bent circuit members a repulsive force opposing that occurring in said two electrodes at the time of conduction.

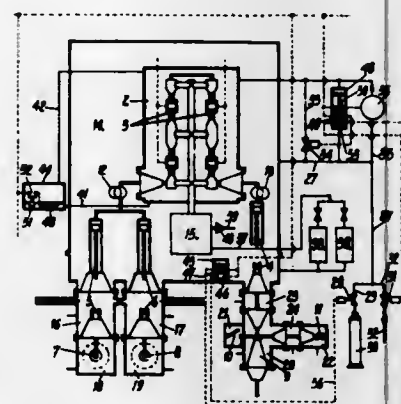
3,614,354
ELECTRIC SWITCH HAVING OPPOSITELY OPERATING DUAL CONTACTS
Hiroshi Koike, and Rokuro Fujita, both of Tokyo-to, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co., Ltd., Kanagawa-ken, Japan
Filed Aug. 29, 1969, Ser. No. 854,142
Claims priority, application Japan, Sept. 4, 1968, 43/63074
Int. Cl. H01h 33/12
U.S. Cl. 200-146 R 4 Claims



In an electric switch for use in inductive circuits including main contacts connected in series with the circuit and short

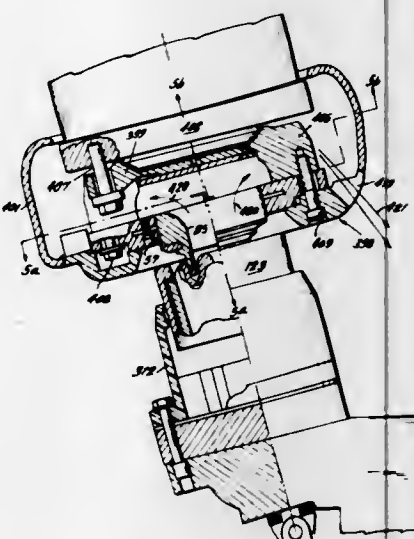
circuit contacts connected in parallel with the circuit, both of the main and short circuiting contacts are driven by a common source of motive power through discrete operating mechanisms. The operating mechanism for the short circuiting contacts includes a lever of variable length which is connected to a contact carrying arm through a lost motion coupler.

3,614,355
SF SYSTEM WITH CONSTANT DENSITY AND CONSTANT PRESSURE DIFFERENTIAL MAINTAINING MEANS FOR A HIGH-VOLTAGE SWITCHGEAR
Rintje Boersma, Harmelen, Netherlands, assignor to N.V. COQ, Utrecht, Netherlands
Filed Apr. 14, 1969, Ser. No. 815,674
Claims priority, application Netherlands, Apr. 22, 1968, 6805638
Int. Cl. H01h 33/56
U.S. Cl. 200-148 E 7 Claims



Metal clad switch gear for high voltages comprising switches and accessories, low-overpressure and high-overpressure compartments filled with SF₆ gas and a gas-control system controlling the flow of gas to and from said compartments and keeping both the pressure difference between said compartments and the density of the SF₆ gas in the low-overpressure compartment(s) substantially constant.

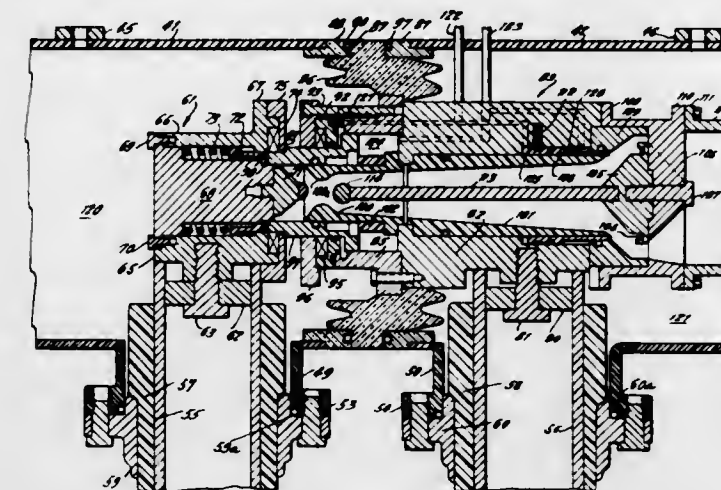
3,614,356
SHIELD ASSEMBLY FOR HIGH VOLTAGE GAS CIRCUIT BREAKER
Henry G. Meler, Glendale, and James R. McCloud, Burbank, both of Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Aug. 25, 1969, Ser. No. 852,535
Int. Cl. H01h 33/82
U.S. Cl. 200-148 R 7 Claims



A high voltage gas circuit breaker has a plurality of interrupter structures, each of which contain an upper stationary contact and corona shield which surrounds the upper contact. The corona shield has openings in a lower rim disposed to direct the gas blast during interruption downwardly and at an angle outwardly from the external surface of its respective interrupter structure to the external surface of its respective interrupter structure to

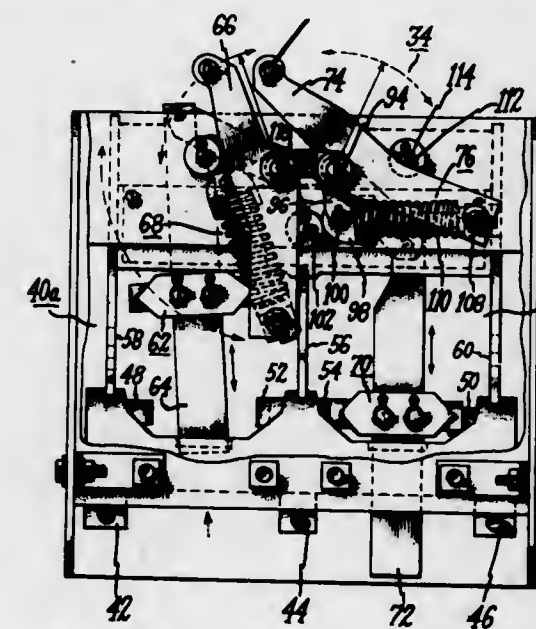
prevent contamination of the insulation surface of the interrupter structure by arc products.

3,614,357
GAS BLAST CIRCUIT INTERRUPTER USING MAIN MOVABLE CONTACT AS BLAST VALVE
Otto Jensen, Malvern, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.
Filed May 8, 1969, Ser. No. 823,115
Int. Cl. H01h 33/86, 33/70
U.S. Cl. 200-148 R 13 Claims



A high-speed gas blast circuit breaker in which SF₆ is used as the mechanical drive for the movable contact and as the dielectric medium for maintaining a high dielectric between the open contacts and for extinguishing arcs. Two or three movable elements are used; an annular movable contact and a cutoff valve and, in some cases, a follower contact. The two elements may be incorporated into one movable body. Each of the movable elements have radially extending surfaces defining pistons so that they may be moved by control air pressure. The movable contact serves as an annular seal in a barrier which separates a high-pressure region from a low-pressure region when the contact is closed. The movable contact acts in the manner of a cork so that, when the seal is broken, the contact is accelerated toward its open position, and fluid from the high-pressure side flows through the annular gap formed and through the arc in its passage to the low-pressure side. The apparatus is mounted in a suitable switch gear enclosure.

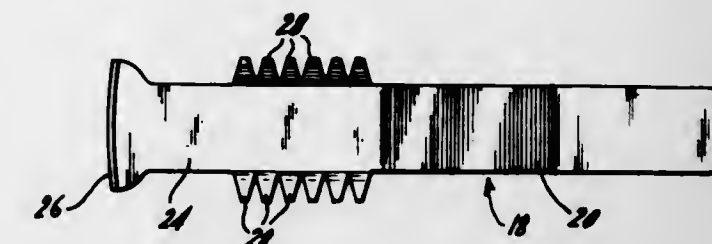
3,614,358
OIL IMMERSSED SNAP ACTION LOADBREAK SWITCH
Gerald P. Hermann, Pittsfield, Mass., assignor to General Electric Company
Filed Apr. 30, 1970, Ser. No. 33,387
Int. Cl. H01h 33/68
U.S. Cl. 200-150 R 7 Claims



A pair of two position snap action oil immersed switches are provided using an overcenter spring toggle to make or

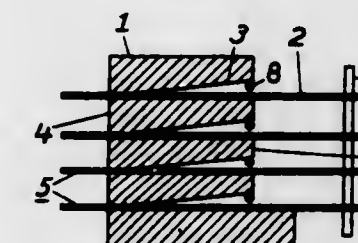
break contacts. Three terminals are provided, one terminal being common to each switch. The movable contacts have a double break to aid in arc interruption and the arc formed on one break tends to force oil across the arc formed at the other break to help interrupt the arc. The switches can be ganged to provide three phase switching.

3,614,359
DISTRIBUTOR ROTOR CONTACT BLADE MEMBER
John J. Beck, Seneca Falls, N.Y., and George M. Gilkey, Southfield, Mich., assignors to Gulf & Western Systems Company, Union Springs, N.Y.
Filed Sept. 24, 1969, Ser. No. 860,540
Int. Cl. H01h 1/00
U.S. Cl. 200-166 J 2 Claims



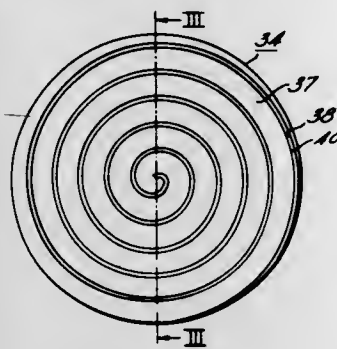
A distributor rotor is disclosed as utilizing a one-piece integral blade and spring with the blade straight or flanged to increase the discharge area. No rivet is required to hold the blade and spring together and the entire distributor rotor therefore can be molded on completely automatic compression molding presses. The one-piece blade and spring has a series of teeth on each side that nest into a slot molded into the top of the rotor sweep member. The teeth are bent upward at approximately a 20° angle and are accurately positioned by means of a fixture on the rotor. Pressure is applied to force the spring and blade into the slot forcing the teeth to bend further upward to approximately a 45° angle. Any effort to pull or dislodge the blade and spring after assembly is resisted by the teeth biting further into the slot walls.

3,614,360
A MULTIPLE CONTACT SWITCHING DEVICE FOR CROSSBAR SWITCHES
Harald Valdemar Alexandersson, Lidings, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 10, 1969, Ser. No. 875,189
Claims priority, application Sweden, Dec. 3, 1968, 16,484/68
Int. Cl. H01h 9/00
U.S. Cl. 200-166 J 3 Claims



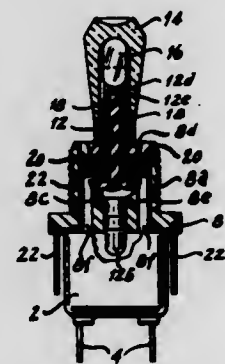
A contact unit for crossbar switches comprises a support body of insulating material of substantially parallelepipedic form carrying fixed contacts and movable contact springs for cooperation with the fixed contacts. The fixed contacts consist of contact bars arranged in a plane parallel to the front and rear surface planes of the body. The movable contact springs are arranged perpendicularly to the plane of the bars which are fastened to the body at a portion of the same near the rear surface plane and project through slots in the front surface plane. Lifting cards for the contact springs are provided at the movable ends of the springs outside the body.

3,614,361
CONTACT WITH LOW-CATHODE DROP MATERIAL INSERT
 Donald E. Weston, Chicago, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
 Filed Sept. 10, 1969, Ser. No. 864,926
 Int. Cl. H01h 1/02, 1/06
 U.S. Cl. 200-166 C 2 Claims



A circuit interrupter, such as a vacuum switch, comprises a pair of relatively movable contacts, at least one of which is a relatively flat disc made of high-cathode drop material, such as molybdenum and having one or more spiral slots extending inwardly from the periphery of the contact filled with solid low-cathode drop material, such as antimony to cause rotation of an arc between said contacts and to facilitate movement of the arc terminal as the arc rotates.

3,614,362
LIGHTED TOGGLE LEVER SWITCH
 John J. Keranen, Sussex, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
 Filed July 28, 1970, Ser. No. 58,944
 Int. Cl. H01h 9/18
 U.S. Cl. 200-167 A 10 Claims

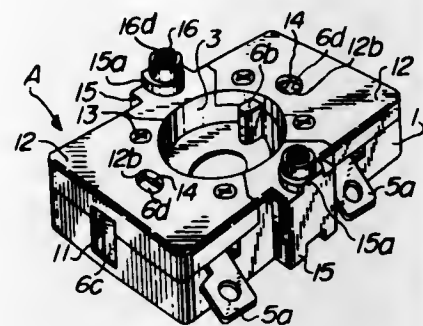


A switch having a toggle lever including a snap-on transparent, hollow handle with a lamp inside connected to external terminals. These lamp terminals differ in appearance and location from the external terminals connected to the switch. The handle portion of the toggle lever is easily removable to expose the bulb for replacement in the socket built into the toggle lever. A pair of helical springs positioned at the axis of rotation of the toggle lever form electrical connections from the lamp socket to the external, lamp terminals.

3,614,363
CAM SWITCH UNIT
 Teizo Fujita, 3-34, Naka, Tezukayama, Sumiyoshi-ku, Osaka, Japan
 Filed July 11, 1969, Ser. No. 840,982
 Claims priority, application Japan, Nov. 18, 1968, 43/84,280
 Int. Cl. H01h 9/02
 U.S. Cl. 200-168 A 5 Claims

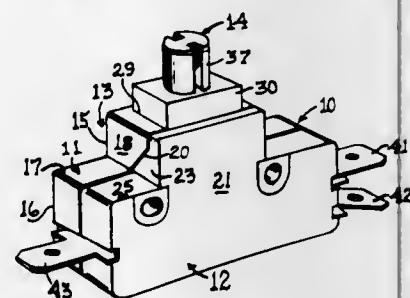
A cam switch unit that can be used singly or in multiples operated by a common actuating means. Each cam switch unit comprises an operating cam mounted centrally in a casing, and a pair of switch housing cavities, one on each side

of the operating cam. The cavities each contain a fixed contactor and a movable contactor operated by the cam. Each cavity is closed by a cover, and each switch unit further comprises an upright cylindrical portion on the top of the casing and a cavity in the bottom of each casing for receiving the upright cylindrical portion of an adjacent unit to align



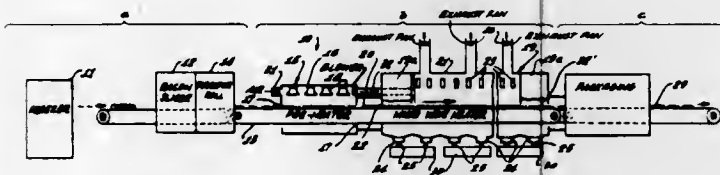
and interlock adjacent units in a multiple switch assembly. Adjacent units are attached together by screw means having an externally threaded stem and a head having an externally threaded cavity for receiving the stem of an adjacent unit. These screw means also attach the switch cavity covers to the switch casing on each individual unit.

3,614,364
ANTIWOBBLE ACTUATOR FOR AN ELECTRIC SWITCH
 Michael F. Bedocs, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill.
 Filed Feb. 27, 1970, Ser. No. 15,158
 Int. Cl. H01h 3/12
 U.S. Cl. 200-172 R 2 Claims



An actuator and switch structure comprising cooperative configured structural elements that prevent wobble, rotation or distortional movement of the actuator during its linear reciprocal movement relative to the switch components contained within the switch housing.

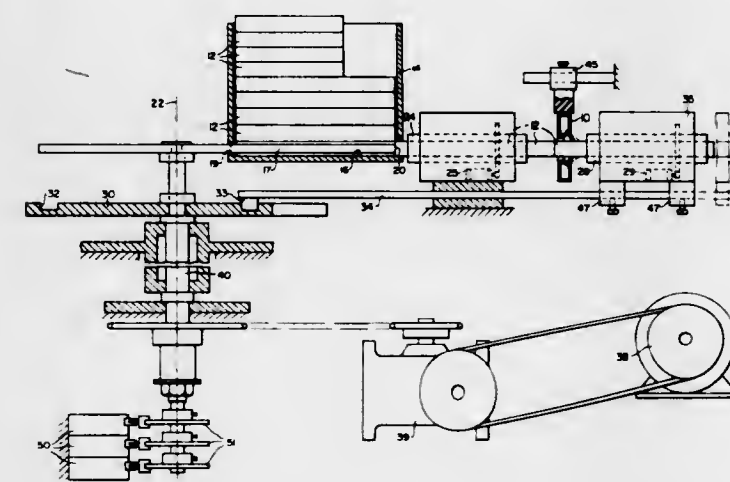
3,614,365
APPARATUS FOR COOKING BACON AND OTHER MEAT PRODUCTS BY MICROWAVE ENERGY
 Alan B. Lane, Northridge, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.
 Division of Ser. No. 646,008, June 14, 1967, abandoned. Filed Sept. 19, 1969, Ser. No. 870,891
 No. 870,891
 Int. Cl. H05b 4/06, 5/00
 U.S. Cl. 219-10.55 2 Claims



Apparatus for cooking cold or refrigerated bacon and other meat products comprising means for preheating the

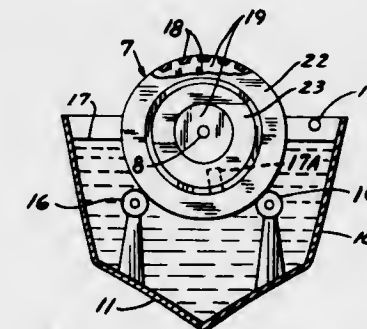
bacon by means, other than by microwave energy, to a temperature above about 60° F. and preferably below about 90° F. and thereafter further heating the meat product, in a microwave, energy zone until it is properly cooked.

3,614,366
CAM FEED SCANNER-TYPE INDUCTION HEATING APPARATUS
 Arthur A. Huchok, Towson, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Filed Jan. 30, 1970, Ser. No. 7,075
 Int. Cl. H05b 5/00, 1/02
 U.S. Cl. 219-10.69 4 Claims



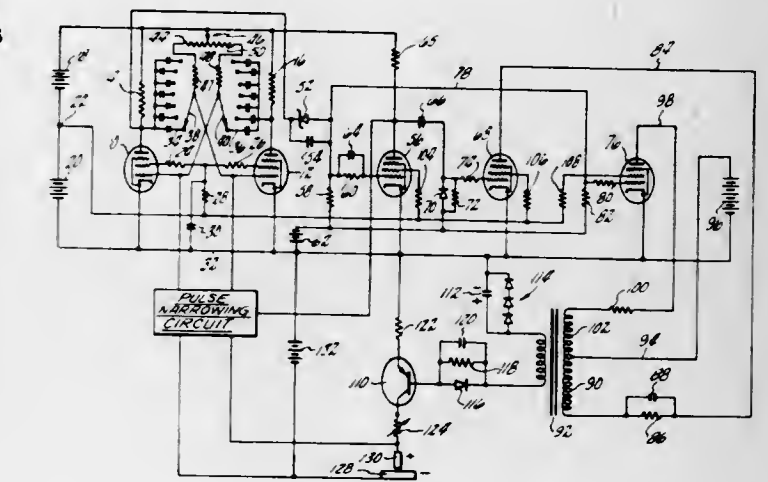
Improvements in an induction heating apparatus which employs a constant rise feed cam that shoves a line of end-to-end workpieces toward an integral quench induction heating coil for scansion of the leading workpiece, and a cam operated collet for completing scansion of such leading workpiece. Means are provided for preventing overheating of certain length workpieces that tend to come to rest in the heating coil during workpiece-introducing and slack-gathering portions of the feed cam cycle, and for increasing speed of operation of the feed cam during such slack-gathering period.

3,614,367
ELECTRIC ARC CAN INCINERATOR
 Paul J. Johnson, 1597 Allen Road, Milan, Mich.
 Filed Feb. 11, 1970, Ser. No. 10,558
 Int. Cl. B23p 1/08; H05b 7/18
 U.S. Cl. 219-69 M 1 Claim



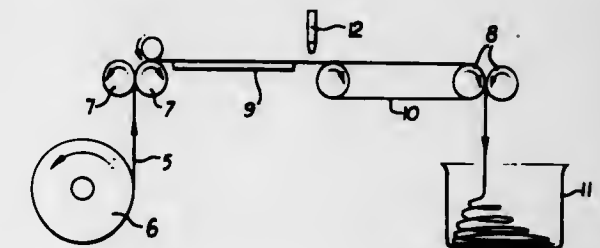
An electric arc, can incinerator, consisting of a receptacle having a liquid therein, and means to charge and discharge the receptacle with the liquid. A cylinder is rotatable in the receptacle, and is partly submerged in said liquid, the cylinder having dielectric end walls and a plurality of closely spaced electrodes, each of substantially wedge shaped cross section. A power supply imparts opposite polarity to adjacent electrodes.

3,614,368
ELECTRICAL DISCHARGE MACHINING SHORT CIRCUIT PROTECTION SYSTEM OF THE KEYED TYPE
 Walter Lobur, Clawson, Mich., assignor to Elox Inc., Troy, Mich.
 Continuation-in-part of application Ser. No. 617,700, Feb. 21, 1967, now Patent No. 3,515,838. This application Jan. 9, 1970, Ser. No. 1,732
 Int. Cl. B23k 9/16 6 Claims



A circuit for providing machining pulse off-time control responsive to gap short circuit condition and responsive to gap open circuit condition. During the aforesaid short circuit condition, machining current is reduced by increasing machining pulse off-time. However, the pulse on-time is maintained constant and is substantially the same as before the occurrence of either gap short circuit or open circuit condition.

3,614,369
METHOD OF AND APPARATUS FOR CUTTING CLOTH
 John A. Medley, Leeds, England, assignor to Wool Industries Research Association, Leeds, England
 Filed Sept. 17, 1968, Ser. No. 760,204
 Claims priority, application Great Britain, Sept. 21, 1967, 43038/67
 Int. Cl. B26d 1/00; B26f 3/00, 3/14
 U.S. Cl. 219-10.43 8 Claims

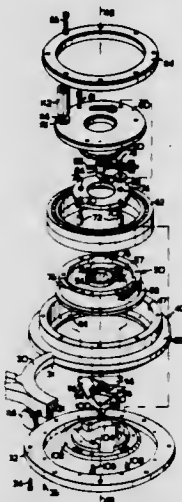


Cloth continuously moved under tension through a cutting zone, and cut by means having applied to it a component of motion oblique to the direction of movement of cloth. Movement of cutter may be controlled by a programmed means, e.g., a magnetic tape fed information by a computer, and feedback means for controlling position of cutter.

3,614,370
ELECTRODE HOLDER
 Caroli Italo, Westmount, Quebec, Canada, assignor to DBM Industries Limited
 Filed Nov. 18, 1970, Ser. No. 90,673
 Claims priority, application Canada, Sept. 21, 1970, 93,611
 Int. Cl. B23p 1/08, 1/04 6 Claims

An electrode holder is described that is adapted to be used with an electric discharge machine which has an electrically conductive electrode. The electrode holder has a main

housing that is generally annular to define a central opening having a central axis along which the electrode is fed during use. A base element is rotatably supported by the main housing, within the central opening. An adjusting ring is also supported by the base element to be movable relative thereto. The adjusting ring is provided with stop means which extend through cooperating slots provided in the base element. Electrically nonconductive guide rollers are disposed symmetrically about the central axis to guidingly engage the electrode. These guide rollers are supported by the base element and are biased against the stop means, with adjustment means being provided to effect relative movement between the base element and adjusting ring such that the positioning of the guide rollers relative to the central



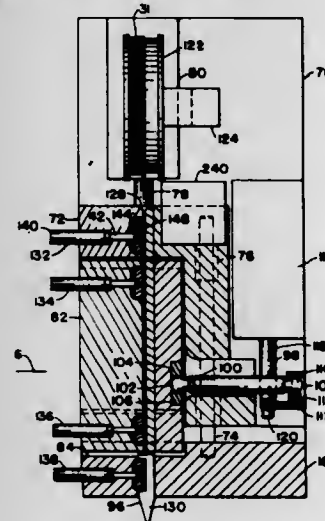
axis can be varied. In one preferred form, the main housing of the electrode holder is adjustably supported in a collar provided on a support stand. Also, preferably, the stop means on the adjusting ring includes a plurality of symmetrically mounted pins, at least one of which is independently rotatable and provided with a section that moves eccentrically relative to the axis about which the pin rotates, for enabling independent adjustment of an associated one of the guide rollers. In another embodiment, the base element in the electrode holder is provided with a drive post, a shoulder, or similar abutment which is engaged by a driving element or member on the electrode discharge machine causing the base element to be rotatively moved about the central axis.

3,614,371 ELECTRODE-WEAR-COMPENSATING APPARATUS FOR AND METHOD OF ELECTRIC DISCHARGE MACHINING

Robert L. Simpkins, Pontiac; Joseph R. Karr, Dearborn Heights, and Jerry W. Lagg, Detroit, all of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.
Filed Nov. 8, 1965, Ser. No. 507,993
Int. Cl. B23p 1/14

U.S. Cl. 219-69 V

9 Claims



Apparatus for and a method of electrical discharge machining of small holes in an electrically conducting

workpiece is disclosed including specific electrode feeding structure and a unique trigger circuit. The electrode feeding structure is responsive to the trigger circuit for feeding a wire electrode operable in conjunction with the electrical discharge machining structure an amount after each operation of the machining structure determined by the erosion of the electrode in the previous operation of the machining structure.

The electrode feeding includes first electrode gripping means, means for moving the first electrode gripping means and the electrode gripped thereby toward a workpiece, second gripping means and means responsive to the trigger circuit on movement of the electrode into contact with the workpiece for releasing the electrode from the first gripping means, clamping the with the second gripping means, returning the first gripping means to the initial position thereof and subsequently releasing the electrode from the second gripping means and again gripping the electrode with the first gripping means.

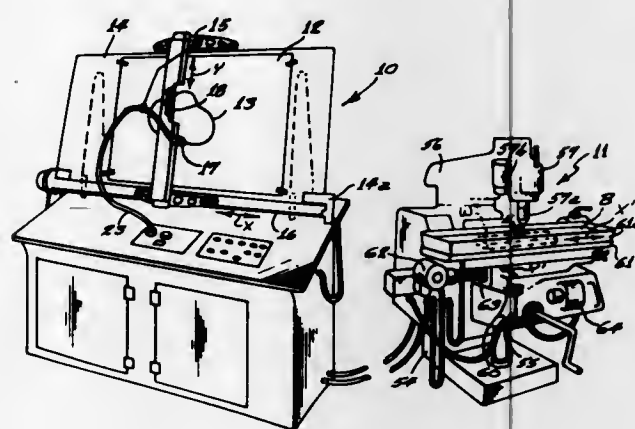
The trigger circuit includes a first circuit operable to conduct only when the electrode is in a predetermined position with respect to the workpiece having control means therein for reversing the movement of the first gripping means when the electrode reaches the predetermined position with respect to the workpiece in movement toward the workpiece and a second circuit operable to conduct for a predetermined time after the first circuit conducts for switching the gripping means gripping the electrode on reverse movement of the first gripping means.

3,614,372 TRACER CONTROLLED MACHINING BY ELECTRICALLY INDUCED EROSION David H. Dulebohn, Minneapolis, Minn., assignor to Andrew Engineering Company, Hopkins, Minn. Continuation-in-part of application Ser. No. 784,453, Dec. 17, 1968, now abandoned. This application Dec. 4, 1969, Ser. No. 882,213

Int. Cl. B23k 9/16, 9/12

U.S. Cl. 219-69 E

13 Claims



Apparatus effecting machining of a workpiece by electrically induced erosion, through electric discharge machining or electrochemical machining, the machining following an irregular configuration identical to the shape of a drawing optically sensed and followed.

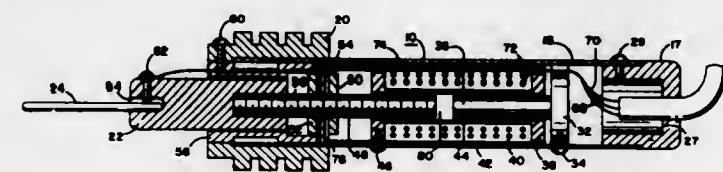
3,614,373 METHOD AND APPARATUS FOR ELECTRICALLY DEPOSITING METAL Edwin E. Skilling, 1481 Third Ave., Chula Vista, Calif. Filed Feb. 12, 1969, Ser. No. 798,701 Int. Cl. B23k 9/16

U.S. Cl. 219-69 V

10 Claims

Method and apparatus for electrically depositing metal from an electrode into the surface of the base member by a hand held unit, which unit continuously vibrates the electrode into indentation contact with the base member surface and with a continuous spark discharge of electrical power having a relatively high voltage and a relatively low

current, which electrical power to the unit is automatically turned off after a given interval following separation of the

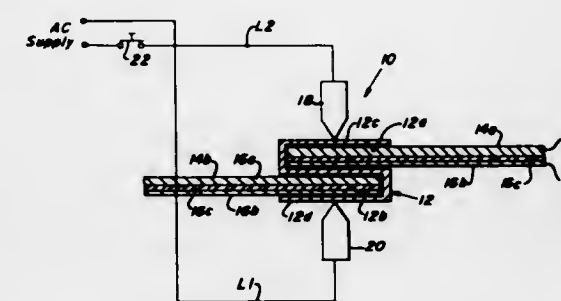


electrode and the base member and is automatically turned on by placing the electrode within spark discharge distance of the base member.

3,614,374 METHOD OF PRODUCING A WELDED JOINT Alvin R. Williams, Northfield, Ohio, assignor to United States Steel Corporation Division of Ser. No. 828,296, May 27, 1969. Filed June 30, 1970, Ser. No. 51,131 Int. Cl. B23k 9/28

U.S. Cl. 219-91

4 Claims

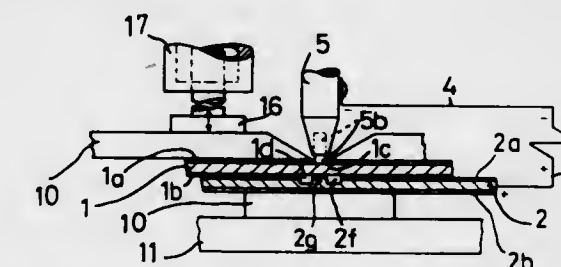


The method of making a welded joint includes the steps of positioning the S-shaped metal connector provided with a first laminate cavity and a second laminate cavity, disposing the first adhesively bonded laminate in the first laminate cavity, disposing the second adhesively bonded laminate in the second laminate cavity, and welding the first adhesively bonded laminate and the second adhesively bonded laminate to the metal connector.

3,614,375 WELDING OF SHEET METAL COATED WITH LAYERS Otto Alfred Becker, 59 Robert Kock Strasse D-6600, Saarbrücken, 6, Germany Filed May 8, 1969, Ser. No. 823,077 Claims priority, application Germany, May 8, 1968, May 28, 1968, Aug. 19, 1968, Sept. 3, 1968, Jan. 17, 1969, Sept. 17, 1968, P 17 65 366.6; P 17 65 489.6; P 17 65 970.0; P 17 90 058.2; P 19 02 569.5; P 17 90 142.7 Int. Cl. B23k 9/28, 1/1/10

U.S. Cl. 219-91

7 Claims

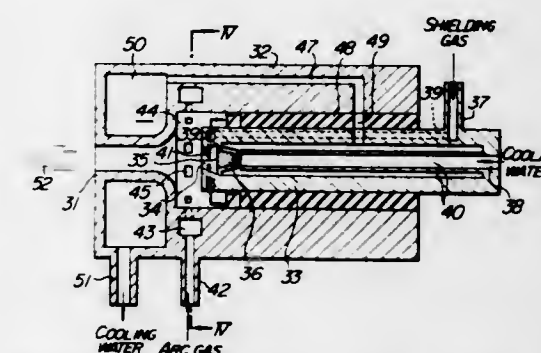


A method for the connection of sheet metal panels coated on at least one surface with an insulating layer by the electrical fusion of a metal, wherein the improvement comprises the steps of supplying an electric current for the fusion of metal indirectly along the sheet metal of at least one panel to the zone at which said panels are to be connected to each other, and keeping the temperature of an outer insulating layer of at least one of said panels below the melting point of said layer.

3,614,376 PLASMA TORCH Tosikatu Manabe, Hachioji-shi; Tetsuo Gelyo, Tokyo, and Yasuzi Hamura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan Filed Aug. 6, 1969, Ser. No. 847,948 Claims priority, application Japan, Aug. 7, 1968, 43/55511 Int. Cl. B23k 9/00

U.S. Cl. 219-121 P

11 Claims

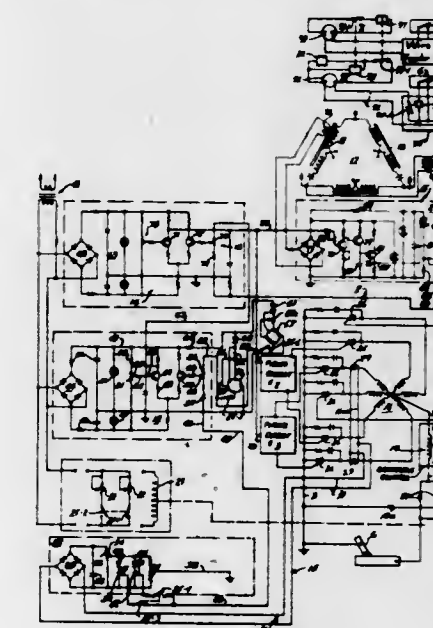


A plasma torch provided with a cathode-supporting structure having a recess formed at one end thereof opposed to a nozzle, said recess having its bottom surface carrying a cathode tip attached thereto and having its peripheral surface formed with shielding gas injection holes opening into said recess tangentially to the periphery thereof, wherein said shielding gas injection holes are located at a distance from the electron emission surface of said cathode tip and the diameter of said recess at its opening end is smaller than the diameter of said recess at the portion thereof where said shielding gas injection holes are formed.

3,614,377 ARC WELDING SUPPLY HAVING MULTIPLE CONTROL SYSTEM James B. Stearns, Elm Grove, and Robert W. Wendelburg, Milwaukee, both of Wis., assignors to Chemetron Corporation, Chicago, Ill. Filed Apr. 25, 1969, Ser. No. 819,238 Int. Cl. B23k 9/10

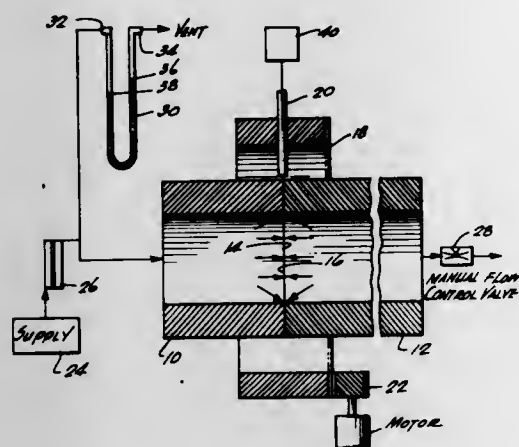
U.S. Cl. 219-131 R

9 Claims



An arc welding supply having a three-phase transformer and a full-wave rectifier including a plurality of controlled rectifiers. A feedback control system is provided for controlling the firing of the controlled rectifiers. The feedback control system includes a first adjustable potentiometer means connected to establish a first output voltage and current and a second adjustable potentiometer means connected in parallel with the first adjustable potentiometer means to establish a different setting for the output characteristic. A relay control circuit energized from the triggers of a pair of torches are connected to selectively insert only one of the potentiometer means into the feedback control system.

3,614,378
FLUXLESS HIGH-FREQUENCY ALUMINUM TUBE WELDING WITHOUT INSERTS
 Stuart E. Goodell, Playa Del Rey, and Gerald R. Stoelckinger, Los Angeles, both of Calif., assignors to McDonnell Douglas Corporation
 Filed Nov. 28, 1969, Ser. No. 880,737
 Int. Cl. B23k 9/00
 U.S. Cl. 219-137 4 Claims

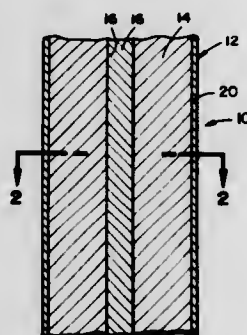


A method of fillerless butt welding hot crack sensitive aluminum tubing with high-frequency current pulsation with continuous pressure purging as a means of eliminating flux and improving weld bead contour.

3,614,379
METHOD OF MANUFACTURING ALUMINUM BRONZE-STAINLESS STEEL BIMETALLIC PLATES
 Jacques Troton, Fraisse, France, assignor to Compagnie Des Ateliers et Forges de la Loire, Paris, France
 Filed Oct. 27, 1969, Ser. No. 869,899
 Claims priority, application France, Oct. 28, 1968, 171,178
 Int. Cl. B23k 9/00 7 Claims

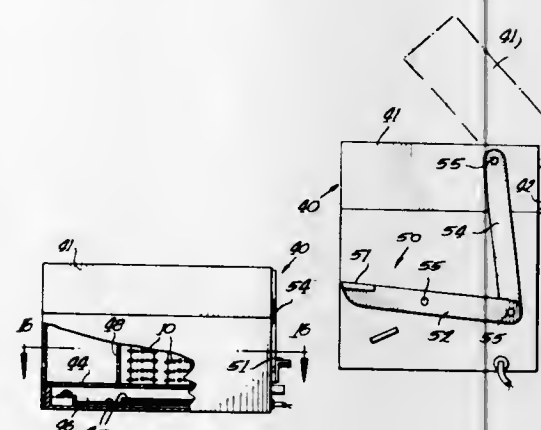
A method of manufacturing bimetallic plates of aluminum bronze and stainless steel by loading by means of blow torch on a baseplate of austenitic or austeno-ferritic steel an intermediate layer of austeno-ferritic stainless steel of adequate composition to yield a ferrite content ranging from about 10 percent to about 20 percent, and loading said intermediate layer with aluminum bronze by arc-welding.

3,614,380
WELDING ROD
 Warren E. Bray, Lodi, Calif., assignor to Richard E. Warner, Edgewood Drive, Lodi, Calif., a part interest
 Filed Oct. 30, 1969, Ser. No. 872,613
 Int. Cl. B23k 35/22
 U.S. Cl. 219-146 5 Claims



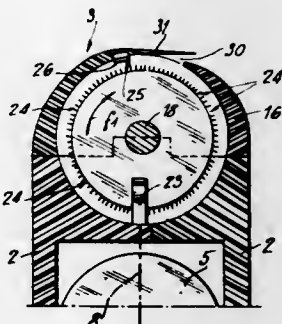
A welding rod comprised of a tubular body of welding material capable of fusing to provide a weld. The body has a bore therethrough longitudinally thereof, the bore being substantially filled with a mass of solder. The welding rod is especially adapted for welding an aluminum body to a body of another material.

3,614,381
HAIR-SETTING DEVICE
 Samuel J. Popell, Chicago, Ill., assignor to Popell Brothers, Inc., Chicago, Ill.
 Division of Ser. No. 850,308, July 28, 1969, Pat. No. 3,565,083, Continuation of Ser. No. 551,320, May 19, 1966, abandoned.
 Filed June 26, 1970, Ser. No. 50,166
 Int. Cl. H05b 3/60; A45d 2/14, 4/10
 U.S. Cl. 219-222 9 Claims



A hair-setting device including a number of curlers and a steam chest for steaming the curlers to a temperature not exceeding that of boiling water and to coat them with pure distilled water so that the hair is uniformly treated in terms of temperature as well as the type of moisture which contacts the hair. The steam chest includes a closure having an access opening which permits the removal of the curler from its interior, the curler being supported out of contact with the water which is boiled in the steam chest to steam the curler. The curler has a tubular hollow body and has good moisture and heat retention characteristics which permits the same to retain a temperature in the hair of not less than approximately 150° F. for a minimum of approximately 2 minutes after being heated in and removed from a 212° F. aqueous environment.

3,614,382
ELECTRIC SHAVING APPLIANCE
 Eugene Jim Politzer, 65, rue Joffroy, Paris, 17 eme, France
 Filed Jan. 24, 1969, Ser. No. 793,737
 Claims priority, application France, Dec. 3, 1968, P.V. 176443
 Int. Cl. H05b 1/00; A45d 26/00
 U.S. Cl. 219-223 14 Claims



bottom of the tank and is surrounded by a spaced-apart tube which is a good thermal insulator, such as a plastic tube. The insulator tube is open at the bottom for cold water inlet and has openings at the top for hot water outlet near the middle of the tank, forming a circulating system within the tank to cause cooler water to sweep across the surface of the electric heating element for economy and to greatly reduce stratification of the hot water within the tank.

3,614,387 ELECTRICAL HEATER WITH AN INTERNAL THERMOCOUPLE

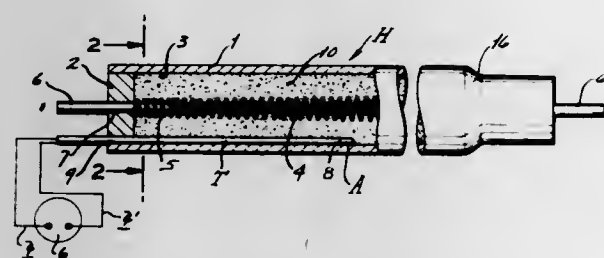
Ronald M. Wrob, Sunset Hills, and John B. Kidney, Hazelwood, both of Mo., assignors to Watlow Electric Manufacturing Co., St. Louis, Mo.

Filed Sept. 22, 1969, Ser. No. 859,623

Int. Cl. H05b 1/00

U.S. Cl. 219—328

9 Claims



An electrical sheath heater incorporating a thermocouple having its measuring junction end positioned against the inner sheath wall and its other end connected to a temperature gauge exteriorly of the sheath for accurately determining the sheath temperature during usage.

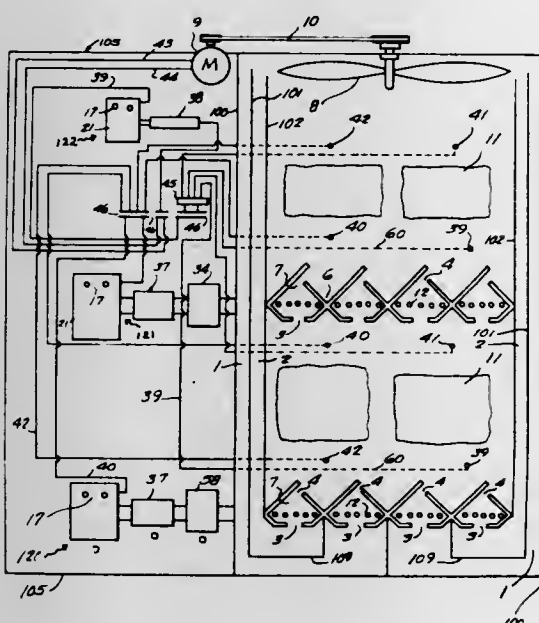
3,614,388 ELECTRIC HEATING OVEN SYSTEM

Aubrey C. Robinson, La Grange, Ga.
Division of Ser. No. 834,727, June 19, 1969, Pat. No. 3,529,358, which is a division of Ser. No. 488,886, Sept. 21, 1965, Pat. No. 3,467,815. Filed June 22, 1970, Ser. No. 48,401

Int. Cl. F27d 11/02

U.S. Cl. 219—400

2 Claims



An electric heating oven system for overcoming an erroneous and inefficient heat treatment of materials such as in the deferred curing of textile garments and pieces of goods, metal, wooden, lacquered surfaces, ceramics, and other objects or materials, where it is known that the product heat of materials undergoing heat treatment should be brought up to the last level equal to that of the environ-

mental temperature level which is used to impose the head treatment upon said material without uncontrolled underheating and/or overheating said material in the process, and where the application of such product head should be made in a gradual manner in order to hold peak heat levels to the minimum level required for given results.

3,614,389 ELECTRICALLY HEATED DENTAL WAX SUPPLYING AND MANIPULATING TOOLS

Imre Malisz, 1404 Daugall Ave., Windsor, Ontario, Canada

Filed Jan. 21, 1969, Ser. No. 792,562

Int. Cl. H05b 1/00; F27b 14/06

U.S. Cl. 219—421

4 Claims



A dental wax shaping and supplying tool includes an electrically heated, pressurized wax reservoir for heating a mass of wax to the desired temperature. Molten wax is selectively discharged from the reservoir through a flow valve in the bottom thereof into an elongated electrically heated flexible tube having connected to its other end an electrically heated spatula for dispensing and shaping the wax. The spatula includes a metallic tube for transmitting the wax from the flexible tube to the spatula spoon. The metal tube is electrically energized to supply heat to the wax flowing therethrough. The wax discharges onto a spatula spoon having an outer rim of electrical resistance material connected to supply heat and a center bowl of electrical insulation.

3,614,390 ROLL MILL AND TEMPERATURE-CONTROLLED ROLL

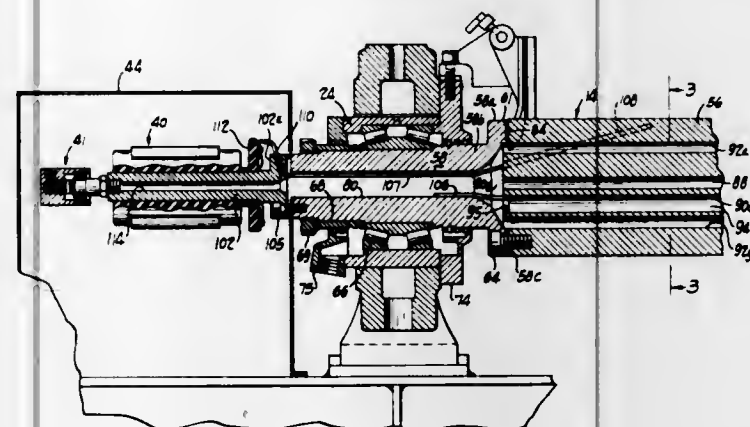
James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed Nov. 17, 1969, Ser. No. 877,235

Int. Cl. H05b 1/02

U.S. Cl. 219—469

2 Claims



Apparatus of the type used to work or calender materials such as rubber, plastic and the like between parallel-spaced rolls. To facilitate temperature control, a roll has internal heating elements and axially extending passageways, one centrally of the roll and others radially outward from the heating elements for carrying a flow of cooling fluid such as air. The outer passageways are located so that a flow of cooling fluid therethrough will provide a thermal barrier to the flow of heat from the heating means to the roll periphery and will produce a relatively uniform effect upon the temperature throughout the roll surface.

3,614,391 CONTROL CIRCUIT FOR COMPOSITE ELECTRONIC MODULATOR FLEXIBLE HEATING ELEMENT

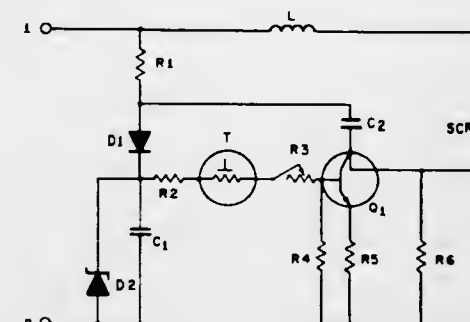
Peter Lauck, III, Princeton, N.J., assignor to J. P. Stevens & Company, Inc., New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,868

Int. Cl. H05b 1/02

U.S. Cl. 219—501

9 Claims



A composite electronic modulator flexible heating element control circuit, adapted to detachable juxtaposition with complementary outer and inner layers, as for example, undersheeting and a heating element insular, nonflammable layer and an outer decorative covering. In this particular circuit, an applied thermistor-sensor is adapted, upon a rise in preselected maximum temperature, to lowering its resistance to fire an NPN transistor to shut off an SCR load. The circuit is stable, sensitive and is particularly adapted to a nonflammable material, having an insular heat shield or ultrafrequency shield with the temperature responsive means being optionally either in the matrix of nonflammable material or in the control plug or control receptacle. It is adaptable to miniaturization by integrated circuit or equivalent means.

3,614,392 REGULATOR FOR A HEATER ELEMENT

Konstantin Apel, Lehrenweg 8, Meersburg, Bodensee, Germany

Filed Oct. 14, 1968, Ser. No. 767,149

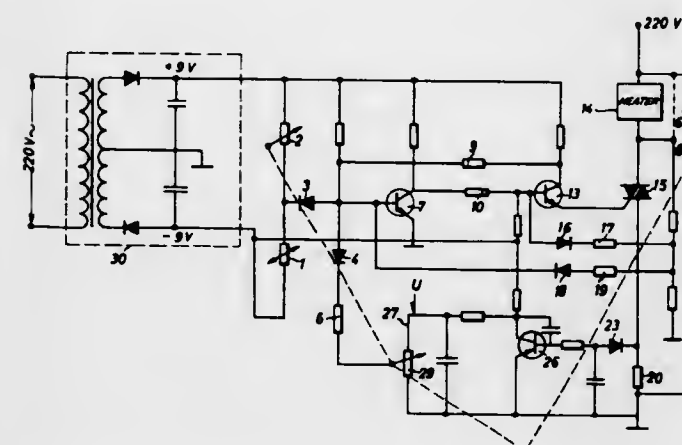
Claims priority, application Germany, Oct. 14, 1967, P 16 15

310.9

Int. Cl. H05b 1/02

U.S. Cl. 219—501

19 Claims



A regulator for supplying control voltage to switch a heater on and off is provided with an OR gate, a control-voltage amplifier, a switching device, a temperature sensing device, and two independent control-voltage generators. One of the generators is connected to the temperature sensing device and the other is connected to power. The output of the control-voltage generators are connected through the OR gate and the control-voltage amplifier to the switching device. The switching device is in circuit with the heater to be controlled.

3,614,393 NAVIGATIONAL COMPUTER

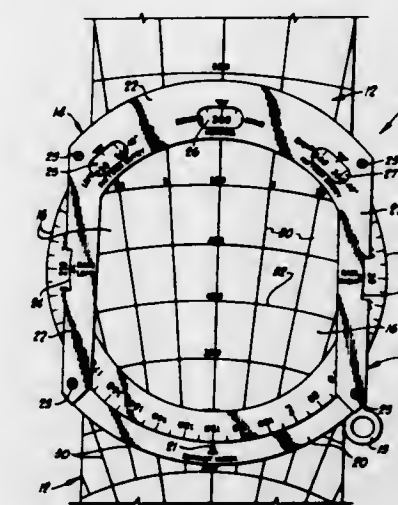
Paul E. Sanderson, Fort Lauderdale, Fla., assignor to Sanderson Films, Inc.

Filed Jan. 27, 1970, Ser. No. 6,074

Int. Cl. G06c 3/00; G06g 1/00

U.S. Cl. 235—61 NV

8 Claims



The invention is an aircraft navigational computer having a transparent rotating disc for plotting wind vector solutions. Surrounding the periphery of the disc is a compass rose superimposed by a support frame having windows which indicate the compass headings of the various legs in the landing pattern for any specific runway.

3,614,394 DATA RECORDS, AND DATA RECORDING AND UTILIZING METHODS AND MEANS

Theodore S. Bindshedler, Pompano Beach, Fla., assignor to Burroughs Corporation, Detroit, Mich.

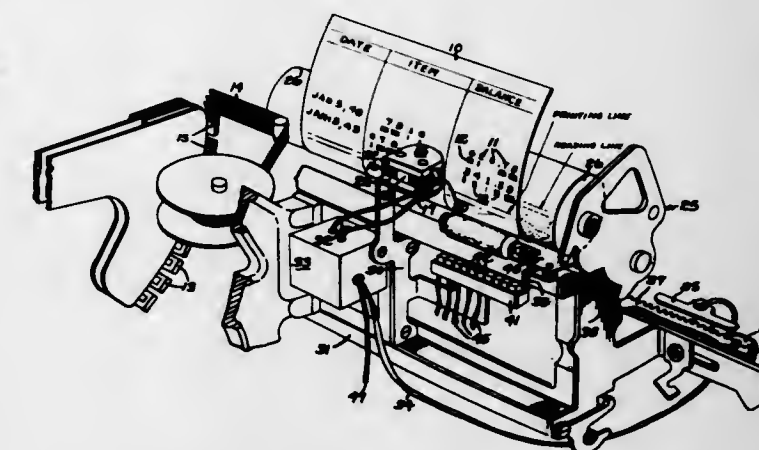
Division of Ser. No. 576,475, Apr. 5, 1945, abandoned, which is a continuation of Ser. No. 237,241, July 17, 1951, abandoned.

Filed May 31, 1963, Ser. No. 285,550

Int. Cl. G06k 3/00; 7/08; B41j 27/16

U.S. Cl. 235—61.9 R

15 Claims



An accounting machine includes means for magnetically recording a new balance on an accounting form and for later sensing the recording to enter such balance into the accumulator of the machine. The magnetic recording is made by impressing deposits of magnetic material from a ribbon onto the form, which deposits are configured so as to be visually readable to facilitate manual checking.

3,614,395 HIGH DENSITY STATIC CARD READER

Everett E. Harshman, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed July 24, 1969, Ser. No. 844,587

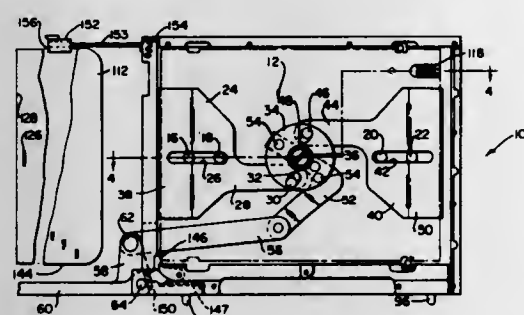
Int. Cl. E05c 17/44; G06k 7/04; H01h 43/08

U.S. Cl. 235—61.11 C

7 Claims

A compact, manually operated card reader which is especially adaptable for reading punched cards having a high

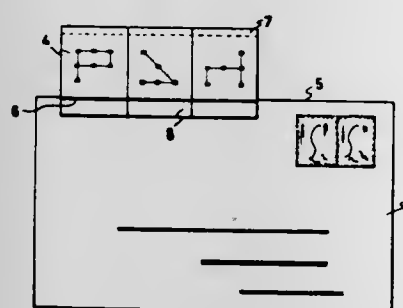
density of information in them. The reader includes first and second printed circuit boards which are brought together for reading a punched card by a pair of wedge members which displace a pressure plate which develops an even pressure on the first printed circuit board in moving it towards the second printed board during a reading operation. The second printed



circuit board has resilient, electrically conducting pins projecting therefrom, which pins pass through the holes in a card and are compressed by the first printed circuit board to complete electrical circuits corresponding to holes in the card. The wedge members are actuated by a crank and a connecting lever which is connected to an operating handle on the reader.

3,614,396 REGISTRATION RECORD AND METHOD FOR READING IT

Norbert F. Goldstern, c/o Gloeilampenfabriek Radium N.V.
De Regenboogstraat 12, Tilburg, Netherlands
Filed June 20, 1969, Ser. No. 834,955
Claims priority, application Netherlands, July 1, 1968,
6809303
Int. Cl. G06k 19/04; G01n 21/30
U.S. Cl. 235-61.12 R 8 Claims



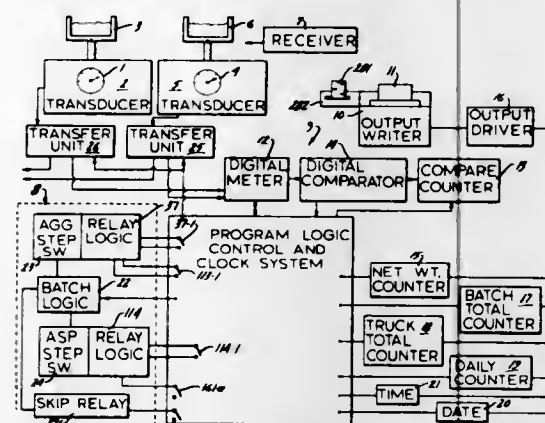
The invention provides a registration record provided with an attached strip with perforations, the perforated strip being attached along two opposing edges by attaching means, which along the one edge are weaker than along the other, so that the weakest attached edge can easily be made loose for folding the strip away from the record for reading it photoelectrically.

3,614,397 BATCH-CONTROLLED READOUT SYSTEM

Walter L. Probert, and Steven R. Finch, both of Milwaukee, Wis., assignors to Wisconsin Electrical Mfg. Co., Inc., New Berlin, Wis.
Filed Nov. 7, 1969, Ser. No. 874,932
Int. Cl. G06m 3/02
U.S. Cl. 235-92 WT 25 Claims

An asphalt-type batching printer unit includes a pair of scale potentiometers sequentially and selectively connected to corresponding batch controls and a counter circuit. The potentiometers are energized from the digital converter of the count circuit. The digital converter and a compare counter are applied to a digital comparator to control a clock pulse source. The clock pulse source is connected to the compare counter and to a net weight counter, a batch total counter, a truck total counter, and a daily total counter. The net weight counter is reset after each printing. During each

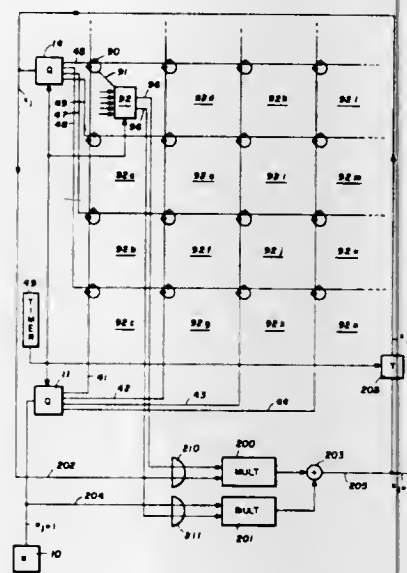
print, an acknowledge switch is closed to again start the batch control. The aggregate batch control and counters print the aggregate scale tare and deliver several aggregate materials with net weight printing of each. The asphalt scale



tare is stored and printed after the final aggregate print. The asphalt batch control delivers the asphalt and the amount is printed. After one batch is completed, a batch signal recycles for another batch or finish ticket signal provides readout of the several totaling counters.

3,614,398 LINEAR EMBEDDED NONLINEAR ADAPTIVE PROCESSOR

William C. Choate, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 23, 1968, Ser. No. 785,944
Int. Cl. G05b 13/02
U.S. Cl. 235-150.1 10 Claims



This invention relates to nonlinear processors and more particularly to the utilization both during training and execution of linear subprocessors which are selected and employed in dependence upon the function to be processed and to provide weighting coefficients by which the function to be processed is weighted.

ERRATUM

For Class 235-151.12 see:
Patent No. 3,614,682

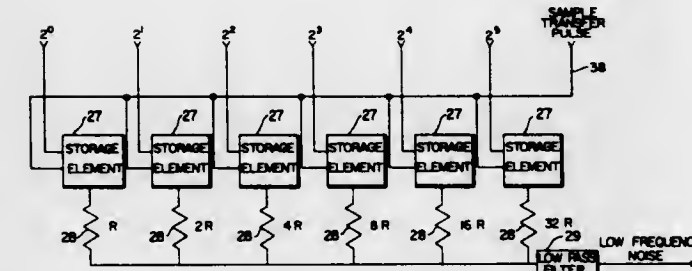
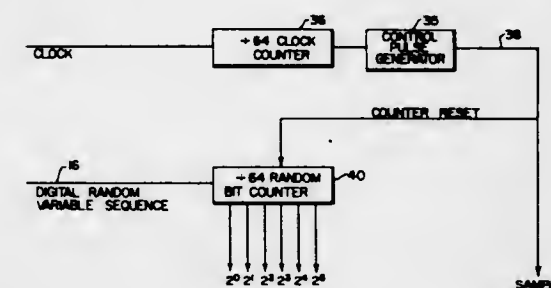
3,614,399 METHOD OF SYNTHESIZING LOW-FREQUENCY NOISE

John C. Linz, 2 Jeffrey Circle, Bedford, Mass.
Filed Aug. 30, 1968, Ser. No. 756,519
Int. Cl. G06f 1/02, 7/38
U.S. Cl. 235-152 46 Claims

A method of synthesizing low-frequency noise wherein the low-frequency noise has a controllable amplitude

distribution, so as to be able to select a desired amplitude-level distribution, such as Gaussian, Poisson, or Uniform distribution. The desired amplitude distribution is derived

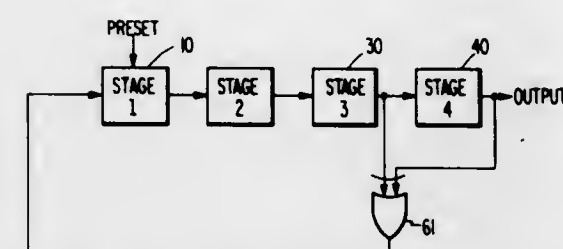
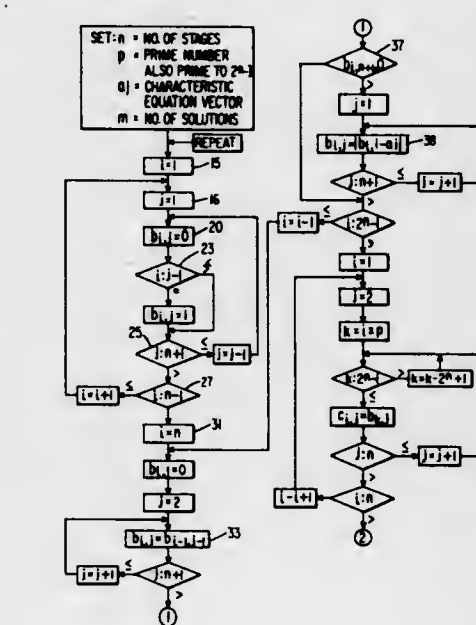
digits (the maximum length sequence possible for n stages). This application relates to a machine implemented process for calculating from a specific feedback connection producing a maximum length sequence all other feedback connections that will produce a maximum length sequence.



from a digital-random-variable sequence, having a plurality of characteristics, by selecting the characteristic appropriate to the desired amplitude distribution and performing an appropriate digital operation on the selected characteristic.

3,614,400 MAXIMUM LENGTH PULSE SEQUENCE GENERATORS

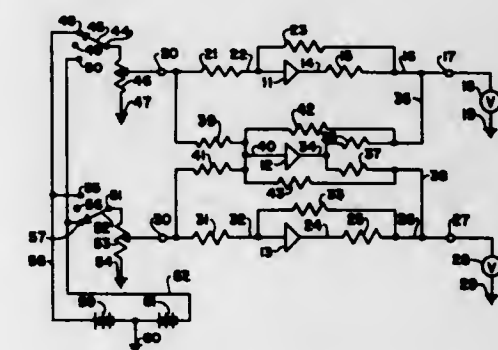
Edward Charles Farnett, Cinnaminson, and Lee Oliver Upton, Jr., Edgewater Park, both of N.J., assignors to RCA Corporation
Filed Nov. 26, 1969, Ser. No. 880,028
Int. Cl. G06f 1/02
U.S. Cl. 235-152 2 Claims



An n stage shift register can be operated as a digital pulse sequence generator by feeding back to the first stage the modulo 2 sum of the signals produced by at least two stages of the register. By properly selecting the stages from which the modulo 2 sum feedback signal is derived, the register can be made to produce a pseudo random sequence of $2^n - 1$

3,614,401 REDUNDANT SYSTEM

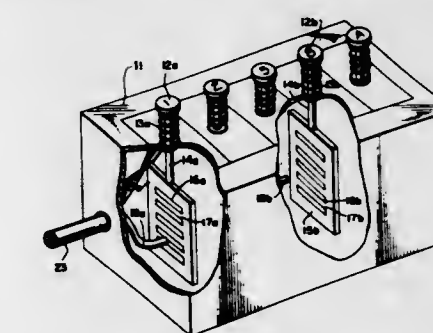
Tenny D. Lode, Madison, Wis., assignor to Rosemount Engineering Company, Eden Prairie, Minn.
Continuation of application Ser. No. 466,928, June 25, 1965, now abandoned. This application Apr. 1, 1969, Ser. No. 812,461
Int. Cl. B64c 13/00; G08c 25/00; G06f 11/00
U.S. Cl. 235-153 19 Claims



This disclosure shows several forms of multiple channel redundant signal transmission systems which are capable of continued operation in spite of failures of individual transmission elements or channel elements. The redundancy is applied to a multiple channel system as a whole, rather than to individual channels. For example, one additional channel may be used as a redundant backup for two, three or more individual channels to provide continued operation of all channels in spite of a failure in any single channel including the additional channel. The approach is believed to offer significant economics over the more conventional approach of providing separate redundant or backup channels for each individual signal channel.

3,614,402 SIGNAL-GENERATING APPARATUS USING FIBER- OPTIC SENSORS HAVING MULTIPLE LIGHT INPUTS AND A SINGLE COMMON ELECTRO-OPTICAL OUTPUT CONVERTER

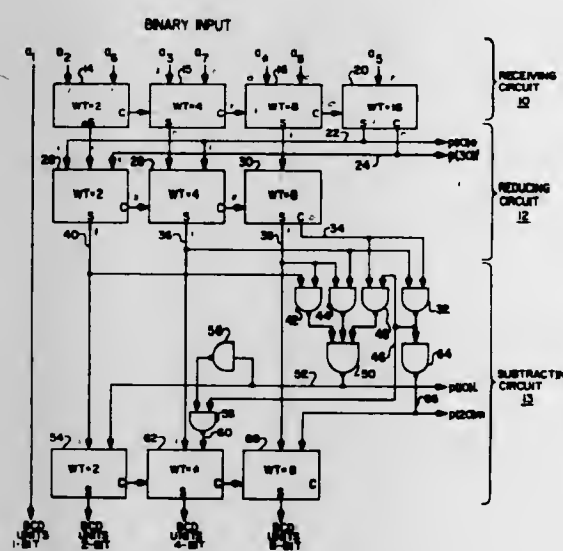
Leonard James Higgins, Watervliet, N.Y., assignor to Datacube Systems Corporation, Latham, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,612
Int. Cl. G02b 5/16; G06f 5/02; G08c 9/00
U.S. Cl. 235-154 8 Claims



A multiposition encoder for keyboard-actuated devices such as desk calculators and the like is provided and comprises a plurality of individually coded target members with each coded target member being representative of a particular alphanumeric character and being connected to a respective key of the keyboard-actuated device that corresponds to the character represented by the coded target member. A plurality of interrogating sensing and readout detectors in the form of light-transmitting and light-receiving fiber-optic elements are positioned adjacent respective ones of the individual coded target members for sensing and

reading out the respective coded characters. Means are provided for selectively individually translating the coded target members past their respective sensing and readout detectors upon actuation of the keys with which they correspond. A common electrooptical converting means is coupled to and supplied from all of the light-receiving and fiber-optic sensors for converting the outputs from the sensing and readout detectors into serial, coded pulsed electric signals representative of the intelligence contained in the selectively actuated keys and their associated coded target members. The encoder may comprise either a separate attachment to an existing equipment such as a desk calculator, or may be fabricated into and comprise an integral part of such equipment. In a preferred arrangement, the light-transmitting fiber-optic elements of all of the respective sensing and readout detectors are supplied from a single common light source and all of the light-receiving fiber optical elements of the detectors are coupled to a single, common output electrooptic converter such as a photocell, a phototransistor, or the like. The multiposition signal-generating encoder also may be applied to a number of different machine tool control, testing sequence and other similar applications.

3,614,403
SYSTEM FOR CONVERTING TO A BCD CODE
Roland Borg Anderson, Silver Spring, Md., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.
Filed Apr. 22, 1969, Ser. No. 818,367
Int. Cl. H04I 3/00
U.S. Cl. 235-155

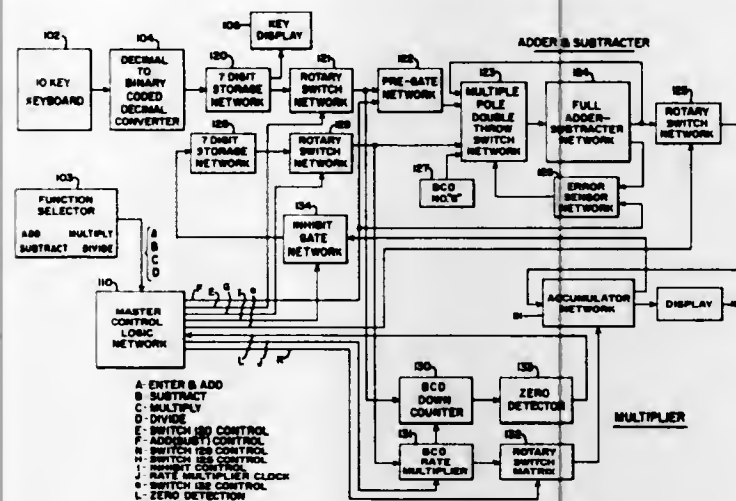


A static circuit for converting from a binary-based code to BCD. A separate converter is provided for each digit of the BCD code. Each converter includes means for summing the weighted bit values for the corresponding digit and means for converting the sum from the summing means into a binary-coded digit between zero and nine and an integral carry to the next higher digit position. For each digit position where the sum from the summing means exceeds a predetermined value (V), such as 29, the converting means includes a first means for reducing the sum of a value no greater than (V), and a second means for subtracting from the output of said first means an integral multiple of 10 so as to obtain the desired value between zero and nine.

3,614,404
ELECTRONIC CALCULATOR
Mark M. Garfein, Dewitt, N.Y., assignor to General Electric Company
Filed Apr. 17, 1969, Ser. No. 816,965
Int. Cl. G06F 7/48
U.S. Cl. 235-159

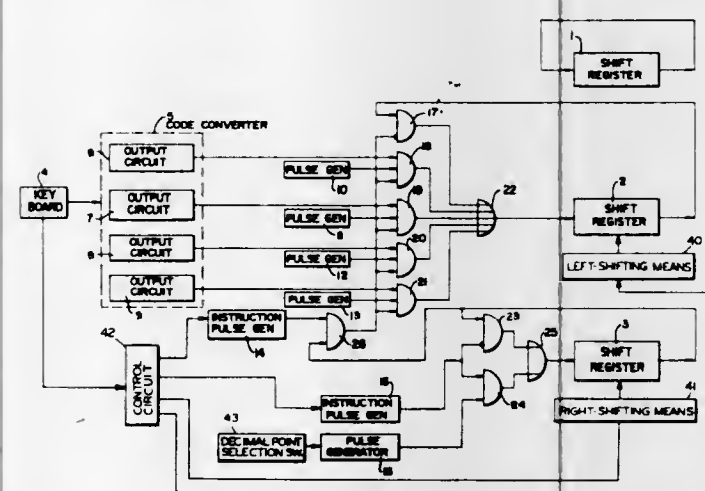
An inexpensively fabricated electronic calculator for efficiently performing basic mathematical operations

including addition, subtraction, multiplication and division is disclosed. In the multiplication operation binary coded numbers are transformed into a unary code using a serial, digit-by-digit technique. A logical design is employed which permits a circuit construction utilizing relatively inexpensive semiconductor devices, specifically of an integrated circuit MOSFET design. In addition and subtraction operations



binary-coded decimals are employed throughout, with correction of uncorrected sums being made by suitable modifications of the circuit which permit the adder-subtractor network per se to be traversed twice thereby obviating the need for a separate correction network. A division operation is performed employing multiplication and addition-subtraction circuitry.

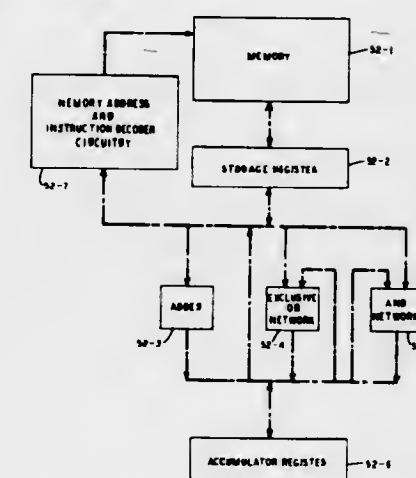
3,614,405
NUMBER ENTRY SYSTEM
Goro Hamano, Osaka, and Sadamichi Sameda, Kanagawa-ken, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Feb. 26, 1969, Ser. No. 802,387
Int. Cl. G06F 3/02
U.S. Cl. 235-160



A number entry system for a digital data processor. The system has an input register for receiving input data therein, and an auxiliary register coupled to said input register primarily for use as a multiplier-quotient register for a multiplication or division operation and which contains no data to be processed during a number entry operation. The auxiliary register has a capacity for the same number of digits as said input register. Left-shifting means is coupled to said input register for shifting the contents of said input register left by one digit position whenever a new figure of an input number is detected during a number entry before the position of the decimal point of said input number is designated. Marker signal generating means is coupled to said auxiliary register for setting a marker signal into the "one's" position of said auxiliary register when the first figure of an input number is detected during number entry. Right-shifting means is coupled to said auxiliary register for shifting said marker signal in said auxiliary register right by

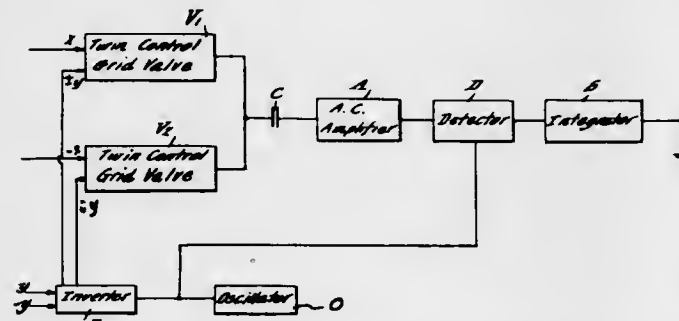
one digit position whenever a new figure of an input number is detected during a number entry after the decimal point of said input number has been designated. Input circuit means is coupled to said input register for putting the input figure into the same digit position with said marker signal whenever a new figure of an input number is detected during number entry.

3,614,406
MACHINE PROCESSING OF ALGEBRAIC INFORMATION
William S. Brown, Chatham, N.J., assignor to Bell Telephone Laboratories Incorporated, New York, N.Y.
Filed Sept. 30, 1964, Ser. No. 400,370
Int. Cl. G06F 7/385, 7/39, 7/00
U.S. Cl. 235-168



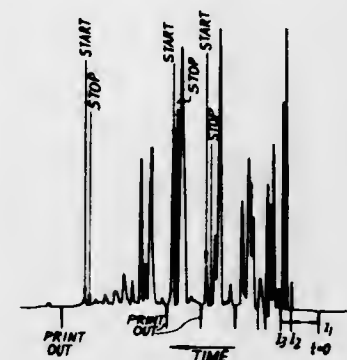
A method and apparatus are disclosed for improving the efficiency of processing and storing algebraic and similar information in a data processor. Polynomial information is treated as an array of coefficient and exponent information subject to machine boundary conditions, user format statements and linking signals. Dynamic storage allocation and exponent overflow are also provided.

3,614,407
METHOD OF MULTIPLICATION OF ELECTRIC SIGNALS AND ITS APPLICATION TO RADAR OR LIKE SYSTEMS
Jacques Maurice Armand Fournier, Chatillon-sous-Bagneux, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France
Filed Apr. 6, 1962, Ser. No. 188,919
Claims priority, application France, Apr. 6, 1961, 857,963
Int. Cl. G06G 7/19, 7/16
U.S. Cl. 235-181



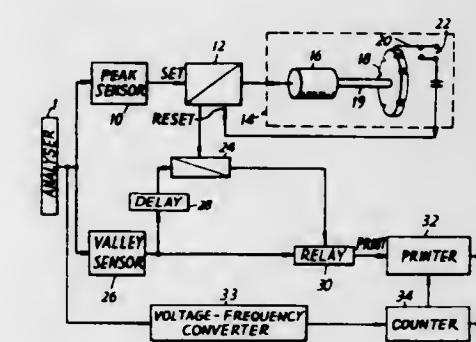
Electronic multiplier device for the treatment of two input signals to be multiplied, comprising two electronic tubes having each two control grids and an anode, means for periodically reversing the sign of one of said input signals, means for applying simultaneously though with opposite signs said periodically reversed signal respectively to one control grid of one tube and to the corresponding control grid of the other tube, means for applying simultaneously though with opposite signs the other of said input signals respectively to the other control grids of said tubes, means for collecting the sum of the anode currents of said tubes, and an alternating current amplifier having its input connected with said last-mentioned means.

3,614,408
WAVEFORM ANALYZING SYSTEM, PARTICULARLY FOR CHROMATOGRAPHS, WHEREIN THE WAVEFORM IS INTEGRATED BETWEEN SELECTED PEAKS AND VALLEYS
Brian L. H. Watkin; Norman Evans, and Ronald J. K. Arnold, all of Sunbury-on-Thames, Middlesex, England, assignors to The British Petroleum Company Limited, Moor Lane, London, England
Filed Feb. 20, 1969, Ser. No. 800,907
Int. Cl. G06G 7/18, 7/19
U.S. Cl. 235-183



A waveform analyzing system, particularly for use with chromatographs, wherein the waveform is integrated between selected peaks and valleys thereof, wherein a recycling timing device is used to reset the time scale to zero at selected points of the waveform, and wherein printout of the integrated values can be obtained at selected peaks and/or valleys of the waveform.

3,614,409
TIMING DEVICE, PARTICULARLY FOR CHROMATOGRAPHS
Brian Leslie Highford Watkin, Sunbury-on-Thames, Middlesex, England, assignor to The British Petroleum Company Limited, Moor Lane, London, England
Filed Feb. 20, 1969, Ser. No. 800,897
Claims priority, application Great Britain, Feb. 22, 1968, 8772/68
Int. Cl. G06G 7/18
U.S. Cl. 235-183

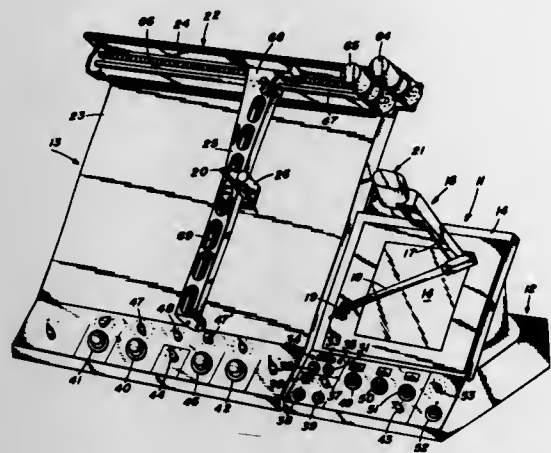


A waveform-analyzing system, particularly for use with chromatographs, wherein the waveform is integrated between selected characteristic points thereof, and selected peaks of the waveform are used as recycling zero time markers which act to restart a timing device programmed to stop before each successive one of said selected peaks instead of operating relative to a continuously running time scale defined by a single point at the beginning of the waveform.

3,614,410
IMAGE RECTIFIER
Knight V. Bailey, Ferndale, and Dudley P. Hattaway, Madison Heights, both of Mich.
Filed June 12, 1969, Ser. No. 832,808
Int. Cl. G06G 7/22
U.S. Cl. 235-186

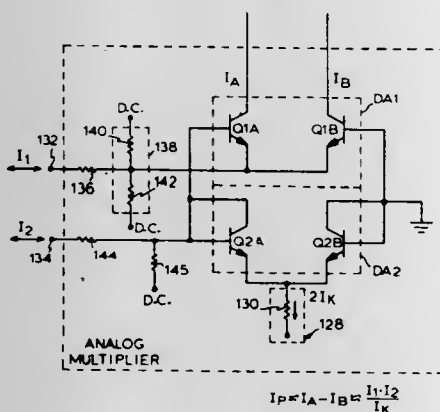
This invention is directed to an apparatus that plots an orthogonal projection of a photograph or similar image

which was taken at an angle to the earth's surface. A stylus is used to outline the image which is to be rectified. The x and y cartesian coordinates of the stylus position are fed to an analog computer together with data relating to the camera's



position at the time the image was taken. The computer, utilizing trigonometric relationships, calculates rectified equivalents of the X, y coordinates. These equivalents are utilized to motivate a plotter which traces a rectified drawing of the input image.

3,614,411
DEFLECTION SIGNAL CORRECTION SYSTEM INCLUDING AN ANALOG MULTIPLIER
Martin C. Henderson, Canoga Park, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Division of Ser. No. 779,901, Nov. 29, 1968. Filed June 30, 1969, Ser. No. 870,853
Int. Cl. G06g 7/16
U.S. Cl. 235-194

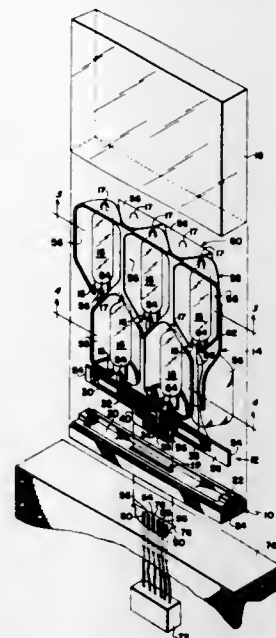


A system for correcting for inaccuracies in the positioning of a cathode-ray tube beam which inaccuracies may result from various factors including (1) curvature of the screen and (2) off-axis displacement of the electron gun. Unique analog multiplication means are disclosed for developing corrected deflection signals in response to position command signals in order to compensate for distortions which would otherwise be introduced due to the tube geometry.

3,614,412
PHOTOFLASH LAMP ASSEMBLY
Alfred H. Bellows, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Mar. 17, 1969, Ser. No. 807,537
Int. Cl. G03b 15/02

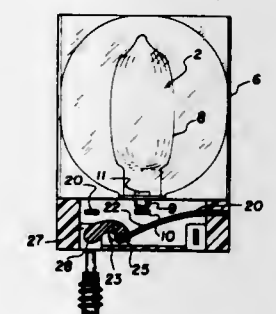
U.S. Cl. 240-1.3
A photoflash lamp assembly electrically connectable to a photoflash lamp ignition circuit includes first and second arrays of concave light reflectors arranged in nested back-to-

back relationship to face in opposite directions. Each array includes at least two parallel rows of reflectors arranged in



staggered interdigitated relationship. A plurality of photoflash lamps are mounted one in each of the reflectors.

3,614,413
PERCUSSION ACTIVATABLE FLASH UNITS HAVING INDIVIDUAL STRIKER ELEMENTS
David E. Beach, Rochester, N.Y., assignor to Sylvania Electric Products Inc., Danvers, Mass.
Division of Ser. No. 765,926, Oct. 8, 1968. Filed Apr. 4, 1969, Ser. No. 813,420
Int. Cl. G03b 15/02

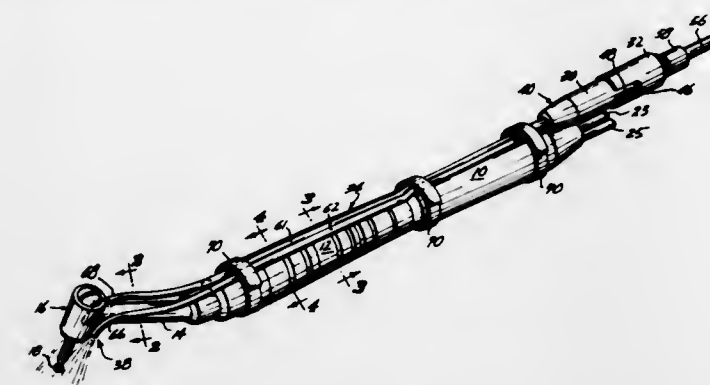


A percussion-ignitable multilamp photoflash unit in which individual spring striker elements for each lamp of the unit are held in a preenergized condition. Access openings are provided in the base of the flash unit at positions such that an actuating mechanism in photographic apparatus on which the units are detachably mounted can cooperate to selectively release the striker elements in the flash unit.

3,614,414
WORK AREA ILLUMINATOR
Kenneth W. Gores, Bellevue, Wash., assignor to Kirkman Laboratories, Inc., Portland, Oreg.
Filed Apr. 3, 1970, Ser. No. 26,183
Int. Cl. F21v 33/00

U.S. Cl. 240-2
A bifurcated illuminator supplies practically shadowless light to a work area in close proximity to a working tool. From a light source remote with respect to the tool, light rays

are gathered and transmitted by fiber optic rods in bundles compensate for the roll action. In a modified form of which extend along the tool shank and divide close to the structure means responsive to the speed of the vehicle are



tool. The bundles are shaped near their emitting ends to emit light directed at the work area of the tool.

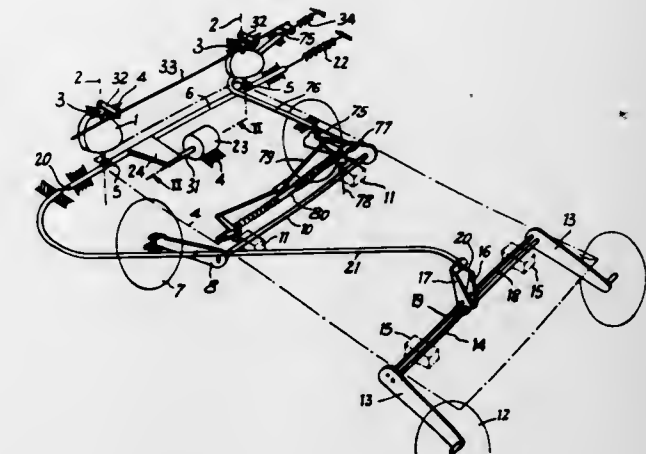
3,614,415
FIBER ILLUMINATOR
Alfred E. Edelman, Camden, N.J., assignor to Vicon Products Corporation, Mamaroneck, N.Y.
Filed May 19, 1969, Ser. No. 825,665
Int. Cl. F211 1/00
U.S. Cl. 240-2.18



A fiber illuminator especially suitable for interoral use by dentists for illuminating the interoral cavity. Light is carried along a flexible bundle of fibers from a light source to a primary light probe and the primary probe is removably connected to various instruments for directing light onto a work area during use of the instruments. The primary light probe is securely connected to an instrument by an arrangement which permits a quick disconnect and which guides the bundle of fibers away from the hand of the operator so that the instrument may be held normally.

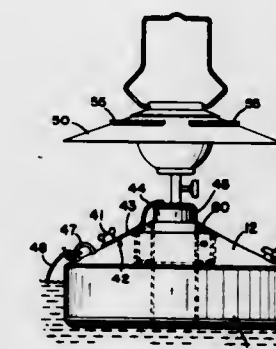
3,614,416
ROAD VEHICLE LIGHTING EQUIPMENT
Jacques Fleury, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Feb. 11, 1969, Ser. No. 798,349
Claims priority, application France, Feb. 16, 1968, 3,463
Int. Cl. B60q 1/12

U.S. Cl. 240-8.25
Road vehicle-lighting equipment includes a linkage for pivoting the headlamp in relation to the direction of travel of the vehicle and also means responsive to vehicle roll for changing the inclination of the pivot axis of the headlamps to turn the headlamps downwardly and inwardly of a curve to



employed for changing the inclination of the pivot axis of the headlamps when the steering wheel is turned.

3,614,417
BUOYANT LANTERN SUPPORT
Clarence H. Sanford, 2055 Tulane Drive, Dayton, Ohio
Filed Aug. 11, 1969, Ser. No. 848,970
Int. Cl. F21v 31/00; B63b 51/52
U.S. Cl. 240-52 R

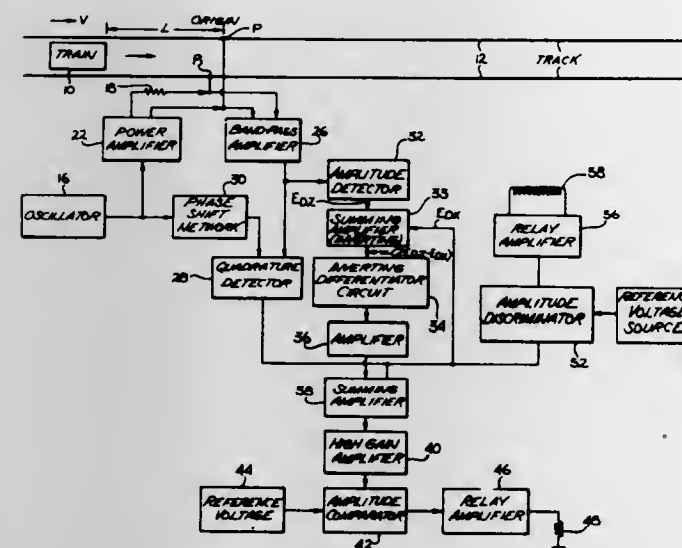


A buoyant support for portable lanterns of molded thermoplastic construction includes a lantern-receiving socket of varying cross-sectional configuration designed to permit the support to be used with lanterns having different size bases. The ballast chamber of the support is divided by a series of primary and secondary baffles to inhibit movement of the water which is used as a liquid ballast in the support.

3,614,418
RAILROAD GRADE CROSSING PROTECTION SYSTEM
Richard V. Pelli, Diamond Bar, Calif., assignor to Marquardt Industrial Products Co., Cucamonga, Calif.
Filed Feb. 26, 1970, Ser. No. 14,373
Int. Cl. B611 29/32

U.S. Cl. 246-128
A railroad crossing warning indicator which predicts the time of arrival of trains to a grade crossing is described. Two voltages are derived from the track reactance magnitude and the impedance magnitude and are both indicative of the distance of the train. By summing the difference between the

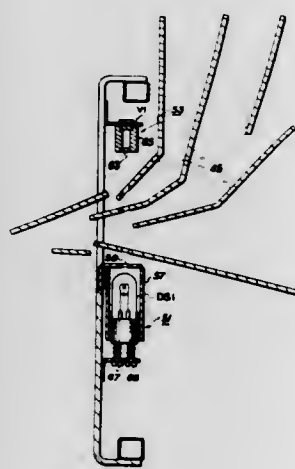
impedance voltage and the reactance voltage with the impedance voltage, a new distance voltage is obtained



whereby errors are reduced due to the nonlinearity of the signals due to ballast resistances in the tracks.

3,614,419
MULTIPLE SHEET DETECTION SYSTEM
John W. Daughton, Fairport; James M. Donohue, Rochester, and Gary L. Schlantz, Penfield, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,766
Int. Cl. G06m 7/10
U.S. Cl. 250-223

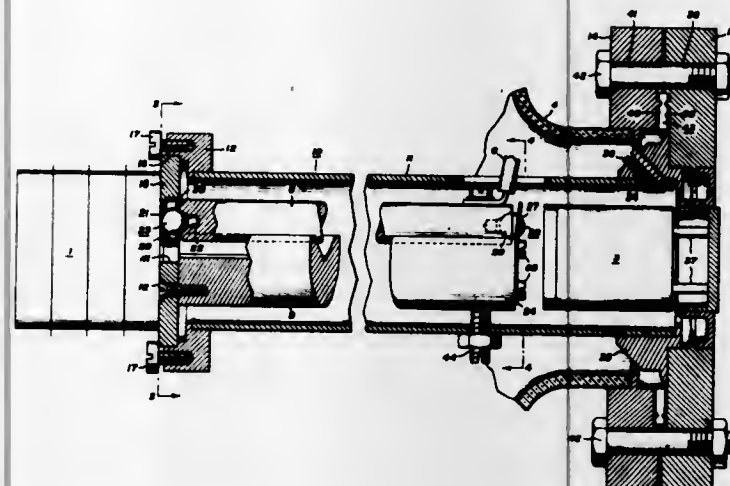
5 Claims



A multiple-sheet-detecting system for use in a sheet feed path to provide signals to a machine control to indicate when superposed sheets are fed past a detection station. The detection system has a light source and photosensor located on opposite sides of the sheet path such that the illumination reaching the photosensor is interrupted by the presence of a sheet or sheets in the sheet path. An electronic circuit is coupled to the photosensor which experiences a change in resistance depending upon the transmittance of a sheet or sheets in the sheet path and provides an output signal when there is a multiple sheet condition. The electronic circuit includes a motor-driven potentiometer which is utilized as a memory for a previously fed sheet in a feedback circuit for comparison with a signal representative of the next sheet. The circuit may be calibrated for varying circuit parameters to accommodate different sheet weights and types.

3,614,420
MONOPOLE MASS SPECTROMETER
Robert H. Dillenbeck, Altamont, N.Y., assignor to General Electric Company
Filed Oct. 11, 1967, Ser. No. 674,579
Int. Cl. H01j 39/34
U.S. Cl. 250-41.9

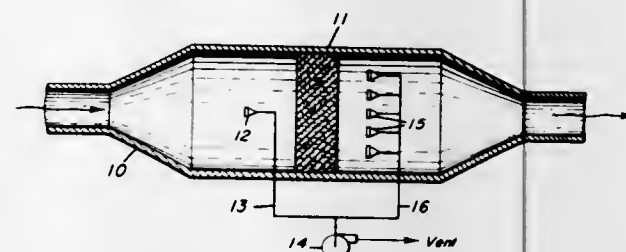
4 Claims



Improved electrode mounting means for a monopole mass spectrometer comprising a rigid end plate and a flexible end plate and means for rigidly supporting one of the electrodes therebetween and flexibly supporting the other.

3,614,421
AMBIENT RADIOACTIVITY AIR FILTER TESTER USING A TRACK-REGISTRATION MATERIAL
Henry Ward Alter, and Richard S. Gilbert, both of Danville, Calif., assignors to General Electric Company
Filed Dec. 12, 1968, Ser. No. 783,247
Int. Cl. G01t 1/08, 1/20
U.S. Cl. 250-43.5

7 Claims



An improved technique for testing air filtration systems is disclosed. So-called "absolute" filters are intended to remove substantially suspended particles from a stream of air passing therethrough. Track-registration films sensitive to alpha particles emitted by radon daughters are placed upstream and downstream of the high-efficiency filter banks. After a suitable period, the exposed films are developed. The ratio of downstream to upstream track density is a direct measure of filtering efficiency. This system is much more sensitive, convenient and simple than prior filter-efficiency-testing techniques.

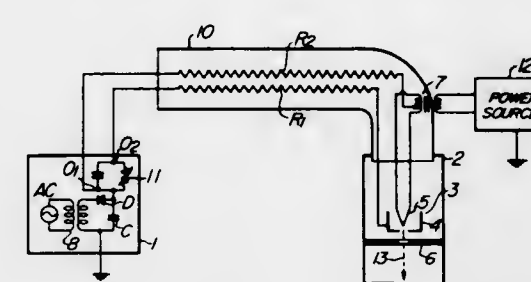
3,614,422
SURGE REDUCTION RESISTORS BETWEEN A HIGH-VOLTAGE SOURCE AND AN ELECTRON MICROSCOPE ELECTRON GUN

Isao Matsui, Katsuta; Yoshihisa Minamikawa, Katsuta, and Shinjiro Katagiri, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 28, 1970, Ser. No. 58,840
Claims priority, application Japan, Aug. 1, 1969, Nov. 10, 1969, 44/72604; 44/105851
Int. Cl. H01j 37/26
U.S. Cl. 250-49.5 A

3 Claims

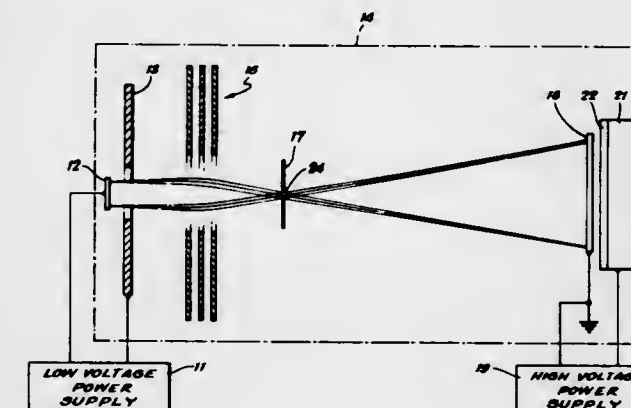
A resistance for adjusting the bias voltage is provided in a high voltage source, a high DC voltage being applied to the

resistance, and the high DC voltage and bias voltage are applied to the filament and Wehnelt electrode, respectively,



3,614,423
CHARGED PARTICLE PATTERN IMAGING AND EXPOSURE SYSTEM
Louis N. Heynick, and Eugene R. Westberg, both of Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Sept. 21, 1970, Ser. No. 73,898
Int. Cl. H01j 37/12, 37/30
U.S. Cl. 250-49.5 C

15 Claims

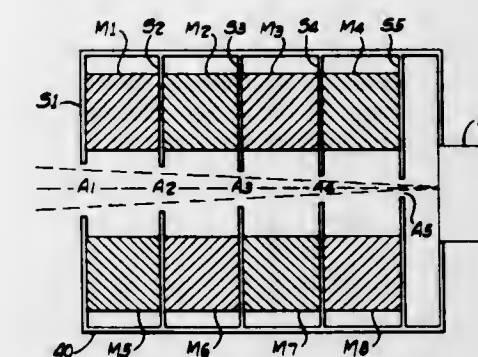


A charged-particle beam-pattern forming and imaging system is disclosed in which charged particles from one or more sources impinge upon an imaging plate. A high-voltage electrical source is connected between the imaging plate and a target to produce a strong electrical field therebetween. The imaging plate contains one or more long and narrow slits which may be straight or curved to any desired configuration. Each slit functions as a lens to yield one image of itself for each particle source, each image being converged only along the width of the slit (one-dimension convergence). Proper choices of the pattern of the particle sources and the slit arrangement in the imaging plate yield a variety of patterns useful in many applications, such as closely spaced parallel lines for diffraction gratings, interdigital patterns for microwave devices, meander lines, and interconnections for integrated circuits, by formation of the entire patterns at once rather than by the scanning or other sequential techniques used heretofore.

3,614,424
COLLIMATOR FOR AN X-RAY ANALYZER
Ian K. Openshaw, Bishops Cleeve, England, assignor to Associated Electrical Industries Limited, London, England
Continuation-in-part of application Ser. No. 625,718, Mar. 24, 1967, now abandoned. This application Dec. 19, 1969, Ser. No. 886,660
Int. Cl. H01j 37/00, 35/16
U.S. Cl. 250-49.5 PE

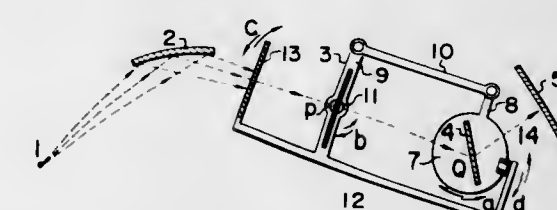
1 Claim

An X-ray analyzer including a collimator having an array of screens with aligned slits and means for producing a



3,614,425
X-RAY DIFFRACTION APPARATUS COMPRISING A CURVED SPECTROSCOPIC CRYSTAL WITH A ROTATABLE X-RAY SLIT AT THE FOCUS THEREOF
Mitsuru Yoshimatsu, Hoya, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan
Filed July 23, 1969, Ser. No. 844,035
Claims priority, application Japan, Sept. 24, 1968, 43/68268
Int. Cl. G01n 23/20
U.S. Cl. 250-51.5

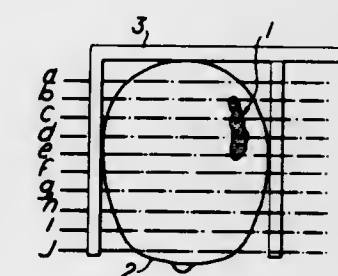
2 Claims



The present invention provides a microphotographic apparatus wherein only X-rays of a single wavelength separated by a curved spectroscopic crystal are allowed to fall upon a specimen and at the same time the specimen is rotated, thereby to vary the angle of incidence of said X-rays continuously.

3,614,426
HOLOGRAPHIC PROCESS
Gerald Donzelle, 109, rue d'Erment, 95 Saint-Prix, France
Filed June 9, 1969, Ser. No. 831,497
Claims priority, application France, June 11, 1968, 154,563
Int. Cl. G01n 23/04
U.S. Cl. 250-61.5

4 Claims



An object is located in an opaque environment permeable to radiation by recording a plurality of images of the object and these images are recorded when in the relative relationship to the parts of the object. The object or its reproduction is then displayed in conjunction with the relief image produced from the composite recording.

3,614,427

X-RAY APPARATUS HAVING COOPERATING MOVABLE CASSETTE CARRIER AND IMAGE INTENSIFIER PICKUP SCREEN

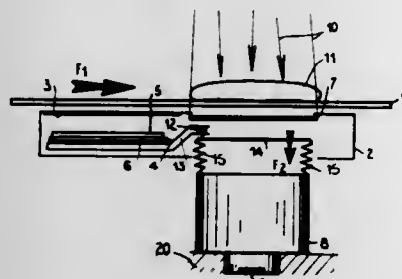
Fernand L. Vacher, Plobsheim, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Aug. 5, 1969, Ser. No. 847,608

Claims priority, application France, Aug. 27, 1968, 164248 Int. Cl. G03b 41/16

U.S. Cl. 250-65 R

8 Claims



In an X-ray diagnostic apparatus comprising an X-ray image intensifier for visual (fluoroscopic) observation and a film cassette carrier for X-ray photography, the image intensifier comprises a movable pickup screen coupled to the cassette carrier to enable rapid locating of the film within the exposure field in the same plane as the intensifier pickup screen.

3,614,428

X-RAY APPARATUS HAVING MEANS FOR DIRECTING AN IMAGE TO EITHER OF TWO DIFFERENT CAMERAS

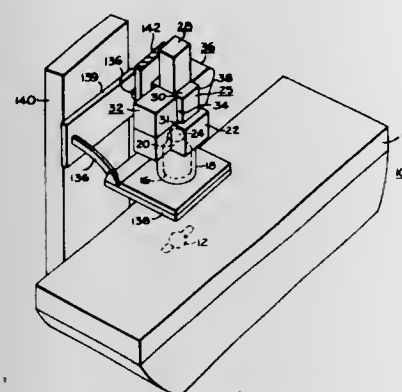
Bernard Miller, Pittsburgh, and Joseph C. McCloskey, Glenshaw, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 26, 1968, Ser. No. 762,771

Int. Cl. G03b 41/16

U.S. Cl. 250-65

4 Claims



X-ray apparatus in which the amplified luminous image from the output screen of an image amplifier tube may be directed selectively to either of two different film camera locations while constantly being observable by a television camera. A rectangular housing has oppositely aligned lens-barrel-accepting openings in its top and bottom walls for television camera and image tube, respectively, and in its sidewalls for two different film cameras. A pair of normally retracted partial mirrors mounted in 45° tilted attitudes are actuated horizontally about vertical axes by respective solenoids into sideward-reflecting positions near lens barrels in the wall openings.

EQUIPMENT FOR READING THERMOLUMINESCENT DOSIMETERS

Kenneth Edward Gordon Perry, Weymouth, England, assignor to United Kingdom Atomic Energy Authority, London, England

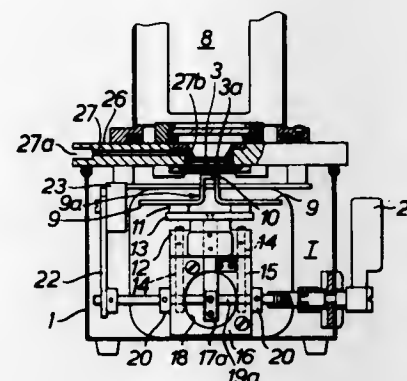
Filed Dec. 20, 1968, Ser. No. 785,635

Claims priority, application Great Britain, Dec. 21, 1967, 58244/67

Int. Cl. G01t 1/11

U.S. Cl. 250-71

7 Claims



A thermoluminescent reader is described having means for introducing a charge of thermoluminescent material into a predetermined location in a lightproof casing between a photoelectric transducer and an electrical heater. When the charge is in this position the heater is moved by remote control into contact with the charge and it is then energized to heat the charge to luminescence in front of the photosensitive part of the transducer from which a measure of the light output is obtained.

3,614,430

FLUORESCENT-INK-IMPRINTED CODED DOCUMENT AND METHOD AND APPARATUS FOR USE IN CONNECTION THEREWITH

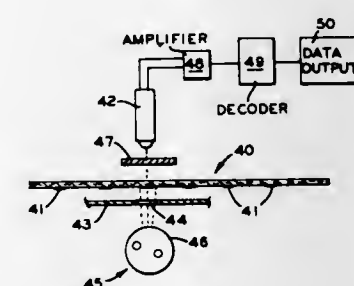
Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Filed Mar. 10, 1969, Ser. No. 805,421

Int. Cl. G01n 21/38

U.S. Cl. 250-71 R

7 Claims



A document comprising a substantially translucent matrix or substrate upon which coded information is imprinted with fluorescent ink. This combination allows the coded document to be read similarly as a punched card or tape, i.e. by placing the source of light on one side of the document and the photoelectric sensor on the other side of the document. The generation of this kind of document, i.e. using a simple printing operation, obviates the disadvantages incurred in generating punched documents while at the same time it preserves the essential advantages inherent in the use of the latter. A simple reliable device is used to read the lighted fluorescent ink imprint through the body of the matrix.

MINIATURE CARBON DIOXIDE SENSOR AND METHODS

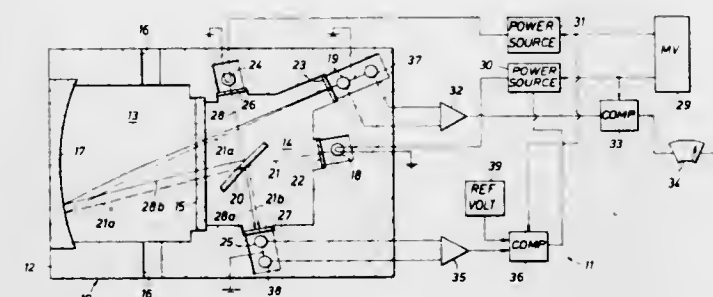
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Thomas F. McHenry, East Norwalk, Conn.

Filed Oct. 1, 1970, Ser. No. 77,169

Int. Cl. G01n 21/26

U.S. Cl. 250-43.5 R

12 Claims



A fast response, miniature CO₂ detector with no moving parts is disclosed for determining the CO₂ concentration of any given atmosphere. The embodiment disclosed includes a sensor housing having separate chambers, one of which receives a sample atmosphere and the other which contains a reference atmosphere. The chamber having the reference atmosphere is hermetically sealed and contains separate infrared light source and detector pairs. The sources are alternately actuated by a multivibrator. An optical arrangement includes a 4.27-micron filter for one source and directs energy through first and second optical paths to each detector, where the first path traverses the sample chamber and the second path traverses the reference chamber. If CO₂ is present in the sample chamber, the 4.27-micron energy is absorbed to affect the signal output of a corresponding CO₂ detector while the 4.27-micron energy to the other reference detector is not affected. When the other source is energized, the optical arrangement directs energy from a 4.0-micron filtered source through third and fourth optical paths to each detector where the third path is equal in length to the first path and the fourth path is equal in length to the second path. The third path also traverses the sample chamber while the fourth path traverses only the reference chamber. The 4.0-micron energy is not affected by CO₂ and thus the CO₂ detector detects the energy transmitted at a 4.0-micron wavelength as a reference value and the energy transmitted at a 4.27-micron wavelength is a measure of CO₂ concentration. The different values as detected by the CO₂ detector are supplied to a comparator circuit which provides an output to a meter calibrated to read partial pressure of the CO₂. The reference detector detects the values of light intensity from the two sources and if they are equal, an error comparator has no output. In the event the intensities are not equal, the error comparator provides a signal to a power supply for one of the light sources which adjusts the intensity until parity is obtained.

3,614,432

METHOD AND APPARATUS FOR INSPECTING PLY SPLICES OF TIRES BY MEANS OF X-RAYS

Donald T. Green, Shaker Heights, Ohio, assignor to Picker Corporation, White Plains, N.Y.

Filed Mar. 13, 1969, Ser. No. 806,860

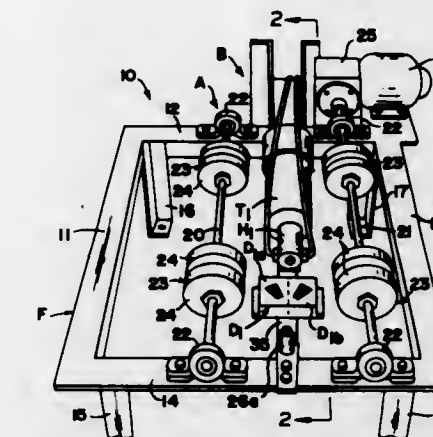
Int. Cl. G01n 23/08

U.S. Cl. 250-52

13 Claims

Inspection apparatus for tires wherein a tire is rotated about its axis and subjected to X-rays which are beamed

through the tire wall to X-ray-detecting devices. The X-ray-detecting devices are constructed and arranged so that the



tire wall is inspected to determine whether the plies in the tire are properly constructed.

3,614,433

METHOD FOR DETERMINING THE AMOUNT OF FREE WATER IN HYDROCARBONS

Donald A. Caldwell, Mountlake, N.J., assignor to Esso Research and Engineering Company

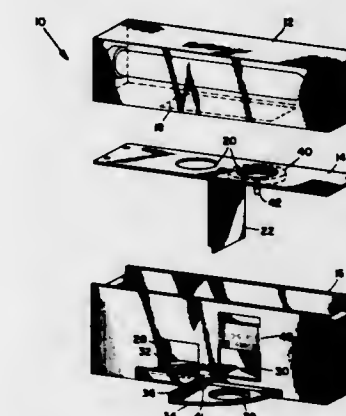
Division of Ser. No. 559,139, June 21, 1966, Pat. No. 3,500,046

Filed Nov. 17, 1969, Ser. No. 877,125

Int. Cl. G01n 21/38

U.S. Cl. 250-71 G

7 Claims



A method for determining the amount of water above the saturation value in a hydrocarbon liquid, such as a jet fuel, includes passing a known quantity of liquid having an unknown quantity of undissolved water through a test element having a sensitive area, which will fluoresce in the presence of ultraviolet light in proportion to the amount of undissolved water collected by the sensitive area. The test element and a standard element having a known fluorescent intensity are subjected to the ultraviolet light, whereupon the intensity of the ultraviolet light striking the surface of one of these elements is varied to match its fluorescent intensity with the reflected fluorescent intensity of the other of the elements. Thus, the intensity level of the varied fluorescent light can be correlated to a known predetermined quantity of undissolved water in the liquid.

3,614,434

AUTOMATIC AGITATING AND SAMPLE DEVICE

Norman H. Horwitz, Birmingham, and Kenneth J. Cook, Oak Park, both of Mich., assignors to James E. Lofstrom, Birmingham, Mich., a part interest

Filed July 17, 1968, Ser. No. 745,451

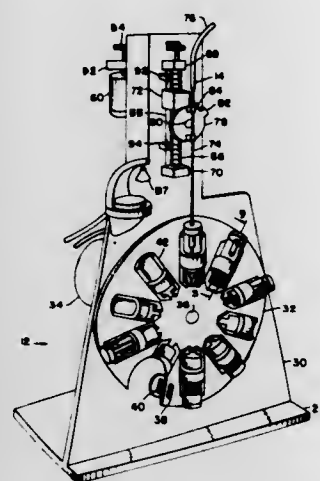
Int. Cl. G01t 1/20

U.S. Cl. 250-71.5

9 Claims

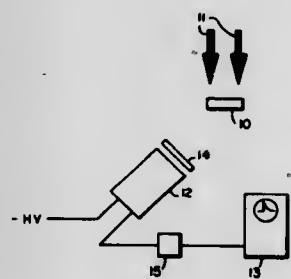
The disclosed apparatus includes a turntable which rotatably agitates a plurality of randomly positioned vials, each containing a liquid sample. The turntable is then

automatically indexed to receive a pipette in one of the vials after a predetermined agitation period, and the autopipettor withdraws an accurately measured liquid sample. The liquid sample may then be pumped to a further station for testing.



The disclosed embodiment includes a scintillation detector, counter and printing calculator adapted to measure and record the radioactivity of the sample. The apparatus is controlled by a timing and sequencing control, operably connected to each of the elements of the apparatus.

3,614,435
DOSIMETER FOR PULSED IONIZING RADIATION
Joseph J. Halpin, Alexandria, Va., and Richard F. Wenzel, Oron Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 10, 1968, Ser. No. 782,545
Int. Cl. G01t 1/20
U.S. Cl. 250-71.5 R 1 Claim

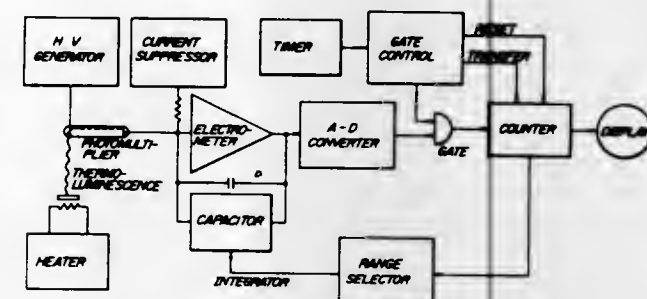


The invention is directed to a dosimeter for pulsed beams of high-energy, ionizing radiation. The dosimeter employs the radiative recombination of radiation-induced excitation in a material. The dose is proportional to this fluorescence signal at any time. To be useful, this fluorescence should have a lifetime about an order of magnitude greater than the duration of the radiation pulse, so as to make the excitation to occur instantaneously. In addition, the material should be relatively insensitive to lattice displacement effects so that the dosimeter may be used for large cumulative doses. An example of such a material is low chromium concentration ruby single crystals ($\text{Al}_2\text{O}_3\text{:Cr}$), i.e. Cr concentrations 0.0003 percent to 0.001 percent by weight.

3,614,436
THERMOLUMINESCENCE DOSIMETER DEVICE
Seiro Hasegawa, Ikeda-shi, and Hiroshi Matsushima, Kadoma-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan
Filed Dec. 23, 1968, Ser. No. 785,919
Claims priority, application Japan, Dec. 28, 1967, Mar. 22, 1968, 43/71, 43/19280
Int. Cl. G01t 1/11
U.S. Cl. 250-71.5 9 Claims

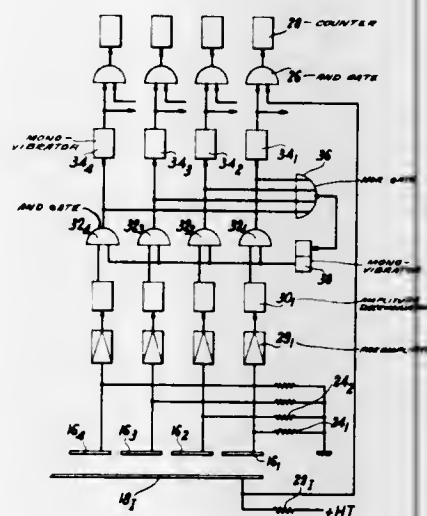
A digital electrometer having an electrometer amplifier and a digital voltmeter for giving a digital display of a very low voltage. In the device, an analog to digital converter

converts the output from the electrometer amplifier into a digital quantity and the digital output from the analog to



digital converter is counted by a counter for the digital display of the voltage.

3,614,437
NEUTRON DETECTION DEVICE FOR THE POSITION OF BEAMS OF NEUTRONS IN SPACE
Robert Allemand, Grenoble; Jean Jacobe, Montbonnot, and Edouard Roudaut, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Apr. 15, 1969, Ser. No. 816,339
Claims priority, application France, Apr. 18, 1968, 148,589
Int. Cl. G01t 3/00, 1/18
U.S. Cl. 250-83.1 8 Claims

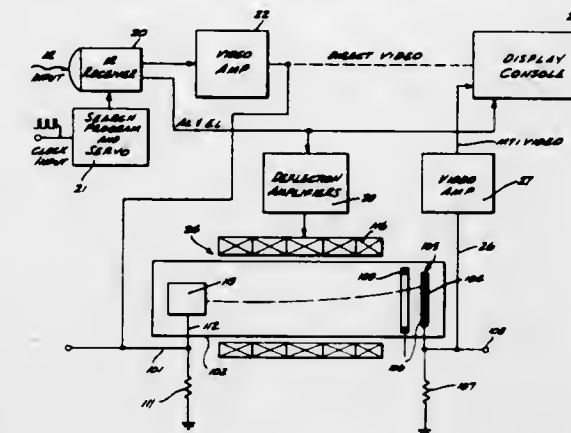


A neutron detection device comprises a single gas-filled flat enclosure of constant thickness. A number $N \times n$ of identical disintegration ionization chambers are disposed at regular intervals in the enclosure and a cathode and an anode are carried by opposite walls. Responsive to a detection, two electrical pulses are delivered by the two electrodes of a cell and one is addressed to one of the n lines and the other to one of the N columns of a matrix-type network comprising $N \times n$ counters each associated by a line and a column of the network with only one of the cells.

3,614,438
TARGET MOTION DETECTION FOR INFRARED SEARCH SYSTEMS
Gary L. Knowlden, Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed May 28, 1965, Ser. No. 459,618
Int. Cl. G01s 9/64
U.S. Cl. 250-83.3 HP 4 Claims

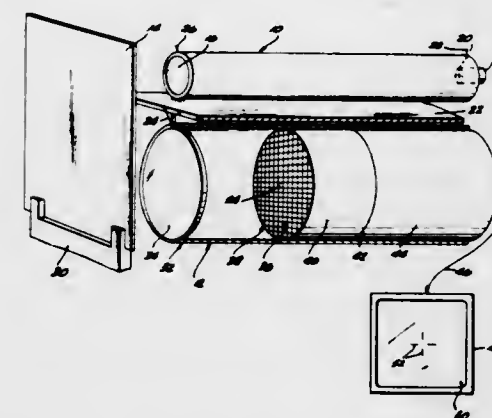
An infrared moving target-detecting system which may detect movement in three dimensions has an optically scanning receiver driven by servos which are controlled by a

search programming device. The received infrared signals are converted into electrical form and are processed, utilizing a



storage tube, so as to activate a display showing only the signals from sources that are moving.

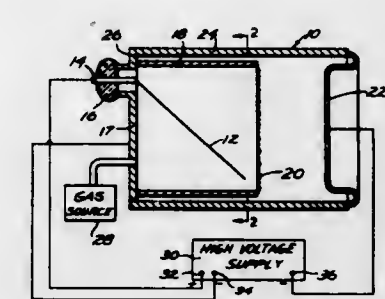
3,614,439
INFRARED ALIGNING APPARATUS AND METHOD
Victor Beelik, Jr., Van Nuys, and Jerome J. Rosenblatt, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 8, 1969, Ser. No. 882,948
Int. Cl. H01J 39/18
U.S. Cl. 250-83.3 HP 8 Claims



A method for aligning an infrared or night sight with respect to a visible wavelength or day sight comprising holding a plane mirror in front of both sights, orienting the plane mirror so that the day sight points in a direction precisely perpendicular to the mirror, and then orienting the night sight to point perpendicular to the mirror. The night sight has a detector surface which includes a matrix of small detectors of a type which radiate infrared light of the same wavelength to which they are sensitive. The infrared sight is oriented so that light emitted from each detector, and which is reflected back by the mirror, falls on precisely the same detector which emitted it. In order to determine when the night sight is aligned, the detector matrix is constructed so there is no detector at the center of the detector surface.

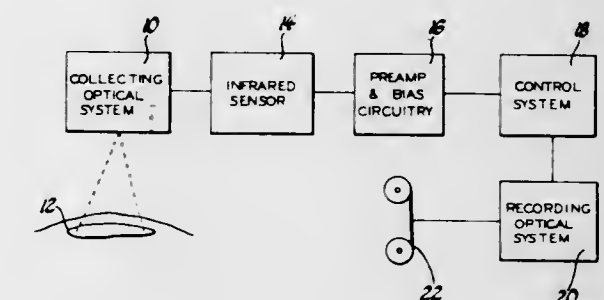
3,614,440
GAS IONIZER DEVOID OF COAXIAL ELECTRODES
Barney J. Carr, deceased, late of Colorado Springs, Colo. (by Elisabeth Helen Carr, administratrix), assignor to Kaman Sciences Corporation, Colorado Springs, Colo.
Continuation of application Ser. No. 404,535, Oct. 16, 1964.
This application June 24, 1968, Ser. No. 742,960
Int. Cl. G21g 3/04
U.S. Cl. 250-84.5 19 Claims

Apparatus for ionizing gases at very low pressures comprising inner and outer electrodes wherein the inner electrode is substantially circular in cross section and the outer electrode surrounding the inner electrode may be other than a figure of revolution or may be eccentrically positioned



greater than the diameter of the inner electrode for a distance of not less than two-thirds the length of the surrounding outer electrode.

3,614,441
INFRARED RADIATION DETECTION CIRCUITRY HAVING A CONSTANT BIAS VOLTAGE ACROSS THE SENSOR
Clyde A. Boenke, Ann Arbor, Mich., assignor to The Bendix Corporation
Filed July 29, 1970, Ser. No. 62,219
Int. Cl. G01j 1/00
U.S. Cl. 250-83.3 H 8 Claims

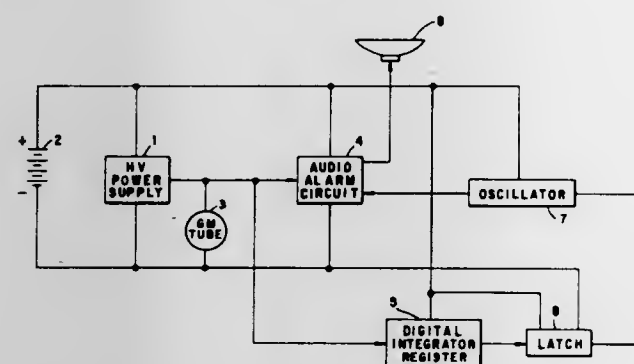


Electromagnetic radiation detection circuitry incorporating a sensor which is responsive to radiation in the infrared region of the electromagnetic spectrum. Variations in the detected radiation are sensed as a change in current conduction by the sensor and are strengthened by an amplifying network including an amplifying transistor. A constant bias voltage is maintained across the sensor by the action of a biasing network having a control transistor, which has its base direct coupled to the base of the amplifying transistor, and a balancing resistor, which has a resistance equal to the nominal resistance of the sensor and which in the biasing network simulates the sensor.

3,614,442
POCKET ALARM DOSIMETER
Robert S. Brodsky, 7605 New Castle Drive, Annandale, Va.
Filed Apr. 28, 1970, Ser. No. 32,677
Int. Cl. G01t 1/18
U.S. Cl. 250-83.6 R 6 Claims

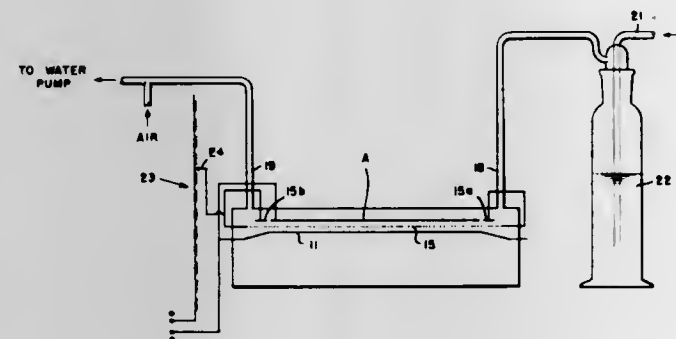
A portable pocket alarm dosimeter employs an electronic radiation counter where total dosage is accumulated in digital form in a serial counter. An alarm is provided for advance warning at a preset integrated radiation dosage. The

integrating device retains 100 percent of the pulses generated by the counter. The alarm levels can be readily changed to operational amplifier. The operational amplifier can be connected as an integrator when the current meter is to



correspond to any particular application because of its extreme accuracy and its ease of adjustment.

3,614,443
SPARK CHAMBERS
Torben Hesselbo, Welwyn Garden City, and Arthur Derek George Groves, Knebworth, both of England, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed Aug. 16, 1968, Ser. No. 753,088
Claims priority, application Great Britain, Sept. 6, 1967, 40832/67
Int. Cl. G01t 1/16
U.S. Cl. 250-83.6



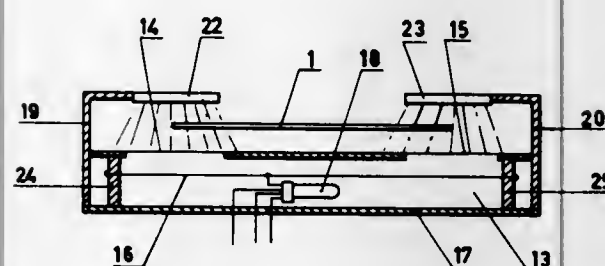
A gastight, crossed wire spark chamber having the major part of each of the walls thereof being formed from a transparent material and further having associated therewith manual or mechanical means for effecting movement of the chamber with respect to an externally mounted radioactive pattern in a plane substantially parallel to the planes of the electrodes disposed within the chamber.

3,614,444
RADIATION SURVEY METER WITH DOSE RATE AND DOSIMETER READOUT
Joseph C. Nirschl, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Nov. 21, 1968, Ser. No. 777,722
Int. Cl. G01t 1/18
U.S. Cl. 250-83.6 R

A radiation survey meter adapted to read either dose rate or dose and including a suitable operational amplifier connected to a radiation detector such as an ionization chamber and having a current meter in the output of said

indicate dose. Alternatively, it can be connected as a current amplifier to indicate dose rate.

3,614,445
MEASURING WIDTH VARIATIONS OF A MOVING SHEET BY THE USE OF BETA-RAYS
Paul Platzek, Delft; Gerardus van Kempen, Delft, and Dominicus Ros, The Hague, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve van Nijverheid, Handel en Verkeer, Netherlands
Continuation of application Ser. No. 643,099, June 2, 1967, now abandoned. This application Sept. 15, 1969, Ser. No. 858,200
Int. Cl. G01t 1/18
U.S. Cl. 250-83.6

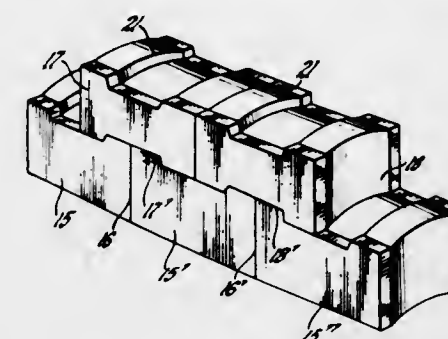


A device is described for measuring the variation in width of a moving sheet of material comprising two substantially identical sources of β rays positioned above the edges of the sheet and preferably one elongated ionization chamber positioned below the sheet. An electrical scheme is shown which comprises a differential amplifier.

3,614,446
PROTECTIVE BRICK AGAINST RADIOACTIVE RADIATIONS
Charles Leuthold, and Francoise Leuthold, both of Avenue Ruchonnet 14, Lausanne 1000, Switzerland
Filed Oct. 10, 1967, Ser. No. 674,246
Claims priority, application Switzerland, Oct. 11, 1966, 14816/66
Int. Cl. G21f 3/04
U.S. Cl. 250-108

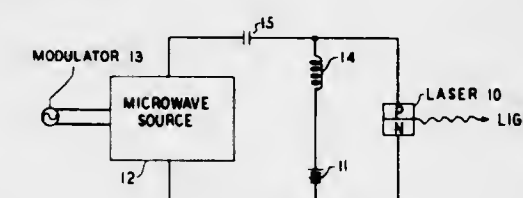
A brick intended primarily to protect against radioactive radiations comprises two longitudinal parallel faces the surfaces of which may or may not be smooth, a front face and a rear face whose convexity and concavity are oriented vertically, and an upper and lower face whose convexity and concavity are oriented horizontally. Each of the upper and lower faces is provided with a central recess which has the same convexity and concavity as the adjacent end portions of the corresponding face. The faces other than the longitudinal faces are provided with flat edges or shoulders so that the

bricks are connected by fitting them vertically one into the other and their opaqueness is assured by their alternative



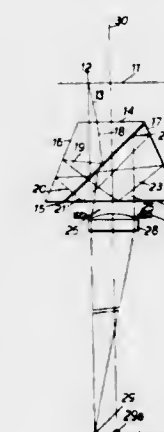
disposition with the flat shoulders and convex surfaces in abutting relationship to each other.

3,614,447
METHOD FOR MODULATING SEMICONDUCTOR LASERS
Thomas L. Paoli, Chatham, and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 16, 1969, Ser. No. 833,522
Int. Cl. H01s 3/18
U.S. Cl. 250-199



A semiconductor junction laser is modulated by applying a suitable DC voltage to produce self-induced pulsing, phase locking the pulsing repetition rate to a low-power microwave signal, and modulating the microwave signal. Information carrying capacities in excess of 10 megahertz are obtained with microwave power of a few milliwatts. Multiplexing arrangements are also described.

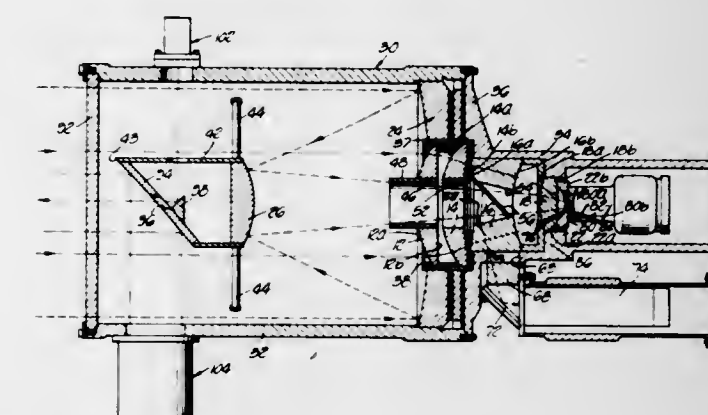
3,614,448
SCANNING SYSTEM FOR FOLLOWING AN OUTLINE
Kenneth Victor DiProse, and Arthur Stuart Forbes, both of Bath, Somerset, England, assignors to Hancock & Co., (Engineers) Limited, Slough, Buckinghamshire, England
Filed July 18, 1969, Ser. No. 843,051
Claims priority, application Great Britain, Feb. 21, 1969, 9429/69
Int. Cl. G05b 1/00
U.S. Cl. 250-202



Method and apparatus for scanning an outline on a substrate in which a beam of light is passed through a

semireflecting surface and thence through a rotating prism having an odd number of reflecting surfaces, the emergent beam is focused on the substrate so as to cross and recross the outline in a circular path, light reflected from the substrate is passed back along the path of the beam to the semireflecting surface and light reflected from this surface is detected to produce line-crossing signals.

3,614,449
OPTICAL TRACKING SYSTEM UTILIZING A COAXIAL LENS SYSTEM
John H. Ward, III, Valencia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 12, 1969, Ser. No. 798,733
Int. Cl. G01c 1/00; G02b 17/00
U.S. Cl. 250-203



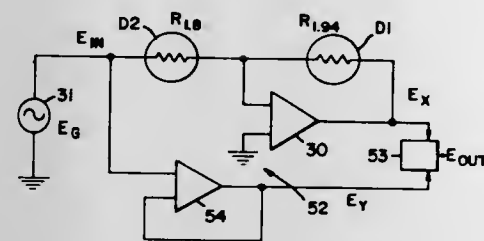
The disclosure relates to an optical system suitable for acquiring and tracking a distant source of light. The optical system contains an acquisition lens system having a first field of view formed of a plurality of centrally apertured lenses which are coaxially positioned to directly receive light rays from a source and lens means coaxially positioned behind the apertured lenses. The image surface of the acquisition lens system is coaxially positioned behind the lens means. Further, a tracking lens system having a second field of view is coaxially positioned with respect to the acquisition lens system and comprises a centrally apertured elliptical primary mirror positioned to directly receive light rays from said source. The mirror aperture is larger than the outer surface of said centrally apertured lenses. A spherical secondary mirror is positioned to receive light rays from said primary mirror and reflect the rays through said acquisition lens system aperture and through the lens means. The tracking lens system image surface is coincidental with the acquisition lens system image surface. Moreover, filter means are mounted within said acquisition lens aperture for reflecting a portion of the light source rays transmitted by the tracking lens system. The filter means may be in the form of a beamsplitter which transmits the reflected rays through the acquisition lens system onto a second image surface remote from said first image surface.

3,614,450
APPARATUS FOR MEASURING THE AMOUNT OF A SUBSTANCE THAT IS ASSOCIATED WITH A BASE MATERIAL

Robert Curtis Hill, Santa Clara; John M. French, San Jose, and Richard E. Toepfer, Campbell, all of Calif., assignors to Measurex Corporation, Santa Clara, Calif.
 Filed Feb. 17, 1969, Ser. No. 799,784
 Int. Cl. H01j 39/12

U.S. Cl. 250-210

5 Claims



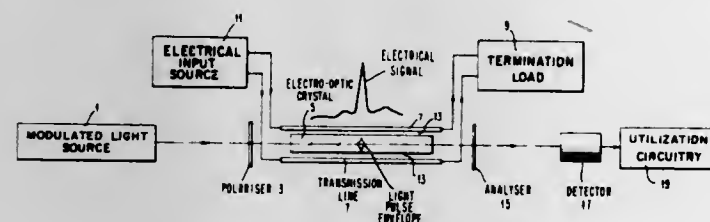
A moisture gauge for paper material includes an infrared source and two detectors one of which is responsive to a wavelength of 1.94 microns which is sensitive to moisture in the paper; the other detector is responsive to 1.8 microns which is not affected by moisture. The operating point of the detector not sensitive to moisture is maintained constant by a feedback system. At the same time an impedance ratio of the two detectors provides information as to absolute moisture content. Automatic standardization of the system is also provided.

3,614,451
SAMPLING SYSTEM UTILIZING ELECTROOPTIC TECHNIQUES

John B. Gunn, Mt. Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Aug. 19, 1968, Ser. No. 753,523
 Int. Cl. G02f 1/28, 1/18

U.S. Cl. 250-217

15 Claims



A sampling system is described which utilizes electrooptic techniques for sampling an electrical signal. Short duration light pulses are polarized and directed through a crystal exhibiting either a linear or longitudinal electrooptic effect or through a liquid showing a large Kerr effect, located in traveling wave relationship with a terminated transmission line structure. The group velocity of the polarized light, that is, the velocity of a light pulse, or the velocity, of the modulation envelope of a modulated light beam, along the electrooptic crystal and the phase velocity of the electrical signal along the transmission line structure are in synchronism. Due to electrically induced birefringence, the state of polarization of the light pulse is altered according to the electrical field intensity to which the electrooptic crystal is subjected by that portion of the electrical signal traveling coincidentally along the transmission line structure. Consequently, the transmission of the light pulse by a crossed analyzer placed at the output of the electrooptic crystal varies in response to the coincidental portion of the electrical signal. The energy of the light pulse emanating from the analyzer is detected and directed to a utilization of circuit, for example, the hold and display circuitry of a sampling oscilloscope.

3,614,452
SPLIT STREAM FLOW CELL FOR ANALYZING A FLUID

Herman R. Felton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed Jan. 8, 1969, Ser. No. 789,710
 Int. Cl. G01n 21/26

U.S. Cl. 250-218

9 Claims



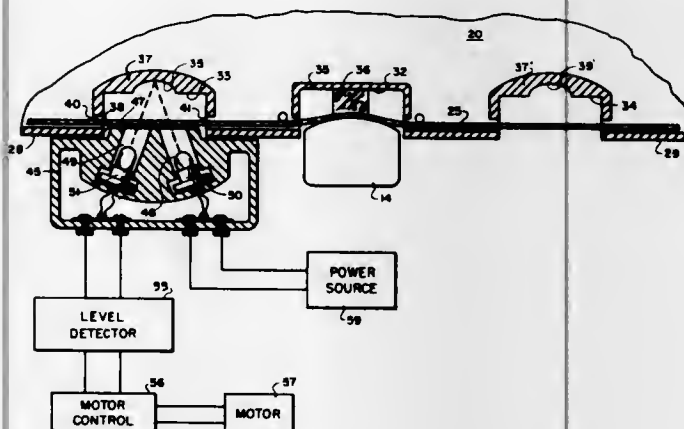
A method of analyzing a fluid, and an apparatus for accomplishing this, which comprises: splitting a stream of fluid into two substantially equal component streams; directing the flow of the component streams in opposite directions; passing a beam of light through substantially equal lengths of the two component stream in such manner that the beam traverses one component stream in a direction directly opposite to the direction of its flow and the other component stream in the direction of its flow; and monitoring the intensity of the emerging beam of light. The apparatus is a split stream flow cell for facilitating the above analysis process.

3,614,453
RADIATION SENSITIVE CASSETTE LEADER DETECTOR

Richard M. Johnson, 3815 Weeburn Drive, Dallas, Tex.
 Filed Apr. 8, 1970, Ser. No. 26,557
 Int. Cl. G01n 21/30

U.S. Cl. 250-219 FR

10 Claims



A standard cassette for 0.15 inch magnetic tape provides a tape path adjacent to one edge which passes through a recess having an outward facing surface that is reflective. A detector unit includes a light source for directing light toward the reflective surface and a detector for detecting light reflected from this surface. A control device response to the intensity of reflected light stops the tape drive. The path of directed and reflected light is through the tape which acts as a shutter. Both the light source and the detector are shielded when the tape is opaque but light from the source is reflected onto the detector when the tape is transparent. The output of the detector is a control signal indicating the character of the tape.

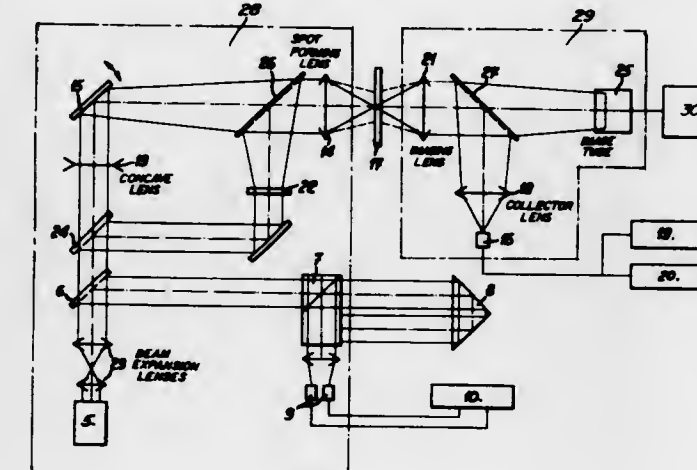
3,614,454
MACHINE FOR MEASURING GEOMETRICAL PARAMETERS OF A TRANSPARENCY, SUCH AS MASKS FOR INTEGRATED CIRCUITS

Maurice Koulikovitch, Geneva; Jacques Pettavel, Geneva, and Pierre Wehrli, Chene-Bougeries-Geneva, all of Switzerland, assignors to Societe Genevoise D'Instruments de Physique, Geneva, Switzerland
 Filed May 9, 1969, Ser. No. 823,381
 Claims priority, application Switzerland, June 17, 1968, 9042/68

Int. Cl. G01n 21/30

U.S. Cl. 250-219 Q

9 Claims



The invention concerns a machine for measuring geometrical parameters of a transparency, namely masks for integrated circuits. The machine includes a photoelectrical microscope, the light source of which is a laser. The laser is also used as a light source for an interferometer and an observation means of the apparatus.

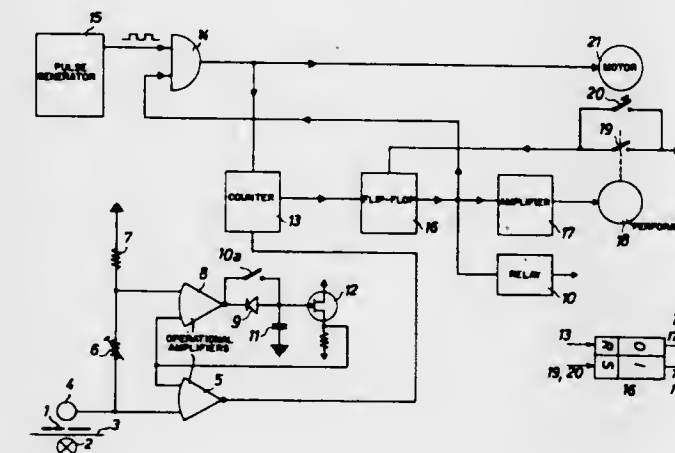
3,614,455
FILM FRAME LOCATION DEVICE COMPRISING MEANS FOR DETECTING BOTH LEADING AND TRAILING EDGES OF FRAME

Rudolf Paulus, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
 Filed Sept. 29, 1969, Ser. No. 861,775
 Claims priority, application Germany, Sept. 27, 1968, P 17 97 439.9

Int. Cl. G01n 21/30; H01j 39/12

U.S. Cl. 250-219

22 Claims



Frames in a filmstrip are separated by frame lines. The frames are centered relative to further processing means by use of first and second photoelectric measuring means, which determine, respectively, the trailing edge of a preceding frame line and the leading edge of the successive frame line. The frame is centered corresponding to the first determined edge.

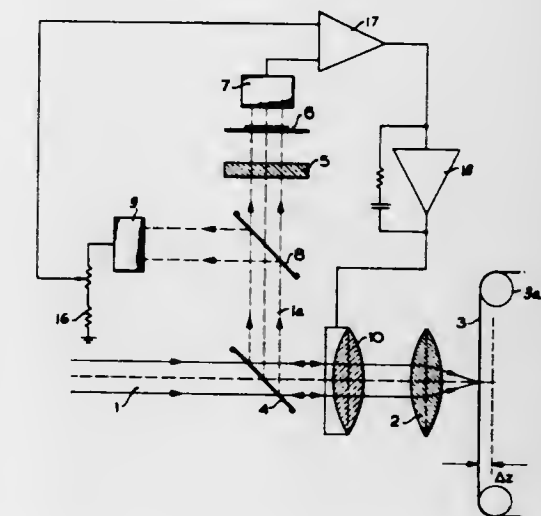
3,614,456
APPARATUS FOR MAINTAINING A RECORDING RADIATION SPOT ON A RECORD CARRIER

Hansjoachim Hamisch, Berlin, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
 Filed Feb. 17, 1969, Ser. No. 799,823
 Claims priority, application Germany, Feb. 17, 1968, P 16 13 987.0

U.S. Cl. 250-234

Int. Cl. H01j 3/14

15 Claims



A laser beam is focused by a lens on a moving record carrier for forming a record. Transverse displacements of the record carrier relative to the lens, are compensated by a control voltage produced by a photocell receiving varying amounts of reflected light through a diaphragm.

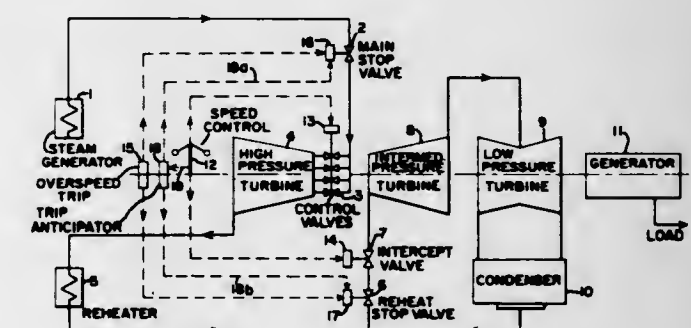
3,614,457
TURBINE OVERSPEED TRIP ANTICIPATOR

Markus A. Eggenberger, Schenectady, N.Y., assignor to General Electric Company
 Continuation-in-part of application Ser. No. 468,887, July 1, 1965, now abandoned. This application June 21, 1967, Ser. No. 666,526

U.S. Cl. 290-40

Int. Cl. H02p 9/04

9 Claims



Turbine control system with conventional overspeed trip for stop valves and governor for control valves includes an additional trip device which temporarily closes stop valves to anticipate overspeed tripping, but reopens them to prevent permanent tripping if the governor functions to bring overspeed under control.

3,614,458
AUTOMOBILE THEFT PREVENTION DEVICE

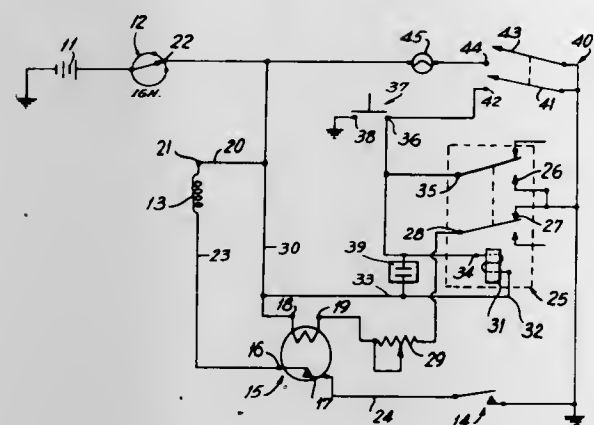
Ira B. Stein, 924 Northfield Road, Woodmere, N.Y.
 Filed Apr. 22, 1970, Ser. No. 30,850
 Int. Cl. H02g 3/00

U.S. Cl. 307-10

7 Claims

A self-activating automobile theft prevention device including a time delay relay, preferably of the thermal type.

The apparatus will interrupt the ignition circuit of an alarm device so that when a jumper wire is connected between the induction coil and the battery, the alarm will

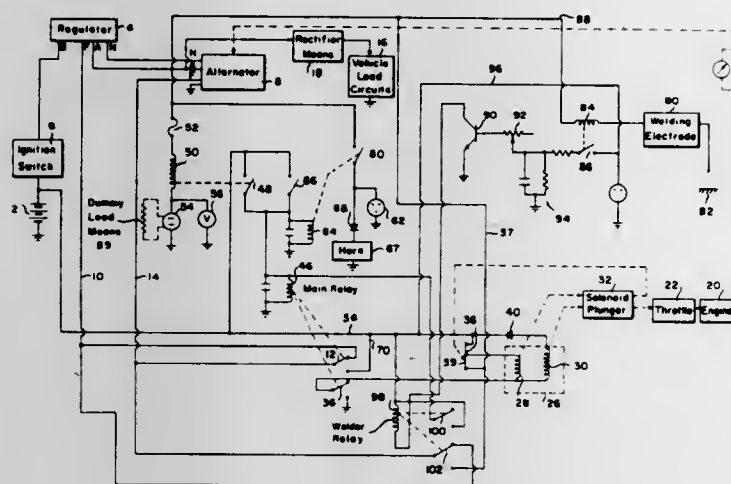


activation of the ignition circuit, a concealed relay-defeating switch is activated.

3,614,459
VEHICULAR REMOTE POWER SUPPLY SYSTEM
Fred A. Watson, 1806 North 15th St., Boise, Idaho
Filed Nov. 20, 1970, Ser. No. 91,316
Int. Cl. H02g 3/00

U.S. Cl. 307-10 R

12 Claims



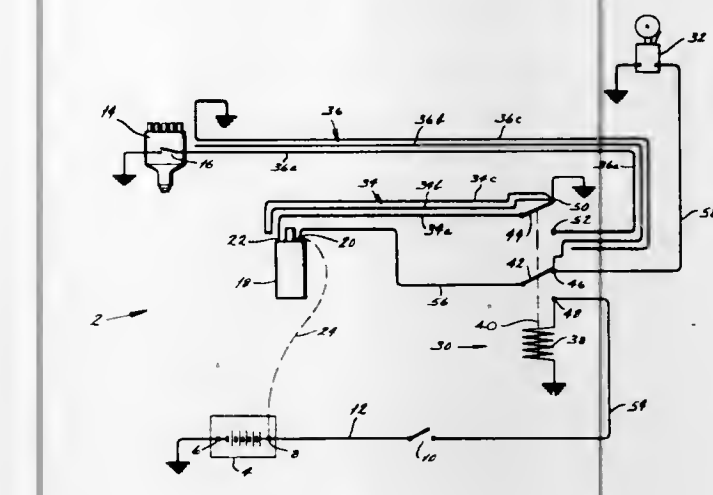
An improved fail-safe vehicular remote power supply system that is automatically operable to produce from the conventional dynamo of a vehicle a relatively high direct current output voltage that is suitable for operating conventional welding apparatus, for charging a battery or for inversion to a high alternating current voltage.

3,614,460
ANTITHEFT DEVICE
David A. Hale, 6222 Dawler St., Pine Lawn, Mo., and Earl R. Housman, 5814 Dressell Ave., St. Louis, Mo.
Filed Dec. 22, 1969, Ser. No. 887,456
Int. Cl. H02g 3/00

U.S. Cl. 307-10

5 Claims

An antitheft device for an automotive vehicle includes a relay switch having contactors which are interposed in conductors extending between the ignition switch and the induction coil and between the induction coil and the breaker points. When the ignition switch is closed and the coil of the relay switch is energized, its contactors shift and complete a circuit between the battery and breaker points. On the other hand, when the ignition switch is open, the relay coil is deenergized and one of the contactors places a terminal of the induction coil in electrical connection with an

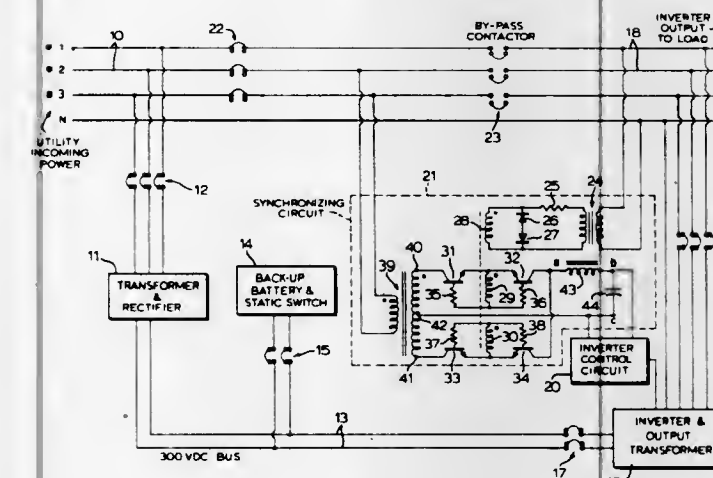


sound, but the breaker points will remain electrically isolated from the induction coil.

3,614,461
CIRCUIT FOR KEEPING THE FREQUENCY OF AN INVERTER SYNCHRONIZED WITH THE FREQUENCY OF ANOTHER SOURCE
Gordon W. Speer, Peterborough, Ontario, Canada, and Dennis F. Williamson, Media, Pa., assignors to Canadian General Electric Limited, Toronto, Ontario, Canada
Filed Feb. 2, 1970, Ser. No. 7,546
Claims priority, application Canada, Aug. 11, 1969, 59141
Int. Cl. H02j 9/00; H02m 5/28

U.S. Cl. 307-64

8 Claims



In an uninterruptible power supply comprising a normal source of alternating voltage, a rectifier/battery charger, a battery, and a static inverter, the inverter is kept in synchronism with the normal source by controlling its frequency in accordance with an error signal which is representative in magnitude and polarity of any deviation in phase between the output voltage of the inverter and the voltage of the normal source.

3,614,462
OPTICAL PARAMETRIC AMPLIFICATION AND DETECTION SYSTEM
Eric G. Lean, Ossining; Robert A. Myers, New York, and Keith S. Pennington, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 2, 1969, Ser. No. 789,095
Int. Cl. H03c 5/00; H01s 3/10

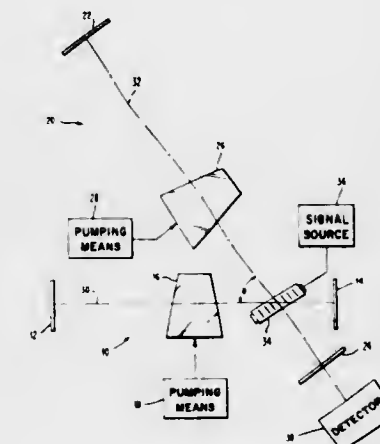
U.S. Cl. 307-88.3

12 Claims

A system for parametric amplification and detection of signals using an acoustic diffraction device in combination with two or more laser cavities. Two types of operation are

provided in the disclosure. In the first type of operation, two laser cavities are arranged so that the axes of the cavities intersect at a selected angle. An acoustic Bragg cell is located in the cavities at the intersection point. The two end mirrors of the first cavity are fully reflective. One mirror of the second cavity is fully reflective and the other mirror is partially reflective and partially transmissive.

The first laser cavity is operated above threshold condition and the second cavity is operated below threshold condition. When a signal having a particular frequency f is applied to the Bragg cell, part of the laser light of the first cavity is diffracted into the second cavity and raises the gain of the



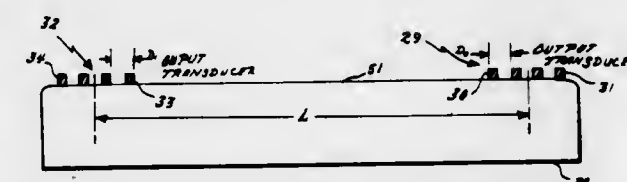
cavity above the threshold condition. The second cavity then oscillates and the output of the second cavity is detected through the partially transmissive mirror.

In the second type of operation, the structure is the same, however, if desired, both cavities may operate above threshold. When a signal at frequency f is applied to the Bragg cell, light is diffracted from the first cavity into the second cavity and the two cavities become coupled and oscillate only at frequencies which can be supported by the two cavities operating independently. The laser light from the output mirror therefore changes frequency indicating the detection of a signal at frequency f .

3,614,463
MICROWAVE ACOUSTIC SURFACE WAVE LIMITER AND METHOD OF FABRICATION
Andrew J. Slobodnik, Jr., Lowell, Mass., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Apr. 1, 1970, Ser. No. 24,744
Int. Cl. H03f 13/00

U.S. Cl. 307-88.3

5 Claims

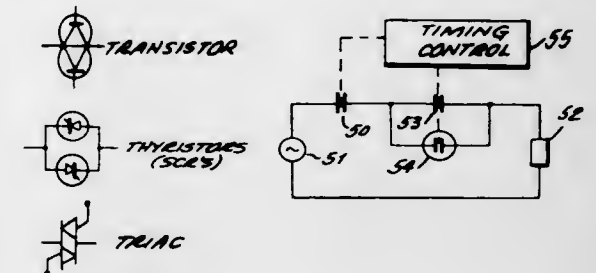


Effective limiting is achieved in a microwave acoustic surface wave device by positioning the output transducer on the acoustic wave propagation surface of a piezoelectric substrate member at a particular distance from the input transducer. Acoustic surface wave fundamental and harmonic power densities along the substrate member are measured and recorded. The output transducer is positioned at the point of maximum harmonic-fundamental interaction. Electromagnetic wave power limits are set by transducer geometry.

3,614,464
ARCLESS TAP-OR SOURCE-SWITCHING APPARATUS USING SERIES-CONNECTED SEMICONDUCTORS
Walter V. Chumakov, Huntingdon Valley, Pa., assignor to ITE Imperial Corporation, Philadelphia, Pa.
Filed Apr. 22, 1969, Ser. No. 818,216
Int. Cl. H01h 9/30

U.S. Cl. 307-136

11 Claims

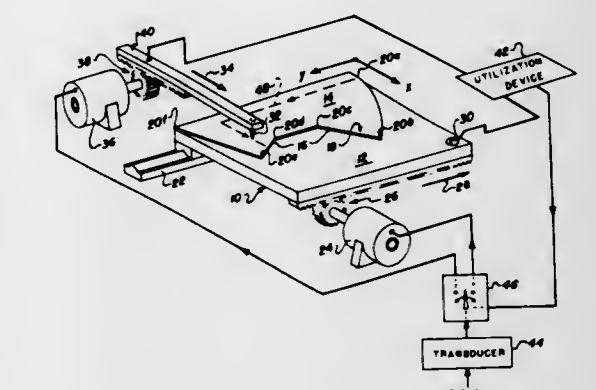


Tap- or source-switching apparatus employable with high-power electrical inputs for connection to a load by means of a mechanical switch in a manner to exhibit little or no arcing contact material erosion or deterioration. A semiconductor switch is connected in series with one current-carrying contact and in parallel with another contact, and serves to establish current initiation through the semiconductor switch and to provide current interruption across that switch. The first of said current-carrying contacts is arranged to be closed prior to the closing of the semiconductor switch and the second said contact and to remain closed until after the opening of those devices.

3,614,465
PROGRAMMABLE TIMER
Eugene W. Kenderline, Sandia Park, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 6, 1968, Ser. No. 773,835
Int. Cl. H01h 3/00

U.S. Cl. 307-139

10 Claims



A programmable timer to initiate an electrical response or subsequent operation a time period after receipt of a pair of signals where the time period is dependent upon a variable function of the time interval between the signals and the time interval itself using a pair of relatively movable contact members.

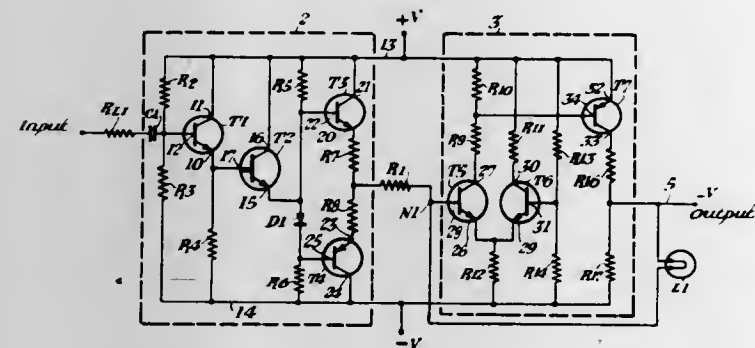
3,614,466
FAIL-SAFE LEVEL DETECTOR WITH 50-50 DUTY CYCLE
Reed H. Grundy, Murraysville, Pa., assignor to Westinghouse Air Brake Company, Swisvale, Pa.
Filed May 22, 1970, Ser. No. 39,801
Int. Cl. H02h 7/20; H03f 17/00

U.S. Cl. 307-202

24 Claims

This invention relates to a fail-safe level detector comprising an amplifier circuit having an input and an output, a feedback loop connected between the output and input for providing an upper and lower hysteresis level and a photosensitive device having a radiant-energy source

connected in the feedback loop for monitoring its condition. The photosensitive device also has a photopositive resistive element connected to the input of the amplifier circuit to assume a high-impedance condition whenever the radiant-energy source emits no radiant energy, thereby decreasing the magnitude of the input below the upper and lower



hysteresis levels so that the amplifier circuit will not produce an output during a component failure in the feedback loop. Design of the feedback loop to provide equal and opposite upper and lower hysteresis levels provides for an output having a substantially 50-50 duty cycle whenever a periodic waveform having origin symmetry has peak amplitudes exceeding the upper and lower hysteresis levels.

3,614,467

NONSATURATED LOGIC CIRCUITS COMPATIBLE WITH TTL AND DTL CIRCUITS

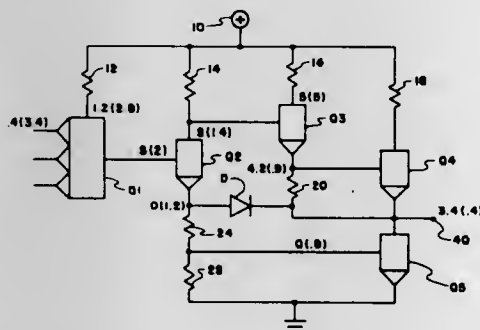
George K. Tu, Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed June 22, 1970, Ser. No. 48,200

Int. Cl. H03k 5/08, 19/36

U.S. Cl. 307-215

13 Claims



A nonsaturated logic circuit compatible with TTL and DTL circuits. The output transistor of the logic circuit has its base terminal connected to the junction of a resistor divider pair and its collector terminal connected through a diode to the drive input of the resistor pair. When current flows through the resistor divider pair to turn on the transistor, the diode conducts and the collector of the output transistor is clamped to a voltage higher than that which would otherwise be obtained in the absence of the diode. The transistor does not saturate and the transistor can then be turned off rapidly.

3,614,468

LOGIC CIRCUIT

Heinz-Wilhelm Ehlbeck, Schwaigern, and Reiner Engbert, Tübingen, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm am Danube, Germany

Filed July 15, 1968, Ser. No. 744,730

Claims priority, application Germany, July 20, 1967, P 15 37 455.7

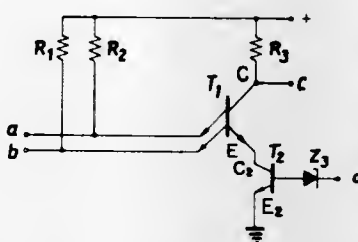
Int. Cl. H03k 19/34

U.S. Cl. 307-215

9 Claims

A logic circuit having a transistor with several input electrodes for controlling the transistor and at least one output connected to the collector of the transistor. An electrode connected to the transistor serves as its emitter

electrode when the logic circuit is operated as a NOR-gate. Further, means are connected to the emitter electrode to provide for selectively applying two different potentials



thereto. When one of the potentials is applied to the emitter electrode the logic circuit operates as a NOR-gate, whereas when the other of the two potentials is applied to the emitter electrode, the logic circuit operates as a coincidence-gate.

3,614,469

SHIFT REGISTER EMPLOYING TWO-PHASE COUPLING AND TRANSIENT STORAGE BETWEEN STAGES

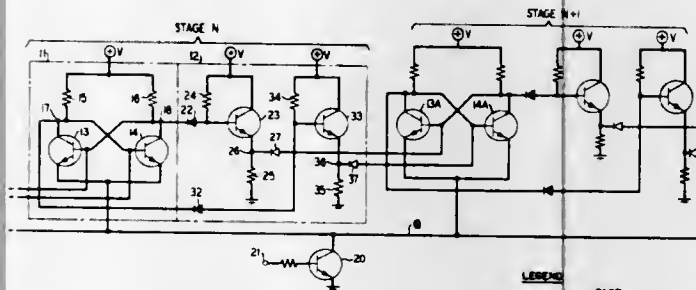
John D. Heightley, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 25, 1969, Ser. No. 844,752

Int. Cl. H03k 23/08

U.S. Cl. 307-221 R

12 Claims



In shift registers there is generally provided an intermediate storage function between stages to enable each stage to transfer its information prior to accepting the next incoming signal, i.e., to avoid a race condition. In accordance with this invention there is provided between each stage a coupling circuit comprising in series a Schottky-barrier (SB) diode, an emitter-follower transistor, and a second diode. While the stages are in the holding mode, the state of stage N is coupled through the SB diode, stored on the capacitance at the base of the emitter-follower, and isolated from stage N+1 by the second diode. Upon application of a shift signal, the SB diode immediately turns off and thereby isolates the Nth stage from the emitter-follower. The second diode turns on; and the signal which was stored at the base of the emitter-follower is coupled through the second diode to set the state of stage N+1.

3,614,470

SOLID-STATE RAMP GENERATOR FOR DEVELOPING A MODULATED RAMP SIGNAL IN A TANDEM SERRASOID MODULATOR

Ross E. Ruthenberg, Des Plaines, and James C. Evtits, Jr., Schaumburg, both of Ill., assignors to Motorola Inc., Franklin Park, Ill.

Filed Apr. 23, 1970, Ser. No. 31,277

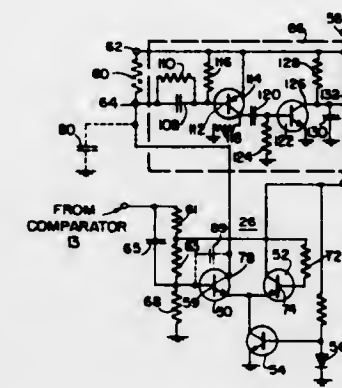
Int. Cl. H03k 4/08

U.S. Cl. 307-228

5 Claims

A serrasoid phase modulator includes tandem modulation stages having a ramp generator with a linearizing circuit. In the ramp generator, an unwanted current pulse is transferred through the base-to-collector junction capacitance of a transistor. A capacitor across which the ramp signal develops is coupled to the collector of the same transistor. To prevent the ramp signal from being distorted by the

current pulse, the ramp linearizing circuit is connected in series. A common control transistor provides a means for between the collector and the capacitor and utilizes the base- simultaneously blocking and unblocking the base-keying



to-emitter drop of another transistor to isolate the capacitor from the unwanted current pulse.

3,614,471

KEYBOARD CONTROL CIRCUIT

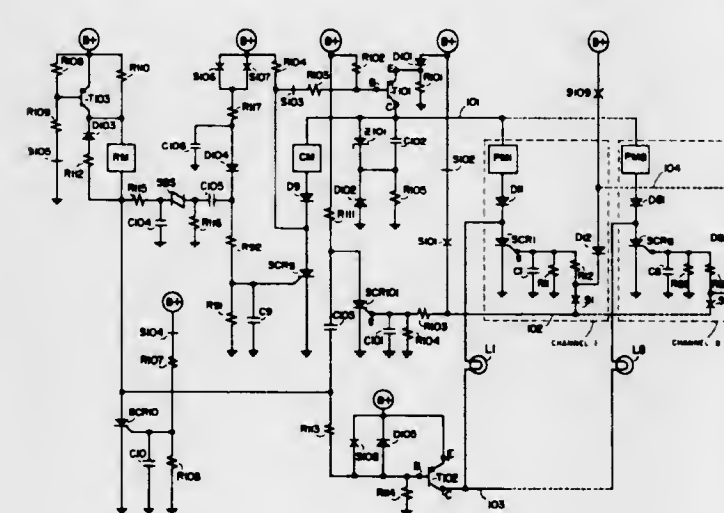
Hugh St. Lawrence Dannatt, Rochester, N.Y., assignor to The Singer Company

Filed Feb. 3, 1969, Ser. No. 795,788

Int. Cl. H03k 17/00

U.S. Cl. 307-241

13 Claims



Controlled avalanche devices such as silicon-controlled rectifiers are used to maximum advantage so that there are dual control paths through the device, one of which may represent a relatively short term function and the other of which may be a relatively long term function, such as, a memory circuit. The inductive EMF of an interrupted inductive circuit is used to extinguish silicon-controlled rectifiers and/or to back bias transistors.

3,614,472

SWITCHING DEVICE

Nico J. Kloppenborg, Seaton, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 3, 1969, Ser. No. 829,920

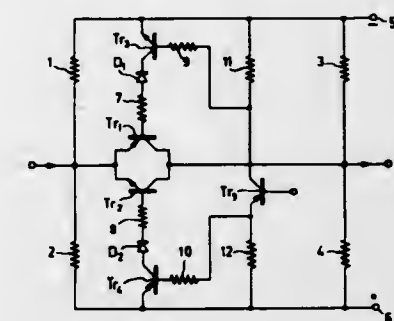
Claims priority, application Australia, June 17, 1968, 39268

Int. Cl. H03k 17/60

U.S. Cl. 307-255

7 Claims

A switching circuit comprising a resistance bridge and a signal transmission path including a pair of switching transistors of opposite conductivity connected in parallel across one diagonal of the bridge to form complementary signal paths. A source of DC voltage is connected to the other diagonal of the bridge. The base electrodes of the switching transistors are connected to opposite terminals of the DC source, each via a diode and a base-keying transistor



transistors whereby the switching transistors are simultaneously blocked or unblocked.

3,614,473

IMPROVED CIRCUIT FOR PROVIDING TWO MONOSTABLE MULTIVIBRATORS

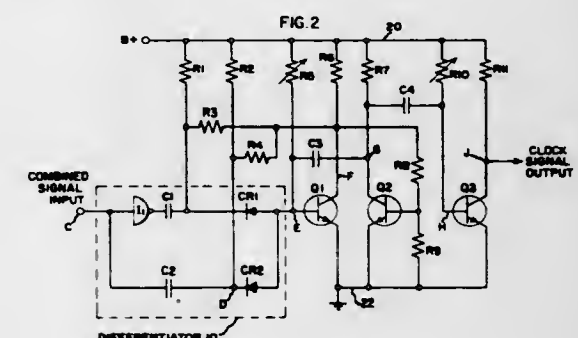
Donald S. Lindsay, and William J. Little, both of Lynchburg, Va., assignors to General Electric Company

Filed Sept. 15, 1969, Ser. No. 857,794

Int. Cl. H03k 3/284

U.S. Cl. 307-273

1 Claim



Two monostable or one-shot multivibrators are provided by three transistors connected so that the first and second transistors form the first monostable multivibrator, and so that the second and third transistors form the second monostable multivibrator. A switching signal is applied to the first transistor to switch the first multivibrator. Switching of the first multivibrator switches the second multivibrator. Output signals can be derived from the third transistor. The first multivibrator preferably has a switched time longer than the switched time of the second multivibrator so that extraneous signals do not cause undesired switching.

3,614,474

SEMICONDUCTOR POWER-SWITCHING APPARATUS

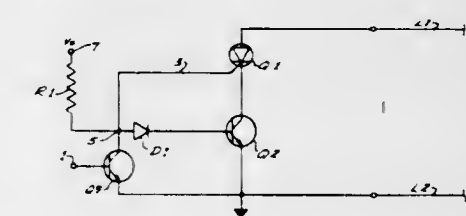
Larry Alan Hahn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1968, Ser. No. 770,259

Int. Cl. H03k 17/00

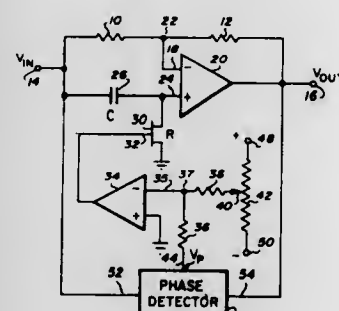
U.S. Cl. 307-252 C

16 Claims



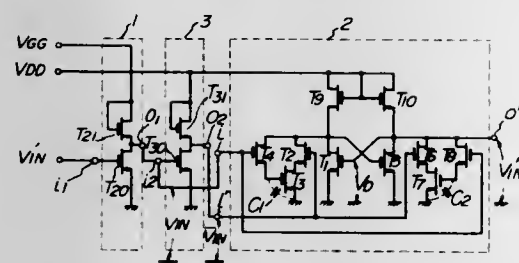
Turnoff of the SCR for switching off the circuit is accomplished by turning off the transistor and providing a shunt path through the gate of the SCR for momentarily shunting the load current around the transistor.

3,614,475
PHASE SHIFT CIRCUIT APPARATUS
 Gordon J. Deboo, Sunnyvale, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
 Filed July 21, 1970, Ser. No. 56,791
 Int. Cl. H03k 1/12
 U.S. Cl. 307-262 9 Claims



A phase shifting circuit for selectively shifting the phase of an input signal from 0° to 180°, the circuit maintaining the signal amplitude constant and independent of signal frequency. The circuit includes resistive and capacitive elements, a voltage variable impedance element, operational amplifier means and a phase detector coupled together in such a manner that a desired phase shift of anywhere between 0° and 180° can be selectively obtained in response to a simple adjustment of a circuit component.

3,614,476
FET FLIP-FLOP DRIVING CIRCUIT
 Yuichi Teranishi, Akishima-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
 Filed Nov. 4, 1968, Ser. No. 772,912
 Claims priority, application Japan, Nov. 6, 1967, 42/70973
 Int. Cl. H03k 3/286
 U.S. Cl. 307-279 16 Claims

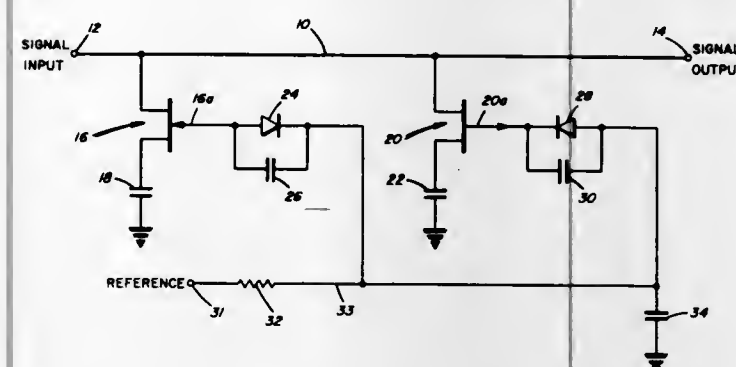


A driving circuit for driving a flip-flop comprising a pair of trigger circuits, each of which is composed of a gating insulated gate field effect transistor (referred to as IGFET hereinafter), memorizing IGFET and triggering one, said driving circuit comprising an inverter constituted by connecting first and second IGFET in series with each other, wherein the input of the inverter is connected in common with the inputs of said gating IGFET's, and the output of said inverter is connected in common with the inputs of said trigger IGFET's.

3,614,477
FIELD EFFECT TRANSISTOR SHUNT SQUARING NETWORK
 Henry F. Liebman, Plantation, Fla., assignor to The Bendix Corporation
 Filed Nov. 26, 1968, Ser. No. 779,113
 Int. Cl. H03k 3/26
 U.S. Cl. 307-279 9 Claims

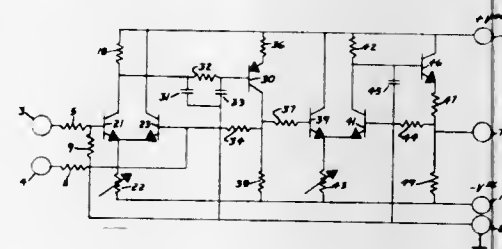
A squaring network wherein an input signal wave appearing on a signal line and having a peak value occurring

at a repetition frequency equal to a pulse repetition frequency of a reference square wave is shaped into a square



wave. A pair of oppositely poled field effect transistors shunt the signal line alternately to one and then another signal storage capacitor in response to the reference square wave.

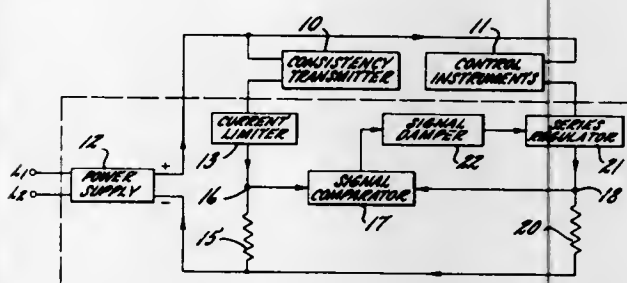
3,614,478
HIGHLY SELECTIVE FILTER CIRCUIT
 Peter Schiff, R. D. #2, Lambertville, N.J.
 Filed July 30, 1969, Ser. No. 845,998
 Int. Cl. H03k 1/16; H03f 3/68; H03k 3/72
 U.S. Cl. 307-295 12 Claims



A filter circuit providing extremely sharp attenuation at a selected frequency cutoff point. The sharp attenuation is obtained through the use of several ganged or cascaded active filter sections whose characteristics are combined in an additive fashion to provide an extremely flat passband characteristic and a sharp attenuation curve at the desired frequency cutoff value.

Filter circuits of this design may be used in combination in the electrocardiograph field to isolate the R-wave of the PQRS complex of an electrocardiogram resulting in trigger signals of a high degree of accuracy for purposes of R-wave detection and evaluation.

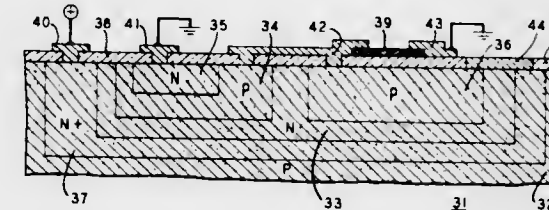
3,614,479
POWER SUPPLY AND SIGNAL CONDITIONER FOR ELECTRONIC INSTRUMENTATION
 David E. Nelson, St. Cloud, Minn., assignor to DeZurik Corporation, Sartell, Minn.
 Filed July 18, 1969, Ser. No. 843,160
 Int. Cl. H03k 1/14
 U.S. Cl. 307-297 8 Claims



An electronic signal conditioner for use with process control instruments is described in which a signal from a transmitting instrument is received and conditioned by way of damping and current limiting before being retransmitted

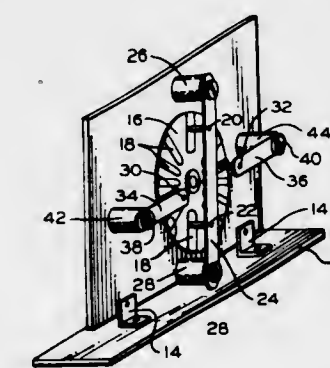
to control apparatus. The output signal is essentially connected between the paired electrodes. The capacitor has independent of the internal impedance of the receiving output electrodes arranged in association with the first paired apparatus.

3,614,480
TEMPERATURE-STABILIZED ELECTRONIC DEVICES
 Carl N. Berglund, Plainfield, and Martin P. Lepseter, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Oct. 13, 1969, Ser. No. 865,747
 Int. Cl. H03k 17/14; H05k 1/00
 U.S. Cl. 307-299 12 Claims



Vanadium oxide exhibits a substantial and relatively abrupt change in conductivity as the temperature of the material is varied through a particular characteristic temperature (about 68° C.). In accordance with our invention, a vanadium oxide resistor is employed as a temperature-sensing element in the control circuit of a heater to stabilize the operating temperature of an electronic circuit at about 68° C. over a wide range of ambient temperatures.

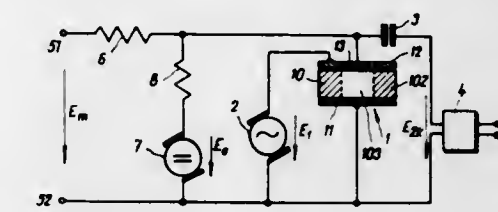
3,614,481
ELECTROSTATIC GENERATOR
 Robert B. Halliday, R.D. #1, Chenango Forks, N.Y.
 Filed June 16, 1969, Ser. No. 833,289
 Int. Cl. H02n 1/00
 U.S. Cl. 310-6 10 Claims



A device for collecting a charge of static electricity by rotating a disc or wheel carrying a plurality of individual conductors in proximity to a pair of stationary conductors. Four stationary brushes are arranged in two pairs to wipe the charge from the individual conductors which is initially induced by the natural imbalance in static charge between the stationary and moving conductors. The charges from each pair of brushes are returned to the stationary conductors and stored on an appropriate capacitor.

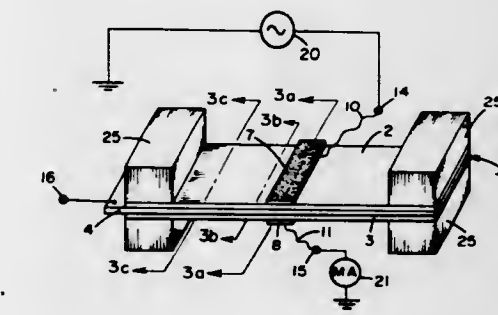
3,614,482
DC VOLTAGE INVERTER
 Antonin Glanc, Libochovice, and Vaclav Janovec, Praha, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia
 Filed Jan. 20, 1970, Ser. No. 4,288
 Int. Cl. H01v 7/00
 U.S. Cl. 310-8.1 14 Claims

A capacitor operating at a temperature-autostabilized state, having a pair of exciting electrodes and a ferroelectric dielectric arranged therebetween. An AC generator is



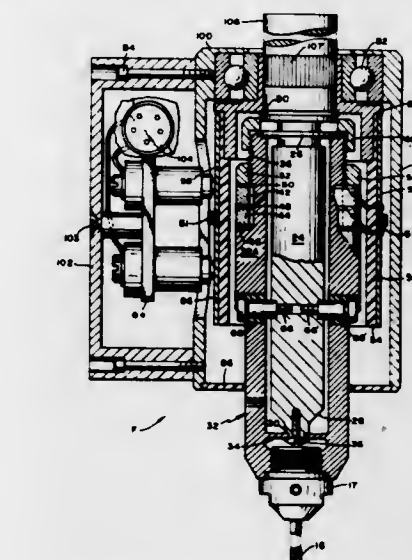
electrodes, and surrounded at least in part by one of them and an AC amplifier.

3,614,483
WIDTH FLEXURAL RESONATOR AND COUPLED MODE FILTER
 Don A. Berlincourt, Chagrin Falls, Ohio, assignor to Clevite Corporation
 Filed June 24, 1970, Ser. No. 49,497
 Int. Cl. H01v 7/00
 U.S. Cl. 310-8.1 26 Claims



Ceramic and crystal resonators and coupled mode filters are disclosed. They are platelike assemblies and operate in the width flexural mode. The operating frequency is determined primarily by the width and thickness of the assembly.

3,614,484
ULTRASONIC MOTION ADAPTER FOR A MACHINE TOOL
 Andrew Shoh, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
 Filed Mar. 25, 1970, Ser. No. 22,413
 Int. Cl. H01v 7/00; H04r 17/00
 U.S. Cl. 310-8.2 6 Claims



An ultrasonic motion adapter for a machine tool comprises two elongated coaxially disposed members coupled to each

other with one of the members being adapted to oscillate as a half wavelength resonator at a predetermined frequency, typically at an ultrasonic frequency of 20 kHz. The adapter is designed to be removably coupled to a conventional machine tool and when so coupled causes a tool bit to rotate while undergoing axial oscillation at the predetermined frequency.

3,614,485

ELECTROMECHANICAL REED SYSTEM

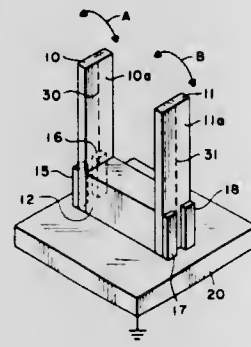
Armond D. Cosman, and Albert L. Snider, both of Austin, Tex., assignors to Austron, Inc., Austin, Tex.

Filed Aug. 5, 1969, Ser. No. 847,687

Int. Cl. H01v 7/00

U.S. Cl. 310-8.2

8 Claims



Disclosed are frequency sensitive electromechanical systems employing mechanically coupled vibratory elements, as reeds or tines, having laterally spaced strain sensitive elements, as piezoelectric wafers, affixed to corresponding major faces of the vibratory elements. Select ones of the piezoelectric wafers are electrically interconnected to eliminate erroneous output signals due to external shocks to the system from any direction. Input and/or output means are coupled to selected interconnected wafers for respectively applying and picking off input and output signals to and from the vibratory elements having a frequency in the vicinity of the mechanical resonant frequency of the system.

3,614,486

LEVER MOTION MULTIPLIER DRIVEN BY ELECTROEXPANSIVE MATERIAL

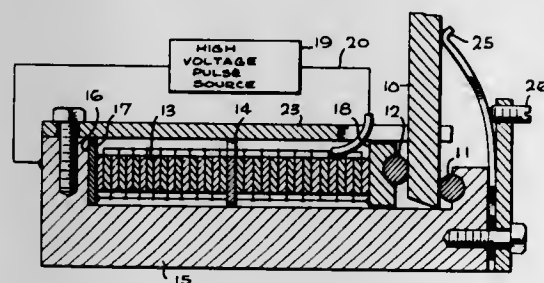
Parker C. Smiley, Oakland, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Nov. 10, 1969, Ser. No. 875,019

Int. Cl. H01v 7/00, 9/00

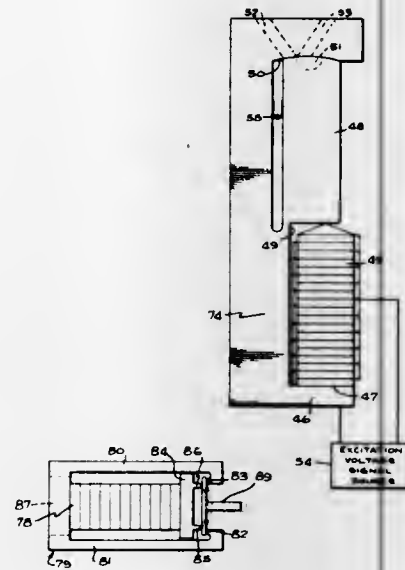
U.S. Cl. 310-8.2

6 Claims



Electroexpansive material such as a stack of piezoelectric discs is employed as a driver for an undamped spring-mass system, such as a lever for motion multiplication. A displacement, step or other motion, is obtained without residual motion by controlling the voltage excitation time, such as the period of a square wave voltage pulse to the natural period of the system or the period of the ramp of a step

voltage to the natural period of the system. A high-speed printer exemplifies application of such controlled excitation



and the advantage of controlling the pulse period. Various forms are disclosed for the lever.

3,614,487

PIEZOELECTRIC ACCELEROMETER WITH BASEPLATE COOLING

Rudolf A. Hatschek, Fribourg, Switzerland, assignor to Vibrometer AG, Fribourg, Moncor, Switzerland

Filed Oct. 4, 1968, Ser. No. 765,164

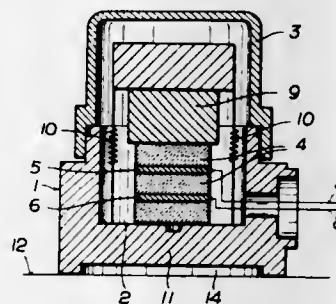
Claims priority, application Austria, Oct. 10, 1967, A

9167/67

Int. Cl. H01v 7/00

U.S. Cl. 310-8.4

6 Claims



A transducer, in particular a piezoelectric transducer for accelerometry, wherein the measuring elements are located in a housing comprising a bottom by means of which it is mounted on the object to be measured, at least one outwardly open recess being provided in the bottom.

3,614,488

MULTICOMPONENT FORCE TRANSDUCER

Hans Conrad Sonderegger, Neftenbach, and Gelli Spescha, Winterthur, both of Switzerland, assignors to Ristler Instruments A. G., Winterthur, Switzerland

Filed July 30, 1969, Ser. No. 846,018

Claims priority, application Switzerland, July 30, 1968, 11446/68

Int. Cl. H01v 7/00

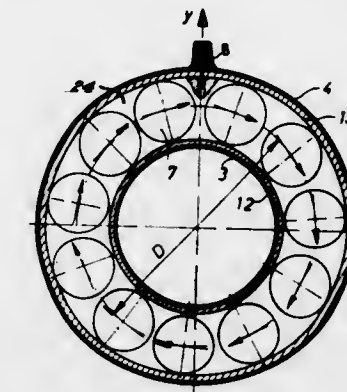
U.S. Cl. 310-8.6

13 Claims

A piezotransducer device in which several piezoplates are

located between force-transmitting members and are operable to measure mass numbers. A number of

mechanically oscillating resiliently suspended conductors (primary circuit) connected to an alternating current source are arranged in said magnetic field. Means are provided for measuring the voltage induced in said conductors, said voltage being substantially proportional to the square of the strength of the magnetic field. Said measuring means may include a secondary circuit mechanically connected to the primary circuit, voltage measuring means being connected to said secondary circuit.



oriented with the force-sensitive axes depending on the type of force to be measured thereby.

3,614,489

LIQUID ELECTRODE

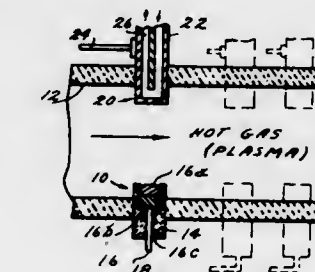
Carl A. Jensen, 920 Fordham, Davis, Calif., and Lowell L. Wood, Jr., 2844 Royal Ave., Simi, Calif.

Filed Jan. 11, 1968, Ser. No. 697,078

Int. Cl. H02n 4/02

U.S. Cl. 310-11

18 Claims



Improved electrode performance in a magnetohydrodynamic device is obtained with an electrode structure which includes a liquid (molten) portion in electrical contact with the electrically conductive gas stream. The liquid is highly electrically conductive and, when employed as a cathode, it has excellent electron emission characteristics at and These presently employed practical operating temperatures in MHD devices. These properties are retained during continuous operation over long periods of time. If both cathode and anode are liquid they may be held in place by rotating the gas flow channel, which supports the electrodes, about its longitudinal axis.

An electric motor has an oscillating armature which performs in a predetermined time interval a first number of oscillations corresponding to the cycles of an alternating current supplied to it. An oscillatory output member is arranged to be driven by the motor. Mechanical means cooperates with the armature and the output member and imparts to the latter in the aforementioned time interval a second number of oscillations which is double the first number.

3,614,492

BIDIRECTIONAL MOTOR

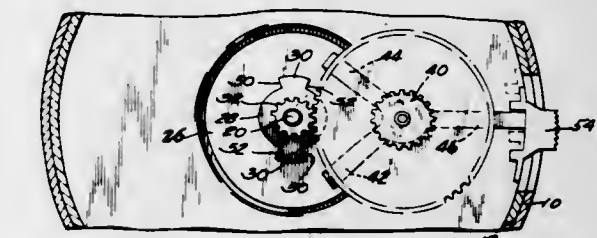
Kenji Yatsushiro, Chicago, and George F. Kuchurik, Westchester, both of Ill., assignors to Controls Company of America, Melrose Park, Ill.

Filed June 10, 1970, Ser. No. 45,118

Int. Cl. H02k 7/118

U.S. Cl. 310-41

2 Claims

**MEANS FOR MEASURING THE SQUARE OF THE STRENGTH OF A MAGNETIC FIELD**

Sven Gunnar Soredal, Stockholm, Sweden, assignor to LKB-Produkter Aktiebolag, Mariefhall, Sweden

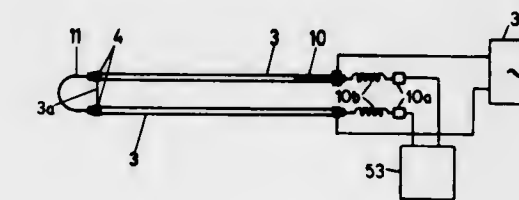
Filed Dec. 23, 1969, Ser. No. 887,547

Claims priority, application Sweden, Dec. 27, 1968, 17821/68

Int. Cl. H02k 35/04

U.S. Cl. 310-25

16 Claims



A device for measuring the square of the strength of a magnetic field is disclosed. The device is particularly

The Y-shaped stop device frictionally engages the gear shaft and tends to rotate with the gear. The freedom of movement of the device is restricted by the selector to permit a selected arm of the Y to be effective. If the pinion gear starts in the wrong direction, the stop wing carried by the

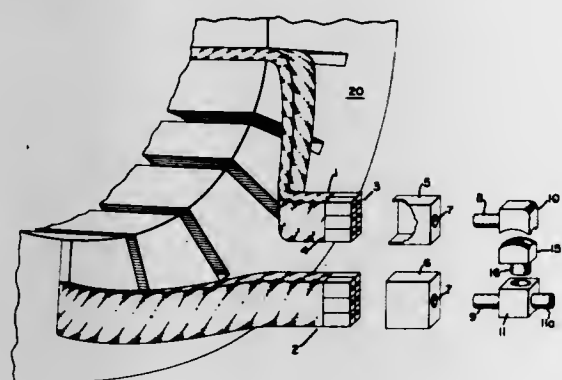
rotor will strike the effective arm which has been frictionally rotated into a position which insures optimum starting conditions for rotation in the desired direction. Upon engagement the rotor starts in the desired direction and the friction acting on the stop device moves the arm clear of the path of the stop wings. The selector limits movement of the stop device to keep the other arm clear of the stop wings.

3,614,493
UNIVERSAL LIQUID-COOLED CONNECTION ASSEMBLY

Harold E. Collings, Schenectady, and William L. Darby, Scotia, both of N.Y., assignors to General Electric Company
Filed Jan. 29, 1970, Ser. No. 6,902
Int. Cl. H02k 9/00

U.S. Cl. 310-54

7 Claims



A connector assembly to connect liquid-cooled stator bars in a dynamoelectric machine. First and second headers attached to the juxtaposed ends of a pair of stator bars are joined by means of rotatable, telescoping joints to fittings having mating cylindrical surfaces. The fittings are further aligned by sliding the cylindrical surfaces upon one another, and then brazed together. In a second embodiment, two joints each comprising a pair of mating cylindrical surfaces generated about perpendicular axes provide an additional degree of freedom between the fittings to compensate for restricted movement at one of the rotatable telescoping joints in certain header orientations.

3,614,494
SINGLE-PHASE ELECTRIC MOTOR

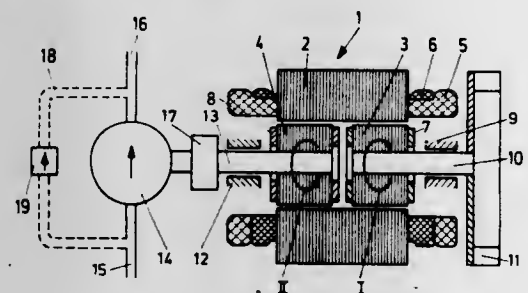
Alwin Borchers, Flensburg, Germany; Kyrre Guttorm Sjøtun, Norge; Gunnar Lyshøj Hansen, Nordborg, and Jørgen Rønø Clausen, Langsø pr. Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed May 18, 1970, Ser. No. 38,322

Claims priority, application Germany, May 17, 1969, P 19 25 305.5

Int. Cl. H02k 17/00

U.S. Cl. 310-126

2 Claims



The invention relates to a single-phase electric motor assembly for installations such as oil burners. The motor has two oppositely rotatable rotors with one rotor adapted to drive a blower and the other adapted to drive an oil pump. The stator has main and secondary windings offset from each other which are switchable on and off together. The current phase in the secondary winding leads by up to 20° upon startup and remains above 0° at the highest operating voltage. There is a time lag during which the blower rotor

builds up speed and it is only thereafter that its rotary field acts on the pump rotor to drive it in the opposite direction. Alternate hydraulic and mechanical means are provided for making the pump effective in only one operating direction.

3,614,495
SYNCHRONOUS MOTOR

Yasuo Suzuki, and Yasuyoshi Kameyama, both of Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

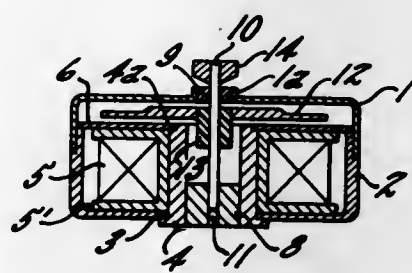
Filed Dec. 4, 1969, Ser. No. 882,018

Claims priority, application Japan, Dec. 9, 1968, 43/9065

Int. Cl. H02k 19/00

U.S. Cl. 310-162

6 Claims



A fixed-directional self-starting synchronous motor comprising a stator associated to an exciting coil therefor and having two groups of radially extending pole teeth of the same number, and a rotor magnetized to have the same number of North and South poles in total with total number of the stator pole teeth and disposed rotatably above the stator. Respective pole tooth groups of the stator are of different width from each other and arranged alternately one by one. The two pole tooth groups are further deviated by a desired angle in a desired rotating direction of the rotor from the position of the case in which the groups are arranged at a regular interval, respectively.

3,614,496
SYNCHRONOUS ELECTRIC MOTOR

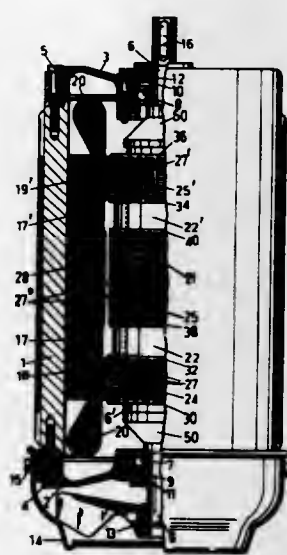
Lodewijk Schliehant, Dubbeldam, Netherlands, assignor to N.V. Electromotorenfabriek Dordt, Dordrecht, Netherlands
Filed Jan. 12, 1970, Ser. No. 2,195

Claims priority, application Netherlands, Jan. 17, 1969, 69,00864

Int. Cl. H02k 19/00

U.S. Cl. 310-162

6 Claims



The rotor of a synchronous electric motor includes an enlarged shaft portion of magnetic material upon which a pair of squirrel cage winding and pole piece assemblies are mounted in spaced relation with a spacer ring of magnetic

material disposed between the assemblies. The laminations of the pole pieces are sandwiched between the end plates of the squirrel cage windings and the radially projecting poles receive some of the conducting bars joining the end plates. The main body portions of the laminations are annular, having substantially the same outer diameter as the spacer ring, and are notched to receive those conducting bars which do not pass through the poles.

3,614,497
TRANSPPOSED CONDUCTOR FOR DYNAMOELECTRIC MACHINES

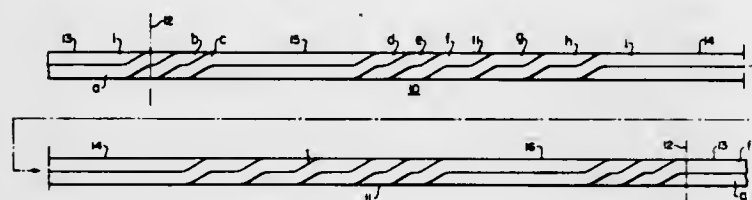
William C. Brenner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 25, 1970, Ser. No. 22,474

Int. Cl. H02k 3/14

U.S. Cl. 310-213

10 Claims



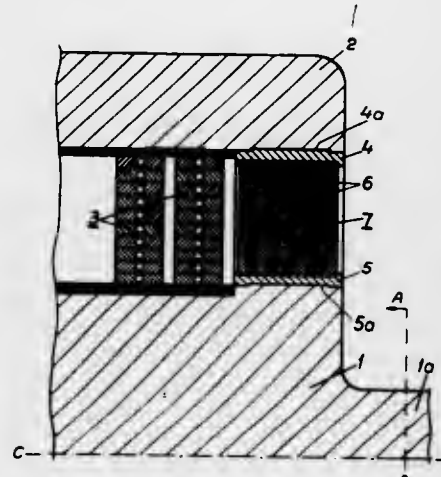
A transposed stranded conductor for dynamoelectric machines in which the transposition is incomplete in the slot portion of the conductor so that unbalanced strand voltages occur which are made to balance the strand voltages occurring in the end portions of the conductor. In the preferred embodiments, this result is accomplished by providing untransposed sections in the slot portion of the conductor.

3,614,498
WINDING COIL SUPPORT MEANS
Henning Bank; Per-Owe Jölsen; Hans Klein, and Tage Persson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Nov. 16, 1970, Ser. No. 89,610

Int. Cl. H02k 3/50

U.S. Cl. 310-262

6 Claims



A rotor of a turbogenerator has a winding coil support which includes a retaining ring surrounding the coil ends of the rotor winding and shrunk onto the rotor body and onto a support ring arranged in the rotor body axially outside the coil ends. The support ring is formed by at least four coaxial metal rings arranged axially one after the other and radially gripped by the rotor body and the retaining ring.

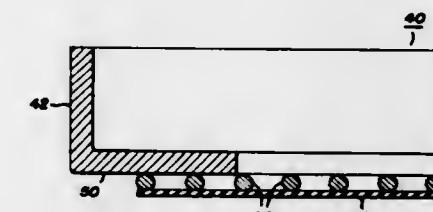
3,614,499
TARGET STRUCTURE FOR CAMERA TUBES
CONSISTING OF A MAGNESIUM OXIDE LAYER SUPPORTED ON ONE SIDE OF A METAL MESH
William C. Debs, North Syracuse, and Bernard E. Day, Liverpool, both of N.Y., assignors to General Electric Company

Filed May 1, 1969, Ser. No. 820,781

Int. Cl. H01J 29/45, 31/30

U.S. Cl. 313-65

4 Claims



A target structure is disclosed having superior electrical properties and mechanical strength. The target comprises a homogenous magnesium oxide membrane supported by a fine gauge nickel mesh. The target structure can be used in either direct-beam or return-beam-type camera tubes.

3,614,500
MISCONVERGENCE COMPENSATION FOR SINGLE-GUN, PLURAL-BEAM-TYPE COLOR TV PICTURE TUBE
Seari Miyake, Kanagawa-ken, and Minoru Morio, Tokyo, both of Japan, assignors to Sony Corporation, Shinagawa-ku, Tokyo, Japan

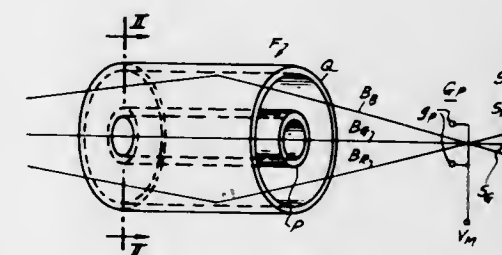
Filed Apr. 14, 1969, Ser. No. 815,870

Claims priority, application Japan, Apr. 14, 1968, 43/24897

Int. Cl. H01J 29/02, 31/20, 29/74

U.S. Cl. 313-69 C

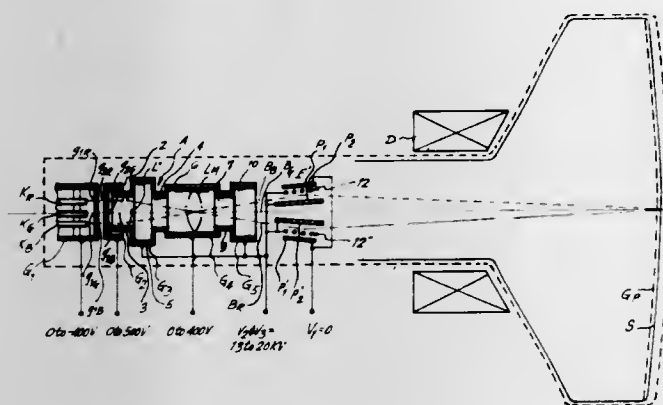
4 Claims



A single-gun, plural-beam-type color television picture tube in which three electron beams representing different color signals are focused by a single lens, after which two of the beams diverge. The two divergent beams are reconverge by convergence deflecting means so they will intersect with the third beam at a common point at a beam-selecting grid, from which point the beams again diverge to impinge on respective color phosphors which together represent a color picture element. Misconvergence, i.e., reconvergence of the two divergent beams to a point other than the common point of intersection with the third beam, which arises from manufacturing inaccuracies such as the misorientation of the convergence deflecting means with respect to the single electron gun of the tube, or the misorientation of the aperture of the beam-generating means of the tube, is compensated for by the provision of convergence deflecting means which exerts upon at least one of the divergent beams an electric, or Coulomb, force which varies in its direction in accordance with the position at which the beam enters and passes through the convergence deflecting means. Thereby, variations in the direction of the electric force compensates for variations in the position at which the beam is introduced to eliminate the misconception which arises from the above-mentioned manufacturing inaccuracies.

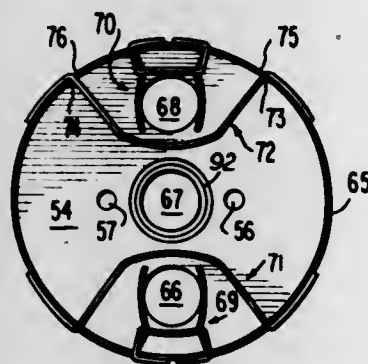
3,614,501 BEAM CONVERGENCE DEVICE FOR COLOR PICTURE TUBE

Akio Ohgoshi, Tokyo, and Senri Miyasaka, Fujisawa-shi, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 6, 1969, Ser. No. 874,568
Claims priority, application Japan, Dec. 26, 1968, 43/96207
Int. Cl. H01J 29/50
U.S. Cl. 313—70 C 8 Claims



In a cathode-ray tube in which a plurality of electron beams are focused on a screen by a focusing lens from which at least certain of the beams emerge along paths divergent with respect to the tube axis, and each of the beams emerging along a divergent path is deflected to cause convergence of the beams at a common area of the screen; such deflection of each divergent beam is effected by a pair of plates at different electrical potentials disposed at opposite sides of the respective divergent path and an auxiliary electrode having open areas therein disposed along the outer side of the respective divergent path spaced inwardly from the plate which is at the side of the respective divergent path away from which the beam is deflected, this plate being at a relatively low potential and the auxiliary electrode and the other plate being at substantially the same relatively high potential to establish an electric field between the plates which, in the region thereof located between the other plate and the auxiliary electrode and being traversed by the respective beam, has a potential gradient that is maintained substantially constant irrespective of variations in the relatively high potential to avoid misconvergence due to such variations.

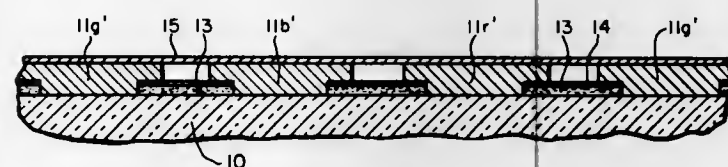
3,614,502
ELECTRON GUN CONVERGENCE ASSEMBLY
Frederick F. Doggett, 7544 Totman Road, East Syracuse, N.Y., and Leonard W. Jenne, Jr., 7469 Hillside Road, Baldwinsville 3, N.Y.
Division of Ser. No. 731,807, May 24, 1968. Filed Sept. 16, 1969, Ser. No. 870,766
Int. Cl. H01J 29/70
U.S. Cl. 313—77 4 Claims



An electron gun assembly of the three gun, in-line type. The three guns each including a plurality of electrode elements are rigidly attached to four support rods or glass beads by a mounting means comprising four metal straps

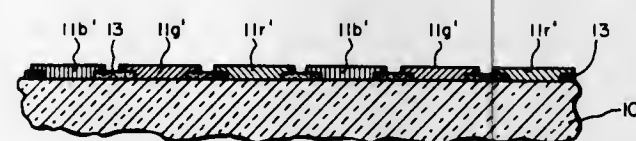
which connect each of the outer gun elements to two support rods and the center gun elements to all four support rods. A first group of four L-shaped metal tabs are imbedded in the ends of the support rods, and two mounting bars are each connected at both ends to two of the tabs for the purpose of making electrical connections to the gun heater elements. A second group of U-shaped metal tabs are also imbedded in the ends of the support rods to permit a mechanical connection of a stem component whereby the gun electrode elements are isolated from forces applied to the stem. A convergence assembly is self-registering with respect to the gun assembly by the alignment of precision holes in the base of the convergence assembly with cutouts provided in a flange on the center gun electrode. A plurality of slots are provided in the wall of the convergence assembly which permit self-registering of pole piece elements positioned inside the assembly.

3,614,503
BLACK-SURROUND COLOR PICTURE TUBE
Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Feb. 24, 1970, Ser. No. 13,564
Int. Cl. G03c 5/00; H01J 29/32
U.S. Cl. 313—92 CS 7 Claims



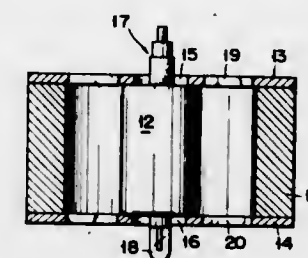
The screen area of a color cathode-ray tube has a multiplicity of phosphor dot triads and the individual phosphor dots are surrounded by a deposit of graphite or other light-absorbing material. The screen has at least two surfaces functioning as diffuse light reflectors. One surface is the customary backing layer of aluminum and the other is a light-reflecting layer applied over the graphite. Multiple reflections from these surfaces permit light developed by the phosphor dots and otherwise attenuated in the graphite to be added to the useful light output of the tube.

3,614,504
COLOR PICTURE TUBE SCREEN WITH PHOSPHOR DOTS OVERLAPPING PORTIONS OF A PARTIAL LIGHT TRANSMISSIVE BLACK-SURROUND MATERIAL
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 9, 1970, Ser. No. 27,052
Int. Cl. G03c 5/00; H01J 29/32
U.S. Cl. 313—92 CS 4 Claims



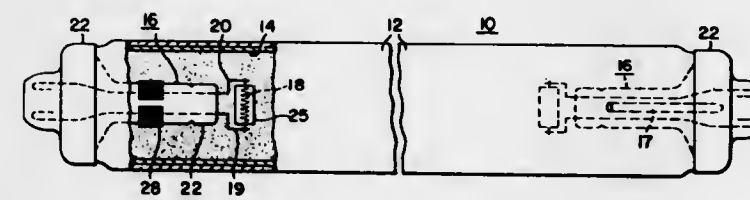
The screen area of a color cathode-ray tube is covered with a graphite layer which is discontinuous in the sense that it has holes into which various phosphor materials are deposited to form the usual dot triad arrangement. The phosphor dots overlap the graphite and the graphite has a transmissivity to visible light of at least 5 to 20 percent so that the overlapping parts of the phosphor dots make a contribution to useful light output.

3,614,505
PACKAGED MAGNETRON
Akihiro Fukatsu, Yokohama, and Masao Kato, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan
Filed July 7, 1970, Ser. No. 52,892
Claims priority, application Japan, July 10, 1969, 44/65144
Int. Cl. H01J 25/50
U.S. Cl. 313—153 6 Claims



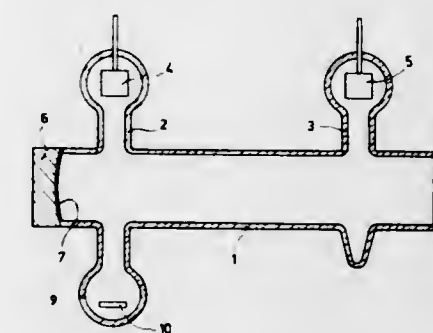
A packaged magnetron comprising a cylindrical permanent magnet coaxially disposed on the outer periphery of an anode, a radiator located between said magnet and anode, two circular conjugate yokes positioned on the magnet, facing each other, and a plurality of holes made in said yokes.

3,614,506
ELECTRIC DISCHARGE LAMP HAVING IMPROVED MERCURY-VAPOR CONTROL ASSEMBLY
George S. Evans, Caldwell, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of application Ser. No. 524,907, Feb. 3, 1966.
This application Apr. 29, 1970, Ser. No. 32,924
Int. Cl. H01J 61/24
U.S. Cl. 313—174 8 Claims



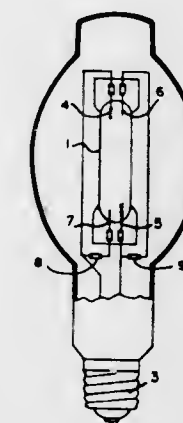
The mercury-vapor pressure within a fluorescent lamp is controlled by an amalgam-forming metal that is enclosed in a foraminous container supported at a selected location within the lamp envelope. The container is fabricated from two strips of wire mesh that are arranged in overlying enclosing relationship with a strip of amalgam-forming metal to form an assembly that is secured to one of the lamp stems. Leakage of the amalgam-forming metal and amalgam when in a fluid state is prevented by providing a border of overlapped wire mesh that is devoid of metal and extends around the periphery of the assembly. Alternatively, the border extends along the sides of the assembly and the ends of the assembly are rendered leakproof by a coating of a material that repels the amalgam or amalgam-forming metal. A method and apparatus for making continuous border-type assemblies on a mass production basis are also disclosed.

3,614,507
DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION, IRASER, BY MEANS OF AN ELECTRIC DISCHARGE IN A GAS MIXTURE CONSISTING PARTLY OF CARBONIC ACID GAS, AND DISCHARGE TUBE DESTINED FOR SUCH A DEVICE
Wilhelmus Jacobus Witteman, and Pieter Zalm, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 6, 1969, Ser. No. 797,070
Claims priority, application Netherlands, Feb. 15, 1968, 6802135
Int. Cl. H01J 17/26, 61/24
U.S. Cl. 313—174 2 Claims



The efficiency of an iraser with a discharge in carbonic acid, helium, nitrogen, and water vapor reduces after a few hundreds of hours. This is prevented by contacting the gas filling with a substance which contains water with the correct vapor pressure, and by ensuring the supply of water vapor which has disappeared by absorption in the wall and in the electrodes. A suitable material is, for example, zeolite.

3,614,508
METAL HALIDE DISCHARGE LAMP CONTAINING BERYLLIUM
Saburo Ito, and Shingo Ezaki, both of Ohtsu, Japan, assignors to New Nippon Electric Company Ltd.
Filed Oct. 27, 1969, Ser. No. 869,554
Int. Cl. H01J 61/18
U.S. Cl. 313—184 4 Claims

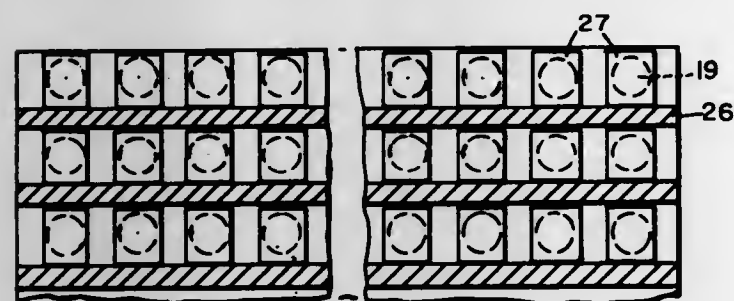


A high-pressure electric discharge lamp which emits a continuous spectrum and containing beryllium, halogen and mercury. The lamp is operated at temperatures in the range of 300° to 700° C. to obtain white light emission of good color-rendering properties and brightness.

3,614,509
LARGE AREA PLASMA PANEL DISPLAY DEVICE
Robert H. Wilson, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 7, 1969, Ser. No. 822,623
Int. Cl. H01J 11/02, 65/04
U.S. Cl. 313—201 4 Claims
This invention is directed to a large area panel display

device whereby a high-density plasma display is provided from a number of modular building blocks to minimize the

matrix forming conductor arrays, inorganic dielectric adherent coating or film on the conductor arrays forming a plurality of discrete, but not physically isolated or localized,

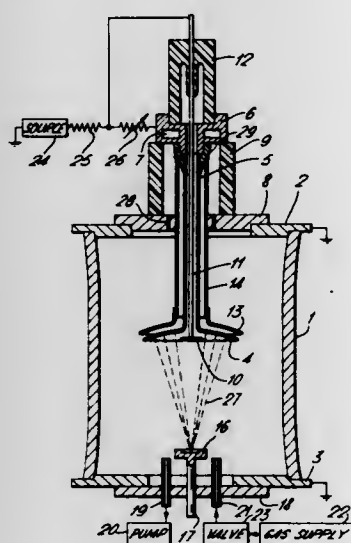


gaps between modules to provide a high-density display device.

3,614,510
NONTHERMIONIC CATHODE DISCHARGE DEVICES
Clifford William Alfred Maskell, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 2, 1969, Ser. No. 829,544
Claims priority, application Great Britain, June 4, 1968, 26600/68
Int. Cl. H01J 17/04, 17/26
U.S. Cl. 313-207

13 Claims



A nonthermionic cathode glow discharge device comprising an enclosure and means to maintain gas in the enclosure at a predetermined pressure. An anode is mounted in the enclosure or forms a part of a wall of the enclosure. A cathode having a surface directed at a treatment zone is suspended in the enclosure and has an aperture therein in which is positioned a control electrode. The said surface of the cathode may extend longitudinally or may be shaped as a segment of a sphere. By varying the potential applied to the control electrode with respect to the cathode, the focal point of the electron or ion beam and the current of the output beam can be controlled. A third electrode may be provided to surround part of the cathode to act as a screen to minimize unwanted electron emission from the cathode.

3,614,511
GAS DISCHARGE DISPLAY MEMORY DEVICE
Theodore C. Baker, Wayne; Wolfgang W. Bode, Sylvania; Richard G. Mathias, Toledo; James F. Nolan, Sylvania, and Lawrence V. Pfander, Toledo, all of Ohio, assignors to Owens-Illinois, Inc.
Division of Ser. No. 686,384, Nov. 24, 1967, Pat. No. 3,499,167.
Filed Jan. 5, 1970, Ser. No. 783
Int. Cl. H01J 61/30, 65/04

U.S. Cl. 313-220
A simplified high resolution display and/or memory device having rugged nonconductive support members carrying

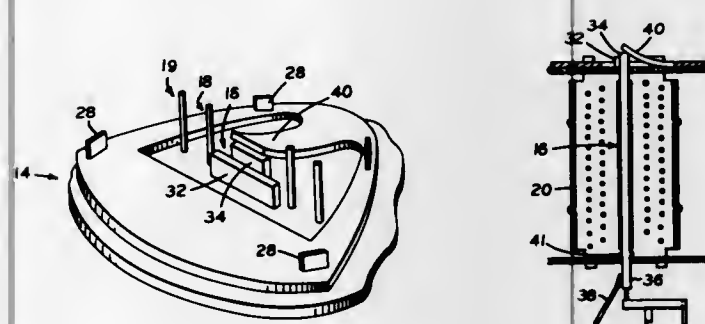
3 Claims

A cathode stop provided externally of the electron cage reduces noise and microphonics generated by loose cathode structures. The stop is utilized in conjunction with a

3,614,513
ELECTRON DISCHARGE DEVICE HAVING NOVEL INDIRECTLY HEATED CATHODE MOUNTING
William A. Allgaker, Emporium, Pa., assignor to Sylvania Electric Products Inc.

Filed July 16, 1969, Ser. No. 842,154
Int. Cl. A47b 91/00, 47/00
U.S. Cl. 313-260

4 Claims



A cathode stop provided externally of the electron cage reduces noise and microphonics generated by loose cathode structures. The stop is utilized in conjunction with a

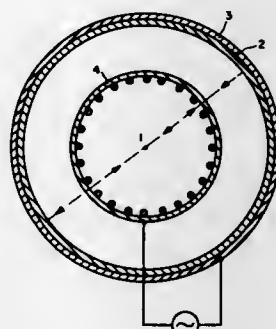
charge storage surfaces for gaseous discharge generated charges in an ionizable gas at a pressure sufficient to laterally confine charges to selected charge storage areas.

3,614,512
IONIZING DEVICE
Robert Evrard, Paris, France, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,679
Claims priority, application France, Apr. 12, 1968, 148053
Int. Cl. H01J 27/00

U.S. Cl. 313-230

1 Claim



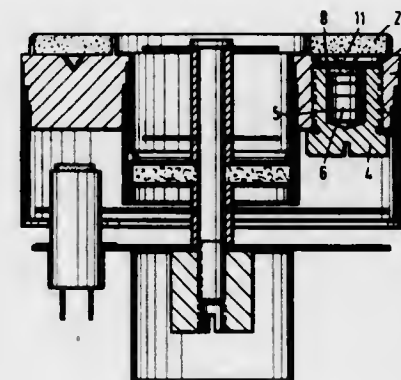
Ion source for use in an ion pump or other apparatus, comprising a secondary-emissive cylinder accommodating a grid. A high-frequency voltage is applied between these two electrodes so that the transit time of the diametrically moving electrons is one whole period or a multiple thereof.

cantilevered mica tongue which exerts pressure on the cathode.

3,614,514
DISPENSER CATHODE STRUCTURE
Helmut Katz, and Erwin Hubner, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 2, 1970, Ser. No. 51,891
Claims priority, application Germany, July 4, 1969, P 19 34 067.1
Int. Cl. H01J 1/14
U.S. Cl. 313-346

5 Claims



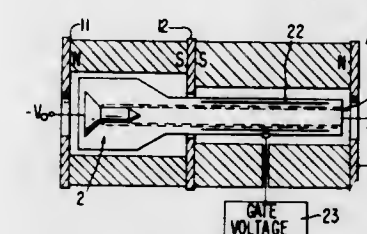
A dispenser MK-type cathode structure adapted for storage and/or handling with subsequent activation and a method of producing the same whereby a supply source substance for an emission-promoting substance (i.e., barium oxide) is positioned in an open end storage chamber of a pluglike insert member (composed of tantalum), and the supply source substance is surrounded with an inert atmosphere at ambient pressure and sealed by a gas impermeable foil member (composed of tantalum). A plurality of such insert members are mechanically mated with a ring-shaped cathode body member (composed of molybdenum) so that the foil member separates the supply source substance from the cathode body member. A suitably porous tungsten disk is mounted on the cathode member body in communication with the foil member so that by evacuating the area around the cathode structure the foil ruptures and the emission-promoting substance (released by heat from the supply source substance) is free to come into contact with the adjacent underside portions of the porous disk. Each of the insert members is provided with shaped contact surfaces to positively seal the foil members between the insert member and the body member.

having a slow wave microwave circuit formed therein. A circuit sever interrupts the microwave circuit to define a microwave field-free drift space in the radial gap region between the circuit sever and the cathode structure. The surface of the cathode structure which faces the circuit sever is contoured to provide a varying radial spacing between the circuit sever and the cathode over a portion of the field-free drift region to enhance debunching of the reentrant electron stream. In a preferred embodiment, the cathode is contoured to provide both increasing radial spacing in the axial direction from both ends toward the center of the field-free region and also circumferentially contoured to provide increased cathode-to-anode spacing taken in the downstream direction of the drift region to move the electron stream away from the anode circuit at downstream end of the drift space which corresponds to the input end of the microwave circuit.

3,614,516
ELECTRON TUBES EMPLOYING A HOLLOW MAGNETRON INJECTED BEAM AND MAGNETIC FIELD REVERSAL FOCUSING
Robert M. Phillips, Redwood City, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 13, 1970, Ser. No. 19,173
Int. Cl. H01J 25/34
U.S. Cl. 315-3.5

9 Claims



Electron beam tubes are disclosed which employ a magnetron injection electron gun for projecting a hollow beam of electrons axially of the tube and generally parallel to an axially directed beam-focusing magnetic field. The axial direction of the beam-focusing magnetic field is reversed abruptly within the beam path and an electrode, such as a gate, drift control electrode, slow wave circuit, or cavity resonator, is disposed in the field reversal region to obtain enhanced electronic interaction with the beam for a given electrical potential established on the interaction electrode. Use of this feature leads to improved high-power switch tubes, traveling wave tubes, klystrons, and RF delay tubes.

3,614,515
CROSSED-FIELD REENRANT STREAM TUBES HAVING AN IMPROVED DRIFT SPACE GEOMETRY
Andrew S. Wilczek, Old Bridge, N.J., assignor to Varian Associates, Palo Alto, Calif.

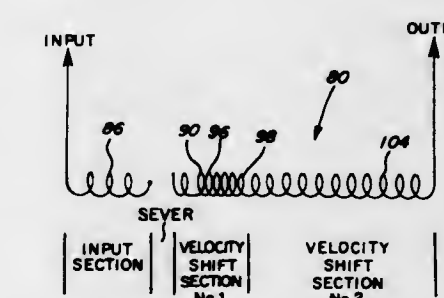
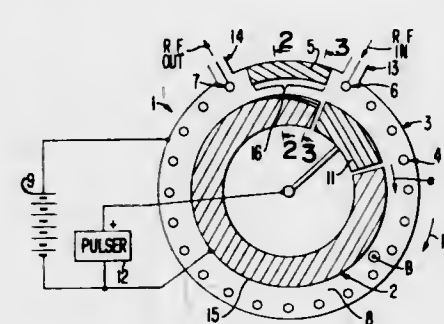
Filed June 2, 1969, Ser. No. 829,640
Int. Cl. H01J 25/42
U.S. Cl. 315-3.5

6 Claims

3,614,517
TRAVELING WAVE ELECTRON INTERACTION DEVICE HAVING EFFICIENCY ENHANCEMENT MEANS
Norman J. Dionne, Ithaca, N.Y., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 30, 1970, Ser. No. 33,459
Int. Cl. H01J 25/34
U.S. Cl. 315-3.6

8 Claims



A crossed-field reentrant stream microwave tube is disclosed. The microwave tube includes an anode structure

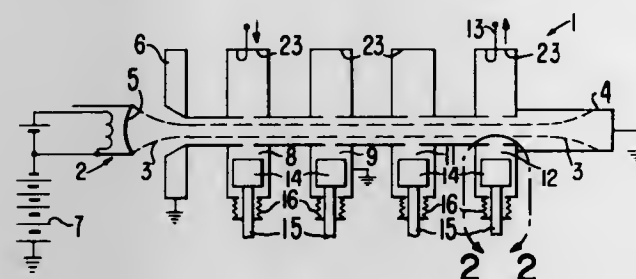
Phase-focusing means are introduced into a traveling wave electron interaction device to optimize exchange of electron kinetic energy with electromagnetic waves propagated along an adjacent wave-guiding structure by providing an

intermediate phase velocity profile at a relatively low level of electron beam energy extraction and well before tube saturation. The resultant redistribution of the guided wave phase velocity provides a delay in the electromagnetic circuit sufficient to permit advancement and desynchronizing of electron bunches to a position in the decelerating field of the propagated waves where the forces on the electrons are substantially minimal. Retention of electrons for longer periods in the decelerating field region of the circuit waves has resulted in a highly significant enhancement in efficiency in traveling wave tube performance. Application of similar phase velocity shift techniques has substantially reduced harmonic frequency power content leading to premature tube saturation in high-gain octave bandwidth devices to yield improvements in efficiency by approximately a factor of 2.

3,614,518
MICROWAVE TUNER HAVING SLIDING CONTACTORS
Robert C. Schmidt, Woodside, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Mar. 16, 1970, Ser. No. 19,602
Int. Cl. H01j 23/20

U.S. Cl. 315-5.53

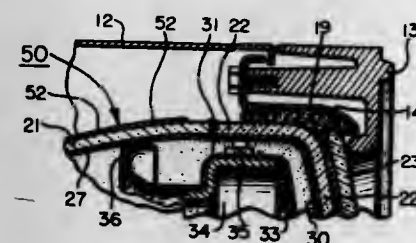
8 Claims



A microwave tuner having sliding electrical contactors is disclosed. The tuner includes a plunger structure movable within a hollow, evacuated microwave conductor, as of copper. The plunger includes a tungsten helix with the turns of the helix being fixedly secured near the leading edge of the plunger with the plane of the turns of the helix being generally parallel to the direction of movement of the plunger and with the trailing edge of the helix being free to move relative to the plunger. The loop formed by each turn of the helix has a generally oblong configuration with major and minor axes to be compressed between the opposed walls of the microwave conductive structure to be tuned, with the minor axes of the loops intersecting the walls to be contacted.

3,614,519
CATHODE-RAY TUBE MAGNETIC SHIELD
Raymond C. Figlewicz, Park Ridge, and John L. Rennick, Elmwood Park, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 18, 1967, Ser. No. 691,401
Int. Cl. H01j 29/06; H01n 9/16
U.S. Cl. 315-8

2 Claims



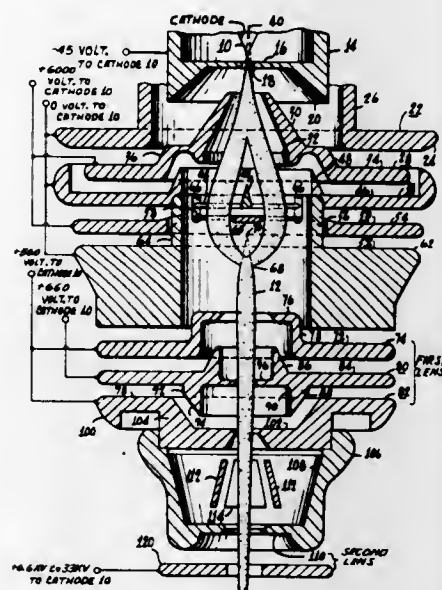
A color cathode-ray tube assembly comprises a hollow envelope that has a neck section enclosing an electron gun apparatus for developing three electron beams and further has a funnel section a portion of which encloses a beam control electrode in the form of a shadow mask disposed

across the path of the beams to achieve color selection. The beams are shielded from interfering magnetic fields by a shield formed of a pliable foil of magnetic material. This foil is positioned and secured upon the aforesaid portion of the funnel section and is patterned to conform to the contour of the funnel so as to be in magnetic coupling relation to the shadow mask. The foil supplants the aquadag coating heretofore applied to the outside surface of the funnel to serve as the grounded electrode of a filter capacitor for the high voltage power supply which energizes the tube.

3,614,520
ELECTRON BEAM INJECTOR AND FOCUSING MEANS SUITABLE FOR ELECTRON MICROSCOPE
John W. Coleman, Willingboro, N.J., assignor to Forglor Corporation, Sanburg, Pa.
Division of Ser. No. 577,353, Sept. 6, 1966, Pat. No. 3,452,241.
Filed Sept. 12, 1968, Ser. No. 759,431
Int. Cl. H01j 29/58

U.S. Cl. 315-15

6 Claims

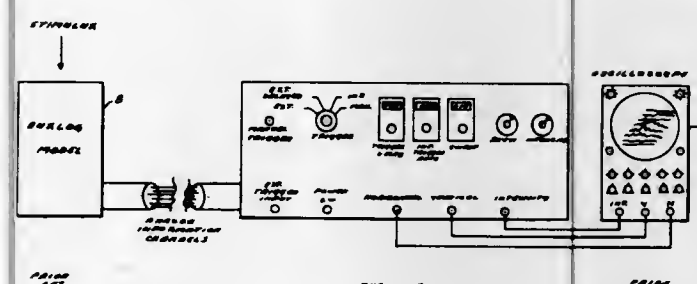


An electron beam focusing means including a grid cap and accelerating lenses is provided. To permit a small change of voltage on the grid cap to overcome the defocusing effect of a great change in voltage on the accelerating electrodes, a short focal length accelerating lens is positioned in the front focal length of the long focal length lens constituted by the high voltage accelerating electrodes.

3,614,521
MULTICHANNEL MULTIPLEXED QUASI THREE-DIMENSIONAL DISPLAY SYSTEM
Erich E. Brueschke, Homewood, Ill., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 28, 1969, Ser. No. 880,881
Int. Cl. H01j 29/70

U.S. Cl. 315-22

6 Claims



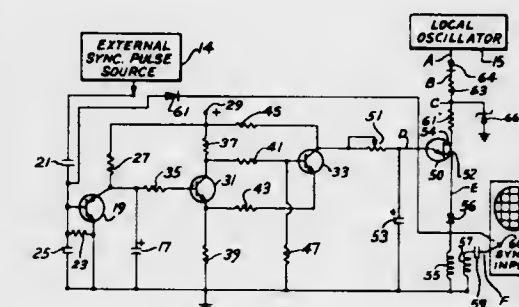
Analog signals on a plurality of channels are processed through electronic ultrafast multiplexing and timing control

circuits to present control signals to the X, Y, and Z inputs of a conventional single-beam oscilloscope for providing a skewed display of the presentation of the plurality of channels on the oscilloscope. This results in a quasi three-dimensional representation of the signals. The analog signals on each channel are characteristically instantaneously one-dimensional in signal amplitude; each channel is then displaced in a skewed relationship and supplies in pseudodepth the second dimension such as frequency, (in some applications the second dimension may be position); time then being the third dimension in which the channel information is presented. The skewing of the channel presentation coupled with intensity modulation of the individual channels proportional to each individual channel signal amplitude creates the three-dimensional effect on the two-dimensional face of the oscilloscope.

3,614,522
CIRCUIT FOR AUTOMATICALLY SELECTING ONE OF TWO SYNCHRONIZING PULSE SOURCES
Michael J. Halinski, Arlington Heights, and Larry Wanschek, Chicago, both of Ill., assignors to Sun Electric Corporation
Filed Feb. 24, 1969, Ser. No. 801,526
Int. Cl. H01j 29/70

U.S. Cl. 315-26

4 Claims



A signal control circuit for applying a synchronizing signal to an oscilloscope circuit from a local frequency generator whenever an external source of triggering signals is unavailable, disabled or inadvertently disconnected. When available, the external triggering signal is applied both to the synchronizing input of the conventional scope circuitry and to the gate electrode of a silicon-controlled rectifier which maintains a capacitor in a discharged state. Whenever the voltage across this capacitor rises due to a loss of external triggering signals, a transistor-switching circuit applies voltage through a variable resistance to a timing capacitor, in turn, causing a unijunction transistor to "fire" periodically in delayed phase synchronism with a local signal generator, thereby producing a secondary source of pulses which are automatically applied to the oscilloscope.

3,614,523
SPARKGAP ASSEMBLY HAVING HORNGAP END ELECTRODES
Earl W. Stetson, Pittsfield, and Francis J. Charewicz, Lanesboro, both of Mass., assignors to General Electric Company
Filed Dec. 18, 1969, Ser. No. 886,102
Int. Cl. H01t 5/00; H02h 9/06

U.S. Cl. 315-36

16 Claims

A sparkgap assembly for a surge voltage arrester is provided with a plurality of elongated electrodes mounted between stacked plates of insulating material to form a zigzag discharge path through the sparkgap assembly when it is sparked over. The sparkgap assembly is provided with uniquely formed end plates that provide corona shielding and

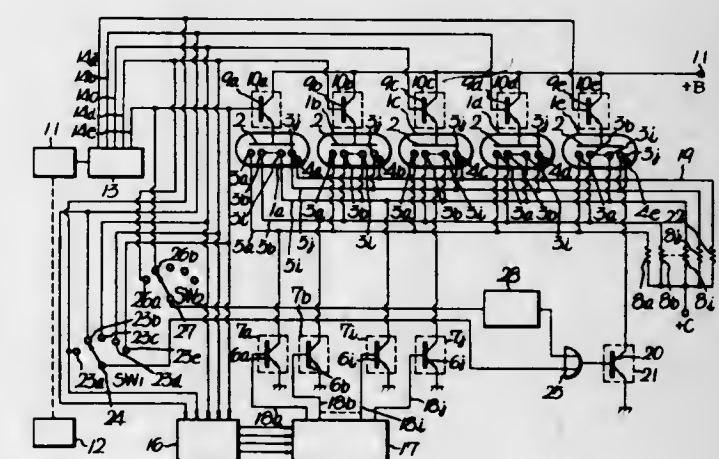
contact the outer electrodes of the assembly in a manner such that these electrodes develop an arc-moving, horn-gap



3,614,524
DISPLAY SYSTEM WITH DIFFERENT INTENSITY INDICATION
Koichi Kojima, Ichikawa, and Tadahiko Nakamura, Sagami-hara, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 30, 1970, Ser. No. 23,562
Claims priority, application Japan, Apr. 3, 1969, 44/25827
Int. Cl. H03k 23/18

U.S. Cl. 315-84.6

8 Claims



A display system for displaying place-indicating points darker than a decimal point to avoid misreading of the latter. Electrodes for place indication every three figures in indicator tubes are arranged to glow in a time-divisional manner with less duty cycle than an electrode for decimal point indication.

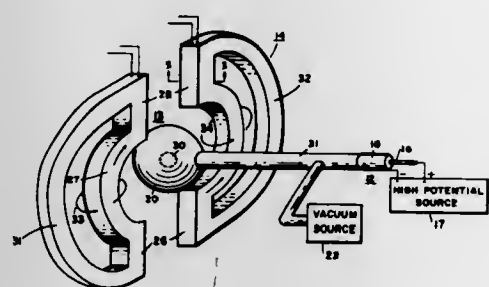
3,614,525
PLASMA COMPRESSION APPARATUS
Robert E. Uleski, 1410 West 21st St., Lorain, Ohio
Filed Jan. 14, 1969, Ser. No. 791,018
Int. Cl. H01j 17/14; H05h 1/10

U.S. Cl. 315-111

9 Claims

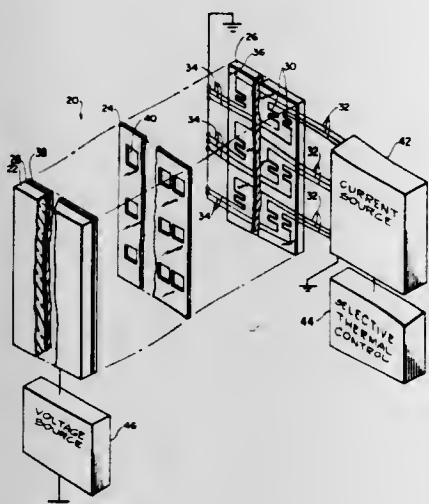
Apparatus to compress a plasma or ionized medium by the use of a generally spherical field produced by a generally spherical winding or field means. The current flows generally in the same direction on the conductors which surround an

envelope containing the plasma to produce a weak field or null field in the central region of the envelope with a stronger



field surrounding this weak field which effectively compresses the plasma into the central region.

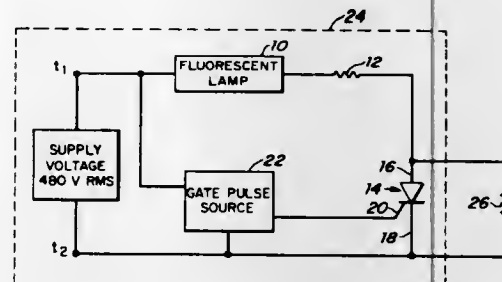
3,614,526
METHOD AND MEANS FOR OPERATING A PLASMA DISPLAY PANEL
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed May 28, 1970, Ser. No. 41,260
Int. Cl. H01j 11/00
U.S. Cl. 315-169 9 Claims



A thermally triggered plasma display panel of the gas-discharge type comprising a plurality of discrete electrically isolated gas-containing cells. One side of each cell is coupled to a common transparent electrode. The other side of each cell is coupled to a corresponding highly resistive thermal electrode. All of the electrodes in the plasma display panel are separated from the gas medium by a thin transparent dielectric coating of glass.

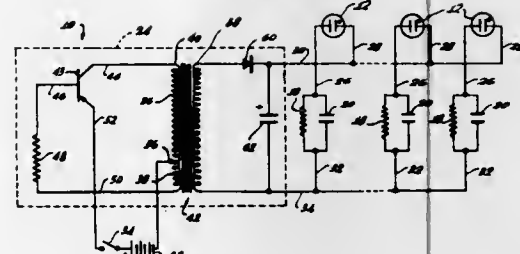
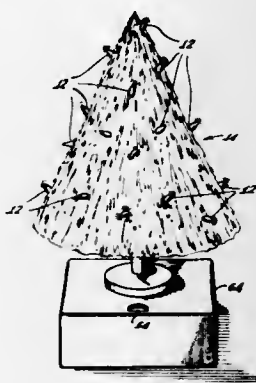
The method by which ionization is established is to apply a continuous alternating field across the common electrode and all of the thermal electrodes, thus placing each cell under the influence of a continuous alternating electric field. The magnitude of the applied electric field is insufficient to establish ionization, at normal cell pressures, within the respective cells, but is sufficient to sustain ionization upon the initiation of ionization within the respective gas cells. Ionization is initiated by the momentary application of current, which produces a quick heat. An increase in cell pressure, caused by the quick heat, results in a lower ionizing voltage. Therefore, the current pulse, in cooperation with the alternating electric field, initiates ionization within the cells corresponding to the current-pulsed thermal electrodes. The magnitude of the alternating field is sufficient to sustain ionization once ionization is initiated, thus providing the illumination necessary for the display of the desired information.

3,614,527
FLUORESCENT-LAMP-DIMMING CIRCUIT
John S. Wirtz, Rochester, N.Y., assignor to Iltek Corporation, Lexington, Mass.
Filed June 27, 1969, Ser. No. 837,218
Int. Cl. H05b 37/02
U.S. Cl. 315-199 2 Claims



A circuit to permit continuous control, over a substantial range, of the power supplied to a negative-resistance load such as a fluorescent lamp. A conventional dimming circuit including a lamp load, a source of cyclically varying voltage and a silicon-controlled rectifier is modified by the inclusion of an impedance shunted across the silicon-controlled rectifier. The impedance permits improved control of the amount of power being supplied to the lamp load and hence of its intensity of illumination, especially at low levels of power.

3,614,528
RANDOM FLASHING CIRCUIT INCLUDING A VOLTAGE STEP-UP CONVERTER
Charles L. Craddock, 4211 Burbank Blvd., Burbank, Calif.,
Continuation of Ser. No. 696,832, Jan. 10, 1968
Filed June 22, 1970, Ser. No. 48,940
Int. Cl. H05b 37/00, 39/00
U.S. Cl. 315-241 6 Claims



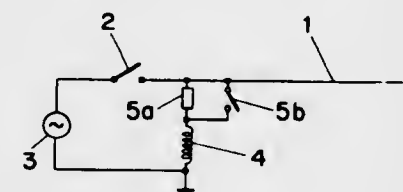
An electrical circuit for periodically and essentially randomly flashing a plurality of gas discharge tubes, particularly for decorative effect. A plurality of gas discharge tubes are connected with associated resistor and capacitor combinations in a relaxation oscillator configuration. A sufficiently high voltage to operate the parallel relaxation oscillators is derived from a low-voltage source and a DC to DC voltage step-up converter. The converter comprises a transistor oscillator of the Hartly type with the main frequency determining coil and the feedback coil being the primary winding of a step-up-transformer. The oscillator is powered by the low-voltage DC source and the stepped-up AC voltage appearing at the secondary of the transformer is rectified and filtered to supply the sufficiently high voltage to operate the plurality of flashing circuits.

3,614,529
LOW-NOISE CORONA DISCHARGE DEVICE
Joseph E. Nanevitz, Palo Alto, Calif., assignor to the United States of America as represented by the Secretary of the Air Force
Filed Feb. 18, 1970, Ser. No. 12,328
Int. Cl. H05f 3/06
U.S. Cl. 317-2 E 2 Claims



A static-discharger system for achieving corona discharge noise reduction including a dielectrically decoupled discharger having a body made of high dielectric constant material suspended at the trailing edge of the aircraft wing. One or more discharge pins are located at positions along the minimum coupling line on the body. The discharge pins are connected to the airframe via a high-resistance band that extends aft only as far as the discharging pin.

3,614,530
ARRANGEMENT FOR DAMPING ELECTRICAL OSCILLATIONS ON A HIGH-VOLTAGE ALTERNATING CURRENT TRANSMISSION LINE
Paul Baltensperger, Würenlos, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed July 7, 1969, Ser. No. 839,454
Claims priority, application Switzerland, Aug. 2, 1968, 11622/68
Int. Cl. H02h 7/22
U.S. Cl. 317-11 C 5 Claims

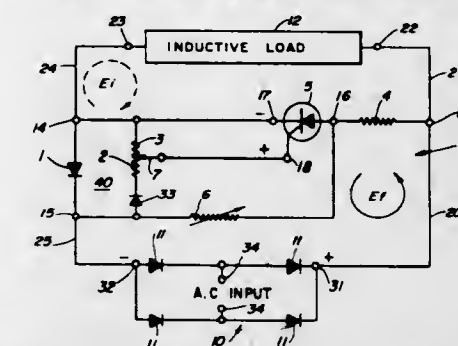


An arrangement for damping electrical oscillations on a high-voltage line formed in an oscillatory circuit constituted by a compensating inductive reactor and the capacitance of the line itself comprises with a resistance component arranged in series with the inductive reactor, and with this series circuit connected between the line and earth at the line side of a circuit breaker employed at one end of the line to connect and disconnect the line with respect to its source of power such as a power station. An auxiliary switch is paralleled with the resistance component. During a disconnection procedure, the main circuit breaker and the auxiliary switch shunting the resistance component open practically simultaneously so that the resistance component becomes effective for a brief duration after which it recloses the shunt path around the resistance component. The resistance component and its shunting switch are structurally associated with the reactor component and its casing and can be mounted either on the exterior of or within this casing.

3,614,531
SHUNT MEANS FOR PROTECTING A POWER SUPPLY AGAINST BACK EMF
Joseph V. Oswald, 2852 South Central Park Ave., Chicago, Ill.
Continuation-in-part of application Ser. No. 715,893, Mar. 25, 1968, now abandoned. This application Aug. 18, 1970, Ser. No. 64,731
Int. Cl. H02h 7/10
U.S. Cl. 317-16 7 Claims

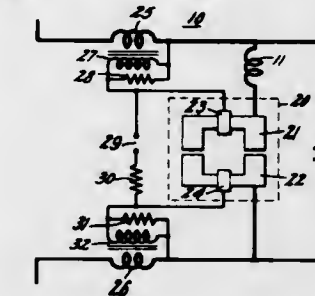
A protective circuit for protecting a rectifier system or other direct current power supply from an excessive inverse-polarity voltage, comprising a diode or other unidirectionally conductive control device connected in series with the power supply and a load, a sensing resistance connected across the

diode, a signal-controlled semiconductor gate device such as an SCR connected across the load, and a shunt resistance connected across the power supply. The gate device is driven conductive by a control signal from the sensing resistor



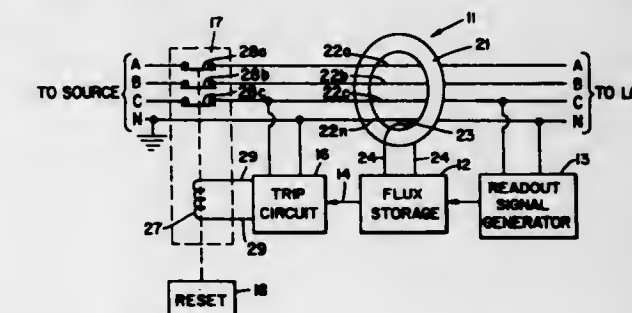
whenever an inverse-polarity voltage occurs, preventing the voltage from reaching the power supply. In the preferred construction, a blocking diode is connected in series with the sensing resistor.

3,614,532
TRIGGERED VACUUM GAP KEEP-ALIVE CIRCUIT
Sidney R. Smith, Jr., Lenox, Mass., and Willem F. Westendorp, Schenectady, N.Y., assignors to General Electric Company
Filed June 1, 1970, Ser. No. 42,326
Int. Cl. H02h 7/16
U.S. Cl. 317-16 4 Claims



This disclosure relates to a "keep-alive" circuit for a triggered vacuum gap wherein the duration of the usual trigger pulse is insufficiently long to maintain the vacuum gap in an active state for more than one-half cycle at the powerline frequency. A circuit utilizing current transformers is described wherein a current transformer provides the trigger pulse necessary to maintain the vacuum gap in an active state for as long as necessary to protect electrical equipment shunted by the vacuum gap.

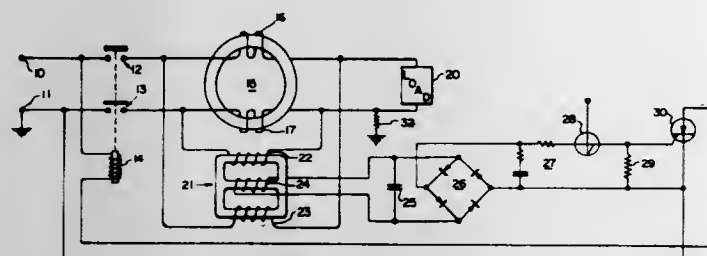
3,614,533
GROUND FAULT DETECTOR AND CIRCUIT INTERRUPTER BY MAGNETIC FLUX STORAGE METHOD
Ellwood S. Douglas, Orinda, and Wallace W. Wahlgren, Oakland, both of Calif., assignors to The Rucker Company, Oakland, Calif.
Continuation-in-part of application Ser. No. 18,518, Mar. 10, 1970. This application May 20, 1970, Ser. No. 39,056
Int. Cl. H02h 3/16
U.S. Cl. 317-18 D 33 Claims



Miniaturized ground fault detector and current interrupter in which fault signals are stored in the form of magnetic flux in an inductor core. The core has a low input impedance and is driven by a differential transformer having a small core and a single-turn secondary winding. Means is provided for reading the stored flux signals out of the inductor core and

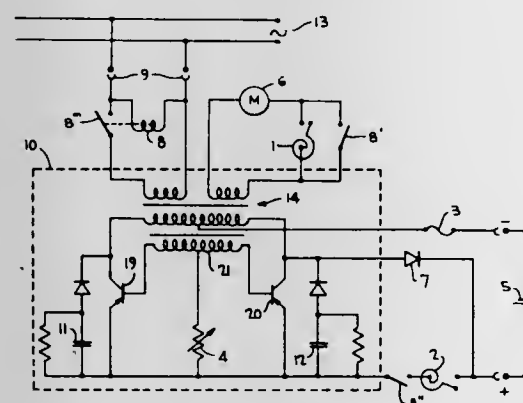
operating a circuit breaker in response thereto. Means is also provided for counting the number of signals readout of the core and delaying the operation of the circuit breaker until a predetermined number have been counted.

3,614,534
GROUND-FAULT-RESPONSIVE ELECTRICAL PROTECTIVE SYSTEMS
Thomas A. O. Gross, Concord Road R.F.D., Lincoln, Mass.
Filed June 29, 1970, Ser. No. 50,453
Int. Cl. H02h 3/28
U.S. Cl. 317-18 D 17 Claims



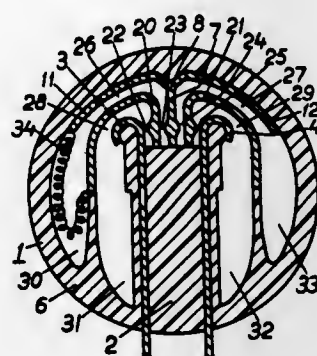
To prevent possible electrocutions and to minimize the risk of fires caused by insulation faults in electrical power distribution systems, a protective system responsive to ground faults interrupts the electrical power. Ground faults are detected by differential impedances in the supply conductors of the distribution system, which develop differential potentials in response to unbalanced currents in the supply conductors. These differential potentials are tapped and supplied to a signal mixer which develops a ground-fault-indicating output signal, the magnitude of which depends on the degree of current imbalance. Output signals exceeding a threshold value trip a circuit breaker to remove power from the load conductors. Unlike some currently popular ground fault systems, the combination can be made very sensitive to ground faults of either high or low resistances.

3,614,535
VOLTAGE TRANSFORMER
Konstantin Apel, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland
Filed Feb. 25, 1970, Ser. No. 13,934
Claims priority, application Germany, Feb. 26, 1969, P 19 09 746.2
Int. Cl. H02h 5/04
U.S. Cl. 317-40 A 8 Claims



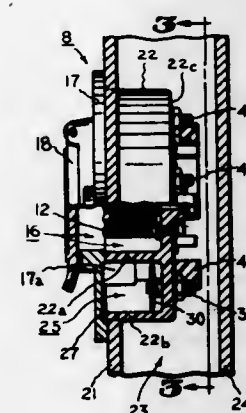
A device and electric circuit to supply a voltage to a consumer with means to switch over from a network to battery-powered operation.

3,614,536
SPARK GAP WITH MAGNETIC BLOWING OF THE ARC
Bengt Johansson, and Erland Nilsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed July 13, 1970, Ser. No. 54,518
Int. Cl. H02h 9/06
U.S. Cl. 317-74 7 Claims



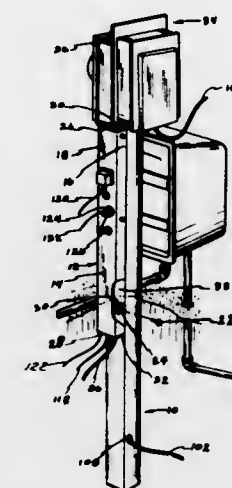
A spark gap is formed between two discs of insulating material resistant to the arc and with a space therebetween. Two outer electrodes extend through the space between the discs from one side almost to the other periphery. These electrodes are insulated through most of their length on their outer faces. An intermediate electrode is arranged on the inner wall of the space facing the two outer electrodes and extending angularly a substantial distance around such inside wall. This electrode has a protrusion opposite the space between the outer electrode. The arcs are magnetically drawn into the portions of the space between the electrodes remote from the intermediate electrode and are there extinguished.

3,614,537
INTEGRAL-BREAKER TRAILER SOCKET WITH BIMETALLIC BREAKER BLADES
Angelo Introvigne, Stafford Springs, Conn., assignor to Cole-Hersee Company, South Boston, Mass.
Filed Nov. 4, 1969, Ser. No. 873,824
Int. Cl. H02b 1/10; H01h 37/52
U.S. Cl. 317-99 7 Claims



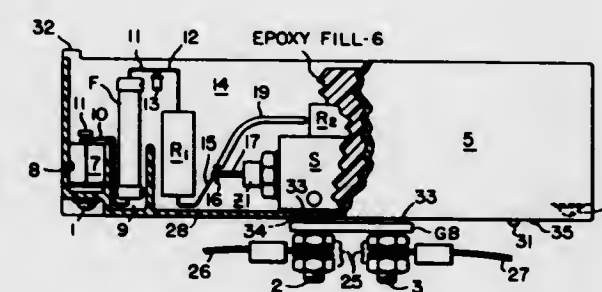
Multipole sockets for electrical cabling connections with truck trailers are provided with built-in circuit breakers which are clustered and protectively housed in a compact annular array around a central socket opening and are equipped with terminals affording circuit connections through protective breakers.

3,614,538
MOUNTING PEDESTAL FOR UTILITIES
Anne D. Nickola, Diane Trailer Park, G-6255 North Saginaw Road, Mount Morris, Mich.
Continuation-in-part of application Ser. No. 684,199, Nov. 20, 1967, now Patent No. 3,502,785. This application Feb. 26, 1970, Ser. No. 14,578
Int. Cl. H02g 9/00
U.S. Cl. 317-99 22 Claims



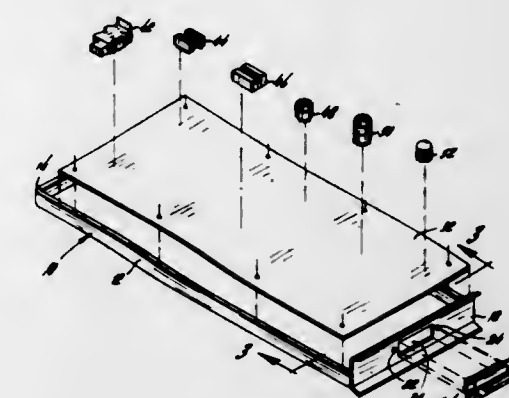
An improved mounting pedestal adapted to support an electrical power box, an electric meter, a telephone box, a television jack, and a gasmeter operatively in a compact arrangement for providing utility services to a mobile home. A hollow, rectangular metal post is supported in an upright position in the ground, extending thereabove, and supports a mounting bracket on the top thereof. A conventional electric meter and electrical power outlet box are supported by the bracket. An elongated U-shaped channel member is secured to one side of the post and has its lower end opening beneath the surface of the ground. A conventional telephone box and television jack are mounted on the channel member. A conventional gasmeter is mounted on the opposite side of the post from the channel member.

3,614,539
INTRINSICALLY SAFE SYSTEM INCLUDING ELECTRICAL BARRIER WITH EXTERNAL CONNECTORS
Bennett Hallenbeck, Tustin, Calif., assignor to Sybron Corporation, Rochester, N.Y.
Filed June 2, 1969, Ser. No. 829,491
Int. Cl. H02b 1/10
U.S. Cl. 317-99 7 Claims



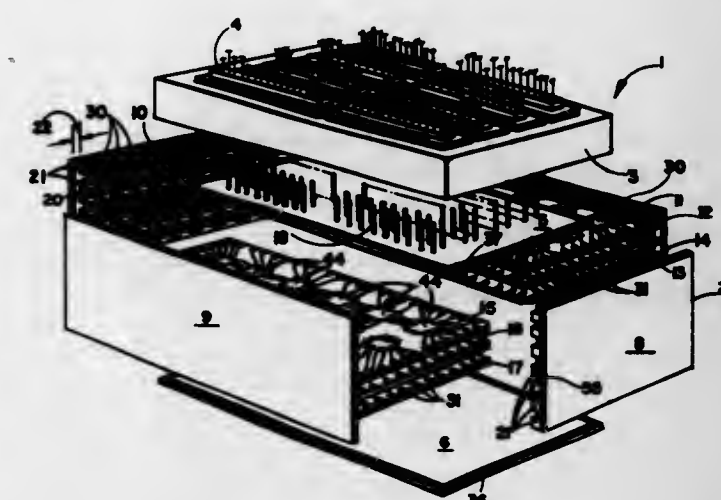
A system having a nonhazardous area and a hazardous area electrically intercommunicate via an electrical barrier. The barrier fails safe, limits both voltage and current, and consists essentially of a monolithic, nonrepairable, ground-bus-mounted circuit having a fuse and three resistors in series, and a pair of zener diodes which break down with excessive voltages at intermediate points of the series resistance.

3,614,540
SUPPORT TRAY FOR PRINTED CIRCUIT BOARDS
Eugene A. Slusser, R.F.D. 1, Concord, N.H.
Filed Mar. 27, 1970, Ser. No. 23,395
Int. Cl. H02b 1/02
U.S. Cl. 317-101 DH 1 Claim



A support tray for printed circuit boards of the type used in life test and burn-in oven systems, particularly a support tray used to support a test printed circuit board and test components during burn-in. The support tray is characterized by its rigidity, ease of handling with the test components positioned thereon and insulated within the oven.

3,614,541
PACKAGE FOR AN ELECTRONIC ASSEMBLY
William A. Farrand, Fullerton, Calif., assignor to North American Rockwell Corporation
Filed Apr. 8, 1969, Ser. No. 814,306
Int. Cl. H05k 1/04
U.S. Cl. 317-101 2 Claims



The package houses an electronic assembly comprising a plurality of modules having integrated circuits secured to the module boards. Wiring patterns on each board interconnect integrated circuit leads and connect the circuits to the module output contacts formed around the periphery of the board.

The housing sides have interior slots which are parallel to the edges of the module boards and include conducting strips which are perpendicular to the slots and spaced according to the spacing of the module output contacts.

The edges of the modules are inserted into the slots for interconnecting corresponding output contacts of the modules through the conducting strips. At least one housing cover plate includes a circuit pattern on its interior surface which has contact terminals about its periphery and connecting pins on its external surface which are electrically connected to the circuit pattern. The plate is placed over the top of the assembled modules for electrically connecting the corresponding contacts of the modules through its circuit

pattern to the connecting pins. The other housing cover plate which may or may not be provided with a circuit pattern and connecting pins completes the package.

After the package has been assembled, it is subjected to an environment for fusing the module output contacts to the conducting strips and for fusing the cover plates to the housing so that a package can be produced with fused mechanical, electrical, and thermal connections being made between the modules of electronic system and the package which is also hermetically sealed.

3,614,542

LIQUID-ACTIVATED SYSTEM

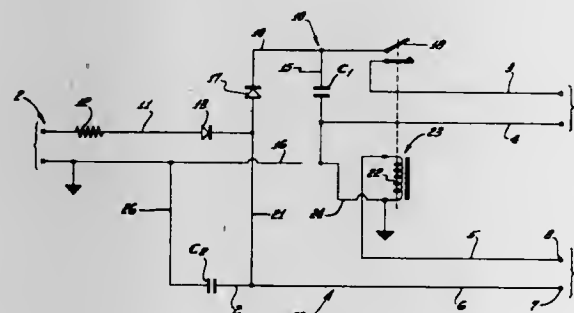
Jan R. Coyle, 514 E. Ghent, San Dimas, Calif.

Filed Aug. 14, 1968, Ser. No. 752,551

Int. Cl. F42b 9/08; H01h 47/00

U.S. Cl. 317-151

18 Claims



A liquid-activated system in which a load circuit includes a capacitor discharged upon immersion of electrodes in liquid.

Such a system in which a separate capacitor is discharged upon immersion of the electrodes in a liquid to close the load circuit and allow discharge of its capacitor.

Such a system in which the immersion of the electrodes in a liquid causes the initial discharge of the load circuit capacitor to close a load circuit relay.

3,614,543

METHOD OF ACTUATING MAGNETIC VALVES AND CIRCUIT FOR CARRYING OUT SAID METHOD

Heinrich Dick, Heidenheim, Germany, assignor to Volth

Getriebe KG, (Breny), Germany

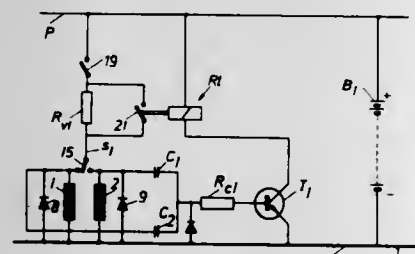
Filed Nov. 3, 1969, Ser. No. 873,457

Claims priority, application Germany, Nov. 8, 1968, P 18 07 748.0

Int. Cl. H01h 47/10

U.S. Cl. 317-154

12 Claims.



The specification discloses a control circuit for electromagnetic devices and a method of operating such devices in which a higher voltage is supplied for actuating the devices to pull the armatures thereof to attracted position, while a lower voltage is supplied to hold the armatures in attracted position. In the circuit the coils of the electromagnetic devices are connected across a line in series with a voltage-dropping resistor and a bypass around the voltage-dropping resistor is closed automatically when a switch pertaining to a coil to be energized is moved to coil-engaging position.

**3,614,544
SOLID ELECTROLYTIC CAPACITORS HAVING AN ADDITIONAL INSULATED LAYER FORMED ON THE DIELECTRIC LAYER**

Wolfgang Mosebach, South Devon, England, and Christopher Peter Piper, Fife, Scotland, assignors to International Standard Electric Corporation, New York, N.Y.

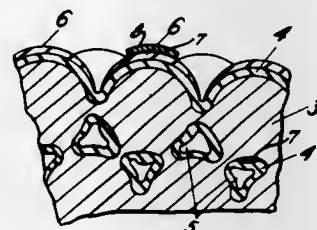
Filed Dec. 8, 1969, Ser. No. 883,088

Claims priority, application Great Britain, Dec. 13, 1968, 59340/68

Int. Cl. H01g 9/05

U.S. Cl. 317-230

7 Claims



To improve the voltage breakdown and leakage current of solid electrolytic capacitors, the dielectric layer is reinforced by an additional layer of silicon nitride, silicon dioxide or increasing the thickness of the original dielectric layer.

3,614,545

ELECTROLYTIC CELL HAVING IMPROVED CONSTRUCTION

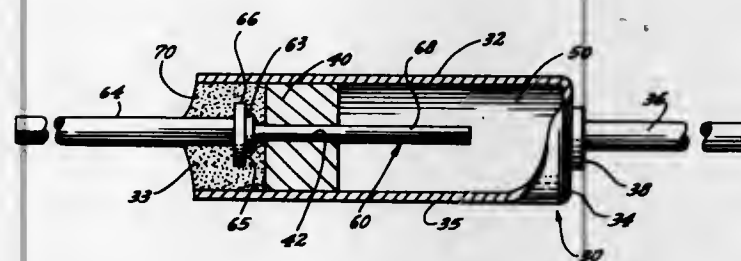
Robert Reese, Los Angeles, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Apr. 13, 1970, Ser. No. 27,639

Int. Cl. H01g 9/08

U.S. Cl. 317-230

8 Claims.



An electrolytic cell comprising a first electrode and a second electrode. The first electrode is formed as a container having an open end, a closed end, and a wall. An electrolytic solution is contained within the container. A plug having a hole therethrough is contained within the container and in contact with the liquid conductive medium. A portion of the second electrode is inserted through the hole in the plug and extends therethrough and into the electrolytic solution and the second electrode includes an enlarged portion which limits the insertion of the second electrode into the electrolytic solution. A sealant fills the open end of the container and surrounds the enlarged portion of the second electrode to lock the second electrode in position.

3,614,546

SHIELDED SEMICONDUCTOR DEVICE

Jack Avias, Princeton, N.J., assignor to RCA Corporation

Filed Jan. 7, 1970, Ser. No. 1,246

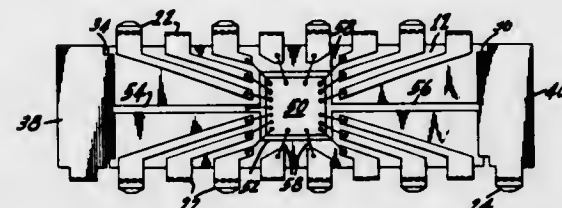
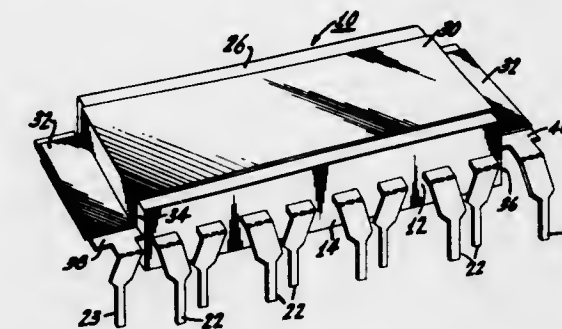
Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

7 Claims

A dual-in-line type device comprises an elongated, rectangular envelope. Emerging from each of two opposed, elongated sides of the envelope is a row of leads. Disposed along the other elongated envelope sides are a pair of elongated shield members having end portions disposed

along the end sides of the envelope. The shield end portions are secured to conductive members extending outwardly



through the end sides. Within the envelope, a semiconductor pellet is mounted on a substrate connected to the conductive members.

3,614,547

TUNGSTEN BARRIER ELECTRICAL CONNECTION

John E. May, Skaneateles, N.Y., assignor to General Electric Company

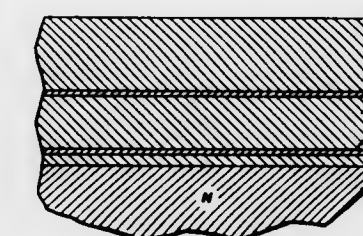
Division of Ser. No. 765,292, Oct. 7, 1968, Pat. No. 3,337,174.

Filed Mar. 16, 1970, Ser. No. 19,872

Int. Cl. H01l 5/00

U.S. Cl. 317-234

5 Claims



A tungsten or molybdenum electrical connector is attached to a surface of a semiconductor element adjacent an N-type region by a bonding layer comprised of aluminum. A tungsten or molybdenum refractory metal barrier layer is interposed between the bonding layer and the semiconductor surface, and thin refractory metal silicide layers are interposed between the bonding layer and the electrical connector and barrier layer. The bonding layer may be formed of an alloy of silicon and aluminum. An aluminum preform may be initially stacked between the refractory metal surfaces to form the bonding layer. The refractory metal silicide may be formed before bonding or may be formed by reaction of silicon with the refractory metal surfaces during bonding. The resulting electrical connection formed exhibits reduced internal resistance.

3,614,548

SEMICONDUCTOR DEVICE HAVING A TiO₂-SiO₂ COMPOSITE OXIDE LAYER

Morio Inoue, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed June 11, 1970, Ser. No. 45,332

Claims priority, application Japan, June 18, 1969, 49150/69

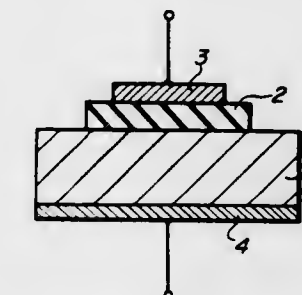
Int. Cl. H01l 3/00

U.S. Cl. 317-234

4 Claims

A surface protective layer or surface insulating layer of a composite oxide which is formed of silicon dioxide (SiO₂) to which is added with less than 0.02 percent by weight of titanium dioxide (TiO₂) stabilizes and improves the

characteristics of the semiconductor device of a single layer formed of silicon oxide. The above-mentioned semiconductor device is provided by mixing small amount of gaseous organic compounds of titanium such as triisopropyl



titanate with a gaseous organic compound of silicon such as tetraethoxysilane and leading the resultant gaseous mixture onto a predetermined semiconductor substrate which is heated and held at a temperature of from 300° to 500° C. to react therewith.

3,614,549

SEMICONDUCTOR RECOMBINATION RADIATION DEVICE

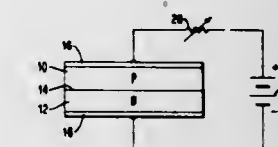
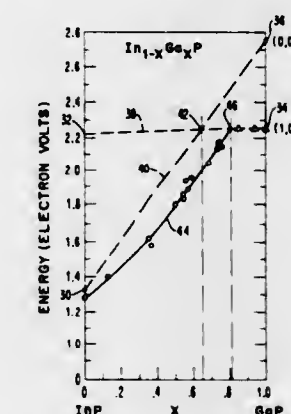
Max R. Lorenz, Mahopac, and Arthur H. Nethercot, Jr., Hastings on Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1968, Ser. No. 767,742

Int. Cl. H01l 15/00

U.S. Cl. 317-234

11 Claims



The diode is a formed alloy of InP and GaP doped to provide a PN junction. A forward bias is applied to produce radiation in the green. The alloy provides efficient direct transition radiation even though it includes more of the indirect GaP semiconductor GaP than the direct gap semiconductor InP. For an output of about 2.2 electron-volts, the alloy includes about 80 percent gap and about 20 percent InP. This highly visible output is achievable with this alloy because the energy difference between the (000) aligned (direct) conduction band minima and the (100) misaligned (indirect) conduction band minima in InP is greater than the energy difference between the corresponding aligned and the misaligned minima in GaP. Also, the energy level for the misaligned minima in InP is essentially at the same energy level as the misaligned minima in GaP. Diodes are also formed of alloys of other III-V compounds.

3,614,550

SEMICONDUCTOR LASER DEVICE WITH IMPROVED OPERATING EFFICIENCY

John C. Marinace, and Ralph C. McGibbon, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1969, Ser. No. 790,116

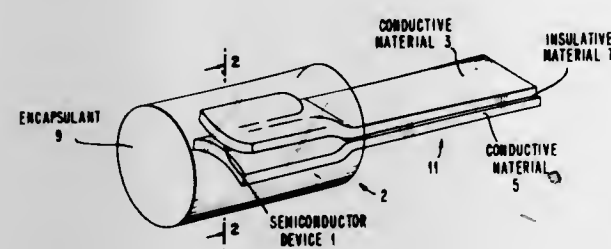
Int. Cl. H01l 15/00

U.S. Cl. 317-234 R

3 Claims

An improved electromagnetic wave-emitting device is provided. A high pressure is applied to the device by potting

the device in a suitable encapsulant. The potted device exhibits a decreased threshold current density and an



increase in its efficiency. Additionally, the device has a more durable structure and an increased shelf life.

3,614,551

OHMIC CONTACT TO ZINC SULFIDE DEVICES

Robert Jenkins, Cupertino; Carver A. Mead, Pasadena, and James McCaldin, South Pasadena, all of Calif., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 25, 1969, Ser. No. 824,898
Int. Cl. H011 9/00, 15/00

U.S. Cl. 317-234

9 Claims

A zinc sulfide body is treated to form an ohmic contact by applying a Group II metal or alloy thereof to a surface region of the body in the presence of a source of donor precursor such as a Group IIIb metal or a halogen and heating the region to a temperature above the melting temperature of the metal or alloy.

3,614,552

INSULATED GATE FIELD EFFECT TRANSISTORS

Hans-Joachim Teuschler, Berlin, Germany, assignor to Kombinat VEB Elektronische Bauelemente, Teltow, Germany

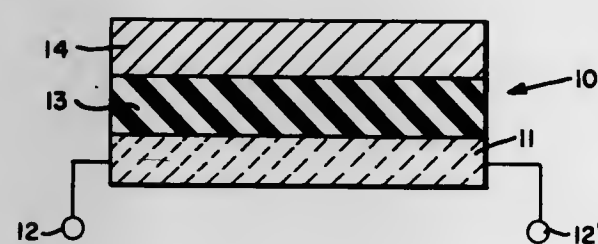
Division of Ser. No. 819,419, Apr. 25, 1967.

Filed Feb. 16, 1970, Ser. No. 14,840

Int. Cl. H011 1/14

U.S. Cl. 317-235

2 Claims



An insulated gate field effect transistor the semiconductor channel layer of which is constituted of lustrous carbon doped with an oxide or carbide of an element of Group IV of the Periodic System. This layer may be prepared by pyrolyzing in the presence of an alkali-free substrate for the layer a compound the pyrolysis of which yields both the carbon and the oxide or carbide.

3,614,553

POWER TRANSISTORS HAVING CONTROLLED EMITTER IMPURITY CONCENTRATIONS

David Louis Franklin, and Barry Joel Fehder, both of Somerset, N.J., assignors to RCA Corporation

Filed Sept. 17, 1970, Ser. No. 73,027

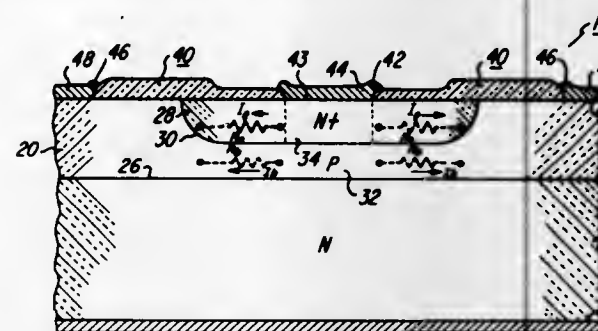
Int. Cl. H011 1/14

U.S. Cl. 317-235

3 Claims

A power transistor having emitter, base, and collector regions, with the impurity concentration in the emitter region

controlled so that the sheet resistance of that region adjacent the emitter-base junction is approximately equal to the sheet



resistance of the base region underneath the emitter region, divided by the maximum beta of the transistor.

3,614,554

MINIATURIZED THIN FILM INDUCTORS FOR USE IN INTEGRATED CIRCUITS

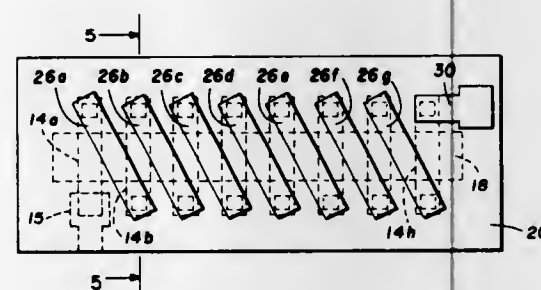
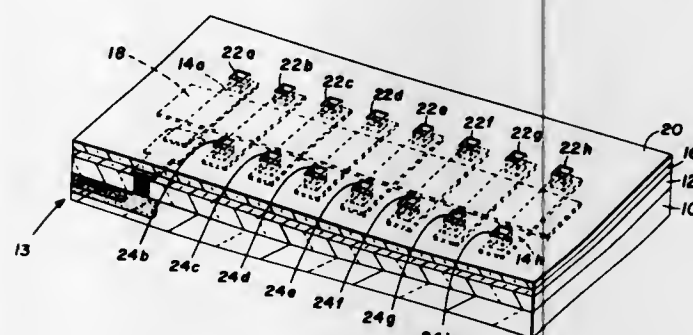
Richard Shield, Richardson, and Thomas H. Ramsey, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1968, Ser. No. 770,375

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

9 Claims



Thin film inductors for use with miniaturized integrated circuits are fabricated by forming a first level of parallel metal strips on a substrate and then forming an insulating layer over the strips. A bar of magnetic material is disposed along the center portions of the metal strips and a layer of insulation is deposited over the bar of magnetic material. A second level of parallel metal strips is then formed over the layer of insulation and is connected between opposed ends of adjacent ones of metal strips at the first level to form a continuous flattened coil around the bar of magnetic material. In other embodiments of the invention, the bar of magnetic material may be omitted, or may be disposed outside the continuous flattened coil formed by the metal strips.

3,614,555

MONOLITHIC INTEGRATED CIRCUIT STRUCTURE

Vincent J. Glinski, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 23, 1968, Ser. No. 786,228

Int. Cl. H011 1/00, 19/00

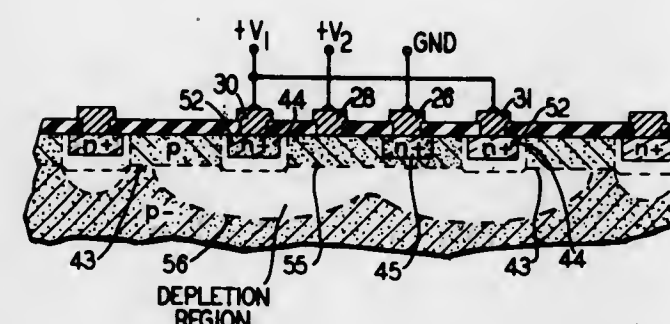
U.S. Cl. 317-235 R

2 Claims

An annular PN junction in conjunction with a relatively high resistivity substrate enables improved means for

isolating functional elements in a monolithic semiconductor integrated circuit. In a semiconductor wafer, localized emitter zones and collector zones extend to a common depth from the surface of the wafer. The collector zone is annular in shape and encloses laterally the emitter zone. The

direct current field is below the critical value for negative differential conductivity is shielded from applied radio frequency energy. High-conductance RF shielding is applied to the device in such a manner that applied RF fields interact



resistivities and spacings of the regions in the wafer are such that with the annular PN junction reverse-biased, the depletion region therefrom extends completely underneath the material enclosed by the annular zone and thereby provides electrical isolation for a functional element in the enclosed material.

3,614,556

MAGNETOSENSITIVE SEMICONDUCTOR SWITCHING DEVICE

Tetsuji Nakamura, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

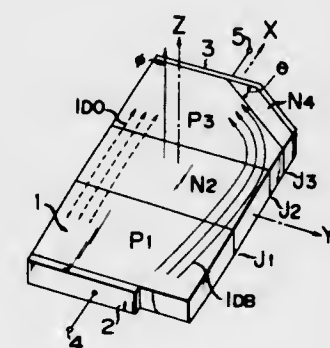
Filed Apr. 14, 1969, Ser. No. 815,651

Claims priority, application Japan, Apr. 16, 1968, 43/24975

Int. Cl. H011 1/10

U.S. Cl. 317-235 R

2 Claims



A semiconductor device wherein a layer to which is generally connected the gate electrode of an ordinary thyristor and an end layer adjacent thereto are shorted by a common electrode. The PN junction defined between these layers is exposed on one lengthwise end portion of the substrate, and a switching operation is performed by an electromagnetic field instead of the gate current of the thyristor.

3,614,557

SHIELDED-CATHODE MODE BULK EFFECT DEVICES

Frank R. Holmstrom, Waltham, Mass., assignor to The United States of America as represented by the Administrators of the National Aeronautics and Space Administration

Filed May 16, 1969, Ser. No. 825,258

Int. Cl. H011 1/00, 15/00

U.S. Cl. 317-235 R

6 Claims

"Gunn effect" microwave diodes are disclosed wherein that portion of the semiconductor material in which the



only with the relatively short length portion of the semiconductor material in which the applied DC field is greater than the threshold for negative differential conductivity.

3,614,558

SEMICONDUCTOR DEVICES WITH MORE THAN ONE SEMICONDUCTOR CIRCUIT ELEMENT IN ONE BODY

Claude Jan Principe Frederic Le Can, and Walter Steinmaier, both of Mollenhutsseweg, Nijmegen, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

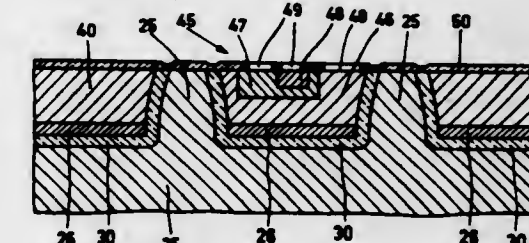
Filed Sept. 16, 1965, Ser. No. 487,748

Claims priority, application Netherlands, Sept. 23, 1964, 6411057

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

15 Claims



A solid semiconductor circuit employing a buried metal layer to reduce the series resistance of a semiconductor zone of one of the circuit elements.

3,614,559

BARRIER-FREE SEMICONDUCTOR SWITCHING DEVICE

Max Guntersdorfer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

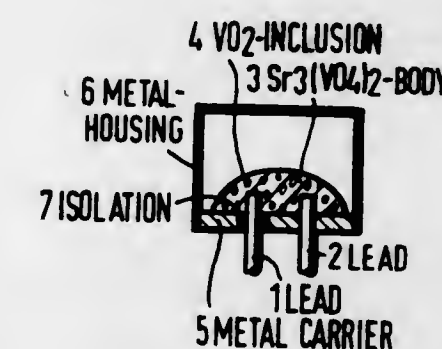
Filed May 27, 1969, Ser. No. 828,199

Claims priority, application Germany, May 27, 1968, P 17 64 373.1

Int. Cl. H011 9/00

U.S. Cl. 317-238

7 Claims



Described is a barrier-free semiconductor component for switching, having at least two electrodes. The component is characterized by the fact that its semiconductor body is comprised of strontium vanadate with sporadic vanadium oxide inclusions.

3,614,560

SURFACE BARRIER TRANSISTOR

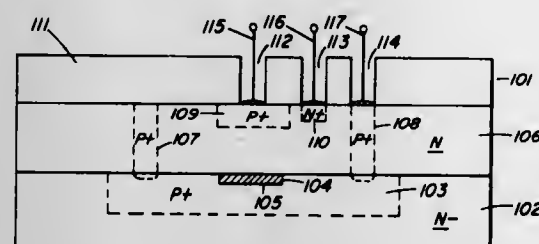
Narasipur G. Anantha, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,047

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

12 Claims



A semiconductor device comprising in combination: a first zone of semiconductive material containing impurity atoms of the acceptor type; a contiguous second zone of semiconductive material containing a predetermined low concentration of impurity atoms of the donor type; a metal layer having an interface with said second zone; and a third zone of relatively highly conductive semiconductive material in contact with said metal layer and containing a high concentration of impurity atoms of either the donor or acceptor type. In a typical device in accordance with this invention the "first zone" is formed as a P+ diffusion area in the "second zone" which is of the N-conductivity type of silicon, the "metal" is platinum, the "third zone" is formed by P+ diffusion into a monocrystalline silicon wafer, and emitter, base and collector leads are in contact with said first, second and third zones, respectively.

3,614,561

ELECTRICAL CONDENSER

Reinhard Behn, Munich; Gerhard Hoyer, Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

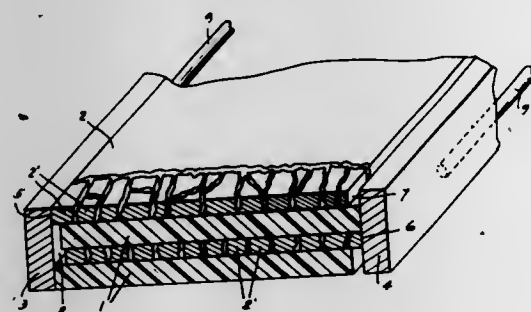
Filed June 18, 1969, Ser. No. 834,247

Claims priority, application Germany, June 25, 1969, P 17 64 548.6

Int. Cl. H01g 1/13

U.S. Cl. 317-258

3 Claims



An electrical stack or layer condenser produced by coiling plastic tapes carrying a metal coating on a drum and by dividing the master coil placed on the drum into the desired individual condensers employ stretchable plastic material, polycarbonates, polyethylene, terephthalate, polypropylene as the dielectricum and metallic coatings having a conductivity of less than 1.5 mho. The dividing causes the plastic to shrink away from edge of the capacitor causing a tearing of the metal coating. The torn portion of the metal coating has an oxide coating.

3,614,562

LAMINATING APPARATUS AND METHOD

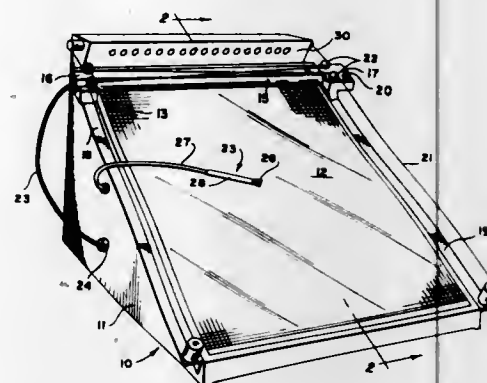
Anthony Q. Testone, Lansdale, Pa., assignor to Testone Electrostatics Corporation, West Point, Pa.

Filed Oct. 14, 1969, Ser. No. 866,205

Int. Cl. H05 ; G09f 7/02

U.S. Cl. 317-262 E

18 Claims



A light box has a glass plate with a grounded conductive sheet on its underside, and a light within the box; a charging bar is moveable above the plate to provide electrostatic clamping of film to the plate, and an ion generator causes ions to flow over the plate to prevent dust from accumulating on the film. A method includes electrostatically adhering a film to a support, positioning art work and a transparent film successively over the first film, and electrostatically adhering the films together while causing a flow of ions over the films and art work to prevent dust adherence to the film.

3,614,563

PLURAL MOTOR TENSION CONTROL FOR A REVERSING INGOT CARRIER SYSTEM

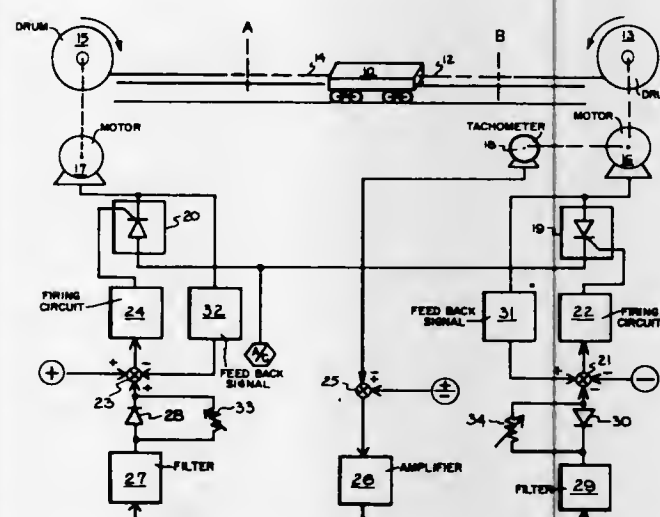
George B. Jones, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 22, 1968, Ser. No. 769,486

Int. Cl. H02p 7/28

U.S. Cl. 318-7

3 Claims



A cable-drawn vehicle control wherein the vehicle is arranged to travel between two locations, each location having a motor-operated drum for taking up and supplying lengths of cable, the ends of which are fixed to the vehicle and to the drums with the motors excited from an alternating current source to oppose each other in winding and unwinding the cables. A tachometer is attached to one of the motors for providing a DC speed signal in opposition to a DC speed reference signal of either polarity representing desired speed and direction. A pair of additional DC reference signals having opposing polarity provide a predetermined level of excitation to each of the motors, whereby the tension in the cables maintains the vehicle in stationary condition. With the application of the speed reference signal, additional

3,614,566

CONTROL DEVICE HAVING MEANS FOR ELECTRICALLY SIMULATING AND COMPENSATING THE INERTIA MOMENTUM OF THE MOVING PARTS OF AN ELECTRICAL POSITIONING MEANS

Ferdinand Koenig, Seuzach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

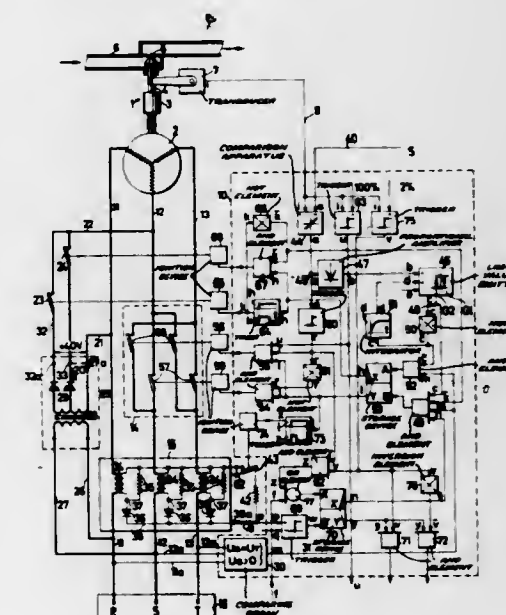
Filed Jan. 28, 1970, Ser. No. 6,530

Claims priority, application Switzerland, Feb. 6, 1969, 186/69

Int. Cl. H02p 3/22

U.S. Cl. 318-211

14 Claims



The drive has a switching logic which includes a means for producing a correction signal in response to the switching-in of the motor. This correction signal serves to compensate for the kinetic energy of the moving parts of the drive by moving up the lower limit value of an error signal (derived from the difference between the actual value of the adjusting element position and a fixed value) so as to permit more accurate switching-out and stopping of the motor. Other features are added to prevent overloading, premature switching-out of the motor during starting, short circuits and the like.

3,614,567

CONTROL OF AUXILIARY MOVEMENTS ON INDUSTRIAL TRUCKS

Ivan Salisbury Payne, and Cecil Goodacre, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Basingstoke, England

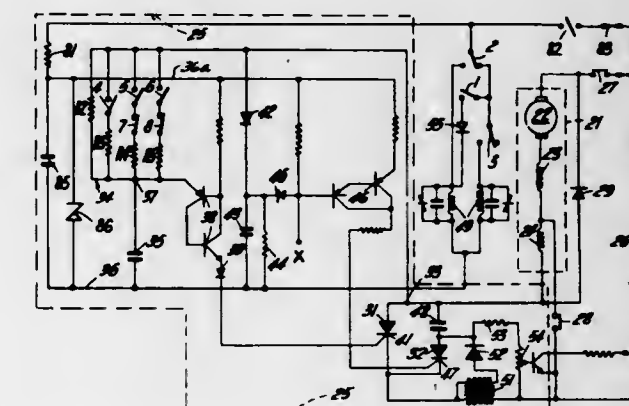
Continuation-in-part of application Ser. No. 402,128, Oct. 7, 1964, now abandoned. This application Dec. 22, 1967, Ser. No. 692,849

Claims priority, application Great Britain, Oct. 8, 1963, 13977/63

Int. Cl. H02p 5/16

U.S. Cl. 318-305

9 Claims



excitation is applied to one of the motors, causing it to override the other motor and move the vehicle, the speed and direction of which is dependent on the magnitude and polarity of the desired speed reference signal.

3,614,564

READHESION APPARATUS FOR VEHICLES

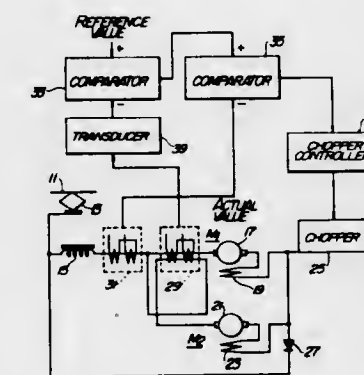
Tetsuji Hirotsu, Katsuta-shi, and Hideo Sonobe, Ibaraki-ken, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Claims priority, application Japan, July 22, 1968, 43/51208

Int. Cl. B61c 15/12; H02p 5/50

U.S. Cl. 318-52

9 Claims



A readhesion apparatus for vehicles for detecting an increment of velocity resulting from a slip caused to a vehicle wheel adapted to make the output of a driving motor follow a reference value, applying the detected value to a transducer which exhibits different time constants when input variation is increasing and when it is decreasing, and reducing the reference value in accordance with an output from said transducer, whereby readhesion of the wheel is enhanced.

3,614,565

CONTROL FOR ELECTROMECHANICAL BRAKE

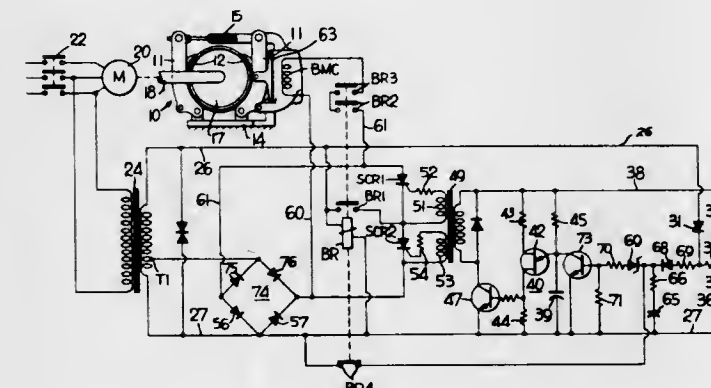
Robert E. Mierendorf, Greendale, Wis., assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed July 9, 1970, Ser. No. 53,505

Int. Cl. H02p 3/04

U.S. Cl. 318-203

9 Claims



A static brake controller supplies DC operating voltage from a bridge rectifier having SCR's in legs thereof to the brake magnet coil of an electromechanical brake to release the brake. Means including a unijunction relaxation oscillator apply gating pulses to the SCR's. RC timing circuit means disable the unijunction oscillator a predetermined interval after initial energization of the power supply transformer so that the SCR's commutate off, and a second bridge rectifier energized from a reduced voltage tap on the power supply transformer secondary applies normal holding voltage to the brake magnet coil to maintain the brake released, thereby preventing over heating of the brake magnet coil and assuring rapid resetting of the brake when the brake coil is deenergized.

An industrial truck having several different auxiliary movements such as a carriage lift mechanism, a mast tilt

mechanism and a reach mechanism has levers operative to select any one mechanism for operation alternatively. A pulse-controlled motor is provided for giving power to drive any one of the movements. The motor drives a variable speed hydraulic pump which is associated with respective valve mechanisms so that the pump provides hydraulic power to drive a mechanism when the respective valve mechanism is operated. The levers controlling the valve mechanisms are also operative to open or close various switches in a control arrangement for the motor such that when a respective one of the movements is selected the pulse-operated motor is driven at a pulse rate respective to the demands of the particular movement. Each movement has a power requirement demanding a different pulse rate and the required pulse rate is selected at the same time as the movement is selected by the appropriate operating lever.

3,614,568 VOLTAGE STABILIZING DEVICE FOR ELECTRIC DRILL MOTOR

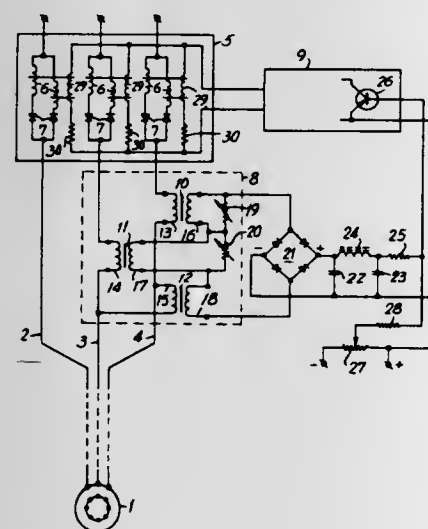
Izrail Mordukhovich Pests, ulitsa Metallistov, 10, kv. 12, and David Leonidovich Shvarts, ulitsa Olminkogo, 10, kv. 2, both of Kharkov, U.S.S.R.

Filed June 17, 1969, Ser. No. 833,967

Claims priority, application U.S.S.R., July 19, 1971, 1254002
Int. Cl. H02p 5/18

U.S. Cl. 318-344

4 Claims



A voltage stabilizing device for an electric drill motor used in a well comprises a voltage control unit provided in the motor connected between a power supply source and current leads of the motor; a voltage transducer in the motor incorporating at least two current transformers having primary winding separately connected to two different ones of the current leads; a voltage transformer connected to the two different ones of the current leads, a plurality of resistors, the current transformers having secondary winding shunted by the resistors having resistances proportional to the total resistance to the corresponding current lead and being connected in series to each other, and to the secondary windings of the voltage transformer, the output of the transducer being essentially a geometrical sum of the voltage transformer, the output of the transducer being essentially a geometrical sum of the voltage of the current leads and the voltage drop across the current lead and being proportional to the motor voltage; a comparison unit adapted to compare a reference voltage proportional to the voltage to be stabilized with the output voltage of the transducer, the output of the comparison unit being connected to the voltage control unit for controlling the operation of that unit.

3,614,569 DC MOTOR CONTROLLERS WITH IR COMPENSATION FOR EXTENDED SPEED RANGE

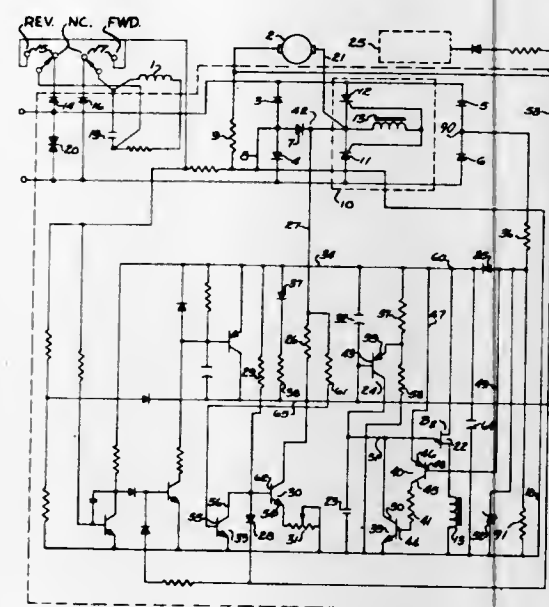
Owen E. Reinert, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 30, 1969, Ser. No. 872,535

Int. Cl. H02p 5/16

U.S. Cl. 318-345

10 Claims



In a standard speed control circuit for DC electric motors, such circuit generally being comprised of an external speed command potentiometer electrically connected to an amplifier, a negative feedback loop indicating motor armature voltage electrically connected to said amplifier, and a positive IR compensation loop electrically connected to said amplifier, which amplifier feeds a signal to a triggering circuit which in turn is electrically coupled to a silicon controlled rectifier circuit, such rectifier circuit being the final resolver of motor speed, means are provided to reduce progressively the effect of the IR compensation input to the amplifier as speed command is increased.

3,614,570 SIMPLIFIED WIRE REMOTE CONTROL OF SMALL MOTORS

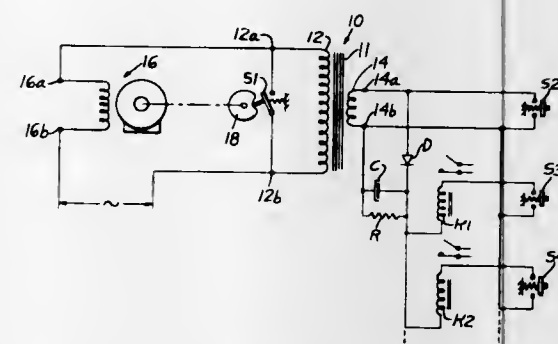
Louis F. Mayle, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed July 3, 1968, Ser. No. 742,273

Int. Cl. H02p 7/64

U.S. Cl. 318-486

4 Claims



An electric circuit arrangement wherein a load current at a higher voltage can be remotely controlled by a control current at a lower voltage in which the load current passes through a first coil which is magnetically coupled to a second coil in which the control current flows. The magnetic coupling of the coils causes the impedance between the terminals of the second coil to be reflected back to the first coil. When a high impedance is across the terminals of the second coil, a small current, less than that required to activate the load, flows in the first coil whereas upon

reduction of the impedance across the terminals of the second coil, the current flowing in the first coil rises to load actuating value. The variable impedance across the terminals of the second coil is, advantageously, a switch which is open for the high impedance condition and which is closed for the low impedance condition.

3,614,571 LINEARIZATION OF A DIGITAL PHASE CONTROL POWER AMPLIFIER FOR DYNAMO ELECTRIC MACHINE

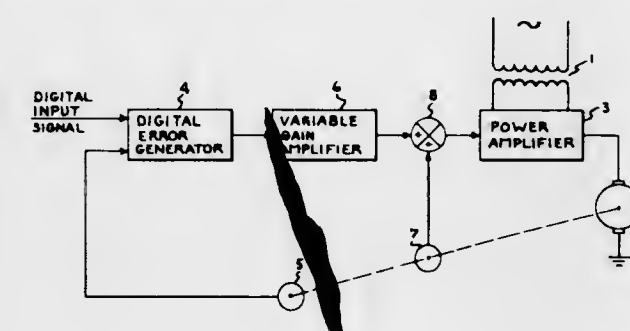
Albert F. Koch, Lanesboro, Mass., assignor to General Electric Company

Filed Dec. 16, 1968, Ser. No. 784,096

Int. Cl. H02p 5/10

U.S. Cl. 318-345

13 Claims



A digital motor control system compensates for the nonlinearity due to operation from a sinusoidal AC power source. A digital error signal is fed through a variable gain digital amplifier whose characteristics are such that the gain varies so as to correct for the nonlinearities which normally result. The output of the variable gain digital amplifier is used to directly control the transfer of power as, for example, by initiating the conduction of controllable rectifiers. The variable gain digital amplifier acts to vary the gain at two different rates, the second rate being less than the first by some factor of two.

3,614,572 AUTOMATIC CONTROL SYSTEM FOR CROP SHEAR

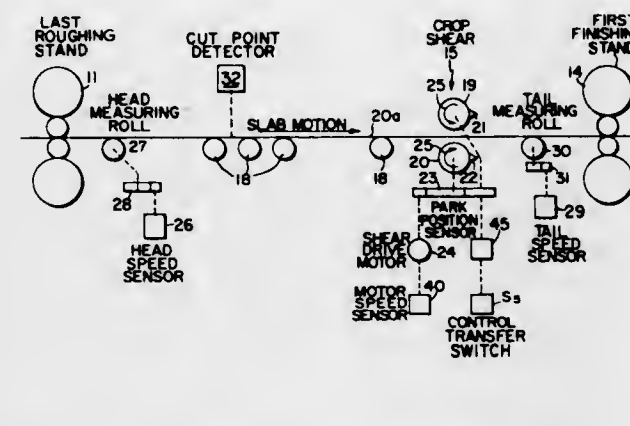
Thomas E. Usher, Scotia, N.Y., assignor to General Electric Company

Filed Mar. 16, 1970, Ser. No. 19,870

Int. Cl. H02p 1/04

U.S. Cl. 318-396

11 Claims



A computer is used to determine the time and position at which a rotary crop shear is started so that the ends of an approaching slab will be cropped at desired crop lines. The computer calculation is based on the principle that the area under the velocity-time profile on the shear equals the distance traveled by the shear blades. A motor speed regulator provides a predictable velocity-time characteristic and a maximum acceleration independent of slab speed to reduce cutting errors. The shear/slab speed ratio is adjustable.

3,614,573 INTERMITTENT CONTROL FOR WINDSHIELD WIPER SYSTEMS

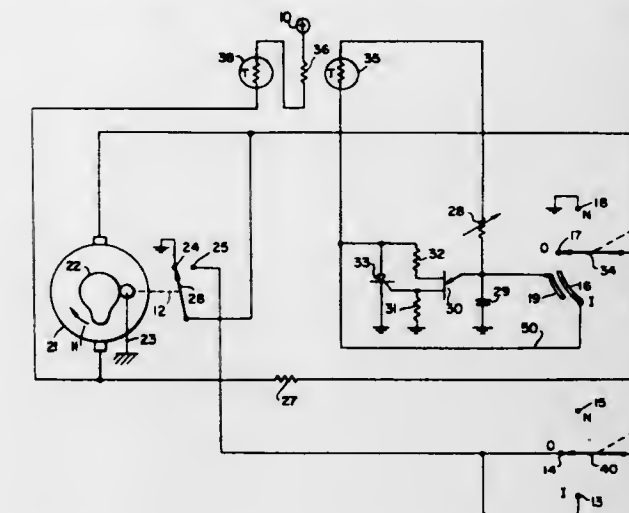
Willis E. Riegan, Skaneateles, and Edward R. Betz, Auburn, both of N.Y., assignors to Gulf & Western Systems Company, New York, N.Y.

Filed Feb. 5, 1970, Ser. No. 9,000

Int. Cl. B60s 1/08

U.S. Cl. 318-443

10 Claims



An intermittent control for a windshield wiper system. One of the two motor terminals is connected to the battery and the second motor terminal is connected to ground through the conventional park switch. In parallel with the park switch is a normally off SCR. A relaxation oscillator triggers the SCR to provide a momentary path to ground for the motor current. As soon as the park switch moves to provide a path to ground, the SCR turns off. The charging circuit of the relaxation oscillator includes a thermistor, heat-coupled to a resistance element in the motor circuit, for causing the dwell period to increase with windshield drag. A potentiometer is also provided in the charging circuit to allow manual adjustment of the dwell period. An additional thermistor in the motor circuit, also heat-coupled to the resistance element, causes the motor speed to slow down as the drag on the wiper blades increases. A circuit is provided for causing the SCR to turn on immediately when the control switch is operated, thus initiating a wipe cycle immediately independent of the operation of the relaxation oscillator.

3,614,574 REVERSIBLE FOLLOW UP POSITIONING DEVICE FOR MOBILE ANTENNA STRUCTURES OR THE LIKE

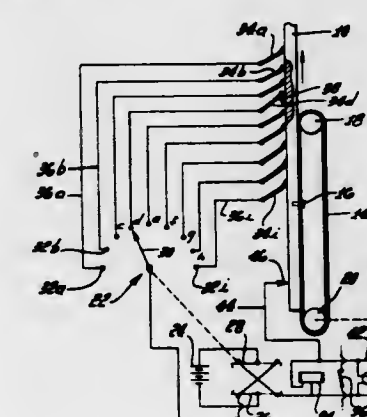
Hato R. Hodges, 169 Horizon Lane, Rancho Calevero Mobile Park, and Fred J. Schnell, 97 Blue Sky Lane, Rancho Calevero Mobile Park, both of Oceanside, Calif.

Filed Feb. 16, 1970, Ser. No. 11,368

Int. Cl. G05b 1/14

U.S. Cl. 318-467

8 Claims



A selector switch is movable between limits through a number of stations corresponding to desired positions of the

load. When the selector switch is moved in one direction or the other to a different station, the reversible motor is automatically connected to move in the required direction and automatically to stop when the load arrives at the selected station. This is accomplished by a two-state sensor that responds to the direction of movement of the selector switch.

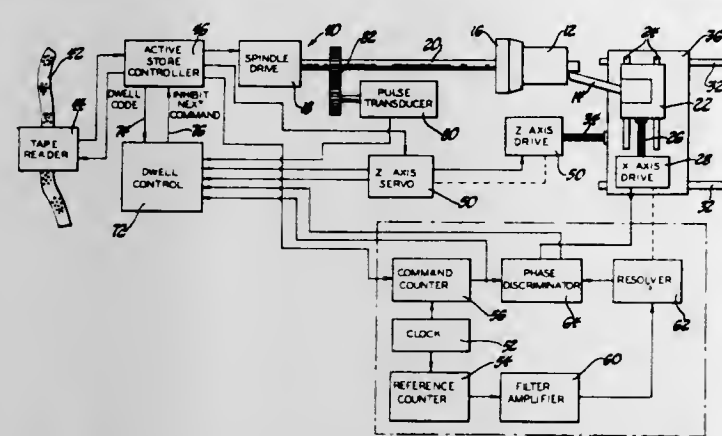
3,614,575 NUMERICAL CONTROL SYSTEM WITH CONTROLLED DWELL

Hymie Cutler, Detroit, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,229
Int. Cl. G05b 19/18

U.S. Cl. 318-569

12 Claims



A numerical control system for a lathe includes means for inhibiting the execution of one of a series of commanded motions until the previous command has been acted on for a sufficient time to insure its execution. The system measures the error between the actual and commanded positions of the controlled part by comparing the phase displacement between the reference and command square waves in a phase analog servo. When the command-position error reaches a predetermined minimum value, indicating that the cutter is very close to its commanded position, pulses generated upon each incremental rotation movement of the spindle are counted until a number has been reached indicating one full spindle revolution. At that point the inhibition of the subsequent command is removed.

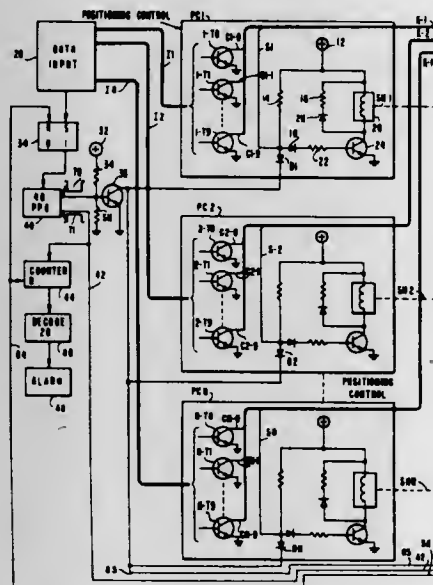
3,614,576 PRINT WHEEL POSITIONING SYSTEM

Martin Raphael, New York, N.Y., assignor to Dytron Corporation, Hicksville, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,219
Int. Cl. G05b 11/32

U.S. Cl. 318-625

14 Claims



A print wheel positioning system. A stepping circuit is associated with each print wheel, and a common step/sense

line is extended to each stepping circuit. The step/sense line is normally grounded. In order to advance the print wheels by one position, the step/sense line is ungrounded; this causes each stepping circuit associated with an improperly positioned print wheel to advance the print wheel and to apply a positive potential to the step/sense line. As soon as a wheel is positioned correctly, the ungrounding of the step/sense line has no effect on the respective stepping circuit. As long as at least one print wheel has not yet been properly positioned, the step/sense line goes positive each time it is ungrounded. As soon as all print wheels are properly positioned, the step/sense line does not go positive when it is ungrounded and a print command is generated.

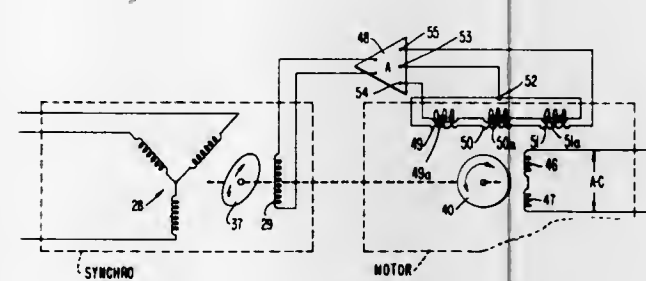
3,614,577 SYNCHRO-SERVOMOTOR COMBINATION

Charles C. Honeywell, and Louis H. Volge, both of Montrose, Pa., assignors to The Bendix Corporation

Filed Feb. 21, 1968, Ser. No. 707,043
Int. Cl. G05b 1/06

U.S. Cl. 318-654

15 Claims



A synchro electrical signal generator or rotary control transformer in combination with an induction servomotor, said transformer and motor having a common rotor shaft.

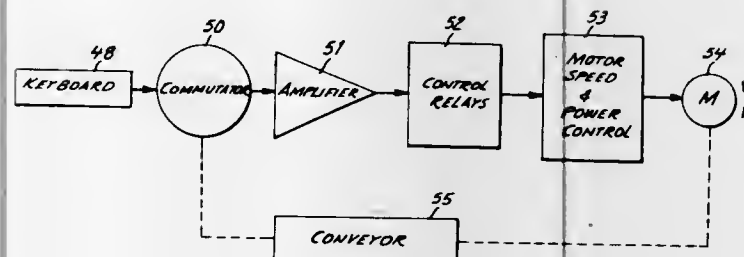
3,614,578 CLOSED LOOP ON-OFF CONTROL SYSTEM FOR DC MOTORS INCLUDING DYNAMIC BRAKING

Benjamin W. Woodward, Kenmore, and John J. Allard, Buffalo, both of N.Y., assignors to Sherry Rand Corporation, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,887
Int. Cl. G05b 11/14

U.S. Cl. 318-673

10 Claims



A network of electronic circuitry elements connected to form a system for controlling a DC motor. The principles of dynamic braking are applied in an arrangement adapted to perform several control functions, during which the motor becomes a self-excited generator dissipating stored energy in braking elements connected across the armature via various paths. Selection of the current path through the braking elements is controlled by condition responsive devices included in the system.

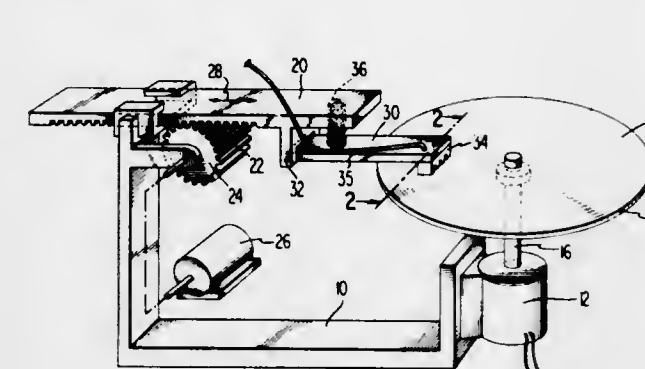
3,614,579 SQUEEZE FILM BEARING SERVOSYSTEM

Langdon Hollister Fulton, Wynnewood, Pa., assignor to RCA

Filed Sept. 24, 1970, Ser. No. 75,012
Int. Cl. G05b 11/01

U.S. Cl. 318-676

7 Claims



A signal transducer which is urged toward a recording medium surface is prevented from contacting the surface by an oscillatory transducer. The oscillatory transducer, which is direct motion coupled to and alternating motion isolated from the signal transducer, is positioned adjacent the recording medium surface and caused to oscillate in a direction transverse to the surface, which creates a pressurized air film to hold the transducers away from the recording medium surface. The amplitude at which the oscillatory transducer is driven, which may be controlled by a servosystem, determines the distance of the signal transducer from the recording medium surface.

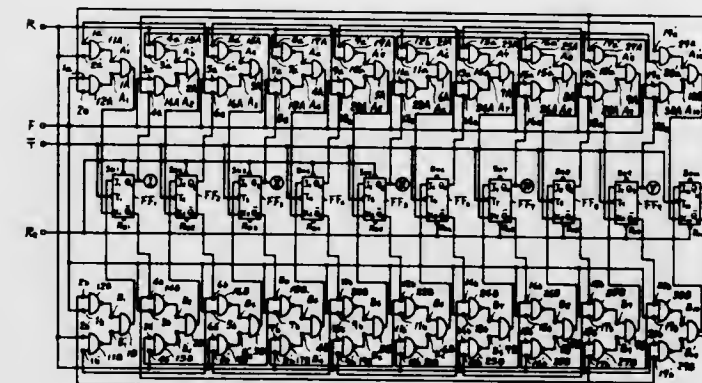
3,614,580 PULSE MOTOR DRIVE SYSTEMS

Kunihiko Eto, Kariya-shi, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 29, 1969, Ser. No. 888,644
Claims priority, application Japan, Dec. 29, 1968, 44/795
Int. Cl. G05b 19/40

U.S. Cl. 318-696

4 Claims



The pulse motor drive system comprises a plurality of flip-flop circuits connected in an endless chain, each of the flip-flop circuits including a pair of input terminals and a pair of output terminals. At least one output terminal of each flip-flop circuit is connected to the input terminals of the flip-flop circuits on both sides thereof through gate circuits. The initial state of output signals for output terminals of all flip-flop circuits are determined by a reset signal and the state thus determined is shifted one by one by trigger pulses. Output conductors are connected between output terminals of every other flip-flop circuits and a conventional pulse motor to energize coils thereof in a predetermined order.

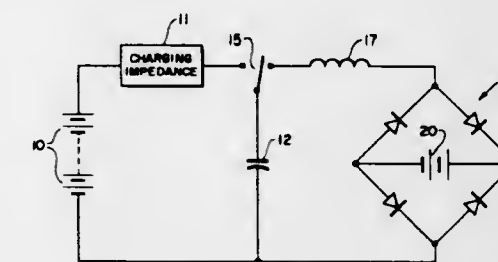
3,614,581 POWER CONVERSION SYSTEM

Emerson L. Frost, Manasquan, N.J.

Filed Feb. 10, 1970, Ser. No. 10,166
Int. Cl. H02J 7/00

U.S. Cl. 320-6

5 Claims



This invention relates to a power conversion system wherein energy from a high-voltage direct current source is caused to charge a relatively small high-voltage capacitor and the energy stored in said capacitor is transferred periodically through a resonant discharge circuit and rectifier to supply a low-voltage direct current to a load which may, for example, be a large capacitor or a battery whose charge is to be maintained relatively constant.

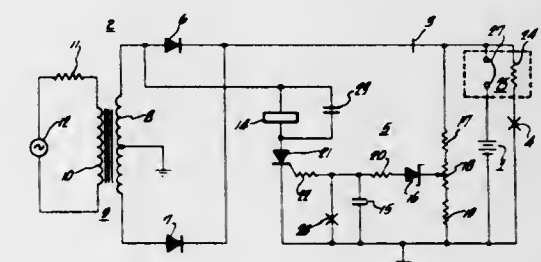
3,614,582 RAPID CHARGING OF BATTERIES

Wilford B. Burkett, Pacific Palisades, and John H. Bigbee, III, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation of application Ser. No. 726,060, May 2, 1968.
This application July 13, 1970, Ser. No. 54,244
Int. Cl. H02J 7/10

U.S. Cl. 320-5

20 Claims



A battery is charged in a very short period of time by applying a charging current in excess of the nominal 1-hour rate of the battery, with the charging current decreasing as the battery becomes charged. The charging current is intermittently interrupted in response to the attainment of a predetermined voltage by integrating the battery terminal voltage, and the battery is discharged at a high rate for a short period of time. The frequency of the interruptions is increased as the terminal voltage and charge of the battery increases. The disclosure relates to both the method of rapid charging and apparatus for rapid charging.

3,614,583 RAPID CHARGING OF BATTERIES

Wilford B. Burkett, Pacific Palisades, and Robert V. Jackson, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

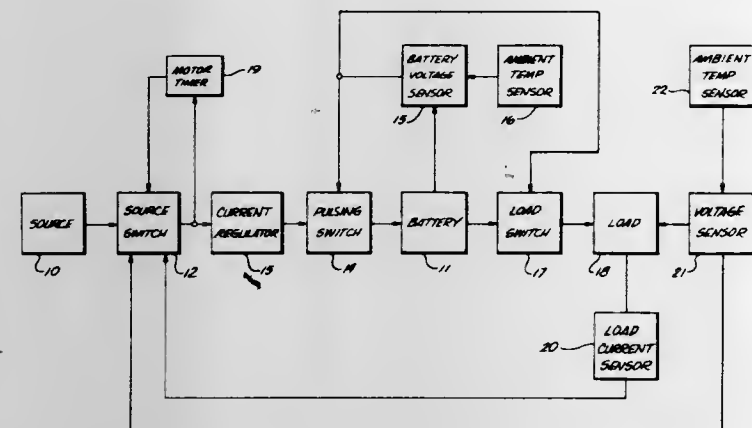
Filed Oct. 20, 1969, Ser. No. 867,838
Int. Cl. H02J 7/10

U.S. Cl. 320-5

33 Claims

Batteries, having one or more cells, are charged by applying a charging current, either continuous direct current or pulsating direct current, having an average value during flow in excess of the nominal 1 hour rate of the cells as rated by the manufacturer. The batteries are intermittently discharged to depolarize the battery to enhance the

chargeability of the battery. This discharging is at a rate also in excess of the nominal 1 hour rate, with the occurrence of



the discharging being dependent upon the occurrence of a selected value of either battery terminal voltage, battery pressure, or battery temperature, one of which is monitored.

3,614,584

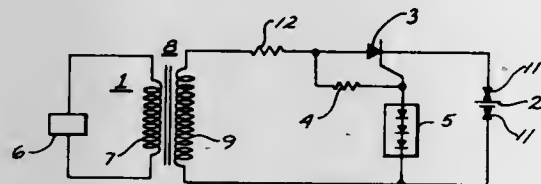
TERMINATION OF BATTERY CHARGING
Wilford B. Burkett, Pacific Palisades, and John H. Bigbee, III, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Mar. 20, 1970, Ser. No. 21,430

Int. Cl. H02J 7/10

U.S. Cl. 320—35

14 Claims



A single cell or a plurality of cells are charged by applying a high-rate charge current and monitoring a terminal characteristic of the battery, such as terminal voltage or temperature, to effect termination of charge before damage occurs to the battery by a simple and relatively inexpensive circuit. The thermal characteristics of a rectifying means, such as a silicon controlled rectifier, are employed to effect termination in response to the attainment of a predetermined terminal characteristic by employing, for example, a circuit that clamps the control terminal of the rectifying means at a selected voltage, thereby making the charger sensitive to battery terminal voltage or a circuit that includes a thermistor mounted in thermal proximity with the battery and electrically connected between the control terminal of the rectifying means and the negative terminal of the battery, which makes the charger sensitive to battery temperature.

3,614,585

CENTRAL POWER PLANT FOR FEEDING DC POWER TRANSMISSION PLANT

Kurt Wedin, Norrviken, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 15, 1969, Ser. No. 884,979

Claims priority, application Sweden, Dec. 16, 1968, 17173/68

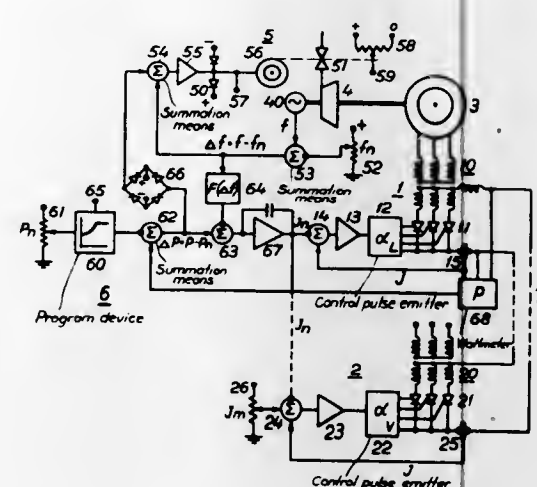
Int. Cl. H02m 5/40

U.S. Cl. 321—2

5 Claims

A power station is provided with a power machine driving an AC generator for feeding an HVDC power transmission plant, comprising a rectifier station in the power station and an inverter station at the other end of an HVDC line connected to the rectifier station. The power machine is controlled from a machine regulator to provide a desired rotational speed, while the converter stations of the HVDC transmission plant are controlled from a converter regulator to maintain a desired transmission magnitude. The machine regulator and the converter regulator are mutually connected and coordinated so that, in the first place, a change in the

state of control of the HVDC plant is fed to the input of the machine regulator and, in the next place, a deviation between the state of control of the power machine and the



actual number of turns of this machine influences the converter regulator so that the state of control of the converters is temporarily adapted to that of the power machine.

3,614,586

ELECTRICAL CHOPPER REGULATOR CIRCUITS
Kenneth G. King, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

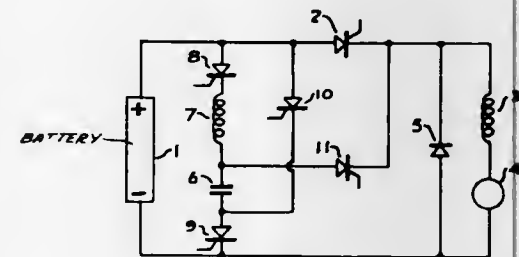
Filed Dec. 29, 1969, Ser. No. 888,384

Claims priority, application Great Britain, Jan. 13, 1969, 01833/69

Int. Cl. H02m 3/32

U.S. Cl. 321—2

6 Claims



An electrical chopper regulator circuit comprises a main controllable rectifier device connected in a current path between input and output terminals and a commutating capacitor connected in a second current path. Second and third controllable rectifier devices control connection of the commutating capacitor with appropriate polarity to opposite sides of the main controllable rectifier device so as to interrupt current flow in the main controllable rectifier device. A charging circuit for controlling charging of the commutating capacitor includes a switching device and an inductance through which current flows to charge the commutating capacitor to the correct polarity for commutating the main controllable rectifier device before firing of that device.

3,614,587

SATURATION CURRENT PROTECTION APPARATUS FOR SATURABLE CORE TRANSFORMERS

Francis C. Schwarz, Weston, Mass.

Division of Ser. No. 775,870, Nov. 14, 1968, Pat. No. 3,539,905.

Filed July 1, 1970, Ser. No. 60,202

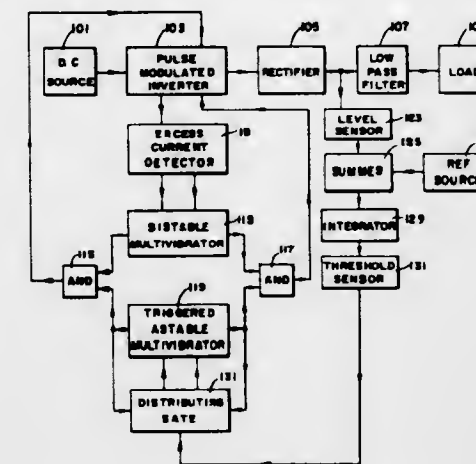
Int. Cl. H02m 7/52; H02p 7/14; G05F

U.S. Cl. 321—2

7 Claims

This disclosure describes a saturation current protection apparatus for saturable core transformers. A cut core (airgap) transformer detects the occurrence of rapidly increasing magnetic current in the saturable core transformer. When a rapidly increasing current condition

occurs, the cut core transformer applies a suitable signal to a switching means. The switching means terminates the



ELECTRIC HIGH VOLTAGE GENERATORS
Alan Davies, Wantage, England, assignor to United Kingdom Atomic Energy Authority, London, England

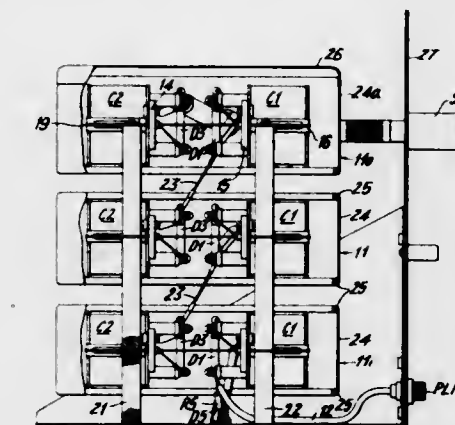
Filed July 9, 1970, Ser. No. 53,389

Claims priority, application Great Britain, July 18, 1969, 36418/69

Int. Cl. H02m 7/00

U.S. Cl. 321—8 R

8 Claims



A high voltage generator of the Cockcroft-Walton type is constructed from modular units built up into a stack, the number of units determining the voltage. Each unit is contained within a screen with large radius outwardly facing surfaces. The units are ready stressed internally and the screens ease the stressing problems of building up a stack. A driving inverter of the switched thyristor type has inductance in the overflow diode path so that the inverter will withstand a short across the output and to improve the speed of thyristor recovery.

3,614,589

SINE WAVE STATIC INVERTER

Ralph H. Ireland, Warminster, Pa., and Joseph D. Segrest, Cherry Hill, N.J.

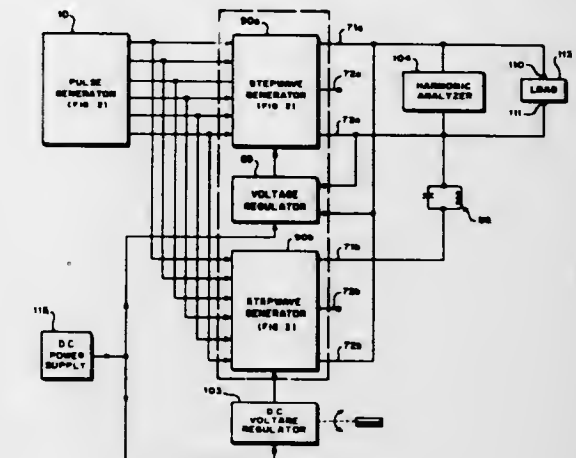
Filed Mar. 18, 1970, Ser. No. 20,701

Int. Cl. H02m 1/12

U.S. Cl. 321—9 A

8 Claims

A sine wave static inverter produces a sine waveform from the output of a step wave generator by removing the higher harmonics from a step waveform. A first embodiment short circuits the higher harmonic signals across the secondary winding of a transformer thus permitting only the first harmonic sine wave to reach the output. A second



PROGRAMMED WAVEFORM STATIC INVERTER FOR DIGITALLY GENERATING AC WAVEFORMS COMPRISED OF A PATTERN OF EQUAL WIDTH VOLTAGE PULSES

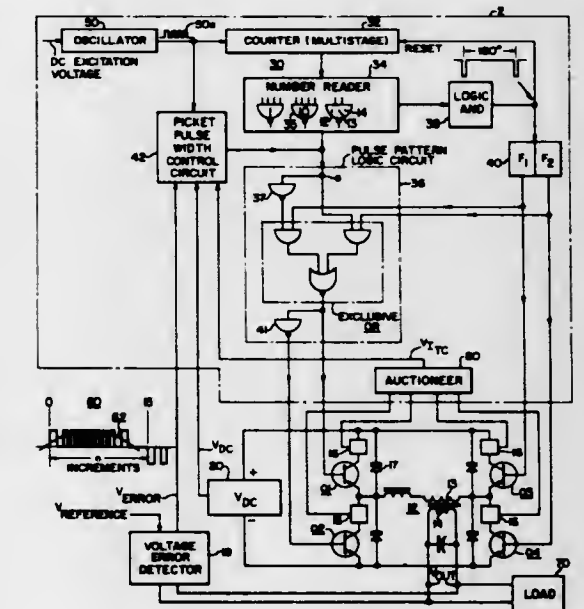
Address Kernick, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1969, Ser. No. 825,807

Int. Cl. H02m 1/12; 7/52; H02h 7/14

U.S. Cl. 321—9

25 Claims



The invention comprises a solid-state static inverter utilizing digital means for generating AC waveforms comprising a pulse-width modulated pattern of a plurality of picket pulses, wherein each picket pulse of a waveform is defined within an identical number of equal increments of the waveform half cycle.

3,614,591

FAILSAFE AND-MONITOR CIRCUIT

James L. Brown, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Mar. 27, 1970, Ser. No. 23,151

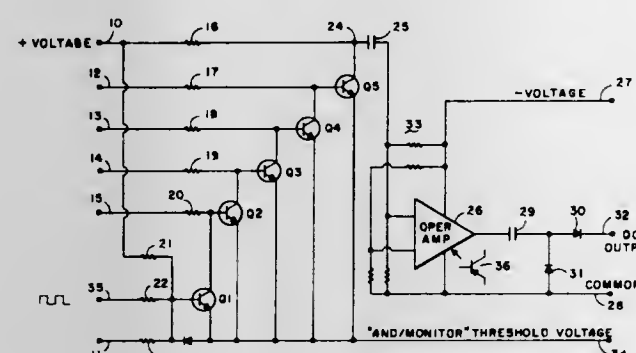
Int. Cl. H02m 1/08; G06g 7/00

U.S. Cl. 321—16

11 Claims

A circuitry which develops an output of a predetermined DC polarity in response to all of a plurality of input lines exhibiting voltage levels in excess of a threshold level. Should at least one of the input lines fall beneath threshold or the monitoring circuitry itself fail a second output level of

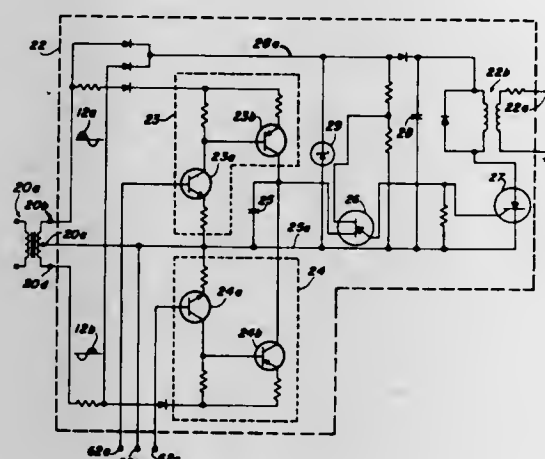
opposite polarity is developed. The monitored inputs act as supply voltages for a transistor switching chain to which a square wave tracer input is applied. The output from the chain is a square wave at the tracer PRF only if the circuitry



is operational and the inputs are above threshold. Output circuitry is responsive only to a square wave applied from the chain to develop the output level assigned to indicate valid output logic.

3,614,592 CYCLOCONVERTER USING BIDIRECTIONAL SEMICONDUCTOR SWITCHES

John T. Redfern, La Jolla, Calif.
Filed Nov. 18, 1969, Ser. No. 877,721
Int. Cl. H02m 5/30
U.S. Cl. 321—69 R



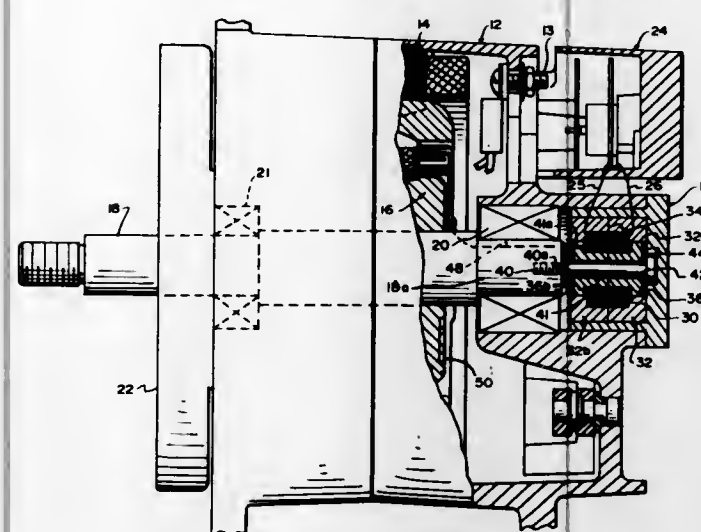
Polyphase power in the form of commercially available three-phase electric power is converted to a single lower frequency by providing a single bidirectional semiconductor serially interposed in each of the branches of a wye or delta transformer secondary. Gate control unipolar trigger pulses are produced when polarity coincidence occurs between the component of polyphase power appearing across each of the branches and a control frequency having its frequency lower than that of the polyphase power. Selective gating of each bidirectional semiconductor forms a composite signal across a commonly connected load in accordance with the frequency of a control signal.

3,614,593 ROTARY TRANSFORMER FOR ALTERNATOR

Meivin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed May 6, 1970, Ser. No. 34,987
Int. Cl. H02p 9/38
U.S. Cl. 322—28

8 Claims
An alternator having a stator winding for applying alternating current voltage to output terminals thereof has a rotor rotatably mounted therein adjacent the stator to induce the alternating current voltage into the stator. A rotary transformer secured to one end of the rotor shaft has a rotary secondary winding and a core thereof in axial alignment with

the rotor shaft and includes a single wire connection between the rotary secondary winding and the alternator rotor



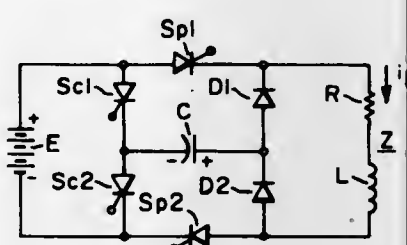
winding to transfer the excitation voltage induced in the secondary of the rotary transformer into the rotor winding.

3,614,594 FORCE COMMUTATION CIRCUITS

John Rosa, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 813,074, Apr. 3, 1969, now abandoned. This application Mar. 11, 1970, Ser. No. 18,412
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R

1 Claim

14 Claims



A commutation circuit is disclosed for commutating power-control switching devices, such as thyristors or silicon-controlled rectifiers, utilized for supplying a load from a DC source, wherein a commutating capacitor is operatively connected across the power control switching device to be commutated by selectively turning on commutation-controlled switching devices, which may also comprise thyristors or silicon-controlled rectifiers. Also unidirectional devices are employed to provide a circuit path for any reactive energy trapped in the load circuit during the commutation operation.

ERRATUM

For Class 322—28 see:
Patent No. 3,614,593

3,614,595

A.C. VOLTAGE CONTROL APPARATUS

Robert Stewart Paulden, Stockport, England, assignor to Ferranti, Limited, Hollinwood, England
Filed Jan. 29, 1970, Ser. No. 6,696
Claims priority, application Great Britain, Feb. 12, 1969, 7523/69
Int. Cl. G05f 3/04

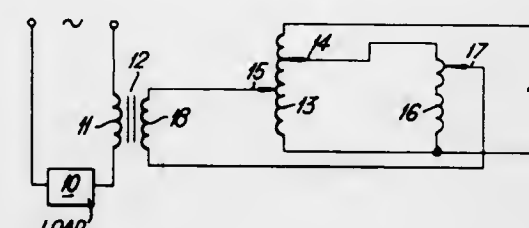
U.S. Cl. 323—6

4 Claims

Alternating current voltage control apparatus comprises a coarse and a fine voltage regulator feeding the primary

winding of a buck/boost transformer the secondary of which is connected in series with a load. The coarse voltage regulator has two movable contacts capable of passing one another, and has the ends of the winding connected to the two poles of an alternating current supply of the same

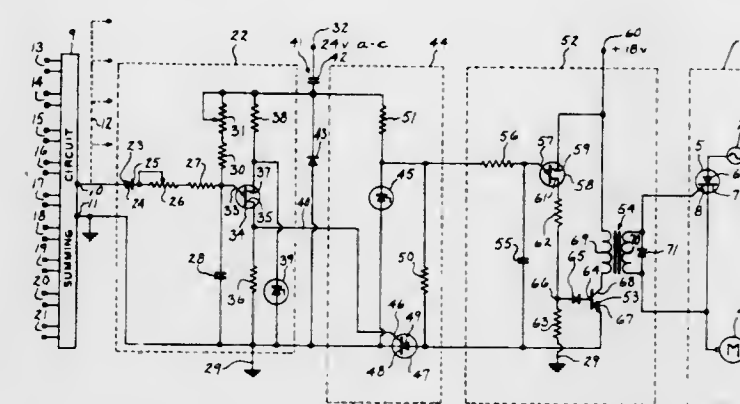
cooperating with the fixed contacts is adapted to be rotated, for the changeover operation between at least one pair of



3,614,596 CONTROLLED RECTIFIER FIRING CIRCUIT

David E. Ford, Jr., Milwaukee, and Richard W. Waltz, New Berlin, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.
Filed Feb. 6, 1970, Ser. No. 9,213
Int. Cl. G05f 1/44
U.S. Cl. 323—22 T

7 Claims



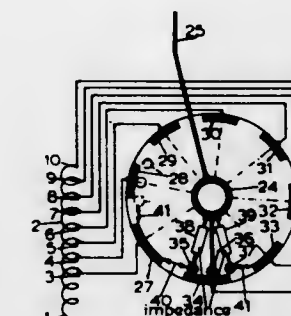
A summing circuit generates a DC command signal with magnitude proportional to the desired power to be conducted by a power SCR in a motor circuit. A unijunction transistor phase shift circuit receives the command signal and translates its magnitude to a firing angle by connecting the base circuit to an AC reference signal source and the emitter to a capacitor charged by the command signal and the AC reference signal. A sensitive SCR connected to the AC source is fired by the unijunction transistor to charge a capacitor of an oscillator, the output of which is amplified and transformer coupled to the gate of the power SCR.

3,614,597

TAPCHANGERS FOR REGULATING TRANSFORMERS

Gerardus A. Van Riemsdijk, Nijmegen, Netherlands, assignor to Smit Nijmegen Electrotechnische Fabrieken N.V., Nijmegen, Netherlands
Filed Sept. 24, 1969, Ser. No. 860,630
Claims priority, application Netherlands, Oct. 2, 1968, 6814063
Int. Cl. H02p 13/06; H01h 19/58, 21/78
U.S. Cl. 323—43.5 R

9 Claims
A tapchanger for a regulating transformer includes a rotatable combined diverter switch tap selector, of which the fixed contacts are arranged in a circular row and are mounted at equal free distances from each other and at least one fixed contact extends over a larger arc of a circle than the other contacts and in which a set of switching contacts mounted for rotation about the axis of the circular row and

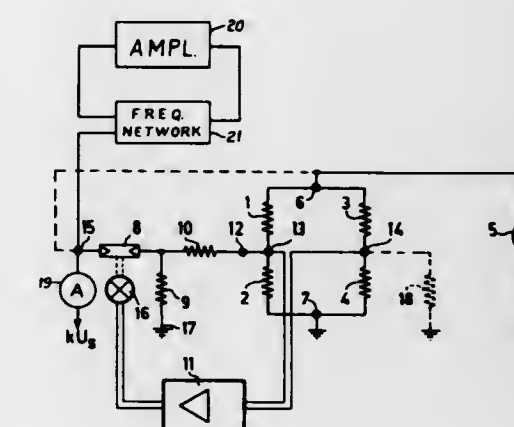


adjacent fixed contacts, through a greater angle than for the changeover operation between the other pairs of adjacent fixed contacts.

3,614,598 CIRCUIT ARRANGEMENT FOR CONVERTING A RESISTANCE VARIATION INTO A PROPORTIONAL ADMITTANCE VARIATION

Dietrich Meyer, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 13, 1970, Ser. No. 36,715
Claims priority, application Germany, May 14, 1969, P 19 24 783.7
Int. Cl. G01r 17/14
U.S. Cl. 323—75 N

9 Claims



By connecting two resistors in parallel with one of the arms of a bridge circuit, for example a strain-gauge bridge, and by injecting a compensating current into the junction point of these resistors from a voltage source through a variable resistor, the bridge unbalance to be measured is compensated. For this purpose null amplifier which controls the variable resistor is connected to the measuring diagonal arm of the bridge. A small resistance variation in the bridge is converted, with a high degree of accuracy, into a large admittance variation which can be measured at the supply terminal of the variable resistor.

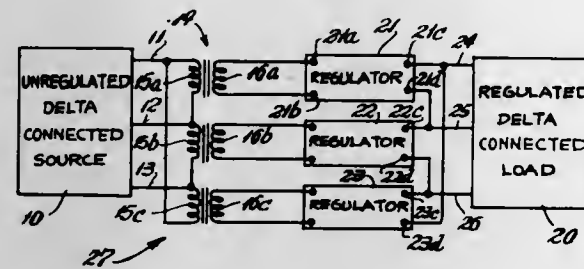
3,614,599

THREE-PHASE DELTA-CONNECTED VOLTAGE-REGULATING SYSTEM AND METHOD THEREFOR

Thomas C. Gmuier, South Britain, Conn., assignor to The Superior Electric Company, Bristol, Conn.
Filed Sept. 17, 1970, Ser. No. 73,141
Int. Cl. H02m 5/10; H02p 13/04
U.S. Cl. 323—44

8 Claims
A system and method for regulating the voltage from a three-phase delta-connected source to a three-phase delta-connected load circuit that includes a voltage regulator for each phase with the input to each regulator being made to be conductively independent of the other phases, while the

outputs of the regulators are interconnected into a three-phase delta connection with each regulator thereby being of operation of contact points of a multislid switch. An apparatus utilizing the substrate and contact pads reveals



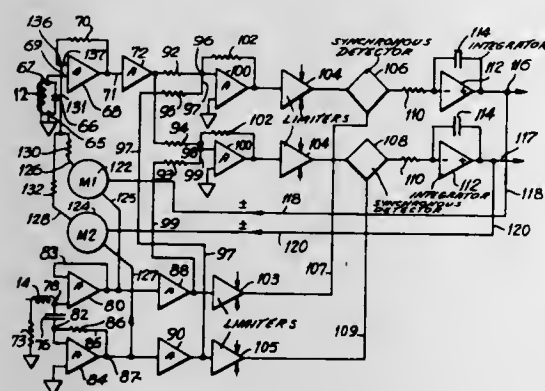
essentially unaffected by the power controlled in the other phases.

3,614,600
ELECTROMAGNETIC PROSPECTING APPARATUS FOR DETECTING ELECTRICALLY OR MAGNETICALLY RESPONSIVE ORE BODIES

Vaino Ronka, Don Mills, Ontario, Canada, assignor to Geonics Limited, Toronto, Ontario, Canada
Continuation-in-part of application Ser. No. 632,656, Apr. 21, 1967, now Patent No. 3,500,715. This application July 31, 1969, Ser. No. 846,424
Int. Cl. G01v 3/12, 3/16

U.S. Cl. 324-4

14 Claims



Electromagnetic prospecting apparatus which may be used in an airplane for detecting electrically conductive buried ore bodies when they are intersected by a horizontal primary electromagnetic field. The prospecting apparatus includes a receiving, or pickup, coil and a reference coil, preferably orthogonal to the receiving coil, and apparatus for detecting real and quadrature components of voltages which are induced in the pickup coil due to the presence of vertical secondary field components which emanate from the buried ore bodies when they are intersected by the horizontal primary field. The detection is accomplished independent of the strength of the primary field or its frequency and is particularly adapted for prospecting with interrupted or frequency shifted types of primary fields.

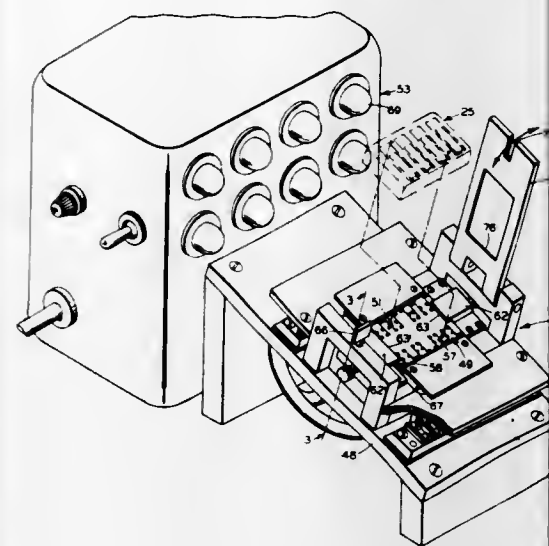
3,614,601
APPARATUS FOR GAGING THE LOCATION OF CONTACT POINTS OF SWITCH-COVER ASSEMBLIES

Edward A. Heckman, Allentown, and James O. Hinkle, Emmaus, Edgar H. Walls, Allentown, all of, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

U.S. Cl. 324-28 R

Contact pads of a conductive material are deposited on an insulating substrate by thin-film techniques. The contact pads are of such a size and in such a position as to define the limits

The present disclosure relates to an apparatus for measuring the charge in a flowing liquid. A pair of apertured metal discs are coaxially mounted adjacent to the peripheral portion of the main liquid stream. One disc is driven from a synchronous motor to provide an electrostatic charge-sensing device. The motor contained in an explosion proof housing, is releasably coupled to the disc assembly and includes a switch housing. A reed switch is disposed within the switch housing with an actuating permanent magnet axially spaced from the switch. A shutter is interconnected to the motor-driven shaft and extends between the switch and the magnet. The configuration of the shutter corresponds to an apertured disc. The reed switch connects the discs in an output circuit.



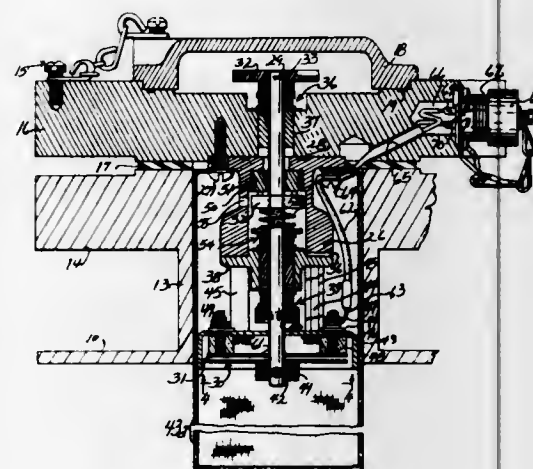
those slide switches whose contact points fall within and without desired limits.

3,614,602
MEASURING APPARATUS INCLUDING ROTATABLY MOUNTED APERTURED PLATE MEANS FOR MEASURING THE CHARGE IN ELECTRICALLY CHARGED FLOWING LIQUID

George A. Clotti, Erie, Pa., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Dec. 20, 1968, Ser. No. 785,585
Int. Cl. G01r 29/12, 5/28

U.S. Cl. 324-32

14 Claims



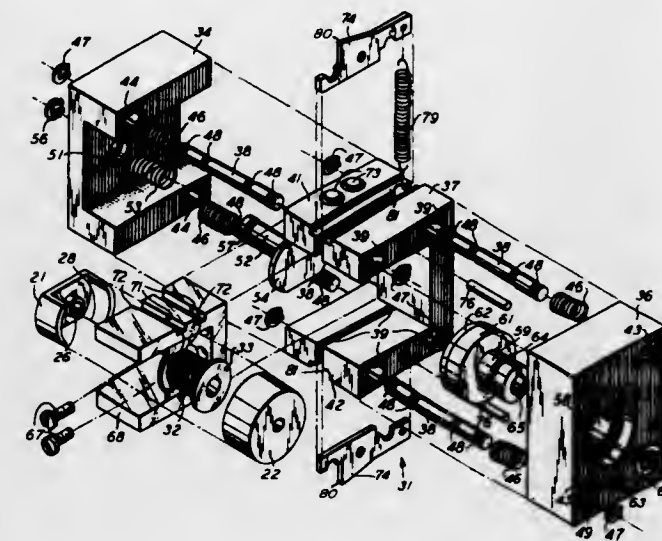
3,614,603
APPARATUS FOR TESTING SEPARABLE MAGNETIC CORES AT VARYING POSITIONS TO ONE ANOTHER

Allen N. Martin, and John L. Speas, both of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,572
Int. Cl. G01r 33/12

U.S. Cl. 324-34 R

12 Claims



A closable test fixture for paired ferrite cores includes (1) a test coil supported within the fixture and connected to terminals accessible from without the fixture, (2) a spring-loaded pad and (3) a rotatable pad having a shaft accessible from without the fixture. Automatically operated facilities are provided for: (1) loading a pair of ferrite core halves within the fixture in axially spaced relationship on opposite sides of the coil; (2) closing and latching the fixture to assemble the core halves and enclose the test coil therein, holding the core halves together with a predetermined, constant pressure between the two pads; (3) conveying the fixture to successive testing stations where contact is made with the access terminals on the fixture and a driver is actuated to rotate the pad and one core half 360° with respect to the other to produce a range of test results; and (4) conveying the fixture to a vibratory swing nest which is actuable to unlatch and open the fixture to release the core halves into a chute for paired packaging.

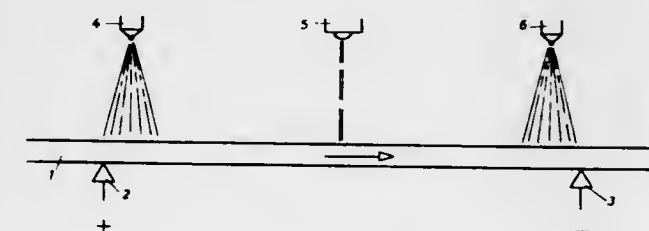
3,614,604
METHOD AND APPARATUS FOR DETECTING WORKPIECE SURFACE DEFECTS AND FOR FIXING THE LOCATION THEREOF USING MAGNETIC PARTICLES

Kurt Reinshagen, Ottweiler/Saar, Germany, assignor to Elektrodenfabrik Oerlikon Bührle AG, Zurich, Switzerland
Filed Oct. 31, 1969, Ser. No. 873,043
Claims priority, application Switzerland, Nov. 8, 1968, 16709/68

U.S. Cl. 324-38

Int. Cl. G01r 33/12

8 Claims



A novel method and apparatus for detecting workpiece surface defects is disclosed. In accordance with the invention, the workpiece is magnetized and a ferritic powder is sprayed over the surface thereof. Due to stray flux lines of the magnetic field occurring at the surface defects, the

ferritic powder accumulates at such defects and effectively traces the same, rendering the defect visible. The tracing of the defects is then fixed or preserved automatically so that the defects remain visible for subsequent corrective maintenance operations after the workpiece is demagnetized and the powder falls off. In one embodiment of the invention, the "fixing" of the tracing occurs in that a colored marking material is applied or sprayed over the surrounding surface about the traced defects as well as over the ferritic powder which effects the tracing itself. The workpiece is then demagnetized and the ferritic powder and the colored marking material over the powder is removed. The remainder of the surface, however, remains dyed by the colored marking material thus outlining the surface defects and fixing or preserving the visible tracing thereof. This technique is referred to herein as a so-called "negative" process. In an alternative embodiment of the invention, a "positive" process is employed wherein the ferritic powder which traces the surface defects is permanently adhered to the surface by means of the application of heat. Subsequently, the workpiece is demagnetized leaving the permanently adhered ferritic powder at the defect location thus fixing the visible tracing.

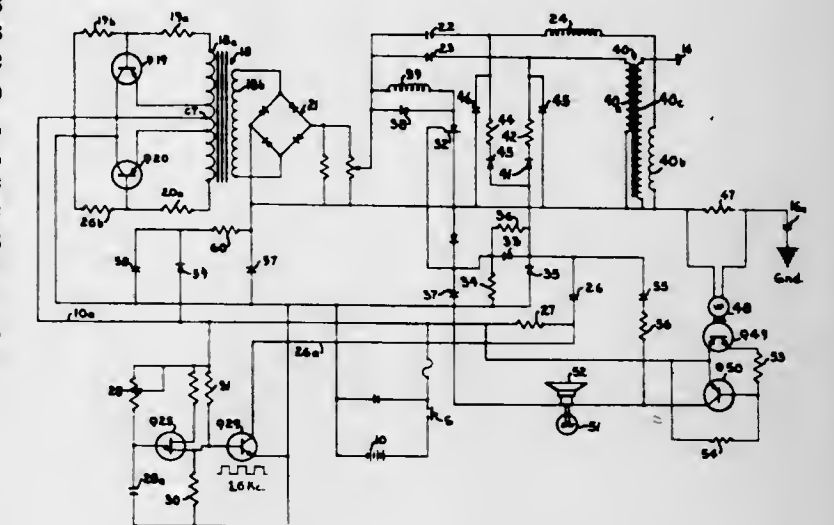
3,614,605
HOLIDAY DETECTOR UTILIZING STAGGERED CAPACITOR DISCHARGES FOR PRODUCING A FAST RISE TIME HIGH-VOLTAGE PULSE

Charles W. Elsie, Warminster, Pa., assignor to H. C. Price Co., Bartlesville, Okla.

Filed Aug. 22, 1969, Ser. No. 852,262
Int. Cl. G01r 31/12

U.S. Cl. 324-54

17 Claims



An electrical detector operable to detect holidays or defects in insulating coatings or mastic coatings generally applied to pipelines has a portable DC power supply, a DC to DC converter, an energy storing means operable to store energy from the DC converter, and SCR interconnected with the energy storing means, an oscillator means for gating the SCR on to discharge the energy storing means through a double primary pulse transformer to produce a high voltage, fast time pulse on an exploring electrode, and an alarm circuit capable of audibly and/or visually indicating that a high voltage has arced through the pipeline coating at a holiday point.

3,614,606
CAPACITIVE-COUPLED PROBE FOR MEASURING POTENTIALS IN A PLASMA

John A. Schmidt, Middleton, and Donald W. Kerst, Madison, both of Wis.

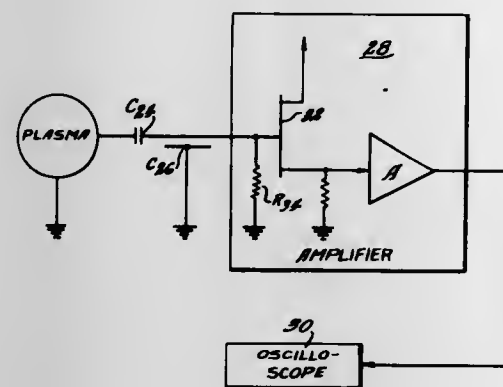
Filed Apr. 4, 1969, Ser. No. 813,449
Int. Cl. G01v 27/26

A capacitive-coupled probe includes an elongated glass tube closed at one end thereof and an electrode mounted within the glass tube at the closed end. A conductor extends

U.S. Cl. 324-61 R

2 Claims

within the tube along the length thereof to contact the electrode and a shield is disposed about the conductor with a dielectric material interposed of the shield and the conductor



3,614,607

PARTICLE COUNTING APPARATUS

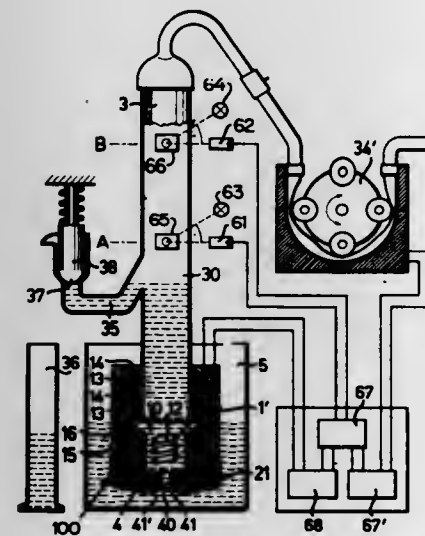
Kurt Schoen, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Mar. 17, 1969, Ser. No. 807,853

Claims priority, application Switzerland, Apr. 5, 1968, 5140/68

Int. Cl. G01n 27/00; G01r 27/02

U.S. Cl. 324-71 CP



There is disclosed an apparatus for counting particles suspended in a fluid medium the electrical conductivity of which is different from that of the particles. A quantity of this fluid medium containing the suspended particles is delivered by a conveying system from a container or the like through an electrical resistance measuring path. Each particle upon passing through the electrical resistance measuring path causes a change in the resistance of such measuring path which is dependent upon the size of the particles. According to an important aspect of the invention, an electrode support means is mounted in sealing fashion upon or at an exchangeable measuring tube and there is exchangeably mounted at such electrode support means a measurement path support member providing at least one such electrical resistance measuring path.

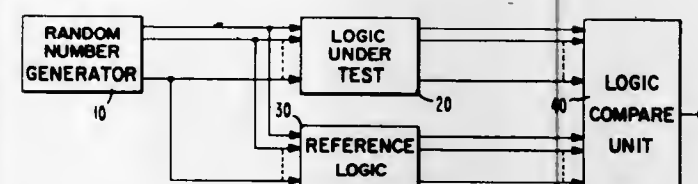
3,614,608 RANDOM NUMBER STATISTICAL LOGIC TEST SYSTEM

Gary R. Giedd, Wappingers Falls; Gerald A. Maley, Fishkill, and Merlyn H. Perkins, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1969, Ser. No. 825,870
Int. Cl. G01r 15/12

U.S. Cl. 324-73 R

9 Claims



A system for testing complex circuitry primarily in large scale integration, where a great number of inputs and outputs must be tested and the internal circuitry is inaccessible. The test system has a random number generator which simultaneously applies a plurality of signals in a random pattern to the plurality of input pins of both the test circuit and a reference circuit. Compare circuitry is responsive to signals received from the test and reference circuits and provides an error signal when the two outputs are not matched.

3,614,609

GO/NO-GO TIMES CIRCUIT USING A TUNNEL DIODE TO SAMPLE A TEST WAVEFORM

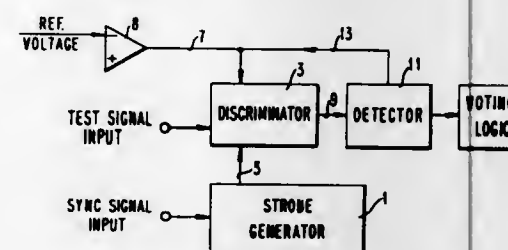
Stanley J. Grubel, Wappingers Falls, and Hugh R. Stirling, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1970, Ser. No. 27,341

Int. Cl. G01r 19/00; H03k 17/58

U.S. Cl. 324-77 A

3 Claims



An improvement to a system for measuring (a) the voltage level of a waveform at a specific time with respect to a reference point in time, (e.g., clock or sync pulse) and (b) the time required with respect to a reference time for a waveform to reach a specific voltage level. In the first case, the voltage at a given sample time is measured, while in the second case, the time to a given voltage is measured. The system incorporates a go/no-go decision circuit which determines if the characteristics of a circuit under test satisfy certain reference criteria. The go/no-go circuit comprises a discriminator which examines a test signal for both amplitude and time. The discriminator compares the level of the input test signal with a reference signal at the time of strobe occurrence. The condition of the discriminator is monitored by a detector circuit which further passes this condition on to a voting logic which makes a go/no-go decision based on a plurality of samples.

3,614,610

PORTABLE VOLTAGE AND FREQUENCY TESTER

Raymond H. Legatti, Moultrie, Ga., assignor to Electromagnetic Industries, Inc., Sayville, L.I., N.Y.

Filed July 7, 1969, Ser. No. 839,338

Int. Cl. G01r 15/08, 19/14

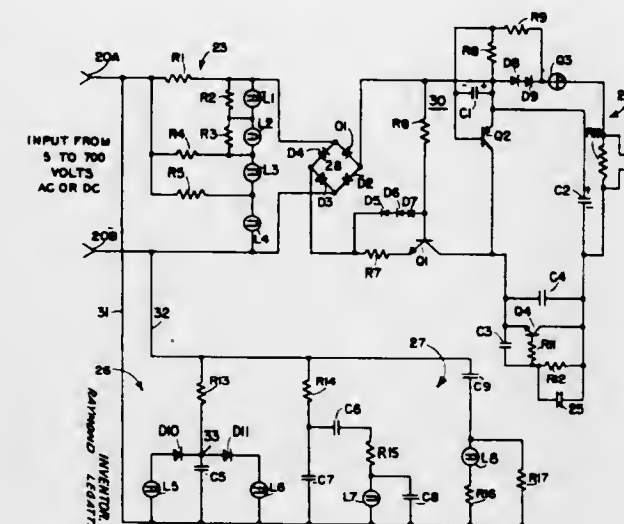
U.S. Cl. 324-115

8 Claims

A portable voltage and frequency tester includes a pair of probes for connection to a source of potential. A voltage

divider and associated neon lamps, lit in cascade, are connected across the probes and indicate AC voltages from 110 to 440 and DC voltages from 110 to 650. A second

with two elastic plastic carriers each of which supports a staff. The carriers are adjacent to two outer sides of the frame which are located opposite each other, and each carrier is normally separated from the adjoining portion of the



voltage indicator is connected across the probes and includes an incandescent lamp and an audible signal generator which are energized in alternation to indicate a minimum voltage of 25 volts or more across the probes.

3,614,611

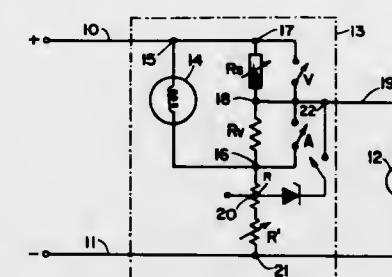
VOLTAGE AND WATTAGE INDICATOR FOR ARC LAMPS

Fred Benjamin, 3251 Santa Maria Ave., Fullerton, Calif.
Continuation of application Ser. No. 780,128, Nov. 29, 1968, now abandoned. This application June 25, 1970, Ser. No. 56,063

Int. Cl. G01r 1/00, 21/00

U.S. Cl. 324-142

2 Claims



An inexpensive wattage indicator is provided in the form of a meter designed to indicate the sum of the voltage drops across a shunt in series with a source and load and a portion of a resistance means connected across the load. The resistance value of the shunt and resistance means and the meter scale are so adjusted that the indication of the sum corresponds substantially to the product of current and voltage supplied to the load thereby providing an indication of the wattage.

3,614,612

COIL ASSEMBLY FOR MOVING-COIL INSTRUMENTS

Willy Kisselmann, Grunwald, Ludwig-Thoma; Fritz Rumpelein, Munich; Franz Landbrecht, Unterhaching, and Paul Knopf, Duisberg, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 26, 1969, Ser. No. 810,585

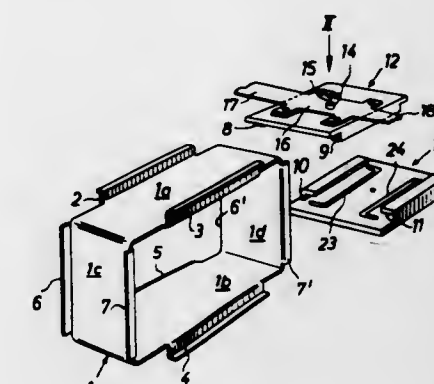
Claims priority, application Germany, Mar. 30, 1968, P 17 66 082.1

Int. Cl. G01r 1/00, 1/14

U.S. Cl. 324-154

18 Claims

A coil assembly for moving-coil instruments wherein the coil is wound around a hollow rectangular frame connected



coil by a gap so that it can be flexed inwardly in response to axial pressure against the respective staff. At least one of the carriers supports a holder for the pointer, balance weight and/or other parts of the coil assembly.

3,614,613

APPARATUS FOR AND METHOD OF TESTING AND BLOCKING STRIP CONDUCTOR COILS

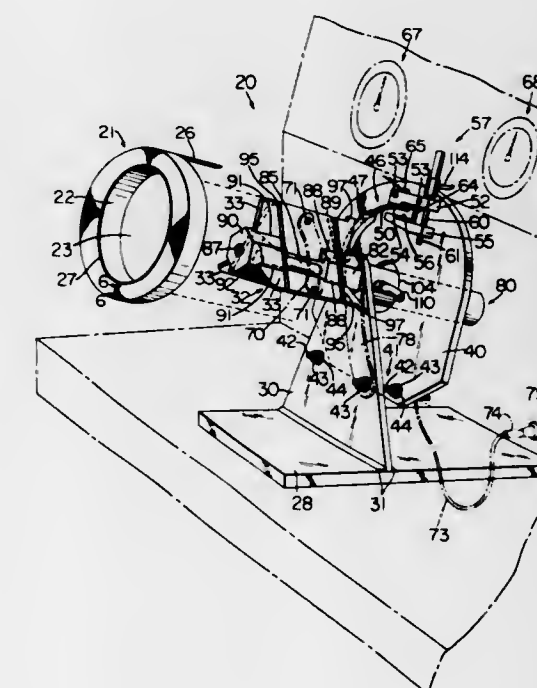
Hans A. Brunner, Chester, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Aug. 5, 1968, Ser. No. 750,083

Int. Cl. G01r 31/02, 31/06

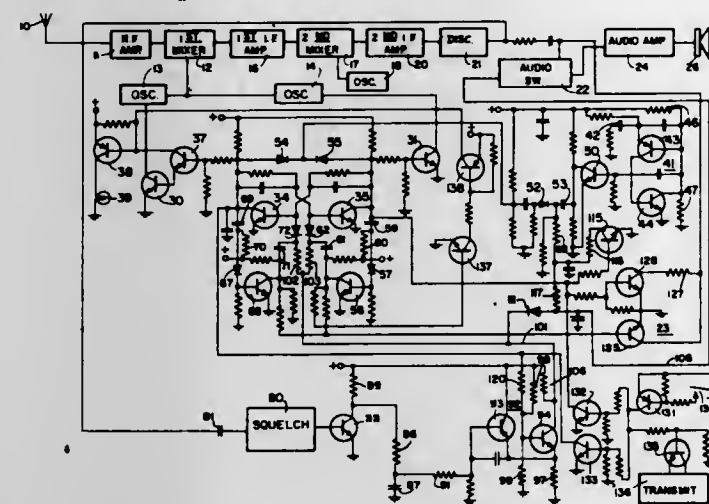
U.S. Cl. 324-158 R

10 Claims



This disclosure relates to a simple apparatus for and method of testing and blocking electrical coils made from an elongated strip of electrically conductive material which utilizes a radially expandable mandrel to hold a coil in position so that one or more leads thereof may be easily connected in an associated electrical circuit using rapidly operating electrical connectors comprising the apparatus, and with a given coil thus held it is rapidly tested and if found acceptable the coil is immediately blocked prior to removal thereof from such mandrel.

relatively rapid sequential scanning of the channels. Detection of a carrier on a nonpriority channel, however, shifts control of the bistable multivibrator to the free-running oscillator to reset the bistable multivibrator to scan the



priority channel, whereupon control is returned to the monostable circuits. Provision is made for attenuating the audio output whenever a nonpriority channel is being received and for increasing the sensitivity of the squelch circuit whenever a nonpriority channel is being scanned.

3,614,622

DATA TRANSMISSION METHOD AND SYSTEM

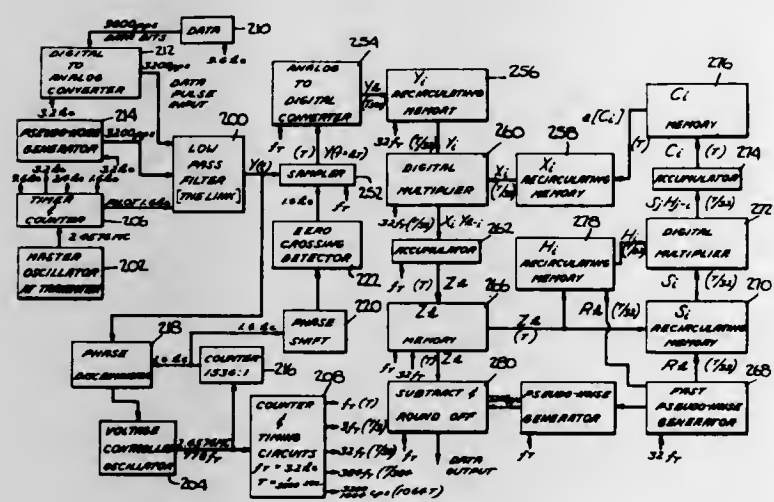
Jerry Lee Holsinger, Wellesley, Mass., assignor to Codex Corporation, Watertown, Mass.

Continuation-in-part of application Ser. No. 573,653, Aug. 19, 1966, now abandoned. This application Apr. 30, 1968, Ser. No. 725,312

Int. Cl. H04b 3/04, 3/10

U.S. Cl. 325-42

2 Claims



Equalizers having variable coefficients which develop correction values from sums of weighted equalizer output errors that enable, among other things, rapid universal convergence both for initial setup and in the presence of data and inexpensive instrumentation. Disclosed are use of timed samples as the basis for the equalizer operation, digital filters as well as tapped delay lines to form the equalizer, weight forming continuously as well as infrequently, weight forming based upon the input to the equalizer, use of weights that have a sliding relationship in which a given error value is weighted by successive weights in forming successive correction values, and error forming based upon subtraction of signals representative of the output desired from the actual output of the equalizer.

Equalization in the presence of data is shown using the unequalized input to form the weights. In an example using pseudo-noise the weights are formed by cross-correlation of the input with the pseudo-noise. In an example using no

pseudo-noise the data is treated as random and the unequalized input is employed to weight the equalizer output errors directly.

Various desired responses are shown helping to solve carrier jitter and other data handling problems.

3,614,623

ADAPTIVE SYSTEM FOR CORRECTION OF DISTORTION OF SIGNALS IN TRANSMISSION OF DIGITAL DATA

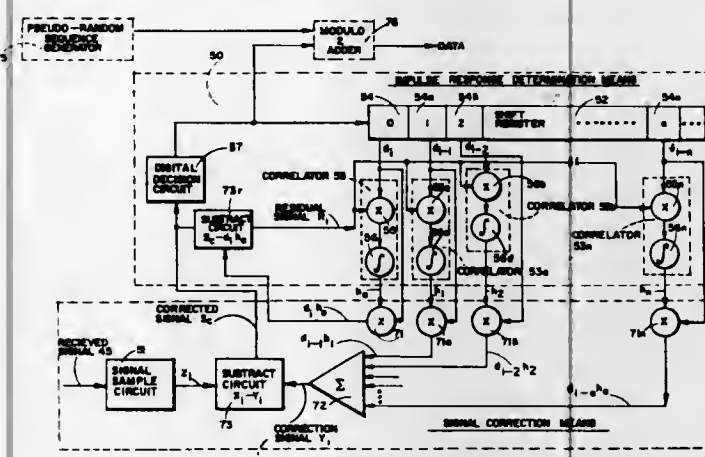
Gerald K. McAuliffe, Mahopac, N.Y., assignor to North American Rockwell Corporation

Filed Apr. 21, 1969, Ser. No. 817,887

Int. Cl. H04b 1/10

U.S. Cl. 325-42

12 Claims



An adaptive-type system which provides improved arrangements for correction of distortion of digital data sent over a transmission channel. The system includes a data shift register which stores received data bits and cross-correlates these with the signal being received to thereby obtain the impulse response of the transmission channel to provide compensation therefor. Cross-correlation networks produce a correction signal for compensation by digitally multiplying each of the n most recently received data bits by any residual distortion remaining in a sampling of the received signal after compensation and integrating the respective products. Residual distortion is detected by comparison of the sampling of the received signal after compensation and the signal for the most recent data bit to provide a residual signal. This residual signal is applied to the correlation circuits to produce a final correction signal which eliminates any distortion causing errors in transmission of the digital data. Another embodiment of the invention also compensates for cross-channel distortion arising in a quadrature modulation system.

3,614,624

DEVICE FOR TRANSLATING BINARY DATA TO A JITTER-CONTROLLED ASYNCHRONOUS FREQUENCY MODULATED SIGNAL

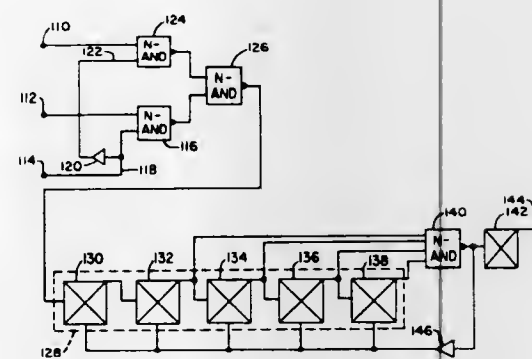
Frank A. Scarpino, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Apr. 1, 1969, Ser. No. 811,894

Int. Cl. H04L 27/12

U.S. Cl. 325-163

13 Claims



A circuit for translation of binary data signals to a jitter-controlled frequency modulated output signal comprises

means producing a first clock signal divided by passing the same through a counter or scaler which provides an output each time a predetermined number of clock cycles has been received thereby. The successive outputs of the scaler shift a bistable element such as a flip-flop to produce an output square wave representing a first of two frequencies of the frequency modulated output signal. The second frequency of the output signal is derived from a second clock signal of different frequency divided through the same scaler, or, in the alternative, from the same clock signal divided through a second scaler of different predetermined cycle capacity. In the latter case, one scaler idles while the other scaler generates an output wave and additional clock signals are employed, as required, to advance the idling scaler to maintain phase continuity for the instant of a shift in data signals so that the new wave generated through the previously idling scaler will have at least approximate phase continuity with the old wave.

3,614,625

MASTER-SLAVE, TUNED CHANNELS FOR SIMULTANEOUS TRACKING OF PLURAL SIGNALS OF DIFFERENT FREQUENCIES

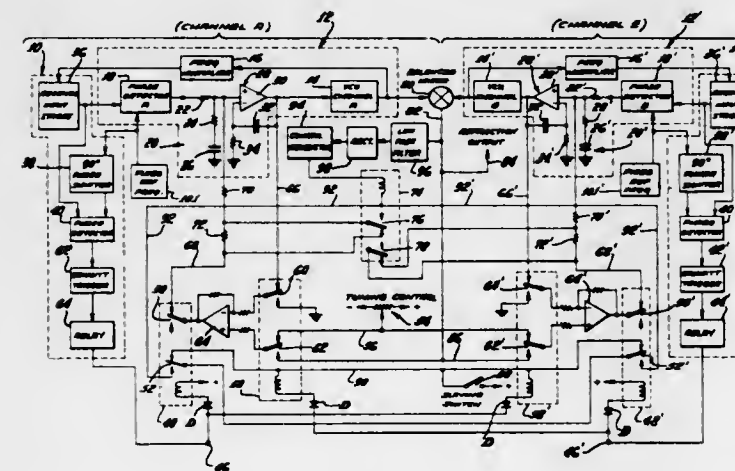
Albert T. Mayle, Jr., Newhall, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 30, 1967, Ser. No. 679,108

Int. Cl. H04b 1/06

U.S. Cl. 325-307

11 Claims



Receiver apparatus for receiving and locking to a pair of harmonically related RF signals, including a pair of phase-lock loops for the respective RF channels and a primary acquisition circuit for each of the phase-lock loops. Switching means is responsive to primary acquisition in either channel to slave the unlocked loop in the other channel to the locked loop in a secondary acquisition so as to automatically adjust the control frequency of the slaving loop to approximately the correct frequency for primary acquisition in said other channel.

3,614,626

RADAR DETECTOR SYSTEM

George M. Dillard, San Diego, Calif.

Filed Jan. 25, 1966, Ser. No. 522,986

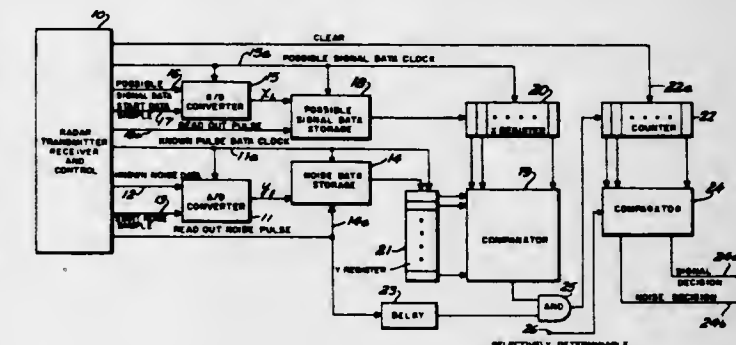
Int. Cl. H04b 1/10

U.S. Cl. 325-323

6 Claims

A system is disclosed for improved detection of signals in the presence of noise and interference. It employs a distribution-free criteria to indicate either the presence or absence of signal. A source of known noise data is connected to means for converting the known noise data to digital form. A separate means for converting signal analog input data similarly converts this data to digital form. An appropriate means is provided for successively comparing the digital quantity of each increment of determinable sequence of the input data with the digital quantity of each increment of a like sequence of the known noise data. This latter means is responsive to the quantitative difference detected for each

incremental comparison for producing a signal which is commensurate with the determined difference. The difference signals thus produced for each compared sequence are summed and the sum of the difference signals are compared with a signal of predetermined quantitative significance which produces an output indicative of the



presence of signal in the analog input data when the summed difference signals exceed the signal of predetermined quantitative significance and produces an output indicative of the absence of signal in the analog input data when the signal of predetermined quantitative significance exceeds the summed difference signals.

3,614,627

UNIVERSAL DEMODULATION SYSTEM

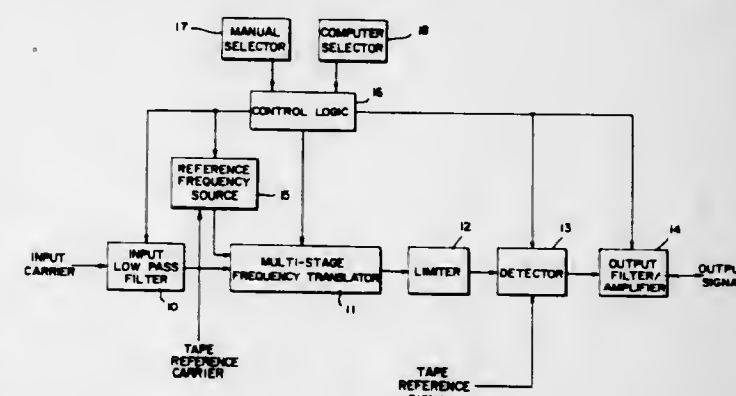
Raymond A. Runyan, Wilton, and Owen J. Ott, Brookfield, both of Conn., assignors to Data-Control Systems, Inc., Danbury, Conn.

Filed Oct. 15, 1968, Ser. No. 767,628

Int. Cl. H04b 1/06

U.S. Cl. 325-345

25 Claims



An FM demodulation system useful to demodulate any carrier signal of any deviation within prescribed ranges with unitary apparatus. A plurality of band pass filters is employed, each filter having a predetermined bandwidth, and selected filters are operatively arranged with a plurality of frequency translators such that an input signal can be heterodyned to the center frequency of the filter having the requisite bandwidth for the deviation of the particular input signal.

3,614,628

UHF-VHF ANTENNA PREAMPLIFIER

Robert S. Ringland, Burlington, Iowa, assignor to Antennacraft Company, Burlington, Iowa

Filed Dec. 5, 1968, Ser. No. 781,392

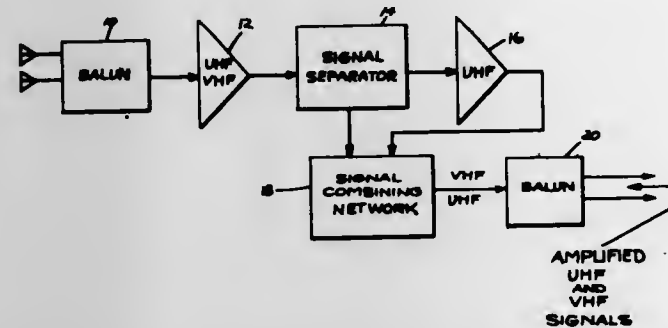
Int. Cl. H04b 1/18

U.S. Cl. 325-365

4 Claims

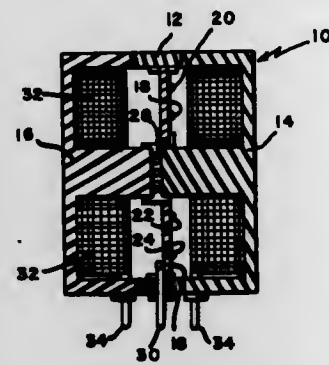
This invention relates to a preamplifier which may be attached directly to an antenna adapted to receive both UHF and VHF television signals. Within the preamplifier there are two stages of amplification and a signal separation network adapted to separate the VHF signals from the UHF signals for individual treatment. The two amplifiers are arranged in successive stages, with the first stage being coupled directly

to the antenna terminals. This first amplifier is adapted to amplify both the UHF and VHF signals. A signal-separating network is coupled between the two amplifiers and contains two networks, each adapted to readily pass one of the UHF and VHF signals and drastically attenuate the other. The UHF network is connected between the output circuit of the first amplifier and the input circuit of the second amplifier, the second amplifier being designed to provide maximum gain of the UHF signals. The VHF circuit is coupled between the output circuits of both amplifiers. The amplified UHF signals from the output circuit of the second amplifier are



combined in a signal-combining circuit with the VHF signals from the first amplifier, and these in turn are coupled to an impedance-matching network designed to be connected directly to a twin lead transmission line which leads to the television receiver. By providing the signal-separating network in the output circuit of the first amplifier, the inherent noise therein will not be amplified initially. Therefore, there results the application of an amplified television signal to the transmission line having a higher signal-to-noise ratio than would have been obtained had the signal separation taken place in the input circuit of the first amplifier.

3,614,629
MAGNETIC PACKAGING MODULE
Lawrence B. Sues, Rome, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,718
Int. Cl. H04b 1/08; H03f 7/02
U.S. Cl. 325-355

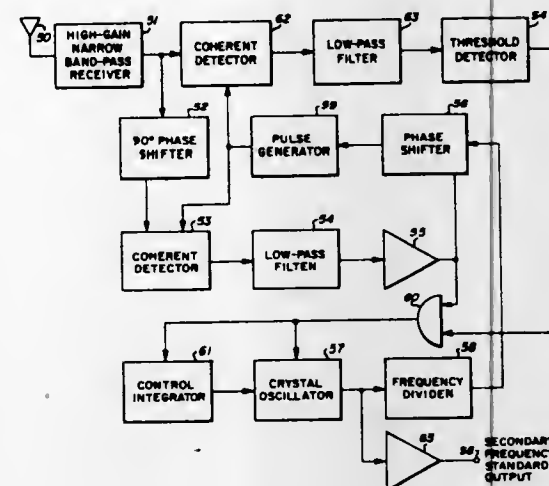


A radio frequency module employing a segmented magnetic structure for packaging a ferrimagnetic tuned circuit. The planar electronic circuitry is packaged in the center section of a three part magnetic structure. Connector pins positioned on the bottom of the module serve to conduct the output signals from the electronic circuitry and to control the magnetic field intensity by means of solenoids located in the outer sections of the module.

3,614,630
RADIO FREQUENCY STANDARD AND VOLTAGE CONTROLLED OSCILLATOR
Louis H. Rorden, Menlo Park, Calif., assignor to Develco, Inc., Mountain View, Calif.
Filed Feb. 4, 1969, Ser. No. 796,539
Int. Cl. H04b 1/16

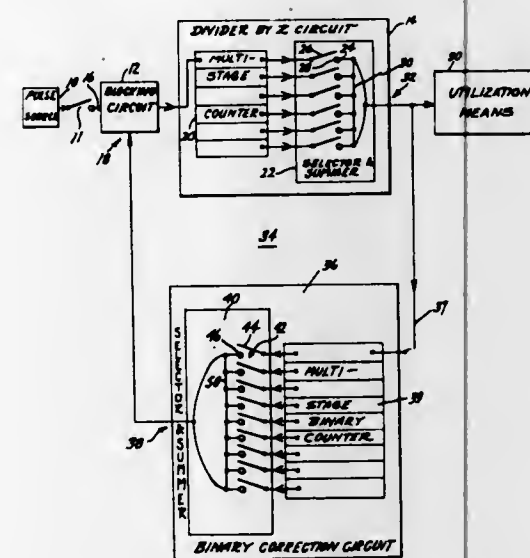
U.S. Cl. 325-421
A radio signal controlled oscillator is provided as a local frequency standard by synchronizing the oscillator using a

phase-lock servosystem comprising a long term integrating device as a voltage variable capacitor in the resonant circuit of the oscillator. The device consists of two columns of mercury separated by a substantial gap of electrolyte in a chamber made of dielectric material. Upon comparison of the oscillator signal with the radio signal, any error signal developed is applied across the electrolyte gap to the



mercury column to transfer mercury from one to the other by the process of electrolysis. Conductive material wrapped around the chamber serves as a second plate of a capacitor for each of the columns one of which is used as part of the voltage variable capacitor. Means is provided for detecting the loss of the radio signal to interrupt any further change in the variable capacitor until the radio signal is restored.

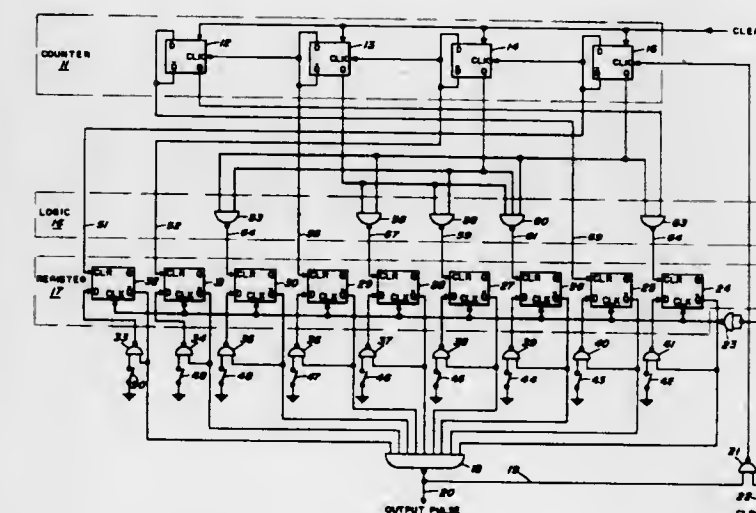
3,614,631
PULSE COUNTER HAVING SELECTABLE WHOLE AND FRACTIONAL NUMBER DIVISION
William E. Be Vier, Schenectady, and Rolf E. Wagner, Latham, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,793
Int. Cl. H03k 21/30
U.S. Cl. 328-48



A system for correcting errors in pulse data signals generated by a repetitive source wherein the data signals are fed to a blocking circuit where they pass on to the output means of the system as long as a blocking signal is not present at the blocking circuit. The pulses which pass through the blocking circuit are divided into a selected discrete number of pulses included in the calibration factor. For each discrete number of pulses of the pulse source, the divider delivers one pulse to the system output means and

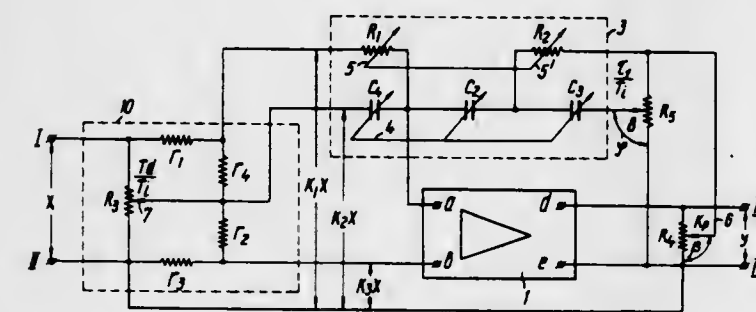
also one pulse to a feedback path which includes a binary correction circuit which is precoded to deliver a blocking signal to the blocking circuit when certain stages of the binary correction circuit are at the "1" level. The states which are operative to cause such a blocking signal to be sent to the blocking circuit are in direct relation to the arrangement of bits of the binary equivalent of the fractional part of the calibration factor so that there appears a precisely calibrated output from the system.

3,614,632
DIGITAL PULSE WIDTH GENERATOR
Lawrence M. Leibowitz, Fairfax, Va., and Richard K. Baldauf, Greenbelt, Md.
Filed Oct. 14, 1970, Ser. No. 80,652
Int. Cl. H03k 5/04
U.S. Cl. 328-58



Logic circuitry for generating a pulse of width n units of time where n is any positive integer.

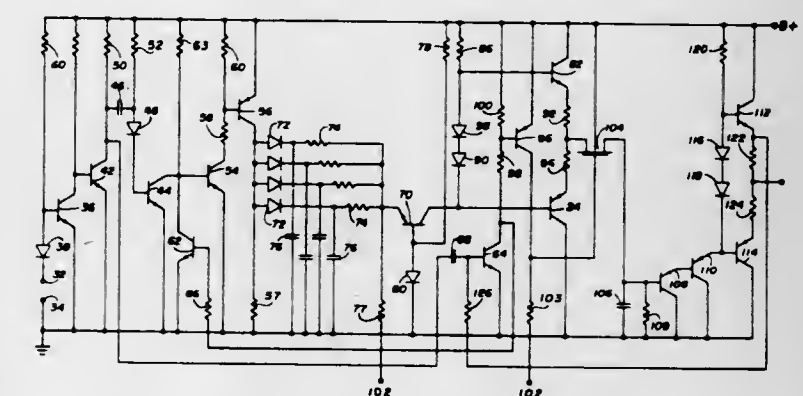
3,614,633
INDUSTRIAL PROCESS REGULATOR OF PROPORTIONAL PLUS INTEGRAL PLUS DIFFERENTIAL ACTION
Aly Umyarovich Yalyshev; David Veniaminovich Svecharnik; Vladimir Alexandrovich Pavlenko; Vyacheslav Alexeevich Tsarkov; Bonch-Bruevick Andrei Mikhailovich, and Boris Alexandrovich Levinson, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatel'skiy Institut teploenergeticheskogo priborostroyeniya, Moscow, U.S.S.R.
Filed July 2, 1968, Ser. No. 741,978
Int. Cl. G06g 7/18
U.S. Cl. 328-127



A regulator for industrial process control, including an amplifier and a negative feedback circuit. The regulator is of a proportional, plus integral, plus differential action type which includes RC components in the feedback group. The feedback group includes a plurality of resistors and capacitors having ganged slider arms and adjustment controls

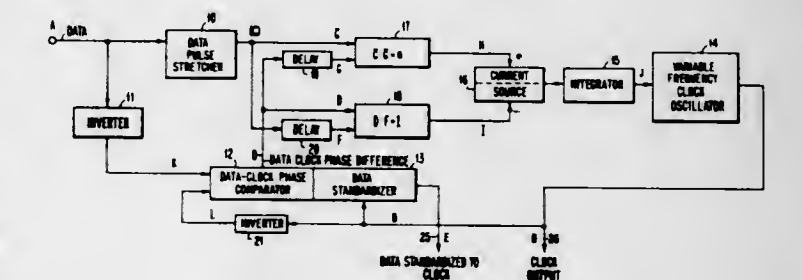
for maintaining a high accuracy over a wide range of parameters for the regulator. An input scaling device is provided including a voltage divider network and a potentiometer with the potentiometer connected through the feedback loop or circuit to an input of the amplifier. One input and an output of the amplifier are connected together to serve as a common bus point.

3,614,634
FREQUENCY CONVERSION SYSTEM
James J. Jones, Plano; David B. Oxford, Garland, and Howard W. Zach, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 2, 1969, Ser. No. 854,688
Int. Cl. H03b 3/04
U.S. Cl. 328-140



In many dynamic control systems, there is a need to rapidly and accurately convert the frequency of an input signal into a voltage proportional thereto. At a preselected time in a cycle of an input signal, a plurality of capacitors are charged to a reset level. After a fixed delay from the preselected time, each of the charged capacitors begins to discharge at a rate determined by the value of an RC network to generate a voltage signal that decays exponentially. The exponentially decaying voltage for each of the plurality of capacitors are summed together to produce a voltage that varies inversely with frequency. This voltage is the input signal to a sample and hold circuit. At the completion of one cycle of the input signal, the value of the voltage that varies inversely with frequency is read and stored as a voltage representative of the frequency of the input signal. Higher voltages correspond to fast frequency signals and lower voltages correspond to slow frequency signals. Conversion of a frequency takes place upon completion of a sampled cycle.

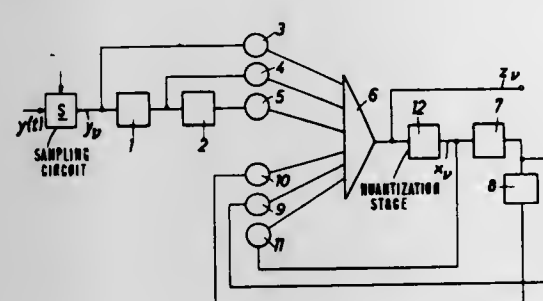
3,614,635
VARIABLE FREQUENCY CONTROL SYSTEM AND DATA STANDARDIZER
Anthony N. LaPine, San Jose, and Julian E. Vaughn, Campbell, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,442
Int. Cl. H03b 3/04
U.S. Cl. 328-155



A variable frequency oscillator feedback control system performs a frequency control function and a data relocation

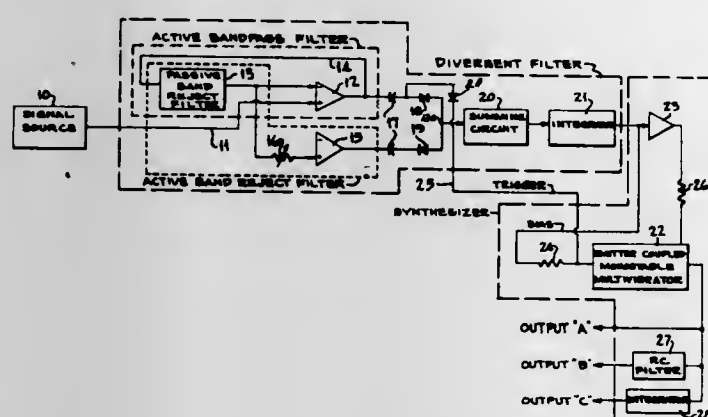
function. The oscillator is made to follow the frequency of random input data and individual incoming data pulses are relocated in time to correspond with the time slots defined by the oscillator output pulses. The feedback loop contains a novel DC logic phase comparator and data standardizer. The phase comparator controls the frequency of the oscillator while the data standardizer relocates the data pulses to the time slots of the oscillator pulses.

3,614,636
DISTORTION CORRECTION CIRCUIT FOR LINEARLY DISTORTED PULSE SEQUENCES
Broder Wendland, Pfingststr. 1, 1 Berlin 44, Germany
Filed Sept. 26, 1969, Ser. No. 861,297
Claims priority, application Germany, Sept. 26, 1968, P 17 91 173.8
Int. Cl. H03b 1/00
U.S. Cl. 328—162 7 Claims



A circuit for correcting linear distortions in a received signal pulse train by converting the pulse train into a signal sequence by periodically sampling the received train and storing each sample value until the next sampling, quantizing the sequence in discrete amplitude levels identical with those of the initial pulse train, sequentially delaying the quantized sequence, multiplying each delayed sequence by a correction value, adding all multiplied sequences to the initial sequence at the quantizing input, and modifying the correction values in a direction to establish equality between the sequence values before and after quantizing.

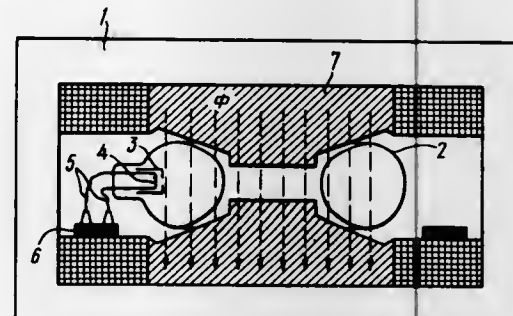
3,614,637
DIVERGENT FILTER SYSTEM
Jacob H. Kubanoff, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 31, 1969, Ser. No. 872,970
Int. Cl. H03k 5/12
U.S. Cl. 328—167 13 Claims



An electrical, easily microminiaturized filter system which exhibits a very steep rolloff, substantially rectangular response by obtaining the divergence or algebraic summation between the positively half-wave rectified response of a band-pass filter and the negatively half-wave rectified response of a band reject filter, both band filters having the

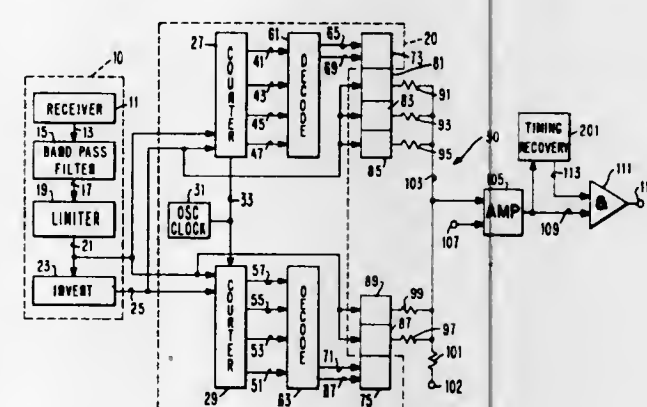
same center frequency and bandwidth. Also provided is a synthesizer, including an emitter coupled monostable multivibrator, which is input bias controlled and output modulated to further enhance filter system response rectangularity through the controlled production of low amplitude narrow pulses in the region of rolloff and high amplitude broad pulses at the center of the band.

3,614,638
BETATRON
Lev Martemianovich Anan'ev, ulitsa Lenina, 44, kv. 10; Yakov Semenovitch Pekker, ulitsa Sovetskaya, 73, kv. 23; Vladimir Lukianovich Chakhlov, pereulok Zavodskoi, 8/1, kv. 8; Yakov Afanasievich Sharachin, poselok Sputnik, 15, kv. 22; Mikhail Mikhailovich Shtein, ulitsa Usova, 17, kv. 8, and Jury Pavlovich Yarushkin, ulitsa L. Tolstogo, 65, kv. 8, all of Tomsk, U.S.S.R.
Filed May 7, 1969, Ser. No. 822,405
Int. Cl. H05h 1/100
U.S. Cl. 328—237 6 Claims



A betatron comprising an electromagnet having a pair of opposing poles spaced adjacent one another and acting to transfer a magnetic flux in a zone therebetween, is provided with an acceleration vacuum vessel interposed between the poles. An injector is mounted internally of the vessel and the injector includes an electron emissive filament. A winding coil is connected to one of the poles and surrounds the flux zone. The filament is electrically coupled with the winding for being heated by electrical energy induced in the winding in response to the magnetic flux.

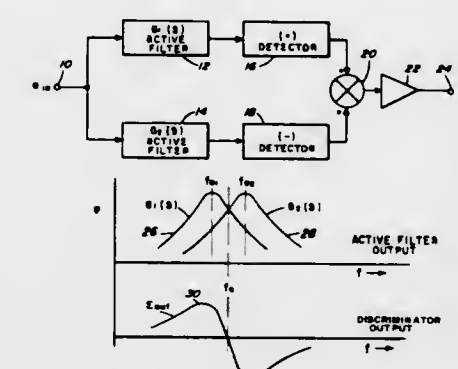
3,614,639
FSK DIGITAL DEMODULATOR WITH MAJORITY DECISION FILTERING
Harris J. Belman, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 30, 1969, Ser. No. 846,112
Int. Cl. H04l 27/14
U.S. Cl. 329—104 10 Claims



A digital FSK demodulator including frequency detecting circuits, temporary storage, and a majority detector. A plurality of the most recent data bits from the frequency

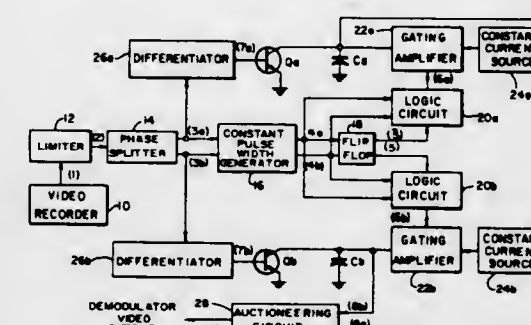
detecting circuits are stored and an output is generated by the majority detector which is a mark if the majority of stored bits are marks, and a space if the majority of stored bits are spaces.

3,614,640
FREQUENCY DISCRIMINATOR USING NO INDUCTIVE COMPONENTS
Frederick H. Wolf, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 27, 1970, Ser. No. 6,096
Int. Cl. H03d 3/06, 3/28
U.S. Cl. 329—110 4 Claims



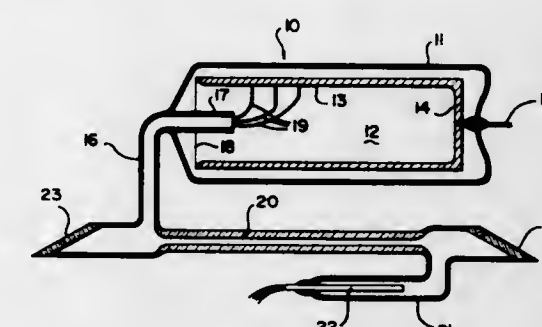
A frequency discriminator which is mechanized of active filters and operational amplifiers. The signal under test is simultaneously applied to a plus detector channel and a minus detector channel these channels having active filters of band-pass configuration, one with a center frequency below the discriminator frequency and one above. The channels also have operational amplifier type detectors and the outputs of the two channels are combined, post detection filtering being accomplished by a summing amplifier by virtue of a RC feedback applied around this amplifier.

3,614,641
FREQUENCY DEMODULATOR
Francis T. Thompson, Murrysburg, and Leonard C. Vercellotti, Verona, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 6, 1969, Ser. No. 863,829
Int. Cl. H03d 3/04
U.S. Cl. 329—110 13 Claims



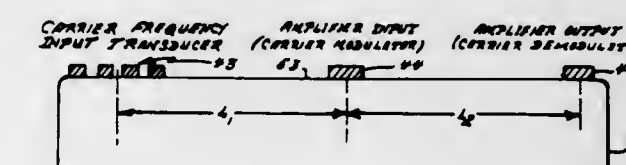
A frequency demodulator and method for demodulating frequency modulated (FM) signals, which may have been previously recorded on a recording medium, modulated in accordance with a video waveform, for example, wherein potentials are stored, for example, by capacitors, in response to selected half-periods of the recorded FM signals, and selecting, by auctioneering for example, one of the stored potentials which is indicative of the intelligence in the FM signals under consideration.

3,614,642
GAS LASER
Urs Hochuli, Hyattsville, and Paul R. Haldemann, College Park, both of Md., assignors to The University of Maryland, College Park, Md.
Filed Sept. 14, 1966, Ser. No. 579,293
Int. Cl. H01s 3/22
U.S. Cl. 330—4.3 10 Claims



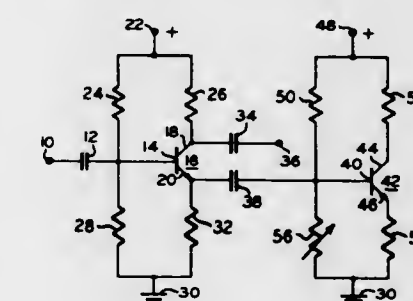
A cold cathode gas laser, in which the cathode is machined in distilled water and is not chemically treated, before being oxidized, and in which gas pressure and volume and cathode current density are selected to provide cathode life of over 10,000 hours for a cathode so prepared.

3,614,643
MICROWAVE ACOUSTIC SURFACE WAVE AMPLIFIER AND METHOD OF FABRICATION
Andrew J. Slobodnik, Jr., Lowell, Mass.
Filed Apr. 1, 1970, Ser. No. 24,691
Int. Cl. H03f 13/00
U.S. Cl. 330—5.5 4 Claims



Nonlinear acoustic properties of crystalline media are utilized to achieve amplification in an acoustic surface wave device. Power density curves of acoustic surface waves traveling along a piezoelectric substrate member have been found to exhibit negative slopes. Amplification is accomplished by modulating the acoustic surface wave at a point on the substrate member corresponding to the first zero slope and demodulating it at the second zero slope.

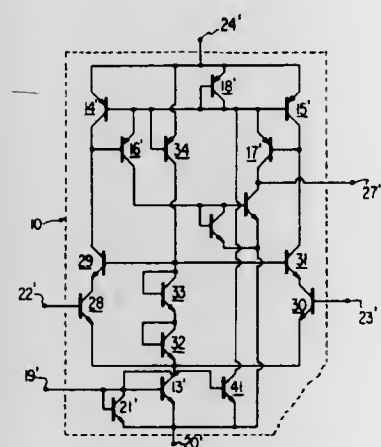
3,614,644
AMPLIFIER APPARATUS WITH DISTORTION COMPENSATION
Daniel Liberman, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
Filed Dec. 15, 1969, Ser. No. 884,988
Int. Cl. H03f 1/08
U.S. Cl. 330—28 8 Claims



A transistor amplifier is shown wherein a second transistor is connected to generate distortion components substantially

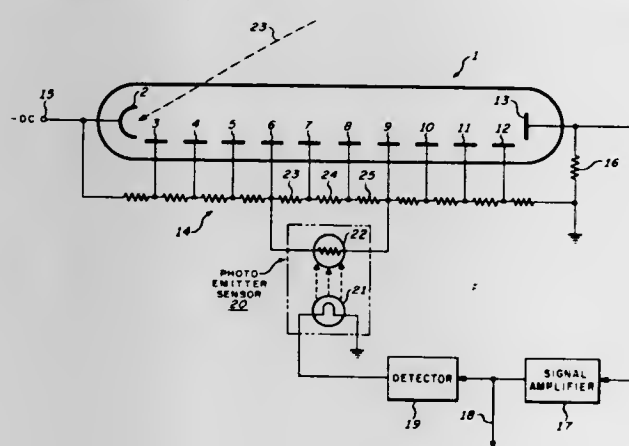
the same as those generated by non-linearities of the base-emitter junction of a transistor connected as the amplifier. The distortion components so generated are coupled to the emitter of the amplifier transistor to reduce the distortion due to the base-emitter nonlinearity.

3,614,645
DIFFERENTIAL AMPLIFIER
Carl Franklin Wheatley, Jr., Somerset, NJ, assignor to RCA Corporation
Filed Aug. 6, 1969, Ser. No. 847,879
Claims priority, application Great Britain, Sept. 27, 1968, 46151/68
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 17 Claims



A differential amplifier comprising a pair of transistors of one conductivity type has an active load circuit comprising a second pair of transistors of the opposite conductivity type, one connected in series with each transistor of the first pair. A third pair of transistors of the opposite conductivity type have their emitter electrodes connected in common to the base electrodes of the second pair, and their base electrodes individually connected to the collector electrodes of the second pair. The active load varies its conductivity as a function of common mode currents while developing a substantially constant voltage drop. Differential signal currents develop significant voltage drops which are simultaneously coupled by the third pair of transistors to an output load circuit.

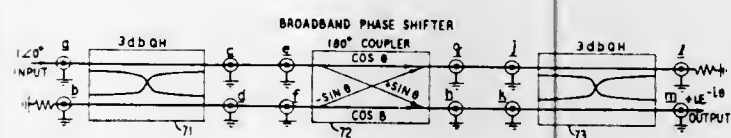
3,614,646
PHOTOMULTIPLIER TUBE AGC USING PHOTOEMITTER-SENSOR FOR DYNODE BIASING
Earl T. Hansen, Salt Lake City, Utah, assignor to Sperry Rand Corporation
Filed Oct. 18, 1967, Ser. No. 676,275
Int. Cl. H03f 17/00
U.S. Cl. 330—59 5 Claims



A photomultiplier tube automatic gain control circuit wherein the biasing potentials between a plurality of adjacent

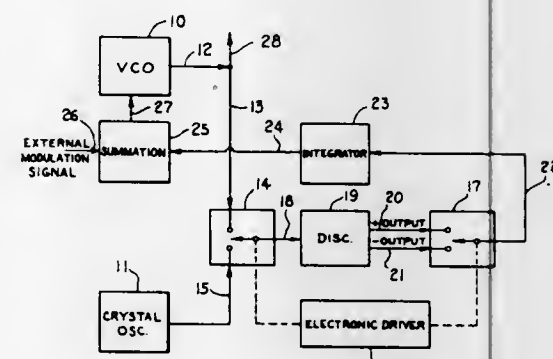
dynodes are varied inversely as the amplitude of the photomultiplier output signal. The output signal is detected and applied to a photoemitter-sensor connected in shunt with the biasing network for the aforesaid dynodes.

3,614,647
GENERALIZED IMPEDANCE-MATCHED MULTIBRANCH ARRAY
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 4, 1969, Ser. No. 874,001
Int. Cl. H03f 3/68
U.S. Cl. 330—124 6 Claims



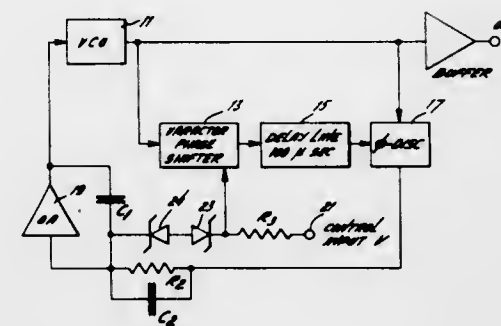
A multibranch array comprising a multibranch input network for dividing a signal into n equal signal components, where n is any integer, and a multibranch output network for recombining said components in phase. The networks are interconnected by means of n branch circuits which include first phase shifters for producing phase differences among the branch signals equal to different multiples of $180 m/n^\circ$, where m is an integer less than n . Second phase shifters produce complementary phase shifts to restore the signals to a common phase for recombination in the output network. Amplifiers or other circuit elements are located in each of the branch circuits between pairs of phase shifters.

3,614,648
AUTOMATIC FREQUENCY CONTROL LOOP INCLUDING SYNCHRONOUS SWITCHING CIRCUITS
Frank Byrne, Cocoa Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Sept. 10, 1970, Ser. No. 71,047
Int. Cl. H03b 3/04
U.S. Cl. 331—14 5 Claims



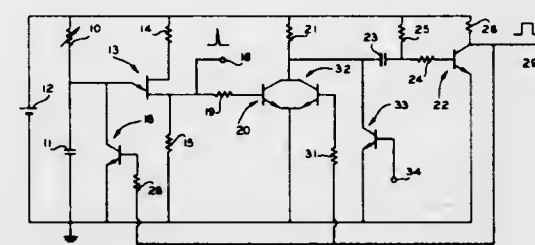
A circuit for producing precise and exact frequency reference that includes a voltage controlled oscillator, a crystal oscillator, a discriminator, an integrator, and a pair of electronic switches. One electronic switch alternately couples the frequencies from the voltage controlled oscillator and the crystal oscillator to the discriminator which produces alternate DC signals on its output. The second electronic switch produces a composite signal which is fed to the integrator for producing a corrective DC signal that is fed back to the voltage controlled oscillator to cause such to come in alignment with the crystal oscillator.

3,614,649
FREQUENCY STABILIZATION OF CONTINUOUSLY TUNABLE OSCILLATORS
John S. Gerig, McLean, Va., assignor to Reaction Instruments, Incorporated, Vienna, Va.
Filed Dec. 24, 1969, Ser. No. 887,957
Int. Cl. H03b 3/04
U.S. Cl. 331—17 7 Claims



A voltage controlled oscillator with a controllable phase shifter and a delay line connected in series with the output of the oscillator. A phase discriminator measures the phase difference between the output of the oscillator and the output of the delay line and feeds back a difference signal which, suitably conditioned, dynamically stabilizes the frequency of the oscillator.

3,614,650
UNIUNCTION TRANSISTOR RELAXATION OSCILLATOR WITH RAPID CAPACITOR DISCHARGE CIRCUIT
Earl L. DeShazo, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 18, 1970, Ser. No. 38,199
Int. Cl. H03k 3/26
U.S. Cl. 331—52 6 Claims

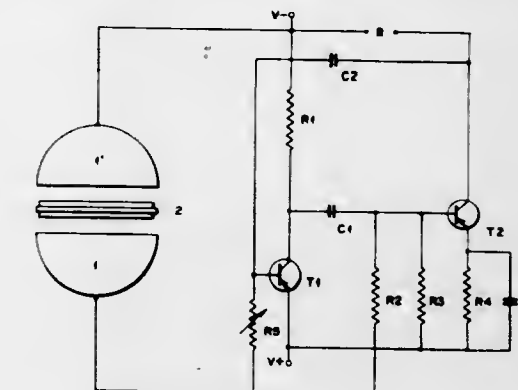


The shape of the output pulses from a unijunction transistor relaxation oscillator is improved by a circuit which rapidly discharges the capacitor of the oscillator. The discharge circuit is actuated by a monostable multivibrator, the input of which is connected to the output of the oscillator.

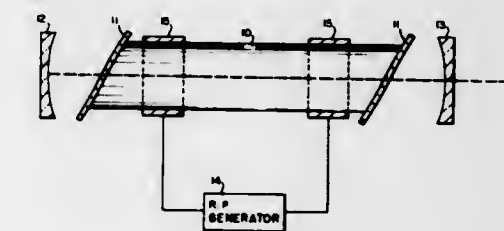
3,614,651
EXTERNAL CONTROL OF VARIABLE FREQUENCY OSCILLATOR
Claude-Marie Pasquier, 37, Avenue de Saxe, Paris, and Françoise Mannel-Sanson, 5, rue de l'Adde Dubos, 60 Beauvais, both of France
Filed June 27, 1969, Ser. No. 837,042
Int. Cl. H03b 5/30
U.S. Cl. 331—65 2 Claims

An electronic control device comprising a pair of electrodes connected in an oscillator circuit. The electrodes

are designed to be held between the hands of a subject and the oscillator output frequency is continuously variable in

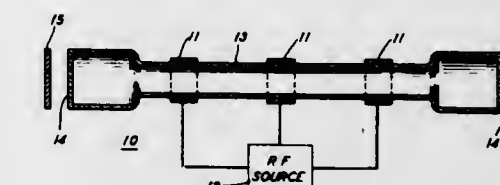


3,614,652
OPTICAL WINDOWS FOR LASERS
Van O. Nicolai, Reston, Va.
Filed Apr. 24, 1970, Ser. No. 31,473
Int. Cl. H01s 3/02; G02b 1/00
U.S. Cl. 331—94.5 1 Claim



A gallium antimonide optical window component for use in high-power gas phase lasers.

3,614,653
OPTICAL MASER
Ali Javan, Boston, Mass.; William R. Bennett, Jr., New Haven, Conn., and Donald R. Herriott, Morristown, N.J., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 79,062, Dec. 28, 1960, now Patent No. 3,149,290, dated Sept. 15, 1964. This application May 2, 1963, Ser. No. 277,651
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 11 Claims



An optical maser comprising: means for producing free electrons within an enclosed space, a first and a second gas within the enclosed space, the first gas possessing a metastable energy level above its ground state to which atoms thereof may be raised by collision with said free electrons, the second gas possessing an energy level system with at least two levels above the ground state, the separation of the higher of said two levels from the ground state substantially matching the separation of said metastable level of the first gas from its ground state, so that atoms of the first gas which are in the metastable state collide with ground state atoms of the second gas and excite said ground state atoms to said higher level, thereby creating a population

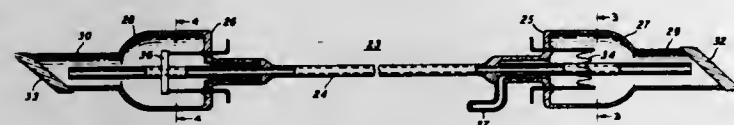
inversion between a pair of energy levels of said second gas so that emission of coherent optical radiation may be stimulated at a frequency corresponding to the energy separation therebetween, means for forming resonant modes of said coherent radiation within the enclosed space comprising two optically reflecting members defining a light beam path therethrough, and means for abstracting said coherent radiation for utilization.

3,614,654 DIRECT-CURRENT GASEOUS OPTICAL MASER STRUCTURE

Warren Gronos, Bernardsville, and Edward J. Walsh, Morris Plains, both of N.J., assignors to Bell Telephone Laboratories Incorporated, New York, N.Y.
Filed Sept. 20, 1963, Ser. No. 310,268
Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

12 Claims



A direct-current gaseous optical maser comprises an elongated hollow cylinder that is open on both ends for defining a usable gas discharge path portion. A cathode and an anode are set back from the two ends within enclosures so that the gas discharge follows an approximately U-shaped path from the cathode through one open end of the cylinder and a similar path from the other open end to the anode.

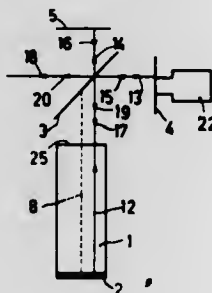
3,614,655 OPTICAL MASER MODULATOR USING INTERFERENCE BETWEEN TWO PORTIONS OF THE OUTPUT BEAM

Bouwe Bolger, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 31, 1964, Ser. No. 341,633
Claims priority, application Netherlands, Feb. 22, 1963, 289372

U.S. Cl. 331-94.5

Int. Cl. H01s 3/10

20 Claims



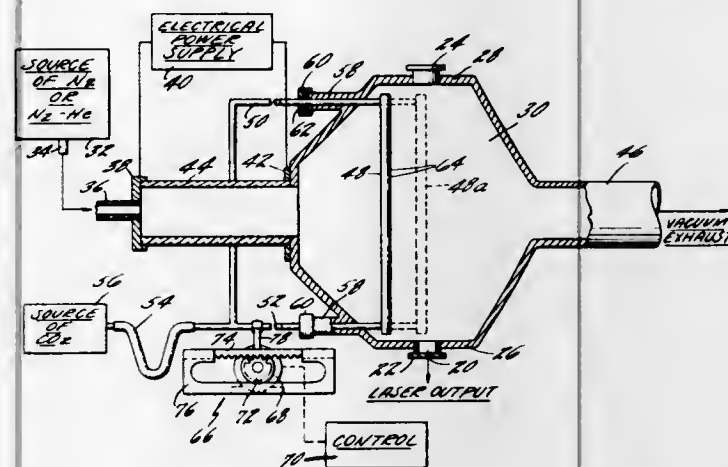
An optical maser of the kind comprising reflecting means at opposite ends of the active medium. A semitransparent mirror is included in the optical system so that the beam is divided into a reflected portion and a transmitted portion. Additional reflecting means are provided for returning the divided beam to the semitransparent mirror. Means are provided for controlling the length of the optical path between the semitransparent mirror and the reflecting means in order to control the phase difference between the reflected radiations. In this way, it is possible to modify, so to speak, the load on the maser and thus control the intensity of the emerging beam. The optical path length can be adjusted by mounting the reflecting means on an electrically controllable piezoelectric or magnetostrictive body. As an alternative, an electrooptic body can be included in the optical path.

3,614,656 GAS LASER

Edward A. Pinsley, Glastonbury, and Clyde O. Brown, Newington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 23, 1968, Ser. No. 710,696
Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

16 Claims



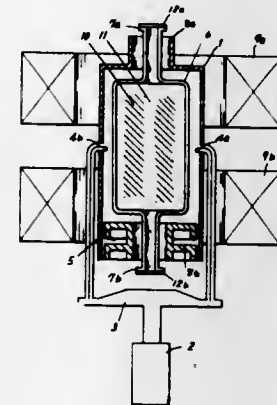
Carbon dioxide is injected into a stream of excited nitrogen by means of one or more manifolds or rods located directly within the laser chamber, disposed adjacent to and movable relative to the laser cavity.

3,614,657 CYLINDRICAL PLASMA LASER

Shuzo Hattori, Nagoyashi, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1964, Ser. No. 418,764
Claims priority, application Japan, Dec. 27, 1963, 38/70626
Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

8 Claims



An apparatus and method for obtaining high-power output oscillations from a gas laser by subjecting the gas to a magnetic field parallel to the axis of a tube containing the gas and to electromagnetic oscillations in a direction perpendicular to the longitudinal axis of the tube to produce a cylindrical plasma. The intensity of the magnetic field (H) and the frequency of the electromagnetic oscillations (f) being expressed by the general formula:
$$f = \frac{eH}{2\pi mc}$$
 wherein
 e = the electric charge of the gas particles,
 m = the average mass of the particles, and
 c = the velocity of light.

3,614,658 GAS LASER HAVING MEANS FOR MAINTAINING A UNIFORM GAS MIXTURE IN A DC DISCHARGE

John P. Goldsborough, San Jose, Calif., assignor to Spectra-Physics, Inc., Mountain View, Calif.
Filed Jan. 22, 1969, Ser. No. 792,952
Int. Cl. H01s 3/22, 3/05, 3/02

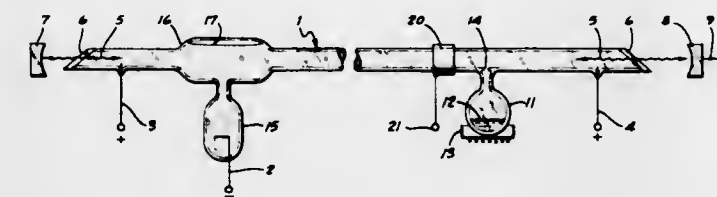
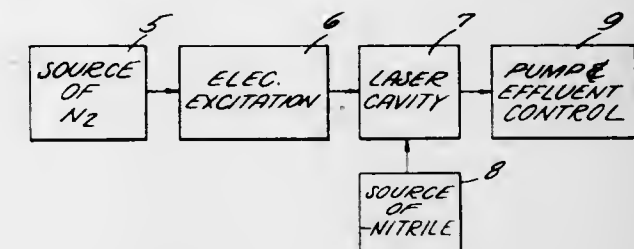
U.S. Cl. 331-94.5

12 Claims

A DC discharge gas laser in which the active medium is a mixture of gases having a low ionization potential

component. This component is supplied to the plasma tube at a position adjacent the anode and flows by DC cataphoresis in the direction of the cathode where it is removed from the system, thereby providing a substantial length of uniform ratio gas mixture which is particularly significant in small

energy level. The lasing gas is one of a group known as aliphatic nitriles which may either be introduced directly into



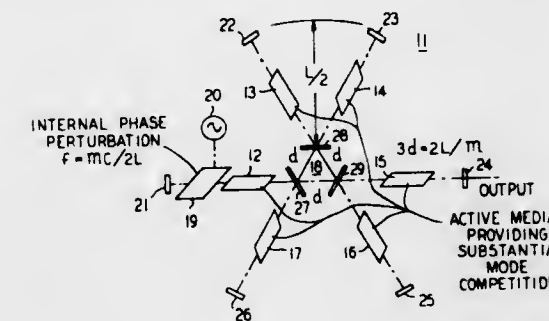
diameter plasma tubes. In the detailed examples, the laser is a helium-cadmium laser with continuous-wave operation at 4,416 Å and 3,250 Å, the flowing component of the active medium being cadmium vapor. Means are provided in modified embodiments to stabilize the concentration of the flowing component.

3,614,659 SYNCHRONOUS COUPLING OF LASER OSCILLATORS TO A COMMON RESONATOR

William W. Rigrod, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Mar. 14, 1969, Ser. No. 807,242
Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

8 Claims



There is disclosed a source of coherent optical energy in which a plurality of lasers pumped to support multiple axial modes are restricted to either mutually phase-locked multiple-mode operation or synchronized single-mode continuous-wave operation by mutual coupling to a common resonator that is adapted to support an additive buildup of intensity from the lasers in a manner providing mutual mode-frequency locking. The common resonator is either a ring or is an interferometric resonator of relatively great free spectral range compared to that of the laser resonators. Mode-frequency selection is facilitated by active media providing strong mode competition and/or by a common resonator having one or more loss ports that contribute to a strong filtering characteristic.

3,614,660 LASER EMPLOYING ALIPHATIC NITRILES AS A LASING GAS

Casper J. Ultee, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 27, 1969, Ser. No. 811,697
Int. Cl. H01s 3/14, 3/22

U.S. Cl. 331-94.5

5 Claims

A gas laser utilizes essentially vibrationally excited nitrogen or carbon monoxide as an energizing gas and, through resonant collisions with a lasing gas, transfers the energy to the lasing gas, preferentially to an upper laser

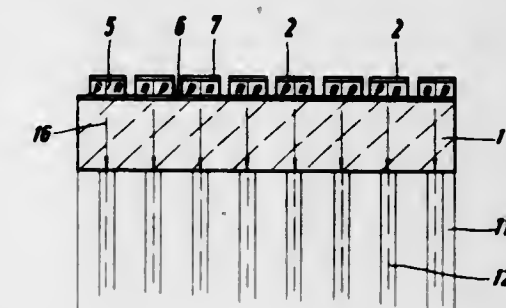
3,614,661 SEMICONDUCTOR LASER DIODE ARRANGEMENT FOR EXCITING LIGHT-WAVE CONDUCTORS

Manfred Borner, Ulm/Danube, and Gunter Goldbach, Neuenstadt, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany
Filed July 23, 1968, Ser. No. 746,929
Claims priority, application Germany, July 27, 1967, P 16 14 846.2

U.S. Cl. 331-94.5

Int. Cl. H01s 3/18

15 Claims



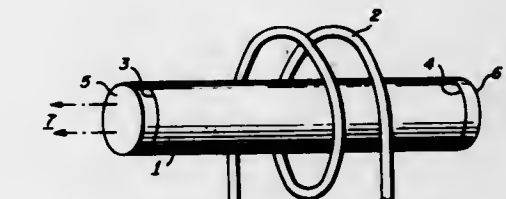
A laser diode semiconductor arrangement in which at least one semiconductor diode is provided on a surface of an insulated supporting body having a reflecting layer and in which such diode includes at least two different types of conductivity zones and a barrier separating such zones, perpendicularly disposed with respect to the reflecting layer surface of the supporting body.

3,614,662 LASER WITH A MONOCRYSTALLINE YA10 :N ACTIVE MEDIUM

Roch R. Monchamp, Waltham; Marvin J. Weber, Wayland, and Michael Bass, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Dec. 19, 1969, Ser. No. 886,617
Int. Cl. H01s 3/16

U.S. Cl. 331-94.5

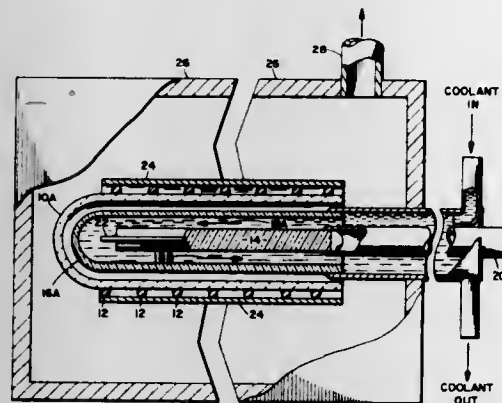
11 Claims



Nd^{++} ions serve as a dopant in monocrystalline YA10, forming an active solid-state lasing medium.

3,614,663
BLACK-BODY-PUMPED LASER
 Paul N. Palanos, Glendora, Calif., assignor to North American Rockwell Corporation
 Filed Nov. 26, 1965, Ser. No. 509,804
 Int. Cl. H01s 3/00
 U.S. Cl. 331-94.5

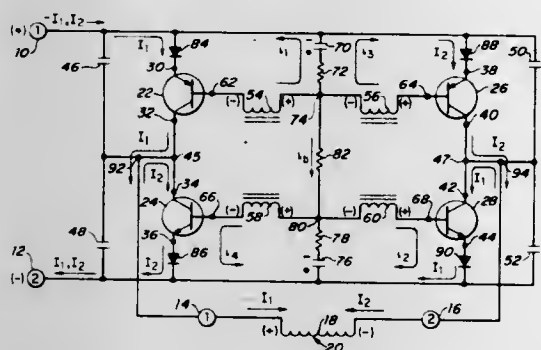
8 Claims



The laser is submerged in a black body cavity, the black body being maintained at a temperature at which its radiations include the frequency spectrum required to pump the laser. In this arrangement, the laser absorbs from this frequency spectrum—the frequencies required to pump it; and the unused black body radiations are reabsorbed by the black body cavity, to be later reradiated. Thus, they are not wasted; and a high-efficiency laser arrangement is produced.

3,614,664
CLASS C BRIDGE OSCILLATOR
 Donald W. Shute, Burlington, Mass., assignor to Spacetic Incorporated, Burlington, Mass.
 Filed July 8, 1970, Ser. No. 53,233
 Int. Cl. H03b 5/14; H03k 3/30
 U.S. Cl. 331-110

11 Claims

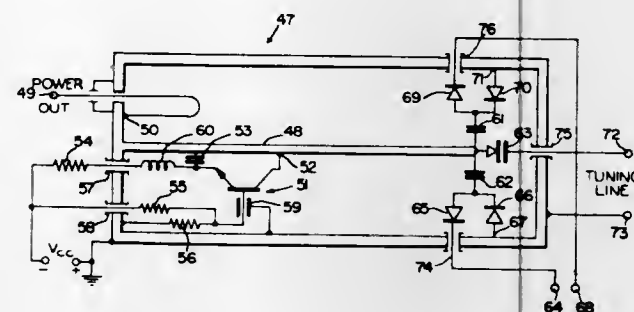


An oscillator bridge circuit including a pair of input terminals adapted for connection to a direct current source; two pairs of semiconductor devices, the two devices of each pair being connected with their load electrodes in series between the first and second input terminals and the junctions between each of the devices in a pair forming a pair of output terminals; a transformer having a primary winding connected across the pair of output terminals and having feedback windings; four capacitors one connected across the load terminals of each of the devices; and means for applying biases between a load electrode and control electrode of each device for alternately switching on one device in each pair to apply the direct current source voltage across the pair of output terminals in alternating polarity; the means for applying including a control circuit which includes the one of the feedback windings connected to the control electrode of each of the devices for applying the voltage induced therein to alternately switch on the devices at the resonant frequency of the bridge circuit as substantially determined by the transformer primary inductance and the four capacitors.

3,614,665
VOLTAGE-CONTROLLED OSCILLATOR WITH DIGITAL PRESET
 Carroll E. Weller, and Robert J. McNair, both of Cincinnati, Ohio, assignors to Avco Corporation, Cincinnati, Ohio
 Continuation of application Ser. No. 713,943, Mar. 18, 1968, now abandoned. This application Apr. 6, 1970, Ser. No. 25,928
 Int. Cl. H03b 5/18

U.S. Cl. 331-101

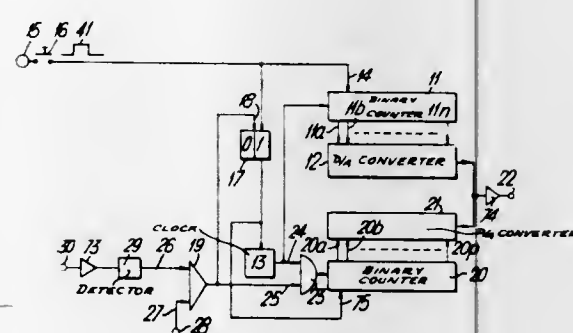
3 Claims



This is a voltage-controlled oscillator. The tank circuit of the oscillator comprises a plurality of capacitors, the capacitance magnitudes of which are related to each other in binary fashion. Also incorporated in this tank circuit is a voltage variable capacitor, to which a bias is applied for tuning purposes. By programmed switching one or more of the aforementioned capacitances are switched into the tank circuit, so as to bring the oscillator within the pull-in range of a phase lock loop. The elements of the oscillator are related to a coaxial line structure. The invention further provides a convenient mounting on which the tank circuit parameters are arranged. The various lumped capacitances in the tank circuit are switched in and out by PIN diodes.

3,614,666
TUNING A VARIABLE OSCILLATOR
 Jean Louis Ribour, La Celle Saint-Cloud, and Francois Emile Clement Denise, Palaiseau, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
 Filed May 28, 1970, Ser. No. 41,336
 Claims priority, application France, May 29, 1969, 69 17509
 Int. Cl. H03j 3/18
 U.S. Cl. 331-177 V

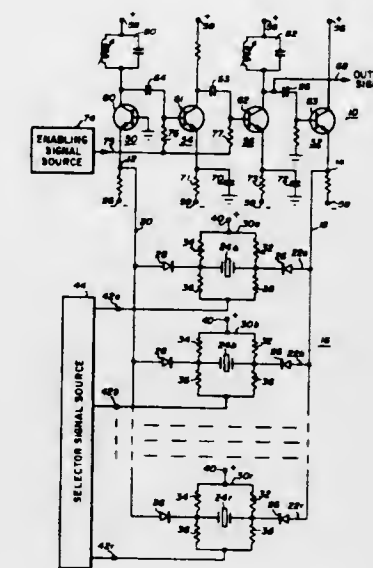
10 Claims



In a system for automatically tuning a ringing circuit, the voltage vs frequency curve of the ringing circuit is incrementally scanned and compared to a reference voltage. The frequency increments are made twice as large in that portion of the curve above said reference via a second incremental means. When the curve passes its maximum and returns to the reference voltage, the second means is disabled, reducing the frequency interval by one-half thus setting a frequency which corresponds to the maximum of said curve.

3,614,667
SWITCHABLE AND MODULATORY CRYSTAL OSCILLATOR
 Martin W. Fletcher, Palo Alto, Calif., assignor to Itek Corporation, Lexington, Mass.
 Filed Mar. 19, 1964, Ser. No. 353,082
 Int. Cl. H03c 3/28
 U.S. Cl. 332-26

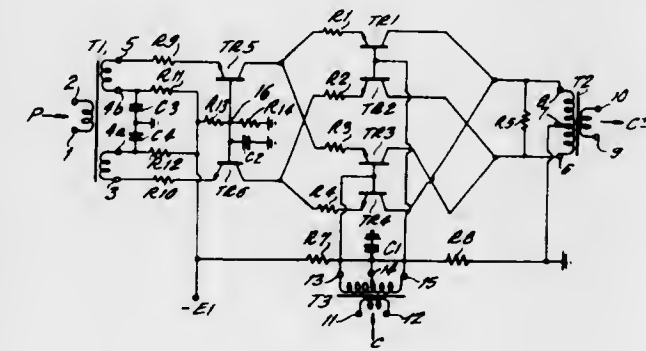
6 Claims



6. Apparatus for pulse modulating a crystal oscillator comprising: a transistor amplifier; a plurality of parallel feedback paths connected to said amplifier, each said feedback path including a crystal having a different resonant frequency; switch means associated with each of said feedback paths, each said switch means normally open to disconnect each of said feedback paths from said amplifier; means for applying a pulse modulating signal to at least the base electrode of one transistor forming one stage of said amplifier to render it conductive; gain control means connected to the stage of said amplifier to which said pulse-modulating signal is applied for providing maximum gain in said amplifier when said amplifier is first rendered conductive and for decreasing this gain thereafter; and means for applying successive switching signals to said switch means, one at a time, to thereby connect different ones of said feedback paths to said amplifier, whereby an output signal of the frequency of the crystal associated with the connected feedback path is generated.

3,614,668
DOUBLE-BALANCED MODULATORS OF THE CURRENT SWITCHING TYPE
 Toshiaki Sudoh, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
 Filed Feb. 13, 1970, Ser. No. 11,212
 Int. Cl. H03c 1/54, 3/26
 U.S. Cl. 332-24

10 Claims

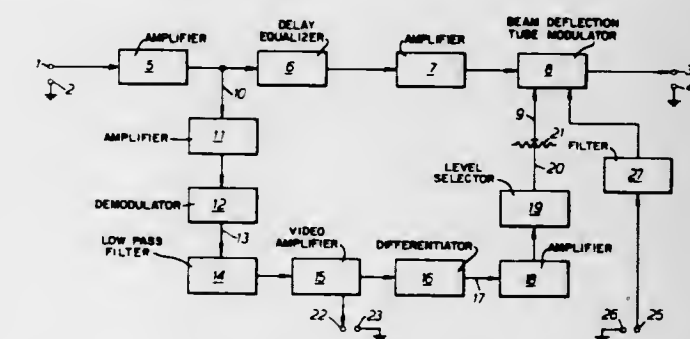


A double-balanced modulator for modulating a carrier with an input signal. A pair of balanced amplifiers each are arranged to modulate a carrier signal with an input signal during alternating half-wave periods of the carrier. The input

signal is coupled to the pair of balanced amplifier-modulators by means of a constant current driver circuit which applies operating current in alternating fashion to the pair of balanced amplifier-modulators whereby only that modulator which is operating during any given half cycle receives operating current so as to produce a modulated carrier which is substantially free of unwanted harmonics and is therefore substantially distortion-free.

3,614,669
ECHO EQUALIZATION AND CHRISPENING OF TV SIGNALS WITHOUT SIGNAL DEMODULATION
 Eric John Gargini, West Drayton, England, assignor to Communications Patents Limited
 Filed May 8, 1968, Ser. No. 727,436
 Claims priority, application Great Britain, May 25, 1967, 24398/67
 Int. Cl. H03c 1/06
 U.S. Cl. 332-37

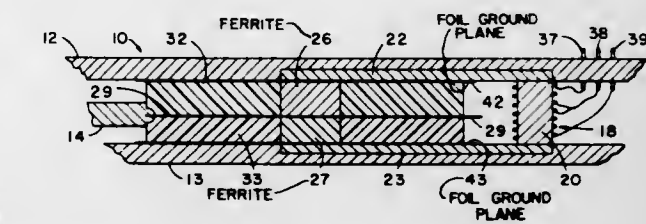
7 Claims



Distortion of an amplitude-modulated television signal being transmitted through a communication network is minimized by deriving a modulation component from the signal and then the modulated signal is modulated by the derived modulation component without demodulating the signal.

3,614,670
SWITCHABLE MICROWAVE CIRCULATOR WHEREIN GROUND PLANES ARE COMPRISED OF FOILS HAVING VERTICALLY CONDUCTIVE PARTICLES
 Richard G. Wilson, San Jose, Calif.
 Filed Nov. 5, 1969, Ser. No. 874,191
 Int. Cl. H01p 1/32, 5/12
 U.S. Cl. 333-1.1

5 Claims



A switchable microwave circulator having ground planes comprised of thin sheets of electrical insulation that have a coating of minute separate aluminum particles on one side that provides a continuous conductive path to microwaves and a resistive path to low frequency currents. The resistance of the coating eliminates induced currents that would otherwise flow around the driving members and pole pieces of the circulator during fast switching of the circulator and would slow the switching of the circulator.

3,614,671
COAXIAL RELAY
 Herbert D. Steinback, Chicago, Ill., assignor to Magnecraft Electric Co., Chicago, Ill.
 Filed Oct. 22, 1965, Ser. No. 502,680
 Int. Cl. H01p 1/10, 5/12
 U.S. Cl. 333-7

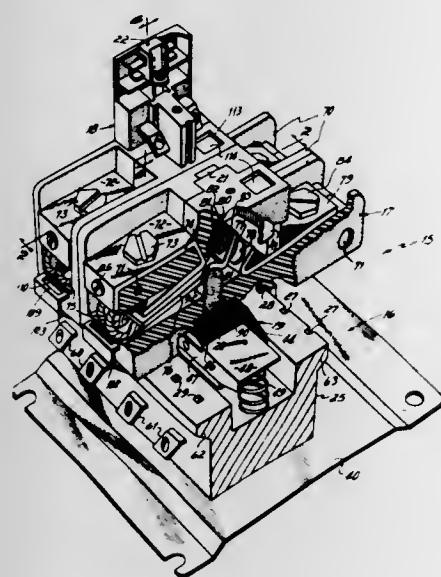
3 Claims

A coaxial relay that approximates a coaxial conductor, the relay contact-making members being mounted on the cover

3,614,680
MULTIPOLE SWITCHING MECHANISM
 John L. Haydu, Owings Mills, and Bernard Coleman,
 Westminster, both of Md., assignors to Rowan Controller,
 Inc., Westminster, Md.
 Filed Feb. 11, 1970, Ser. No. 10,378
 Int. Cl. H01h 50/04

U.S. Cl. 335-132

16 Claims



A switching mechanism for multipole operation having a base and having up to four contact-carrying modules symmetrically mounted on the base, the modules being simultaneously operable by electromagnets for use as a contactor or operable by a lever for use as a disconnect switch, the module being adapted to receive auxiliary contact blocks operated in tandem with the contacts of the main module.

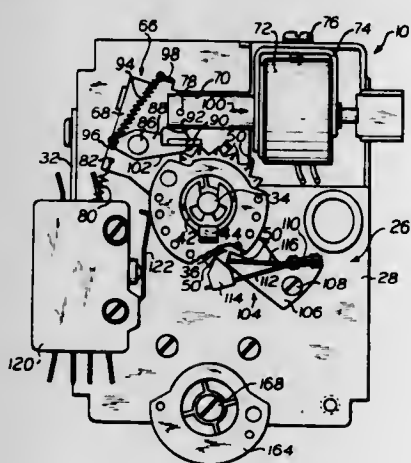
3,614,681
SELECTIVELY VARIABLE COIN CONTROL APPARATUS
 Harry Greenwald, Whitestone, and Dennis J. Larkin, West
 Hempstead, both of N.Y., assignors to Greenwald Indus-
 tries, Inc., Brooklyn, N.Y.

Filed Nov. 7, 1969, Ser. No. 874,866

Int. Cl. H01h 51/08

U.S. Cl. 335-140

13 Claims



A coin-operated selectively variable control apparatus is adapted to be used with a coin-receiving device which produces a respective signal corresponding to the deposit of each coin therein. The apparatus comprises a support which rotatably mounts an operating device. Stepping means responsive to the aforementioned signals is adapted to rotate the operating means through a preselected arc in response to each of such signals received. At least one switch is mounted on the support and is adapted to be connected in an electric circuit with the controlled device. Switch-actuating means is

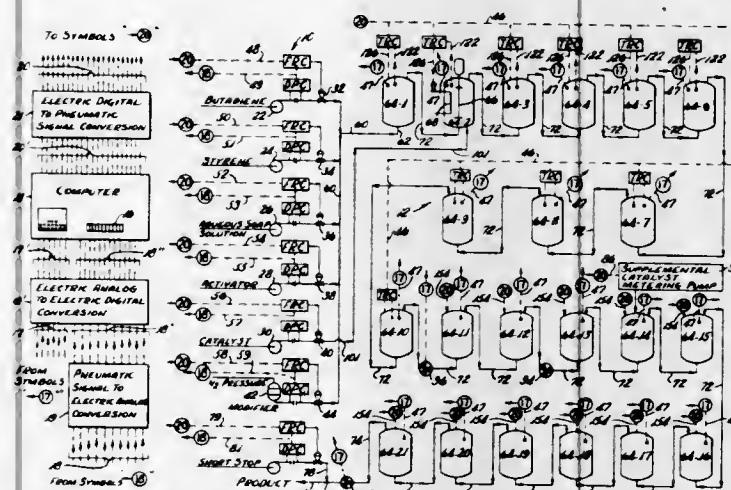
selectively positionable on the operating means for operating the switch in response to the rotation of the operating means through a predetermined arc as determined by the position of the switch-actuating means on the operating means.

3,614,682
DIGITAL COMPUTER CONTROL OF POLYMERIZATION PROCESS
 Robert C. Smith, Houston, Tex., assignor to The Firestone
 Tire & Rubber Company, Akron, Ohio
 Continuation of application Ser. No. 434,845, Feb. 24, 1965,
 now abandoned. This application June 22, 1970, Ser. No.
 48,954

Int. Cl. G06f 15/46

U.S. Cl. 235-151.12

4 Claims



Changes in component concentration, heat history, and other variables which cannot be directly measured in the successive reactors in a train of polymerization reactors, are followed by periodically numerically integrating, by a digital computer, for each reactor and for each of the variables, the equation

$$(1) \quad \frac{dx_{i,n}}{dt} = \frac{F}{V} (x_{i,n-1} - x_{i,n}) + \frac{\partial x_{i,n}}{\partial t}$$

where

x = a process variable, e.g., concentration, conversion, etc.
 i , as the first subscript of x , signifies that this is the i th of l variables

n , as the second subscript of x , means that this is the value of the variable in the n th one of the reactors on the line—thus $x_{i,1}$ means the value of x_i in the first reactor 64-1 etc.

F = total volumetric flow rate

V = volume of the n th reactor

t = time difference under the reaction conditions

$\partial x_{i,n} / \partial t$ = overall rate of generation or degeneration of $x_{i,n}$ under the conditions obtaining the n th reactor

The resultant calculated values of these variables, together with directly measured values of other variables, are manipulated by the computer and used to adjust the rate of feed of reagents and other conditions of polymerization in the train.

3,614,683
MULTIPLE-CONTACT GLASS-SEALED DRY REED SWITCHING DEVICE

David Lee Porter, Buena Park, Calif., assignor to Western
 Electric Company, Incorporated, New York, N.Y.
 Filed Oct. 29, 1968, Ser. No. 771,494

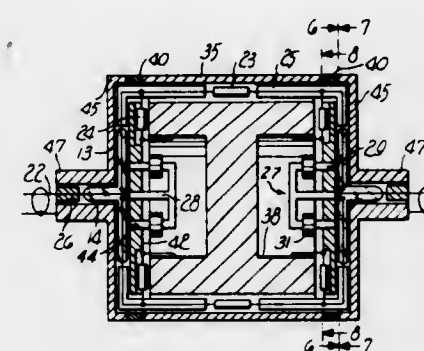
Int. Cl. H01h 51/28

U.S. Cl. 335-152

2 Claims

A multiple-contact magnetic glass-sealed dry reed switch has a plurality of radial reeds which are selectively operated

to engage or disengage a central disc contact. The reeds and the disc contact are contained within a single sealed envelope released, to block the trip member against movement to a resetting position and to maintain the operating handle in the



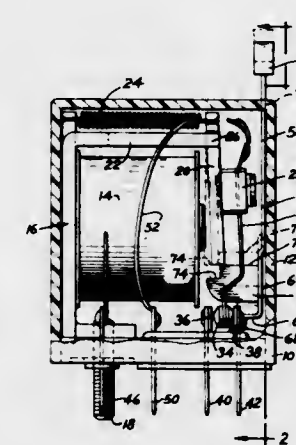
3,614,684
RELAY WITH LOCK-IN AND MANUAL RESET
 Joseph J. Egler, La Grange, Ill., assignor to Guardian Electric
 Company

Filed Feb. 26, 1970, Ser. No. 14,383

Int. Cl. H01h 9/20

U.S. Cl. 335-166

2 Claims



A relay is comprised of a terminal block with a coil, an armature mounted for cooperation with the coil, at least one pole operated by the armature, and the improvement of a lock-in and manual reset mechanism. The mechanism includes a reset member with an attached stud. The stud engages and holds or locks the armature in a fixed position whenever the coil is energized. The reset member is biased between the terminal block and the cover of the relay and may be manually displaced against the biasing force to release or unlock the armature.

3,614,685
CIRCUIT BREAKER WITH HANDLE-INDICATING MEANS

James P. Ellsworth, and Robert H. Flick, both of Beaver, Pa.,
 assignors to Westinghouse Electric Corporation, Pittsburgh,
 Pa.

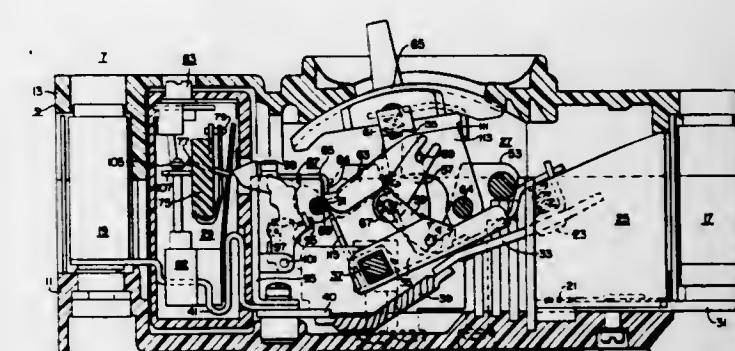
Filed Feb. 6, 1970, Ser. No. 9,370

Int. Cl. H01h 9/20, 1/52

U.S. Cl. 335-166

8 Claims

An improved circuit breaker comprises means operating, when the contacts are welded closed and the trip member is



3,614,686
MULTIPOSITION MAGNETICALLY HELD FAIL-SAFE SWITCH

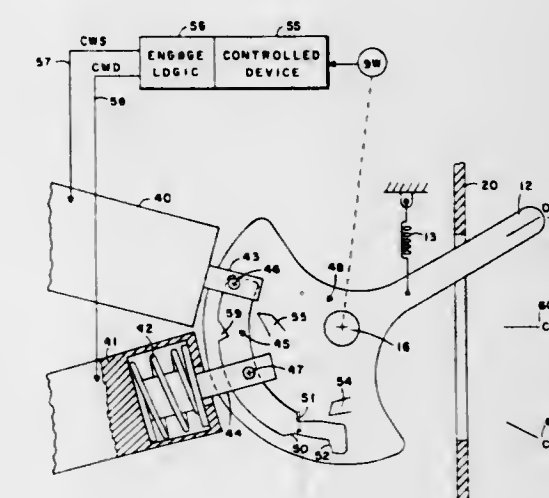
David W. Ellis, Costa Mesa, Calif., assignor to Collins Radio
 Company, Cedar Rapids, Iowa

Filed Sept. 2, 1970, Ser. No. 69,072

Int. Cl. H01h 9/20

U.S. Cl. 335-167

12 Claims



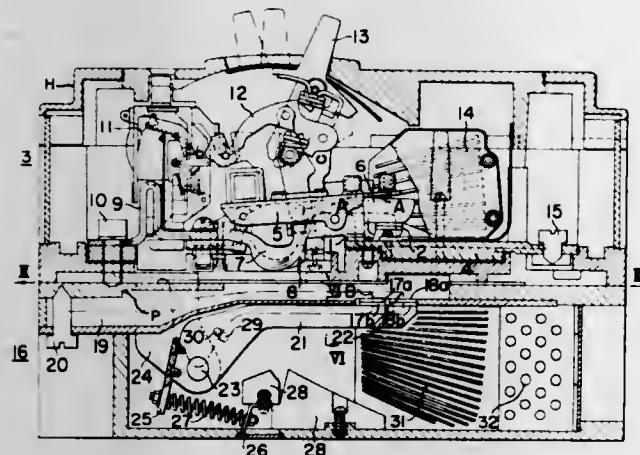
A concept of multiposition magnetically held fail-safe switching employs a control solenoid for each successive pair of switch positions. Each solenoid effects both holding and blocking functions under control of an associated logic-enabled energization source to achieve fail-safe operation with minimal complexity, cost, and power consumption.

3,614,687
CIRCUIT INTERRUPTING APPARATUS
 Masachika Iida, Kunitachi-shi, Tokyo-to, and Yasutaka
 Imajo, Fuchu-shi, Tokyo-to, both of Japan, assignors to
 Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi,
 Japan

Filed Aug. 22, 1969, Ser. No. 852,355
 Claims priority, application Japan, Aug. 28, 1968, 61186
 Int. Cl. H01h 77/10

U.S. Cl. 335-195
 A so-called no-fuse circuit breaker of a predetermined interrupting capacity is integrally combined with a current limiting circuit interrupter with contacts which are opened by electromagnetic force and having a larger interrupting capacity than the no-fuse circuit breaker. Overcurrents within the interrupting capacity of the no-fuse circuit breaker

are interrupted by the same whereas overcurrents exceeding said interrupting capacity are interrupted by the current-



limiting circuit interrupter before the no-fuse circuit breaker operates.

3,614,688
CONVERGENCE UNIT FOR COLOR TELEVISION PICTURE TUBE

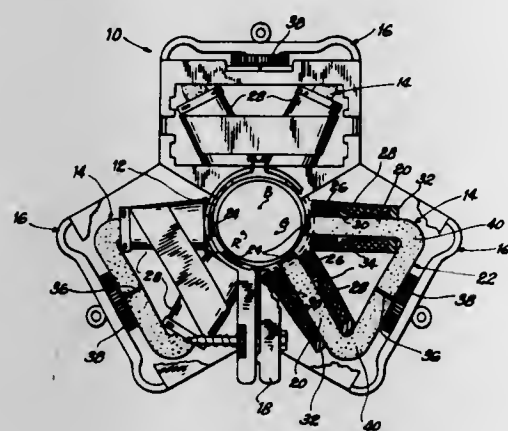
Albert M. Anthony, Conneaut, Ohio, assignor to Tracor, Inc., Austin, Tex.

Filed June 15, 1970, Ser. No. 46,311

Int. Cl. H01f 7/00

U.S. Cl. 335-210

7 Claims



The illustrated convergence unit comprises three generally triangular cores adapted to be mounted around the neck of a color television picture tube at equal angular intervals. Each core comprises two legs directed inwardly toward the central axis of the tube, and crossbar means extending between the outer end portions of the legs. As to each core, the legs and the crossbar means form a triangular shape. The legs are positioned substantially along radii which extend outwardly from the central axis. Horizontal and vertical convergence coils are mounted on the legs. The triangular shape of the cores increases the efficiency of the coils. Moreover, the legs are brought into closer proximity to the three electron beams of the picture tube.

3,614,689
TRIPPING DEVICES

Paul A. G. Canonne, Chelles, France, assignor to L'Industrie Electrique De La Seine, Seine-Saint-Denis, France

Filed Nov. 7, 1969, Ser. No. 875,214

Claims priority, application France, Jan. 6, 1969, 6900052

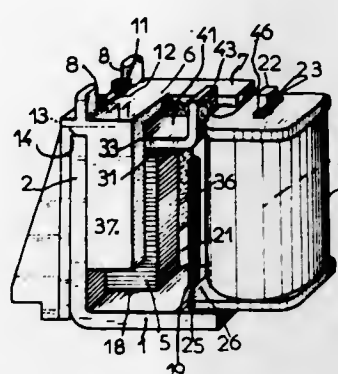
Int. Cl. H01f 7/08

U.S. Cl. 335-229

17 Claims

A high sensitivity and high-fidelity tripping device, comprises a magnetic circuit of U-shape with a coil on one of the legs of the U and a permanent magnet housed in the U adjacent the second leg of the U such that one pole lies

against the base of the U. A plate of nonmagnetic material is secured to the second leg of the U, and an armature is normally held magnetically on the two legs of the U and is releasable under spring action by rocking on the second leg of the U between two projections of the plate. The polar face of the second leg of the U is cut into two sections by a wide, central channel, which reduces it to two narrow, separated teeth, and the polar face of the first leg of the U is reduced to



a narrow tooth between two shoulders; a regulating screw of magnetic material is screwed into the base of the U, parallel to the legs of the U, between the coil and the permanent magnet; and a flux collector, of magnetic material has a flat part located through the intermediary of a plate of nonmagnetic material on the free end of the permanent magnet and is arrested at a short distance from the second leg of the U and also has a part turned upwards towards the armature and arrested at a short distance from the armature.

3,614,690
SOLENOID

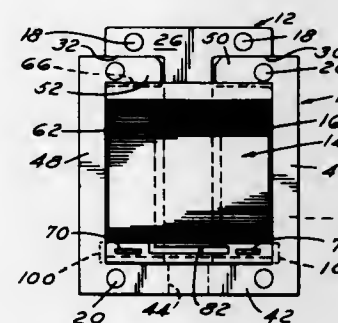
David C. Jencks, Troy, Mich., assignor to Detroit Coil Company, Ferndale, Mich.

Filed Feb. 25, 1970, Ser. No. 14,113

Int. Cl. H01f 7/10

U.S. Cl. 335-250

10 Claims



The coil bobbin which is received within the stator is provided with a pair of end flanges, one of which is shaped to define a pair of catches which are depressed when the bobbin is inserted in the stator, and when the bobbin is in its proper position the catches spring out to retain the bobbin in operating position.

3,614,691
DEVICE FOR TREATING HYDROCARBON FUEL

Saburo Miyata, 19-47, Takanawa 3-chome Minato-ku, Tokyo, Japan

Filed Sept. 19, 1969, Ser. No. 859,434

Int. Cl. H01f 7/02

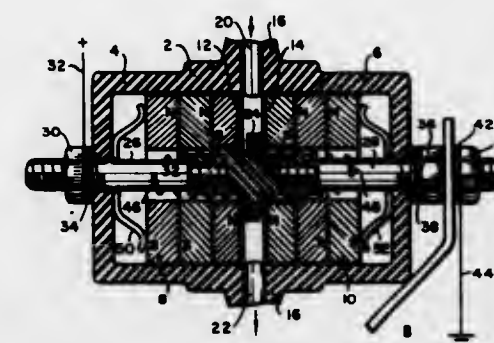
U.S. Cl. 335-306

10 Claims

A device for treating hydrocarbon fuel to improve combustion thereof in an internal combustion engine. A pair of permanent magnets are supported in a casing with like poles facing each other and separated by a small gap. The

spaced faces of the magnets are connected to opposite poles of a source of electricity to superimpose an electrostatic field

dielectric cooling liquid having a boiling point slightly above the normal full load operating temperature of the cast coil assembly. To enhance cooling of the coil by the ambient liquid heat-conducting pins embedded in the windings extend

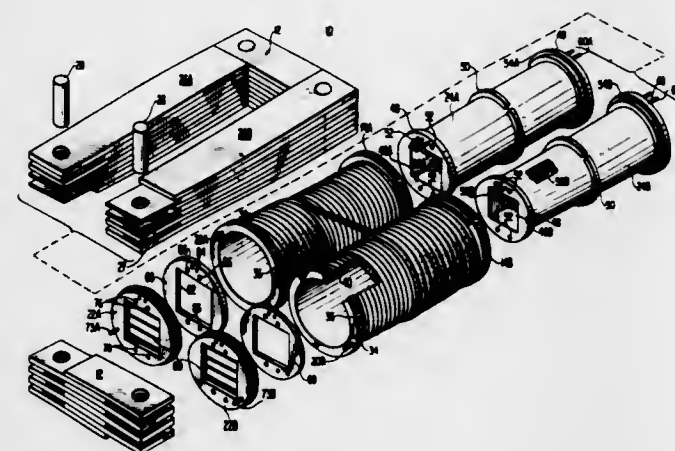


in the space between the magnets. A pair of conduits are connected to the casing to conduct the fuel through the gap.

3,614,692
VARIABLE INDUCTION DEVICE
Donald S. Rozelle, Owego, N.Y.; Ralph B. Rozelle, Forty Fort, and Umid R. Nejib, Edwardsville, Pa., assignors to Magnetech Industries, Inc., Montrose, Pa.
Filed June 2, 1970, Ser. No. 42,703
Int. Cl. H01f 21/04

U.S. Cl. 336-15

13 Claims



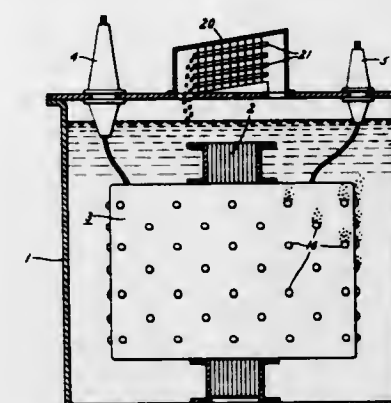
The disclosure relates to a variable induction device or transformer of the type comprising a rectangular magnetic core having two primary transformer windings on opposite core legs and a transferable secondary winding carried by a pair of axially rotatable drums which are each mounted in telescoping relationship over an associated one of the primary transformer windings. Each drum carries a portion of the secondary winding, and the portions are connected in series opposition. The turns of the transferable secondary winding may be transferred from one drum to the other by rotating the drums in synchronism, thereby varying the effective number of transformer secondary turns. A fixed secondary winding or coil having a predetermined number of fixed turns is provided on one of the drums, and electrical connections are made to the windings on the drums by way of an induced current-carrying commutator. All of the elements comprising the variable induction device are removably mounted and one of the core end members is removable to provide interchangeability of the elements.

3,614,693
LIQUID COOLING OF ELECTRICAL APPARATUS
Langdon T. Frey, III, Newton, N.C., assignor to General Electric Company
Filed Nov. 4, 1970, Ser. No. 86,764
Int. Cl. H01f 27/10

U.S. Cl. 336-58

5 Claims

A power transformer having its main high-power windings encapsulated in a cast body of epoxy resin is filled with a

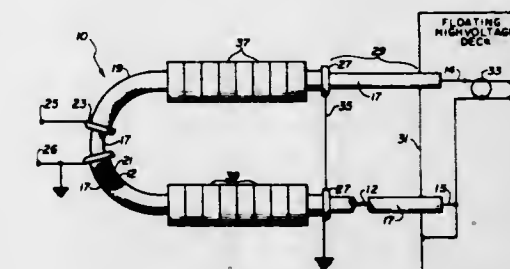


to the outer surface of the coil assembly and have exposed surface areas sufficiently small to exceed the vaporization temperature of the liquid. Consequently bubbling from these boiling sites enhances heat transfer over substantially the entire coil surface.

3,614,694
COAXIAL CABLE HIGH-VOLTAGE PULSE ISOLATION TRANSFORMER
Roland F. Koontz, Menlo Park, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 17, 1969, Ser. No. 858,818
Int. Cl. H01f 17/06

U.S. Cl. 336-174

6 Claims



A one-to-one high-voltage nanosecond pulse isolation transformer formed from a single length of solid dielectric coaxial cable bent into a U-shape with the outer sheath separated at the midpoint of the "U" and with the outer ends of the sheath electrically interconnected. Input connections are made to the separated sheaths at the midpoint of the "U" and output connections are made across the ends of the center conductor at the ends of the "U." Ferrite cores are stacked over the sheath on each leg of the "U" to prevent input pulses from flowing in the sheaths and being shorted by the connection between the sheaths.

3,614,695
INDUCTIVE APPARATUS WITH MAGNETIC LOCKING PLATES
Selwyn Palmer, Waterdown, Ontario, Calif., assignor to Canadian Westinghouse Company, Limited, Hamilton, Ontario, Calif.
Filed Sept. 24, 1970, Ser. No. 75,216
Int. Cl. H01f 27/26

U.S. Cl. 336-210

4 Claims

Electrical inductive apparatus including a magnetic core constructed of stacked-magnetic laminations arranged to provide a plurality of spaced-leg portions, the adjacent ends of which are joined by first and second yoke portions. Yoke

clamps are disposed to hold the first and second yoke portions in assembled relation, and a plurality of lock plate members are disposed against the leg portions. The lock

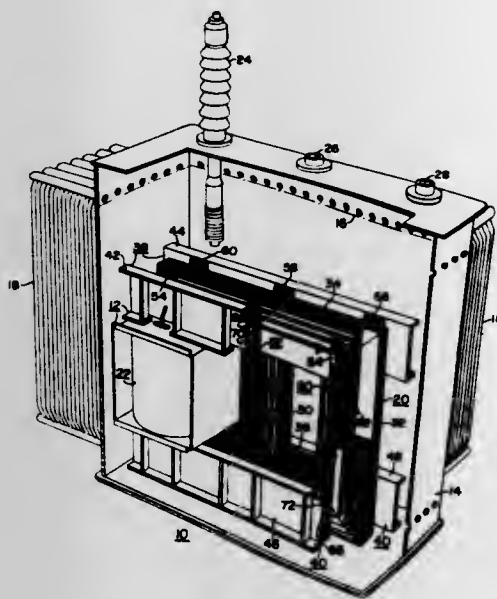
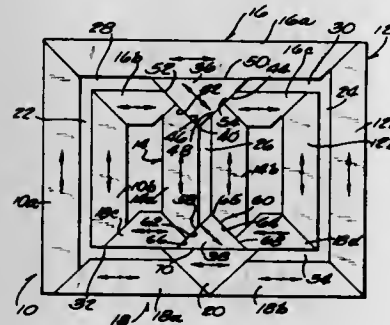


plate members, which mechanically link the yoke clamps, are constructed of a plurality of magnetic laminations whose major surfaces are disposed perpendicular to the major surfaces of the laminations in the leg portions.

3,614,696
LAMINATION CONSTRUCTION FOR TRANSFORMER CORE AND CORE INCLUDING SAME
James D. Douglass, Pittsburgh, and Albert T. Chase, Bethel Park, both of Pa., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 5, 1969, Ser. No. 855,635
Int. Cl. H01f 27/24
U.S. Cl. 336-215

10 Claims

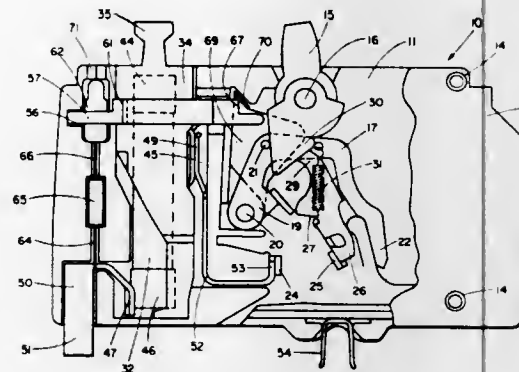


A triangular-shaped segment is arranged at each joint between the inner leg and the yokes of a split magnetic transformer core. The triangular segments have a corner directed inwardly toward the inner leg and present two angularly related edges, i.e., on both sides of the corner, to the inner leg. These angularly related triangular segment edges abut complementary angled edges in the center leg. The grain orientation of the triangular segments is disposed at an angle of 45° to the grain orientation of both the inner leg and the yokes and perpendicular to the butt connection between the triangular segment and the inner leg. These triangular segments are offset relative to each other and with respect to the inner leg. One of the triangular segments engages an additional triangular-shaped segment provided in one of the yokes and the dimension between the inwardly facing corner and the opposite triangle segment edge abutting a yoke segment is different for both of the triangular segments.

3,614,697
MOLDED CASE ELECTRIC CIRCUIT BREAKER WITH FUSE AND INDICATOR LAMP
Robert W. Dunham, and Charles D. Vyskocil, both of Cedar Rapids, Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed July 20, 1970, Ser. No. 56,426
Int. Cl. H01h 85/00
U.S. Cl. 337-6

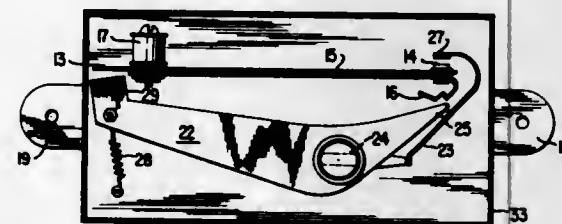
5 Claims



A circuit breaker is provided with a current-limiting fuse mounted in a removable fuse holder and electrically connected in series with the circuit breaker contacts. A self-biasing mechanical interlock member prevents insertion or removal of the fuse unless an operating lever is in the OFF position. An indicator lamp is connected across the fuse and circuit breaker contacts to indicate an open circuit caused either by blowing of the fuse or tripping of the circuit breaker. A switch in the energizing circuit of the lamp prevents lighting thereof when the operating lever is in the OFF position. The interlock member carries current to the lamp and serves as a movable contact for the switch.

3,614,698
THERMALLY ACTUATED CIRCUIT DELAY SWITCH
Donald J. Gardner, 3741 Penbrook Lane #13, Flint, Mich.
Filed Oct. 27, 1970, Ser. No. 84,416
Int. Cl. H01h 61/00, 71/16
U.S. Cl. 337-81

4 Claims



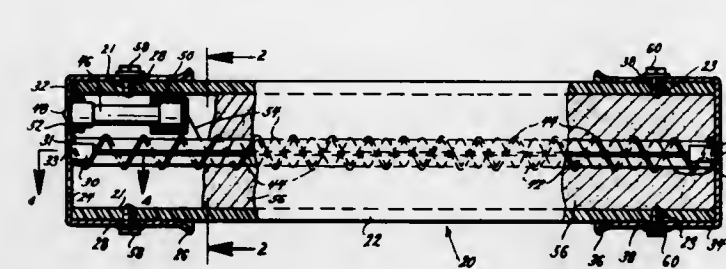
A switch for lighting fixtures and the like which provides either immediate opening of the circuit when actuated or optionally a delayed opening by means of a bimetallic thermal element responsive to a thermistor.

3,614,699
PROTECTOR FOR ELECTRIC CIRCUITS
Aloysius J. Fister, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Aug. 10, 1970, Ser. No. 62,414
Int. Cl. H01h 85/30
U.S. Cl. 337-244

9 Claims

A terminal of an electric power-supplying fuse has an opening therein and has an annular mounting surrounding that opening; and that annular mounting supports, in cantilever fashion, the indicator-bearing terminal of an indicating fuse. The other terminal of that indicating fuse is displaced radially outwardly of and out of engagement with

the fusible element of the power-supplying fuse. The indicating fuse is a wholly enclosed, complete subassembly of an electric circuit or alternatively set into motion a sequence of events which will cause the circuit to open after

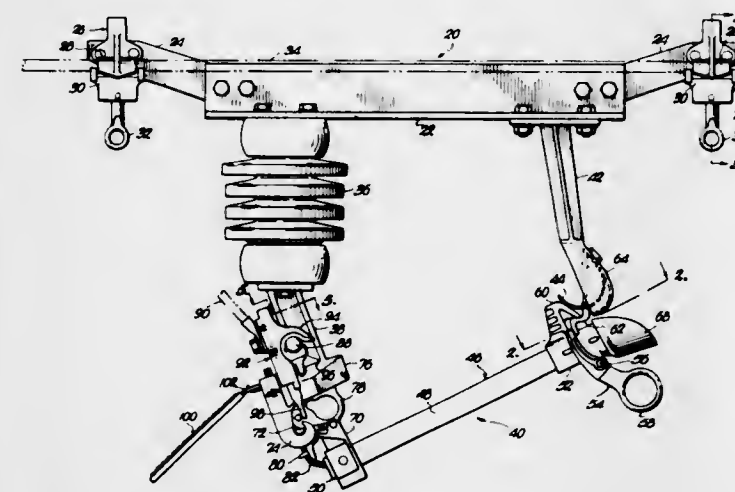


which is manufactured and tested, and is then assembled with said annular mounting on said terminal.

3,614,700
ON-THE-LINE DISTRIBUTION CUTOUT SWITCH
Lloyd R. Beard, Delmar E. McNaghten, and Charles A. Popeck, all of Centralia, Mo., assignors to A.B. Chance Company, Centralia, Mo.

Filed Apr. 25, 1969, Ser. No. 819,275
Int. Cl. H01h 31/00, 31/12, 31/34
U.S. Cl. 337-203

6 Claims

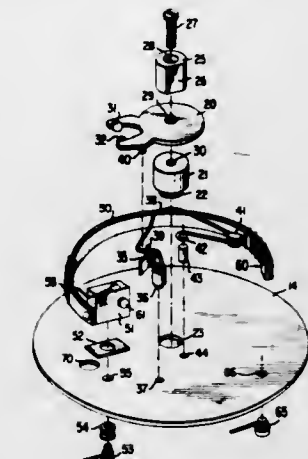


A distribution cutout which is both electrically connected to a current-carrying line and mechanically connected thereto for support by the line without breaking the latter. The cutout is particularly adapted for use in overhead distribution circuitry where crossarms are not available as a support. The switch arm of the cutout comprises a tubular fuse holder from which a fuse link therewithin is ejected when a fault is encountered, a guard being provided which blocks the ejecting link to prevent the establishment of an arc between such link and the line. Both the head of the link and the frangible disc used to seal the fuse holder are captured by a vented retainer.

3,614,701
MANUALLY CONTROLLED DELAYED-ACTION POWER SWITCH
Donald J. Gardner, 3741 Penbrook Lane #13, Flint, Mich.
Filed Jan. 19, 1970, Ser. No. 3,826
Int. Cl. H01h 37/62
U.S. Cl. 337-341

9 Claims

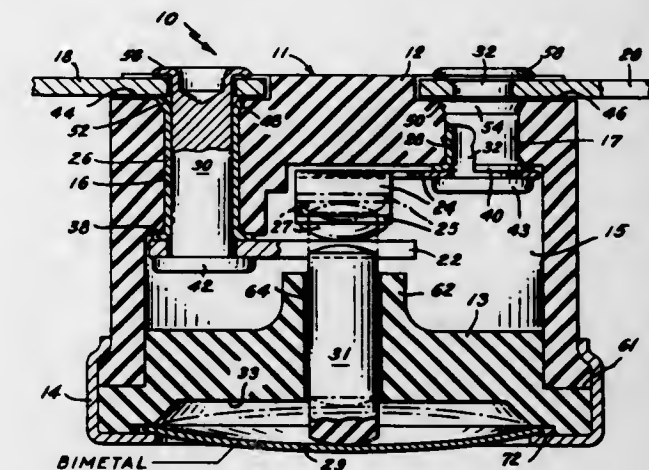
A manually controlled delayed-action power switch that an operator may position to cause immediate closing or opening



a predetermined delay effected by the properties of a thermal element.

3,614,702
TERMINAL-CONTACT RIVET CONSTRUCTION AND METHOD OF ASSEMBLY THEREOF
Walter S. Vargas, North Kingstown, R.I., assignor to Elmwood Sensors, Inc., Cranston, R.I.
Filed Sept. 8, 1969, Ser. No. 855,809
Int. Cl. H01h 37/04, 37/52; H01r 9/20
U.S. Cl. 337-381

6 Claims



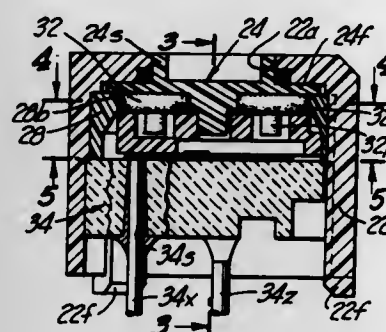
A terminal contact rivet construction for use in a thermostatic switch and including a sleeve that cooperates with a rivet for securing a terminal strip and contact element to the housing of said switch, said sleeve and rivet further acting to prevent loosening of the terminal strip and contact element upon expansion or contraction of the switch housing due to temperature differentials experienced in the operation of said switch.

3,614,703
MINIATURE POTENTIOMETER WITH FRICTION WHEEL DRIVE
Ronald L. Froebe, Riverside, Calif., assignor to Bourne, Inc.
Filed Apr. 1, 1970, Ser. No. 24,689
Int. Cl. H01c 9/02
U.S. Cl. 338-174

7 Claims

A miniature rotary potentiometer having an arcuate resistance element and a rotary contact movable through less than one complete turn or revolution in brushing over the active extent of the resistance element. The rotary contact is mounted upon a rotatable carrier which also carries the pivots of a plurality of friction planet wheels the peripheries of which frictionally engage and travel along a circular path

on the inner wall of the potentiometer housing and which peripheries are frictionally engaged by and driven by a small rotary spindle or hub carried by a tool-rotatable actuator disposed in the top or upper end of the potentiometer.



Rotation of the actuator frictionally rotates the friction planet wheels which through their pivots drive the carrier at reduced rotary speed relative to the actuator, whereby the actuator must be rotated several complete revolutions to drive the contact along the extent of the resistance element.

3,614,704

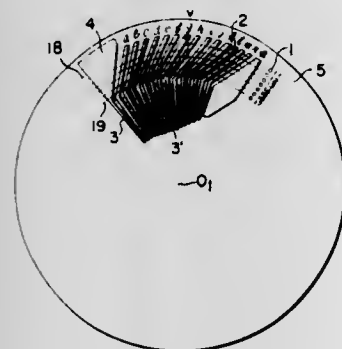
SLIDING MEMBER AND ELECTRODES FOR MEASURING INSTRUMENTS

Tatsuo Fujii, and Yutaka Watano, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Oct. 20, 1969, Ser. No. 867,542
Claims priority, application Japan, Oct. 23, 1968, 191932/1968

Int. Cl. H01c 9/04

U.S. Cl. 338-140

1 Claim



The invention includes tap electrodes comprising a plurality of resistance layers connected in series but different in width before and after the joint portions, and a sliding contacting member comprising a great number of small contacts. Either or both of the elongated directions of the electrodes and contacting member are relatively inclined. By this arrangement the variation in resistance is ideally stepwise and this stepwise variation is held stable regardless of the increase in the number of sliding operations of the slider.

3,614,705

SYSTEM AND APPARATUS FOR ELECTRICALLY CONNECTING A VACUUM CLEANER AND A REMOTE MOTOR DRIVEN BRUSH TOOL

Raymond Descarries, Montreal; Paul E. Gaudry, Laval, Quebec, Canada, and B. Erik Ohlson, Stamford, Conn., assignors to Consolidated Foods Corporation, Chicago, Ill.
Division of Ser. No. 730,306, May 20, 1968, Pat. No. 3,534,317.
Filed Jan. 7, 1970, Ser. No. 6,005

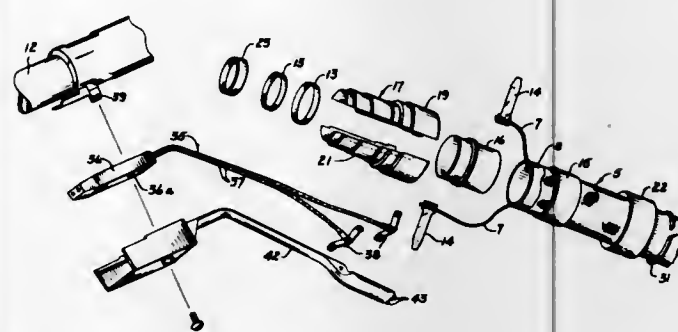
Int. Cl. H01r 15/02

U.S. Cl. 339-8 R

1 Claim

A vacuum cleaner hose having electric conductors and end fittings provided with electric terminals in which the fittings are removably connected with the hose by means of an uncured rubber ring clamped radially onto the hose by a pair

of sleeves associated with the respective hose end fittings. One hose fitting is adapted for use as a handgrip and is provided with an electric terminal which automatically connects the hose conductors with the conductors of a



telescoping wand. The wand is provided with a sliding contact so that in any of its retracted and elongated positions current is conducted to the motorized brush tool removably attached to one end of the wand.

3,614,706

GROUND CONNECTOR

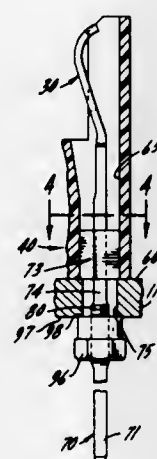
Frank A. Kukla, Cicero, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,191

Int. Cl. H01v 3/06

U.S. Cl. 339-14 R

8 Claims



A ground connector assembly for connecting a terminal pin, with a wire-wrap post on one end, to a metal plate. The assembly includes a ground terminal of one piece construction made from flat sheet stock, having an integrally formed ground section including mounting means for seating on a metal plate and a shank which extends through a generally circular cylindrical aperture in a plate and is integrally threaded at its lower end to receive a locking nut which secures the terminal tightly to the plate. The configuration of the mounting means and the locking nut are such that the terminal is stabilized in perpendicular relationship to the plate and bites into the surface of the plate to provide excellent electrical contact between the terminal and the plate.

3,614,707

ELECTRICAL CONNECTOR

Kurt Kaufmann; Rudolf Jerney, and Franz Wandinger, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich

Filed Oct. 6, 1969, Ser. No. 864,041

Claims priority, application Germany, Oct. 9, 1968, P 18 02 130.2

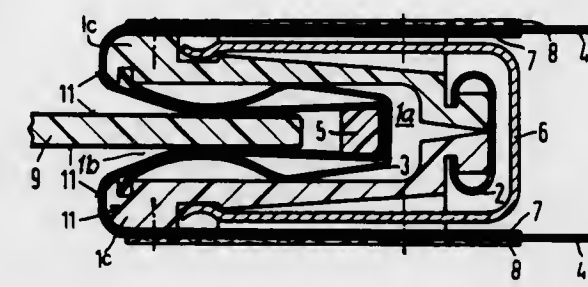
Int. Cl. H01r 13/50; H05k 1/07

U.S. Cl. 339-17 F

10 Claims

A plug in electrical connector for receiving the plug end of a printed circuit board. The connector includes a housing means having a receptacle for receiving the plug end of a

circuit board. The periphery of the receptacle is resilient for nonabradably receiving the plug end of the printed circuit board and provides electrical contact with the plug end of the printed circuit board. A tension means is mounted in the housing means out of contact with the resilient peripheral boundaries of the receptacle urging the boundaries toward



the plug end of the circuit board with a force sufficient to establish electrical contact between conductor paths extending along the receptacle and the conductor paths extending along the plug end of the circuit board. The connector is miniaturized and adapted to interconnect a plurality of circuits in an information storer to a plurality of circuits in a drive device without damage to such circuits.

3,614,708

METER DISCONNECT DEVICE

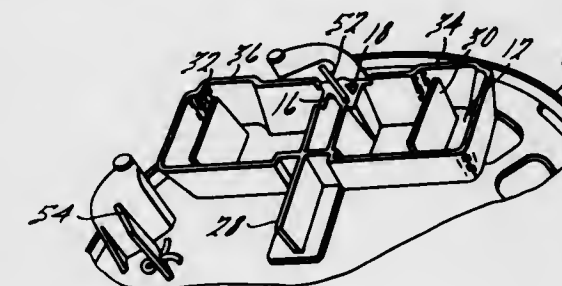
William S. Koepfgen, Southgate, Mich., assignor to Ekstrom Industries, Inc., Farmington, Mich.

Filed Sept. 11, 1969, Ser. No. 848,850

Int. Cl. H01r 13/44, 13/60

U.S. Cl. 339-36

7 Claims



A unitary insulating plastic disconnect device designed to plug into both line jaws of a common household watt-hour meter socket; said device being provided with a slot capable of holding a meter by one blade and in a disconnected condition by reason of being rotated out of contact with said meter socket jaws.

3,614,709

ELECTRICAL CONNECTOR UNIT

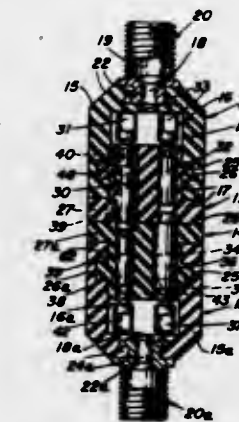
Richard F. Schweibs, 640 S. Cornell, Villa Park, Ill.

Filed May 20, 1969, Ser. No. 826,123

Int. Cl. H01r 13/52, 13/54

U.S. Cl. 339-63 R

4 Claims



An electrical connector unit is provided for detachably attaching a thermocouple to an electrical instrument, or

instrument panel, or the like, without the use of screws, or like fastening elements, and without the need for any tool other than a suitable soldering tool, preferably a soldering tool of the so-called pencil type.

3,614,710

BIPOST SOCKET FOR LUMINAIRES

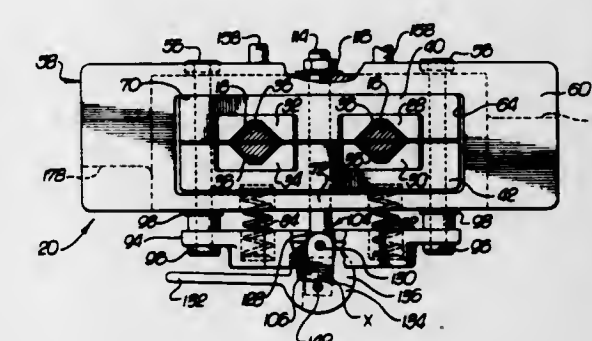
Richard B. Gluckmann, Sherman Oaks, Calif., assignor to Berkey/Colortran Mfg. Inc., Burbank, Calif.

Filed July 7, 1969, Ser. No. 839,386

Int. Cl. H01r 33/10

U.S. Cl. 339-75 R

11 Claims



The bipost socket structure comprises a pair of clamp members accommodated in a housing and mounted for limited movement toward and away from each other, conductive socket elements interfitting the clamp members and operable to close about posts of a lamp upon movement of the clamp members together, and a mechanism for moving the clamp elements together. The mechanism comprises a movable clamping plate connected to one of the clamp members by coiled compression springs and a cam for moving the clamping plate against the action of the compression springs.

3,614,711

ELECTRICAL CONNECTOR HAVING ADJUSTABLE KEYING

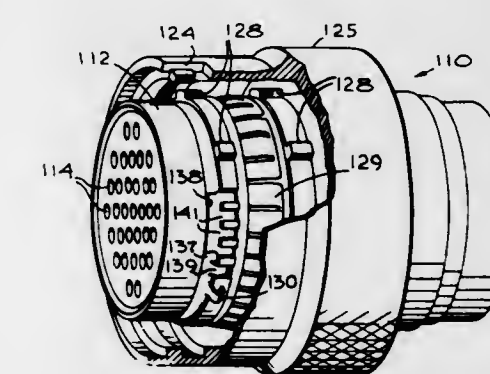
Norman R. Anderson, Cicero, and David F. Rundle, Berwyn, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 15, 1969, Ser. No. 866,664

Int. Cl. H01r 13/64, 7/32

U.S. Cl. 339-90 R

3 Claims

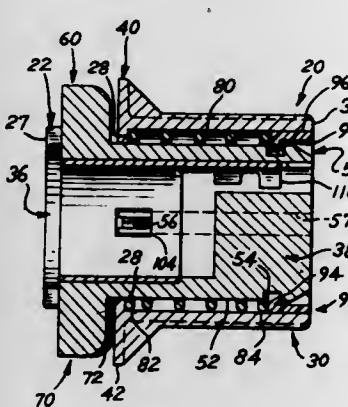


An electrical connector having adjustable keying and comprising a lockingly engageable plug and receptacle containing respectively mating pins and sockets. The receptacle includes a plurality of circumferentially spaced pluggable keyways which can be selectively plugged by a connector user to provide a keyway for the receptacle at any of a plurality of different possible locations. The plug has a rotatably movable key which a connector user can align with the selected keyway location provided in the receptacle.

3,614,712
APPLIANCE MOUNTING APPARATUS
 Anthony J. Taormina, Detroit, and Roman J. Witek, Jr.,
 Romulus, both of Mich., assignors to Essex International,
 Inc.

Filed May 9, 1969, Ser. No. 823,316
 Int. Cl. H01r 13/32
 U.S. Cl. 339-127

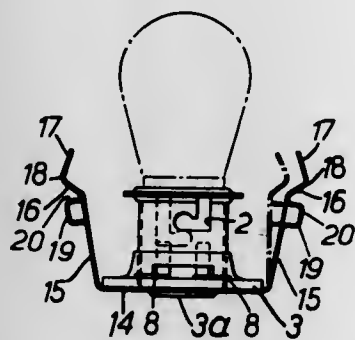
6 Claims



Apparatus for mounting an electrical appliance, such as a lamp, in a panel having an aperture located adjacent the perimeter of a center hole in the panel. The apparatus includes an inner shell that is movably mounted within a bore defined by an outer shell. A radial flange is connected to the outer shell and is adapted to engage a first side of the panel. A lug is connected to the inner shell and is adapted to fit through the aperture, so that it may engage a second side of the panel. A coil spring is retained between the outer shell and a retainer member that releasably engages the inner shell so that the apparatus is resiliently held in place on the panel. The electrical appliance is held within the inner shell by a socket.

3,614,713
ELECTRIC LAMPHOLDER
 Clarence Williams Heath, Bleasby, England, assignor to TRW
 Inc., Cleveland, Ohio
 Continuation of application Ser. No. 733,658, May 31, 1968,
 now abandoned. This application Mar. 9, 1970, Ser. No.
 17,037/70
 Claims priority, application Great Britain, June 1, 1967,
 25244/67
 Int. Cl. H01r 13/32
 U.S. Cl. 339-128

2 Claims



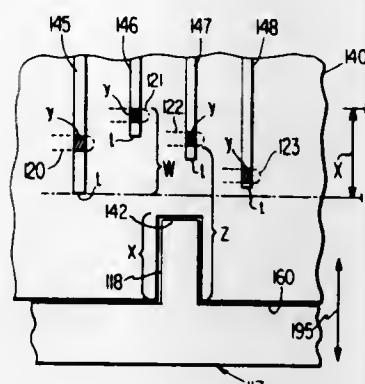
Lampholder comprising a metal shell having its inner end assembled in a bosslike recess on a base of insulating material, an electrical contact on the base extending into the recess for engaging the base contact on a lamp.

3,614,714
EDGE CONNECTOR WITH POLARIZING MEMBER
 Bernard Silverstein, Philadelphia, Pa., assignor to RCA
 Corporation
 Filed Nov. 21, 1969, Ser. No. 878,688
 Int. Cl. H01r 13/64; H05k 1/07
 U.S. Cl. 339-186 M

17 Claims

A connector having a socket for receiving the leading edge of a printed circuit board includes a polarizing and keying

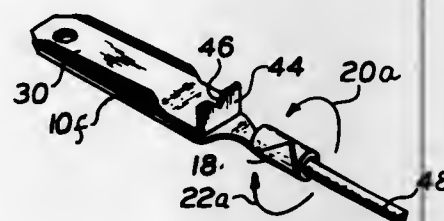
member adapted to engage an indexing slot adjacent the printed circuit board leading edge in a given direction. The engaging keying-indexing member and slot are disposed in



the socket intermediate the socket bottom and the contact region of a contact element, permitting the contact element and the indexing-keying means to be aligned in the given direction.

3,614,715
CORDSET BLADE DESIGN
 Walter H. Marx, Berkley Heights, N.J., assignor to General
 Cable Corporation, New York City, N.Y.
 Filed July 25, 1969, Ser. No. 844,800
 Int. Cl. H01r 13/06
 U.S. Cl. 339-252 P

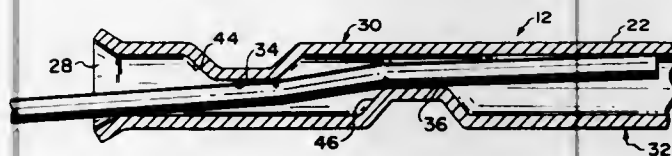
7 Claims



This cordset blade construction has a ridge formed in the prong end of the blade so that the blade has equivalent strength even though made of lighter stock, as compared with a heavier blade, and the blade is shaped to fit conventional outlets, even though the blade is thinner than conventional blades. The strain relief tab, on the end of the blade over which the insulation plug is to be molded, is notched to serve as a die for cutting through the insulation in an improved method for attaching the blade to an insulated conductor.

3,614,716
CONNECTOR RECEPTACLE WITH WIRE DEFORMING MEANS
 Robert E. Jensik, Cicero, Ill., assignor to Chicago Miniature
 Lamp Works, Chicago, Ill.
 Filed Mar. 28, 1969, Ser. No. 811,342
 Int. Cl. H01r 11/08
 U.S. Cl. 339-256 R

8 Claims



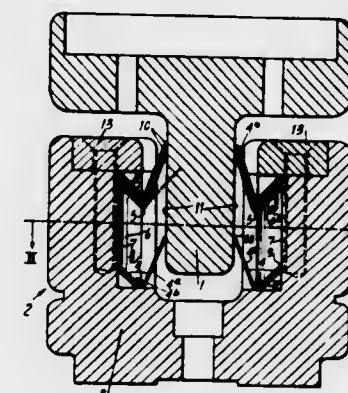
A connector receptacle for establishing a strong mechanical connection and a reliable low resistance electrical connection with a metal wire such as the lead wire of a miniature lamp or other wire is formed from an elongated tubular member. Offset sections of the wall of the tube adjacent an open end provide obstructions to insertion of the wire forcing the wire to be deformed beyond its elastic limit as the wire is inserted into the tube. The tube inwardly

of the obstructions includes an unobstructed portion of substantial length so that a substantial length of the wire is successively deformed as the wire is inserted. In order to withdraw the wire from the tubular receptacle, the wire must once again be deformed and the elastic limit overcome. Consequently, the wire is securely held in place and a low resistance electrical connection is obtained due to firm engagement between the wire and portions of the tube wall including the obstructions.

3,614,717
ELECTRIC CONTACT DEVICES
 Rintje Boersma, Harmelen, and Gijbert W. Irik, Bithoven,
 both of Netherlands, assignors to N. V. "COO" - Utrecht
 Filed Aug. 22, 1969, Ser. No. 852,254
 Int. Cl. H01r 13/12

U.S. Cl. 339-262 R

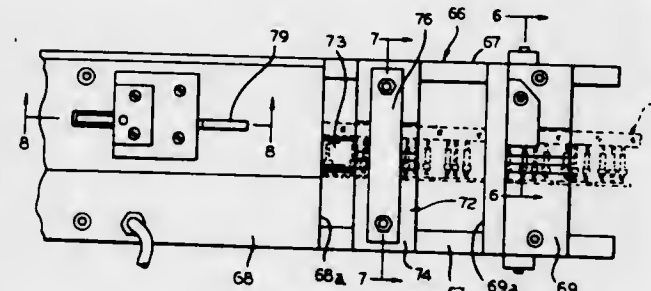
9 Claims



An electric contact device comprising two cooperating contacts, of which one consists of a holder containing at least one stack of interlocked, equal and equally directed, resilient, metal plates which are folded in V-shape and mounted for tilting about their folds in said holder, said plates lying with one of their free edges, which are parallel to the folds, against a contact surface of the holder and forming with their other free edges, which are also parallel to the folds, a resilient contact surface for cooperation with the other contact.

3,614,718
TERMINAL STRIP
 Joseph J. Cervinka, 428 E. Crescent, Elmhurst, Ill., and
 Marvin E. Hetzel, 177 Michaux, Riverside, Ill.
 Division of Ser. No. 709,109, Feb. 28, 1968, Pat. No. 3,550,250.
 Filed Oct. 13, 1969, Ser. No. 865,570
 Int. Cl. H01r 11/08
 U.S. Cl. 339-276 SF

5 Claims



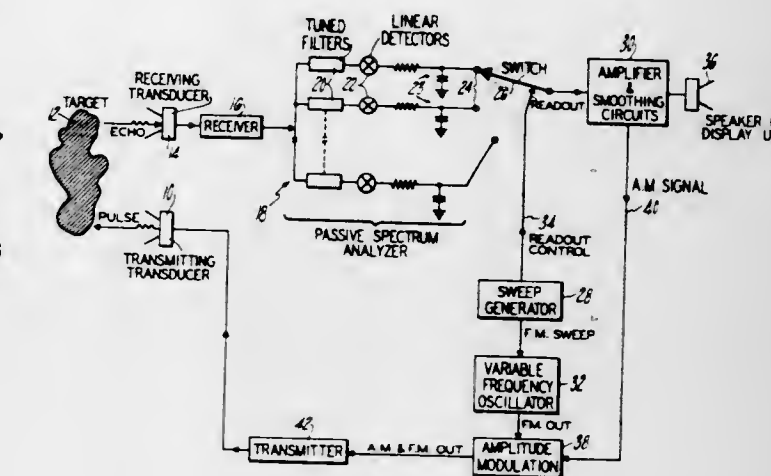
Continuous strip of terminal sets for use in a machine to mount the terminal sets on bobbins.

3,614,719
ADAPTIVE PULSE ECHO TARGET IDENTIFICATION SYSTEM
 Edmond B. Treacy, Vernon, Conn., assignor to United
 Aircraft Corporation, East Hartford, Conn.
 Filed Nov. 25, 1968, Ser. No. 778,519
 Int. Cl. G01s 9/66
 U.S. Cl. 340-3 R

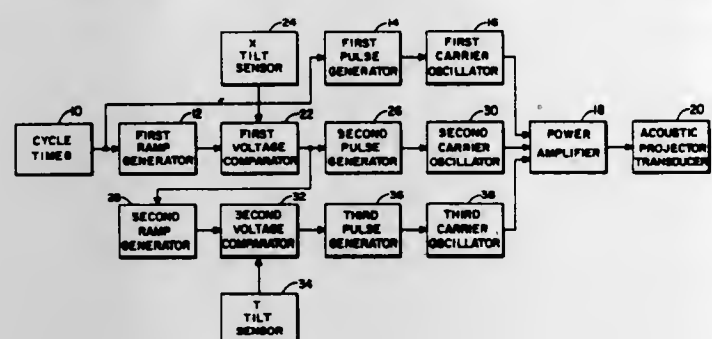
7 Claims

An adaptive target identification system is described in which a chirped or frequency swept pulse is transmitted

towards a target. The reflected pulse is analyzed over its frequency spectrum by a series of tuned filters to produce a reflection spectrum which is proportional to the reflection coefficient of the target as a function of frequency. The next

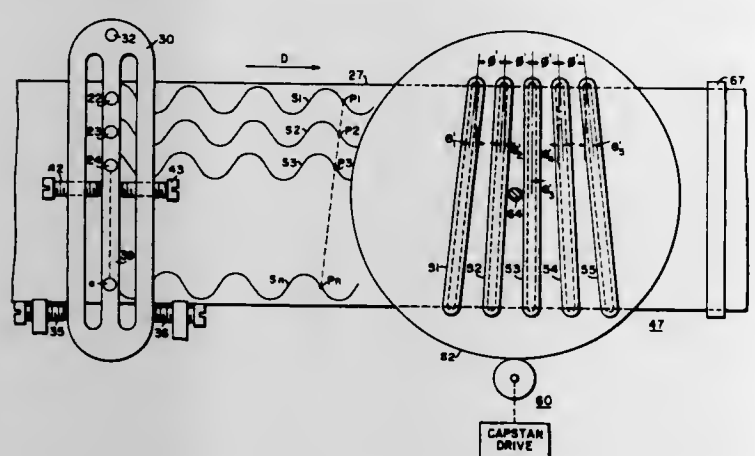


3,614,721
CONTROL APPARATUS
James A. Lagoe, Woodenville, Wash., assignor to Honeywell
Inc., Minneapolis, Minn.
Filed July 16, 1969, Ser. No. 842,239
Int. Cl. H04b 11/00



An acoustic riser angle indicator utilizing three separate frequencies for providing information, to a remote receiver, of deviation of a riser from vertical in mutually perpendicular vertical planes. The three separate frequencies are utilized to simplify reception circuitry and to eliminate multipath problems. The time interval between the first and second pulses of different frequencies indicates the deviation from vertical in one of the planes while the time interval between the second and third pulses indicates the deviation from vertical in the quadrature plane.

3,614,722
SIGNAL-PROCESSING APPARATUS AND METHOD
 Charles H. Jones, Murrysville, Pa., assignor to Westinghouse
 Electric Corporation, Pittsburgh, Pa.
 Filed Oct. 27, 1965, Ser. No. 505,444
 Int. Cl. G01s 3/00



A plurality of recording heads records, on a magnetic medium, the signals derived from a corresponding plurality of transducers arranged in an array. Each recording head records a respective transducer signal on a separate track of the recording medium which is movable relative to the recording heads and relative to a readout means. The readout means comprises a plurality of linear transducers each of which extends across all of the recording tracks. The

orientation of each linear transducer is greater than 0° with respect to movement of the recording medium and each linear transducer is at an angle with respect to one another. The signal provided by each linear transducer accordingly represents energy impinging upon the transducer array from a specified direction dependent upon the orientation of the linear transducer means. A scanning function is simulated by a rotation of the linear transducer means.

3,614,723

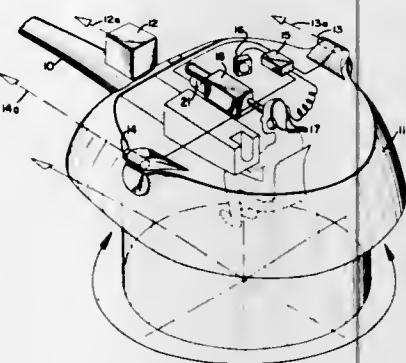
AIMING ARRANGEMENT

Heinz Hermes, Wedel; Helmut Hinterthür, Hamburg-Blankenese; Arnold Otto, Hamburg; Klaus Dietrich Thieme, Wedel, and Heinz Westhoff, Braunschweig, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt (Main), Germany

Filed Aug. 19, 1968, Ser. No. 788,354

Claims priority, application Germano, Aug. 19, 1967, L 57246 Ic/721

Int. Cl. G01s 3/00

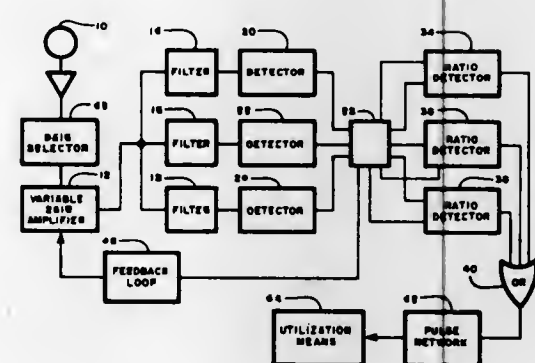


A gun turret of a tank, equipped with acoustic and optical aiming devices. The acoustic device is used to bring the gun to bear in the general direction of a target from which a noise comes, whereafter the optical aiming device, which may include an infrared searchlight, is turned on. In this way, the initial target acquisition and the preliminary aiming are done by passive means, the active aiming means being used only after the preliminary aiming and being needed for only a very short time.

3,614,724
DETECTION SYSTEM

William L. Brown, and John M. Portlock, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

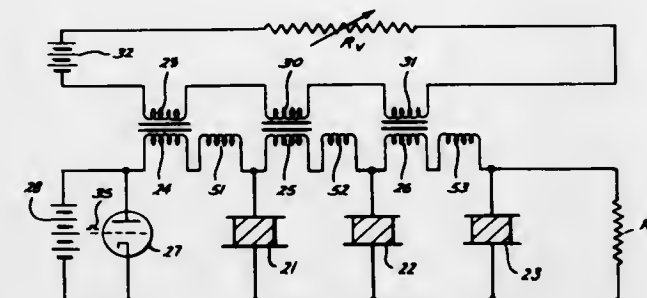
Filed Apr. 8, 1970, Ser. No. 26,570
Int. Cl. G08b 13/00



A detection system which utilizes an automatically varied threshold controlled by noise level in one or more frequency bands while monitoring a plurality of seismic frequency bands where signal and noise do not occur simultaneously. The signal and noise frequency bands may be preselected or they may be automatically determined during operation of the system.

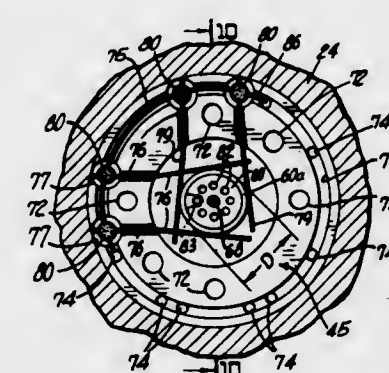
3,614,725
CONTINUOUSLY VARIABLE STEERED BEAM
TRANSDUCERS FOR ACOUSTIC WELL LOGGING
James H. Moran, Danbury, Conn., assignor to Schlumberger
Technology Corporation, New York, N.Y.
Filed Apr. 18, 1969, Ser. No. 817,410
Int. Cl. G01v 1/16

U.S. Cl. 340-17 **4 Claims**



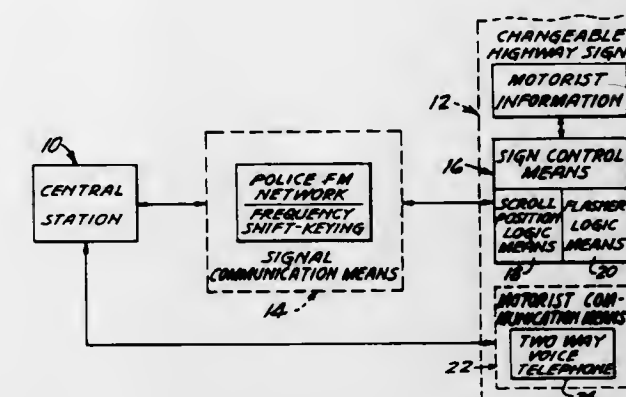
An illustrative embodiment of the present invention includes directional acoustic transducer apparatus for use in acoustic logging in a well bore for both transmitting and receiving acoustic logging signals. The apparatus utilizes a plurality of piezoelectric acoustic transducer elements and a plurality of inductors wound over permeable cores. The angle of directivity of the acoustic transducer may be remotely and continuously controlled by varying the magnetic bias of the permeable cores by means of a control circuit.

3,614,726
SLIPRING ASSEMBLY
Albert P. Richter, Jr., and James D. Bruner, both of Houston,
Tex., assignors to Texaco Inc., New York, N.Y.
Continuation of application Ser. No. 682,485, Nov. 13, 1967.
This application Oct. 30, 1969, Ser. No. 871,773
Int. Cl. H01r 39/08; G01v 1/40
U.S. Cl. 340—18 LD **3 Claims**



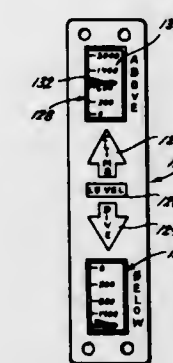
A slipring assembly including male and female portions wherein said portions are comprised of a stack of dielectric wafers and dielectric annular waferlike members, respectively. The stack of wafers, or discs, forming the male portion of the assembly is provided with a plurality of spaced-apart conductive sliprings. Registered apertures in the wafers provide wiring passages, or conduits, for electrical wires which are electrically bonded to the various conductive rings on the male portion. Each annular waferlike member comprising the female portion, which concentrically encompasses the male portion, carries four gold alloy contact wires, or brushes, which contact the conductive ring on one of the wafers comprising the male portion. The four wires are placed so that four points of contact with the slipring are spaced approximately 90° apart.

3,614,727
**CHANGEABLE HIGHWAY SIGN AND MOTORIST AID
 SYSTEM**
 Robert W. Fritts, Afton Township, Washington County,
 Minn., assignor to Minnesota Mining and Manufacturing
 Company, Saint Paul, Minn.
 Filed Aug. 16, 1968, Ser. No. 753,096
 Int. Cl. G08g 1/09
 U.S. Cl. 340—22
 8 Claims

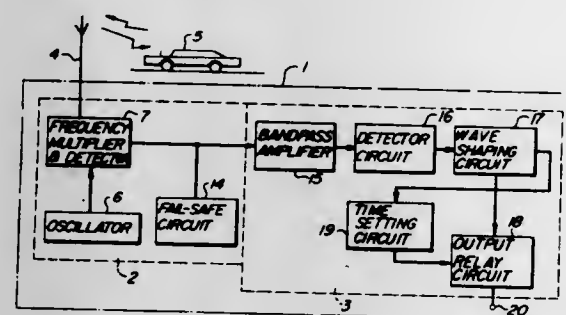


A changeable sign is disclosed which is adapted for use as a changeable highway sign located along a highway and which is capable of visually displaying to a motorist travelling in a vehicle along the highway any one of several predetermined driving messages. Additionally, a changeable highway sign system which incorporates a changeable highway sign is disclosed wherein the system includes a remotely located central station for selectively controlling changeable highway signs to continually inform the motorists of current speed limits, driving conditions and the like associated with the particular portion of the highway over which the motorists is traversing. The changeable highway sign and system, as disclosed herein, are adapted to include a motorist voice communication system to permit a motorist to communicate with a dispatcher at a central station.

3,614,728
INDICATOR MEANS FOR COLLISION AVOIDANCE
SYSTEMS
Martin J. Borrok, Berkeley; Robert E. Perkinson, St. Louis
County; Fred D. Watson, St. Louis County, and Wilbur H.
Von Fange, Kirkwood, all of Mo., assignors to McDonnell
Douglas Corporation, St. Louis, Mo.
Filed Mar. 6, 1970, Ser. No. 17,256
Int. Cl. G08g 5/04
U.S. Cl. 340-23 18 Claims

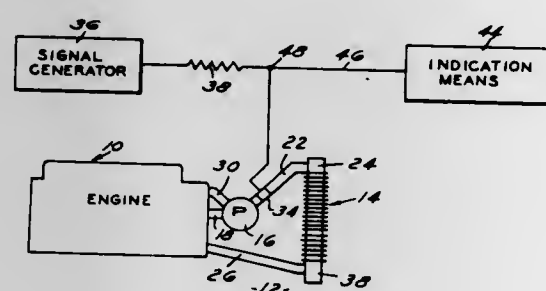


3,614,729
VEHICLE-DETECTING APPARATUS USING ELECTROMAGNETIC WAVE
 Kyohel Fujimoto, Yokohama, and Nobuyuki Suyama, Chigasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed Mar. 24, 1969, Ser. No. 809,843
 Claims priority, application Japan, Mar. 29, 1968, 43/21134
 Int. Cl. G08g 1/015, 1/06
 U.S. Cl. 340—38 R 7 Claims



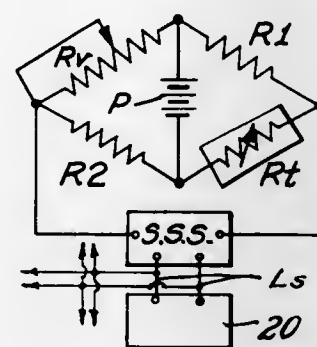
An all solid-state microwave vehicle-detecting apparatus specially equipped with time-setting circuits to attain a high accuracy in registering the number of moving vehicles on a roadway, said time-setting circuits processing signals to obtain an output well correlated with an actual number of vehicles regardless of the state of traffic, said vehicle-detecting apparatus having a high reliability and compactness attained by completely transistorized circuits and radiofrequency circuits of special design comprising a circuit which functions as a frequency multiplier as well as a signal detector.

3,614,730
ENGINE COOLANT LEVEL WARNING SYSTEM
 Michael Bozolan, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
 Filed June 25, 1970, Ser. No. 49,691
 Int. Cl. B60q 1/00
 U.S. Cl. 340—59 9 Claims



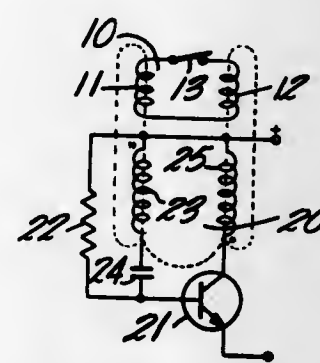
A system for indicating lack of or severe reduction of coolant flow through a coolant system for an internal combustion engine that warns the vehicle operator of catastrophic failure or loss of fluid in the engine cooling system, as well as apprising the operator that the engine coolant thermostat has opened. A metal band, for example, a hose clamp, is placed on one of the radiator hoses, preferably the upper hose, and a signal generator generating a high-frequency electrical signal is coupled to this metal band. An indication means in the form of a lamp driver circuit and a warning lamp is also connected to the metal band. When coolant is flowing through the radiator hose, the capacitance between the metal band and the engine is at a predetermined level, but when flow of coolant through the hose is reduced substantially, the capacitance is reduced substantially. This change of capacitance is sensed by the lamp driver circuit and will cause the warning lamp coupled to the lamp driver circuit to become illuminated when coolant flow through the radiator hose is at a low or nonexistent level.

3,614,731
TRANSPORT VEHICLE AXLE BEARING ALARM
 Stephen A. Huchan, Riverside; Sidney Herman, Covina, and Eugene G. Dowd, Rolling Hills, all of Calif., assignors to Bourns, Inc.
 Filed June 15, 1970, Ser. No. 46,358
 Int. Cl. B60q 5/00
 U.S. Cl. 340—57 5 Claims



A system for producing an alert or alarm apprising the operator of a transport vehicle of the overheating of an axle bearing.

3,614,732
TRANSMISSION OF INFORMATION BETWEEN ELEMENTS IN RELATIVE MOTION
 Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, S.A. Michelin & Cie, France
 Filed June 18, 1969, Ser. No. 834,353
 Claims priority, application France, June 21, 1968, 156203
 Int. Cl. B60c 23/02
 U.S. Cl. 340—58 10 Claims

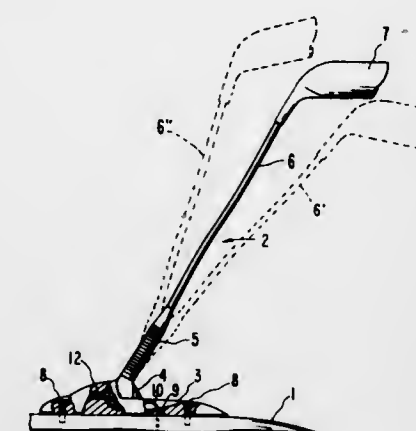


A driver is apprised, while driving, of an abnormal temperature or pressure in any of the tires of an automobile. A receiver oscillator, mounted on the automobile frame near each tire, contains two inductors so arranged that the oscillator is normally blocked. A pair of inductors, associated with each tire and moving therewith, are arranged in series with a normally open switch, which is closed in response to the condition to be monitored. When this switch is closed, the passing of these latter inductors near those of the receiver oscillator causes it to become unblocked, thus producing a signal to warn the driver of the abnormal condition.

3,614,733
ELEVATED AUTOMOBILE BRAKE LIGHT ON SPRING MOUNT
 Dewey D. Halligan, 239 Elk St., Santa Cruz, Calif.
 Filed Mar. 31, 1970, Ser. No. 24,228
 Int. Cl. B60q 1/00, 3/00
 U.S. Cl. 340—87 4 Claims

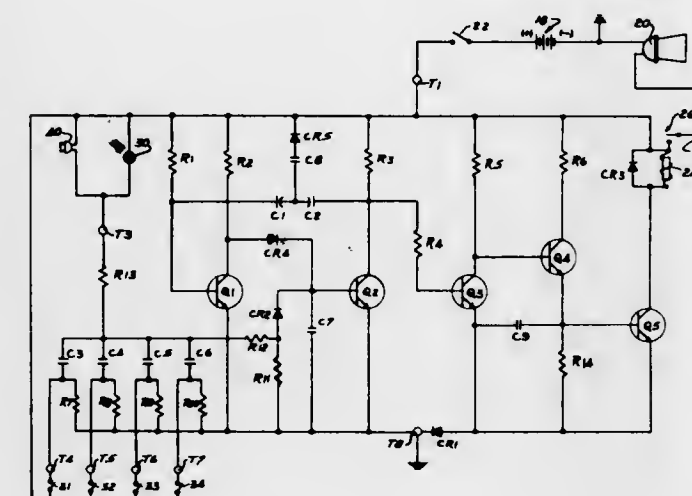
A high-level stop and signal light has a mounting base which can be mounted on a vehicle's exterior surface such as the roof, rear pillar or rear deck of an automobile. The base holds a ball swivel that is locked in place by a screw, the swivel holding a lamp disposed in the end and shielded from sunlight by an extended hood. The lamp is connected to the

automobile brake light system or turn signal system. Upon rapid deceleration of the vehicle the flexible spring section



permits the lamp to rise to a more vertical position thus attracting the attention of other motorists.

3,614,734
AUTO ALARM SYSTEM
 Charles E. Davis, 4608 Gilbert Ave., Dallas, Tex.
 Filed June 17, 1968, Ser. No. 737,513
 Int. Cl. B60r 25/00; G08b 13/00
 U.S. Cl. 340—64 14 Claims



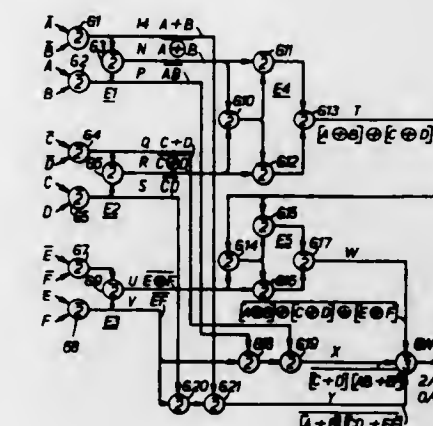
An automobile alarm system having a monostable multivibrator, an external trigger circuit and a driving circuit to actuate a relay to sound an alarm when an abrupt increase in current drawn from automobile battery causes a temporary voltage change. The alarm is automatically deenergized after a predetermined period of time to prevent excessive drain of power from the battery.

3,614,735
MONITORING CIRCUITS
 Roy Harold Mauger, and John Michael Frampton, both of Liverpool, England, assignors to The Plessey Company Limited, Ilford, England
 Filed Oct. 16, 1969, Ser. No. 866,837
 Claims priority, application Great Britain, Oct. 21, 1968, 49832/68
 Int. Cl. G06f 11/00
 U.S. Cl. 340—146.1 4 Claims

The preferred circuit uses NAND gates or NOR gates in integrated circuit form and is employed for monitoring the "set" and "reset" sides of six storage toggles A to F to determine the validity of otherwise of their coded outputs.

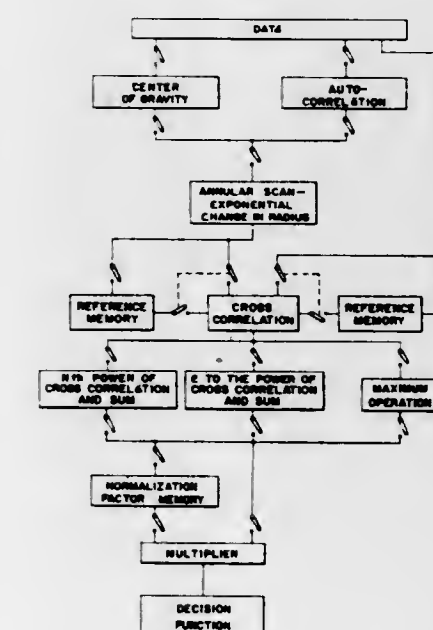
The circuit comprises three branches appropriate to the terms:

$(A \oplus B) \oplus (C \oplus D) \oplus (E \oplus F)$ 1/6, 3/6, 5/6
 $(C + D) (AB + EF)$
 $(A + B) (CD + EF)$ 3 of 4/6



These branches are arranged to ensure that the only valid conditions are 2-out-of-6 and the null condition 0-out-of-6.

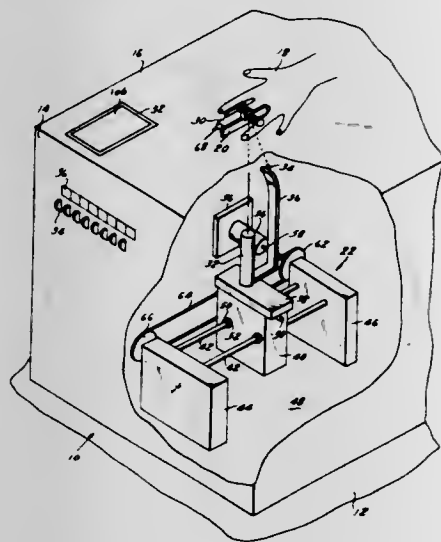
3,614,736
PATTERN RECOGNITION APPARATUS AND METHODS INVARIANT TO TRANSLATION, SCALE CHANGE AND ROTATION
 John A. McLaughlin, San Jose, Calif., and Josef Raviv, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
 Filed May 21, 1968, Ser. No. 730,828
 Int. Cl. G06k 9/08
 U.S. Cl. 340—146.3 O 8 Claims



A pattern recognition system is disclosed which will recognize patterns irrespective of their translation rotation or scale change. Input data may be provided by a scanner or other suitable data source. Means for calculating the center of gravity, or alternatively the autocorrelation function are provided which can be employed; and then the data can be transformed for an actual or simulated annular or equivalently radial scan, with exponential spacing along radii. Alternatively, a straightforward raster scan may be employed for recognition which is invariant to translation only. The output is then processed in means for cross correlating with known patterns. The result is preferably raised to the Nth power and summed. Alternatively, 2 can be raised to the power of the cross correlation times K and summed which is easily done on a digital computer, or finally the result can be

subjected to maximum operation. In all cases, the pattern is then processed through corresponding means for normalization including a storage device, a multiplier and a decision function unit. Prior to operation for pattern recognition, the system is operated with the normalization storage connected through an inverter to the output of one of the Nth power, power of 2 or maximum operation units for receiving the appropriately processed data relative to a sample for normalization. Then the appropriate normalization may be supplied for each mode of processing after cross correlation.

3,614,737
METHOD AND APPARATUS FOR INDIVIDUAL RECOGNITION
Charles Sadowsky, Great Neck, N.Y., assignor to Dactylog, Inc., New York, N.Y.
Filed Sept. 8, 1969, Ser. No. 855,955
Int. Cl. G06k 9/04
U.S. Cl. 340-146.3 E

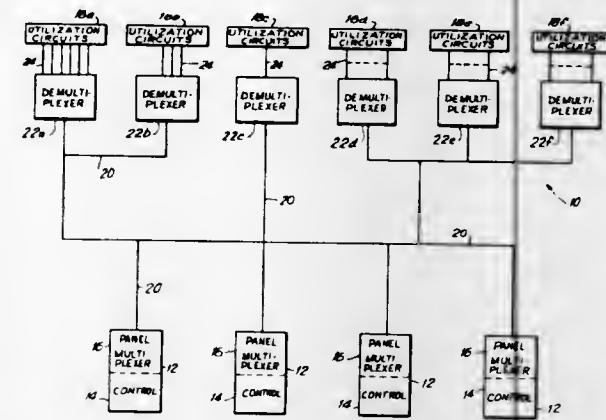


A method and apparatus for determining or verifying the identity of an individual wherein characteristics of a designated skin area of the individual, for example on the hand, are transduced into electrical signals which are then matched to or compared with a corresponding set of stored electrical signals representative of the characteristics of the same designated skin area of an individual whose identity is known. The characteristics of the designated skin area are scanned along a linear path by a light source and photoelectric cell and the light and dark representations of the ridges and depressions and/or the variation in contrast of the designated skin area are transduced by a transducer into electrical signal representations which representations are then compared by a comparator circuit in a computer with the allegedly corresponding representations stored in a computer memory bank. If the two sets of representations correlate, the identity of the individual is determined.

3,614,738
ATTENDANT CONTROL PANEL SYSTEM
Martin J. Slavin, Dix Hills, Huntington, N.Y., assignor to Phonplex Corporation, Huntington, N.Y.
Filed June 30, 1969, Ser. No. 837,828
Int. Cl. H04q 9/14
U.S. Cl. 340-163

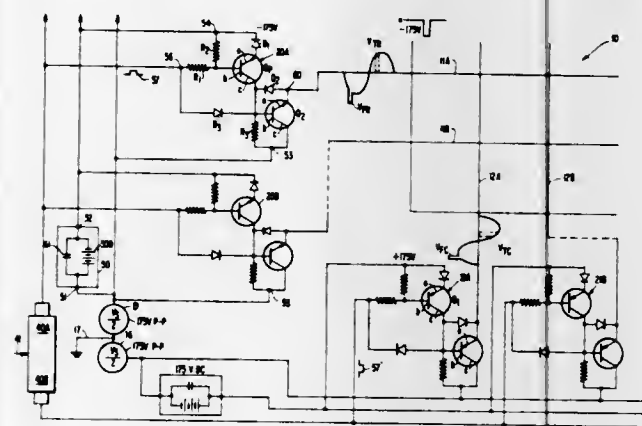
A panel system whereby an attendant may control a plurality of utilization circuits including a control panel manually adjustable to a plurality of modes each representative of a particular utilization circuit to be controlled and the desired status thereof. The control panel is connected to a multiplexer for producing a multiplexed signal including in assigned time frames digital codes representative of said control panel mode. A plurality of demultiplexing means are each connected with at least a portion of said utilization circuits and said multiplexing

means for receiving said multiplexed signal, and upon detecting a digital code assigned to one of its utilization



circuits, placing said utilization circuit in the status indicated by said control panel.

3,614,739
INTEGRATED DRIVING CIRCUITRY FOR GAS DISCHARGE PANEL
William E. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed May 2, 1969, Ser. No. 821,346
Int. Cl. H01j 17/38; H05b 37/00
U.S. Cl. 340-166 R

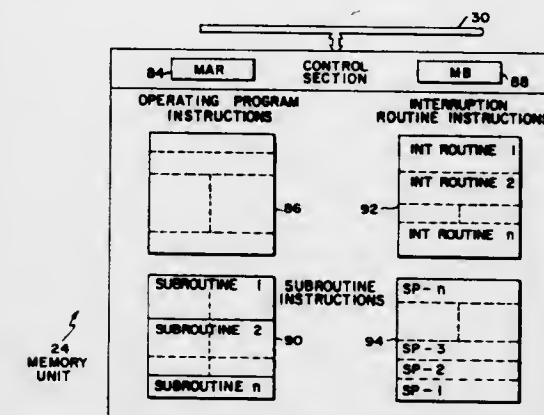


Solid-state low-level to high-level interfacing circuits for multiple discharge gas discharge devices capable of feeding through a high-level periodic sustaining voltage to the discharge device with minimum degradation. The output is the algebraic sum of the periodic sustaining voltage and a level converted logic signal. NPN circuits are used to drive one set of conductors in an array and PNP circuits are used for driving transversely related conductor arrays in the gas discharge device. Dielectric isolation in the fabrication of the integrated circuits is utilized and the circuits are such as to not require any inductance or capacitance elements, thus reducing cost and size of the circuits. The circuit appears as a low impedance to the load. There is no mixing of active elements (NPN vs PNP) in a circuit wafer or chip. Consult the specification for features and details.

3,614,740
DATA PROCESSING SYSTEM WITH CIRCUITS FOR TRANSFERRING BETWEEN OPERATING ROUTINES, INTERRUPTION ROUTINES AND SUBROUTINES
Bruce A. Delagi, Acton; Harold L. McFarland, Jr., Concord, and James F. O'Loughlin, Westford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 23, 1970, Ser. No. 021,957
Int. Cl. G06f 9/12
U.S. Cl. 340-172.5

A data processing system processor unit for executing instructions from one of a plurality of partially completed

operating routines. With each subroutine transfer a first register provides memory location address for storing a second register contents. The program count is stored in the second register; and the first subroutine instruction address is transferred to the program counter. A last subroutine instruction moves the second register contents to the program counter and the memory location contents to the second register. When an interruption routine is started, the



contents of the program counter and a status register are transferred directly into a pair of memory locations defined by addresses from the first register. A last interruption routine instruction moves the contents of the two memory locations defined by addresses from the first register to the processor unit. The last operating routine to be started is always the first one to be completed so that any number of routines may be partially completed.

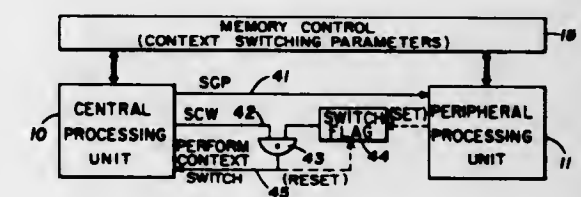
3,614,741
DATA PROCESSING SYSTEM WITH INSTRUCTION ADDRESSES IDENTIFYING ONE OF A PLURALITY OF REGISTERS INCLUDING THE PROGRAM COUNTER
Harold L. McFarland, Jr., Concord, and James F. O'Loughlin, Westford, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 23, 1970, Ser. No. 21,973
Int. Cl. G06f 9/20
U.S. Cl. 340-172.5

OPERAND ADDRESS					
ADDRESS MODE	5	4	3	2	1 0
0	0	0	0	0	0
1	0	0	0	1	0
2	0	0	1	0	0
3	0	0	1	1	0
4	1	0	0	0	0
5	1	0	0	1	0
6	1	0	1	0	0
7	1	0	1	1	0

A data processing system processor unit including memory addressing circuits. Operand addresses for identifying data storage locations comprise operand address mode and register selection bits. One of a plurality of registers in the processor unit, which includes the program counter, is selected by decoding the register selection bits. The selected register contents are transferred to the processor unit as data, data addresses or addresses of intermediate storage locations containing data addresses to provide direct, indirect or double deferred addressing. Data or data addresses interleaved with or obtained from information interleaved with instructions are obtained by selecting the program counter. This provides immediate, absolute, relative and deferred relative addressing. The selected register contents are modified if certain address modes are used. A given

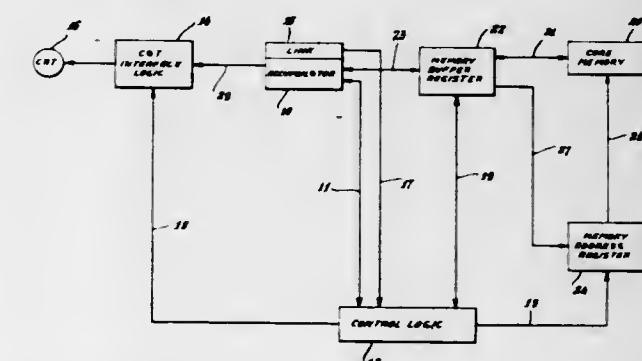
operation code can be combined with one or two operand addresses in order that each instruction can obtain data from locations in the most efficient manner.

3,614,742
AUTOMATIC CONTEXT SWITCHING IN A MULTIPROGRAMMED MULTIPROCESSOR SYSTEM
William J. Watson, and William D. Kastner, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed July 9, 1968, Ser. No. 743,572
Int. Cl. G06f 9/18
U.S. Cl. 340-172.5



An interface between a central processing unit and a peripheral processing unit responds to a program instruction of either system call and proceed or system call and wait. Interfacing interlocking is provided for directing to a reserved address in memory an instruction code developed in the central processing unit which is responsive to the instruction to reduce overhead time in switching programs and in directing the peripheral processing unit in its support of the central processing unit.

3,614,743
VARIABLE STROKE CHARACTER GENERATOR
Murray Ruben, Belmont, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jan. 14, 1969, Ser. No. 791,121
Int. Cl. G06f 3/14; G06k 15/18, 15/20
U.S. Cl. 340-172.5

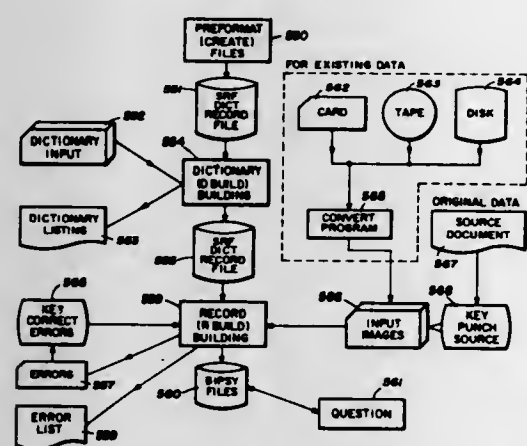


Each character to be displayed by a cathode-ray tube is assigned unique control and mask words. A portion of the assigned mask word designates one of a plurality of predetermined masks best suited for generation of a character; each mask defining a unique plurality of character stroke endpoints. The control word determines which of the various character strokes defined by a mask are to be executed by the CRT beam, while the remaining portion of the mask word determines which of the executed character strokes are to be visible.

3,614,744
GENERALIZED INFORMATION PROCESSING
James W. Sweeney, Norman, Okla., assignor to The University of Oklahoma Research Institute
Filed June 27, 1969, Ser. No. 837,237
Int. Cl. G06f 15/40
U.S. Cl. 340-172.5

Strings of variable content natural language alphanumeric data are stored in computer memory at addressable locations along with an internal format code and a relative address.

The data is serially compared with stored variables which produce truth responses through the internal format code. The number of responses per variable is stored. The addresses of data for each said truth response satisfying a predetermined logical combination of said variables are



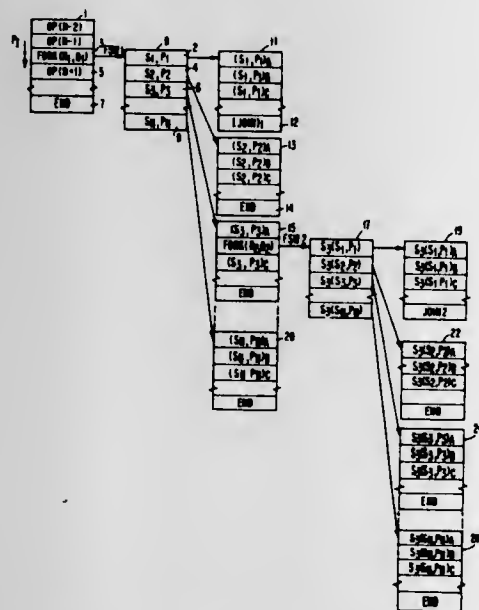
stored. Thereafter, data at the stored addresses are serially compared through the internal format code with at least one additional variable. The truth responses of said additional variable render accessible in storage the addresses of the corresponding data for each such truth response.

3,614,745
APPARATUS AND METHOD IN A MULTIPLE OPERAND STREAM COMPUTING SYSTEM FOR IDENTIFYING THE SPECIFICATION OF MULTITASKS SITUATIONS AND CONTROLLING THE EXECUTION THEREOF
Albert Podvin, Woodland Hills, Calif., and Michael J. Flynn, Evanston, Ill., assignors to International Business Machines, Armonk, N.Y.

Filed Sept. 15, 1969, Ser. No. 858,022
Int. Cl. G06f 15/16

U.S. Cl. 340—172.5

3 Claims



A system is described, useful in a multiple operand stream, or parallel, data processing system, for detecting the specification of independent tasks which can be operated upon in parallel. The specification of the independent parallel operable tasks is given by a fork instruction specifying the number of tasks and the physical or logical function to be performed for the task. A fork point can therefore be visualized as a logical node point where a given class of physical or logical tasks is undertaken. There is control apparatus associated with each node point. The control apparatus is a resource distributor-manager and also a controller into which each system resource reports when it has become free from whatever other task it was performing.

The control apparatus dynamically allocates resources to the tasks in the fork on an as-available basis. The fork ends at a join point where data from the parallel tasks is coordinated. In one embodiment, the processor which initiated the fork may reach the join point, and apparatus is provided which gives this processor the options to wait for all tasks to be completed and coordinate data itself; to become one of the fork processors and help out by taking on an undistributed task, if one or more tasks remain undistributed; or to abort, for example under priority interrupt, and go to another job leaving the data to be coordinated by another processor in the system.

The control apparatus includes subsystems, each comprising first and second queueing means, the first queueing means for queueing fork instructions as they are issued, and second queueing means for allowing the control of a plurality of fork instructions at a given time.

3,614,746
MEMORY ADDRESSING DEVICE USING ARBITRARY DIRECTED GRAPH STRUCTURE

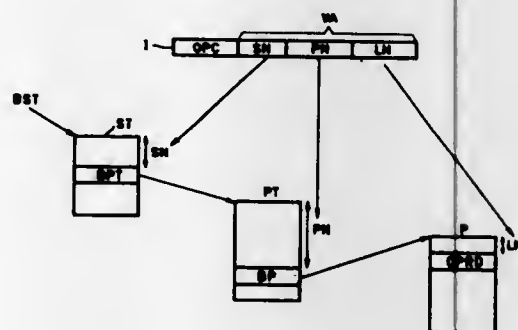
Jacob Fredrik Klinkhamer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,299
Claims priority, application Netherlands, Oct. 31, 1968, 6815506

Int. Cl. G06f 9/10, 9/20

U.S. Cl. 340—172.5

7 Claims



Data-processing system comprising an addressing device for addressing in a directed graph structure in a store which is divided for this purpose into tables each having a reference address as a table base. Relative to the table base, the words to be found numerically in the table are reference addresses for a further table or operands or indirect addresses for operands. In order to permit highly flexible addressing in a directed graph structure, the address portion of an instruction and/or any sequential words contains an arbitrary number of address components which may have different lengths. The table words may have table length data of a further table to permit a length check and addressing in overflow tables.

3,614,747
INSTRUCTION BUFFER SYSTEM
Keiichi Ishihara, and Tetsunori Nishimoto, both of Hatano-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 29, 1969, Ser. No. 872,065
Claims priority, application Japan, Oct. 31, 1968, 43/79553
Int. Cl. G06f 9/00

U.S. Cl. 340—172.5

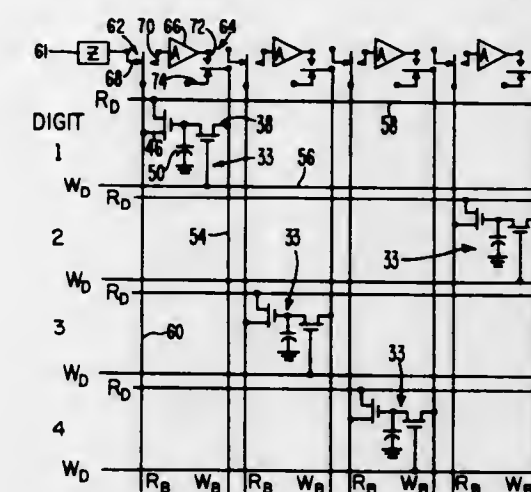
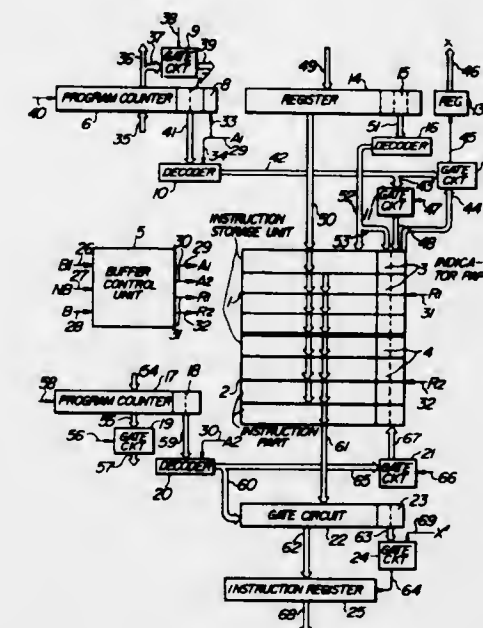
13 Claims

An instruction buffer for electronic computer systems, mainly comprising a pair of groups of registers in which instructions read out from the memory unit are stored and a control unit for controlling the selection of said groups of registers, normally one group of registers being used and the second group being used when a conditional branch instruction occurs in the program, so as to store the instructions in the branch program, the subsequent use of the

groups of registers depending on the fate of the branch condition, thereby the advanced control of readout being

3,614,749
INFORMATION STORAGE DEVICE
Arthur J. Radcliffe, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed June 2, 1969, Ser. No. 829,426
Int. Cl. G11c 11/24, 11/40
U.S. Cl. 340—173 R

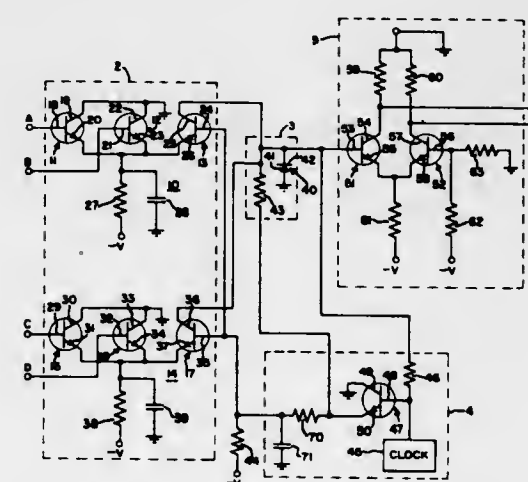
5 Claims



An information storage device comprising a capacitive memory cell utilizing a pair of insulated gate field-effect transistors controlling the "read" and the "write" operations of the cell. A capacitor is electrically connected to both transistors to function as the information storage element of the cell. The capacitor may be either a discrete component or it may be formed on the same substrate as are the two transistors.

3,614,748
HIGH-SPEED MEMORY AND MULTIPLE LEVEL LOGIC NETWORK WITH PULSE SHAPING
William Peil, North Syracuse, and Richard J. Pepe, Liverpool, both of N.Y., assignors to General Electric Company
Filed Jan. 7, 1970, Ser. No. 1,115
Int. Cl. G11c 11/36
U.S. Cl. 340—173 R

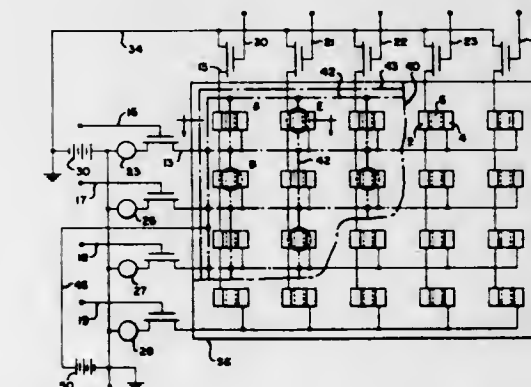
5 Claims



To substantially improve the operation of a high-speed, low-power digital logic network of the type including a bistable tunnel diode circuit, a source of clock signal pulses and a multiple input logic gate circuit for generating logic signal pulses in response to applied binary inputs and said clock signal pulses, said logic and clock signal pulses being coupled to said tunnel diode circuit for driving it into a first stable state when concurrently applied and into a second stable state with said clock signal pulses solely applied, the improvement comprising the employment of pulse-shaping circuit at the output of the clock signal source for shaping the clock signal pulses applied to said logic gate circuit so as to relax component tolerances and reduce spurious operation.

3,614,750
READ-ONLY MEMORY CIRCUIT
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed July 15, 1969, Ser. No. 841,760
Int. Cl. G11c 17/00
U.S. Cl. 340—173 SP

4 Claims



The present invention relates to a read-only memory card comprising a coded array of dielectric coated gate electrodes mounted on a nonconductive substrate. The invention also relates to a read-only memory card reader for reading said read-only memory card comprising source electrode-semiconductor material-drain electrode elements on a nonconductive substrate. Field-effect transistors are formed when the read-only memory card is placed on the read-only memory card reader. The field-effect transistors are probed by applying a gate voltage to the coded array of dielectric coated gate electrodes of the read-only memory card and applying a source-drain voltage to each element of the read-only memory card reader. The field-effect transistors, only, will conduct a source-drain current. A source-drain current, which passes through the completed field-effect transistors, is sensed, in order to read the information in the read-only memory card.

3,614,751

MEMORY CIRCUIT

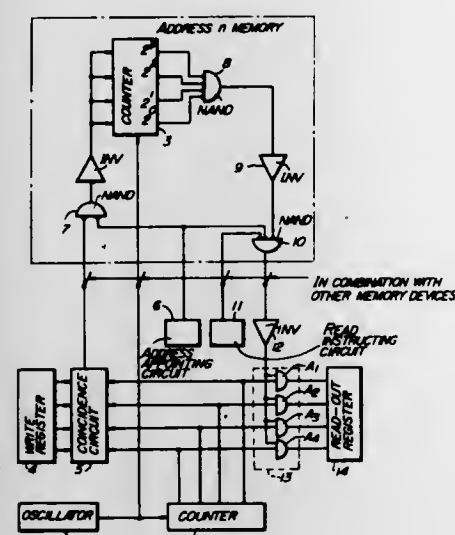
Hiroshi Narisawa, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 18, 1969, Ser. No. 858,987

Claims priority, application Japan, Sept. 20, 1968, 43/67603
Int. Cl. G11c 13/00

U.S. Cl. 340-173 R

8 Claims



A memory circuit comprising counters of which the number of bits is equal to that of information, each one of the said counters corresponding to each address, and a single such counter common to all the addresses, wherein the said counters are advanced in synchronism with clock pulses, the counter corresponding to the address where information is to be written is set to a particular numerical representation at such a clock position that the contents of the write register and common counter are in conformity with each other, and the content of the common counter is read out at such a clock position that the address counters represent a particular number and is then transferred to a read-out register.

3,614,752

STORAGE ARRANGEMENT WITH CONTACT PRESSURE DEVICE

Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

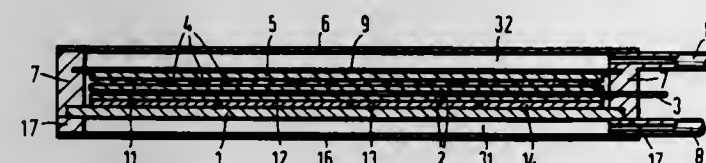
Filed Sept. 26, 1969, Ser. No. 861,338

Claims priority, application Germany, Oct. 1, 1968, P 18 00 34.3

Int. Cl. G11c 13/00, 19/00

U.S. Cl. 340-173 SP

3 Claims



An electrical, relatively flat and comparatively thin storage arrangement in which the components are disposed in relatively flat stacked relation one upon the other, having means forming a generally correspondingly shaped chamber in which the stack of components is disposed, the chamber having a wall thereof, bearing on one of the outermost components of the stack, constructed to transmit pressure applied to the external face thereof to said stack whereby the components of the latter may be placed under compression by action of substantially equal pressure forces acting on said wall and the opposite parallel wall of said chamber in opposite directions substantially perpendicular to said first-mentioned wall, means being provided for effecting the application of such pressure with atmospheric or a greater pressure being employed as the pressure-affecting medium.

3,614,753

SINGLE-RAIL SOLID-STATE MEMORY WITH CAPACITIVE STORAGE

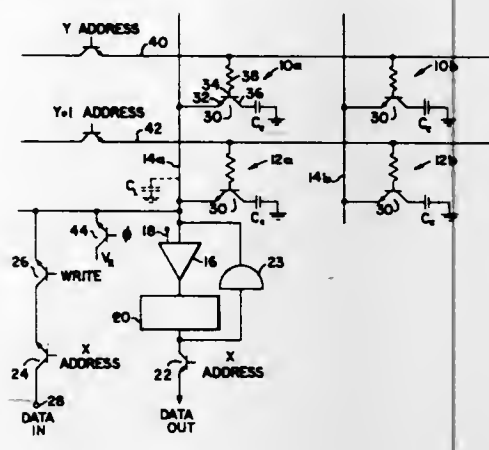
Sven E. Wahlstrom, Palo Alto, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 825,257, May 16, 1969. This application Nov. 10, 1969, Ser. No. 875,240

Int. Cl. G11c 11/40; H03k 3/26

U.S. Cl. 340-173 R

3 Claims



A one-device-per-bit random-access memory array is constructed with integrated-circuit transistors as the memory cell switching elements. The transistors used are bidirectionally conductive and have a beta of at least two in both directions. Information transfer is accomplished by transferring incremental charges between the collector-to-substrate capacitance of the transistor and the bit line capacitance.

3,614,754

FERROELECTRIC GADOLINIUM MOLYBDATE COMPENSATION TYPE BISTABLE LIGHT GATE AND LOGIC CELL HAVING MEMORY

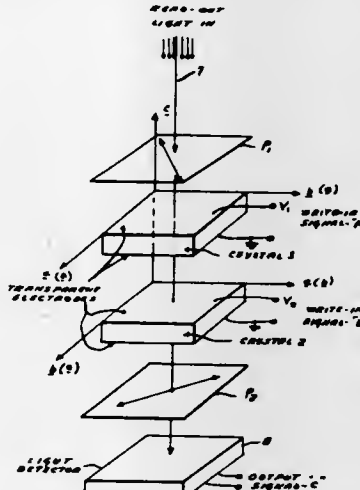
Stewart E. Cummins, 11810 Stafford Road, New Carlisle, Ohio

Filed Mar. 17, 1969, Ser. No. 807,753

Int. Cl. G02f 1/26; G11c 11/22, 13/04

U.S. Cl. 340-173.2

6 Claims



Two, electrode, birefringent, bistable crystals of ferroelectric gadolinium molybdate are aligned along their crystallographic c axis between crossed optical polarizers. When the two crystals have their respective spontaneous polarization switched by an electrical pulse so that the directions of their a and b axes respectively coincide, the retardations add, and when they are switched so that the a direction of one crystal aligns with the b direction of the other crystal the retardations subtract. In the former instance light is passed, in the latter no light is transmitted through the crystals and crossed polarizers. Each bistable ferroelectric gadolinium molybdate crystal has memory in that only an electrical pulse is required to bring about a change of state which is retained until the crystal is conversely pulsed.

3,614,755

ASSOCIATIVE THIN FILM MEMORY ORGANIZATION

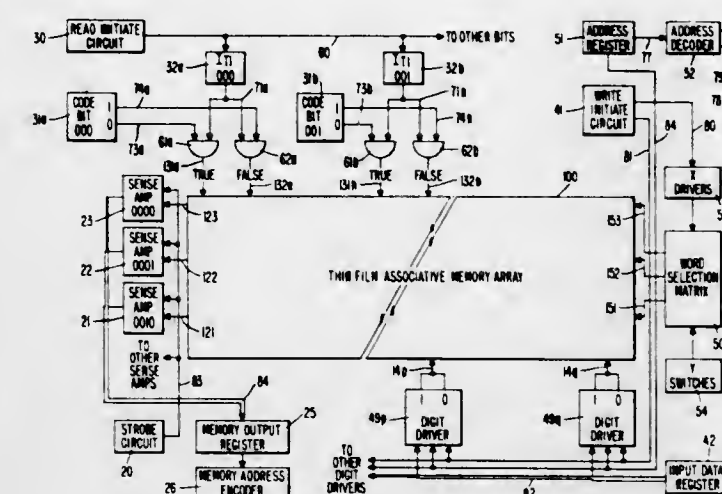
Joseph W. Hart, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 3, 1969, Ser. No. 796,087

Int. Cl. G11c 15/00, 11/14

U.S. Cl. 340-174 GA

10 Claims



This disclosure relates to an associative memory organization of an array of thin film storage elements for the storing of bits and the complement bits corresponding thereto. Upon the presentation of a code word to the code word register, a ZERO residing in the significant bit level of the code word will cause the interrogation of a particular significant bit level in the memory array while the presence of a ONE in the code word will cause the interrogation of the corresponding complement bit level. In this manner, a match between the contents of a particular word location in the memory and the code word will result in the interrogation of only those memory elements which reside in a ZERO state in the matching word location. The disclosure also describes a manner of orienting the individual thin film storage elements to minimize the signal induced on the respective sense lines upon interrogation of that memory element when it resides in a ZERO state. The effect of the memory organization and storage element orientation is to allow a larger number of bits to be sensed for a matching word by reducing the accumulation of ZERO bit signals generated on the word level sense line which accumulations might otherwise cancel out a ONE bit signal that indicates a mismatch.

3,614,756

MAGNETIC RECORD WITH SERVO TRACK PERPENDICULAR TO INFORMATION TRACK

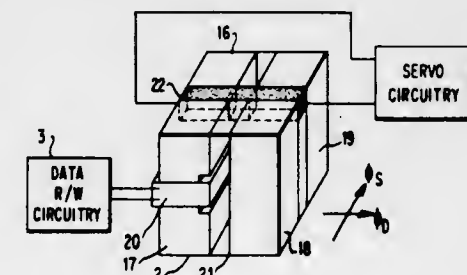
Robert P. McIntosh, Saratoga, and Marco Padalino, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,666

Int. Cl. G11b 5/28, 5/38, 21/08

U.S. Cl. 340-174.1 C

9 Claims



The invention relates to a servosystem used in a random access disk memory system which comprises a magnetic disk

having servo tracks recorded such that the magnetic domains within the servo tracks are aligned radially from the center of the disk and data tracks which have the magnetic domains aligned concentrically about the center of the disk, and a transducer capable of developing a data signal as a function of the rate of change of the magnetic flux associated with the data tracks and a servo signal generated by the magnitude of the absolute flux magnitude that it presented to the transducer by the transducer's relationship to the servo tracks on the magnetic disk, the servo signal and the data signals being generated either simultaneously or alternately in the magnetic transducer.

3,614,757

DISPLACING APPARATUS

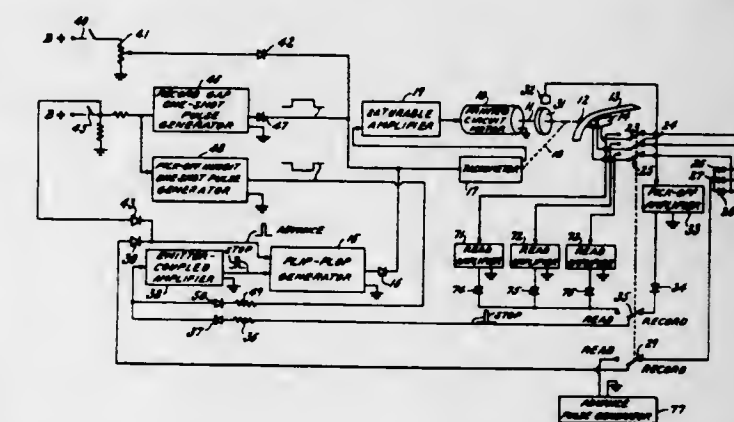
Robert P. Burr, Lloyd Harbor, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.

Continuation of application Ser. No. 321,511, Nov. 5, 1963, Continuation-in-part of application Ser. No. 120,256, June 28, 1961, now Patent No. 3,182,243. This application Mar. 4, 1966, Ser. No. 536,541

Int. Cl. H02p 5/06

U.S. Cl. 340-174.1

12 Claims



Apparatus for advancing magnetic tape with respect to a recording head through small, discrete, and uniform displacement increments. A direct current drive motor has an armature shaft that drives a displaceable member. Controls develop signals that energize and deenergize the motor. Included in these controls are a speed responsive tachometer and an acceleration control utilizing a saturable amplifier.

3,614,758

METHOD AND APPARATUS FOR SATURATION-TYPE DIGITAL MAGNETIC RECORDING

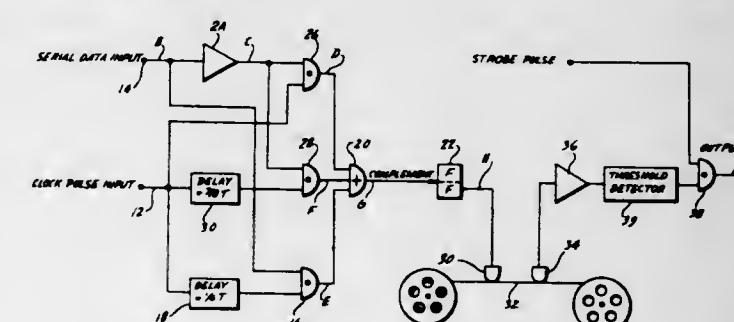
Michael I. Behr, South Pasadena; Norman S. Blum, Thousand Oaks, and James T. Wang, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 9, 1969, Ser. No. 840,394

Int. Cl. G11b 5/06

U.S. Cl. 340-174.1 G

15 Claims



There is described a digital magnetic recording arrangement using saturation recording in which the intervals between successive data transitions from one saturation level to the other on the magnetic medium are varied according to

a predetermined code and in which one or more pairs of control transitions are inserted on the tape between adjacent data transitions, the number of pairs of control transitions being determined by the spacing between the adjacent data transitions.

3,614,759

INDICATING APPARATUS

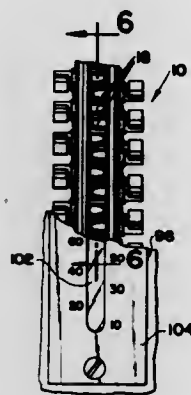
Edward H. Moore, Avon, and Milton A. Aron, Newington, both of Conn., assignors to The Gems Company, Inc., Farmington, Conn.

Filed May 28, 1969, Ser. No. 828,563

Int. Cl. H02b 1/04, 9/00

U.S. Cl. 340-212

10 Claims



An indicating apparatus for providing a visual linear output signal related to a measure variable in response to a voltage signal received from a sensor which measure the variable and provides an output voltage signal analogous thereto.

3,614,760

SIGNALLING APPARATUS

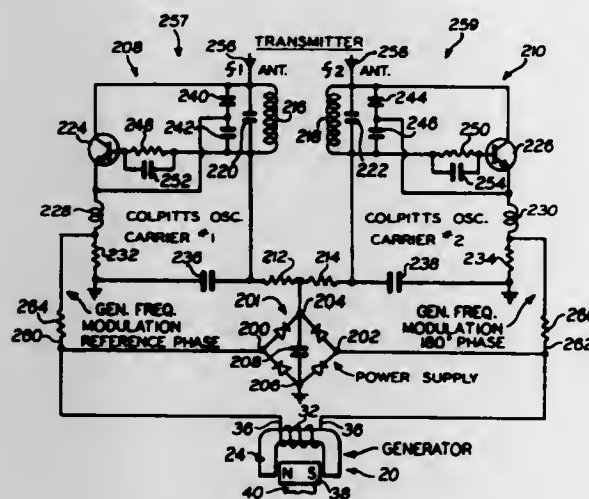
Arthur L. Zimmet, 203 East 76th St., New York, N.Y., and Milton P. Chernack, 299 June Place, West Hempstead, N.Y., assignors to Arthur L. Zimmet; Milton P. Chernack and Murray S. Trachtenberg, Bayside, N.Y., part interest to each

Filed Dec. 27, 1968, Ser. No. 787,456

Int. Cl. G08b 5/22

U.S. Cl. 340-224

11 Claims



A signaling system employs a transmitter energized by a momentary power generator which responds to a brief mechanical input. The input may be due to intentional signaling activity, unintentional triggering of a burglar detection device, or it may be in response to an ambient condition such as elevated temperatures indicating a fire is in progress. The mechanical event vibrates a spring-mass pendulum. The vibrating mass traverses an airgap in a magnetic circuit to induce an alternating potential in a signal output coil. The output of this generator is rectified to provide power for one or more radio frequency transmitters, and in addition may be used as the modulating signal

impressed upon the radio frequency carrier. Two radio frequency transmitters operating at different carrier frequencies may be modulated by different phase components of the generator frequency. Alternatively, the modulation may be supplied by one or more subcarrier generators energized by the mechanical power generator. For greater noise immunity, a variation of this system may employ coded combinations of subcarrier frequencies.

3,614,761

METHOD AND APPARATUS FOR MONITORING POTENTIAL OR LOST CIRCULATION IN AN EARTH BOREHOLE

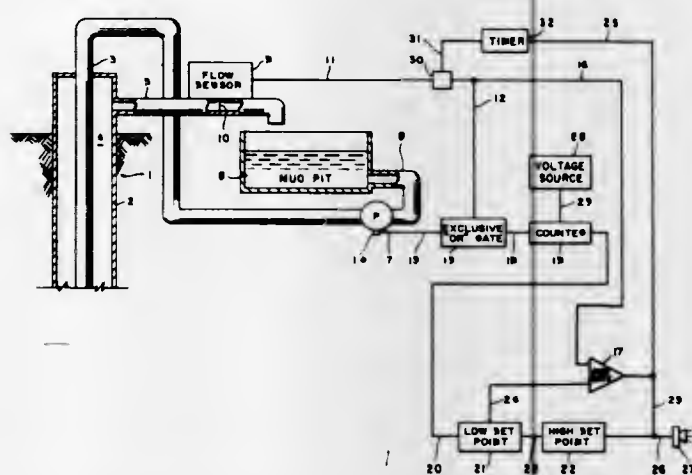
William A. Rehm; Phil H. Griffin, III, and Martin J. Sharki, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 3, 1969, Ser. No. 873,337

Int. Cl. G08b 21/00

U.S. Cl. 340-239

8 Claims



Method and apparatus for monitoring potential blowouts or lost circulation in a well by employing sensing devices on the drilling fluid pump and the well bore return pipe for the drilling fluid. Means are provided for monitoring the drilling fluid pumped into the well bore and for sounding a warning if a certain amount of drilling fluid flows out of the well bore before a minimum amount of drilling fluid is pumped into the well bore. Means are also provided for sounding the warning if no drilling fluid flows out of the well bore and the certain maximum amount of drilling fluid has been pumped into the well bore.

3,614,762

TANK RUNOUT WARNING SIGNAL

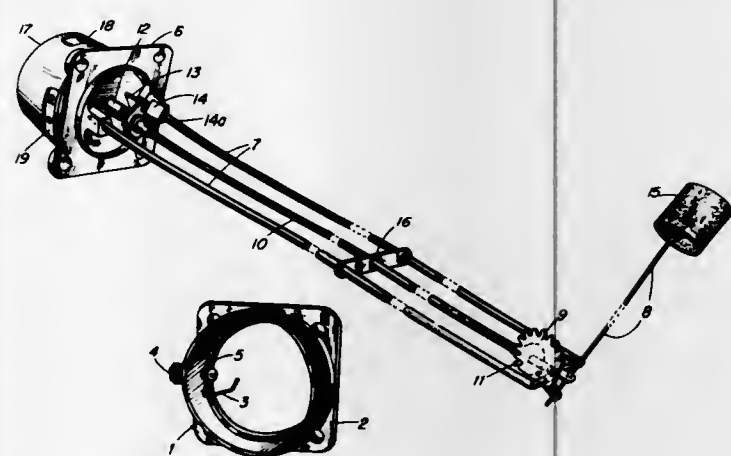
Elbert B. Childs, Hastings-on-Hudson, N.Y., assignor to Mobil Oil Corporation

Filed Oct. 8, 1968, Ser. No. 765,842

Int. Cl. G08b 21/00

U.S. Cl. 340-244 B

12 Claims



A liquid level indicator and alarm wherein a contact is secured to a movable element of a liquid level gauge, and a

fixed contact is secured to the housing thereof. As the liquid level varies, the position of the movable element likewise varies and when the liquid reaches a predetermined level, the fixed and movable contact elements complete a circuit which triggers an alarm.

3,614,763

PRONE POSITION ALARM

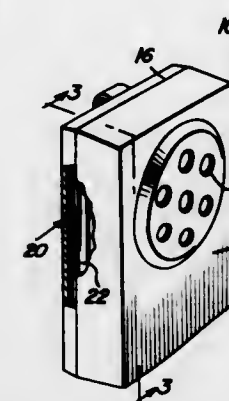
Anthony Yannuzzi, 10 Birchwood Ave, West Orange, N.J.

Filed Mar. 18, 1969, Ser. No. 808,106

Int. Cl. G08b 21/00

U.S. Cl. 340-279

13 Claims



A housing to be secured to a person's clothing encloses an audio signal generator. A mercury switch is connected to the generator so that when the person falls to a prone position, the mercury switch energizes the circuit to cause issuance of an alarm signal. The housing further encloses medication and a medical record sheet which informs a first aider as to the person's medical condition.

3,614,764

APPARATUS FOR PROVIDING GRAPHICAL IMAGES ON A RADIANT-ENERGY-RESPONSIVE SURFACE

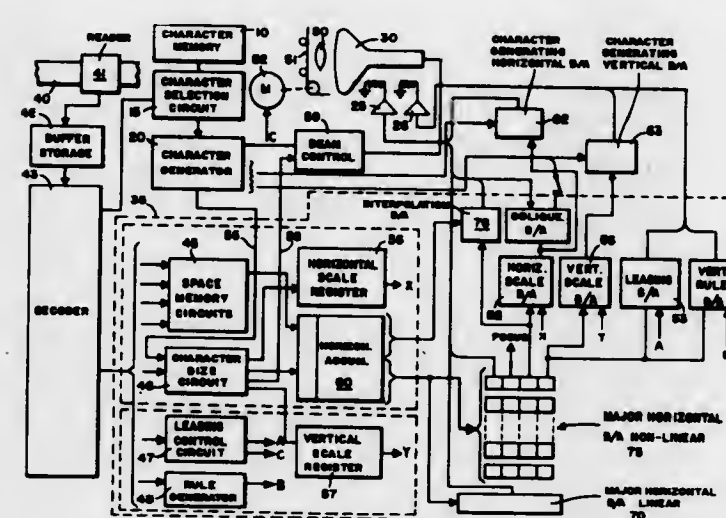
Edwin R. Kolb, University Heights, and Herbert E. Drake, Willowick, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Mar. 4, 1968, Ser. No. 710,350

Int. Cl. G06f 3/14

U.S. Cl. 340-324 A

5 Claims



A phototypesetting system wherein characters may be displayed on a cathode-ray tube includes a character-positioning means for locating accurately each character horizontally on the face of the tube in response to the status of an accumulator means. The character-positioning means includes an output circuit means having a substantially linear response to the status of the accumulator to provide a substantial portion of the character-positioning signal, and a compensating means, also responsive to the status of the accumulator means, to supply only that portion of the character-positioning signal which is necessary to

3,614,765

QUOTATION BOARD SYSTEM

George H. Huber, Cinnaminson; Eugene I. Gertler, Cinnaminson; Haggood, Dennis W., Magnolia; John A. Ciarrocchi, Magnolia, and Walter A. Richman, Woodcrest, all of N.J., assignors to Ultronic Systems, Pennsauken, N.J.

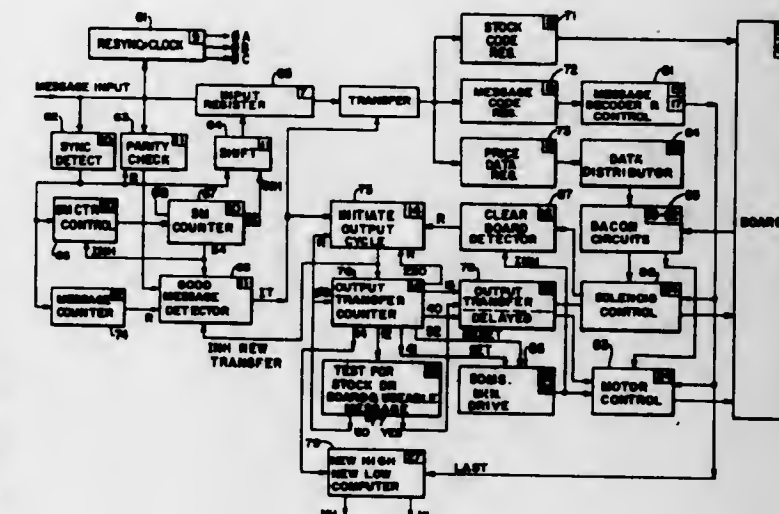
Division of Ser. No. 542,057, Apr. 12, 1966, Pat. No. 3,416,134.

Filed July 2, 1968, Ser. No. 742,011

Int. Cl. G09f 11/08, 11/28

U.S. Cl. 340-324

3 Claims



A quotation board system for the display of prices of stocks, commodities and the like wherein messages are transferred from a central location to individual quotation board locations. Different stocks can be selected at each location for display using manually changeable stock identification characters and individual digit units for displaying prices.

3,614,766

DISPLAY DEVICE INCLUDING ROLL AND CRAWL CAPABILITIES

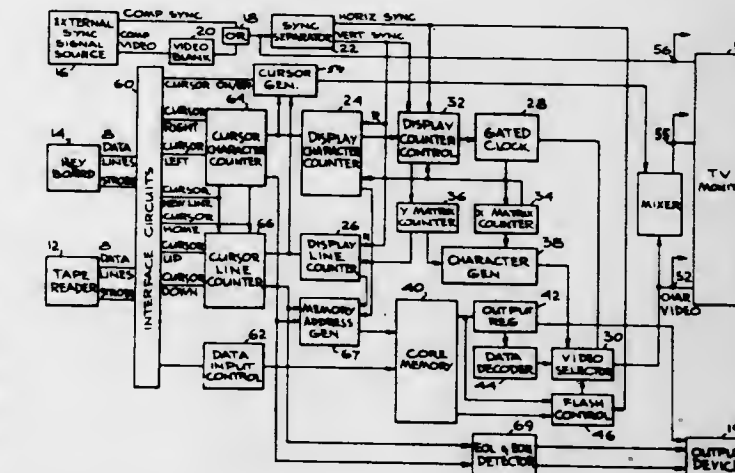
James M. Klevit, Des Plaines, Ill., assignor to A.B. Dick Company, Chicago, Ill.

Filed June 9, 1969, Ser. No. 831,687

Int. Cl. G06f 3/14

U.S. Cl. 340-324 A

27 Claims

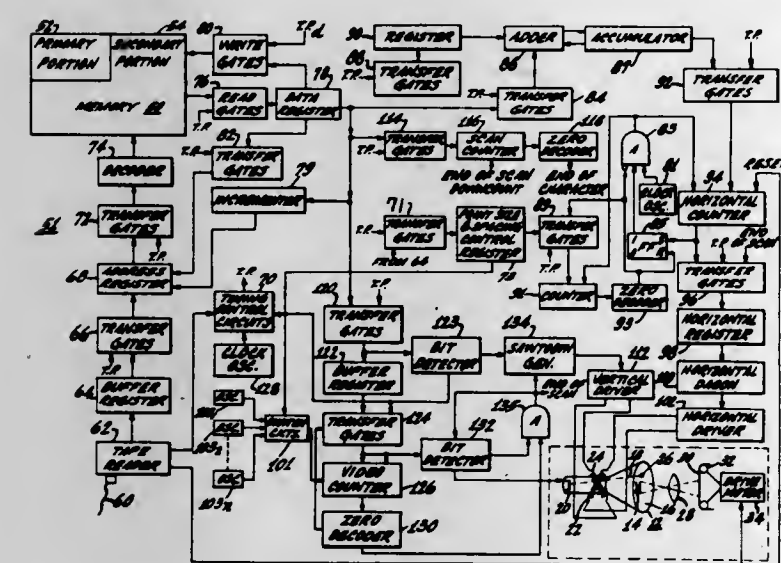


Data display apparatus is provided with the capability for moving the lines of data vertically upward across the face of the display tube, or characters of data from right to left

across the face of the display tube. Characters stored in a memory are read out by addressing the memory in synchronism with a TV display scan.

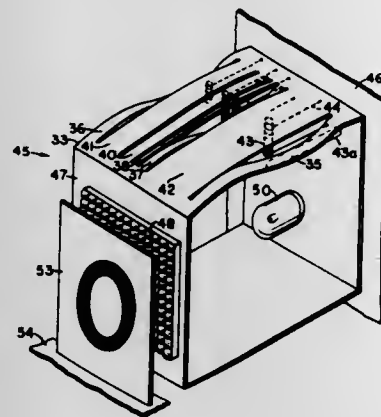
3,614,767
ELECTRONIC PHOTOCOMPOSING SYSTEM THAT FORMS CHARACTERS OF DIFFERENT POINT SIZES
Ross M. Carrell, Cinaminson, N.J., assignor to RCA Corporation

Filed Dec. 24, 1968, Ser. No. 786,672
Claims priority, application Great Britain, Feb. 19, 1968, 08078/68
Int. Cl. G06f 3/14
U.S. Cl. 340-324 A 5 Claims



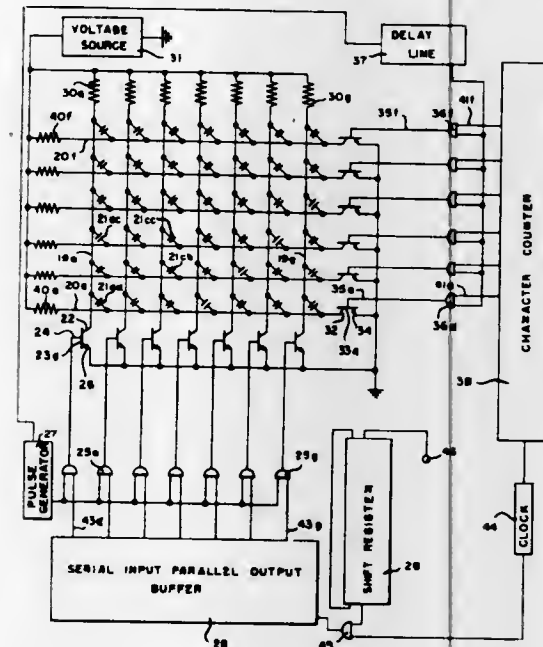
An electronic photocomposing system forms alphanumeric characters on the face of a cathode-ray tube by a plurality of vertical scanlines that form slices of the characters. The characters are imaged onto photographic film for subsequent processing into printing plates. Characters of different point sizes are formed by changing the lengths of the scanlines, as well as the spacing between adjacent scanlines.

3,614,768
DIGITAL READOUT METHOD AND APPARATUS
Idea Browning, 745 Distel Drive, Los Altos, Calif.
Filed May 1, 1968, Ser. No. 725,634
Int. Cl. G08b 5/32
U.S. Cl. 340-325 3 Claims



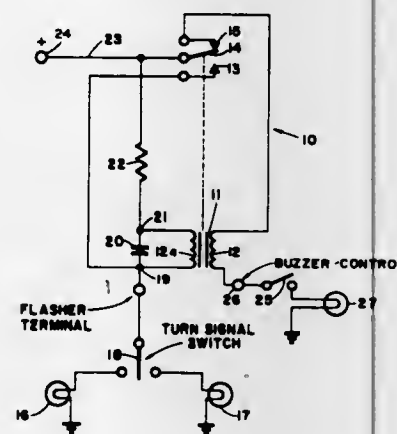
A digital readout method and apparatus is disclosed wherein there is projected from a lens mosaic and film onto a screen a decimal number equivalent to the binary number at the input of a binary coded decimal displacement transducer to which the lens mosaic or film is mechanically connected for displacement proportional to the decimal value of the binary number at the input of the transducer.

3,614,769
FULL SELECT-HALF SELECT PLASMA DISPLAY DRIVER CONTROL
William E. Coleman, Dayton, and Robert R. Skutt, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Aug. 4, 1969, Ser. No. 847,141
Int. Cl. G09f 9/30
U.S. Cl. 340-324 R 14 Claims



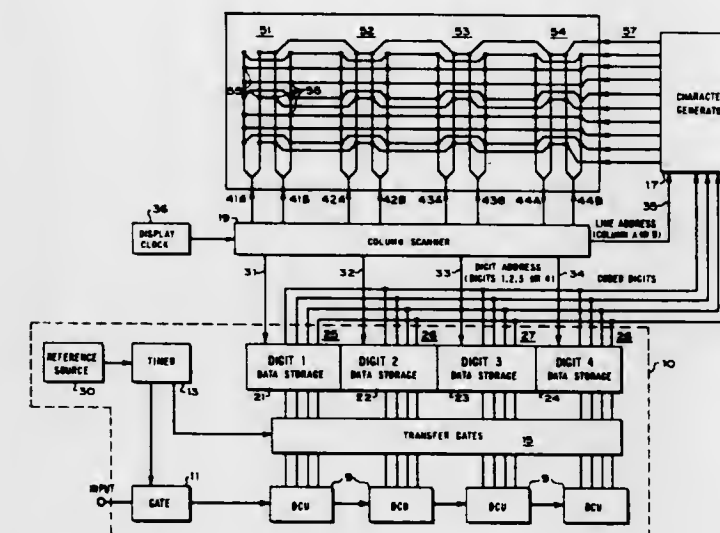
A driver circuit in the form of a matrix formed by segment and character electrodes is utilized in a visual display for the selection of specific electroluminescent cells containing an encapsulated gas. Cells are driven into ignition by alternating energizing segment and character electrodes connected to the selected cells. The driver circuit utilizes a wall charge deposited on the individual cell walls during ignition of the cell, in the selection process for igniting selected cells. The wall charge is also utilized in preventing unselected cells connected to the energized segment or character electrode from igniting after the initial energization of the selected segment electrode and selected character electrodes.

3,614,770
FLASHER BUZZER DEVICE
Rodney Hayden, Stoney Creek, Ontario, and Mario Guarasci, Niagara Falls, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio
Filed Apr. 29, 1969, Ser. No. 820,097
Claims priority, application Canada, Dec. 26, 1968, 038,722
Int. Cl. G08b 3/10; B60q 1/38
U.S. Cl. 340-328 1 Claim



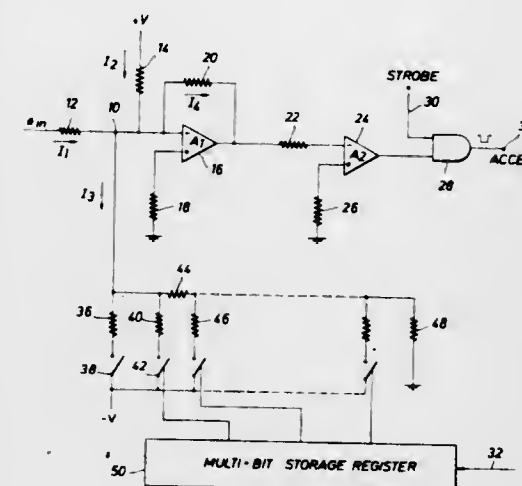
A combination flasher buzzer relay device having switch means operated by either of two coils, one in parallel with a condenser as a time constant control to operate the device as a flasher and the other to operate it as a buzzer.

3,614,771
DISPLAY APPARATUS
Ian T. Band, Los Altos, and Howard C. Borden, Atherton, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sept. 18, 1969, Ser. No. 859,087
Int. Cl. G09f 9/34
U.S. Cl. 340-336 8 Claims



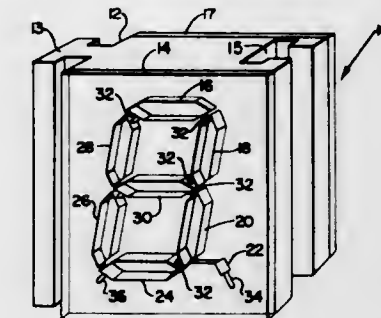
A multiple-place alphanumeric character display includes for each place character to be displayed a plurality of discrete light sources arranged at selected interstices in a matrix array. The characters are formed and displayed more rapidly than in conventional techniques by sequentially scanning symmetrical halves of the digits that form the display.

3,614,772
ANALOG-TO-DIGITAL CONVERTER
T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of; Wallace R. Finley, Albuquerque, N. Mex., and Jay A. Cox, Rolling Hills, Calif.
Filed Mar. 27, 1970, Ser. No. 23,132
Int. Cl. H03k 13/04
U.S. Cl. 340-347 AD 2 Claims



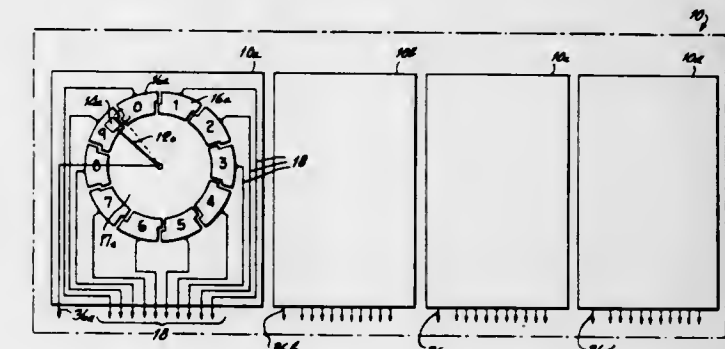
An analog-to-digital converter which utilizes an offset voltage to eliminate problems of offset errors, the conversion being performed on the ratio of the unknown analog signal to the offset voltage.

3,614,773
INDICATOR GLOW TUBE
Bernard M. Gordon, Magnolia, Mass., assignor to Gordon Engineering Company, Wakefield, Mass.
Filed June 30, 1969, Ser. No. 837,557
Int. Cl. G09f 9/30
U.S. Cl. 340-343 14 Claims



In an indicator tube, of the glow discharge type, a dielectric body is formed with a plurality of cutouts in a profile corresponding to different intelligence symbols. All cutouts communicate with each other through ports and contain a gaseous discharge medium. Portions of each cutout are coated with a conductor to form a pair of electrodes. A symbol is displayed by the indicator tube when the electrodes of selected cutouts are energized.

3,614,774
ANALOG-TO-DIGITAL SHAFT ENCODER WITH ANTIAMBIGUITY BINARY DIGITAL CODE OUTPUT
Thomas C. Clements, New York, N.Y., assignor to Neptune Meter Company, New York, N.Y.
Filed May 31, 1968, Ser. No. 733,392
Int. Cl. G08c 9/08, 19/34
U.S. Cl. 340-347 P 11 Claims

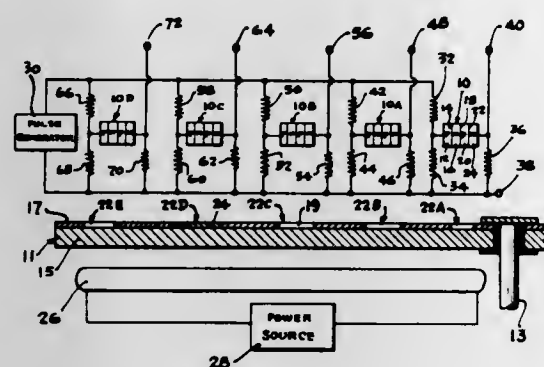


An analog-digital converter, especially adapted for use in reading utility meters, according to which decimal digits are encoded into binary signals, the binary code being unique in that it is of constant and even parity for both the main characters, representing the normal decimal digits, and for those characters which represent ambiguous states between decimal digits. As a result, ambiguities which occur in the reading of nonindexing registers are encoded with no special logic and with the simplest possible shaft encoder.

3,614,775
OPTICAL ENCODER WITH PNP DIODE SENSING
John W. Brean, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Sept. 18, 1968, Ser. No. 760,594
Int. Cl. G08c 9/06; H03k 13/02
U.S. Cl. 340-347 P 4 Claims

An optical analog-to-digital encoder is disclosed employing light responsive PNP diode switching diodes to respond to transparent sectors of a code member. The encoder utilizes a constant light source and an electrical pulse generator connected to the diodes for sampling. In one embodiment of the encoder a separate output is

obtained for each of a plurality of switching diodes. In another embodiment, the output of a plurality of switching



diodes appears on a single pair of output terminals sequentially.

3,614,776 PULSE SYNCHRONIZATION FOR DIGITAL TO ANALOG CONVERTERS

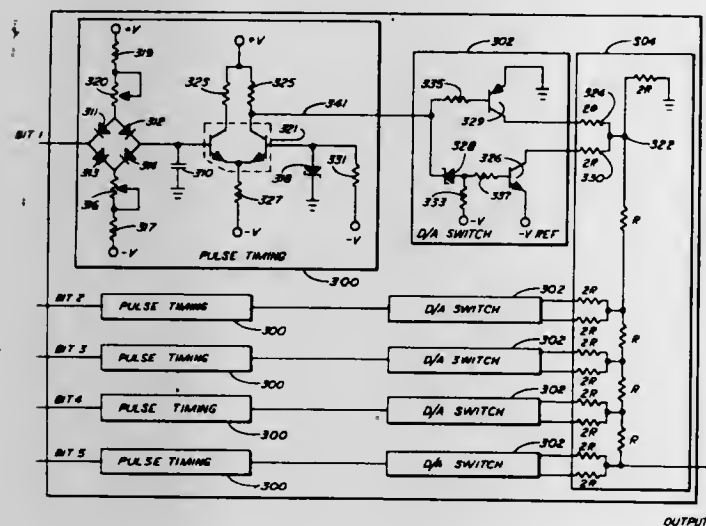
Dean B. Eshleman, Lincoln, and Alice M. D'Entremont, Boston, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 19, 1968, Ser. No. 777,123

Int. Cl. H03k 13/02

U.S. Cl. 340-347 DA

6 Claims



A method and apparatus for performing the method for eliminating transients at the output of a digital to analog (D/A) converter is disclosed. Pulses representing all bits of a multibit digital word applied to a D/A converter are time synchronized by independently delaying their leading and trailing edges. The delay is achieved by integrating the pulse edges of all bits at a variable rate and applying the integrated pulse edges to a threshold circuit to recover them. Varying the integration rate of the various bits allows the time synchronization.

3,614,777 ANALOG-TO-DIGITAL CONVERTER

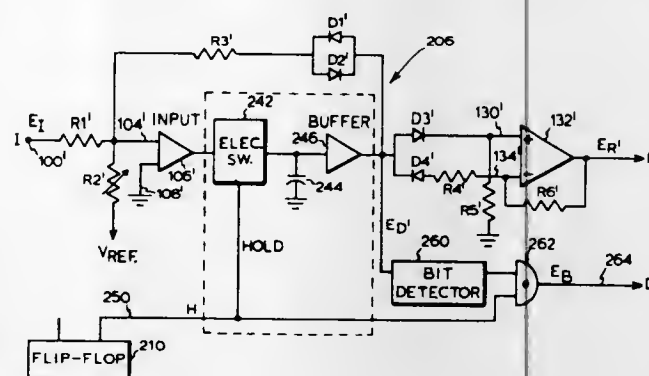
Roy P. Foerster, Thousand Oaks, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of application Ser. No. 645,191, June 12, 1967. This application June 9, 1969, Ser. No. 831,467
Int. Cl. H03k 13/06

U.S. Cl. 340-347 AD

11 Claims

A converter system employing clock controlled data propagation for rapidly converting analog input signals to "reflected binary" or Gray code output signals. The system is comprised of a plurality of substantially identical stages, each capable of providing both a bit output signal and a residual analog output signal in response to an analog input signal. Each stage alternately operates in an "acquisition" mode in

which the input portion of the stage slews to, and tracks, the stage input voltage and a "hold" mode in which the stage input portion stops tracking and holds constant at the level of the input signal immediately prior to the start of the hold



command. The stages are interconnected in a manner which permits each stage to start converting a subsequent analog input signal promptly after it forms its bit with respect to the preceding analog input signal and prior to propagation of the preceding analog input signal through all of the stages.

3,614,778 FINE RESOLUTION RADAR FOR FOLIAGE PENETRATION

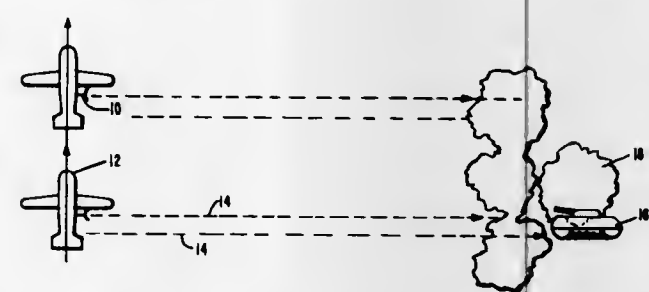
Robert R. Graham; Keeve M. Siegel, and Weston E. Vivian, all of Ann Arbor, Mich., assignors to Conduccion Corporation, Ann Arbor, Mich.

Filed Nov. 18, 1965, Ser. No. 508,731

Int. Cl. G01s 9/02

U.S. Cl. 343-5 R

10 Claims



A method and apparatus for detecting by airborne radar the presence of a ground object hidden beneath foliage or the like. The radar signal is transmitted at a frequency having a wavelength relatively long with respect to the dimensions of the foliage and the like so that the scatter of the transmitted signal wave due to foliage is minimized and the transmitted wave passes through the foliage to be reflected from the ground object back to the airborne radar set. The optimum frequency range has been determined to be 100 to 1,000 MHz. The transmitted radar beam forms a radar path on the ground and it has been discovered that the optimum incidence angles measured in the vertical plane of the beam at the patch are in the range of 30° to 60°. The radar beam is transmitted at right angles to the direction of motion of the airborne radar set. The radar beam is preferably horizontally polarized to eliminate or minimize a scatter from vertical clutter such as tree trunks.

3,614,779 RADAR TARGET IDENTIFICATION SYSTEM

Helmut Sommer, Bethesda, and James Salerno, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 14, 1962, Ser. No. 246,864

Int. Cl. G01s 9/02, 9/08

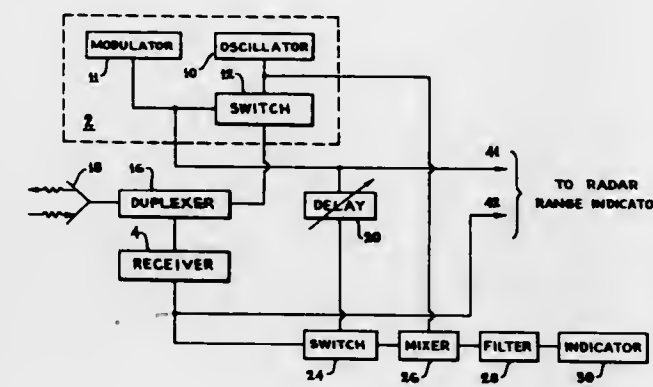
U.S. Cl. 343-6 R

1 Claim

The method of identifying an object detected by a short range, high-resolution radar having a transmitter which includes means for generating a pulse modulated continuous wave output signal, antenna means connected to said

transmitter for radiating the pulse modulated continuous wave output signal generated by said transmitter and for receiving reflected signals of the radiated signal, and a receiver connected to said antenna means, said method comprising the steps of

- combining the reflected signals from said object with a constant phase signal of the same frequency over several pulse periods to produce a signal having the same fre-



- quency of the combined signals but which is amplitude modulated due to the variation in phase relation between said reflected signals and said constant phase signal caused by the vibration of said detected object.
- filtering the amplitude modulated signal to detect the modulation signal, and
- audibly reproducing the modulation signal to provide a continuous indication of the nature of said detected object.

3,614,780 CRYPTOGRAPHIC COMMUNICATION SYSTEM

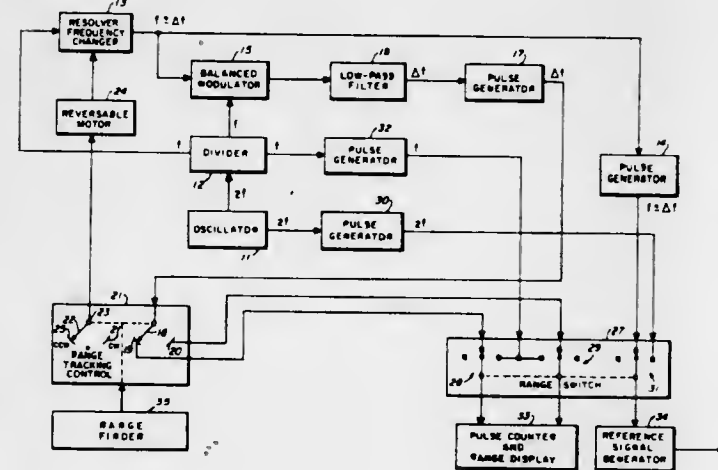
Robert D. Isaak, and Woodrow H. Littrell, both of San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 6, 1961, Ser. No. 157,604

Int. Cl. G01s 9/02; H04k 1/00

U.S. Cl. 343-7 ED

6 Claims



The invention as described comprising in combination, means for producing a signal 9 a frequency proportional to the instantaneous rate of change in distance between a pair of vessels, means for converting the frequency of said signal into parameters displayed in terms of instantaneous distance between said pair of vessels, means for generating a predetermined reference signal, and means connected between said frequency signal producing means and said converting and generating means for selectively driving said converting and generating means simultaneously or reversely with respect to each other.

3,614,781 DUAL CHANNEL DOPPLER FREQUENCY-SELECTIVE FUZE SYSTEM

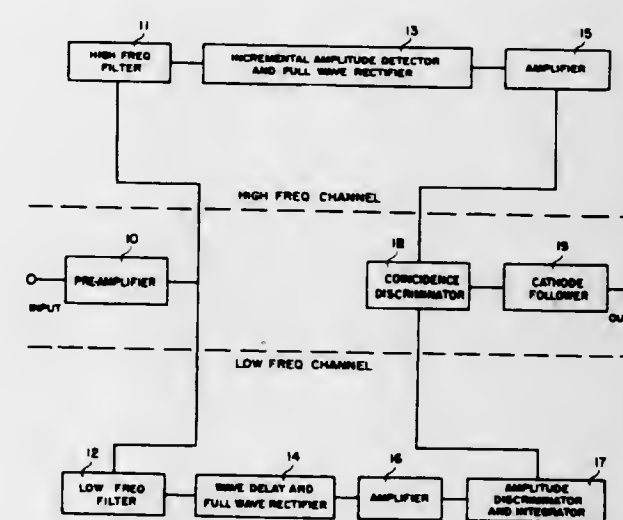
Samuel W. Lichtman, Riverside, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 21, 1956, Ser. No. 567,037

Int. Cl. G01s 7/02; F42c 13/04

U.S. Cl. 343-7 PF

11 Claims



A frequency-selective fuze system comprising means for transmitting an RF signal and receiving an echo signal modified by the doppler frequencies resulting from the relative velocity between a missile carrying the fuze and a target aircraft means for deriving the doppler frequency spectrum from said received signal, means for disassociating the spectrum into two spectral bands consisting of low frequency components of the doppler signal and high-frequency components of the doppler signal, and means for initiating a burst signal in response to a coincident combination of said low frequency components and a particular portion of said high-frequency components.

3,614,782 NOISE-MODULATED FUZE SYSTEM

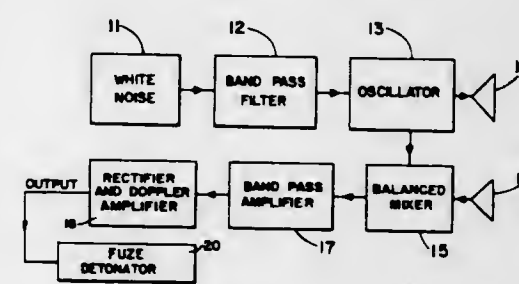
Donald J. Adrian, Riverside, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Sept. 16, 1958, Ser. No. 761,447

Int. Cl. G01s 9/02; F42c 13/04

U.S. Cl. 343-7 PF

3 Claims



An FM doppler fuze system comprising means for transmitting a signal having a carrier frequency modulated by a band of random noise, means for mixing the transmitted signal with a return echo signal modified by the doppler effect of the relative movement between the fuze and a target-biased band pass amplifier means coupled to the output of said mixing means for blocking received signals within a predetermined range, and means coupled to the output of said band pass amplifier means responsive to received signals beyond said predetermined range for actuating said fuze.

DESIGNS

OCTOBER 19, 1971

222,323
HANDLE STICK FOR A FROZEN CONFECTION
Alton W. Defee, 2320 Irving Blvd., Dallas, Tex. 75207
Filed June 22, 1970, Ser. No. 23,588
Term of patent 14 years
Int. Cl. D1—99

U.S. Cl. D1—99



222,324
HAIRBRUSH HANDLE
Dan E. Simon, 20142 Scottsdale Blvd.,
Shaker Heights, Ohio 44122
Filed May 14, 1970, Ser. No. 22,979
Term of patent 14 years
Int. Cl. D4—02

U.S. Cl. D4—35



222,325
CLOWN BED
Howard S. Curtis, 1902 Glenfield Ave.,
Dallas, Tex. 75224
Filed June 16, 1970, Ser. No. 23,506
Term of patent 14 years
Int. Cl. D6—01

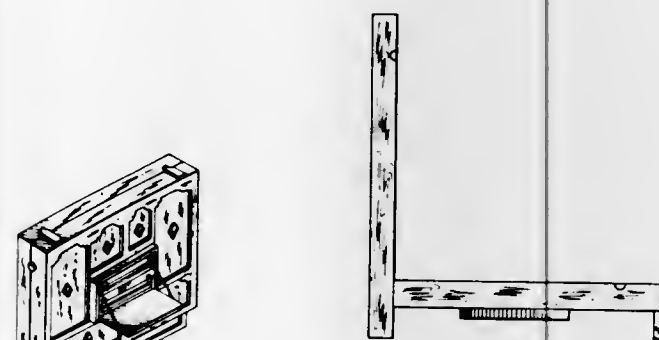
U.S. Cl. D5—4



1310

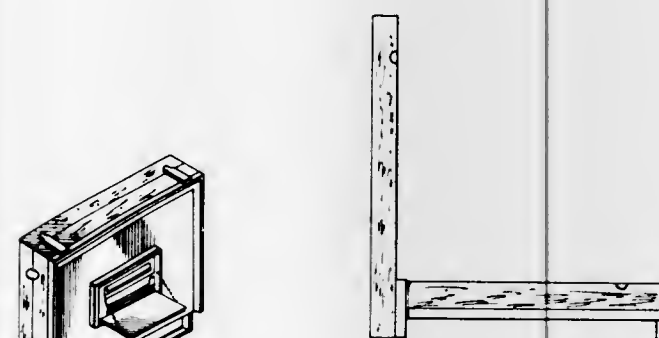
222,326
COMBINED UPENDING BED AND DESK
OR SIMILAR ARTICLE
Benjamin Franklin Harrison, Jr., and Gary Joe Barnes,
Birmingham, Ala., assignors to Lorch, Inc., Birming-
ham, Ala.
Filed Aug. 31, 1970, Ser. No. 24,762
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D5—4



222,327
COMBINED UPENDING BED AND DESK
OR SIMILAR ARTICLE
Benjamin Franklin Harrison, Jr., and Gary Joe Barnes,
Birmingham, Ala., assignors to Lorch, Inc., Birming-
ham, Ala.
Filed Aug. 31, 1970, Ser. No. 24,763
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D5—4



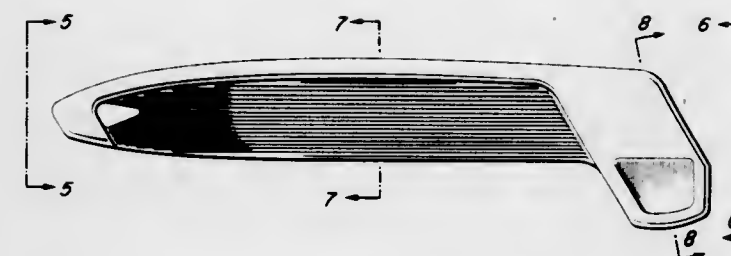
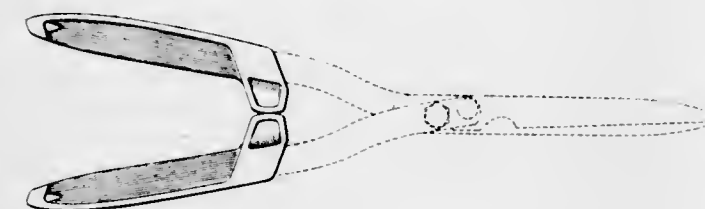
OCTOBER 19, 1971

U. S. PATENT OFFICE

1811

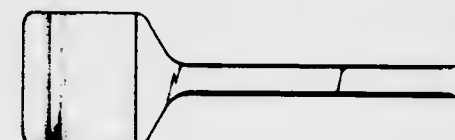
222,328
HANDLE
John S. Vecchione, Sturbridge, Mass., assignor to Parker
Manufacturing Company, Worcester, Mass.
Filed June 17, 1970, Ser. No. 23,529
Term of patent 14 years
Int. Cl. D8—01

U.S. Cl. D8—5



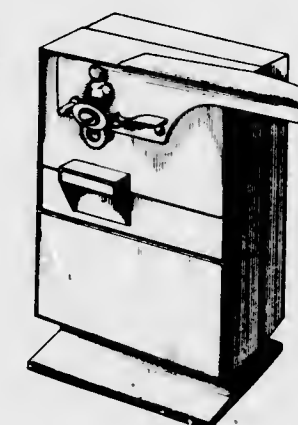
222,329
CARPET TOOL
John F. Cuscovitch, 42 Woodbridge Ave.,
East Hartford, Conn. 06108
Filed July 13, 1970, Ser. No. 23,937
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—15



222,330
ELECTRIC CAN OPENER
Monte L. Levin, New York, N.Y., assignor to Scovill
Manufacturing Company, Waterbury, Conn.
Filed June 3, 1970, Ser. No. 23,269
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—36



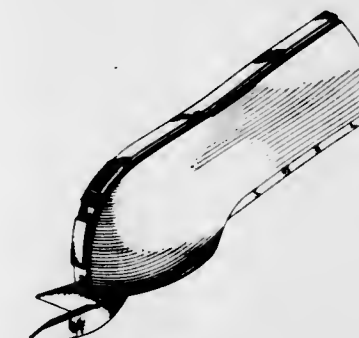
222,331
VALVE SPRING COMPRESSING TOOL
William E. Shultz, 239 N. Main St.,
Lombard, Ill. 60148
Filed July 20, 1970, Ser. No. 24,020
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—51



222,332
ELECTRIC SCISSORS
Wayne A. Current, Cranford, N.J., assignor to The
Singer Company, New York, N.Y.
Filed Aug. 28, 1970, Ser. No. 24,757
Term of patent 14 years
Int. Cl. D8—03

U.S. Cl. D8—61

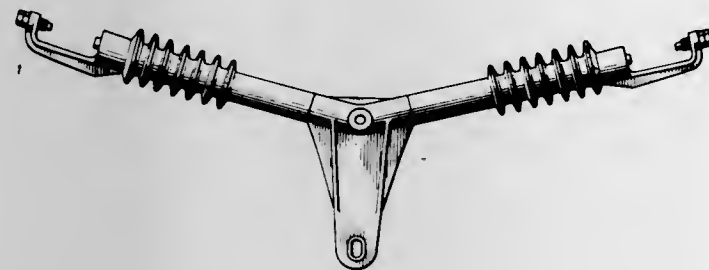


222,333
PITON
William A. Fesserer, 2009 1/2 Oak St.,
Santa Monica, Calif. 90405
Filed Apr. 23, 1970, Ser. No. 22,579
Term of patent 14 years
Int. Cl. D8—08

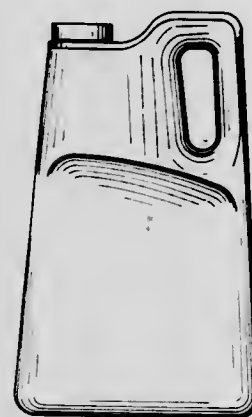
U.S. Cl. D8—230



222,334
ELECTRICAL CONDUCTOR SUPPORT
Paul E. Lewis, Mexico, and Robert W. Harmon, Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Original design application July 8, 1969, Ser. No. 18,108, now Patent No. D. 219,332, dated Dec. 1, 1970. Divided and this application June 24, 1970, Ser. No. 23,628
Term of patent 14 years
Int. Cl. D13—03
U.S. Cl. D8—230



222,335
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 21,299
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—47



222,336
BOTTLE
Donald J. Leary, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 1, 1970, Ser. No. 23,785
Term of Patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—87



222,337
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sept. 8, 1970, Ser. No. 24,886
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—115



222,338
BOTTLE
Jean Marie Leon Desprez, Neuilly-sur-Seine, France, assignor to Parfums Jean Desprez, Societe Anonyme of France, Neuilly-sur-Seine, France
Filed May 20, 1970, Ser. No. 23,110
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—115



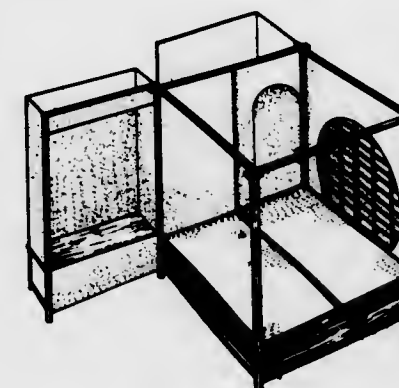
222,339
BOTTLE
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 1, 1970, Ser. No. 23,784
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—115



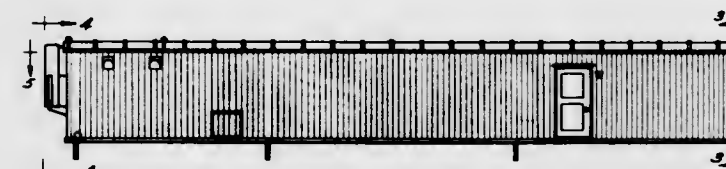
222,340
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 1, 1970, Ser. No. 23,782
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—158



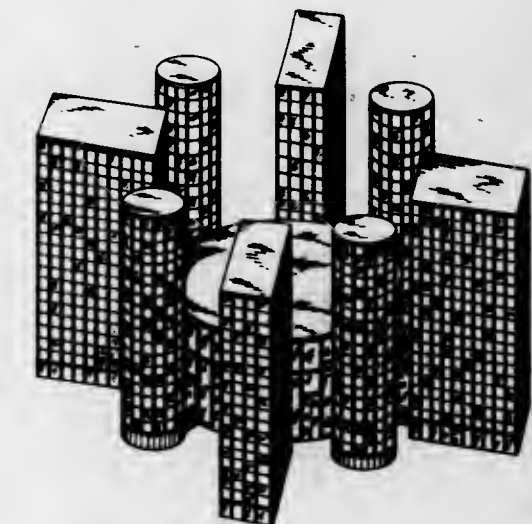
222,341
TEA ROOM UNIT
Soshitsu Sen, 613 Ogawadori, Teranouchiagaru, Homopimae-cho, Kamikyo-ku, Kyoto, Japan
Filed Dec. 18, 1969, Ser. No. 20,553
Claims priority, application Japan June 21, 1969
Term of patent 14 years
Int. Cl. D25—03
U.S. Cl. D13—1



222,342
MOBILE KINDERGARTEN FACILITY
James T. Glason, Evinston, Fla., assignor to Motivation Systems, Inc., Gainesville, Fla.
Filed Jan. 2, 1970, Ser. No. 20,741
Term of patent 14 years
Int. Cl. D25—03
U.S. Cl. D13—1



222,343
BUILDING COMPLEX
Charles F. Mullen, 243 W. Mount Royal Road, Milwaukee, Wis. 53217
Original design application July 19, 1968, Ser. No. 12,830. Divided and this application Feb. 19, 1970, Ser. No. 21,927
Term of patent 14 years
Int. Cl. D25—03
U.S. Cl. D13—1



222,344
WALL PANELING
Lester V. Ottinger and Robert E. James, Danbury, and Andrew E. Carmellini, Brookfield, Conn., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed May 13, 1970, Ser. No. 22,948
Term of patent 14 years
Int. Cl. D25—01
U.S. Cl. D13—1



**222,345
BUILDING**

James Robert McGlashan, Olathe, Kans., assignor to New Trends, Inc., Kansas City, Mo.
Filed Sept. 28, 1970, Ser. No. 25,235
Term of patent 14 years
Int. Cl. D25—03

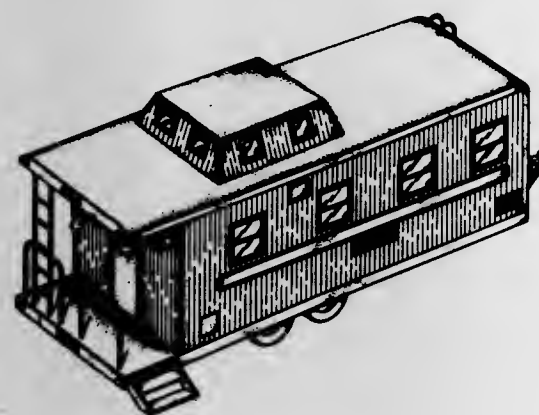
U.S. Cl. D13—1



**222,346
TRAVEL TRAILER**

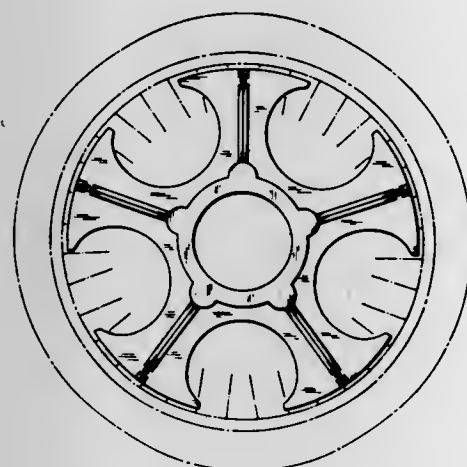
William C. Schmeizer, 118 Briar Heath Circle, Dayton, Ohio 45415
Filed Aug. 5, 1970, Ser. No. 24,321
Term of patent 14 years
Int. Cl. D12—03

U.S. Cl. D14—3



**222,347
BICYCLE WHEEL COVER**
Orlando B. Fornaturo, 201 Nemo St., New Castle, Pa. 16101
Filed June 10, 1970, Ser. No. 23,428
Term of patent 14 years
Int. Cl. D12—14

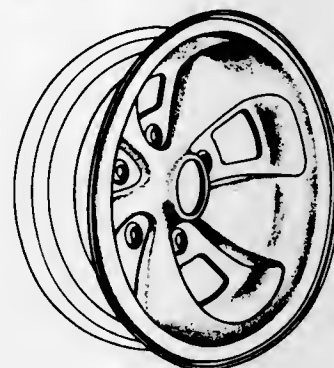
U.S. Cl. D14—30



**222,348
WHEEL**

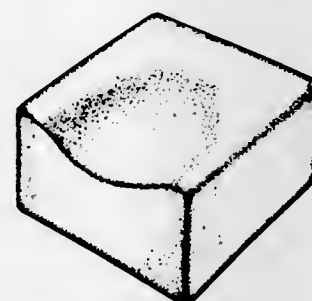
Millard Fillmore Harty, Jr., Bloomfield Hills, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Filed Oct. 1, 1970, Ser. No. 25,286
Term of patent 14 years
Int. Cl. D12—16

U.S. Cl. D14—30



**222,349
FURNITURE CUSHION OR SIMILAR ARTICLE**
Christen Willner Sorensen, 210 Darwin Park, Nun's Island, Montreal, Quebec, Canada
Filed Oct. 24, 1969, Ser. No. 19,706
Claims priority, application Canada Sept. 29, 1969
Term of patent 14 years
Int. Cl. D6—01

U.S. Cl. D15—8



**222,350
CHAIR**

Carl W. Sundberg and Montgomery Ferrar, Southfield, and Chester J. Barecki, Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.
Continuation-in-part of design application Ser. No. 16,840, Apr. 21, 1969. This application May 13, 1970, Ser. No. 22,965

Term of patent 14 years
Int. Cl. D6—02

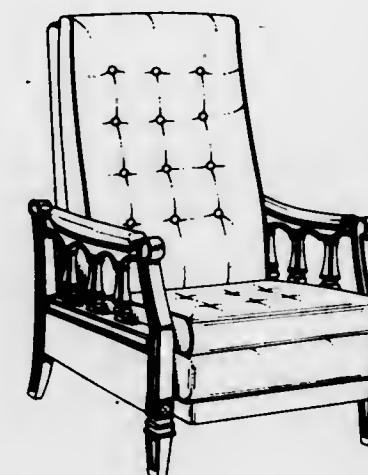
U.S. Cl. D15—8



**222,351
CHAIR**

George Mergenov, 80 Oaks St., Closter, N.J. 07624
Filed July 6, 1970, Ser. No. 23,826
Term of patent 14 years
Int. Cl. D6—02

U.S. Cl. D15—11

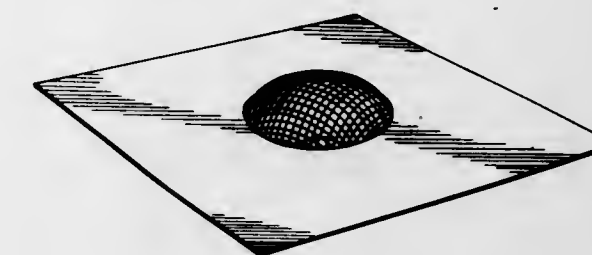


222,354

FLAT ROOF DRAIN

Charles J. Foltz, 6660 Shannon Ave., San Diego, Calif. 92115, and Bernard J. Tomonelli, 1320 Sommermount Drive, El Cajon, Calif. 92020
Filed Feb. 16, 1970, Ser. No. 21,449
Term of patent 14 years
Int. Cl. D23—01

U.S. Cl. D23—42

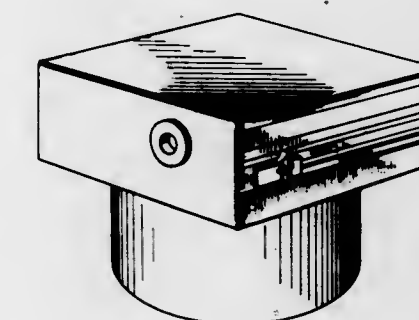


222,355

DEODORIZER OR THE LIKE

Richard W. Farris, 1508 Indiana Ave., La Porte, Ind. 46350
Filed June 10, 1970, Ser. No. 23,413
Term of patent 14 years
Int. Cl. D23—04

U.S. Cl. D23—150

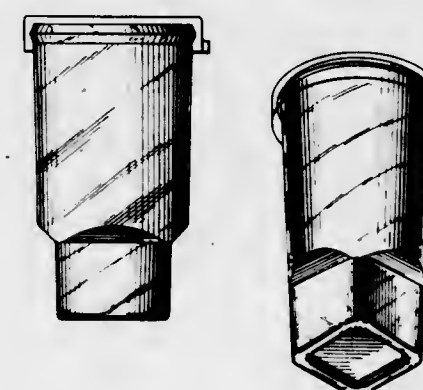


222,352

DISPOSABLE VIAL FOR BLOOD CELL COUNTING
Patrick V. Ferro, Miami Lakes, and Laureston C. Brown, Miami Springs, Fla., assignors to Coulter Diagnostics, Inc., Hialeah, Fla.

Filed Apr. 23, 1970, Ser. No. 22,601
Term of patent 14 years
Int. Cl. D24—02

U.S. Cl. D16—1

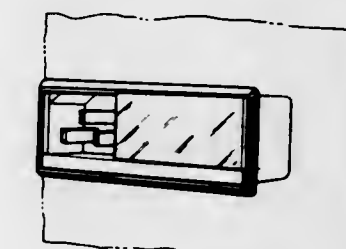


222,356

POWER MODULE

Allen E. Inhelder, Mountain View, and Richard L. Hoogner, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 18, 1970, Ser. No. 23,547
Term of patent 14 years
Int. Cl. D13—03

U.S. Cl. D26—1



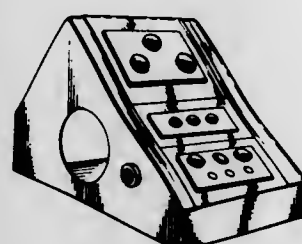
**222,353
FISHING LURE**

Joseph Dexter Mills, 158 Crittendon Ave. NE., Roanoke, Va. 24012
Filed Aug. 5, 1970, Ser. No. 24,308
Term of patent 14 years
Int. Cl. D22—05

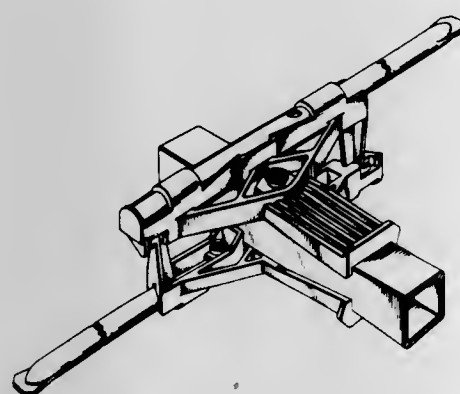
U.S. Cl. D22—29



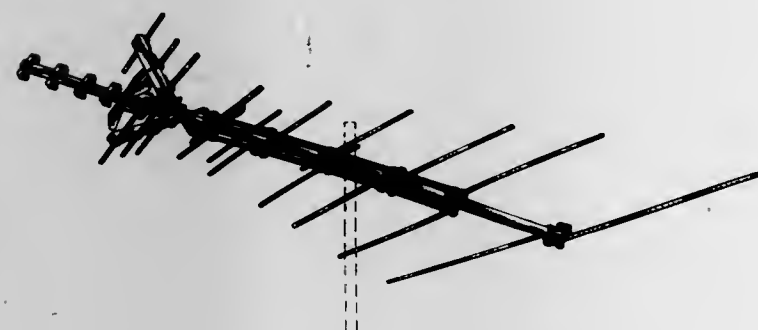
222,357
CASING FOR COMMUNICATIONS EQUIPMENT
OR THE LIKE
 Albert Locher, 1905 Peck Road, Monrovia, Calif. 91016
 Filed Mar. 20, 1970, Ser. No. 21,990
 Term of patent 14 years
 Int. Cl. D14—03
 U.S. Cl. D26—5



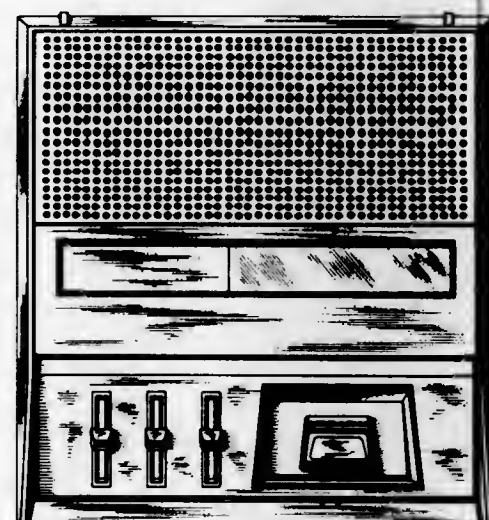
222,358
ANTENNA
 Franklin Roosevelt Di Meo, Woodbury, N.J., and Neil Worrall Burwell, deceased, late of Moorestown, N.J., by Shirley D. Burwell, legal representative, Moorestown, N.J., assignors to RCA Corporation
 Filed Dec. 29, 1969, Ser. No. 20,656
 Term of patent 14 years
 Int. Cl. D14—99
 U.S. Cl. D26—14



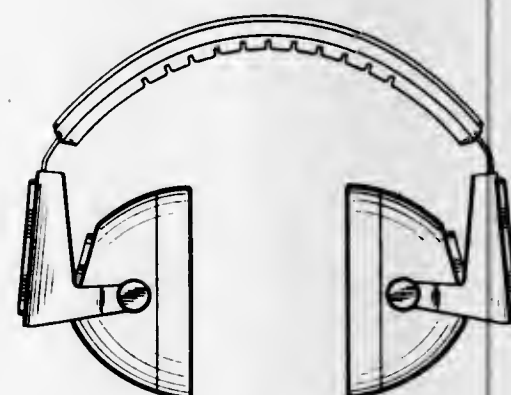
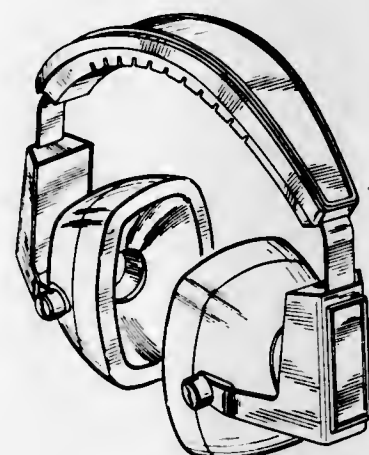
222,359
ANTENNA FOR A RADIO OR TELEVISION SET
 Donald William Peterson, Maple Shade, N.J., assignor to RCA Corporation
 Filed May 27, 1970, Ser. No. 23,164
 Term of patent 14 years
 Int. Cl. D14—03, 99
 U.S. Cl. D26—14



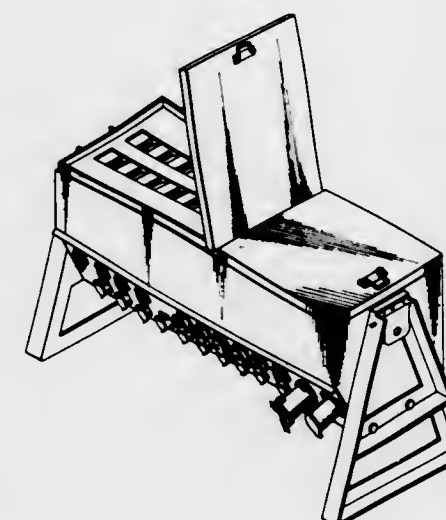
222,360
CASSETTE TAPE RECORDER
 John S. Mallakas, North Syracuse, N.Y., assignor to General Electric Company
 Filed June 5, 1970, Ser. No. 23,335
 Term of patent 14 years
 Int. Cl. D14—01
 U.S. Cl. D26—14



222,361
HEADPHONE
 Richard S. Hart, Wheaton, Ill., assignor to The Telex Corporation, Tulsa, Okla.
 Filed Aug. 26, 1970, Ser. No. 24,704
 Term of patent 14 years
 Int. Cl. D14—01
 U.S. Cl. D26—14



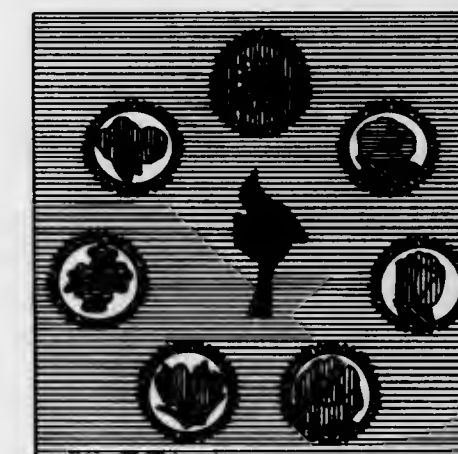
222,362
ELECTRIC POWER DISTRIBUTION APPARATUS
 James R. Williams, Berkeley, Calif., assignor to Williams & Lane, Inc.
 Filed Dec. 24, 1969, Ser. No. 20,647
 Term of patent 14 years
 Int. Cl. D13—01, 02
 U.S. Cl. D26—15



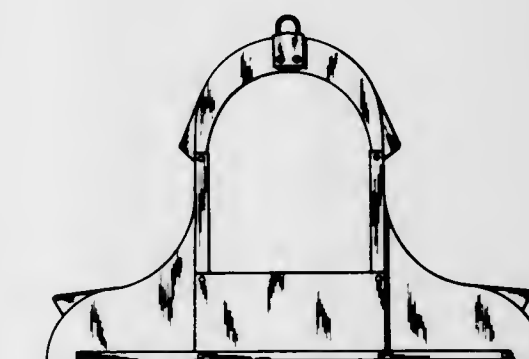
222,363
DECORATIVE HANGING INCLUDING SKELETAL FRAMEWORK
 Clifton Bullard, 310 Prescott Place, Plainfield, N.J. 07063
 Filed Apr. 6, 1970, Ser. No. 22,257
 Term of patent 14 years
 Int. Cl. D11—04
 U.S. Cl. D29—1



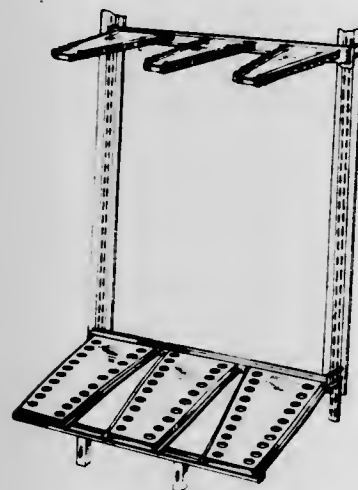
222,364
PLAQUE
 Nestor A. Kmickewicz, 916 Cardero St., Vancouver 5, British Columbia, Canada
 Filed Aug. 13, 1970, Ser. No. 24,480
 Term of patent 14 years
 Int. Cl. D11—02
 U.S. Cl. D29—23



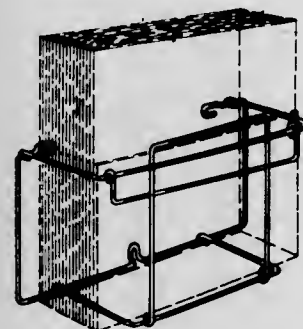
222,365
FARROWING HOUSE
 Claude W. Ahrens, West Highway 6, Grinnell, Iowa 50112
 Filed Sept. 14, 1970, Ser. No. 24,979
 Term of patent 14 years
 Int. Cl. D30—02
 U.S. Cl. D30—1



222,366
BILLIARD CUE RACK
 Samuel H. Berger, Skokie, Ill., assignor to Ajax Enterprises Corporation, Delavan, Wis.
 Filed Feb. 27, 1970, Ser. No. 21,659
 Term of patent 14 years
 Int. Cl. D6—99
 U.S. Cl. D33—3



222,367
PAPER BAG HOLDER
 Robert C. Goss, 505 N. Western, Oklahoma City, Okla. 73106
 Filed Apr. 2, 1970, Ser. No. 22,215
 Term of patent 14 years
 Int. Cl. D6—04
 U.S. Cl. D33—3



222,368
END STANDARD FOR A GUN RACK
 George J. Smith, Birmingham, Ala., assignor to Just-O Corporation
 Filed May 21, 1970, Ser. No. 23,088
 Term of patent 14 years
 Int. Cl. D6—99
 U.S. Cl. D33—3



222,369
MODULAR CABINET
 Charles E. Schroer, Columbus, Ind., and John J. Hamilton, Avon, Conn., assignors to Hamilton Cosco, Inc., Columbus, Ind.
 Original design application Dec. 26, 1968, Ser. No. 15,125, now Patent No. 217,558. Divided and this application
 Mar. 2, 1970, Ser. No. 21,677
 Term of patent 14 years
 Int. Cl. D6—04
 U.S. Cl. D33—19



222,370
BILLIARD TABLE POCKET
 Theodore Silverman, 230 Broadway, Denver, Colo. 80203
 Filed Aug. 13, 1970, Ser. No. 24,463
 Term of patent 14 years
 Int. Cl. D21—01
 U.S. Cl. D34—3



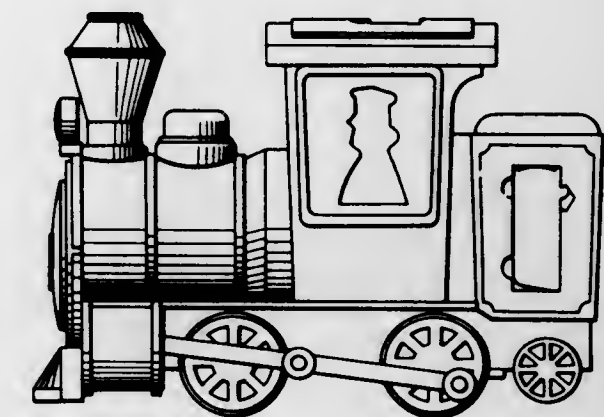
222,371
WICKET
 Louis R. Chrest, Jr., South Bend, Ind., assignor to South Bend Toy Manufacturing Company, Inc., South Bend, Ind.
 Filed Aug. 5, 1970, Ser. No. 24,327
 Term of patent 14 years
 Int. Cl. D21—01
 U.S. Cl. D34—5



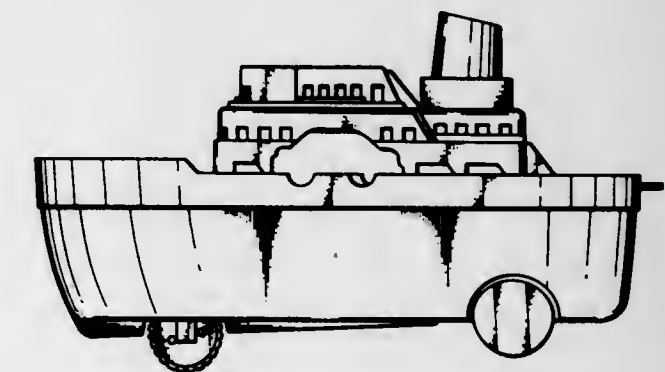
222,372
GOLF CLUB
 Harold A. Thomas, Murrysville, Pa., assignor to Harvey L. Hensel, Frankfort, Mich.
 Filed Aug. 20, 1970, Ser. No. 24,611
 Term of patent 14 years
 Int. Cl. D21—02
 U.S. Cl. D34—5



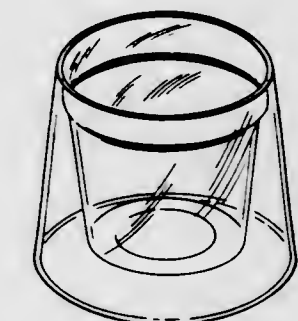
222,373
TOY LOCOMOTIVE
 Tachi Ichiro, Fujisawa, Japan, assignor to Kabushiki Kaisha Asakusa Ganga, Tokyo, Japan
 Filed Nov. 10, 1970, Ser. No. 25,918
 Term of patent 14 years
 Int. Cl. D21—01
 U.S. Cl. D34—15



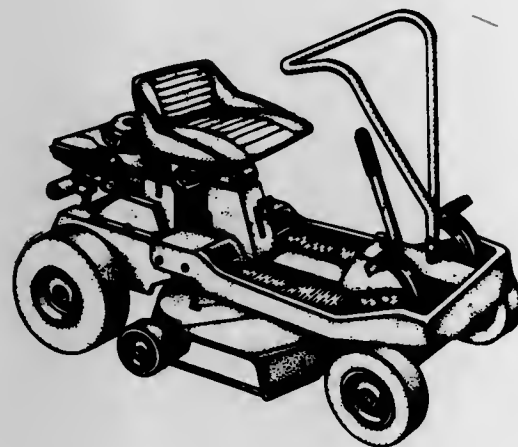
222,374
TOY SHIP
 Tachi Ichiro, Fujisawa, Japan, assignor to Kabushiki Kaisha Asakusa Ganga, Tokyo, Japan
 Filed Nov. 10, 1970, Ser. No. 25,919
 Term of patent 14 years
 Int. Cl. D21—01
 U.S. Cl. D34—15



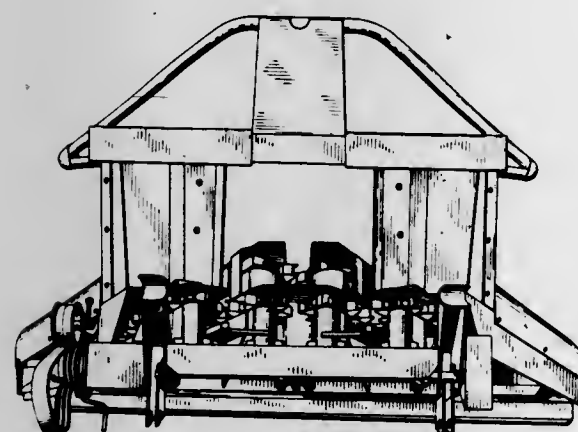
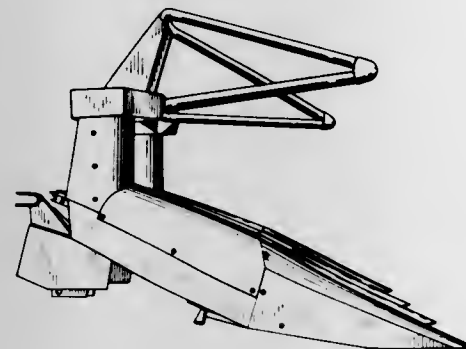
222,375
DRINKING VESSEL OR THE LIKE
 Lajos Bencik, 19 Melmore Gardens, East Orange, N.J. 07018
 Filed Mar. 2, 1970, Ser. No. 21,692
 Term of patent 14 years
 Int. Cl. D7—01
 U.S. Cl. D36—8



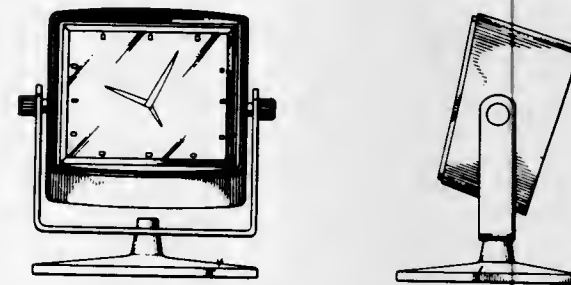
222,376
RIDING MOWER
 Robert B. Mead, Wilmington, Ohio, assignor to Mast-Foos Manufacturing Company, Inc., Springfield, Ohio
 Filed May 27, 1970, Ser. No. 23,170
 Term of patent 14 years
 Int. Cl. D15—03
 U.S. Cl. D40—1



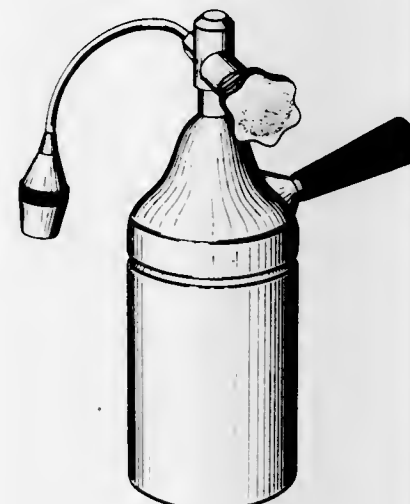
222,377
FORAGE HARVESTER HEADER
 Fero! S. Fell, Newton, William D. Long, Hesston, and Kenneth R. McMillen, Moundridge, Kans., assignors to Hesston Corporation, Hesston, Kans.
 Filed June 3, 1970, Ser. No. 23,274
 Term of patent 14 years
 Int. Cl. D15—03
 U.S. Cl. D40—1



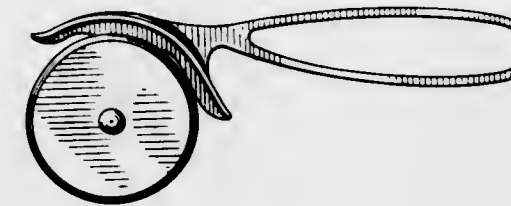
222,378
CLOCK
 Daniel A. Berkoff, Sherman Oaks, Calif., assignor to Hollywood Accessories (a division of Orion Industries Inc.), El Segundo, Calif.
 Filed Sept. 14, 1970, Ser. No. 24,957
 Term of patent 14 years
 Int. Cl. D10—01
 U.S. Cl. D42—7



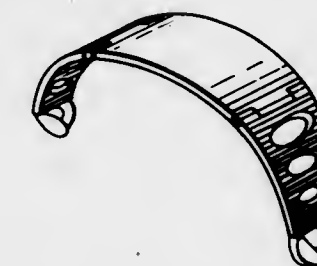
222,379
COFFEE PERCOLATOR
 Renato Piovani, Via Donato 66/3, Bologna, Italy
 Continuation-in-part of design application Ser. No. 20,488, Dec. 15, 1969. This application Aug. 18, 1970, Ser. No. 24,557
 Term of patent 14 years
 Int. Cl. D7—02
 U.S. Cl. D44—26



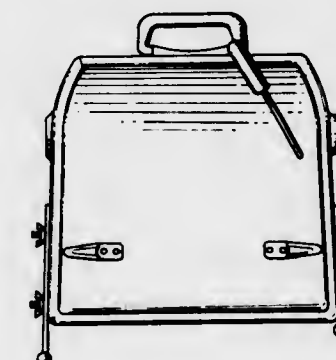
222,380
PIZZA PIE CUTTER
 Joseph Fraloli, Sr., New York, N.Y.
 (300 Martine Ave., White Plains, N.Y. 10601)
 Filed Apr. 22, 1970, Ser. No. 22,567
 Term of patent 14 years
 Int. Cl. D7—06
 U.S. Cl. D44—29



222,381
LINKAGE FOR AN IDENTIFICATION BRACELET OR SIMILAR ARTICLE
 Raymond C. Fontaine, Greenville, R.I., assignor to Textron Inc., Providence, R.I.
 Filed Mar. 2, 1970, Ser. No. 21,702
 The portion of the term of the patent subsequent to July 14, 1984, has been disclaimed
 Term of patent 14 years
 Int. Cl. D11—01
 U.S. Cl. D45—4



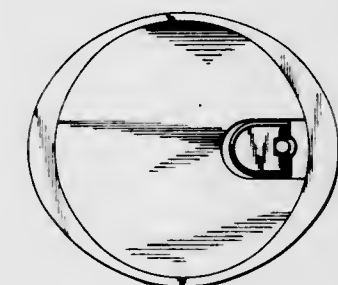
222,382
SEWER CLEANER HOUSING
 Charles E. Freese, Erie, Pa., assignor to Emerson Electric Co., St. Louis, Mo.
 Filed Apr. 22, 1970, Ser. No. 22,573
 Term of patent 14 years
 Int. Cl. D15—05
 U.S. Cl. D49—10



222,383
TEAT CUP INFLATION PUNCH AND AIR VENT CLEANER
 Daniel O. Noorlander, 5707 N. Bond St., Fresno, Calif. 93726
 Filed June 26, 1970, Ser. No. 23,694
 Term of patent 14 years
 Int. Cl. D8—99; D30—99
 U.S. Cl. D49—22



222,384
TAPE MEASURE
 Michael A. Cousins, Huntington, N.Y., assignor to Justus Roe & Sons, Inc., Patchogue, N.Y.
 Filed May 12, 1970, Ser. No. 22,939
 Term of patent 14 years
 Int. Cl. D10—04
 U.S. Cl. D52—1



222,385

VENDING MACHINE CABINET

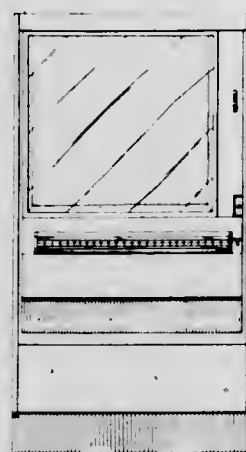
Walter L. Koch, Caldwell, Robert P. Franklin, Jefferson Township, and George R. Huyler, Hanover, N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Apr. 1, 1970, Ser. No. 22,164

Term of patent 14 years

Int. Cl. D20-01

U.S. Cl. D52-3



222,386

AIRCRAFT LANDING UNIT

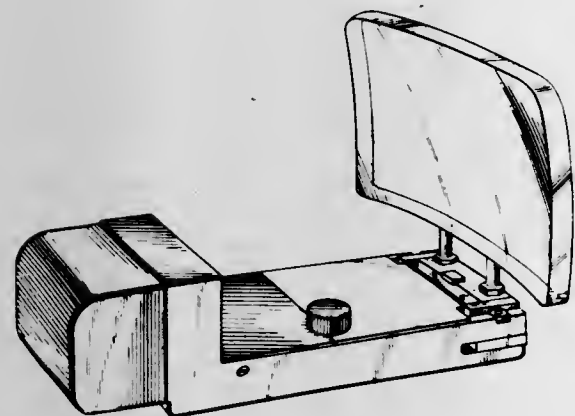
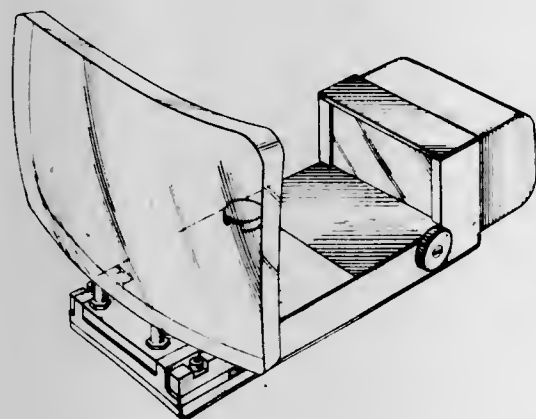
Robert K. Kirschner, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.

Filed May 15, 1970, Ser. No. 22,994

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D52-6



222,387

PRECISION INTERNAL THREAD GAUGE

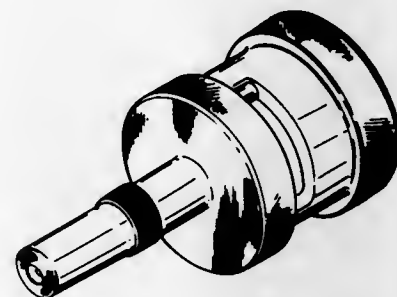
George E. Mock, Phoenix, Ariz., assignor to Osborn Products, Inc., Phoenix, Ariz.

Filed Sept. 1, 1970, Ser. No. 24,792

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D52-6



222,388

COMBINED RULE, PROTRACTOR AND ERASING SHIELD

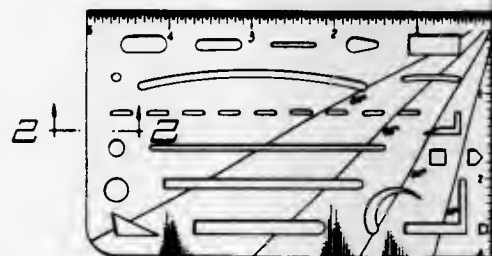
Charles R. Meldrum, Detroit, Mich., assignor of fractional part interest to Robert G. Montag, Detroit, Mich.

Filed Sept. 25, 1970, Ser. No. 25,196

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D52-6



222,389

VENDING MACHINE CABINET

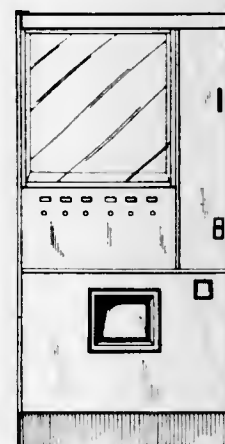
Walter L. Koch, Caldwell, Robert P. Franklin, Jefferson Township, and George R. Huyler, Hanover, N.J., assignors to Rowe International, Inc., Whippany, N.J.

Filed Apr. 1, 1970, Ser. No. 22,165

Term of patent 14 years

Int. Cl. D20-01

U.S. Cl. D52-3



222,390

PORTABLE DOWEL HEAD CUTTER

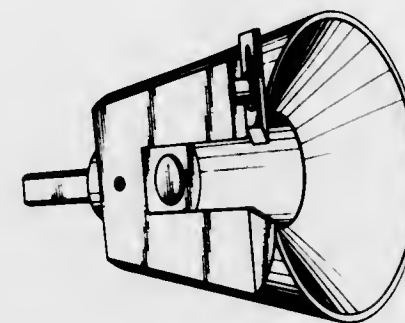
Normand A. Pinette, 1207 Lakeview Ave., Lowell, Mass. 01854

Filed July 6, 1970, Ser. No. 23,844

Term of patent 14 years

Int. Cl. D8-05

U.S. Cl. D54-4



222,391

FORK OR SIMILAR ARTICLE

James Russell Price, Esmond, R.I., assignor to Textron Inc., Providence, R.I.

Filed Aug. 24, 1970, Ser. No. 24,662

Term of patent 14 years

Int. Cl. D7-03

U.S. Cl. D54-12



222,392

VALVE BAG PACKER

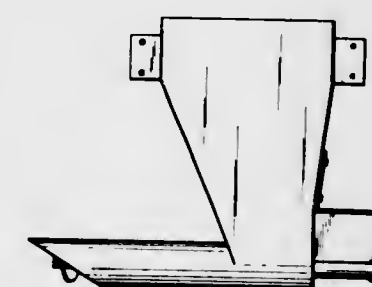
Murland L. Taylor, 2521 Washington, Parsons, Kans. 67357

Filed May 14, 1970, Ser. No. 22,969

Term of patent 14 years

Int. Cl. D15-08

U.S. Cl. D55-1



222,393

ORGAN CONSOLE

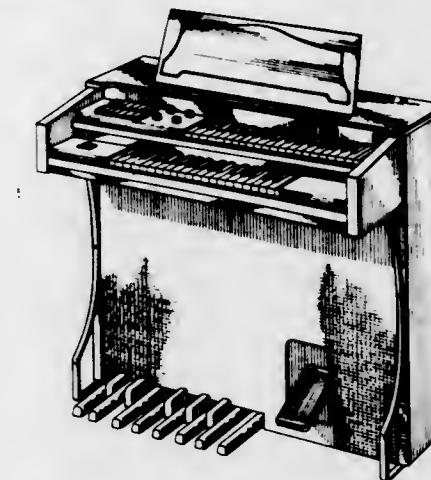
Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Nov. 16, 1970, Ser. No. 25,987

Term of patent 14 years

Int. Cl. D17-01

U.S. Cl. D56-2



222,394

PIANO

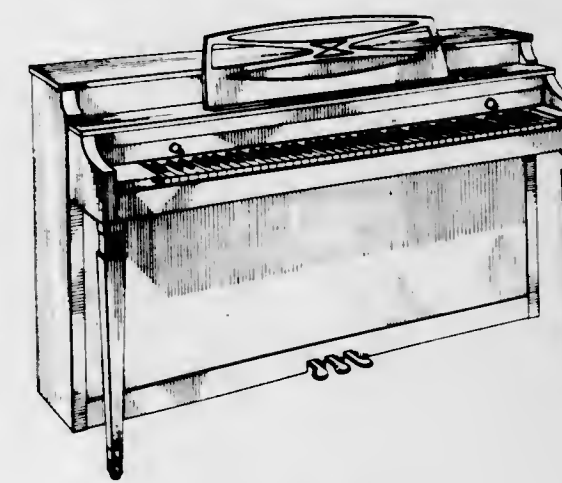
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Nov. 16, 1970, Ser. No. 25,994

Term of patent 14 years

Int. Cl. D17-01

U.S. Cl. D56-9



222,395

PIANO

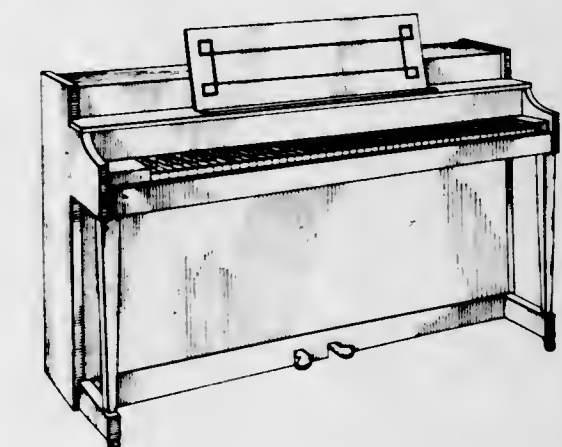
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Nov. 16, 1970, Ser. No. 26,024

Term of patent 14 years

Int. Cl. D17-01

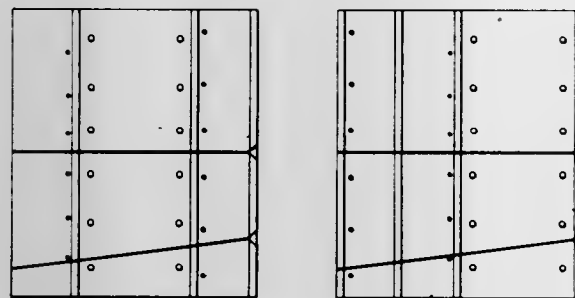
U.S. Cl. D56-9



222,396
MOTION PICTURE FILM SPLICER
Leonard Dickstein, 206 W. 22nd St., Deer Park, N.Y. 11729, and Barry Green, 732 De Mott Court, Westbury, N.Y. 11590

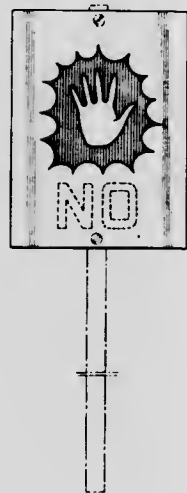
Filed Dec. 8, 1969, Ser. No. 20,407
Term of patent 14 years
Int. Cl. D16—07

U.S. Cl. D61—1



222,397
WARNING SIGN
Juil William Cathey, Jr., 2839 Wooded Acres, Waco, Tex. 76701
Filed May 8, 1970, Ser. No. 22,898
Term of patent 14 years
Int. Cl. D29—99

U.S. Cl. D72—1



222,398
PEDESTRIAN SIGNAL
John E. Roberts, 2198 Garden Drive, Wickliffe, Ohio 44092
Filed July 8, 1970, Ser. No. 23,866
Term of patent 14 years
Int. Cl. D29—99

U.S. Cl. D72—1



222,399
CARD PUNCHING STYLUS
Ira G. Laws and Edward J. Crossland, Tulsa, Okla., assignors to Seismograph Service Corporation, Tulsa, Okla.

Filed Dec. 2, 1968, Ser. No. 14,753
Term of patent 14 years
Int. Cl. D19—99

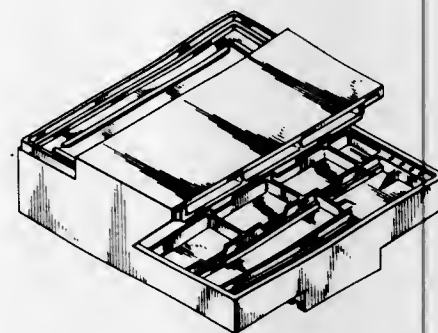
U.S. Cl. D74—1



222,400
DESK TRAY FOR A RUBBER STAMP SIGN KIT
Jack G. Barnes, Alameda County, Calif. (19485 Meekland Ave., Hayward, Calif. 94541)
Continuation-in-part of design application Ser. No. 15,763, Feb. 13, 1969. This application May 26, 1970, Ser. No. 23,153

Term of patent 14 years
Int. Cl. D19—02

U.S. Cl. D74—5



222,401
PENCIL
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Sept. 23, 1970, Ser. No. 25,165
Term of patent 14 years
Int. Cl. D19—06

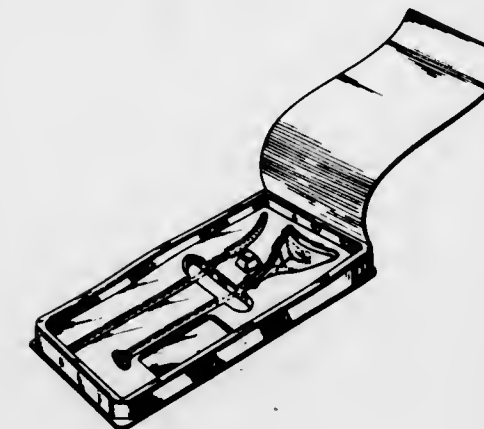
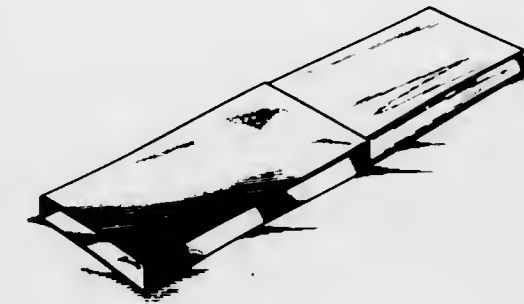
U.S. Cl. D74—24



222,402
STERILE PACKAGE
Michael S. Burnhill, Brooklyn, N.Y., assignor to American Caducous Industries, Inc., New York, N.Y.

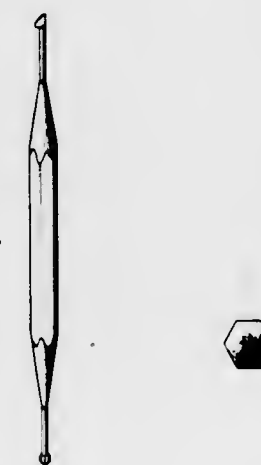
Filed Aug. 10, 1970, Ser. No. 24,390
Term of patent 14 years
Int. Cl. D24—02; D9—04

U.S. Cl. D83—1



222,403
EYE SURGICAL TOOL
Ely Jay Crary, 4730 Anstell Road, Anstell, Ga. 30001
Filed Oct. 1, 1970, Ser. No. 25,287
Term of patent 14 years
Int. Cl. D24—03

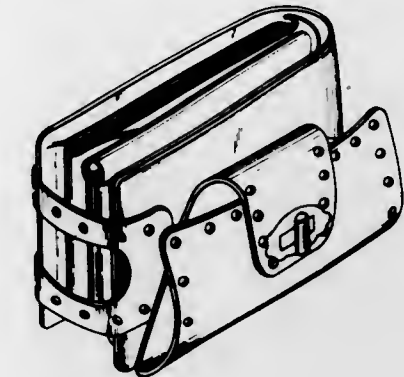
U.S. Cl. D83—12



222,404
COMBINED WALLET AND EYEGLASS CASE
Murray Wolf, Union, N.J., assignor to Evans-Aristocrat Industries, Inc., Elizabeth, N.J.

Filed Jan. 24, 1969, Ser. No. 15,490
Term of patent 14 years
Int. Cl. D3—02

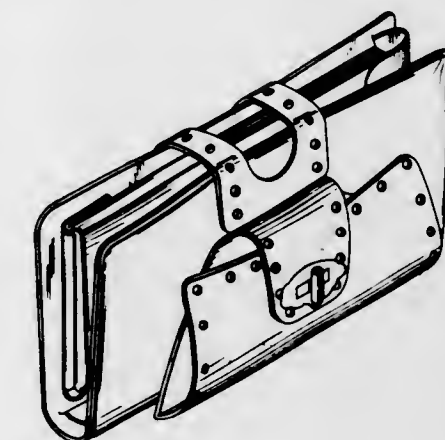
U.S. Cl. D87—3



222,405
COMBINED WALLET AND EYEGLASS CASE
Murray Wolf, 849 Niles Road, Union, N.J. 07083
Original design application Jan. 24, 1969, Ser. No. 15,490. Divided and this application Dec. 8, 1969, Ser. No. 20,410

Term of patent 14 years
Int. Cl. D3—02

U.S. Cl. D87—3



222,406
HANDBAG OR THE LIKE
Benjamin Krifchia, Baltimore, Md., assignor to General Crafts Corporation, Baltimore, Md.
Filed Aug. 4, 1970, Ser. No. 24,297
Term of patent 3½ years
Int. Cl. D3—02

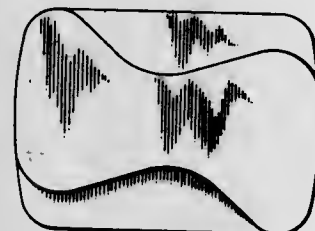
U.S. Cl. D87—3



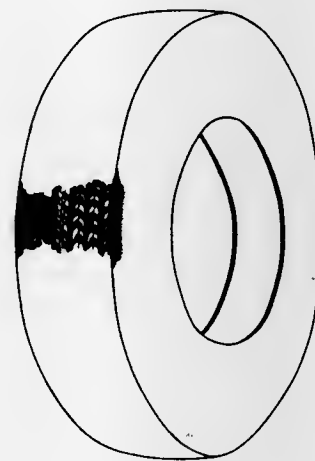
222,407
CARRYING CASE FOR A CAMERA OR THE LIKE
 Vincent F. Lang, Rochester, N.Y., assignor to
 Eastman Kodak Co., Rochester, N.Y.
 Filed Nov. 9, 1970, Ser. No. 25,904
 Term of patent 14 years
 Int. Cl. D3—01
 U.S. Cl. D87—5



222,408
KEY HOLDER
 Jack C. Watson, 626 N. President,
 Wheaton, Ill. 60187
 Filed Aug. 12, 1970, Ser. No. 24,460
 Term of patent 14 years
 Int. Cl. D3—02
 U.S. Cl. D87—8



222,409
PNEUMATIC TIRE
 William K. Pope, Mount Clemens, Mich., assignor to
 Uniroyal, Inc., New York, N.Y.
 Filed Aug. 19, 1970, Ser. No. 24,578
 Term of patent 14 years
 Int. Cl. D12—15
 U.S. Cl. D90—20



222,410
TEXTILE FABRIC
 Leonard C. Clementi, Huntington, N.Y., assignor to
 Cannon Mills Company, Kannapolis, N.C.
 Filed June 9, 1970, Ser. No. 23,395
 Term of patent 14 years
 Int. Cl. D5—02
 U.S. Cl. D92—1



222,411
TOWEL OR SIMILAR ARTICLE
 John W. Rock, Wyckoff, N.J., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,879
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



222,412
TEXTILE FABRIC
 John W. Rock, Wyckoff, N.J., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,880
 Term of patent 14 years
 Int. Cl. D5—05
 U.S. Cl. D92—1



222,413
TOWEL OR SIMILAR ARTICLE
 Nancy Ann Scherer, Plainfield, N.J., assignor to
 Cannon Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,881
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



222,414
TOWEL OR SIMILAR ARTICLE
 Nancy Ann Scherer, Plainfield, N.J., assignor to
 Cannon Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,882
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



222,415
TEXTILE FABRIC
 Nancy Ann Scherer, Plainfield, N.J., assignor to
 Cannon Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,883
 Term of patent 14 years
 Int. Cl. D5—05
 U.S. Cl. D92—1



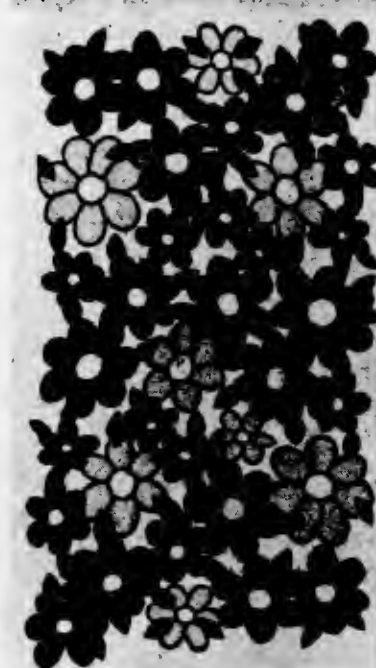
222,416
TEXTILE FABRIC
 Leonard C. Clementi, Huntington, N.Y., assignor to
 Cannon Mills Company, Kannapolis, N.C.
 Filed June 9, 1970, Ser. No. 23,397
 Term of patent 14 years
 Int. Cl. D5—02
 U.S. Cl. D92—1



222,417
TEXTILE FABRIC
 John W. Rock, Wyckoff, N.J., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Filed Aug. 7, 1970, Ser. No. 24,873
 Term of patent 14 years
 Int. Cl. D5—05
 U.S. Cl. D92—1



222,418
TOWEL OR SIMILAR ARTICLE
 Joyce E. Haney, Post, Tex., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Original design application Nov. 25, 1968, Ser. No. 14,635,
 now Patent No. 216,416, dated Dec. 30, 1969. Divided
 and this application Nov. 20, 1969, Ser. No. 20,192
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



222,419
TOWEL OR SIMILAR ARTICLE
 John W. Rock, Wyckoff, N.J., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Filed Nov. 9, 1970, Ser. No. 25,878
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



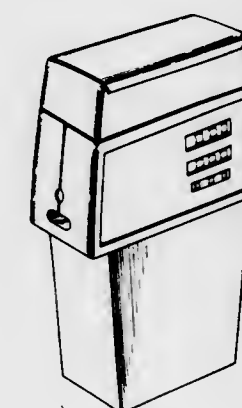
222,420
TOWEL OR SIMILAR ARTICLE
 John W. Rock, Wyckoff, N.J., assignor to Cannon
 Mills Company, Kannapolis, N.C.
 Filed Aug. 7, 1970, Ser. No. 24,374
 Term of patent 14 years
 Int. Cl. D6—13
 U.S. Cl. D92—26



222,421
KNIFE
 Terence Gerald Riley, Sheffield, England, assignor to
 Stanley Works (Great Britain) Limited, Woodside, Eng-
 land
 Filed May 11, 1970, Ser. No. 22,906
 Claims priority, application Great Britain Nov. 12, 1969
 Term of patent 14 years
 Int. Cl. D7—03; D8—02
 U.S. Cl. D95—3



222,422
**COMBINED ELECTRIC SHAVER AND HEAD
 PROTECTING CAP THEREFOR**
 E. Burton Benjamin, Highland Park, Ill., assignor to
 Electro Engineering Products Co., Inc.
 Filed Sept. 22, 1969, Ser. No. 19,230
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF OCTOBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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- Abbott Laboratories: See—
Blasko, Joseph, 3,613,677.
- Abild, Robert N., to United Aircraft Corporation. Rocket engine propellant feeding and control system. 3,613,375, Cl. 60-240.
- Abromavage, John C.: See—
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- Ace Filtercraft Inc.: See—
Nichols, Gerald L., 3,614,038.
- Ackermann, Gunter: See—
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- Adair, James Richard; and Bifasiewicz, Tadeusz M., to United Engineering and Foundry Company. Hot reversing strip mill method and apparatus. 3,613,426, Cl. 72-202.
- Adams, Joe R. Therapeutic aid. 3,613,681, Cl. 128-293.
- Adamski, Joseph; and Grim, James W., to Dura Corporation. Vehicle jack mechanism. 3,614,065, Cl. 254-122.
- Adamski, Maximilian; and Schover, Donald S., to General American Transportation Corporation. Sludge dewatering apparatus. 3,613,564, Cl. 100-118.
- Adrian, Donald J., to United States of America, Navy. Noise modulated fuze system. 3,614,782, Cl. 343-7.
- Adrian, Donald J., to United States of America, Navy. FM cross-sideband fuze system. 3,614,783, Cl. 343-7.
- Adrian, Donald J.: See—
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- Aerosol Systems Inc.: See—
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Saubert, Charles R., 3,613,950.
- AGA Aktiebolag: See—
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- Agfa-Gevaert Aktiengesellschaft: See—
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- Paulus, Rudolf, 3,614,455.
- Ainsworth, David; and Atkinson, Cyril Millward, to Northrop Weaving Machine Limited. Stop motions for looms. 3,613,742, Cl. 139-336.
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- Air Products and Chemical Inc.: See—
Klee, David J., 3,613,386.
- Aisin Seiki Kabushiki Kaisha: See—
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Iwai, Katsuyuki; Fukatsu, Motonori; and Sato, Fujio, 3,614,308.
- Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C., to Jacobsen Manufacturing Company. Gang lawn mower. 3,613,337, Cl. 56-7.
- Akgulian, Sahag C.; Haffner, Donald G.; and Heth, Sherman C., to Jacobsen Manufacturing Company. Tractor-driven lawn mower. 3,613,340, Cl. 56-249.
- Aktiengesellschaft Brown, Boveri & Cie: See—
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- Akustische u. Kino-Gerate Gesellschaft m.b.H.: See—
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- Albright, Alva Z. Pick-up attachments for loaders and bulldozers. 3,613,923, Cl. 214-147.
- Albro Filters and Engineering Company Limited: See—
Cox, Victor Ian Malcolm, 3,613,858.
- Alden, Milton, to Alden Research Foundation. Scanning apparatus support structure. 3,614,313, Cl. 178-7.6
- Alden Research Foundation: See—
Alden, Milton, 3,614,313.
- Alexandersson, Harald Valdemar, to Telefonaktiebolaget L M Ericsson. Multiple contact switching device for cross bar switches. 3,614,360, Cl. 200-166.
- Alexandre Piquet: See—
Gaston, Meneglier G., 3,613,713.
- Alfa-Laval Bergedorfer Eisenwerke G.m.b.H.: See—
Ziller, Fritz, 3,613,892.
- All-O-Matic Manufacturing Corporation: See—
Ballinger, J. R., 3,613,718.
- Allard, John J.: See—
Woodward, Benjamin W.; and Allard, John J., 3,614,578.
- Allastics, Inc.: See—
Holdredge, Ernest C., Jr., 3,613,605.
- Allds, Raymond J., to Ashtabula Bow Socket Company. Method and apparatus for constructing convertible top linkages. 3,613,203, Cl. 29-155.
- Allegheny Ludlum Steel Corporation: See—
Deverell, Harry E.; and Muscatell, Frank L., 3,613,433.
- Allegheny Ludlum Steel Corporation: See—
Smith, Bernard, 3,613,489.
- Allemand, Robert; Jacobe, Jean; and Roudaut, Edouard, to Commissariat A l'Energie Atomique. Neutron detection device for the position of beams of neutrons in space. 3,614,437, Cl. 250-83.1
- Allen, Derek P., to Allen Medical Instruments, division of Bio-Dynamics Inc. Cutter for soft fibrous materials. 3,613,241, Cl. 30-294.
- Allen, Herman. Balloon power turbine toy engine. 3,613,303, Cl. 46-206.
- Allen Medical Instruments: See—
Allen, Derek P., 3,613,241.
- Allen-Bradley Company: See—
Ford, David E., Jr.; and Waltz, Richard W., 3,614,596.
- Alleo, Jackson Anthony, to Gentex Corporation. Protective helmet. 3,613,113, Cl. 2-3.
- Allgaier, William A., to Sylvania Electric Products, Inc. Electron discharge device having novel indirectly heated cathode mounting. 3,614,513, Cl. 313-260.
- Allis-Chalmers Manufacturing Company: See—
Burkhardt, Edgar S.; and Torrence, James D., 3,614,004.
- Horn, John M., 3,613,721.
- Weston, Donald E., 3,614,361.
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Bank, Henning; Jilsen, Per-Owe; Klein, Hans; and Persson, Tage, 3,614,498.
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Bielsten, Nils Ove, 3,613,442.
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- Koranyi, Robert, 3,613,941.
- Landa, Torstein; Syvakari, Perti; and Westman, Erik, 3,613,157.
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Haddon, Roger C., 3,613,427.
- Alside International Corporation: See—
Mollman, Robert E., 3,613,326.
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- Altherr, Russell G., to Amsted Industries Incorporated. Rotary dump coupler. 3,613,902, Cl. 213-72.
- Altland, George E.: See—
Stram, George H.; Williams, Ralph J.; Altland, George E.; and Dunn, Thomas J., 3,613,131.
- Altman, Gerald. Reflex reflecting products, processes and devices useful with such products. 3,614,199, Cl. 350-105.
- Aluminum Company of America: See—
Woodburn, Wilton A., 3,613,417.
- Alvarez, William, to Jonathan Manufacturing Company. Flush bottom tank ball valve. 3,614,056, Cl. 251-144.
- Amano, Takehisa, to Nippon Gakki Seizo Kabushiki Kaisha. Monophonic electronic musical instrument with variable filter. 3,614,288, Cl. 84-1.21
- Ambac Industries, Incorporated: See—
Corey, Dwight O., 3,613,165.
- Snyder, Warren E.; Cavanaugh, John B.; and Aubin, Jean-Paul R., 3,613,651.
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- American Hoist & Derrick Company: See—
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- American Hospital Supply Corporation: See—
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- American Locker Company, Inc.: See—
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- American Sign & Indicator Corporation: See—
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- AMF Incorporated: See—
Monte, Matthew Sallee, 3,613,693.
- Amici, Francis Robert; and Bornn, Ralph, to Ideal Toy Corporation.
Animated doll. 3,613,299, Cl. 46-120.
- Amicone, Raymond George; Davey, Charles T.; and Dunning, Warren J., to Air Balance, Inc., meane. Electrically and/or thermally actuated release link. 3,613,795, Cl. 169-42.
- AMP Incorporated: See—
Gudaitis, Bernard Vincent; and Loose, Winfield Warren, 3,614,346.
- Ampex Corporation: See—
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- Ananiev, Lev Martemianovich; Pekker, Yakov Semenovich; Chakhlov, Vladimir Lukianovich; Sharachin, Yakov Afanasievich; Shtein, Mikhail Mikhailovich; and Yarushkin, Jury Pavlovich. Betatron. 3,614,638, Cl. 328-237.
- Anantha, Narasipur G., to International Business Machines Corporation. Improved surface barrier transistor. 3,614,560, Cl. 317-235.
- Anderson, Donald E., to Schjeldahl, G. T., Company. Method and apparatus for coating articles utilizing rotating crucible coating apparatus including a centrifugal-type crucible. 3,613,633, Cl. 118-5.
- Anderson, Edgar F. Fishing device. 3,613,284, Cl. 43-26.1
- Anderson, Gerald H.: See—
Ganci, Edward; Gance, Joseph V.; and Anderson, Gerald H., 3,614,133.
- Anderson, Norman R.; and Rundle, David F., to Bunker-Ramo Corporation, The. Electrical connector having adjustable keying. 3,614,711, Cl. 339-90.
- Anderson, Philip J. Method and system for static testing structures. 3,613,435, Cl. 73-37.
- Anderson, Philip J., to Institute of Gas Technology. Low noise process for breaking pavement which relies upon reflected tensile pulses to fracture the pavement. 3,614,163, Cl. 299-14.
- Anderson, Richard D.: See—
Whitman, Wesley H., Jr.; and Anderson, Richard D., 3,614,205.
- Anderson, Roland Borg, to Bunker-Ramo Corporation, The. System for converting to a BCD code. 3,614,403, Cl. 235-155.
- Ando, Sadanao, to Kabushiki Kaisha Ricoh. Device for cleaning developed electrostatic photographic copy sheet. 3,613,701, Cl. 134-64.
- Andree, Harold C.: See—
Connolly, Walter L.; Andree, Harold C.; and Harrison, Ralph M., 3,614,250.
- Andrew Engineering Company: See—
Dulebohn, David H., 3,614,372.
- Andrews, Daniel E., Jr.; Klund, William E.; and Isaak, Robert D., to United States of America, Navy. Secure communication system. 3,614,316, Cl. 178-22.
- Andrews, Laurence M.: See—
Apstein, Maurice; Blomgren, Evert; Keehn, George R.; Andrews, Laurence M.; and Rabinow, Jacob, 3,613,589.
- Andrews, Maurice. Device to be used when applying a cosmetic. 3,613,697, Cl. 132-79.
- Anna, Otto; Kassner, Jochen; and Druen, Bernhard, to Braun Aktiengesellschaft. Electrically operated motion conversion means. 3,614,491, Cl. 310-37.
- Antennacraft Company: See—
Ringland, Robert S., 3,614,628.
- Anthony, Albert M., to Tracor, Inc. Convergence unit for color television picture tube. 3,614,688, Cl. 335-210.
- Anti-Pollution, Inc.: See—
Cloutier, Charles C., 3,613,891.
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Keyston, David H., 3,614,049.
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- Apel, Konstantin. Regulator for a heater element. 3,614,392, Cl. 219-501.
- Apel, Konstantin, to Holzer Patent AG. Voltage transformer. 3,614,535, Cl. 317-40.
- Appleton Wire Works Corporation: See—
Lee, Charles A.; and Sorrells, Frank D., 3,613,639.
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Schultze, Eckart F.; and Schultz, John R., 3,614,267.
- Apstein, Maurice; Blomgren, Evert; Keehn, George R.; Andrews, Laurence M.; and Rabinow, Jacob, to United States of America, Army. Bomb fuzing system. 3,613,589, Cl. 102-70.2
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Whitlock, Robert A., 3,613,731.
- Arai, Toshikatsu, to Tomy Kogyo Co., Ltd. Toy airplane and trackway. 3,613,306, Cl. 46-216.
- Arakawa, Kazuyuki, to Tsudakoma Industrial Co., Ltd. Gear transmission mechanism of a weaving loom. 3,613,470, Cl. 74-393.
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Ryden, James W.; and Abromavage, John C., 3,613,921.
- Arctic Enterprises, Inc.: See—
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- Arndt, Charles J., to Harsco Corporation. Power conductor take-up system. 3,613,866, Cl. 198-139.
- Arnold, Bruce C.: See—
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Mita, Kunio; and Umamura, Yukio, 3,613,543.
- Asano, Tadao; Yamaguchi, Hiroji; and Ishikawa, Kazuo, to Aisin Seiki Kabushiki Kaisha. Forward-reverse and brake control valve. 3,613,844, Cl. 192-4.
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Allds, Raymond J., 3,613,203.
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- Associated Electrical Industries Limited: See—
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Ainsworth, David; and Atkinson, Cyril Millward, 3,613,742.
- Atkinson, Cyril M., to Northrop Weaving Machine Limited. Loom let-off and take-up mechanisms. 3,613,739, Cl. 139-1.
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- Bremshy & Co.: See—
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- Brennan, Francis P. Cap locking means for wardrobe hanger bar. 3,613,898, Cl. 211-124.
- Brenner, William C., to Westinghouse Electric Corporation. Transposed conductor for dynamoelectric machines. 3,614,497, Cl. 310-213.
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- Bricknell, William H., to Hawker Siddeley Canada Ltd. Grapple attachment for tree processors. 3,613,750, Cl. 144-3.
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- Brown, William J.; Butler, Robert F.; Hedden, Smith E.; and Jablonskis, Janis, to United States of America, Navy. Electronic delay cartridge. 3,613,592, Cl. 102-70.2

Brown, William L.; and Portlock, John M., to United States of America, Atomic Energy Commission. Detection system. 3,614,724, Cl. 340-16.

Brown, William S., to Bell Telephone Laboratories, Incorporated. Machine processing of algebraic information. 3,614,406, Cl. 235-168.

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Brueschke, Erich E., to United States of America, Air Force. Multichannel multiplexed quasi three-dimensional display system. 3,614,521, Cl. 315-22.

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- Coburn, Charles W., to Ickes-Braun Glasshouses, Inc. Plant cultivation. 3,613,309, Cl. 47-38.
- Codex Corporation: See—
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- Cofar, Larry Wilson, to Deere & Company. Crop-handling means and stripper therefor. 3,613,345, Cl. 56-364.
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- Cogar Corporation: See—
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- Cogliano, Joseph A. Catamaran. 3,613,136, Cl. 9-1.
- Cohen, Paul, to Subcom, Inc. Communicating passage for submersible vessels. 3,613,640, Cl. 114-16.
- Cohn, Mark J. Film holding camera construction and film package. 3,613,545, Cl. 95-66.
- Colas, Francois, to Cegedur G.P. Method and means for producing a railway carriage roof. 3,613,194, Cl. 29-33.
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- Coleman, Bestor P., to Interlake, Inc. Adjustable platen track. 3,613,557, Cl. 100-26.
- Coleman, John W., to Forgi Corporation. Electron beam injection and focusing means suitable for electron microscope. 3,614,520, Cl. 315-15.
- Coleman, William E.; and Skutt, Robert R., to National Cash Register Company. The Full select-half select plasma display driver control. 3,614,769, Cl. 340-324.
- Colgren, Theodore; and Kane, Morris W., to Brown Company. Expansion meter. 3,613,437, Cl. 73-73.
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- Collings, Dana B.; and Broughton, Douglas J., to Buxton Incorporated. Purse carrying strap and frame assembly. 3,613,759, Cl. 150-29.
- Collings, Harold E.; and Darby, William L., to General Electric Company. Universal liquid-cooled connection assembly. 3,614,493, Cl. 310-54.
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- Hill, John Dan, III, 3,614,674.
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- Collins, Samuel C., to Cryogenic Technology, Inc. Method and apparatus for continuously supplying refrigeration below 4.2 K. 3,613,387, Cl. 62-100.
- Colston, John R., to Bowles Fluidics Corporation. Turbine speed control. 3,613,369, Cl. 60-105.
- Colt's Inc.: See—
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 Zeigler, Philip B.; St. Amand, James C.; and Ranft, Ernst L., to General Motors Corporation. Sensor and fragmentizable glass means for releasing a penetrator. 3,613,944, Cl. 222-5.
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17: 3.613.727	3.614.311	146: 3.614.354	84.1: 3.614.015	84.1: 3.614.016	52: 3.614.084
19: 3.613.728	7.3: 3.614.312	148: 3.614.355	106: 3.614.017	106: 3.614.018	52: 3.614.085
624.18: 3.613.729	6: 3.614.313	3.614.356	118.3: 3.614.017	118.3: 3.614.018	52: 3.614.086
625.29: 3.613.731	88: 3.614.314	3.614.357	61: 3.614.018	61: 3.614.019	52: 3.614.087
44: 3.613.732	17: 3.614.315	3.614.358	157.1: 3.614.019	157.1: 3.614.020	52: 3.614.088
6: 3.613.730	22: 3.614.316	3.614.359	188: 3.614.020	188: 3.614.021	52: 3.614.089
65: 3.613.733	66: 3.614.317	3.614.360	198: 3.614.022	198: 3.614.023	52: 3.614.090
138- 31: 3.613.734	68: 3.614.318	3.614.361	113: 3.613.944	113: 3.613.945	52: 3.614.091
45: 3.613.735	69.5: 3.614.319	3.614.362	221- 109: 3.613.946	221- 109: 3.613.947	52: 3.614.092
109: 3.613.736	179- 1: 3.614.320	168: 3.614.363	125: 3.613.948	125: 3.613.949	52: 3.614.093
149: 3.613.737	3.614.321	172: 3.614.364	250: 3.613.948	250: 3.613.949	52: 3.614.094
156: 3.613.738	3.614.322	1: 3.613.871	285: 3.613.945	285: 3.613.946	52: 3.614.095
139- 1: 3.613.739	5: 3.614.323	4: 3.613.872	310: 3.613.949	310: 3.613.950	52: 3.614.096
122: 3.613.740	2: 3.614.324	45.15: 3.613.873	222- 16: 3.613.950	222- 16: 3.613.951	52: 3.614.097
127: 3.613.741	3.614.325	46: 3.613.874	36: 3.613.951	36: 3.613.952	52: 3.614.098
336: 3.613.742	3.614.326	47: 3.613.875	43: 3.613.952	43: 3.613.953	52: 3.614.099
348: 3.613.743	15: 3.614.327	52: 3.613.876	56: 3.613.953	56: 3.613.954	52: 3.614.100
371: 3.613.744	3.614.328	53: 3.613.877	61: 3.613.954	61: 3.613.955	52: 3.614.101
140-118: 3.613.745	18: 3.614.329	56: 3.613.878	83: 3.613.956	83: 3.613.957	52: 3.614.102
141- 5: 3.613.746	3.614.330	63.3: 3.613.879	136: 3.613.956	136: 3.613.957	52: 3.614.103
198: 3.613.747	90: 3.614.331	65: 3.613.880	180: 3.613.958	180: 3.613.959	52: 3.614.104
143- 43: 3.613.748	100: 3.614.332	3.613.881	187: 3.613.959	187: 3.613.960	52: 3.614.105
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3,613,374	3,613,416	3,613,926	3,614,316	3,614,710	3,614,192
3,613,408	3,613,440	3,613,955	3,614,331	3,614,731	3,614,291
3,613,434	3,613,446	3,613,959	3,614,333	3,614,733	3,614,314
3,613,458	3,613,466	3,613,967	3,614,339	3,614,736	3,614,319
3,613,615	3,613,510	3,613,968	3,614,342	3,614,745	3,614,322
3,613,660	3,613,512	3,613,978	3,614,356	3,614,753	3,614,325
3,613,664	3,613,539	3,613,994	3,614,365	3,614,756	3,614,430
3,613,706	3,613,546	3,613,995	3,614,373	3,614,758	3,614,484
3,613,794	3,613,551	3,613,996	3,614,378	3,614,768	3,614,537
3,614,027	3,613,554	3,614,002	3,614,380	3,614,771	3,614,539
3,614,326	3,613,555	3,614,009	3,614,411	3,614,777	3,614,599
3,614,617	3,613,581	3,614,014	3,614,418	3,614,780	3,614,627
4 : 3,613,259	3,613,583	3,614,024	3,614,421	3,614,781	3,614,656
3,613,360	3,613,590	3,614,028	3,614,423	3,614,782	3,614,660
3,613,698	3,613,604	3,614,030	3,614,438	3,614,783	3,614,719
3,613,921	3,613,617	3,614,036	3,614,439	3,614,785	3,614,725
3,614,045	3,613,621	3,614,041	3,614,449	3,614,789	3,614,759
3,614,217	3,613,630	3,614,046	3,614,450	3,614,794	3,614,784
3,614,218	3,613,659	3,614,049	3,614,475	3,613,600	3,613,115
3,614,321	3,613,665	3,614,056	3,614,486	3,613,674	3,613,314
5 : 3,613,749	3,613,666	3,614,057	3,614,489	3,613,786	3,613,314
6 : 3,613,117	3,613,669	3,614,077	3,614,516	3,613,787	3,613,345
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3,613,142	3,613,690	3,614,110	3,614,528	3,613,884	3,613,999
3,613,152	3,613,722	3,614,111	3,614,529	3,613,925	3,614,190
3,613,153	3,613,726	3,614,114	3,614,533	3,613,934	3,614,452
3,613,211	3,613,729	3,614,120	3,614,541	3,614,020	3,613,370
3,613,220	3,613,732	3,614,131	3,614,542	3,614,440	3,613,457
3,613,228	3,613,751	3,614,133	3,614,545	3,613,180	3,613,748
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3,613,248	3,613,788	3,614,173	3,614,584	3,613,375	3,614,431
3,613,250	3,613,796	3,614,181	3,614,592	3,613,517	3,614,772
3,613,268	3,613,799	3,614,194	3,614,611	3,613,552	3,613,149
3,613,273	3,613,806	3,614,205	3,614,618	3,613,595	3,613,189
3,613,277	3,613,808	3,614,214	3,614,625	3,613,634	3,613,227
3,613,285	3,613,808	3,614,227	3,614,626	3,613,689	3,613,245
3,613,298	3,613,852	3,614,231	3,614,630	3,613,693	3,613,261
3,613,307	3,613,865	3,614,234	3,614,635	3,613,708	3,613,265
3,613,313	3,613,871	3,614,246	3,614,658	3,613,728	3,613,294
3,613,332	3,613,880	3,614,250	3,614,663	3,613,792	3,613,411
3,613,343	3,613,881	3,614,254	3,614,667	3,613,928	3,613,430
3,613,346	3,613,888	3,614,262	3,614,670	3,613,960	3,613,556
3,613,353	3,613,909	3,614,272	3,614,679	3,613,979	3,613,599
3,613,357	3,613,910	3,614,281	3,614,683	3,613,980	3,613,626
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3,613,919	3,614,164	3,614,640	3,614,070	3,613,861	3,613,876
3,613,949	3,614,185	3,614,642	3,614,125	3,613,875	3,613,885
3,613,964	3,614,216	3,614,673	3,614,127	3,613,896	3,613,899
3,613,976	3,614,219	3,614,680	3,614,128	3,613,947	3,613,944
3,614,089	3,614,256	3,614,779	3,614,129	3,613,987	3,613,952
3,614,102	3,614,306	3,614,787	3,614,153	3,613,993	3,613,977
3,614,104	3,614,310	25 : 3,613,138	3,614,158	3,614,010	3,613,984
3,614,393	3,614,315	3,613,146	3,614,172	3,614,083	3,614,012
3,614,394	3,614,347	3,613,224	3,614,183	3,614,084	3,614,015
3,614,477	3,614,351	3,613,240	3,614,187	3,614,100	3,614,026
3,614,648	3,614,361	3,613,260	3,614,209	3,614,189	3,614,034
3,614,720	3,614,364	3,613,264	3,614,266	3,614,198	3,614,040
13 : 3,613,605	3,614,381	3,613,266	3,614,334	3,614,200	3,614,042
3,613,767	3,614,470	3,613,385	3,614,359	3,614,201	3,614,044
3,613,797	3,614,492	3,613,387	3,614,367	3,614,204	3,614,086
3,613,807	3,614,502	3,613,441	3,614,368	3,614,210	3,614,090
3,613,854	3,614,503	3,613,450	3,614,371	3,614,225	3,614,097
3,613,874	3,614,504	3,613,482	3,614,410	3,614,226	3,614,112
3,613,897	3,614,519	3,613,528	3,614,434	3,614,230	3,614,154
3,614,075	3,614,521	3,613,651	3,614,441	3,614,243	3,614,193
3,614,237	3,614,522	3,613,657	3,614,538	3,614,261	3,614,195
3,614,388	3,614,531	3,613,709	3,614,550	3,614,275	3,614,202
3,614,510	3,614,593	3,613,747	3,614,575	3,614,278	3,614,203
15 : 3,613,325	3,614,621	3,613,759	3,614,690	3,614,299	3,614,211
16 : 3,613,289	3,614,671	3,613,772	3,614,698	3,614,317	3,614,215
3,613,685	3,614,684	3,613,907	3,614,701	3,614,320	3,614,221
3,613,859	3,614,706	3,613,940	3,614,708	3,614,324	3,614,222
3,613,920	3,614,709	3,614,179	3,614,712	3,614,391	3,614,223
3,614,098	3,614,711	3,614,199	3,614,730	3,614,400	3,614,224
3,614,459	3,614,716	3,614,206	3,614,749	3,614,415	3,614,232
17 : Re: 27,190	3,614,718	3,614,238	3,614,762	3,614,444	3,614,235
3,613,128	3,614,766	3,614,241	3,614,778	3,614,447	3,614,245
3,613,130	Re: 27,195	3,614,269	27 : 3,613,140	3,614,469	3,614,255
3,613,151	Re: 27,197	3,613,283	3,613,283	3,614,478	3,614,289
3,613,174	3,613,120	3,613,313	3,613,317	3,614,480	3,614,290
3,613,178	3,613,125	3,614,358	3,613,331	3,614,506	3,614,295
3,613,218	3,613,143	3,614,412	3,613,389	3,614,515	3,614,402
3,613,229	3,613,214	3,614,463	3,613,452	3,614,520	3,614,404
3,613,245	3,613,219	3,614,523	3,613,481	3,614,546	3,614,413
3,613,247	3,613,364	3,614,534	3,613,527	3,614,553	3,614,419
3,613,249	3,613,390	3,614,557	3,613,633	3,614,555	3,614,420
3,613,309	3,613,506	3,614,571	3,613,678	3,614,581	3,614,451
3,613,310	3,613,548	3,614,587	3,613,723	3,614,620	3,614,457
3,613,312	3,613,580	3,614,622	3,613,810	3,614,645	3,614,458
3,613,318	3,613,725	3,614,643	3,613,811	3,614,647	3,614,462
3,613,335	3,613,757	3,614,653	3,613,812	3,614,654	3,614,467
3,613,342	3,613,839	3,614,662	3,613,901	3,614,659	3,614,471
3,613,406	3,613,966	3,614,664	3,613,924	3,614,715	3,614,481
3,613,413	3,613,969	3,614,740	3,613,943	3,614,763	3,614,493
3,613,435	3,614,064	3,614,741	3,613,951	3,614,765	3,614,499
3,613,438	3,614,067	3,614,743	3,613,997	3,614,767	3,614,517
3,613,444	3,614,107	3,614,773	3,614,068	3,613,262	3,614,527
3,613,460	3,614,130	3,614,776	3,614,072	3,613,399	3,614,532
3,613,477	3,614,145	26 : Re: 27,192	3,614,140	3,613,455	3,614,547
3,613,480	3,613,132	3,614,213	3,614,213	3,613,778	3,614,560
3,613,491	3,614,259	3,614,263	3,614,263	3,614,724	3,614,563
3,613,493	3,614,300	3,614,352	3,614,352	3,613,122	3,614,572
3,613,505	3,614,309	3,614,372	3,614,372	3,613,137	3,614,573
3,613,525	3,614,570	3,614,479	3,614,479	3,613,177	3,614,576
3,613,538	3,613,154	3,614,727	3,614,727	3,613,182	3,614,578
3,613,553	3,613,237	3,613,366	3,613,372	3,613,212	3,614,608
3,613,557	3,613,253	3,613,222	3,613,372	3,613,271	3,614,609
3,613,564	3,613,254	3,613,223	3,613,686	3,613,278	3,614,623
3,613,609	3,613,263	3,613,242	3,613,733	3,613,292	3,614,629
3,613,613	3,613,287	3,613,267	3,613,845	3,613,391	3,614,631
3,613,661	3,613,451	3,613,303	3,613,982	3,613,392	3,614,644
3,613,731	3,613,641	3,613,359	3,614,051	3,613,410	3,614,676
3,613,735	3,613,753	3,613,388	3,614,123	3,613,414	3,614,677
3,613,752	3,614,591	3,613,431	3,614,169	3,613,419	3,614,678
3,613,791	3,614,619	3,613,436	3,614,171	3,613,461	3,614,681
3,613,793	3,614,628	3,613,437	3,614,302	3,613,464	3,614,731
3,613,795	3,614,697	3,613,465	3,614,387	3,613,471	3,614,738
3,613,801	3,613,503	3,613,467	3,614,460	3,613,485	3,614,748
3,613,802	3,613,508	3,613,479	3,614,569	3,613,488	3,614,757
3,613,814	3,613,515	3,613,484	3,614,699	3,613,495	3,614,760
3,613,818	3,613,691	3,613,486	3,614,700	3,613,507	3,614,774
3,613,842	3,613,972	3,613,524	3,614,728	3,613,513	3,613,158
3,613,868	3,613,184	3,613,560	3,614,341	3,613,514	3,613,159
3,613,877	3,613,656	3,613,561	3,613,284	3,613,516	3,613,215
3,613,878	3,613,683	3,613,566	3,614,105	3,613,531	3,613,403
3,613,886	3,613,970	3,613,568	3,614,168	3,613,532	3,613,445
3,613,898	3,613,288	3,613,571	3,613,774	3,613,537	3,613,687
3,613,902	3,613,381	3,613,584	3,614,343	3,613,541	3,613,822
3,613,912	3,613,628	3,613,624	3,614,540	3,613,558	3,613,894
3,613,917	3,613,891	3,613,700	3,613,118	3,613,608	3,613,950
3,613,922	3,613,923	3,613,715	3,613,119	3,613,610	3,613,958
3,613,938	23 : 3,613,355	3,613,717	3,613,186	3,613,632	3,614,018
3,613,942	24 : 3,613,136	3,613,715	3,613,204	3,613,636	3,614,032
3,613,945	3,613,302	3,613,776	3,613,279	3,613,637	3,614,058
3,613,956	3,613,338	3,613,820	3,613,280	3,613,638	3,614,323
3,613,965	3,613,377	3,613,846	3,613,297	3,613,640	3,614,603
3,613,992	3,613,394	3,613,869	3,613,301	3,613,658	3,614,614
3,614,021	3,613,589	3,613,872	3,613,328	3,613,679	3,614,693
3,614,022	3,613,593	3,613,882	3,613,361	3,613,684	3,614,723
3,614,053	3,613,594	3,613,884	3,613,415	3,613,694	3,613,129
3,614,062	3,613,619	3,613,888	3,613,520	3,613,697	3,613,134
3,614,069	3,613,675	3,613,892	3,613,545	3,613,714	3,613,144
3,614,079	3,613,779	3,613,904	3,613,578	3,613,718	3,613,147
3,614,088	3,613,935	3,613,957	3,613,587	3,613,765	3,613,162
3,614,106	3,614,253	3,614,016	3,613,603	3,613,834	3,613,172
3,614,113	3,614,292	3,614,038	3,613,643	3,613,843	3,613,203
3,614,115	3,614,366	3,614,052	3,613,672	3,613,850	3,613,210
3,614,144	3,614,403	3,614,055	3,613,680	3,613,855	3,613,236
3,614,146	3,614,433			3,613,856	3,613,293

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3,613.326	3,614.688	3,613.489	3,613.258	3,614.312	3,614.150
3,613.421	3,614.739	3,613.497	3,613.393	3,614.398	3,614.151
3,613.422	3,614.754	3,613.504	3,613.862	3,614.453	3,614.174
3,613.459	3,614.764	3,613.550	3,614.702	3,614.474	3,614.414
3,613.483	3,614.769	3,613.574	3,613.168	3,614.485	3,614.721
3,613.500	3,614.775	3,613.585	3,613.200	3,614.554	3,613.476
3,613.522	3,614.786	3,613.591	3,613.662	3,614.634	3,613.936
3,613.526	3,613.116	3,613.655	3,613.738	3,614.674	3,613.208
3,613.547	3,613.206	3,613.670	3,613.819	3,614.682	3,613.322
3,613.575	3,613.295	3,613.721	3,614.132	3,614.726	3,613.324
3,613.602	3,613.320	3,613.724	3,614.399	3,614.742	3,613.337
3,613.695	3,613.336	3,613.746	3,613.958	3,614.761	3,613.340
3,613.754	3,613.380	3,613.795	3,613.165	3,613.150	3,613.462
3,613.760	3,613.790	3,613.817	3,613.333	3,613.356	3,613.469
3,613.761	3,613.895	3,613.946	3,613.569	3,613.496	3,613.518
3,613.762	3,613.905	3,613.953	3,613.639	3,613.511	3,613.606
3,613.770	3,614.061	3,614.078	3,613.673	3,613.562	3,613.631
3,613.851	3,614.073	3,614.085	3,613.681	3,613.889	3,613.648
3,613.853	3,614.122	3,614.139	3,613.840	3,614.646	3,613.663
3,613.866	3,614.252	3,614.162	3,613.867	3,614.649	3,613.676
3,613.870	3,614.650	3,614.279	3,614.008	3,613.187	3,613.720
3,613.872	3,614.744	3,614.297	3,614.071	3,613.448	3,613.805
3,613.879	3,613.235	3,614.346	3,614.074	3,613.586	3,613.815
3,613.906	3,613.290	3,614.350	3,614.155	3,613.592	3,613.848
3,613.962	3,613.703	3,614.357	3,614.293	3,613.612	3,613.863
3,613.985	3,613.800	3,614.428	3,613.948	3,613.975	3,613.954
3,613.988	3,613.971	3,614.464	Re 27,194	3,613.031	3,613.973
3,613.991	3,614.054	3,614.466	3,613.127	3,614.004	3,614.011
3,614.035	3,614.066	3,614.497	3,613.155	3,614.240	3,614.023
3,614.043	3,614.136	3,614.513	3,613.185	3,614.287	3,614.087
3,614.103	42 : Re 27,196	3,614.562	3,613.226	3,614.328	3,614.099
3,614.137	3,613.113	3,614.577	3,613.276	3,614.435	3,614.124
3,614.239	3,613.131	3,614.579	3,613.327	3,614.442	3,614.126
3,614.258	3,613.161	3,614.589	3,613.378	3,614.473	3,614.135
3,614.374	3,613.164	3,614.594	3,613.378	3,614.613	3,614.157
3,614.383	3,613.166	3,614.601	3,613.454	3,614.632	3,614.177
3,614.384	3,613.198	3,614.602	3,613.456	3,614.652	3,614.178
3,614.386	3,613.199	3,614.605	3,613.597	3,614.171	3,614.267
3,614.390	3,613.213	3,614.606	3,613.653	3,613.188	3,614.349
3,614.395	3,613.215	3,614.616	3,613.712	3,613.275	3,614.362
3,614.406	3,613.323	3,614.637	3,613.737	3,613.296	3,614.377
3,614.417	3,613.351	3,614.641	3,613.745	3,613.316	3,614.397
3,614.432	3,613.369	3,614.685	3,613.785	3,613.382	3,614.401
3,614.483	3,613.371	3,614.692	3,613.824	3,613.383	3,614.565
3,614.511	3,613.371	3,614.696	3,613.824	3,613.443	3,614.596
3,614.525	3,613.386	3,614.714	3,613.930	3,613.607	3,614.606
3,614.526	3,613.417	3,614.722	3,614.019	3,613.611	3,613.711
3,614.549	3,613.425	3,614.734	3,614.096	3,613.627	
3,614.590	3,613.426	3,614.755	3,614.121	3,613.831	
3,614.624	3,613.427	3,614.785	3,614.186		
	3,613.433	43 : 3,613.329			

Design Patents

1 : 222.326	12 : 222.352	25 : 222.328	34 : 222.389	36 : 222.396	39 : 222.398
222.327	13 : 222.403	222.390	222.404	222.401	222.367
222.368	17 : 222.331	222.348	222.405	222.402	222.399
4 : 222.387	222.335	222.350	222.411	222.407	42 : 222.347
6 : 222.333	222.361	222.388	222.412	222.410	222.372
222.354	222.366	222.409	222.413	222.416	222.382
222.356	222.408	29 : 222.334	222.414	37 : 222.394	44 : 222.381
222.357	222.422	222.377	222.415	222.395	222.391
222.362	18 : 222.355	34 : 222.332	222.417	39 : 222.324	48 : 222.323
222.378	222.369	222.351	222.419	222.336	222.325
222.383	222.371	222.358	222.420	222.337	222.397
222.400	19 : 222.365	222.359	36 : 222.330	222.339	222.418
8 : 222.370	20 : 222.345	222.363	222.360	222.340	51 : 222.353
9 : 222.329	222.392	222.375	222.380	222.346	53 : 222.386
222.344	21 : 222.393	222.385	222.384	222.376	55 : 222.343
12 : 222.342	24 : 222.406				

U.S. GOVERNMENT PRINTING OFFICE: O-1971

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 26, 1971

Volume 891

Number 4

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PATENT OFFICE NOTICES

TRADEMARKS

Status Inquiries; Amendment

The notice entitled Status Inquiries which appeared in the Federal Register of August 11, 1971 (36 F.R. 14771-14772), indicated that all status inquiries regarding trademark applications will be entered in the application files. That procedure will not, however, be followed in all cases, and the first paragraph of the notice has, accordingly, been amended to read as follows:

"In order to expedite the handling of inquiries regarding the status of both new and amended applications, the Patent Office has adopted a new procedure. Henceforth, status inquiries should be filed in duplicate and should identify by title and date the last paper known by the applicant to have been filed in the case. Each inquiry should be accompanied by a self-addressed, stamped envelope. Both the original inquiry and the duplicate will be marked with a response and the duplicate will be returned to the applicant. The original inquiry will be entered in the file only if the applicant has requested an estimated date for the next Office action; otherwise, the original inquiry will be placed in a separate file."

Dated: Sept. 14, 1971.

ROBERT GOTTSCHALK,
Acting Commissioner of Patents.

[FR Doc. 71-14129 Filed 9-23-71; 8:50 am]

Pub. in 36 F.R. 18961, Sept. 24, 1971

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,813,185, R. V. Smith, HEATING DEVICES; 2,956,143, L. H. Schall, MICROWAVE OVENS; 3,182,164, R. Ironfield, ELECTROMAGNETIC ENERGY SEAL, filed Jan. 9, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c52, Raytheon Company v. Sanyo Denki, KK. et al. Stipulation, cause dismissed with prejudice as to said defendant, Mar. 25, 1971.

2,856,229, R. Adell, PROTECTIVE TRIM MOLDING FOR VEHICLE DOOR EDGES; 2,887,338, same, TRIM MOLDING FOR CURVED VEHICLE DOOR OUTER EDGES; D. 172,414, same, AUTOMOBILE, filed Aug. 22, 1967, D.C., E.D. Mich. (Detroit), Doc. 30272, Adell Manufacturing Inc., and Franklin Z. and Marvin M. Adell v. Victra Sales Corp. and Victra Corp. Final judgment and injunction by consent, May 14, 1971.

2,887,338. (See 2,856,229.)

2,890,027, J. J. Fischer, LIQUIDS-SOLIDS BLENDING MACHINE, filed Oct. 23, 1969, D.C.N.J. (Newark), Doc. 1241-69, The Patterson-Kelley Co., Inc. v. General Machine Company of New Jersey, Inc. Consent judgment for permanent injunction, July 12, 1971.

2,906,831, G. Hirsch, SPIT DRIVE UNITS, filed July 13, 1971, D.C., S.D.N.Y., Doc. 71-C-3119, Brevel Products Corp. v. Buddy L. Corporation.

2,925,719, Robbins and Linn, REFRIGERATING PACKAGE, filed July 7, 1971, D.C., E.D. Mo. (St. Louis), Doc. N71C32, Hospital Marketing Services Co., Inc. v. Kwik-Kold, Inc.

2,931,383, H. E. Handley, CURB BOX HAVING LOCATING MAGNET THEREIN, filed July 28, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71-C-396, Handley Industries, Inc. v. Ametek, Inc. and Revel L. Ivey.

2,945,666, Freeman and Vaudreuil, BALL VALVE, filed June 29, 1971, U.S. Ct. of Cl., Doc. 520-71, Jamesbury Corp. v. The United States of America.

2,950,775, R. E. Zwyer, EXHAUST NOISE REDUCING AND AIR DIFFUSING MEANS FOR PNEUMATIC MOTORS, filed Feb. 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c414, The Aero

Corp. v. Allied Witan Company and Norman Engineering Co. Cause transferred to U.S.D.C. of Northern Dist. of Ohio.

2,956,143. (See 2,813,185.)

2,959,555, Martin and Abel, COPPER AND IRON CONTAINING SCALE REMOVAL FROM FERROUS METAL, filed Oct. 26, 1961, D.C., E.D. La. (New Orleans), Doc. CA 11665, The Dow Chemical Company v. Chemical Cleaning, Inc. et al. Judgment, plaintiff recover from defendants, July 29, 1969.

2,974,426, N. C. McDonald, METHOD AND APPARATUS FOR MAKING IDENTIFICATIONS, filed July 19, 1971, D.C. Conn. (New Haven), Doc. 14534, Colt's Inc. v. Bangor Punta Operations, Inc.

3,004,298, R. N. Haynie, METHOD FOR MAKING FLUID SEALS, filed May 20, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1062, Federal-Mogul Corporation v. Chicago Rawhide Manufacturing Company. Judgment order, plaintiff owner of patent. Judgment on counterclaim entered for plaintiff with prejudice, patent valid and infringed; defendant perpetually enjoined, June 17, 1971.

3,095,309, Zebilsky, McCormack, Williamson and Scheble, ELECTROLESS COPPER PLATING, filed Apr. 21, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-971-EC, Kollmorgen Corporation v. Dynachem Corporation.

3,124,576. (See 3,197,466.)

3,129,927, A. D. Mast, MIXING APPARATUS FOR FLUENT MATERIAL, filed Apr. 14, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71-878, Feedmobile, Inc. v. Jacob F. Conrad, doing business as Eastern Mobile Mills.

3,161,223, W. G. Marsh, SHEET METAL BRAKE, filed Aug. 16, 1968, U.S. Ct. of App., 6th Cir., Ohio (Cincinnati), Doc. 20835, Tapco Products Company v. Van Mark Products Corp. and Eugene Van Cleave. In our opinion, claim 7 of the Marsh patent is valid and infringed by defendants. The judgment of the District Court is reversed and the cause is remanded for further proceedings consistent with this opinion, decided July 12, 1971.

3,173,911. (See 3,197,466.)

3,182,164. (See 2,813,185.)

3,197,466, Chow and Hoover, PENICILLIN SULFOXIDES AND PROCESS; 3,173,911, J. R. E. Hoover, PROCESS FOR THE PREPARATION OF PENICILLIN ESTERS; 3,124,576, R. Stedman, INTERMEDIATES FOR THE PREPARATION OF ANTIMICROBIAL AGENTS AND PROCESS FOR THEIR PREPARATION, filed June 14, 1971, D.C., E.D. Pa. (Philadelphia), Doc. CA-71-1452, Eli Lilly and Company v. Smith Kline & French Laboratories.

3,198,383, L. R. Brown, MARKING SPREADER, filed Oct. 23, 1968, D.C., E.D. Va. (Alexandria), Doc. 4937-A, Laurence R. Brown v. Montgomery Ward & Co. Judgment by consent, patent has been dedicated to the People of the United States on Mar. 10, 1971. Defendant has not infringed and complaint is dismissed with prejudice. Plaintiff permanently enjoined, Mar. 30, 1971.

3,262,378, L. K. Quick, LATENT HEAT REFRIGERATION DEFROSTING SYSTEM, filed Oct. 28, 1970, D.C. Del. (Wilmington), Doc. 4002, Hussman Refrigerator Co. and Pet Incorporated v. Hilman Coal & Coke Company and Melchoir, Armstrong, Dessau, Inc. Judgment on consent, patent valid and infringed, defendants enjoined, Apr. 19, 1971.

3,404,334, C. L. Marshall, COLOR TELEVISION TEST APPARATUS; 3,539,720, same, PORTABLE TEST APPARATUS FOR COLOR TELEVISION; D. 209,140, same, PORTABLE KINESCOPE JUG FOR TESTING TELEVISION TUBES, filed Mar. 15, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-283, Cecil L. Marshall v. Telematic-U.X.L. Corp. Order of dismissal, May 5, 1971.

3,453,939, Pollitz and Fairchild, BITUMINOUS PAVER; 3,262,389, Schrimper and Page, ADJUSTABLE STRIKE-OFF PLATE FOR FINISHING MACHINES, filed May 20, 1971, D.C., E.D. Ill. (East St. Louis), Doc. CV 71-86-D, Iowa Man-

OCTOBER 26, 1971

U. S. PATENT OFFICE

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ufacturing Company of Cedar Rapids, Iowa v. Blaw-Knox Company.

3,463,342, Bender, Fraser and Thompson, ADAPTER FOR CONTROLLED CLOSURE OF EVACUATED CONTAINERS; 3,474,543, Bender and Thompson, METHOD AND APPARATUS FOR SIMULTANEOUSLY FREEZE DRYING A PLURALITY OF BACTERIAL CULTURES, filed Oct. 28, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2683, Cenco Medical/Health Supply Corp. v. Thermovac Industries, Corp. et al. Consent order, patents in suit are valid and infringed. Defendants are enjoined, Apr. 16, 1971.

3,474,543. (See 3,463,342.)

3,499,072, Helling and Erickson, METHOD FOR FORMING CYLINDRICAL SLEEVES FOR THERMOPLASTIC RESIN SHEETS; 3,500,287, R. W. Helling, METHOD AND APPARATUS FOR PROTECTING INSULATED PIPE; Reg. No. 852,025 (COVERITE), Coverite, Inc., filed May 19, 1971, D.C. Colo. (Denver), Doc. C-3129, Coverite, Inc. v. Ceel-Tite, Inc. et al.

3,506,109, J. H. Hales, DRAPERY PLEATING AND FOLDING APPARATUS, filed May 17, 1971, D.C., N.D. Calif. (San Francisco), Doc. C-71-947, Perfect Pleat Products Company v. MBL Equipment Company.

3,506,947, T. F. Leskosek, MOUNTING FOR ELECTRICAL TERMINAL BLOCKS AND SOCKETS AND THE LIKE, filed July 7, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1652, Curtis Development & Mfg. Co. v. Reed Devices, Inc. et al. Consent judgment, complaint dismissed with prejudice and counterclaim dismissed, each of the parties are enjoined, Feb. 4, 1971.

3,531,724, G. H. Fathauer, SIGNAL-SEEKING RADIO RECEIVER, filed Mar. 24, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP71-C-161, Electra Corporation v. Regency Electronics, Inc.

3,539,720. (See 3,404,334.)

3,560,287. (See 3,499,072.)

3,561,181, S. H. Bassett, REPLICA WOODEN BEAMS, filed May 10, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71-1100, Paeco, Inc. v. Applied Moldings, Inc.

D. 172,414. (See 2,856,229.)

D. 204,933, R. E. Richter, WHEEL, filed Mar. 31, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-791-IH, Cragar Industries, Inc. v. Pyramid Enterprises, Inc. et al.

D. 209,140. (See 3,404,334.)

Reg. No. 852,025. (See 3,499,072.)

Certificates of Correction for the Week of Oct. 26, 1971

3,307,215	3,561,227	3,575,442	3,581,580
3,453,367	3,562,263	3,575,843	3,582,303
3,478,146	3,563,309	3,576,099	3,582,514
3,498,156	3,563,922	3,576,120	3,582,612
3,498,955	3,564,003	3,576,130	3,582,616
3,502,768	3,564,010	3,576,981	3,582,677
3,527,610	3,565,798	3,577,096	3,582,761
3,530,116	3,566,602	3,577,098	3,582,917
3,535,945	3,567,229	3,577,210	3,582,949
3,540,118	3,567,412	3,577,310	3,583,142
3,540,809	3,567,720	3,577,406	3,583,248
3,541,091	3,568,903	3,578,303	3,583,272
3,543,131	3,569,665	3,578,436	3,583,327
3,543,363	3,569,974	3,579,429	3,583,403
3,544,373	3,571,761	3,579,567	3,583,820
3,544,903	3,572,479	3,579,615	3,583,950
3,545,599	3,572,912	3,579,840	3,583,965
3,547,697	3,573,125	3,580,043	3,583,994
3,547,858	3,573,463	3,580,198	3,584,039
3,548,700	3,574,158	3,580,337	3,584,044
3,549,478	3,574,233	3,580,555	3,584,057
3,550,981	3,574,259	3,580,660	3,584,107
3,554,740	3,574,270	3,580,748	3,584,488
3,555,011	3,574,312	3,580,887	3,585,005
3,557,247	3,574,426	3,580,997	3,585,086
3,558,240	3,574,746	3,581,066	3,585,773
3,558,505	3,574,949	3,581,086	3,586,296
3,558,873	3,575,031	3,581,274	3,586,552
3,560,514	3,575,134	3,581,283	
3,561,975	3,575,334	3,581,451	

Disclaimers

3,431,050.—Charles S. Jenkins, Lexington, Ky. COMBINATION PAPER AND DEVELOPER SUPPLY. Patent dated Mar. 4, 1969. Disclaimer filed Apr. 23, 1971, by the assignee, International Business Machines Corporation.

Hereby enters this disclaimer to claims 1, 3 and 4 of said patent.

Disclaimer and Dedication

3,484,369.—Gilbert Desire De Dobbelaar, Leuven, Heverlee, Belgium. APPARATUS FOR HEMODIALYSIS OR ARTIFICIAL KIDNEY. Patent dated Dec. 16, 1969. Disclaimer and dedication filed Aug. 26, 1971, by the assignee, Baster Laboratories, Inc.

Hereby disclaims and dedicates to the Public the remaining term of all claims of said patent.

3,492,263.—Roland E. Kreibich, Harlan G. Freeman, and Gene F. Baster, Seattle, Wash., and Karl F. Kumli, Chico, Calif. METHOD OF PRODUCING A PHENOL-HCHO-RESORCINOL RESIN BY CONDENSING PHENOL AND HCHO IN THE PRESENCE OF A BIVALENT METAL ION AND THEN ADDING RESORCINOL AND A LIQUID HCHO HARDENER. Patent dated Jan. 27, 1970. Disclaimer filed July 29, 1971, by the assignee, Weyerhaeuser Company.

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,549,110.—Robert B. Cotton, Media, Pa. ENERGY ABSORBER. Patent dated Dec. 22, 1970. Disclaimer filed Aug. 18, 1971, by the assignee, All American Engineering Company.

Hereby enters this disclaimer to claims 1-6 of said patent.

3,583,178.—Allen Scott Caples, Baltimore, Md. MECHANICAL PRIMER. Patent dated Feb. 16, 1971. Disclaimer filed Aug. 2, 1971, by the assignee, Catalyst Research Corporation.

Hereby enters this disclaimer to claims 4 and 5 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 5, 1971

PATENT EXAMINING GROUPS

Actual
Filing Date
of Oldest
New Case
Awaiting
Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-01-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-20-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-14-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chem- ical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	10-07-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-04-70

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	1-28-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio- Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-10-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 260—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-21-70
PHYSICS, GROUP 280—R. L. EVANS, Director..... Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-03-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts; Household, Personal and Fine Arts.	10-02-70

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Recep- tacles and Packages.	7-13-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	7-06-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director..... Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lu- brication; Joint Packing.	10-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-10-70

Expiration of patents: The patents within the range of numbers indicated below expire during October 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 960, 70th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 86th Congress, approved August 23, 1964 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 161.

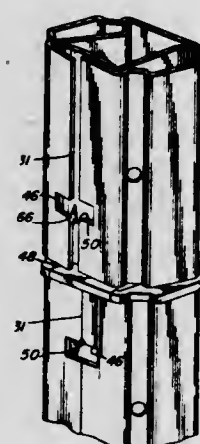
Patents..... Numbers 2,690,840 to 2,692,985, inclusive
Plant Patents..... Numbers 1,312 to 1,327, inclusive

REISSUES

OCTOBER 26, 1971

Matter enclosed in heavy brackets [] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,200
STEEL SHELVING
 Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to Hirsh Company
 Original No. 3,480,155, dated Nov. 25, 1969, Ser. No. 723,691, Apr. 24, 1968, which is a continuation-in-part of Ser. No. 691,545, Dec. 18, 1967. Application for reissue Jan. 19, 1970, Ser. No. 3,250
 Int. Cl. A47f 5/00
 U.S. Cl. 211—148

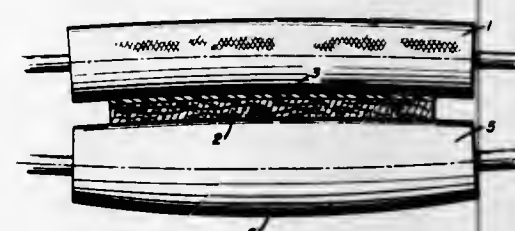


Light weight steel shelving in which short sections of corner posts are snap assembled by the customer in end-to-end relationship and held in alignment and against separation by a connector with a molded pad cammed into place between the ends in weight bearing relationship. The connection accommodates various shaped posts and comprises an elongated generally U-shaped spring element bridging the joined ends and is provided with camming shouldered spring actuated detents which, upon insertion and advancement into the ends of post sections, spring inwardly of the walls of the post sections until the shouldered detents snap into shouldered apertures in the post walls in interlocking relationship therewith against rectilinear separation. A single post assembly can be disassembled individually either by slight relative rotation without damage to the posts but when assembled as a corner post in shelving is held against relative twisting and performs as an integral member or, tiered shelving can be separated as units by spring detents engaging in either of the two abutting post sections present at each corner of the shelving. Provision is also made with the connector for decor panels posts and nested leveling pads on the bottom of the posts for stabilizing the shelving.

27,201
APPARATUS AND PROCESS FOR PRODUCING AN EMBOSSED PLASTIC LAMINATE
 Emanuel Mittman, Forest Hills, N.Y., assignor to W. R. Grace & Co., New York, N.Y.
 Original No. 3,483,057, dated Dec. 9, 1969, Ser. No. 693,774, Dec. 27, 1967, which is a continuation-in-part of Ser. No. 354,797, Mar. 25, 1964. Application for reissue Apr. 23, 1970, Ser. No. 31,396
 Int. Cl. B31f 1/10
 U.S. Cl. 156—209

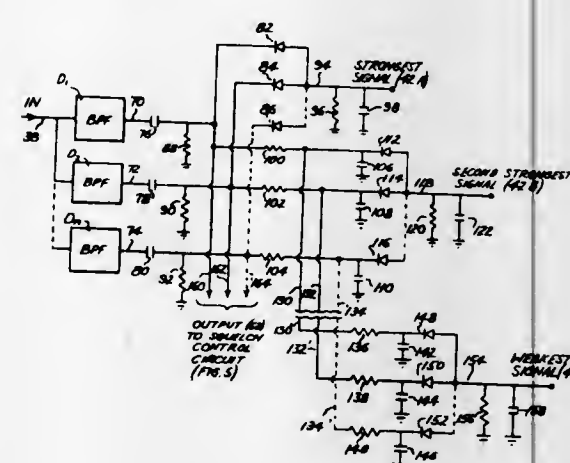
An apparatus and process for forming a uniform embossed laminate. A uniform pattern is applied to the plastic lamina of a laminate by utilizing a curvilinear crown

on the roll to compensate for the deflection of the embossing and backup rolls. The laminating process includes the steps of embossing a uniform pattern into the outer surface of a film of thermoplastic polymeric material adhered



to a hard plate-like substrate by means of the embossing roll and a backup roll while the film is at an embossing temperature. After embossing, the film is rapidly cooled to set the embossed pattern.

27,202
SIGNAL SELECTION AND SQUELCH CONTROL IN WIDEBAND RADIO RECEIVERS
 Leonard R. Kahn, Freeport, N.Y., assignor to Electrospac Corporation
 Original No. 3,337,808, dated Aug. 22, 1967, Ser. No. 336,263, Jan. 7, 1964. Application for reissue July 22, 1969, Ser. No. 862,982
 Int. Cl. H04b 1/10; H04l 27/14
 U.S. Cl. 325—474



Improvement in communications receivers of the type having an intermediate frequency passband substantially wider than the bandwidth of the received signal, such improvement involving gating means comparing the energies in frequency related segments of the receiver passband, and passing as receiver output only such segments as have a different energy level (caused by signal presence) than the energy levels in other of the segments (caused by noise energy). Such gating means can also be employed for squelch control, with the receiver rendered sensitive when the energy levels in the passband segments are substantially different (i.e. signal energy is present) and squelched when the energy levels in the segments are substantially the same (i.e. only noise energy is present).

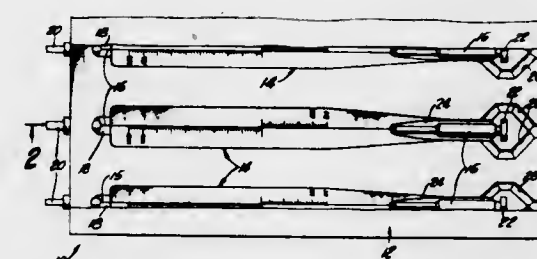
OCTOBER 26, 1971

U. S. PATENT OFFICE

1337

27,203
INEXPENSIVE CLINICAL THERMOMETER
 Lee Le Beau, Venice, Calif., assignor to K & L Associates, Ltd., St. Clair Shores, Mich.
 Original No. 3,350,490, dated Oct. 31, 1967, Ser. No. 426,721, Jan. 21, 1965. Application for reissue Oct. 29, 1969, Ser. No. 871,504
 Int. Cl. B29b 5/04; G01k 5/22
 U.S. Cl. 264—275

16 Claims



1. That method of making an inexpensive throw-away clinical thermometer which comprises supporting the opposite ends of a tensioned small diameter flexible core forming wire assembly of uniform diameter throughout the major portion thereof and having an enlargement near one end generally centrally of a mold cavity, closing the mold parts, charging said mold cavity with transparent thermoplastic material, opening the mold and separating said core assembly endwise from the molded part from the larger diameter end of said core assembly, charging said bore from end-to-end with colored liquid having a high coefficient of expansion, and sealing said bore.

27,204
DIFFERENTIAL HYDRAULIC CYLINDER MECHANISM
 Robert B. McCreery, P.O. Box 157, Xenia, Ohio 45385
 Original No. 3,181,436, dated May 4, 1965, Ser. No. 165,761, Jan. 12, 1962. Application for reissue May 1, 1967, Ser. No. 641,060
 Int. Cl. F01b 15/02
 U.S. Cl. 92—117

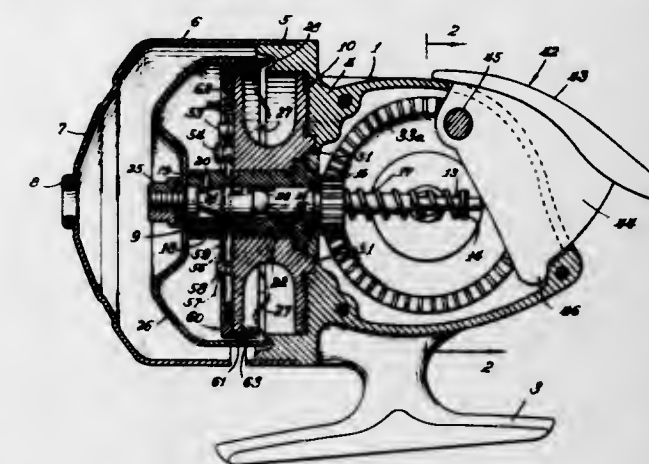
14 Claims



A stationary piston rod forming a load supporting column slidably and rotatably mounts a cylinder assembly to enclose fluid pressure chambers on opposite sides of a piston. Fluid under pressure is supplied to the pressure chambers through conduits extending through the piston rod in order to elevate or lower the cylinder assembly supporting a load.

27,205
REMOVABLE LINE SHIELD FOR SPINNING REEL SPOOLS
 Clifford E. Willis, Fayetteville, Ark., and Gerald D. Harrington, Kalamazoo, Mich., assignors to Shakespeare of Arkansas, Inc., Fayetteville, Ark.
 Original No. 3,329,371, dated July 4, 1967, Ser. No. 349,568, Mar. 5, 1964. Application for reissue Dec. 9, 1968, Ser. No. 796,936
 Int. Cl. A01k 89/04
 U.S. Cl. 242—84.2 R

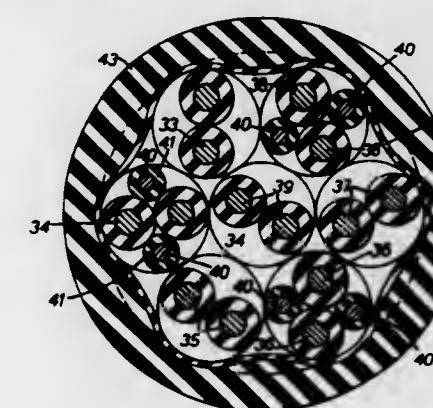
12 Claims



A spinning reel comprises a housing, an axially movable shaft rotatably mounted in the housing, means for rotating the shaft, line pick-up means affixed to the shaft, means for providing forward axial movement of the shaft, a normally stationary line spool coaxially mounted on the shaft, and an annular spool flange detachably mounted on the periphery of the front wall of the spool. The annular spool flange comprises an axial wall positioned over the edge of the front wall of the spool and which extends rearwardly of the front wall. A line drawn axially from the spool rides on the flange when the line pick-up means is disengaged.

27,206
WIRED BROADCASTING SYSTEMS AND COMMUNICATION CABLES THEREFOR
 Ralph P. Gabriel, Chobham, and Rupert I. Kinross, Shepperton, England, assignors to Communications Patents Limited
 Original No. 3,350,647, dated Oct. 31, 1967, Ser. No. 317,608, Oct. 21, 1963. Application for reissue Oct. 22, 1969, Ser. No. 870,440
 Int. Cl. H01b 11/08; H04b 3/34; H04n 7/10
 U.S. Cl. 325—308

6 Claims



A wired broadcasting system comprising transmitting means for transmitting a plurality of high frequency signals corresponding to different television picture programs and a plurality of audio frequency signals corresponding to different sound programs, a plurality of subscriber receiver means for receiving the television picture signals and the audio frequency signals transmitted by the transmitting means and a signal distributing network connecting said transmitting means with each of said subscriber receiver means for transmitting the signals transmitted by said transmitting means to each of said subscriber receiver

means, said signal distributing network including a signal transmitting cable comprising a central core element consisting of a region devoid of high frequency transmission conductors, a plurality of pairs of high frequency conductors being positioned around said central core in a manner whereby the outer surface of each of said pairs of high frequency conductors contacts the adjacent pair of high frequency conductors and the central core element and wherein the high frequency conductors are mechanically and electrically symmetrically placed about said central core to give mechanical rigidity and low cross talk with a maximized number of high frequency cables dispersed about said central core for a given overall cable size.

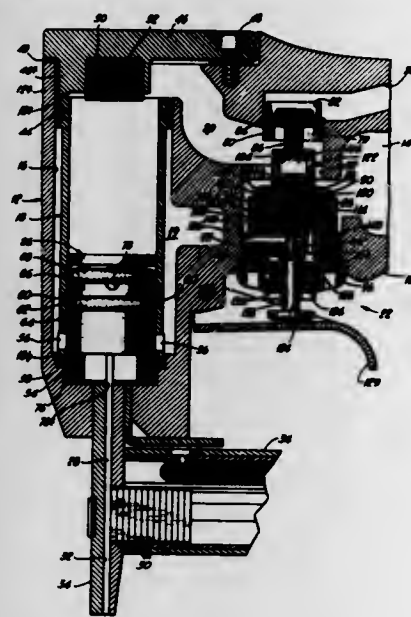
27,207

FASTENER DRIVING TOOL

Howard B. Ramspeck, Chicago, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Original No. 3,353,453, dated Nov. 21, 1967, Ser. No. 457,767, May 21, 1965. Application for reissue Oct. 31, 1969, Ser. No. 871,500

Int. Cl. F15b 11/15, 13/042, 15/22
U.S. Cl. 91—356

24 Claims



A control valve on a pneumatic stapler is effective to drive the power piston mounted in the power cylinder

through its drive stroke and automatically and sequentially through a return stroke whether or not the trigger has been released. This is accomplished by providing two valve members operatively interrelated with a delay mechanism or lost motion-dashpot connection therebetween to control the return of the piston upon completion of its drive stroke.

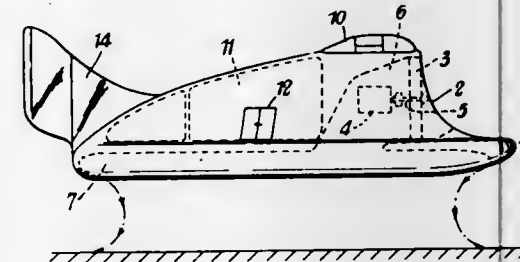
27,208

VEHICLES FOR TRAVELLING OVER LAND AND/OR WATER

Christopher Sydney Cockerell, Southampton, England, assignor to Hovercraft Development Limited
Original No. 3,363,716, dated Jan. 16, 1968, Ser. No. 627,925, Dec. 12, 1956. Application for reissue Jan. 5, 1970, Ser. No. 599
Claims priority, application Great Britain, Dec. 12, 1955, 35,656/55

Int. Cl. B60v 1/02, 1/12
U.S. Cl. 180—122

32 Claims



A vehicle capable of hovering or travelling over and in close proximity to a surface at a height which is small in relation to the size of the vehicle, and a method of supporting such a vehicle, wherein a curtain of moving fluid travels across the gap existing between said surface and the body of the vehicle and, in combination with the vehicle body and said surface, at least partially encloses a gas-containing space between the underside of the vehicle and said surface, a cushion of gas being produced in said space having a pressure sufficient, in relation to the area of the underside of the vehicle on which said pressure acts, to support the major part of the weight of the vehicle.

PATENTS

GRANTED OCTOBER 26, 1971

GENERAL AND MECHANICAL

3,614,788

PRE-SHAPED BREAK POINT CONVOLUTE FOR A PRESSURIZED SUIT

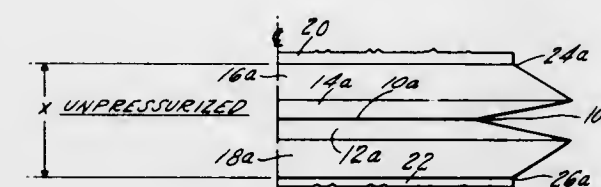
Douglas E. Getchell, Windsor Locks, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 20, 1968, Ser. No. 785,603

Int. Cl. A62b 17/00

U.S. Cl. 2—2.1

1 Claim U.S. Cl. 4—1



A two-convolute system includes a central root which has a much smaller natural diameter than the two outer roots, so that when the convolute is pressurized, it still maintains a well defined break point. Patterns for the convolute sections are disclosed.

3,614,789

TAILORING CUT FOR GARMENT SLEEVES, WITH ASSEMBLY OF THE CORRESPONDING ELEMENTS

Georges Menut, Le Mazet-Saint-Voy (Haute-Loire), France

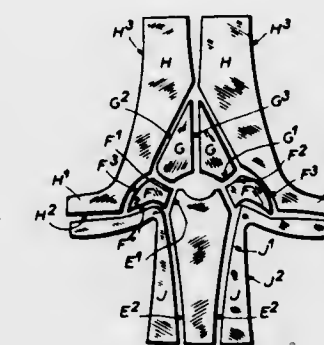
Filed Apr. 10, 1969, Ser. No. 814,965

Claims priority, application France, Apr. 16, 1968, 93/68; Mar. 24, 1969, 6907779

Int. Cl. A41d 1/00

U.S. Cl. 2—93

6 Claims



A garment comprising a plurality of sections interconnected with one another includes sections which are specifically shaped to correspond to the contour of various muscles in the arm of the human body, so that when the arm is raised the garment portion at the waist does not ride upwardly.

3,614,790

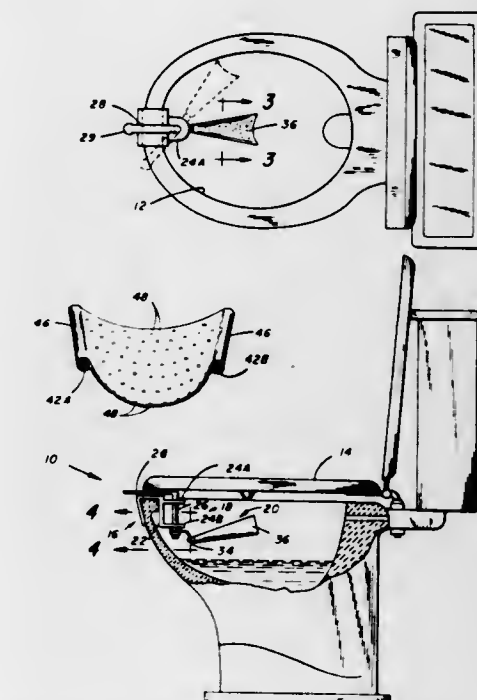
ANTI-NOISE APPARATUS FOR A COMMODE BOWL

Max L. Billingsly, 2807 E. 45th St. N., and John W. Weirick, 6132 S. Zunis, both of Tulsa, Okla. 74105

Filed May 28, 1969, Ser. No. 828,520

Int. Cl. A47k 17/00

2 Claims



In an attachment for a commode bowl, an arcuate channel receives urine and noiselessly conducts it into the basin of water located in the bottom of said commode bowl.

3,614,791

COLLAPSIBLE BATHTUB AND WASH-BASIN ASSEMBLY

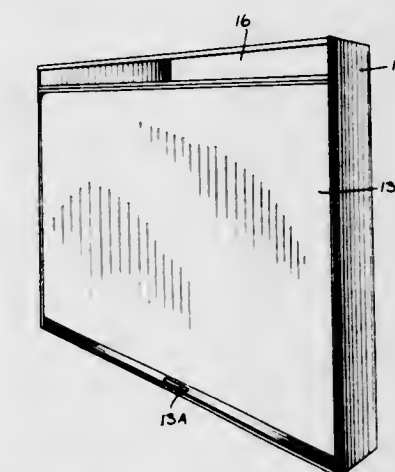
Babette B. Newburger, 180 E. 79th St., New York, N.Y. 10021

Filed May 15, 1970, Ser. No. 37,719

Int. Cl. A47k 4/00

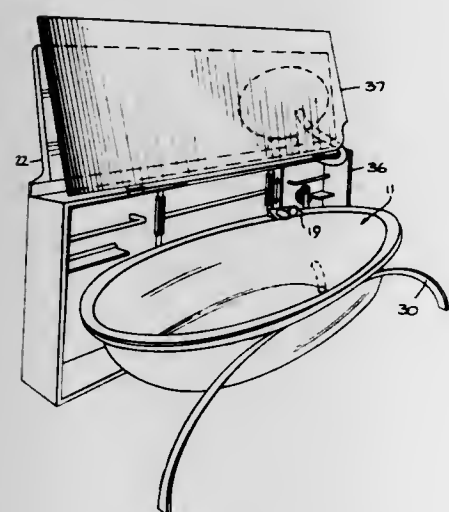
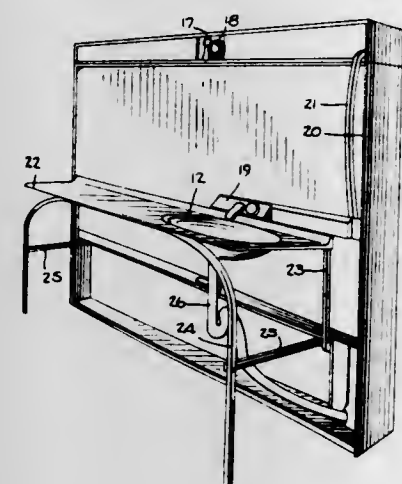
U.S. Cl. 4—4

12 Claims



A collapsible bathtub and wash-basin assembly which is retractable within a storage cabinet. The cabinet is pro-

vided with a lower compartment occupied by the wash-basin, an intermediate compartment occupied by the bathtub, and an upper compartment housing a traveling water console. When either the wash-basin or the bathtub, both



of which are formed of flexible plastic material, is withdrawn from its compartment and erected, the console, which rides on a vertical track, may be pulled down to supply water into the operative fixture.

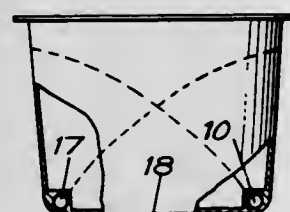
3,614,792
BATHS

Stanley Leslie Sierant, Marlands, Cross Road, Keighley, England

Filed June 14, 1968, Ser. No. 737,172
Claims priority, application Great Britain, June 17, 1967, 28,022/67; Aug. 11, 1967, 36,958/67; Mar. 20, 1968, 13,416/68

U.S. Cl. 4-150 Int. Cl. A47k 3/022

4 Claims



A bathtub having water introducing hollow perforated means extending along the lower part of the tub adjacent the intersection of the bottom and side walls of the tub, the hollow perforated means directing a plurality of jets

of water upwardly and inwardly into the tub. A headrest is provided at one end of the tub adjacent the bottom thereof.

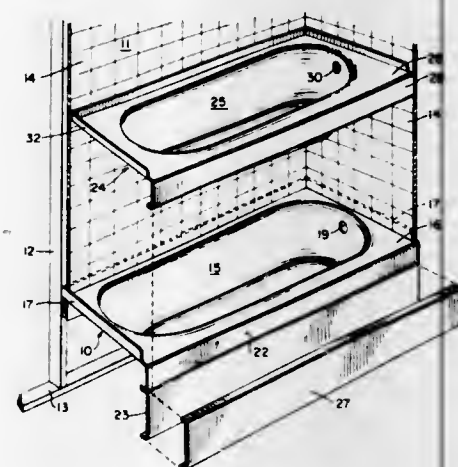
3,614,793
BATHTUB RENOVATING APPARATUS
AND METHOD

Alfred Nemiroff, New York, N.Y., assignor to The P. I. Nemiroff Corporation, New York, N.Y.
Filed Sept. 4, 1968, Ser. No. 759,261

U.S. Cl. 4-173

Int. Cl. A47k 3/00

12 Claims



The present invention includes a method and apparatus for renovating existing bathtubs. A bathtub liner assembly including tub and ledge portions is inserted into and supported by the existing bathtub, said liner assembly covering and obscuring the existing bathtub from sight. Waste and overflow connections are made between the liner assembly and an existing plumbing system to which the existing bathtub was previously connected.

3,614,794
PORTABLE SLEEPER UNIT

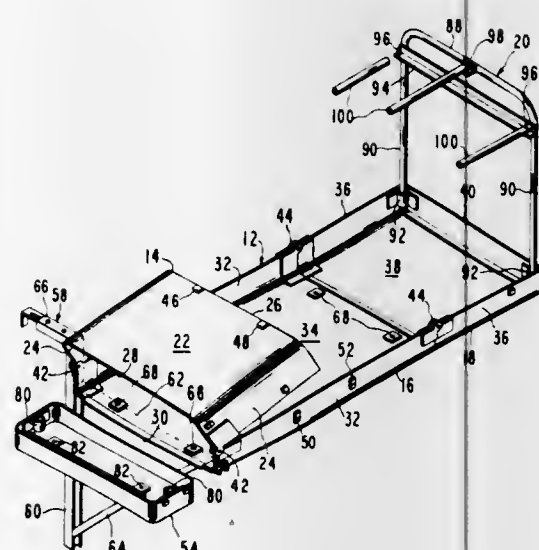
Alfred H. Rodgers, 1051 E. Homestead Road, Sunnyvale, Calif. 94087

Filed Apr. 18, 1969, Ser. No. 817,318

U.S. Cl. 5-119

Int. Cl. A47k 11/02

12 Claims



A portable sleeper unit adapted for use by campers and others wherein the unit is comprised of a collapsible body permitting the unit to be expanded to form a bed-like

support and to be collapsed to form a suitcase-like container. The unit can be coupled with brackets for mounting the same on the side of a vehicle or other support or can be used with support legs for positioning the unit above ground.

3,614,795

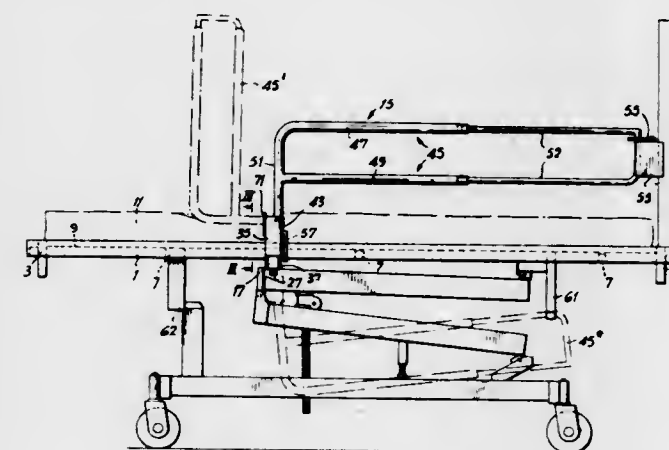
SAFETY SIDES FOR BEDS

Kenneth Malcolm Agnew, London, England, assignor to National Research Development Corporation, London, England

Filed Aug. 26, 1969, Ser. No. 853,011
Claims priority, application Great Britain, Aug. 29, 1968, 41,363/68

Int. Cl. A47c 21/00; A47d 7/02; A47f 5/00
U.S. Cl. 5-331

8 Claims



A safety side for a bed, including a clamp for engagement with a longitudinal member of the bed, an arm pivotally connected to the clamp, and a fence structure pivotally connected to the arm. The fence may pivot relative to the arm between a position in which it prevents a person falling out of bed and a position in which it extends generally perpendicular to the mattress so that it may constitute a hand-hold for a person on the bed as the bed is raised from a horizontal to a vertical position. The fence and arm may pivot relative to the clamp from the position in which the fence prevents a person falling out of bed to a position in which it is beneath the bed and out of the way for bed making. Safety sides are provided at both sides of a bed and the clamps of the two safety sides are rigidly interconnected.

3,614,796

METHOD AND APPARATUS FOR TREATING
TEXTILE MATERIALS

Yoshiyuki Tanaka and Hiroshi Fujita, Kyoto, Japan, assignors to Tanaka Iron Works Co., Ltd., Kyoto, and C. Itoh & Co., Ltd., Osaka, Japan

Filed Oct. 20, 1969, Ser. No. 867,682
Claims priority, application Japan, Oct. 21, 1968, 43/76,091

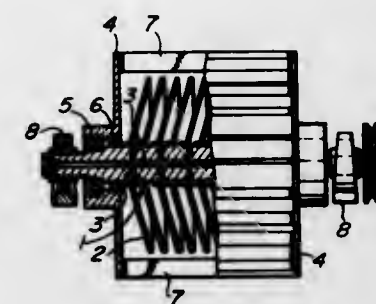
U.S. Cl. 8-151 Int. Cl. B05b 3/02; B05c 8/04

8 Claims

A method of treating textile materials with a liquid. A treating liquid is ejected through holes bored through the wall of a rotary hollow shaft, splashed by radial blades mounted on and rotating with the rotary hollow shaft under the influence of centrifugal force and divided into fine particles by conflict members which are arranged surrounding the outer peripheral edges of the blades and against which the splashing treating liquid impinges. The thus finely divided particles of the treating liquid hit and penetrate the textile material engaged around the outer edges of the conflict members, whereby the textile materials are treated with the liquid.

An apparatus for practicing the method of treating textile materials with a liquid. A large number of equally

spaced radial blades are mounted on a rotary shaft having a number of holes bored through the wall thereof. A pair of opposed side plates are rotatably mounted on the opposite ends of the rotary hollow shaft and a large



number of conflict members are provided extending across the outer peripheral edges of the side plates in suitably spaced relation so as to surround the outer peripheral edges of the blades with a suitable space therebetween, for carrying the textile material thereon.

3,614,797

METHOD FOR CLEANING AND PARTIALLY
DRYING CARPETS

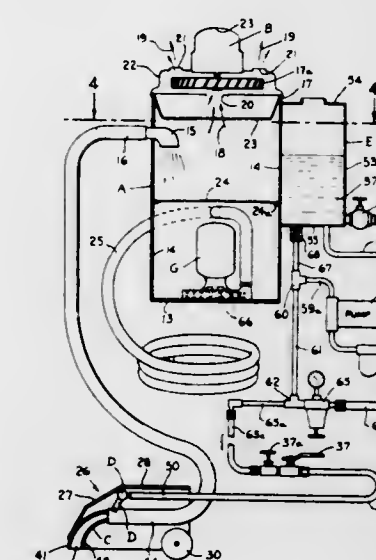
Judson O. Jones, 17 Inglewood Drive, Greenville, S.C. 29609

Original application Apr. 24, 1969, Ser. No. 818,876, now Patent No. 3,496,592, dated Feb. 24, 1970. Divided and this application Dec. 12, 1969, Ser. No. 889,813

Int. Cl. A47i 7/00

U.S. Cl. 8-158

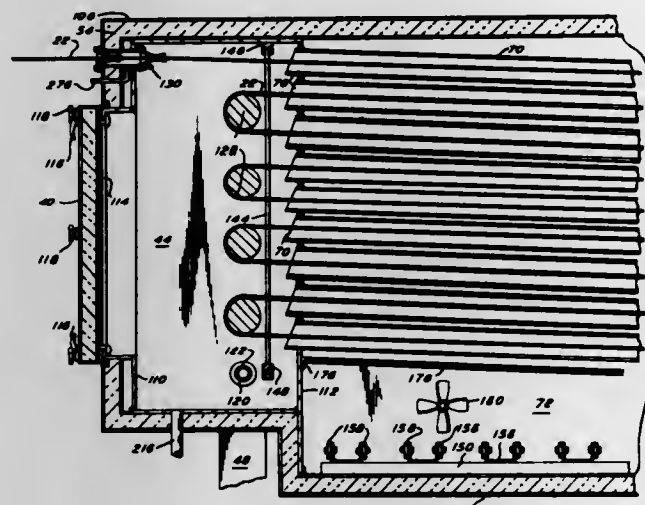
1 Claim



A unitary and portable apparatus for cleaning and partially drying carpets having a cleaning head including a sprayer positioned ahead of a suction nozzle for spraying a cleaning medium on a carpet closely adjacent the nozzle as the head is moved across the carpet. The suction nozzle draws the used cleaning solution and foreign matter from the carpet. The used cleaning solution and foreign matter are deposited in a suction tank provided with a high velocity centrifugal blower which evacuates air therefrom, creating circulation of a large volume of air through the nozzle and tank. A centrifugal pump continuously removes the spent solution and foreign matter from the suction tank. A liquid cleaner is continuously injected in a pressurized source of hot water connected to the nozzles on the cleaning head for supplying a continuous flow of cleaning medium thereto.

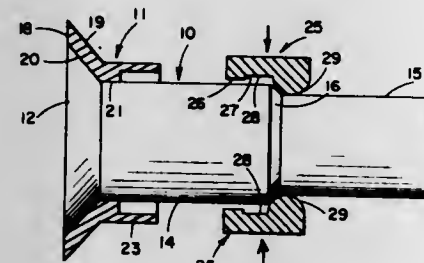
3,614,798
SUPERATMOSPHERIC PRESSURED STEAM
SETTING OF DYE ON WEB IN A TUBE
 Jacob Serbin, Cedarbrook Hill Apt.,
 Wyncote, Pa. 19095
 Original application June 19, 1964, Ser. No. 380,740.
 Divided and this application May 28, 1968, Ser.
 No. 732,618.

Int. Cl. D06p 5/00
 U.S. Cl. 8—166 13 Claims



A method of setting dye on a dyed web of fabric comprising passing the web under tension through an atmosphere of live steam at superatmospheric pressure until said dye is set.

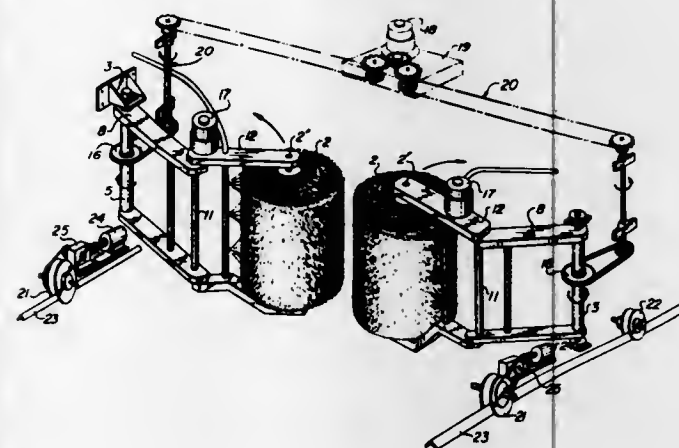
3,614,799
METHOD OF PRODUCING A SHEAR RESISTANT
CAPTIVE SCREW
 Bulent Gulistan, Malibu, Calif., assignor to Deutsch
 Fastener Corp., Los Angeles, Calif.
 Filed July 14, 1969, Ser. No. 841,325
 Int. Cl. B23p 19/08; B21h 3/02; B23g 9/00
 U.S. Cl. 10—155 14 Claims



A captive screw including a sleeve having a bore substantially complementarily receiving a relatively large diameter portion of the shank of a screw inwardly of the screw head, with an annular enlargement on the shank, of greater diameter than the bore, being located at the end of this shank portion and retaining the screw to the sleeve. Beyond the annular enlargement, the shank is provided with an annular groove and rolled threads on its outer end. The sleeve includes a head at one end and an enlarged bore portion at the opposite end providing a relatively thin wall adapted to be bent outwardly to secure the sleeve to a workpiece. The fastener is produced by first providing a screw blank having a head and portions of two diameters, the larger diameter portion being extended through the sleeve, following which dies are engaged with the blank at the juncture of the smaller and larger diameter portions, producing an annular groove

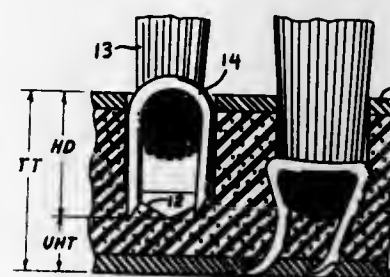
and displacing material outwardly into recesses in the dies where the annular enlargement is shaped. A bulge on the smaller diameter portion of the shank also is created when the groove is formed, which then is ground off, after which threads are rolled on the end portion of the shank.

3,614,800
CAR BODY WASHING APPARATUS
 Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi
 Tekko Kabushiki Kaisha, Nagoya, Japan
 Filed Apr. 3, 1969, Ser. No. 813,077
 Claims priority, application Japan, Feb. 26, 1969,
 44/13,938
 Int. Cl. B60s 3/06
 U.S. Cl. 15—21 E 1 Claim



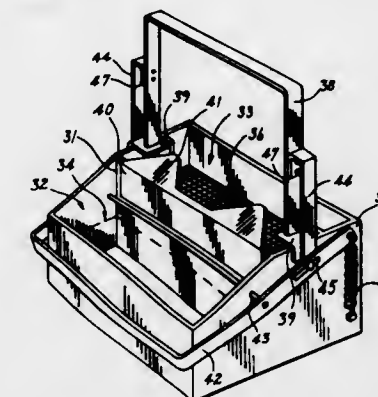
An apparatus for washing a car body comprising a movable or fixed frame on which a pair of vertically disposed rotatable brushes are mounted by means of support mechanisms which are foldable to move the brushes in the lateral directions so that the brushes can be used to wash the front and rear surfaces of the car body as well as the side surfaces thereof.

3,614,801
ROTARY TUBULAR BRUSH
 Ralph C. Peabody, Minneapolis, Minn., assignor to
 Tennant Company
 Filed Apr. 22, 1970, Ser. No. 30,685
 Int. Cl. A46b 13/02
 U.S. Cl. 15—179 15 Claims



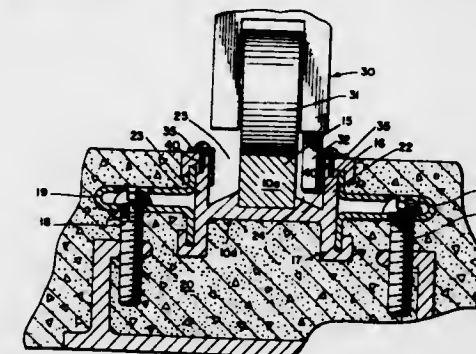
A tubular brush having a tube made of a foamed plastic material that has outer and inner skins of substantial thicknesses and a central foam layer, a plurality of tuft holes extending through the outer skin and at least substantially through the central layer and tufts secured in the holes by staples extending at least a substantial distance into the inner skin. The inner and outer skins are of the same material as the central layer, although the density thereof is substantially greater than that of the central layer. Also disclosed are tubular brushes having interlocking portions and brush tubes having split tubular sections joined together to form a tube.

3,614,802
UTILITY CONTAINER
 George E. Seufert and Janet H. Seufert, both of 140 S.
 Depew, Lakewood, Colo. 80215
 Filed Apr. 10, 1969, Ser. No. 815,031
 Int. Cl. A47l 13/14, 13/58
 U.S. Cl. 15—260 3 Claims



A utility container includes a plurality of compartments for containing liquid agents, such as wash and rinse solutions. One or more of the compartments is provided with a foraminous platform which may be raised or lowered with respect to liquid contained in the related compartment for use in squeezing or pressing a sponge-like applicator, or tool.

3,614,803
DOOR TRACK
 Thomas E. Matthews, Niles, Mich., assignor to American
 Metal Climax, Inc., New York, N.Y.
 Filed Apr. 7, 1969, Ser. No. 813,824
 Int. Cl. A47h 33/00
 U.S. Cl. 16—94 4 Claims

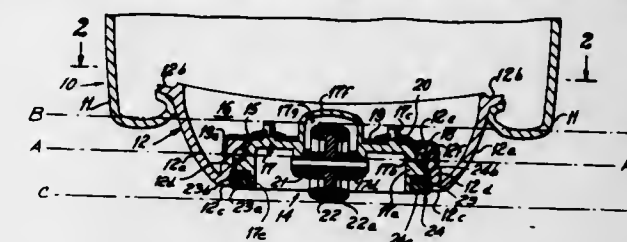


A track is provided for a sliding wall panel and the like including a base member supporting a rail and having a flange defining a guide groove with the rail for receiving a guide extension of the panel. A hardened insert strip is provided along the inner surface of the flanges facing the respective rail to define a bearing surface for the guide projection.

3,614,804
COMBINED SKID AND CASTER SUPPORTING
MEANS FOR MOBILE HOUSEHOLD APPLIANCES
 Karl Gustav Grellsson, Sollentuna, Sweden, assignor to
 Aktiebolaget Electrolux, Stockholm, Sweden
 Filed Sept. 11, 1968, Ser. No. 759,129
 Claims priority, application Sweden, July 25, 1968,
 10,116/68
 Int. Cl. B60b 33/00 4 Claims

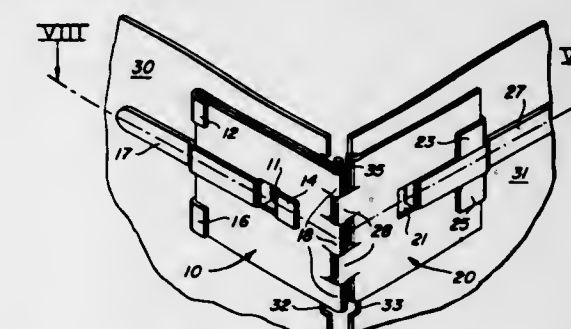
This invention relates to a movable household appliance, such as a suction cleaner, for example, the casing of which at its bottom has an exterior surface serving as a skid when the appliance is moved over a supporting surface like a deep pile rug, for example. A caster is employed to promote movement of the appliance over a supporting surface like a short pile rug or floor, for example. The caster has a horizontally disposed member

and a wheel mounted thereon for rotation about a horizontal axis. The member in turn is journaled in the skid for rotation about a vertical axis perpendicular to the horizontal axis. Such journaling is effected by an annular bearing having cooperating races and antifriction elements, such as ball bearings, therebetween. The skid



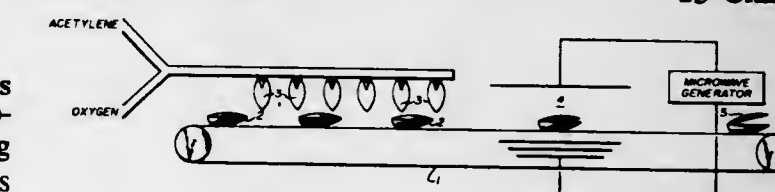
and rotatable member have a ring-shaped gap therebetween which is adjacent to the bearing and open at the bottom. In order to protect the bearing from dust and dirt ring-shaped packing is carried by the rotatable member. The packing is disposed in the gap for sealing the cooperating races and antifriction bearing elements therebetween.

3,614,805
HINGE FASTENER
 Dealtry E. Barker, 1826 11th Ave. SW.,
 Calgary, Alberta, Canada
 Filed June 6, 1968, Ser. No. 735,035
 Claims priority, application Canada, June 8, 1967,
 992,541
 Int. Cl. E05d 9/00 9 Claims



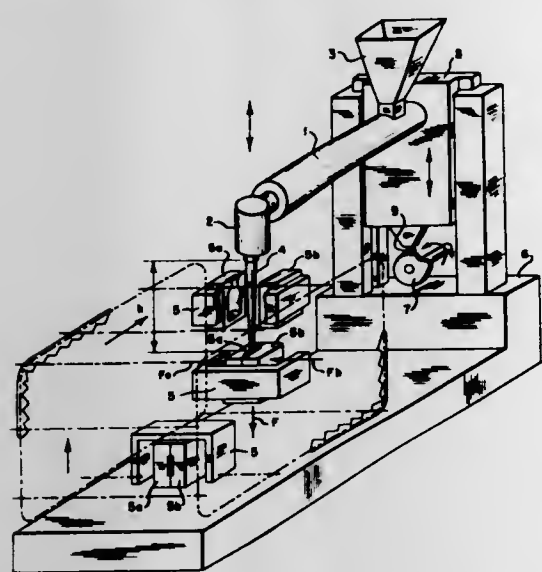
A hinge for use with planar sheets, wherein each hinge element is formed from a single piece of flat sheet material and comprises a body, a pintle receiving member disposed along one edge of the body, and a flexible permanently deformable locking tongue projecting from the opposite edge of the body. The locking tongue is adapted to be passed through the planar sheet on which the hinge is to be mounted, bent back to overlie the body, passed through the planar sheet and an aligned aperture in the body and again bent back reversely to overlie the body whereby to securely lock the hinge element to the planar sheet.

3,614,806
METHOD FOR SHUCKING SHELLFISH
 Michael T. Henry, Roseland, N.J., assignor to
 Interchemical Corporation, New York, N.Y.
 Filed Feb. 18, 1969, Ser. No. 800,194
 Int. Cl. A22c 29/00 13 Claims



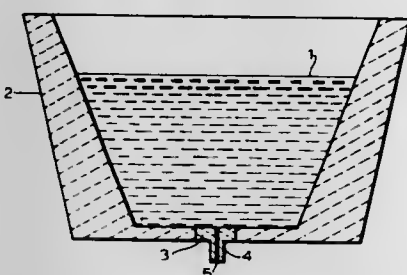
A method for shucking shellfish, particularly oysters, by exposing them to microwaves and oxy-acetylene heat for a period of time sufficient to open the shellfish and detach it from the shell.

3,614,807
APPARATUS FOR FORMING HOLLOW BODIES
 Serge Lagoutte, Chalon-sur-Saone, France, assignor to
 Societe d'Etudes Verrieres Appliquees, Neuilly-sur-
 Seine, Hauts-de-Seine, France
 Filed June 13, 1969, Ser. No. 832,916
 Claims priority, application France, June 17, 1968,
 155,192
 Int. Cl. B29c 17/07
 U.S. Cl. 18—5 BE



Hollow bodies such as bottles are blow molded from tubular plastic material produced along an axis defined in an extruder therefor by means of molds carried through a closed path, part of which coincides with that axis. As each mold is carried to the position where it intersects the axis of the extruder, it closes on a section of the plastic material to permit blowing thereof to the shape defined by the mold, and the mold moreover continues to move along that axis, pulling on the material between it and the extruder. In order to impart to the section of extruded material between that mold and the extruder (which section will be seized by the next mold) a desired variation in wall thickness, a supplementary cyclical relative motion is imparted to the extruder and to the mold pulling on the extruded material, for example by means of a cam which shifts the extruder along the extrusion axis with respect to the apparatus which carries the molds.

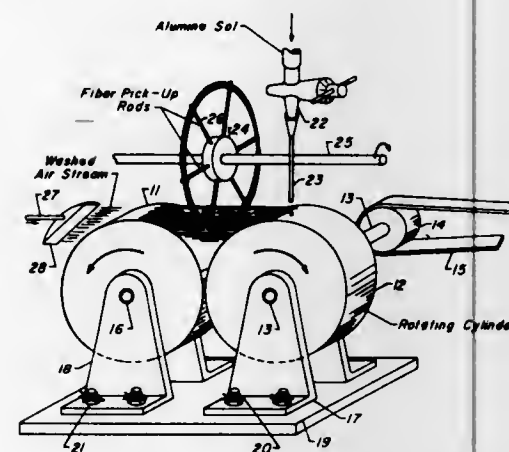
3,614,808
APPARATUS FOR SPINNING LOW VISCOSITY MATERIALS
 Douglas P. Harrison, Durham, and Robert E. Cunningham, Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.
 Filed Nov. 6, 1968, Ser. No. 773,834
 Int. Cl. D01d 5/00
 U.S. Cl. 18—8 SS



Apparatus is provided for spinning fine filaments from low viscosity molten materials, e.g., metal or metal oxides. The apparatus comprises a crucible containing molten material having an orifice therethrough and an elongated tubular extension positioned to extend from the orifice down away from the bottom of the crucible. The radius and length of the elongated member are dependent on the orifice radius, the melt density and surface tension of the

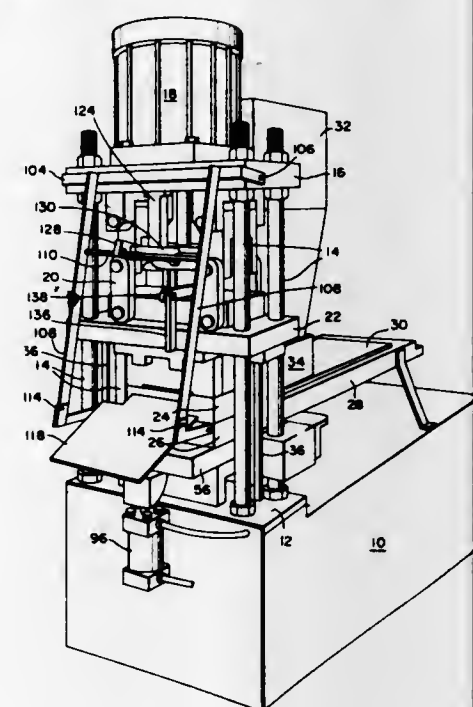
molten material and on the extrusion velocity. The tubular extension serves to overcome the problem of wetting which otherwise results in the formation of drops of material. The use of the tubular extension results in free-jet extrusion of the low viscosity material.

3,614,809
MEANS FOR PRODUCING HIGH SURFACE AREA FIBERS
 John C. Hayes, Palatine, and Jay E. Sobel, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
 Filed Dec. 27, 1968, Ser. No. 787,358
 Int. Cl. D01d 1/00
 U.S. Cl. 18—8



Means for continuously producing small diameter fibers of an inorganic oxide material, such as alumina, by feeding a viscous sol of the material onto the surface of at least one of a set of "drawing" surfaces and then causing the meeting and withdrawal of such surfaces to effect the formation of filaments of semi-set sol. The resulting filaments of fibers are preferably continuously collected from between the "drawing" surfaces by mechanically moving rod means that are positioned to pass between such surfaces.

3,614,810
MOLDING PRESS
 Jacob Schmier, Allentown, Pa., assignor to Rodale Manufacturing Company, Inc., Emmaus, Pa.
 Filed Feb. 25, 1969, Ser. No. 806,776
 Int. Cl. B30b 15/32
 U.S. Cl. 18—16 F



A molding press is provided with a stationary mold section and a movable mold section. The movable sec-

4 Claims

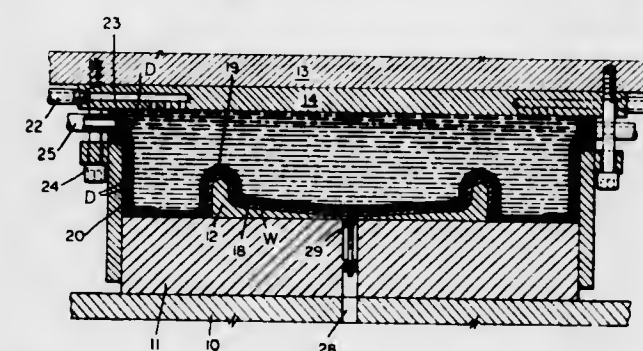
6 Claims

1 Claim

3 Claims

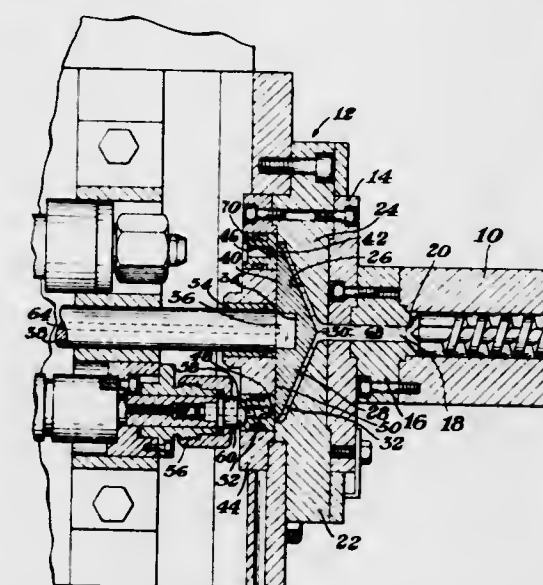
tion carries mechanism operative when the mold is opened for ejecting a workpiece from the mold. Additional mechanism is arranged for projection into the mold cavity for forming a recess in the side of the workpiece and for being withdrawn from the mold cavity in time to permit ejection of the workpiece from the mold cavity. Latch mechanism, operable in response to opening and closing of the mold, is provided for suitably controlling means which receives work ejected from the mold and discharges it from the press.

3,614,811
DIAPHRAGM-TYPE FORM-SHAPING APPARATUS
 Herbert G. Johnson, Havertown, Pa., assignor to Shell Oil Company, New York, N.Y.
 Continuation-in-part of application Ser. No. 815,127, Apr. 10, 1969. This application Aug. 13, 1969, Ser. No. 849,699
 Int. Cl. B29c 17/04
 U.S. Cl. 18—19 F



This application discloses diaphragm-type apparatus and method for form-shaping material, especially plastic sheet material in dies. The apparatus comprises elastomeric diaphragm means which is forced by pressure fluid against confined material, such as a sheet of plastic material against a rigid die, to form the material, the diaphragm means comprising a plurality of layers or laminae with the layer which engages the material having an opening through it to admit fluid between it and the material to separate it from the material after the forming operation has been completed.

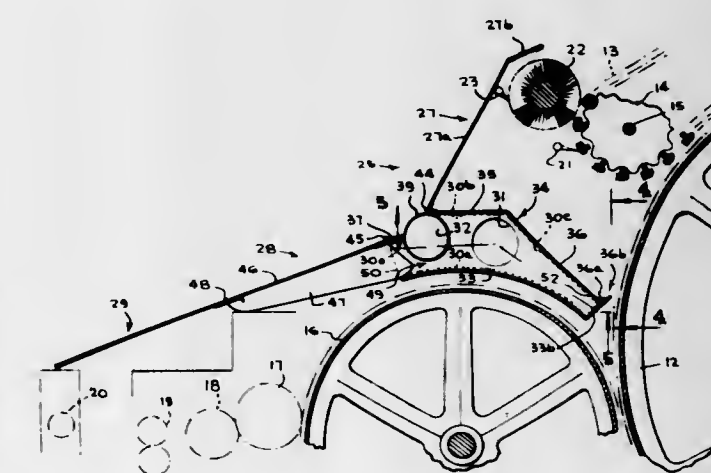
3,614,812
APPARATUS FOR MANUFACTURING HOLLOW THERMOPLASTIC ARTICLES
 Ralph E. Ayres and Theodore P. Seda, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
 Filed Aug. 14, 1968, Ser. No. 752,722
 Int. Cl. B29f 1/00
 U.S. Cl. 18—30 RV



A method and apparatus for making hollow thermo-plastic articles, particularly small articles such as phar-

maceutical capsules, pipe thread covers, unit-serve coffee cream containers, and the like. The method involves registering of a distributor and a die adjacent an extruder orifice wherein a given quantity of plasticized material meters through a feed slot of the distributor into a cavity of the die. A mold plug is then driven forward into the cavity to force the plasticized material to take the shape of the desired article of manufacture. After the plasticized material has cooled sufficiently, the mold and die are separated and the formed article is ejected.

3,614,813
DELIVERY END CLEANING APPARATUS FOR CARDING MACHINES
 Donald A. Sloan, Winston-Salem, N.C., assignor to The Bahnsen Company, Winston-Salem, N.C.
 Filed Aug. 28, 1969, Ser. No. 853,831
 Int. Cl. D01g 15/76
 U.S. Cl. 19—107



A suction manifold assembly for pneumatic cleaning of the delivery end section of a carding machine, including a main plenum section forming a suction chamber above the doffer cylinder in open communication with the latter and with an adjacent portion of the main cylinder, and a hood-like extension of hinged plural sections overlying most of the other card components in the delivery end section. The main plenum section includes a first exhaust port in a side thereof connected to a suction riser and a return tube traversing the plenum section in parallelism with the axis of the first exhaust port communicating at one end with another suction riser and at its other end through an elbow with the plenum section to facilitate attainment of suction source conditions at each side of the plenum and maintain substantially uniform pressure across the plenum.

3,614,814
DEVICE FOR ACCOMMODATING SLIVERS INTO A SLIVER CAN
 Hidejiro Araki, Aichi, and Ikuro Kodama, Toyota, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Aichi, Japan
 Filed Oct. 24, 1969, Ser. No. 869,238
 Claims priority, application Japan, Oct. 26, 1968, 43/78,184; 43/78,185; 44/23,299
 Int. Cl. B65h 54/80

This invention relates to a device for accommodating slivers into a sliver can, in which the pressure onto the sliver coil in the can is maintained substantially constant. The sliver can is provided with a movable bottom plate, which bottom plate being supported by a controllable

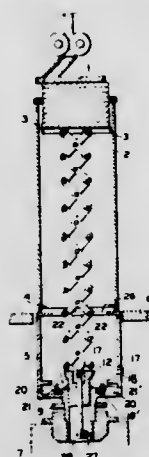
8 Claims

6 Claims

7 Claims

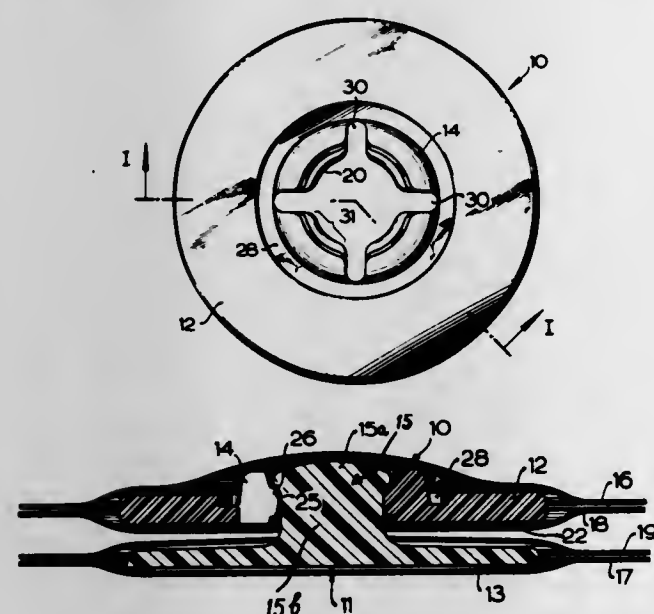
6 Claims

pantagraph mechanism in a can wheel in a compact form at the time of change of the can, and when accommodat-



ing the sliver said bottom plate is adapted to be slowly lowered.

3,614,815
SNAP FASTENER
Bernhard Nysten, Aachen, Germany, assignor to William Prym-Werke KG, Stolberg-Rhineland, Germany
Filed May 8, 1969, Ser. No. 822,879
Claims priority, application Germany, May 9, 1968, P 17 60 372.4
Int. Cl. A44b 17/00
U.S. Cl. 24—216 8 Claims



A female socket portion has a center aperture one axial side of which has an inlet. An opening is defined within the aperture by an inwardly projecting annular bead which has an axial endface directed toward the other axial side and closer to the same than to the inlet. The head of an undercut male coupling portion is insertable through the inlet and with a snap action through the opening; it has an annular contact face directed towards the inlet and engaging the axial endface of the bead.

3,614,816
METHOD OF MAKING CARTRIDGE CASES
Rolf Weyhmüller, Vaduz, Liechtenstein, Franz Xander, Gisingen, Austria, and Paul Greiner, Schaan, Liechtenstein, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG., Zurich, Switzerland
Filed July 7, 1969, Ser. No. 839,366
Claims priority, application Austria, July 12, 1968, A 6,782/68; Switzerland, July 16, 1968, 10,805/68, 10,807/68
Int. Cl. B21k 21/04
U.S. Cl. 29—1.3 6 Claims

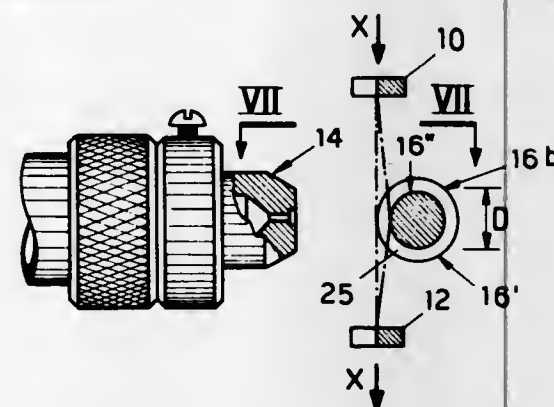
Steel cartridge cases are made from round bar stock preferably containing 0.16 to 0.25% C, which is cut trans-

versely into blanks. The blanks are upset cold so that the degree of upsetting $\phi_s = \log_e(F_1/F_0)$ is about -0.5, F_1 and F_0 being cross sectional areas at right angles to the direction of compression. Upsetting is followed by heat



treatment for 1-5 minutes at temperatures well above A_3 with very rapid heating and cooling. A cup is formed by extrusion of the blank, and drawn to the required depth. The bottom is preformed during upsetting and finished after drawing, whereupon the neck is formed.

3,614,817
METHOD AND DEVICE FOR THE PRODUCTION OF CONTINUOUS MULTIFILAMENTS HAVING A HIGH DEGREE OF COHESION
Domenico Nicita, Cesano Maderno, and Ettore Luzzatto, Milan, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy
Filed July 1, 1969, Ser. No. 838,256
Claims priority, application Italy, July 12, 1968, 18,927/68
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 10 Claims

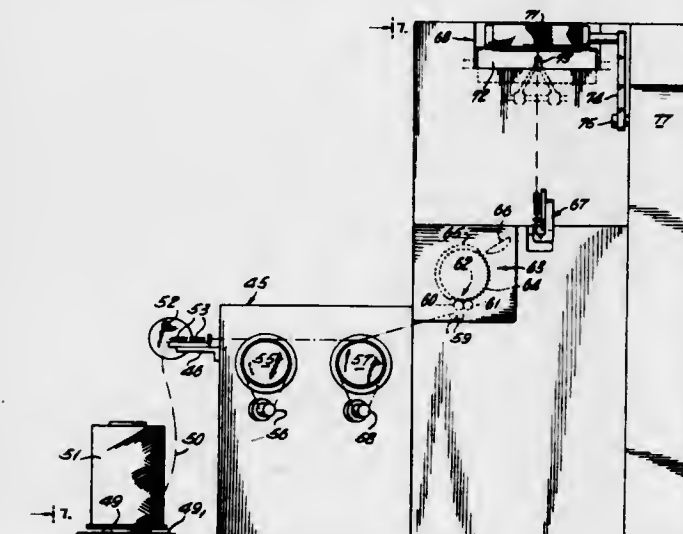


A method and a device are disclosed for improving the cohesion between individual monofilaments of a cohered yarn. The method consists in limiting the freedom of oscillatory movement of the individual filaments as exposed to the action of a cohering gas jet, and is carried out by providing a grooved or splined cylindrical surface in the area where the gas jet is active on the filaments. The dimensions, and the distances at which the cylindrical surface is placed with respect to the other component parts of the installation are critical.

3,614,818
YARN TREATING APPARATUS AND METHOD
Fred B. Satterwhite, Williamsburg, Va., assignor to KMG Machinery Limited, Macclesfield, England
Continuation of application Ser. No. 532,642, Mar. 8, 1966, now Patent No. 3,454,998, dated July 15, 1969. This application May 2, 1969, Ser. No. 821,229
The portion of the term of the patent subsequent to July 15, 1986, has been disclaimed
Int. Cl. D02g 1/12
U.S. Cl. 28—1.6 30 Claims

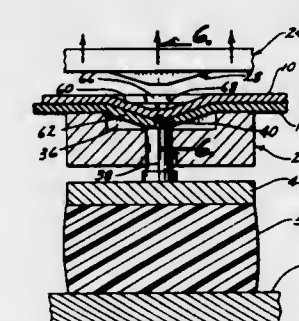
Apparatus for treating thermoplastic yarn comprising means for heating and drawing the yarn while advancing the yarn, means for crimping the yarn by longitudinal

compression directly after drawing while the yarn is still in a heated condition from the heating and drawing means, and means for winding up the drawn and crimped yarn, said heating and drawing means comprising a pair of roller arrangements, each of said roller arrangements having a peripheral surface with which the yarn is contacted, one of said roller arrangements being heatable and rotatable to heat the advance yarn from the supply to the other of said roller arrangements, said other roller



arrangement being heatable and rotatable to advance the yarn at a rate greater than the rate at which the yarn is advanced by the said one roller arrangement to thereby draw the yarn while in a heated condition from the said one roller arrangement, said crimping means comprising a chamber defining a yarn bunching zone for forming a plug of crimped yarn and means for driving the drawn yarn into the chamber while the yarn is still in a heated condition from the heating and drawing means.

3,614,819
APPARATUS FOR BONDING FLAT SHEETS
Walter D. Behlen, Columbus, Nebr., assignor to Behlen Manufacturing Company
Original application Apr. 10, 1967, Ser. No. 629,505. Divided and this application Apr. 25, 1969, Ser. No. 819,139
Int. Cl. B23p 17/00
U.S. Cl. 29—21.1 3 Claims



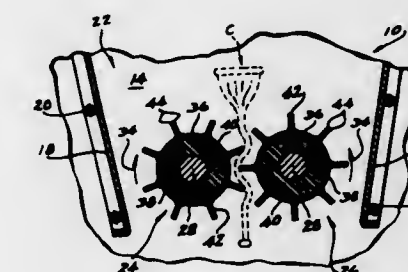
A mechanical splice for rolls of metal in continuous metal fabrication wherein each splice includes a portion deformed from adjacent sheets of metal thereby limiting relative movement therebetween. In one embodiment, the portion of material deformed is spread after it is deformed to prevent it from returning to its original condition. A die for performing the deformation and spreading includes a flat die surface with oppositely outwardly flaring end surfaces which press superimposed portions of the sheets of metal into a depression in a second die against a yieldable pin which spreads at least one of the portions by at least the time the movable die has bottomed out

but after the one portion is deformed out of its sheet of material. The method of forming the mechanical splicing involves the deforming of the elongated portion thereby forming an opening in the sheet of material and then the spreading of the deformed portion such that it cannot pass back into the opening. The spreading may begin at the same time as the deforming step begins but is not completed until the deforming step has been completely finished. A second embodiment of the splicing includes semi elliptical portions the mirror image of each other on opposite sides of a perpendicular plane to the sheets of material being deformed on opposite sides of a parallel plane to the sheets of material to lock the sheets against relative movement. The dies for forming the semi elliptical deformations are the mirror image of each other and have convex outer surfaces whereby they register with each other.

3,614,820
METHOD OF MANUFACTURING STORAGE TARGET FOR CATHODE RAY TUBE
Robert W. Morris, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed June 14, 1968, Ser. No. 737,115
Int. Cl. H01j 9/00
U.S. Cl. 29—25.11 9 Claims

A storage target for a cathode ray tube is formed by adhering a layer of glass to the rear of a glass faceplate and etching depressions or apertures in such layer. Such layer is formed of a material which is easily etched by substances which have substantially no effect upon the glass faceplate. A photoresist is first applied to the glass layer, and this photoresist exposed to the desired pattern of a mesh or collector electrode having apertures therein. The photoresist is developed, and an etchant is applied which produces substantially cylindrical depressions in the glass layer. Secondary emissive dielectric or phosphor material applied in these depressions will have uniform depth and therefore uniform storage properties. A storage target according to the present invention may be provided with a collector on the glass layer between apertures therein, as well as with an undercollector between the glass layer and the faceplate.

3,614,821
MEANS FOR CRUSHING OR COMPACTING DISPOSABLE OBJECTS AND REFUSE
Harold J. Qualheim, 641 Tower Circle, Racine, Wis. 53403
Original application Apr. 22, 1968, Ser. No. 722,898, now Patent No. 3,504,621, dated Apr. 7, 1970. Divided and this application Dec. 8, 1969, Ser. No. 883,159
Int. Cl. B21f 27/00
U.S. Cl. 29—121 3 Claims



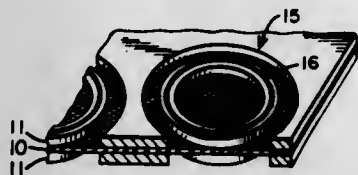
Rollers to be journaled in a frame and employed to compact, crush, or otherwise treat disposable material, such as metal containers, bottles, other frangible objects and refuse. The rollers are radially and circumferentially yieldable relative to their shafts and engage the objects as the latter pass between the rollers.

3,614,822 METHOD OF FORMING INTEGRAL MESH SUPPORTING FIXTURES

Silas A. Brown, Lake Elmo, Minn., assignor to
Buckbee-Mears Company, St. Paul, Minn.
Filed Mar. 28, 1969, Ser. No. 811,548
Int. Cl. B23p 15/16

U.S. Cl. 29—163.5 R

2 Claims



A process of electroforming and etching a material to produce an integral supporting fixture comprising the steps of electroforming a layer of depositant onto and into metal mesh, applying etchant resist to the depositant in the shape of the supporting fixture, etching away the excess depositant so as to leave only an integral supporting fixture, removing excess resist, cutting the supporting fixture from the remaining mesh, and crimping the integral supporting fixture so as to tighten the mesh supported therein.

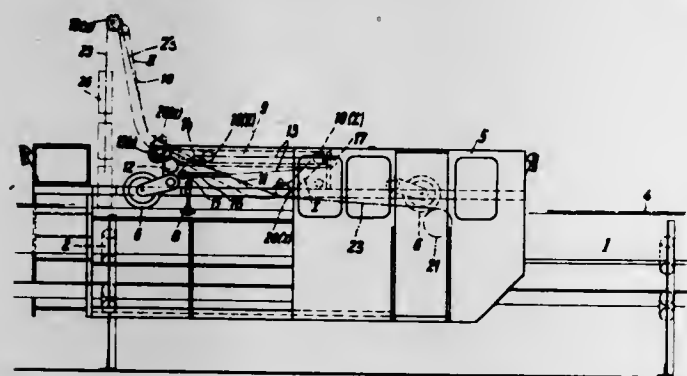
3,614,823 METHOD OF EXCHANGING GARLAND ROLLER SETS OF CONVEYOR INSTALLATIONS AND MEANS FOR CARRYING OUT SAME

Heinz Weber, Krefeld-Traar, and Hans Pelzer, Krefeld,
Germany, assignors to Fried. Krupp Gesellschaft mit
beschränkter Haftung, Essen, Germany

Filed Apr. 11, 1969, Ser. No. 815,402
Claims priority, application Germany, Apr. 11, 1968,
P 17 56 158.9
Int. Cl. B23p 19/00

U.S. Cl. 29—200 A

7 Claims



A method of and cart for exchanging a garland roller set of a belt conveyor, according to which the cart is equipped with two laterally arranged hoisting means adapted in cooperation with each other to pull one roller set out from underneath the conveyor belt while simultaneously and at the same rate said roller set is being pulled out another replacement roller set is pulled into the position previously occupied by said first mentioned roller set.

3,614,824 METHOD AND APPARATUS FOR INSERTION OF ELECTRICAL CONTACTS INTO ELECTRICAL CONNECTORS

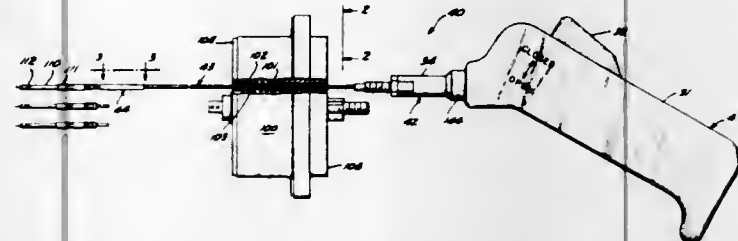
Norbert L. Moulin, Placentia, Calif., assignor to Hughes
Aircraft Company, Culver City, Calif.
Filed Aug. 19, 1968, Ser. No. 753,377
Int. Cl. H01r 19/04

U.S. Cl. 29—203

16 Claims

An electrical connector contact handling tool having a small diameter collet chuck mechanism to, in one embodiment, grip inside a contact socket tip, and in a second embodiment circumferentially grip a contact pin tip; a

thin elongated tube aligned with the chuck; a wire reciprocatingly slidable in the tube; and a handle and trigger for selectively actuating the wire to slide to retracted and to extended position in the tube to accordingly effect contact holding or releasing. In the method, the small chuck



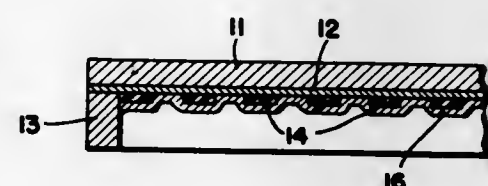
and the tube are inserted through a connector body numbered aperture, the corresponding contact terminal in a cable is gripped by the chuck, the contact is pulled through the aperture to assembled position, and the contact is then released.

3,614,825 METHOD FOR FABRICATING A MEMBRANE ASSEMBLY

Edmund H. Rottmiller, San Diego, Calif., assignor to
Stromberg Datagraphix Inc., San Diego, Calif.
Filed Mar. 17, 1969, Ser. No. 807,862
Int. Cl. B23p 17/00

U.S. Cl. 29—423

18 Claims



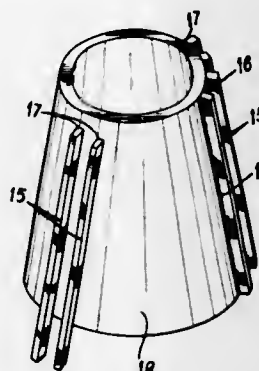
A method is described for fabricating a thin membrane supported at its periphery by a mounting frame, wherein the membrane is deposited on a substrate, the frame is secured to the membrane, and the substrate is subsequently etched away. Also described is a membrane assembly which may be constructed in accordance with the method of the invention.

3,614,826 METHOD FOR THE MANUFACTURE AND RE- COVERY OF CONICAL AND DISCS SETS FOR WOODPULP MACHINES

Milton Pilao, Rua Campo Largo, 369, Sao Paulo, Brazil
Filed Jan. 25, 1968, Ser. No. 701,532
Claims priority, application Brazil, Nov. 23, 1967,
194,914
Int. Cl. B23p 19/00

U.S. Cl. 29—434

12 Claims



In making comminutor sets for pulp refining machines, stainless steel or carbon steel sheet material is compacted to a given thickness to increase its hardness and tensile

strength. Comminuting blades are made from the compacted material and welded to respective surfaces of the comminutor members of the set, employing a technique of ridgelessly welding in a skipping sequence to avoid raising the material temperature during welding above 200° C.

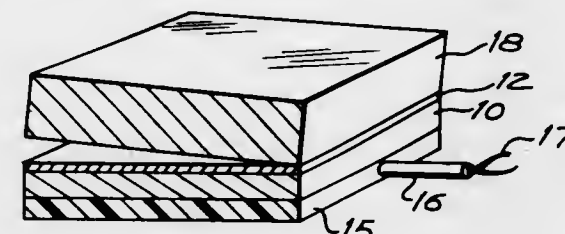
3,614,827 PROCESS FOR EXPLOSIVELY BONDING DISSIMILAR METALS

Louis H. Knop, Glendora, and John P. Mykkanen,
Placentia, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 24, 1969, Ser. No. 818,910
Int. Cl. B23k 21/00

U.S. Cl. 29—470.1

4 Claims



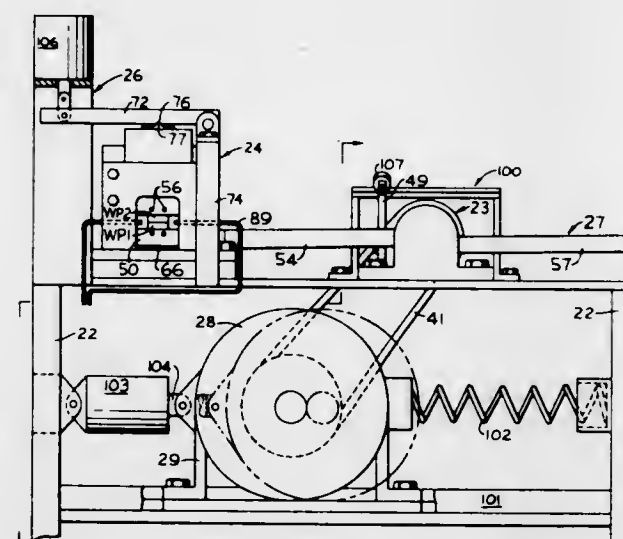
According to the present disclosure, a metal cladding layer of relatively low acoustic impedance is explosively bonded to one surface of the metal of two dissimilar metals which has the higher acoustic impedance. Subsequently, the metal cladding layer is explosively bonded to the other of the two dissimilar metals.

3,614,828 BONDING

Ramamurat R. Maurya, Peoria, Ill., and James J. Kauzlarich, Charlottesville, Va., assignors to Caterpillar Tractor Co., Peoria, Ill.
Original application Oct. 21, 1965, Ser. No. 499,249, now Patent No. 3,420,428. Divided and this application
May 23, 1968, Ser. No. 740,403
Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

10 Claims



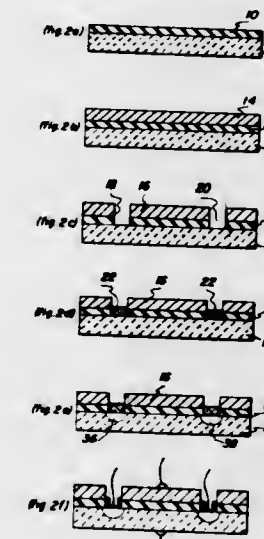
Metal parts are butt welded by reciprocity motion. The axial load, oscillatory speed and time of engagement are controlled to produce a stabilized plastic condition and a uniform bond of high quality across the entire interface. The acceleration forces of the mechanism imparting the reciprocity motion are dynamically balanced by moving balancing mechanism in opposition to the motion imparting mechanism.

3,614,829 METHOD OF FORMING HIGH STABILITY, SELF- REGISTERED FIELD EFFECT TRANSISTORS

James F. Burgess and Constantine A. Neugebauer,
Schenectady, and Reuben E. Joynson, Scotia, N.Y.,
assignors to General Electric Company
Filed Dec. 8, 1969, Ser. No. 883,168
Int. Cl. B01j 17/00; H01g 13/00

U.S. Cl. 29—571

8 Claims



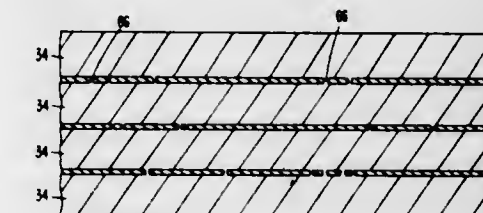
High stability, self-registered field effect transistors are formed by etching the metal gate electrode simultaneously with exposure of surface adjacent areas of a semiconductor wafer, growing an activator containing glass atop only the exposed areas of the wafer by passing a gaseous stream containing a mild oxidizing agent and an activator impurity across the etched face of the wafer heated to a temperature between 700° C. and 1000° C., and subsequently baking the semiconductor wafer in a reducing atmosphere at temperatures in excess of 1000° C. to form the source and drain regions of the semiconductor wafer. In a particularly preferred embodiment, a gaseous stream containing 5–10% hydrogen and 90–95% helium or argon is bubbled through water and ethyl borate solutions at room temperature whereupon the stream is passed over an etched wafer to form a silico-borate glass atop the exposed silicon surface. The semiconductor wafer then is baked for approximately 4 hours at 1000° C. in a nitrogen atmosphere containing 5–10% by volume hydrogen to drive the activator impurities into the wafer. A technique for forming complementary pairs of high stability self-registered field effect transistors on a single substrate also is disclosed.

3,614,830 METHOD OF MANUFACTURING LAMINATED STRUCTURES

Geoffrey Bate and George W. Brock, Boulder, Colo.,
assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 28, 1969, Ser. No. 803,263
Int. Cl. H01f 7/06

U.S. Cl. 29—603

11 Claims



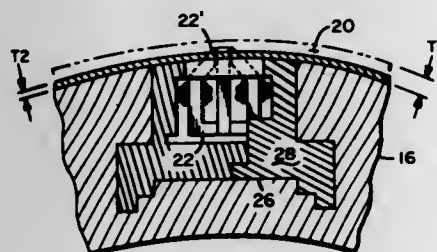
A laminated structure, including lamina of metallic magnetically permeable material, constructed with each lamina separated from each next adjoining lamina by a

thin layer of electrically non-conductive material, with the exception that each lamina is joined and interconnected in a random pattern through the non-conductive layer to each adjacent lamina. The interconnections between each pair of laminae cover about 10%, or less, of each lamina's surface area. Laminated structures of this type are produced by providing a thin, electrically non-conductive coating upon the surface of metallic lamina, stacking a plurality of coated laminae, including magnetically permeable lamina, in registered contacting relationship, and then heating the stacked laminae at a temperature and for a time sufficient to simultaneously anneal the magnetically permeable material and cause each lamina to be diffusion bonded through the non-conductive layer to each adjacent lamina in a random pattern covering about 10%, or less, of each lamina's surface area.

3,614,831
METHOD OF MAKING A HARD-SURFACE ROTOR CONTAINING MAGNETIC TRANSDUCERS
Matthias J. Grundtner, St. Paul, and George E. Melink, Burnsville, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,389
Int. Cl. H01f 7/06

U.S. Cl. 29—603

5 Claims

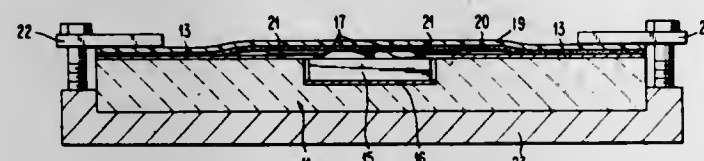


A hard-surface rotor in a rotating-head magnetic memory system for maintaining the uniform profile of flexible magnetic record members used in the magnetic memory system and for resisting damage to the rotor resulting from accidental contacting of the flexible magnetic record member with the rotor surface is described. A method for providing a hard-surface coating over an entire rotor peripheral surface, with only the magnetic transducer pole pieces exposed, is also described.

3,614,832
DECAL CONNECTORS AND METHODS OF FORMING DECAL CONNECTIONS TO SOLID STATE DEVICES
Dudley A. Chance, Samuel S. Im, John A. Perri, and Jacob Riseman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 9, 1966, Ser. No. 533,073
Int. Cl. H05k 3/30

U.S. Cl. 29—626

10 Claims



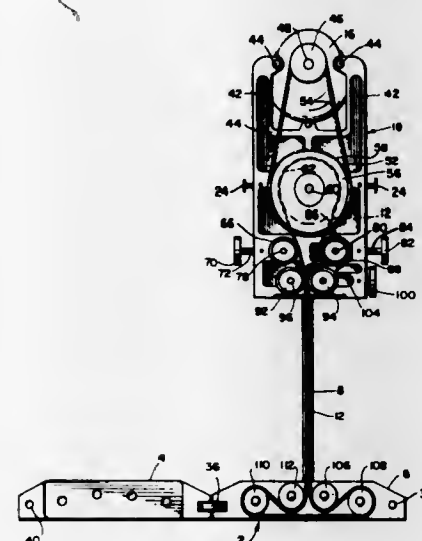
A plurality of connections from electrically conductive lands on an insulating substrate to the contacts of a solid state device are formed in one operation by fixedly positioning the device on, or in a cavity within, the substrate. A decal, including a backing plate with a plurality of conductive strips which can be adhered to the plate by means of a soluble adhesive, is positioned over the

device bearing substrate with the strips in registry with respective contacts and lands. The strips are brought into contact with respective contact and land surface portions and subjected to heat and pressure sufficient to cause bonding therebetween. Thereafter, the decal backing plate may be removed from the strips, as by dissolving the adhesive, leaving the strips firmly bonded to the contacts and lands and bridging the space therebetween, whereby the lands are connected to the contacts through the strips.

3,614,833
PORTABLE MACHINE FOR CUTTING MATERIALS
John Roper, Baltimore, Md., assignor to Inventions Development Corporation, Baltimore, Md.
Filed June 9, 1970, Ser. No. 44,697
Int. Cl. B26b 27/00

U.S. Cl. 30—139

14 Claims

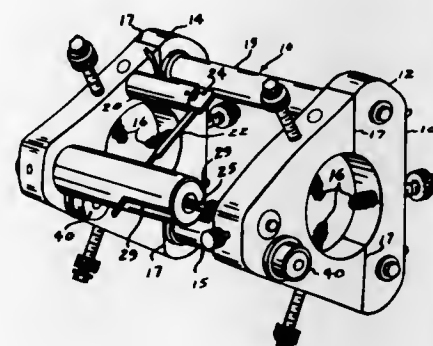


A portable band shear machine for cutting cloth, rugs, plastic and the like having an endless band blade with means for continuously sharpening same.

3,614,834
EXTENSOMETER FOR LARGE DIAMETER RODS
Randolph E. Holt and Robert A. Crist, Albuquerque, N. Mex., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Sept. 9, 1969, Ser. No. 856,416
Int. Cl. G01b 7/02, 7/14, 7/16

U.S. Cl. 33—147 D

4 Claims



An extensometer having a pair of head members with circular openings therein for receiving reinforcing bar test specimens, each having three spring-loaded gage points for mounting the head members on the test specimen. A linear variable differential transformer is mounted in a housing on one of the head members and provides an output signal. The differential transformer is operated by a displacement shaft connected to the other head member through a 10:1 ratio arm.

3,614,835
EDUCATIONAL TOY CONSTRUCTION KIT
Macon D. Rice, Hawthorne, Nev. (707 Van Buren St. NW., Washington, D.C. 20012), and Emil G. Anderson, Washington, D.C.; said Anderson assignor to said Rice

Filed Sept. 2, 1969, Ser. No. 854,442
Int. Cl. G09b 23/04

U.S. Cl. 35—34

9 Claims



The construction kit has a plurality of regular polygonally shaped base and side panels ranging from triangles to dodecagons which panels have connecting means adjacent their edges so that certain combinations of panels may be placed edge to edge to produce either geometrically symmetrical flat plate structures or bowl shaped objects, and accordingly a group of side panels may be selectively and successively applied to a selected base panel to produce various shaped objects, and by selecting differentially shaped base panels a large number of differently shaped objects can be obtained by employing relatively few panels.

3,614,836
BLOCK COPOLYMER FOXING AND SOLING COMPOSITION

John L. Snyder, Long Beach, Thomas L. Keelen, Palos Verdes Peninsula, and Geoffrey Holden, Los Alamitos, Calif., assignors to Shell Oil Company, New York, N.Y.
Filed July 8, 1968, Ser. No. 743,035
Int. Cl. C08d 9/08

U.S. Cl. 36—2.5

4 Claims

Improved compositions are provided especially for use as injection molded textile shoe foxing and soling comprising block copolymers having the structure polystyrene-polyisoprene-polystyrene with narrow molecular weight range specifications which provide improved adhesion of the foxing to canvas, injection moldability and ozone resistance. Compositions are also provided comprising combinations of the above-described block copolymers with block copolymers of the structure polystyrene-polybutadiene-polystyrene.

3,614,837
APPARATUS FOR DREDGING AND SIFTING MUD, SANDS OR GRAVEL

Toshinobu Araoka, 1308 Oaza-Orio, Yahata-ku, Kitakyushu, Fukuoka Prefecture, Japan
Filed June 5, 1969, Ser. No. 830,747

Claims priority, application Japan, June 13, 1968, 43/50,509; July 9, 1968, 43/48,623; Sept. 2, 1968, 43/63,539, 43/76,520

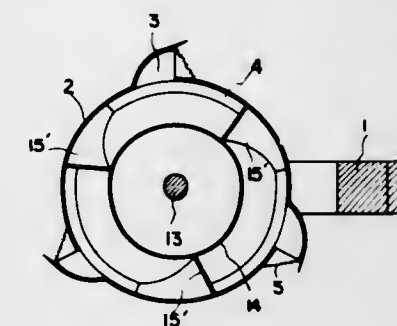
Int. Cl. E02f 3/92, 3/94

U.S. Cl. 37—57

1 Claim

A device for dredging up and sifting mud, sand and gravel, which device comprises a boom that can be dipped into water from aboard a ship or from the land, a scoop-carrying drum rotatably mounted on the end of the ladder, scoops on the periphery of the drum, a collecting space within the drum and partitioned from each scoop

by means of a screen, and a suction pipe one end of which opens to the collecting space through one side of the

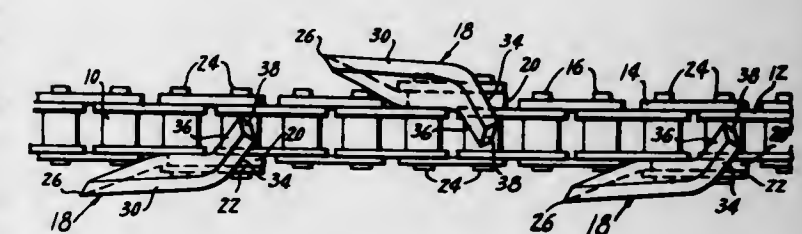


drum while its other end projects above the surface of the water.

3,614,838
TREE DIGGING CHAIN SAW
Bernard Wherry, St. Marys, W. Va. 26170
Filed Apr. 4, 1969, Ser. No. 813,498
Int. Cl. E02f 3/08; B27b 33/14, 33/02

U.S. Cl. 37—191

2 Claims

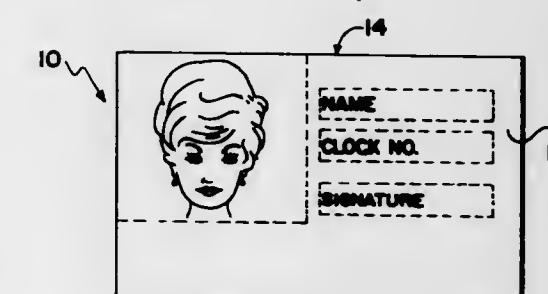


A conventional saw chain, for example, a link and roller chain, is provided with cutting teeth alternately arranged on opposite sides of the saw and provided with forwardly and outwardly angled teeth to cut downwardly through the ground to form a ditch around a tree or bush to facilitate the digging of the tree or bush with a substantial ball of earth thereon. Each tooth is provided with a rearwardly inwardly angled extension, with the paths of travel of alternate extensions overlapping each other so as to dig a ditch across the width of the chain as well as outwardly beyond the chain.

3,614,839
ID CARD LAMINAR STRUCTURES AND PROCESSES FOR MAKING SAME
James F. Thomas, Lawrence, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 1, 1968, Ser. No. 717,710
Int. Cl. G09f 3/02; B32b 27/30

U.S. Cl. 40—2.2

19 Claims



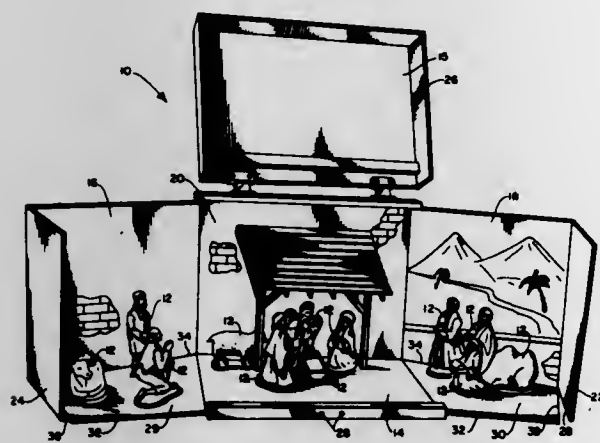
Laminar structures comprising a color photograph bonded to a sheet of vinyl through an ethylene-vinyl acetate copolymer tie coat and identification (ID) cards including the same.

3,614,840 PORTABLE FOLDING THREE DIMENSIONAL SCENE

Herbert S. Vadell, 4017 McFarland St.,
New Orleans, La. 70126
Filed Apr. 27, 1970, Ser. No. 32,245
Int. Cl. G09f 19/100

U.S. Cl. 40—126 A

2 Claims

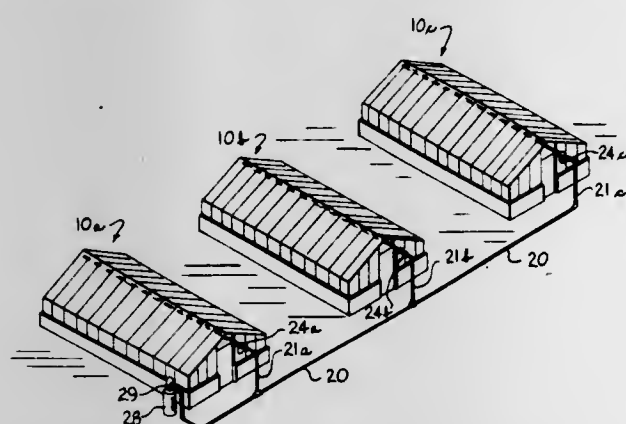


A portable scene of three dimensional objects, foldable to form its own container without dismantling the objects.

3,614,841
EXTERMINATION METHOD
Grady W. Query, P.O. Box 12452,
Charlotte, N.C. 28205
Filed July 25, 1969, Ser. No. 844,753
Int. Cl. A01m 13/00

U.S. Cl. 43—124

4 Claims



A method of exterminating insects within a building wherein a predetermined weight of insecticide is dispersed through a permanently installed distribution system at predetermined periodic intervals in order to insure continuing extermination of insects without exposure of materials stored within the building to excessively high concentrations of the insecticide.

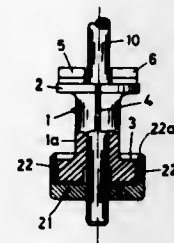
3,614,842
COMPRESSING ARRANGEMENT IN TOY
ASSEMBLY KIT
Artur Fischer, 133 Grunnetarstrasse,
7241 Tumlungen, Germany
Original application Sept. 19, 1966, Ser. No. 580,240, now
Patent No. 3,464,147. Divided and this application
Apr. 24, 1969, Ser. No. 819,051
The portion of the term of the patent subsequent to
Sept. 2, 1986, has been disclaimed
Int. Cl. A63h 33/04

U.S. Cl. 46—23

10 Claims

A pulley has a flange and is provided with an axial slot extending through the flange. A compressing member is cup-shaped and has a smaller-diameter bore registering

with that of the pulley, and a larger-diameter bore constituting a continuation of the smaller-diameter bore from

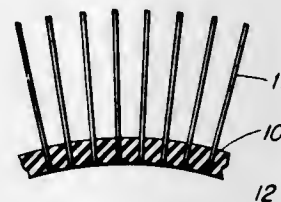


which it converges away so that, when pushed over the flange, it will compress the flange and narrow the slot.

3,614,843
ARTIFICIAL HAIR
Selwyn G. Hawtin, Whitley, Coventry, and Harold G. Mallaban, Napton, near Rugby, England, assignors to Courtaulds, Limited, London, England
Filed Oct. 31, 1968, Ser. No. 772,361
Claims priority, application Great Britain, Nov. 1, 1967,
49,565/67
Int. Cl. A63h 3/44

U.S. Cl. 46—172

7 Claims

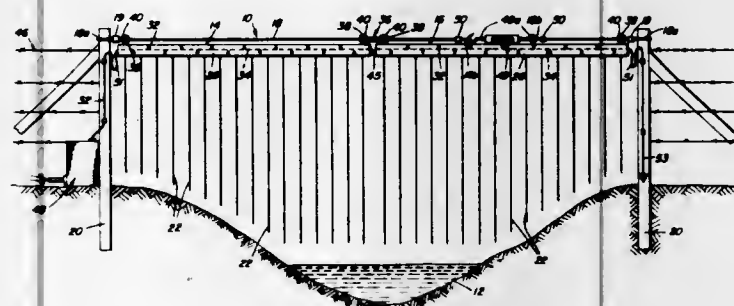


An artificial hair piece comprising a plurality of filaments of synthetic or regenerated polymeric material, for example cellulose triacetate, the filaments having a hollow interior by virtue of having a cross-section which is a ring or an open or closed split-ring.

3,614,844
FLOOD GATE STRUCTURE
Emery H. Withers, Road 2, Cynthiana, Ky. 41031
Filed Apr. 21, 1970, Ser. No. 30,570
Int. Cl. E06b 11/02

U.S. Cl. 49—10

10 Claims



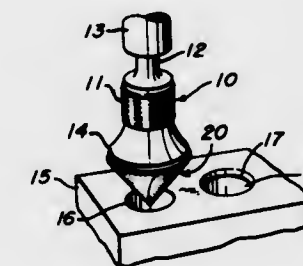
A flood gate structure for an electric fence comprises an assembly having a plurality of rod members disposed in side-by-side, laterally spaced relationship. The assembly is mounted on a cable extending across a ground indentation and is swingable about the cable to move upwardly out of the way of flood waters and debris carried

thereby. The assembly normally hangs from the cable with the rod members providing an electric barrier for the indentation.

3,614,845
ABRADING IMPLEMENT
Herbert E. Cook, 98 W. Floyd Ave.,
Dayton, Ohio 45415
Filed July 18, 1969, Ser. No. 842,997
Int. Cl. B24d 17/00

U.S. Cl. 51—358

9 Claims

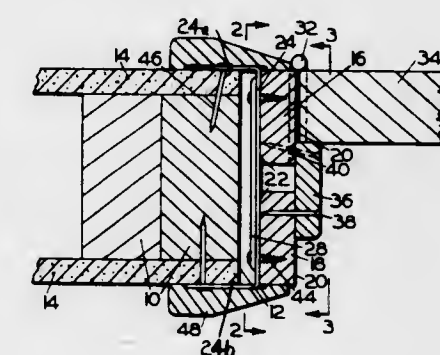


An abrasive cone assembly comprising a mandrel and an expendable cone tip. The rotary driving connection between the elements includes complementary projecting and recessed portion allowing a closed coupled connection therebetween, and features a projecting pin on the mandrel providing elongated central bearing support in the cone.

3,614,846
DOOR JAMB ASSEMBLY
Robert L. Donnelly, 1100 NE. 152nd, Portland, Oreg. 97230; Richard A. McGrath, 29126 Wellington, Farmington, Mich. 48024; and Cray J. Coppins, 2732 E. Overlook Road, Cleveland, Ohio 44106
Filed Feb. 13, 1967, Ser. No. 620,583
Int. Cl. E06b 1/08, 1/60

U.S. Cl. 52—213

1 Claim



A door jamb assembly made of multiple parts so as to be shipped and stored in knocked-down condition. A strap member is included as one of the parts and is designed to assist in securing the jamb to a support as well as to adjust the width of the jamb for fitting walls of different thickness.

3,614,847
ARCHITECTURAL STRUCTURE AND WORKS
UTILIZING THE SAID STRUCTURE
Pierre Debeaux, 2 Boulevard d'Arcole, Toulouse, Haute-Garonne, France
Filed Dec. 17, 1968, Ser. No. 785,454
Claims priority, application France, Dec. 18, 1967,
132,671; Aug. 1, 1968, 161,543
Int. Cl. E04h 12/08

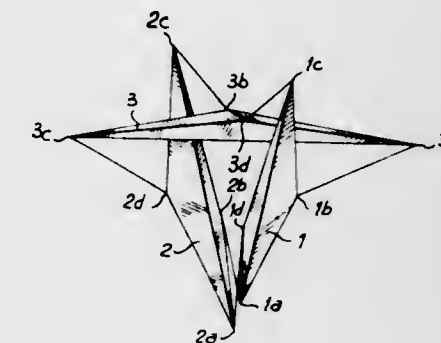
U.S. Cl. 52—648

1 Claim

An architectural structure which, in its simplest form, is a cell composed of at least three solid oblong elements

connected to each other and positioned with respect to each other, without mutual contact, by the action of a system of tie-rods, the number of which does not exceed twice the number of solid elements considered, and which connect at least one intermediate point of each of said elements to a point close to one extremity of another solid element.

The above structure generally comprises four tie-rods per solid element. It is however possible to form a structure in which the solid elements are connected to each other.



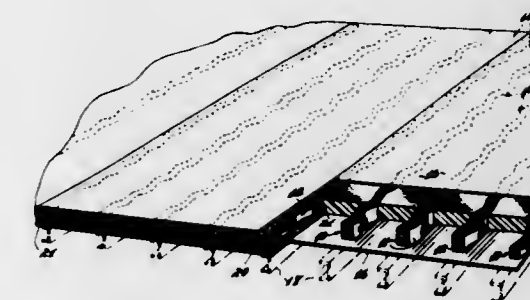
An architectural structure in accordance with the structure specified above, in which the solid elements are connected to each other and positioned with respect to each other by the action of tie-rods, at least one of said solid elements being connected to an adjacent solid element by tie-rods of which at least one has issued from a substantially central or intermediate point of said solid element so as to terminate and be fixed to the other extremity of an adjacent solid element, the other solid elements being connected to each other by four tie-rods coupling a point close to one of the extremities of a solid element to an intermediate or substantially central point of another solid element.

Finally, these structures are applicable to constructional and building works and even to spatial relays.

3,614,848
FOAM STRUCTURAL ELEMENT
Robert A. Hitch, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Original application June 9, 1964, Ser. No. 373,694, now
Patent No. 3,472,728, dated Oct. 14, 1969. Divided
and this application May 8, 1969, Ser. No. 840,577
Int. Cl. B32b 3/12, 5/18, 27/40

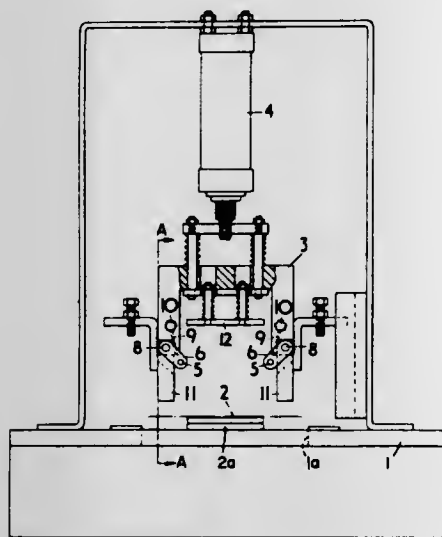
U.S. Cl. 52—747

4 Claims



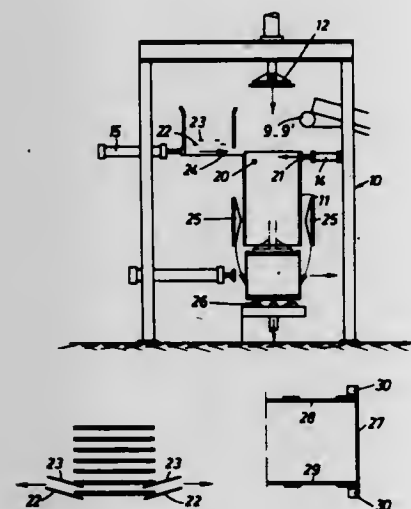
An insulated panel having a prefabricated sandwich construction which is provided with a pair of parallel sheets separated from one another by a plurality of spaced apart spacers having foamable material between the spacers and the sheets wherein each of the spacers is defined by a pair of parallel strips defining a second space filled with such foamable material having the columnar growth or rise axis of the foamable material being in a direction perpendicular to the length of the strips and parallel to the plane of said strips.

3,614,849
PACKAGING MACHINES
 Anthony Harry Croucher, Homewood, 12 Pine Bank,
 Tower Road, Hindhead, England
 Filed Aug. 18, 1969, Ser. No. 850,902
 Int. Cl. B65b 13/02, 13/20; B65c 1/04
 U.S. Cl. 53—3 5 Claims



Deformable articles, e.g. textile articles, are packed by laying a length of adhesive or part-adhesive tape across the articles, blowing the ends of the tape around the edges of the articles by means of compressed gas jets and compressing the articles and tape between upper and lower pressure plates so as to adhere the tape either to the articles or to itself.

3,614,850
METHOD FOR PACKAGING LOOSE FIBROUS MATERIAL FROM A CONTINUOUS FLOW
 Claude Brochot, Antony, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France
 Continuation-in-part of application Ser. No. 476,070, July 30, 1965. This application July 18, 1968, Ser. No. 745,878
 Claims priority, application France, Aug. 3, 1964, 984,032
 Int. Cl. B65b 1/24, 25/02, 43/08
 U.S. Cl. 53—24 1 Claim



Process for packaging of loose fibrous material, such as tobacco, from a continuous flow, in portions subjected to successive compressions in a pressing device. The pressing device has a pressing cylinder which is open on both ends, with removable side walls. Provision is made for placing a bottom plate and a top plate on the packaged material.

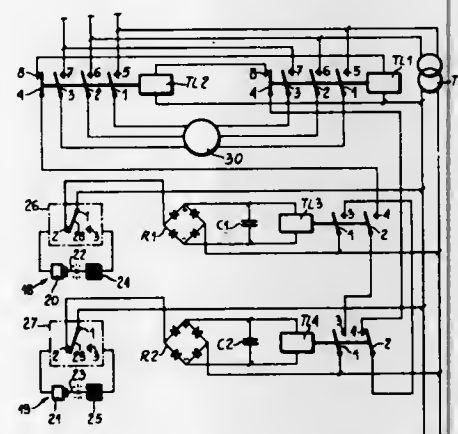
3,614,851
METHOD OF ENCAPSULATING LIQUID
 Sydney James Green, London, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.
 No Drawing. Filed Apr. 16, 1969, Ser. No. 816,841
 Claims priority, application Great Britain, Apr. 19, 1968, 18,560/68
 Int. Cl. B65b 63/08 5 Claims

The invention provides a method of encapsulating a liquid substance, in which a tube is filled with the substance, is subjected to freezing to solidify the substance, and is cut into lengths whose ends are then sealed, the tube lengths being finally allowed to warm so that the encapsulated substance becomes liquid. Capsules so produced are especially suitable for incorporation in smoking articles. Thus the encapsulated substance may be a substance which, on release from the capsule, will improve or enhance the quality of the smoke provided by the smoking article and/or will serve as a smoke-filtering and/or filter-moistening substance.

3,614,852
SHRINK PACKAGING
 Konrad Buob, Rho, Milan, Italy, assignor to W. R. Grace & Co., New York, N.Y.
 No Drawing. Filed May 9, 1967, Ser. No. 637,068
 Claims priority, application Great Britain, May 11, 1966, 20,975/66
 Int. Cl. B32b 27/30; B65b 43/00 4 Claims

The invention relates to the use in shrink packaging of a moderately oriented film of a vinyl chloride polymer which has a shrinkage of at most 35% at 100° C. in both directions and a shrink tension less than 10.5 kg./cm.².

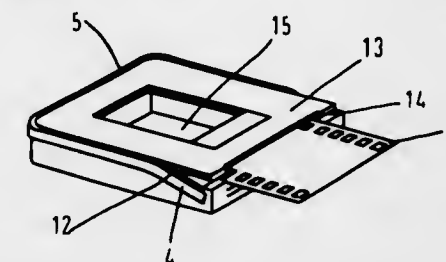
3,614,853
DEVICE FOR FEEDING ARTICLES TO PAPER WRAPPING MACHINES
 Ariosto Seragnoli, Bologna, Italy, assignor to GD Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli, Via Pomponia, Bologna, Italy
 Filed Nov. 21, 1969, Ser. No. 878,673
 Claims priority, application Italy, Nov. 28, 1968, 1.830a/68
 Int. Cl. B65b 57/12 3 Claims



An irregular supply of articles such as candies is fed by a lower speed conveyor to a higher speed conveyor where they pile up against a fixed stop. Articles against the stop are transferred to a wrapping machine at a normal operating rate or at a higher rate. Two photo-electric sensing mechanisms are placed along the higher speed conveyor so that when the pile of articles does not reach the nearest sensing mechanism the wrapping machine and transfer of articles thereto is stopped; when the pile of articles reaches only the nearest sensing mechanism the

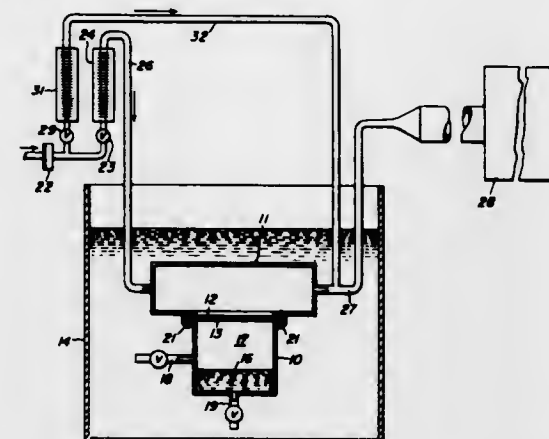
wrapping machine operates at normal rate; and when the pile of articles reaches the further sensing mechanism the wrapping mechanism operates at the higher rate.

3,614,854
APPARATUS FOR EXPANDING A TRANSPARENCY INSERTION SLIT IN A SLIDE FRAME
 Peter Hans Ernst Mundt, Garmisch-Partenkirchen, Otfried Urban, Kochel am See, and Arnold Neubold, Garmisch-Partenkirchen, Germany, assignors to Geimuplast Peter Mundt KG, Farchant, Germany
 Filed Oct. 2, 1968, Ser. No. 764,469
 Claims priority, application Germany, Oct. 4, 1967, G 38,057; Jan. 11, 1968, P 16 22 116.2
 Int. Cl. B65b 17/00, 63/00 4 Claims



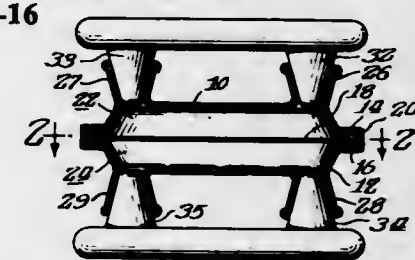
A slide frame having at least one expansible insertion slit is gripped at its edge portion that is adjacent to the insertion slit and at at least one other portion. At least one portion of the frame is simultaneously or subsequently subjected to a deformation by which the frame portions defining the insertion slit are spaced apart so that the insertion slit is expanded.

3,614,855
CONTINUOUS PRODUCTION OF CALIBRATION GAS FLOWS
 Frank W. Van Luik, Jr., Schenectady, N.Y., assignor to General Electric Company
 Filed Dec. 26, 1967, Ser. No. 693,471
 Int. Cl. B01d 59/12 2 Claims



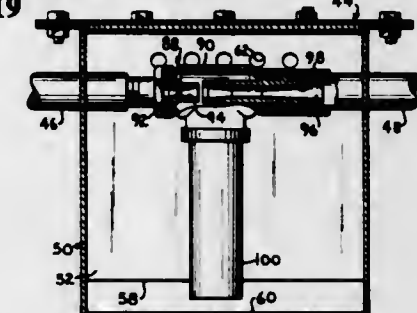
The continuous production of very low predeterminable concentrations of gases in the range from about 10⁻⁹ to 10⁻¹³ gm./cc. is described. The properties of non-porous permeable membranes are employed to controllably provide preselected very low concentrations of some given gas in a chamber having the selectively permeable membrane as at least part of the wall area thereof. In essence the membrane is employed as a flow control valve for the molecular specie of interest. A measured flow of dilution gas is mixed with the predetermined amount of the given gas, which has passed through the membrane wall area creating a mixed flow having a still lower concentration in the given gas. This flow, which is relatively large, is conducted to trace gas measuring equipment for the calibration thereof with respect to detection of the given gas.

3,614,856
GAS TRANSFER DEVICE
 Manuel C. Sanz, Lancy, Switzerland, and John J. J. Staunton, Oak Park, Ill., assignors to The Perkin-Elmer Corporation
 Filed Nov. 29, 1968, Ser. No. 779,766
 Int. Cl. B01d 53/22 11 Claims



A device for receiving an approximately 15 microliter sample of blood and for transferring gas from the blood to a gas receptor fluid through a gas permeable membrane. The blood sample may be stored in the device which is adapted to deliver the receptor fluid into a measuring electrode. By contrast in prior art systems blood gas analyses were made in the same device in which the blood sample was placed.

3,614,857
AUTOMATIC LIQUID EJECTION TRAP
 George D. Fette, 3010 McGee St., Apt. 1, Kansas City, Mo. 64108
 Filed Dec. 29, 1969, Ser. No. 888,310
 Int. Cl. B01d 45/02 7 Claims

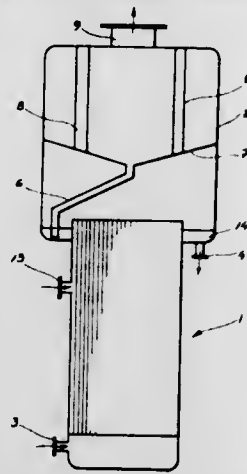


A trap comprising a closed vessel communicating through a conduit with a pressurized gas system. A pressurized gas flow suction device in the conduit permits gravitation of liquid and solid contaminants into the vessel and a float controlled solenoid valve on the discharge opens to create a flow of pressurized gas through the device when the contaminants reach a predetermined level in the vessel. This flow sucks the contaminants through the device for discharge in the gas stream to empty the vessel.

3,614,858
APPARATUS FOR SEPARATING LIQUID FROM GAS
 Eino Eemil Pohjolainen, Vuoksenniska, and Martti Aukusti Tolvanen, Paaskylahti, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland
 Filed Apr. 15, 1969, Ser. No. 816,223
 Claims priority, application Finland, Apr. 18, 1968, 1,080/68
 Int. Cl. B01d 45/12 8 Claims

This invention relates to an apparatus for separating liquid which might contain small particles of solid material from gas, the apparatus being mounted at the upper portion of a vertical heat exchanger and comprising a false bottom, at least one spiral wall and separate discharge connections for the separated liquid and for the purified gas. The mixture of gas and liquid in a quiet upwardly directed flow in a passage situated between a vertical spiral wall and the enveloping wall of the apparatus is converted into a spiral-formed horizontal flow, which is then throttled in a discharge opening formed between two spiral walls thus increasing the flow velocity to a

value sufficient for centrifugal separation of the liquid from the gas. The free space between the spiral wall or

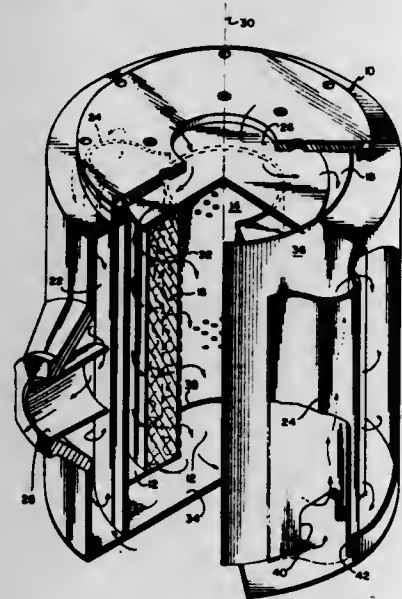


walls is directly above the tube or lamella heat exchanger and is sufficiently large to permit tube or lamella replacement through said space.

3,614,859
GAS FILTER-SILENCER
Billy L. Clark, Corning, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,286
Int. Cl. B01d 27/08

U.S. Cl. 55—276

4 Claims



A gas filter-silencer of limited size with a plurality of concentric chambers having an interpositioned annular filter. The chambers of one pair thereof are in gas flow communication by way of choke tubes which are structurally and operatively disposed therebetween. The choke tubes divide the filtered gas into parallel paths, each of which extend more than half the axial length of the filter-silencer, to suppress the noise frequencies of the gas.

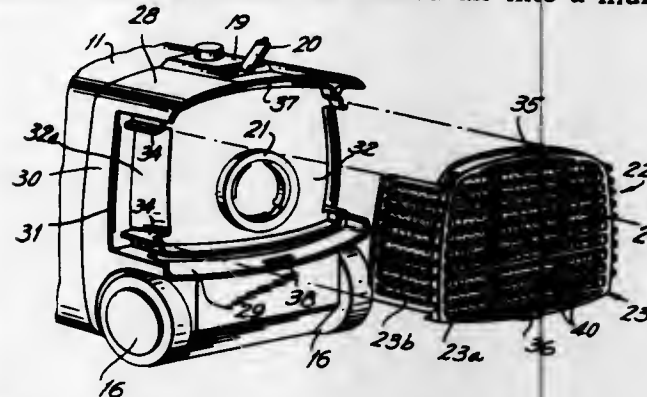
3,614,860
SUCTION CLEANER
Karl Gustav Grelsson, Sollentuna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Mar. 13, 1969, Ser. No. 807,777
Claims priority, application Sweden, Mar. 15, 1968, 3,400/68
Int. Cl. B01d 46/10

U.S. Cl. 55—276

2 Claims

This invention relates to a suction cleaner having an elongated casing formed with an air inlet at one end and an air outlet in a transverse wall at its opposite end. A chamber, which is defined in part by the transverse wall and a combined filter and diffuser unit, receives air flowing from the air outlet. The combined filter and diffuser unit is U-shaped and has an end which extends transversely of the cleaner at the vicinity of the air outlet end thereof and spaced apart sides which extend at opposing sides of

the cleaner from the closed end toward the transverse wall. The U-shaped filter and diffuser unit, which includes a U-shaped grate or apertured frame and a fine filter in the form of a layer of material positioned within the closed end and spaced apart sides of the grate, has a cross-sectional area greater than that of the air outlet and filters fine dust particles from air flowing into the chamber and diffuses and subdivides the filtered air into a multiplicity

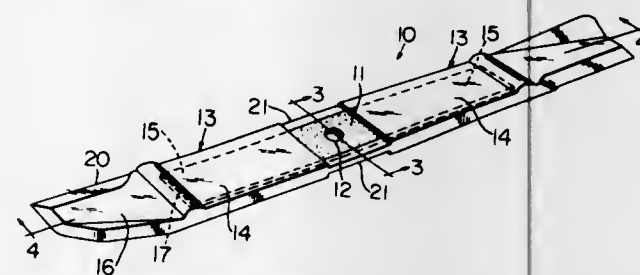


of tiny air streams which are deflected upward and discharged from the unit through a horizontal arc which extends transversely of the cleaner and along the opposing sides thereof.

3,614,861
MOWER BLADE AND METHOD OF MAKING SAME
William T. Wickham and Leland E. Williams, Waynesville, Doyle V. Haren, Clyde, and Robert W. Buchanan, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio
Filed May 26, 1969, Ser. No. 827,587
Int. Cl. A01d 55/18

U.S. Cl. 56—295

3 Claims



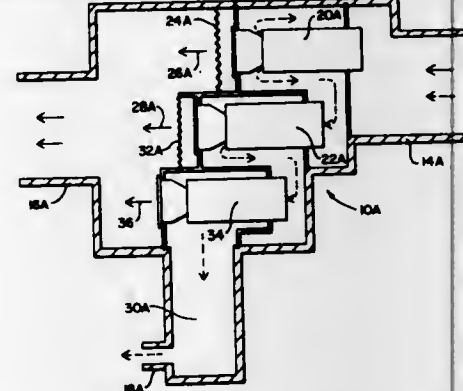
A lawn mower blade having a central mounting member and outwardly extending arms of improved strength and comprised of an elastomeric material bonded to the mounting member in an optimum manner, with each arm having a flexible outer portion provided with an integral cutting edge, and a method of making such a blade.

3,614,862
APPARATUS FOR REMOVING CONTAMINANTS FROM GASES

Harold D. Connors, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed June 30, 1969, Ser. No. 837,431
Int. Cl. B01d 45/12

U.S. Cl. 55—321

5 Claims



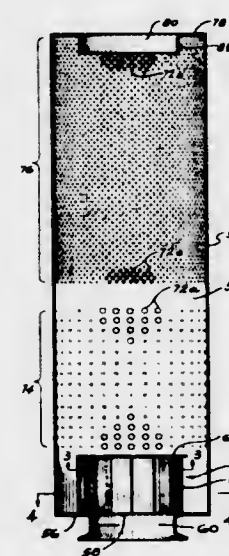
This disclosure describes an apparatus for separating and removing contaminant foreign particles from a gas

or airstream. A plurality of separating stages are assembled in serial flow arrangement so that only contaminant plus a small percentage of carrier air or gas is transmitted to each succeeding stage.

3,614,863
CENTRIFUGAL SEPARATOR HAVING PERFORATED CAN WALL
Robert C. Patterson, Longmeadow, Mass., and Rudolph J. Micheller, East Granby, and John F. Carney, Windsor, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 31, 1968, Ser. No. 789,049
Int. Cl. B01d 45/12

U.S. Cl. 55—452

7 Claims



A centrifugal separating apparatus comprising a cylindrical can body defining a spinning chamber in which vapor-liquid mixture is rotated at a high velocity to separate the entrained liquid by centrifugal action. The wall of the can body is provided along its length with two distinct perforated portions forming liquid discharge passages for the removal of separated liquid from the chamber. The perforated portion adjacent the inlet end of the chamber presents a liquid flow area substantially less than that of the other portion such that a vortical flow can be established and sustained in the process fluid.

ERRATUM

For Class 56—295 see:
Patent No. 3,614,861

3,614,864
TWO-PLY POLYAMIDE TIRE CORD
Berthold Daimler, Remscheid-Lennep, and Bernd Jacobi, Wuppertal-Elberfeld, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Nov. 21, 1969, Ser. No. 878,958
Claims priority, application Germany, Nov. 23, 1968, P 18 10 618.8
Int. Cl. D02g 3/28, 3/48

U.S. Cl. 57—140 R

10 Claims

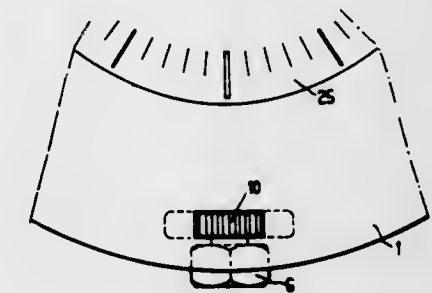
A two-ply nylon tire cord in which the individual plies are pretwisted in the direction opposite to the after-twist of the plies in the finished cord, the pretwist being at least 200 turns/meter greater than the after-twist which should provide a twist factor α_m of the about 60 to 140. A plurality of such two ply cords are assembled into a rubber tire structure to provide improved performance characteristics.

3,614,865
WATCH-CASE WITH A WATERTIGHT WINDING CROWN

Hans Widmer, Bienne, and Peter Aebi, Brittern, Switzerland, assignors to Omega Louis Brandt & Frere S.A., Bienne, Switzerland
Filed Sept. 24, 1969, Ser. No. 860,690
Claims priority, application Switzerland, Oct. 23, 1968, 15,819/68
Int. Cl. G04b 37/08

U.S. Cl. 58—90

9 Claims

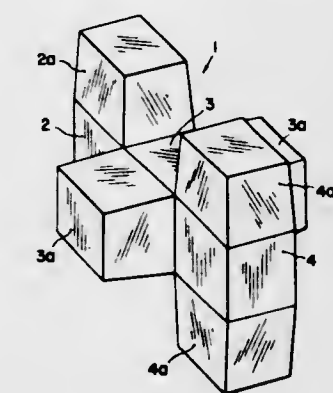


A watch-case with a watertight winding crown, in which the crown has a threaded portion capable of engaging, as it is moved axially, the tapping of a nut guided in an opening of the watch-case and having a fixed axial position, rotation of said nut resulting, on the one hand, in displacing the crown inwardly without causing it to rotate about its own axis, while compressing at least one gasket against a shoulder of the watch-case, and, on the other hand, in locking the crown in its inner position, the crown head, having a noncircular periphery, being engaged at least partially in a noncircular cut-out part of the watch-case.

3,614,866
POLYPOD STRUCTURE FOR CIVIL ENGINEERING USES
Taisuke Kaneko, Ehime-ken, and Fumiyasu Morioka, Sapporo-shi, Hokkaido, Japan, assignors to Kyowa Concrete Kogyo Kabushiki Kaisha Sapporo-shi, Hokkaido, Japan
Filed Apr. 1, 1969, Ser. No. 811,983
Claims priority, application Japan, Feb. 21, 1969 (utility model), 44/15,388
Int. Cl. E02b 3/04, 3/12, 3/14

U.S. Cl. 61—3

8 Claims

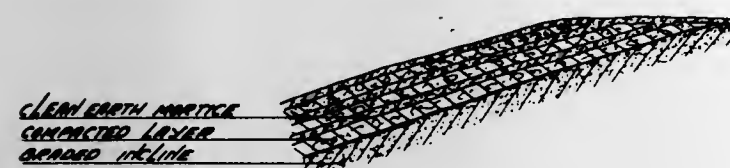


A polypod block is composed of at least three pillar-shaped parts integrally joined with alternately crossed relationship, the block thereby having at least six legs, and the dimensions and shape of the block are so selected that a large number of these blocks can be interlocked in several ways to form tightly assembled combinations of the blocks for purposes such as wave breaking, soil erosion control, and dissipation of the energy of flowing water.

3,614,867
METHOD OF SANITARY LANDFILLING
 Tom Nieman, Sedalia, Colo., assignor to Landfill, Incorporated, Commerce City, Colo.
 Filed Feb. 13, 1970, Ser. No. 11,164
 Int. Cl. E02d 3/12

U.S. Cl. 61—35

8 Claims



City dumps, particularly a landfilling operation, utilizing city and industrial trash which is compacted, moistened, sprayed with insecticide and morticed with a clean earth layer to develop a landfill suitable for recreation or both residential and commercial construction activity.

3,614,868
METHOD FOR STABILIZING AN EXCAVATED TRENCH BY STABILIZATION OF ASBESTOS SUSPENSION
 Mamoru Shinozaki, Tokyo, Japan, assignor to Takenaka Komuten Company, Ltd., Higashi-ku, Osaka-shi, Osaka-fu, Japan

Filed July 16, 1969, Ser. No. 842,307
 Claims priority, application Japan, July 17, 1968, 43/50,784

U.S. Cl. 61—35

Int. Cl. E02d 17/08

2 Claims



A method for stabilizing an excavated trench by filling the trench with a liquid slurry containing asbestos fibers in suspension with water. As the liquid slurry flows through the permeable walls of the trench the asbestos fibers will tend to seal the walls of the trench. The method further contemplates the use of the asbestos suspension along with a suspension of clay.

3,614,869
PIVOTED TOWER SINGLE POINT MOORING SYSTEMS
 John F. Flory, Morristown, N.J., and William R. Philliber, Sale, Victoria, Australia, assignors to Esso Research and Engineering Company

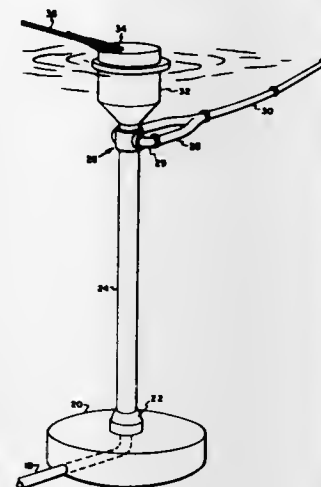
Filed Sept. 9, 1969, Ser. No. 856,446

U.S. Cl. 61—46

7 Claims

A pivoted tower single point mooring and cargo handling system, primarily for tanker vessels, is provided which comprises a buoyancy chamber with attached rigid pipe which is pivotally connected to a mooring foundation, a flexible cargo conduit for conducting cargo from

the base of the buoyancy chamber to the vessel, means for conducting cargo from the foundation through the pipe to the base of the buoyancy chamber and swiveling

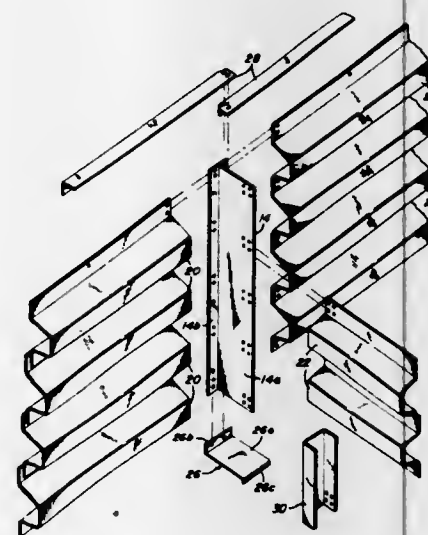


means at the base of the buoyancy chamber for permitting the flexible cargo conduit to rotate with respect to the buoyancy chamber.

3,614,870
SOIL TIGHT RETAINING WALL
 Jerald H. Boynton, Franklin, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
 Filed Sept. 22, 1969, Ser. No. 859,706
 Int. Cl. E02d 29/02

U.S. Cl. 61—47

8 Claims



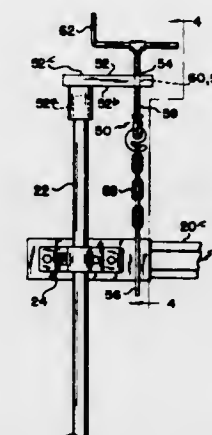
A soil tight retaining wall of the bin type having a plurality of pairs of vertical connectors, each connector having a flange portion and a web portion extending laterally from the center line of the flange portion so as to have a T-shaped cross section. The flange portion of one vertical connector of each pair is parallel to the front of the wall and the flange portion of the other connector of the same pair is parallel to the rear of the wall. Lapped stringer members join the vertical connectors to form the front and rear of the wall, each end of each stringer member being attached to a part of the flange portion on one side of the web portion of one of the vertical connectors. Lapped spacer members join the pairs of vertical connectors, the ends of each spacer member being attached to the web portions of the vertical connectors of a pair.

3,614,871
METHOD APPARATUS, AND DOCK MEMBER COMPONENTS FOR ERECTING, ALIGNING, RE-ALIGNING, OR DISASSEMBLING A DOCK MEMBER

Edwin A. Nordell, Lyndhurst, Ohio, assignor to The Metal Craft Company, Chardon, Ohio
 Filed June 14, 1968, Ser. No. 737,159
 Int. Cl. E02b 3/20

U.S. Cl. 61—48

5 Claims



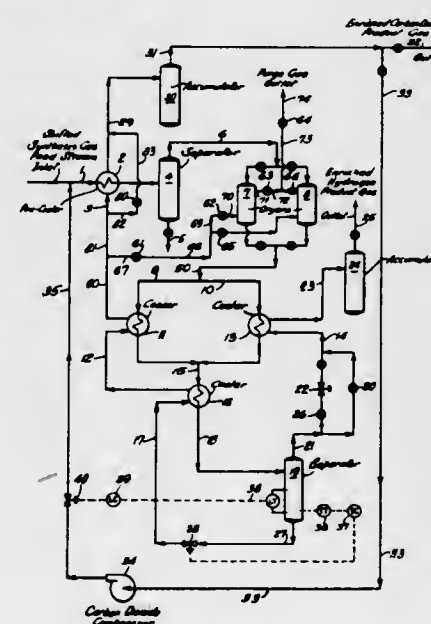
Method, apparatus and dock member component or components for erecting, disassembling, aligning and/or realigning a dock member easily erectable (as a complete dock, a modular dock component, or an extension of an existing dock) by a single person even in deep water without the use of boats and without getting wet; and including a dock deck elevator, dock member post clamp bracket, a connector for operatively connecting two dock members, and/or combination member connector and post clamp bracket, etc.

3,614,872
SYNTHESIS GAS SEPARATION PROCESS
 Joseph P. Tassoney, Whittier, and Warren G. Schlinger, Pasadena, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,864
 Int. Cl. F25j 1/00, 3/00, 3/06

U.S. Cl. 62—26

12 Claims



Superatmospheric autorefrigeration process for separating a gaseous mixture comprising essentially hydrogen and carbon dioxide into an enriched hydrogen product stream and an enriched carbon dioxide product stream.

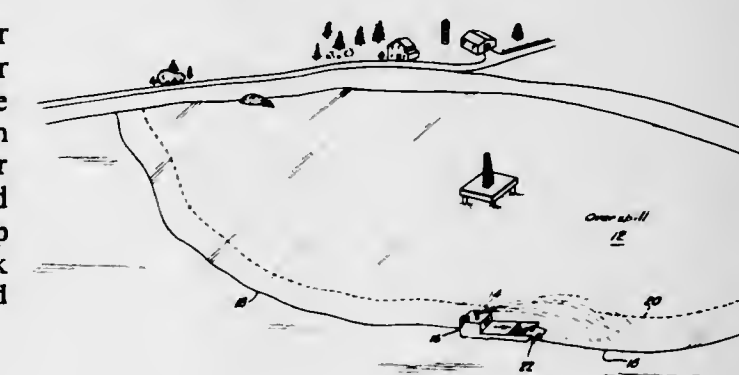
The gaseous feedstream at a pressure of about 40 to 250 atmospheres is cooled so that 30 to 95% of the carbon dioxide is condensed by noncontact counterflow heat exchange with refrigerants, and liquid carbon dioxide is then separated from the uncondensed gases. The

two departing product streams are separately employed as refrigerants to cool said fractions of the feedstream. The temperature of the enriched carbon dioxide product stream and when desired, such as at start-up, the temperature of the enriched hydrogen product stream is further reduced by expansion to about the triple point of carbon dioxide (and even lower for the enriched hydrogen stream) without solid formation. A portion of the enriched carbon dioxide product stream is recycled to the inlet of the process and combined with the feedstream to improve the separation efficiency of the system. The enriched hydrogen product stream may be used directly as feedstock for chemical synthesis or may be further processed to make pure hydrogen.

3,614,873
FREEZING OIL SPILLS
 Edward L. Cole, Fishkill, and Howard V. Hess, Glenham, N.Y., assignors to Texaco Inc., New York, N.Y.
 Filed Oct. 1, 1969, Ser. No. 862,716
 Int. Cl. F25c 5/00

U.S. Cl. 62—66

6 Claims



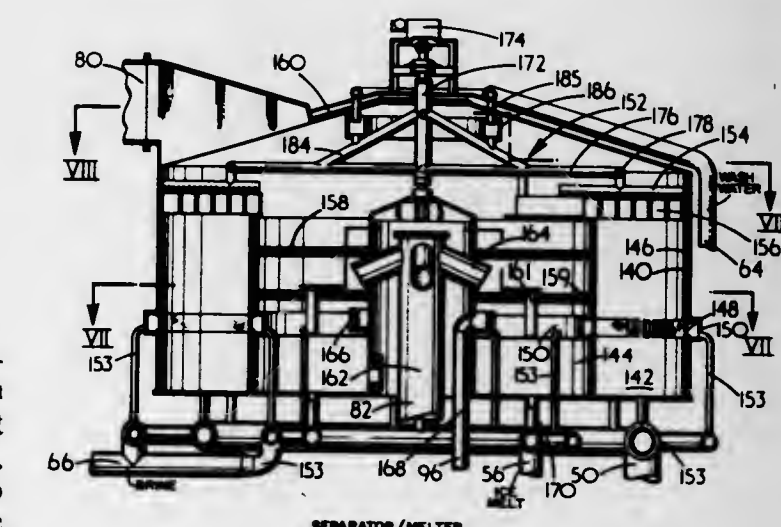
Cleaning up marine oil spills by freezing the surface layer of oil, preferably with particles of Dry Ice or the like, to enable the layer to be screened off the surface as a cake.

3,614,874
SEPARATOR-MELTER UNIT FOR DESALINATION
 Allan Martindale, Bramhall, Bryan R. Parr, Sale, and Michael J. S. Smith, Abingdon, England, assignors to Simon-Carves Limited, Stockport, Cheshire, England
 Filed Jan. 15, 1968, Ser. No. 697,804
 Claims priority, application Great Britain, Jan. 17, 1967, 2,349/67

U.S. Cl. 62—123

Int. Cl. B01d 9/04

9 Claims



In the production of fresh water from saline water, ice crystals formed by boiling a volatile refrigerant in

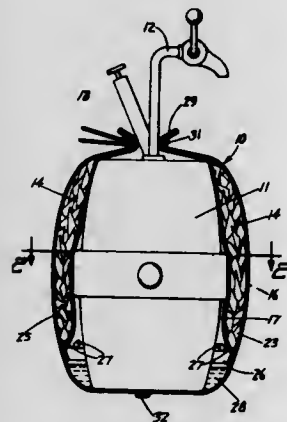
the saline water, are separated from saline water in one chamber and passed over to another for melting to provide the fresh water.

3,614,875
APPARATUS FOR HOLDING ARTICLES

Gerald Lee McCallum, 1720 W. 76th,
Richfield, Minn. 55423

Filed Aug. 18, 1969, Ser. No. 850,866

Int. Cl. F25d 3/08
U.S. Cl. 62—372 10 Claims



A flexible bag having a plurality of side pockets for holding ice cubes adjacent the sides of a container for cooling the contents stored in the container. The bag has an outer cover surrounding an inner liner. The liner is attached to the inside of the cover to form longitudinal pockets accommodating the ice. The bottom of the liner has a plurality of holes for draining water to the bottom of the cover. A closure cord is used to close the top of the bag about the container.

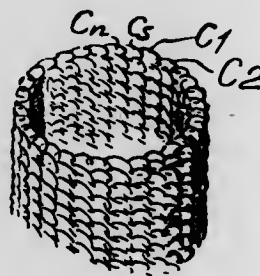
3,614,876
EAR-RING AND METHOD OF MANUFACTURE

Jacques Henri Lenfant, 47 Rue des Petits-Champs,
Paris, France

Filed June 6, 1969, Ser. No. 830,941

Claims priority, application France, June 7, 1968,
154,124

Int. Cl. A44c 7/00
U.S. Cl. 63—14 G 3 Claims



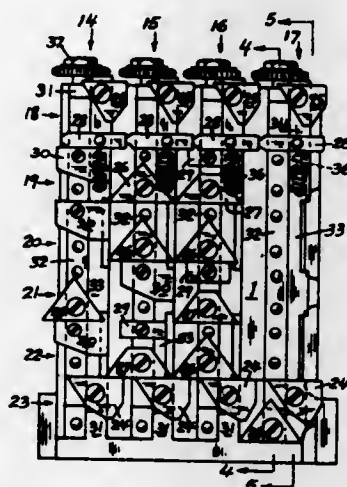
Earrings made by interlacing a plurality of coils of precious metal wire to form a "Milanese" wire gauze which, in turn, is formed into a tube and then shaped into the form of a split toroid so that the abutting ends thereof will exert a resilient gripping force in tension.

3,614,877
COMPOUND STITCH CAM FOR KNITTING MACHINES

Jack Radin, Brooklyn, N.Y., assignor to Monarch
International Ltd., Brooklyn, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,312

Int. Cl. D04b 9/38, 15/76
U.S. Cl. 66—42 13 Claims



A compound stitch cam, particularly for use at each feed of a multi-feed latch needle circular knitting machine, comprising a fixed main and an adjustable auxiliary stitch cam to act upon a pair of vertically spaced butts on the shanks of the latch needles in the machine, the said stitch cams also being vertically spaced with the main stitch cam acting upon the lower ones of said butts to lower the needles to less than their stitch forming level and with the auxiliary stitch cam thereafter acting upon the upper ones of said butts to lower the needles to their stitch forming level. The said compound stitch cam and the latch needles being arranged in combination with needle selecting pattern means on the said machines for three level selection of the needles to welt, tuck and knit positions.

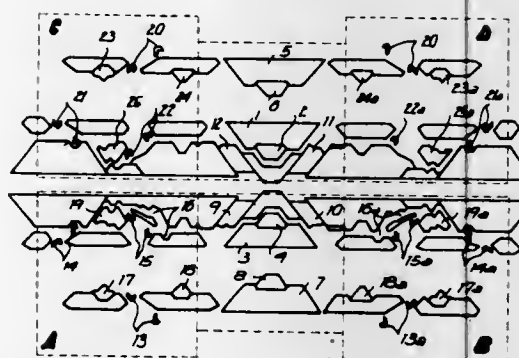
3,614,878
FLAT KNITTING METHOD AND APPARATUS

Matias Mestre Mas, Calle Vilapiscina 33,
Barcelona, Spain

Filed Nov. 1, 1968, Ser. No. 772,728

Claims priority, application Spain, Nov. 11, 1967,
347,504

Int. Cl. D04b 7/00
U.S. Cl. 66—78 4 Claims



A flat knitting method and apparatus for bringing about a change in the width of the knitted fabric particularly in connection with the knitting of a collar or neck region

of a garment. The knitting machine includes a series of longitudinally displaceable needle assemblies movable in opposed directions between operative and inoperative positions, and preselected needle assemblies are displaced in one of these directions by a displacing means which may be automatically actuated, to bring about in this way a change in the width of the knitted fabric. Where the displacing means is used to displace selected needles to inoperative positions, the loops carried thereby are transferred to needles which continue to participate in the knitting, and the displacing means preferably takes the form of swingable butt-engaging members which turn about a predetermined axis to produce the displacement of selected needle assemblies.

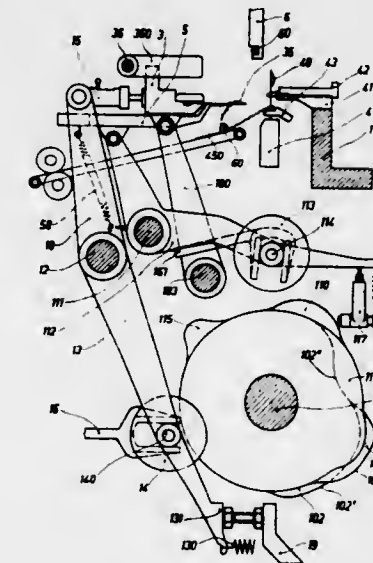
3,614,879
FLAT-KNITTING MACHINE FOR ALTERNATELY PRODUCING DOUBLE WELTS OR RIB WELTS

Hansjoachim Suppe, Ingolstadt, Germany, assignor to
Schubert & Salzer Maschinenfabrik Aktiengesellschaft,
Ingolstadt, Germany

Filed Apr. 9, 1969, Ser. No. 815,533

Claims priority, application Germany, Apr. 9, 1968,
P 17 60 141.1

Int. Cl. D04b 1/04
U.S. Cl. 66—88 17 Claims



The machine needle bar is connected to its drive mechanism by a connection which can be rigid to transmit knitting movement from the drive mechanism to the needle bar or which can be resiliently yieldable to exert a draw off force on the machine needle bar while a welt is being produced. The connection may include a coupling arm having two telescopic parts pressed toward a shortened relationship by a compression spring and which parts can be rigidly connected together by latching a control rod. Alternatively, tension springs can connect the machine needle bar and its drive mechanism to exert a resilient draw off force during welt production, but a coupling arm can be connected between the needle bar and its drive mechanism to provide a rigid connection when it is desired to drive the needle bar positively to effect knitting movements. A welt bar or a welt rod can be used in addition to the machine needles to provide further draw off force.

3,614,880
FABRIC DAMPENER

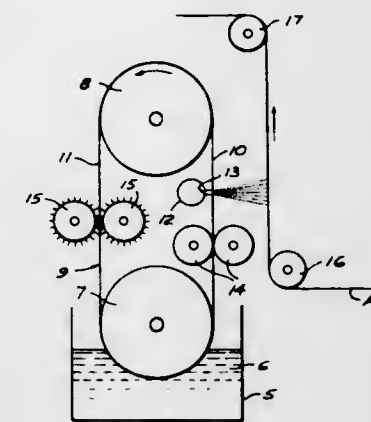
Alexander J. Bayne, Schenectady, and Paul N. Winberg,
Hempstead, N.Y., assignors to Cluett, Peabody & Co.,
Inc., Troy, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,693

Int. Cl. D06f 35/00; B05c 5/00
U.S. Cl. 68—205 R 5 Claims

This invention is directed to a dampener for a continuously advancing fabric web and includes a pair of ver-

tically aligned rolls that carry an endless mesh belt that has one loop partly immersed in water. A pair of stripper rolls remove excess water from the pick up flight of the



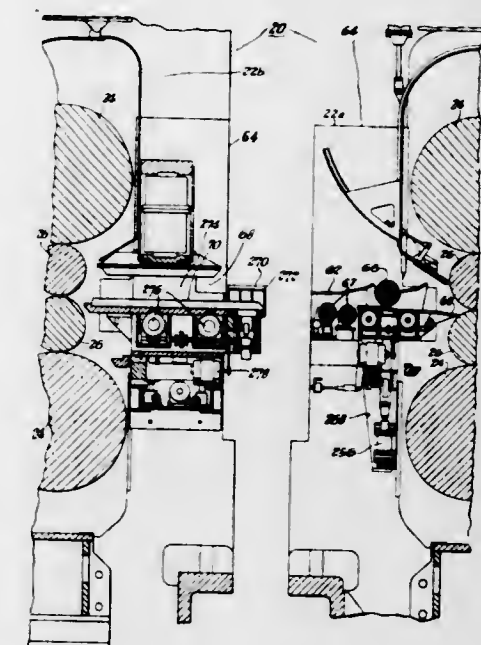
belt and the retained water is blown as a fine mist from the belt onto the fabric web by a multiplicity of air jets located above the stripper rolls.

3,614,881
AUTOMATIC THREADING DEVICES FOR COLD MILLS

Andrew J. Petros, Pittsburgh, Pa., assignor to Mesta
Machine Company, Pittsburgh, Pa.

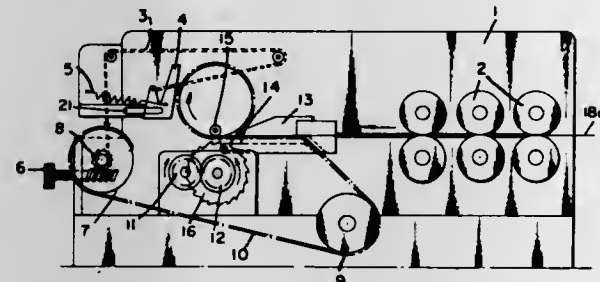
Filed June 25, 1968, Ser. No. 739,720

Int. Cl. B21b 37/00, 39/20, 41/00
U.S. Cl. 72—12 9 Claims



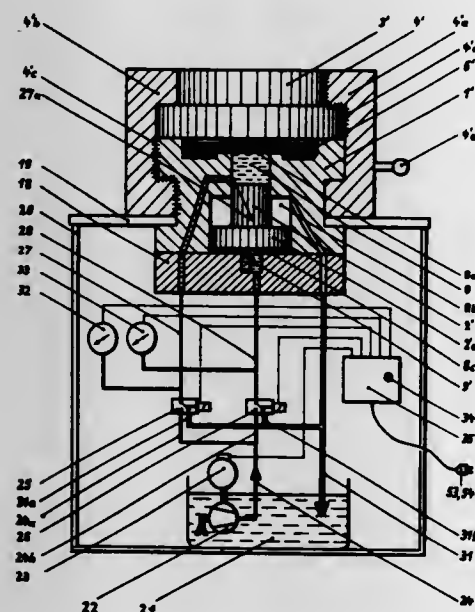
I disclose in a rolling mill, the combination comprising at least one mill stand, a pair of work rolls rotatably mounted in said mill stand, an entry strip edge guiding mechanism disposed adjacent said work rolls and engageable with the lateral edges respectively of said strip, and a delivery strip edge guide mechanism mounted closely adjacent the delivery side of said work rolls for engaging the lateral edges respectively of said strip. My invention also contemplates similar apparatus wherein a feed reel and deflector roll are mounted in advance of said entry edge guide mechanism, and means are provided for simultaneously and transversely moving said deflector roll and said feed reel for strip alignment purposes.

3,614,882
MACHINE FOR MANUFACTURING HELICALLY SEAMED TUBING FROM A STRIP-LIKE PROFILED BLANK
 Eino Kalervo Malkki, Et. Hesperiankatu 18A2, and Valentin Silde, Kuusitie 4A3, both of Helsinki, Finland
 Filed Mar. 26, 1969, Ser. No. 810,470
 Claims priority, application Finland, June 7, 1968, 1,617/68
 Int. Cl. B21c 37/12; B21f 3/10
 U.S. Cl. 72—49 6 Claims



A machine manufactures helically seamed tubing from a strip-like profiled blank. The machine includes two seaming rolls cooperating with a loop consisting of a flexible traction element. The blank is forcibly fed into the loop and is bent into a tubular shape with guidance by the loop. A support member is used to support the tube while it is being formed from the outside, namely, the side opposite to the direction of feeding of the blank.

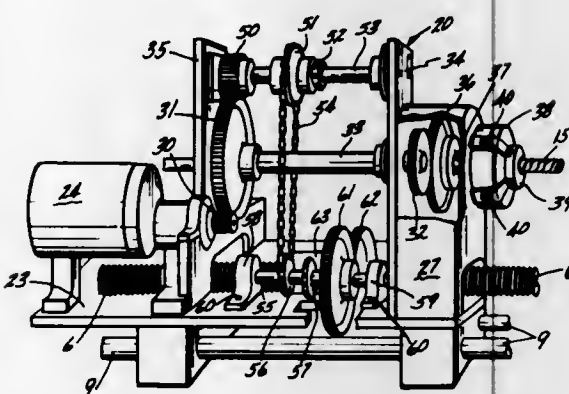
3,614,883
DEVICE FOR PRESSING PIECES OF SHEET METAL
 Klaus E. Kramer, 14 Kommandantenstr., 45 Berlin, Germany
 Filed June 3, 1969, Ser. No. 830,161
 Claims priority, application Germany, June 4, 1968, P 17 52 485.5
 Int. Cl. B21d 22/12
 U.S. Cl. 72—63 8 Claims



A device for hydraulically pressing sheet metal in which a flexible diaphragm extends transversely through a chamber formed at one end of a cylinder body to divide the chamber into two chamber spaces. The sheet metal to be pressed is sandwiched in one of the chamber spaces between the flexible diaphragm and a matrix in the one chamber space, the open end of which is closed by a closure member clamped by releasable clamping means

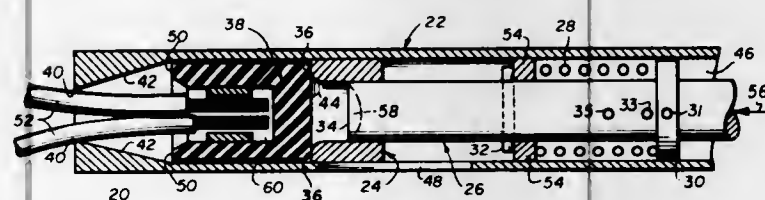
against the one end of the cylinder body. The other chamber space communicates with a bore in the cylinder body in which a piston is reciprocally arranged and pressure fluid is first fed into the bore portion communicating with the other chamber space and then against the piston face facing away from the diaphragm to pressurize the fluid.

3,614,884
PROCESS FOR FORMING CORRUGATED TUBING
 Joseph Winter, New Haven, Conn., assignor to Olin Mathieson Chemical Corporation
 Original application Oct. 31, 1967, Ser. No. 679,459.
 Divided and this application Mar. 25, 1969, Ser. No. 840,564
 Int. Cl. B21d 15/04
 U.S. Cl. 72—77 5 Claims



The disclosure teaches an improved apparatus for corrugating tubes and an improved corrugated tube produced thereby. The apparatus is characterized by having an inner frame moveably mounted on an outer frame, with a die rotatably mounted on the inner frame. The die has an annular opening through which passes the tube to be corrugated and shaped die members projecting into the annular opening.

3,614,885
EXTRUSION TOOL
 Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
 Filed Apr. 9, 1970, Ser. No. 27,073
 Int. Cl. B21c 27/02
 U.S. Cl. 72—259 30 Claims

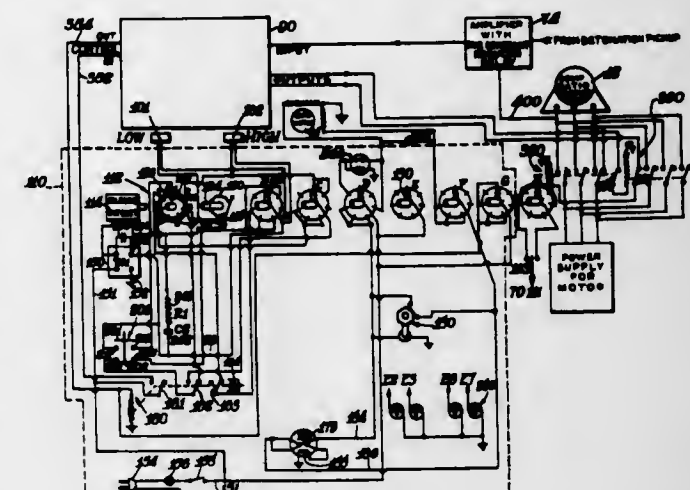


The invention is directed to an improved extrusion tool. Slidably disposed within an open-ended selectively bored restrictively orificed elongated housing is an outer hollow plunger and at least one inner plunger in aligned telescoping cooperation with and resiliently coupled to the outer plunger, to permit the successive selective deformation of an article disposed within the housing. Mounted adjacent the open front end of the housing may be adjusting means for selectively restricting the orificial dimension thereof. The front end of the inner plunger may be appropriately contoured to form a complementary impression on an article intimately engaged therewith.

3,614,886
PROCESS FOR PRODUCING STEEL SHEETS FOR CANS HIGH IN THE ANTICORROSION
 Toshiro Nishihara, Hidejiro Asano, and Yashichi Ouyagi, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
 Filed Jan. 26, 1970, Ser. No. 5,495
 Claims priority, application Japan, Feb. 3, 1969, 44/8,059
 Int. Cl. B21b 3/02 4 Claims

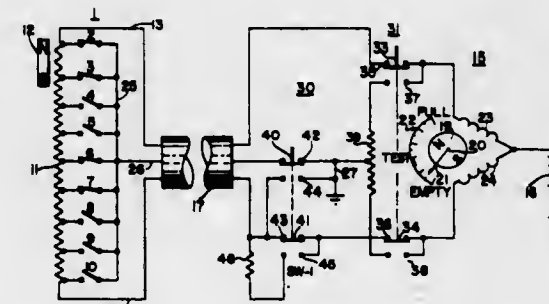
A process for producing steel sheets for cans which are high in the workability, particularly in the can-producing property and in the anticorrosion, particularly adapted to store carbonated beverages, comprising hot-rolling an extremely low carbon steel material containing less than 0.030% C, and 0.02–0.10% S and of S/P>1 and then cold-rolling the thus obtained hot-rolled steel sheet in one step at high reduction rate to a product of final gauge of less than 0.5 mm.

justment is made for overshooting of the fuel-air ratio increase. Alternatively the increase in fuel-air ratio can be effected in steps at least about 10 seconds apart, these



3,614,887
BITE FOR LIQUID LEVEL AND QUANTITY MEASURING SYSTEM
 Malcolm E. Douglass, Wenham, Mass., assignor to General Electric Company
 Filed May 13, 1969, Ser. No. 824,105
 Int. Cl. G01f 25/00 8 Claims

U.S. Cl. 73—1 R 8 Claims



Test equipment which is permanently built into the instrument permits in situ testing of the instrument sensor and indicator without using auxiliary test equipment or removing the instrument from service. The built-in test equipment is designed for use with an instrument of the type utilizing an impedance element in the sensor. It includes a test impedance of known magnitude which is permanently associated with the instrument. The test impedance is selectively switched into the circuit with the sensing impedance. If the sensing impedance is functioning properly, the two impedances in the circuit will produce a pre-set response on the instrument indicator. This shows the operator that his instrument is functioning properly. If, however, a fault is present, the instrument indicator does not show the pre-set response providing thereby an immediate indication of the presence of a fault.

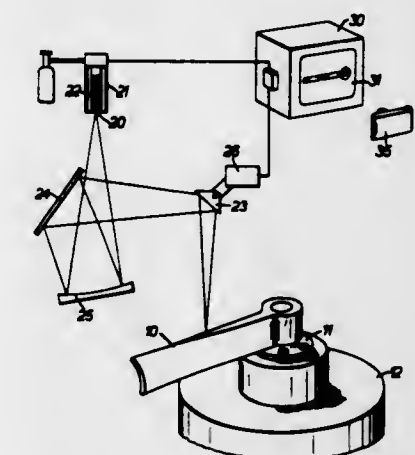
3,614,888
MAXIMUM KNOCK DETERMINING METHOD AND APPARATUS
 John T. Jones, Ardsley, and Gilbert C. de Malvilain, West Nyack, N.Y., assignors to Ethyl Corporation, New York, N.Y.
 Filed Jan. 6, 1969, Ser. No. 789,308
 Int. Cl. G01n 33/22 5 Claims

Automatic knock testing of gasoline with engine having automatic compression ratio control that changes compression ratio to maintain predetermined knock intensity, is effected with quicker and simpler maximum knock fuel-air ratio search that first lowers fuel-air ratio and then increases it at a fairly rapid rate, the increasing being terminated when the compression ratio control stops calling for a decrease in compression ratio, and then an ad-

steps being terminated when the compression ratio decrease steps pause for at least about the same length of time as the spacing between fuel-air ratio increase steps. No adjustment is needed with this alternative.

3,614,889
VIBRATION TESTING OF SPECIMENS
 James Walter Gearing, St. Leonards-on-Sea, England, assignor to Derritron Electronics Limited, St. Leonards-on-Sea, Sussex, England
 Filed Nov. 20, 1969, Ser. No. 873,734
 Claims priority, application Great Britain, Nov. 21, 1968, 55,264/68
 Int. Cl. G01n 29/00 8 Claims

U.S. Cl. 73—67 8 Claims

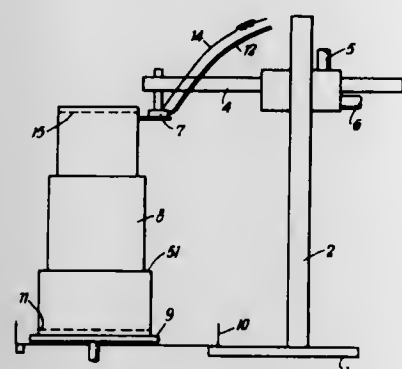


In a method of locating stresses in a specimen being vibrated by an electro-mechanical vibrator, the infra-red radiation from different points on the specimen surface, due to variations of temperature caused by stress, is detected by scanning the image of a detector over the surface. The variation may be indicated or recorded by using the detector output to control an electron beam which is similarly scanned over a screen.

3,614,890
PROBE MANIPULATORS FOR ULTRASONIC FLAW DETECTION APPARATUS
 Edward Arthur Benjamin Bates, London, England, assignor to Glass Developments Limited, London, England
 Filed Nov. 29, 1968, Ser. No. 779,963
 Claims priority, application Great Britain, Nov. 29, 1967, 54,391/67
 Int. Cl. G01n 24/00 10 Claims

Ultrasonic flaw testing apparatus is disclosed for dealing with stepped or other discontinuous surfaces. The

probe carriage has inner and outer fork members sprung apart with the probe pivotally mounted across the limbs of the inner fork and maintained in a predetermined position by a balance weight. Wheels are mounted at the ends of the limbs of the outer fork for engagement with the surface of the specimen under test the probe being maintained in a predetermined position with respect of the sur-



face by the spring between the forks and the balance weight acting on the pivot. The carriage is slidably mounted on an arm and is urged by a second spring against the surface, microswitches controlling an electric motor for moving the arm being arranged to be actuated when the limits of movement under control of the second spring are exceeded.

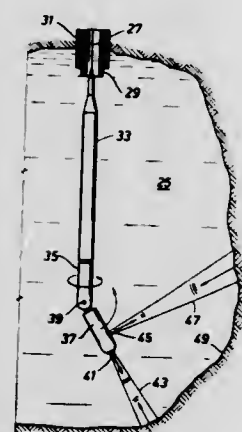
3,614,891

WELL SURVEYING INSTRUMENT AND METHOD
Ernst P. Nolte, Hildesheim, Germany, assignor to Prakla-Seismos G.m.b.H., Hannover, Germany
Filed Mar. 17, 1969, Ser. No. 807,883

U.S. Cl. 73—151

Int. Cl. E21b 47/00

29 Claims



A surveying instrument for investigating the character of an underground cavity penetrated by a borehole, includes an elongated instrument housing and a lower section containing means to generate and receive energy, such as a surveying transceiver. The lower section is pivotally and rotatably movable about the lower end of the housing enabling the entire surface of the cavity to be surveyed.

3,614,892

FLOWMETER TEMPERATURE COMPENSATION SYSTEM AND METHOD
Sidney Allan Ottenstein, Summerville, N.J., assignor to M & J Valve Company and M & J Development Company, both of Houston, Tex.
Filed Apr. 11, 1969, Ser. No. 815,313

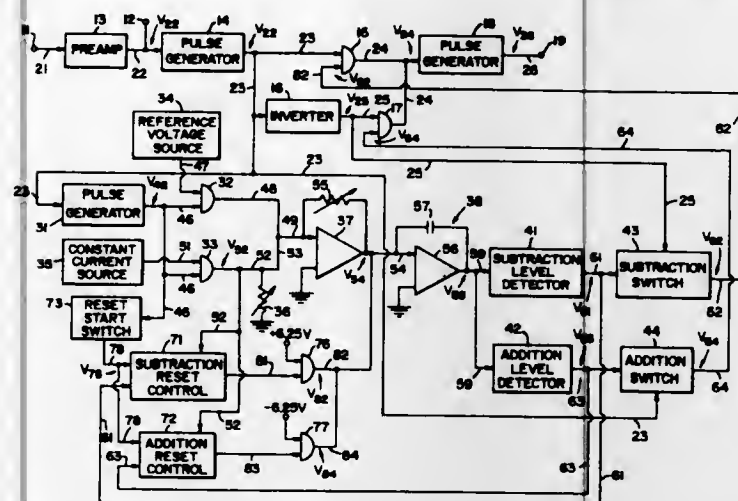
U.S. Cl. 73—233

Int. Cl. G01f 1/04

16 Claims

System and method relating to liquid flowmeters for adding pulses to and subtracting pulses from the flowmeter's digital pulse train in accordance with temperature deviations from a reference temperature, volumetric flow

rate, and the coefficient of expansion of the liquid. A signal having a magnitude proportional to the liquid temperature and a frequency dependent on the flow rate is generated and compared with a reference signal. The dif-



ference between the two signals is amplified, compensated in accordance with the coefficient of expansion of the liquid, and integrated to provide control of the addition and subtraction of pulses.

3,614,893

SPLAT-COOLED Fe-Co-V AND Fe-Co-Cr ALLOYS AND DEVICES USING SAME
Ethan A. Nesbitt, Berkeley Heights, and Ronald H. Willens, Warren Township, Somerset County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 23, 1967, Ser. No. 677,312

U.S. Cl. 73—362 R

Int. Cl. G01k 7/38

2 Claims



An inductive thermometer in which the inductor core consists of a splat cooled alloy of either the Fe-Co-V or the Fe-Co-Cr systems, both of which have been found to evidence paramagnetic properties at room temperatures and ferromagnetic properties upon cooling to 1.4° K.

3,614,894

GYROSCOPE FLEXURE HINGE ASSEMBLY
Willis B. Ensinger, Silver Spring, Md., assignor to The Singer Company, New York, N.Y.
Filed Jan. 30, 1969, Ser. No. 795,302

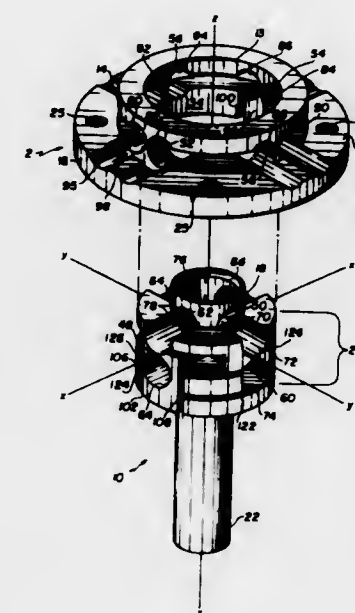
U.S. Cl. 74—5

Int. Cl. F16c 29/00; G01c 19/04

14 Claims

An improved flexure hinge suspension for use in free-rotor displacement type gyroscopes is provided comprising an inner hinge unit and an outer hinge unit concentrically nested one within the other in a generally parallel manner coaxial with the gyro's spin or reference axis. Each hinge unit, in turn, comprises a frictionless, four-bar,

two-axis, universal-joint suspension element for supporting the gyro's inertial flywheel relative to the spin axis in a particular directional mode. That is, in the inner hinge unit, the flexure bars have their respective longitudinal axes arranged perpendicular to the spin axis so as to support the flywheel against torsional and radial displacements relative to the spin axis while in the outer hinge unit the flexure bars have their respective longitudinal axes oriented parallel to the spin axis so as to support the flywheel



against axial displacements along the spin axis. Furthermore, in each hinge unit the flexure bars comprise locally thin necked-down sections formed by machining a corresponding pair of closely spaced holes completely through the peripheral wall of each unit as the case may be. Thus, when the two units are positioned relative to each other before being rigidly fastened together, the desired exact orthogonal alignment between the flexure bars the outer unit and the corresponding flexure bars in the inner unit may be facilitated by a simple visual inspection thereof.

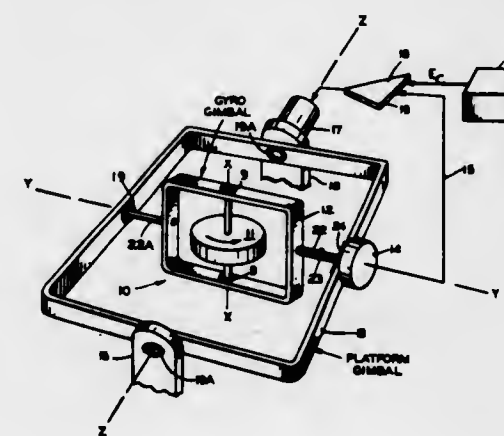
3,614,895

GYRO PLATFORM ERECTION SYSTEM
William Packard, Fair Lawn, Frank S. De Carlo, Westwood, and Bruce Finkelstein, Hackensack, N.J., assignors to The Bendix Corporation
Continuation-in-part of application Ser. No. 717,538, Apr. 1, 1968. This application June 26, 1969, Ser. No. 836,932

U.S. Cl. 74—5.41

Int. Cl. G01c 19/30

9 Claims



A gyroscope mounted to a platform gimbal and including a float having a groove and precessing through an angle to contact limiting spring means in the groove, said springs means providing a torque for gyro erection.

3,614,896

ECCENTRIC MECHANISM FOR CONVERTING A ROTARY MOVEMENT INTO A RECIPROCATING RECTILINEAR MOVEMENT OF VARIABLE AMPLITUDE

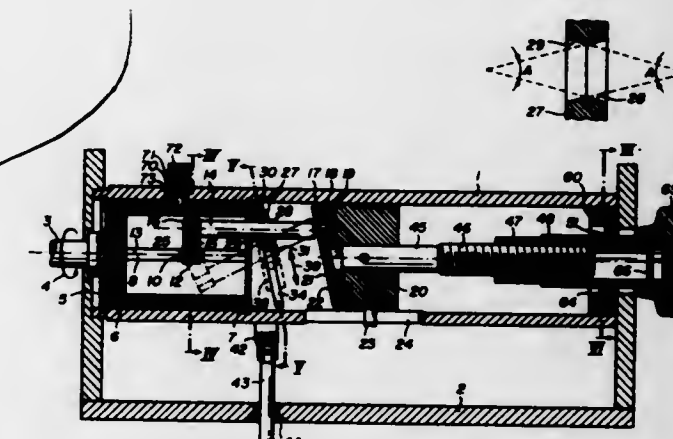
Manuel Claude Sanz, Grand-Lancy, Geneva, and Rene Weber, Geneva, Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Aug. 11, 1969, Ser. No. 849,025
Claims priority, application Switzerland, Aug. 16, 1968, 12,398/68

U.S. Cl. 74—42

Int. Cl. F16h 21/18, 33/00

6 Claims



In an eccentric mechanism for converting the input rotary movement of a rotary member into an output reciprocating linear movement, in order to vary asymmetrically the amplitude of the output movement, a slotted cup-like rotary member drives a cylindrical crank-pin through an eccentric lug and offset socket so that its axis describes an eccentricity-setting cone having its contour delimited by a high position and a low position, and having a generatrix parallel to the axis of rotation of the rotary member.

3,614,897

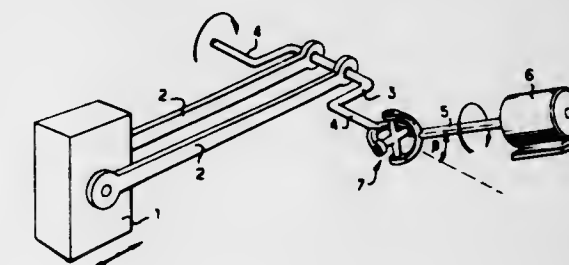
COUPLING FOR DRIVING INTERMITTENTLY ACTING ROLLING MILL

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France
Filed June 19, 1970, Ser. No. 47,261
Claims priority, application France, June 24, 1969, 6921147

U.S. Cl. 74—44

Int. Cl. F16h 21/22

2 Claims



The crankshaft driving the reciprocating cage of an intermittently acting rolling mill is driven from a constant-speed motor through a universal joint with the motor shaft positioned at an angle to the crankshaft in a plane perpendicular to the plane of reciprocation of the cage, so that cyclical irregularities in the angular speed of the crankshaft due to the mass of the cage are compensated for by complementary irregularities due to the angular drive through the universal joint.

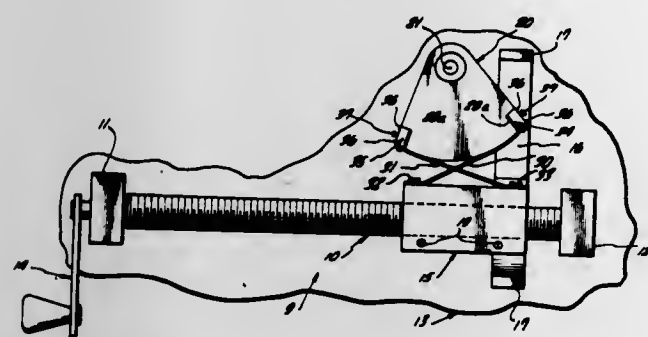
3,614,898

POSITIONING MECHANISM

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Kenneth G. Johnson, Los Angeles, Calif.
Filed Aug. 7, 1969, Ser. No. 848,282
Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

4 Claims



The disclosure describes a positioning mechanism for converting translatory motion into rotary motion, and is especially adapted for precision instrumentation. The mechanism includes a lead screw having a carriage threadedly mounted thereon and a sector pivotally mounted about a fixed axis normal to that of the lead screw and connected to the carriage by means of a pair of flexible bands. The sector is also provided with adjustment means for maintaining each of the bands in a taut condition between the carriage and the sector. Upon translatory movement of the carriage by rotation of the lead screw, the sector is drawn about its pivot by the carriage via the bands.

3,614,899

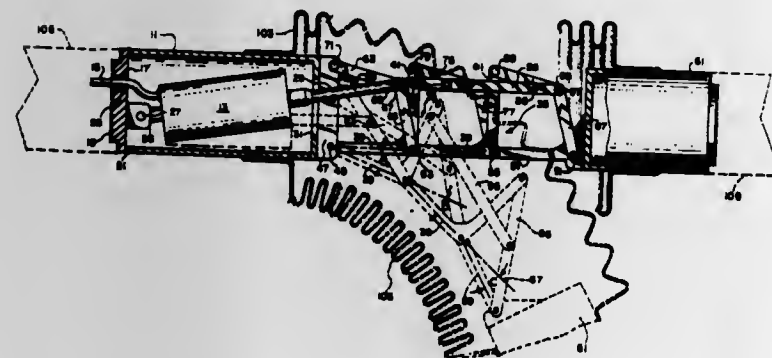
HERMETICALLY SEALED ELBOW ACTUATOR

Hans F. Wuenschel, Huntsville, Ala., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 25, 1969, Ser. No. 852,843
Int. Cl. F16h 15/50, 21/44; G05g 1/04

U.S. Cl. 74—105

6 Claims



A hermetically sealed elbow actuator comprising first and second pairs of pivotally connected angular actuating elements arranged between a base member and a head member. The base member houses a motor that forces incremental deflection of the actuating elements and the head member through a system of drive rods and expandable linkages. Limited deflection of each pair of actuating elements permits all of the moving parts, including the motor, to be hermetically sealed by a metallic bellows since the deflection of each pair of actuating elements is small enough to be within the bending tolerance of the bellows.

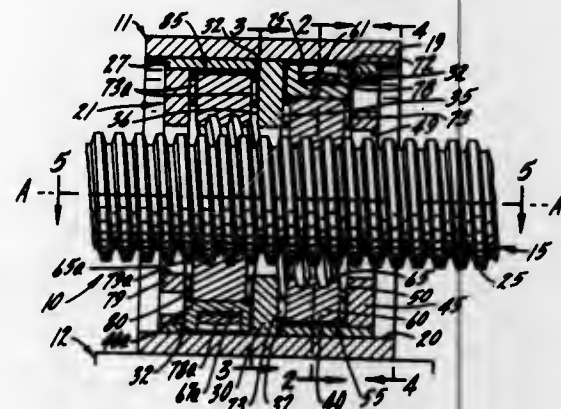
3,614,900

ANTI-FRICTION DRIVE

Gunnar A. Wahlmark, Grand Detour, Ill., assignor to Wahlmark Systems, Inc., Chicago, Ill.
Filed May 8, 1970, Ser. No. 35,762
Int. Cl. F16h 1/20, 55/22

U.S. Cl. 74—424.8

12 Claims



A screw type anti-friction transmission device. The drive screw extends through a driven housing including a force transmission cartridge. Thread engaging rings are mounted for rotation on bearings within the cartridge and are radially urged into engagement with the screw thread at 180-degree displaced points to forestall backlash.

3,614,901

STEERING WHEEL FOR MOTOR VEHICLES

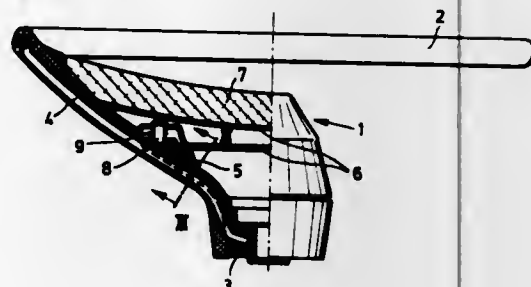
Bodo Henning, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Dec. 16, 1969, Ser. No. 885,482
Claims priority, application Germany, Dec. 17, 1968,
P 18 15 130.9

Int. Cl. B62d 1/04

U.S. Cl. 74—552

3 Claims



A steering wheel for motor vehicles having a rim attached to a hub portion by a plurality of spoke inserts. The hub portion includes an arm extending radially outwardly over each spoke insert. The arms are shorter than the spoke inserts and each arm has an outer end disposed between the rim and the center of the hub. A shock absorber member is mounted on the outer ends of the arms.

3,614,902

PLANETARY TRANSMISSION

Giovanni Candellero, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed June 26, 1970, Ser. No. 50,210
Claims priority, application Italy, June 13, 1970,
69.039/70

Int. Cl. F16h 37/08, 47/08, 57/10

U.S. Cl. 74—695

4 Claims

An automatic transmission having a hydraulic torque converter and a planetary gear set drivingly connected thereto by means of a plurality of hydraulically actuated

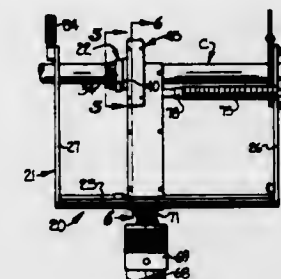
3,614,904

INSULATION STRIPPING APPARATUS

Jerry R. Young and Richard T. Wilcox, Charlotte, N.C., assignors to Utilities Research, Inc., Charlotte, N.C.
Filed Jan. 20, 1970, Ser. No. 4,302
Int. Cl. H02g 1/12

U.S. Cl. 81—9.5 R

16 Claims



Apparatus for stripping insulation from an elongate insulated conductor in which an insulation cutter means mounted for movement relative to a conductor is driven in simultaneous and coordinated rotation about and translation along the longitudinal axis of the conductor so that the cutter means describes a spiral path relative to the conductor and strips insulation therefrom.

3,614,905

APPARATUS FOR WIRE AND CABLE CUTTING AND STRIPPING

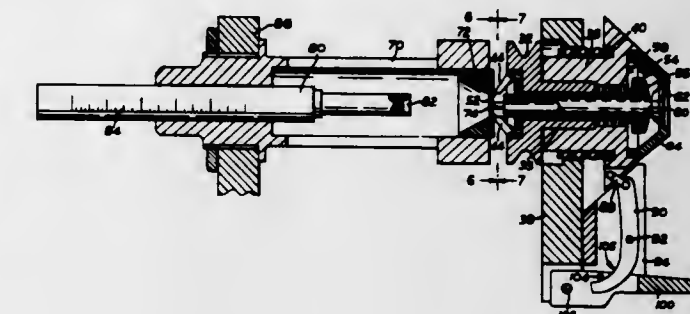
Zdzislaw Bleganski, Apem Works, St. Albans Road, Watford, England

Filed Mar. 21, 1969, Ser. No. 809,329
Claims priority, application Great Britain, Mar. 27, 1968,
14,633/68

Int. Cl. H02g 1/12; B26b 27/00; B21f 13/00

U.S. Cl. 81—9.5

5 Claims



Wire and cable stripping apparatus having cutters which are rotated around the wire and are pivoted, the cutters being axially displaceable along the direction of the cable to take them against an anvil to pivot them to an operative cutting position, and stops being provided to limit the degree of pivoting and hence the depth of the cut into the cable.

3,614,906

CUTTING APPARATUS FOR SLITTING MATERIAL

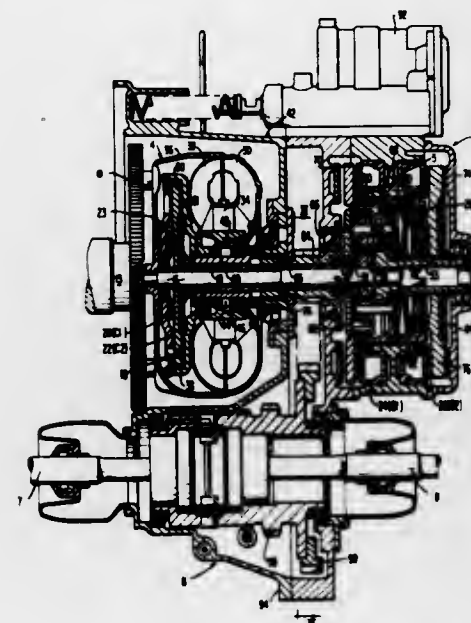
Clyburn E. Hall, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Sept. 3, 1969, Ser. No. 854,826
Int. Cl. B26d 1/22

U.S. Cl. 83—505

7 Claims

Cutting apparatus for slitting material comprising an anvil including a plurality of very thin discs, preferably from about .005 inch to about .010 inch thick, coaxially mounted in side-by-side relation and for resilient axial movement relative to each other. At least one rotating cutting blade having an axis of rotation substantially parallel to the axis of the discs is superimposed in cooperative relationship with the discs for slitting material passing out.



torque converter and the planetary gear set. A plurality of forward drive gear ratios and a reverse ratio is obtained by selectively engaging the clutch means positioned between the engine and the torque converter, as well as additional friction engaging devices positioned radially outwardly from the planetary gear set.

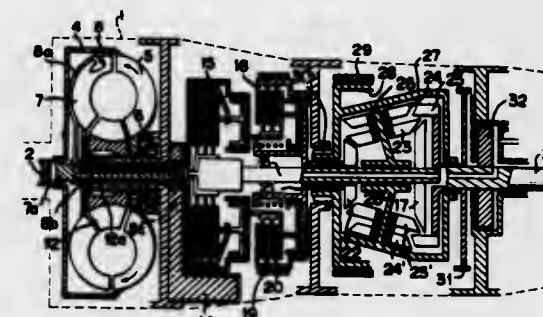
3,614,903

TRANSMISSION APPARATUS

Masaaki Noguchi and Shigeru Sakakibara, Aichi-ken, and Tomoo Ishihara, Tokyo, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Nov. 15, 1968, Ser. No. 776,149
Int. Cl. F16h 47/08, 5/42; B60k 21/08

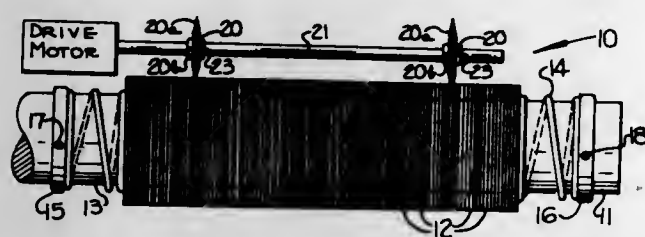
U.S. Cl. 74—868

41 Claims



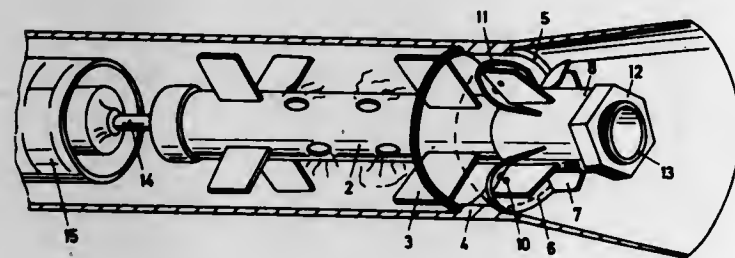
This invention relates to transmission apparatus of the fluid variety which includes various speed change gearing. According to the invention, the flow speed of the circulating volume within the torque converter portion of transmission apparatus is detected and thereafter utilized in the application of pressurized oil to the various portions of the transmission apparatus so that an oil pressure proportional to the flow speed of the circulating volume is obtained. The obtained pressurized oil is then used as the actuating fluid for the respective clutches and brake bands present within the transmission apparatus which act in combination to change the ratios of the speed change gearing and, in addition thereto, detect the shift points at which the automatic changes in the gear ratios are carried out.

therebetween. The cutting edge of the cutting blade is received by and wedged between two of the discs by axially



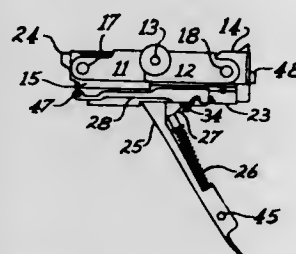
moving the discs relative to each other and passing between the two discs as the cutting blade rotates.

3,614,907
BLOW-OUT DISC
Nils E. Haglund and Knut G. Knutsson, Eskilstuna, Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden
Continuation-in-part of application Ser. No. 672,573, Oct. 3, 1967. This application Mar. 12, 1969, Ser. No. 806,373
Claims priority, application Sweden, Oct. 4, 1966, 13,358/66
Int. Cl. F41f 3/02, 15/00
U.S. Cl. 89—1.7 4 Claims



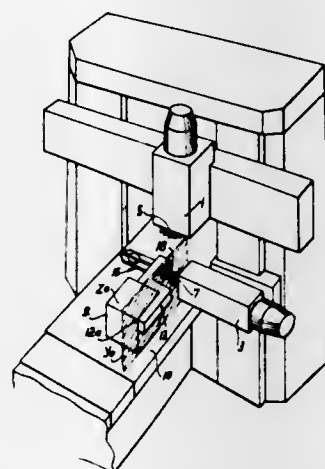
A ductile metal damming washer or disk, the marginal edge portion of the front end of which is in contact with a rear annular surface of a constriction provided within the barrel of the gun. A sub-calibre combustion chamber having a set of radial supporting members of known type, extends through the constriction and through the disc. The chamber is kept in a correct radial and axial position by means of a second set of radial supporting members behind the disc, simultaneously clamping it to the constriction. The gas pressure, when firing a round, will split the disc and form or fold its sections into tab-like elements that will extend around the leading end of the supporting members in the rear set of said radial supporting members.

3,614,908
REMOVABLE UNITARY ACTION FOR A FIREARM
Gary Wilhelm, Hamden, Conn., assignor to Stoeger Arms Corporation, South Hackensack Township, Bergen County, N.J.
Filed Oct. 7, 1968, Ser. No. 766,380
Int. Cl. F41c 19/00
U.S. Cl. 89—132 5 Claims



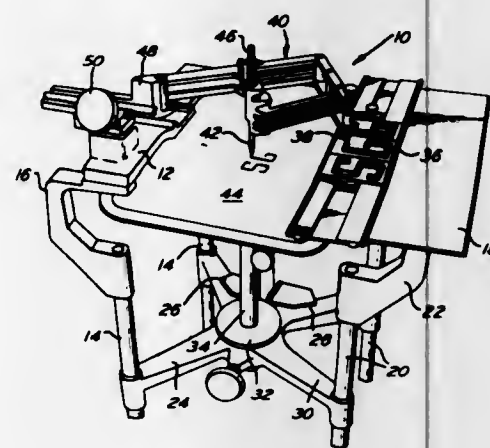
Shown is a toggle action recoil operated semiautomatic pistol whose action as a unitary assembly is removably secured in the hollow frame of the pistol by a pin, a spring loaded plunger and a set screw.

3,614,909
APPARATUS FOR ADJUSTING CUTTING TOOLS FOR THEIR USE IN TOOL MACHINES, IN PARTICULAR MILLING MACHINES
Rolf-Dieter Neuser, Coburg, Bavaria, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Bavaria, Germany
Filed Mar. 4, 1969, Ser. No. 804,236
Claims priority, application Germany, Mar. 15, 1968, P 16 52 751.8
Int. Cl. B27g 23/00
U.S. Cl. 90—11 R 10 Claims



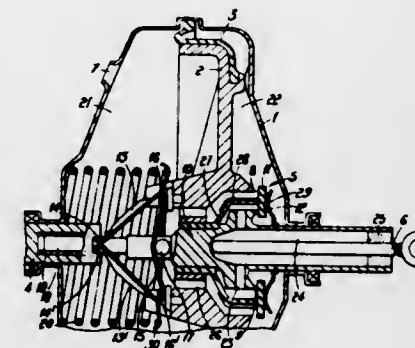
An apparatus for adjusting the infeed of cutting tools in tool machines, in particular milling machines. There is provided on the machine table or on a workpiece clamped on the machine table a zero point of a three-dimensional coordinate system. The tool cutting edge is thereafter brought into one of the reference planes defined by the coordinate axes by means of a measuring and indicating device. The measurement readable on the scale associated with the tool support is determined as a zero value and the infeed of the tool toward the workpiece is then carried out according to this scale.

3,614,910
FONT OF TYPE
George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,614
Int. Cl. B23g 33/00, 35/42; B23c 1/16
U.S. Cl. 90—62 8 Claims



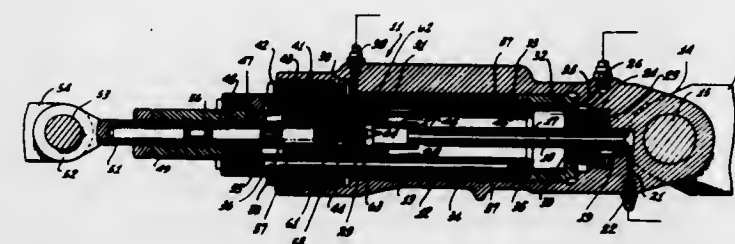
A pattern font of type is provided whereby a single, double or triple thickness letter may be engraved by using the single pattern font. The stylus of a conventional engraving machine is used to trace the desired thickness letter from the pattern font of type, and a remote engraver is utilized to engrave the letter having the desired thickness.

3,614,911
BRAKE BOOSTER
Juan Belart, Walldorf, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,453
Claims priority, application Germany, Oct. 4, 1968, P 18 01 022.5
Int. Cl. F15b 9/10
U.S. Cl. 91—369 B 15 Claims



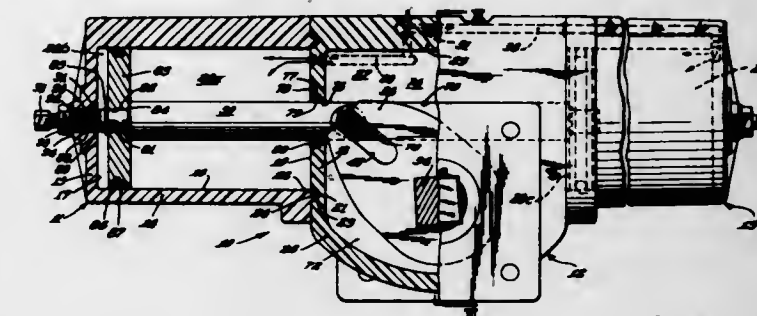
A vacuum operated brake booster for power assisted brakes in which two thrust members acting between the power piston of the booster and the power transmitting member for the master cylinder are held at an angle with respect to the piston axis by a resilient tie strip connecting the ends of the thrust members. The center section of the tie strip continuously exerts a reaction force on the actuating linkage to eliminate slack in the system.

3,614,912
TELESCOPING PISTON, CENTRAL LOCK HYDRAULIC ACTUATOR
Donald L. Nepp, San Pedro, Calif., assignor to Lionel Pacific, Inc., Anaheim, Calif.
Filed Sept. 29, 1969, Ser. No. 861,563
Int. Cl. F15b 15/26
U.S. Cl. 92—25 8 Claims



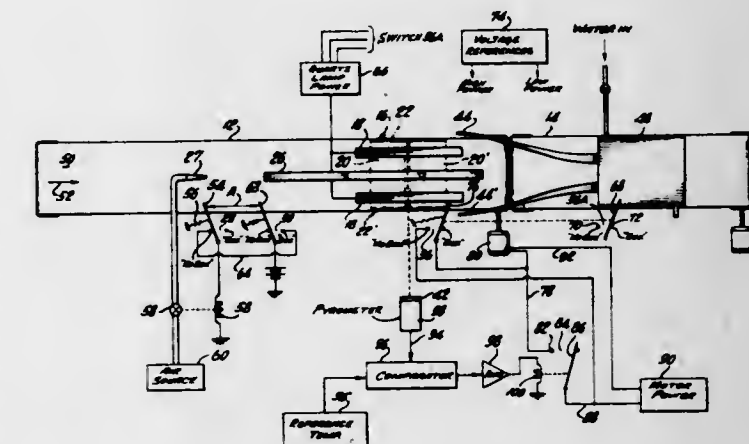
A hydraulic actuator employing telescoping, independently movable outer and inner pistons with the inner piston movable independently to an extended position, while the outer piston remains retracted, or with both pistons extended for the maximum movement of the operator which is mounted on and moves with the inner piston. Both pistons are substantially cylindrical in form, the inner piston having locking elements carried therein, which are movable radially when the pistons are retracted, for effecting locking engagement with a stationary part carried by the body of the actuator and received within the inner piston when it is in retracted position. The inner piston carries a locking-unlocking piston for effecting radial movements of said locking elements into and out of locking engagement with a stationary member. A port is provided for pressurizing the inner piston only for extension, a second port is provided for pressurizing the outer piston for extension, and a third port is provided for pressurizing both the pistons for retracting movement thereof.

3,614,913
PNEUMATIC OPERATING MEANS FOR A VALVE
Malcolm D. Clark, Glasgow, Scotland, assignor to Raymond Control Systems, Inc.
Filed Apr. 11, 1969, Ser. No. 815,410
U.S. Cl. 92—138 Int. Cl. F01b 7/00 14 Claims



A pneumatically operated valve actuator employs a centrally located piston rod which is slidably supported over a substantial length of its travel by upper and lower guiding rails or tracks and which is movable in response to the receipt of fluid operating pressures which are directed simultaneously through two branches of a fluid circuit internally of the actuator and against the faces of a pair of oppositely disposed pistons carried by the piston rod so that the branch fluid circuits cooperably power the actuator. Total piston areas may be varied by changing or eliminating cylinders. Additionally, the actuator may be employed for placing its corresponding controlled valve in a desired fully open or fully closed position in response to an alarm condition by a biasing arrangement having spring means which is loaded by operation of the actuator. The actuator is preferably constructed primarily of plastic components to minimize friction and provide for ease in formation of the fluid circuits therein.

3,614,914
BOX SEALING MACHINE
John A. Troll, Ridgefield, Conn., assignor to Iris Corporation
Filed July 31, 1969, Ser. No. 855,059
Int. Cl. B31b 1/00
U.S. Cl. 93—36 R 9 Claims



A novel sealing method and apparatus is described for the sealing of cardboard boxes. The boxes are coated with temperature sensitive sealer at at least the portion where a seal is to be made. The box portion is suitably heated with a source of radiation of a predominant wavelength range. A temperature sensor is employed which is sensitive to radiations outside the wavelength range of the

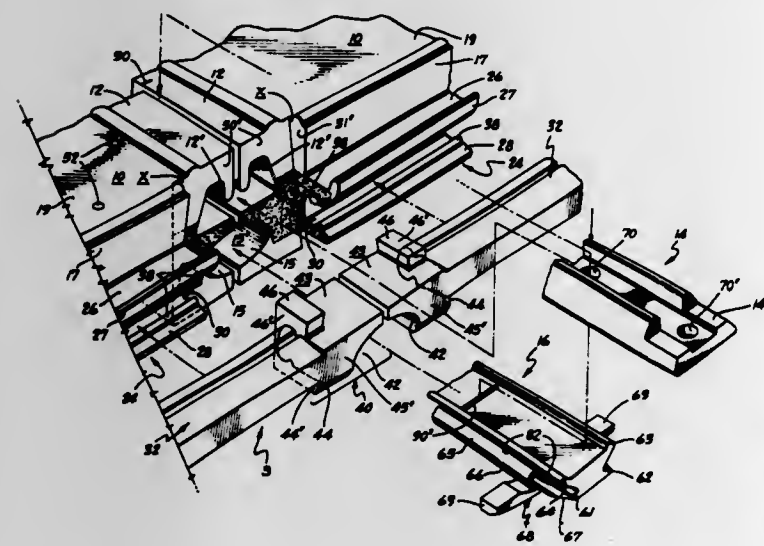
source of radiation. The temperature sensor monitors the heated box portion and supplies a control signal when the desired temperature has been attained.

3,614,915
PANEL ASSEMBLY AND METHOD
Robert E. Perry, Lafayette, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Continuation-in-part of application Ser. No. 767,447, Oct. 14, 1968. This application Jan. 21, 1969, Ser. No. 792,357

U.S. Cl. 94—13

Int. Cl. E01c 5/00

23 Claims



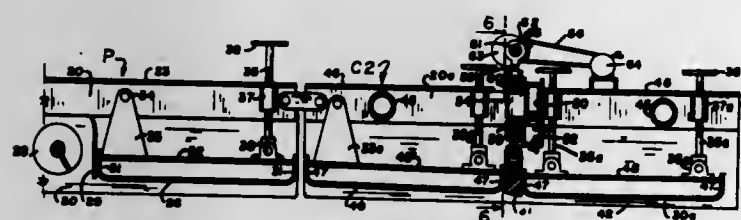
This invention relates to an improved load supporting and load transferring panel system for use in landing mat installations and the like comprised of a plurality of removably interlocked panels and wherein the joints formed by the various marginal edges of the interlocked panels are provided with improved cooperating locking and sealing means to prevent the penetration of water and the like through the joint structures as well as to facilitate installation of the overall panel system and access to individual panels that may become damaged in use.

3,614,916
COMPACTING APPARATUS FOR FINISHING HOT MIX PAVEMENT
Jewell R. Benson, 1111 S. Colorado Blvd., Denver, Colo. 80222
Filed Apr. 13, 1970, Ser. No. 27,504

U.S. Cl. 94—48

Int. Cl. E01c 19/30

9 Claims



Apparatus to follow a paving machine to better compact a ribbon of pavement formed by mixes of asphalt and aggregate. A compaction shoe traversing the pavement is confined between a leading surcharge plate and a trailing finishing plate. The pressure of the compaction shoe against the pavement which is sufficient to distort the pavement surface at each side of the shoe, effects the desired compaction because of the restraining action of the surcharge and finishing plates. To more effectively attain the desired compaction, a means is provided to vibrate the compaction shoe.

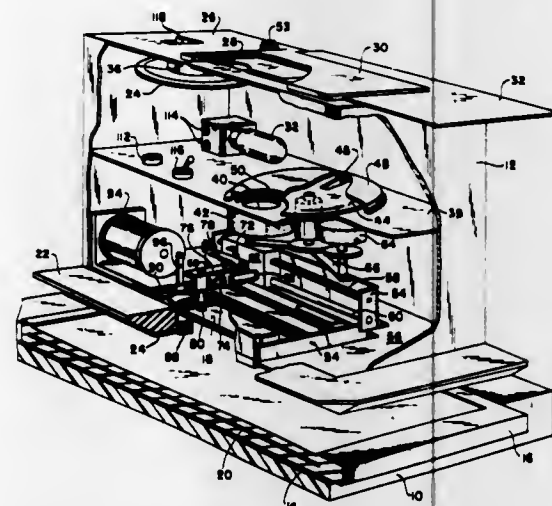
3,614,917
APPARATUS AND METHOD FOR FORMING A DEVELOPABLE PATTERN ON LIGHT-SENSITIVE FILM CARRIED IN A CASSETTE
Stephen J. Wenthe and Norman N. Lareau, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1969, Ser. No. 821,194

Int. Cl. G03b 17/24

U.S. Cl. 95—1.1

6 Claims



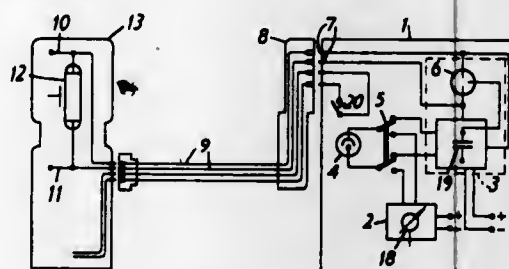
Apparatus for forming a developable pattern on a light-sensitive film carried in a cassette having an openable window, the marking apparatus including a mechanism for holding the cassette in a predetermined position, a device for opening the window, a support for prepared data and means for optically projecting an image of the data through the window onto the film in the cassette. The apparatus may also be provided with electrical switch means for preventing its operation if the cassette is not properly received therein.

3,614,918
PHOTOGRAPHIC CAMERAS
Walter Hennig and Heinz Schulze, Dresden, Germany, assignors to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, Germany
Filed Dec. 5, 1968, Ser. No. 781,482

Int. Cl. G03b 7/00, 15/05

U.S. Cl. 95—10

4 Claims



The camera in combination with a flash lamp apparatus is constructed with the light path through the camera. A change over switch is provided in the camera housing which connects alternately a quantitative light meter and a photometer to the photoelectric cell according to choice by means of a changeover switch.

3,614,919
APERTURE DEFINING EXPOSURE CONTROL SYSTEM
Lawrence M. Douglas, Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 16, 1968, Ser. No. 784,064

Int. Cl. G03b 7/08, 9/06

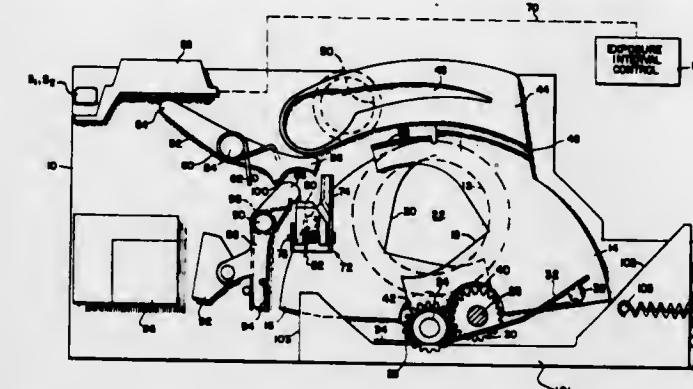
U.S. Cl. 95—10 C

29 Claims

An automatic aperture control system for photographic apparatus which provides for continuous as opposed to incremental regulation of aperture dimension. Aperture

defining blades are linked cooperatively and driven to diverge from a position defining a minimum aperture to a position defining a maximum aperture. In response to a control signal, an electromagnetically actuated braking mechanism halts the movement of the blades when they

a prism to invert the image of the object in the vertical or horizontal is placed and another prism is placed behind the small hole for compensating the light path length to coincide with the light path passing through said first prism. On the focusing plane of the objective lens, two photoconductive elements are provided on both sides



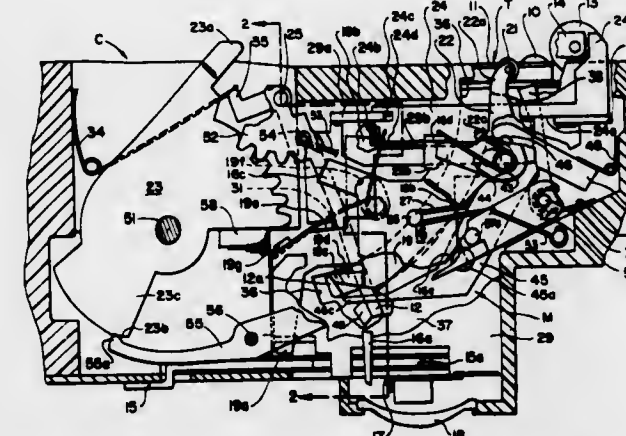
reach a proper aperture defining orientation. The brake is characterized in using a pivotally mounted lever having an end which frictionally contacts the surface of at least one of the moving blades in a manner such that it assumes a compressive force counteracting any tendency for further movement of the blades.

3,614,920
SELF DEVELOPING CAMERA WITH PIVOTABLE PLATEN
Leonard F. Kamp, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 15, 1968, Ser. No. 767,621

U.S. Cl. 95—13

Int. Cl. G03b 17/52

8 Claims



A pivotal platen mechanism is provided for use in a camera in which slide transparency units are both exposed and processed. The platen pivots out of the exposure plane before exposure of the film and then pivots into the exposure plane to support the film during spreading of a developing fluid across the film.

3,614,921
PHOTOELECTRIC DEVICE FOR DETECTING THE FOCUSING
Torakiyo Yamanaka and Kichichi Sakaguchi, Yokohama-shi, and Kazuya Hosoe, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 17, 1969, Ser. No. 885,936

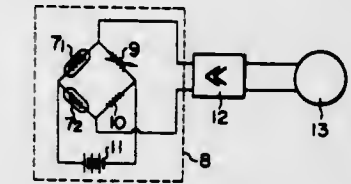
Claims priority, application Japan, Dec. 25, 1968, 43/94,496

U.S. Cl. 95—44 C

Int. Cl. G03b 3/12

4 Claims

Photoelectric device for detecting whether or not the image of an object to be photographed is correctly focused: On the optical axis of an objective a fixed iris having a small hole on the optical axis and another small hole of the same diameter as that of the small hole on the off-axis position is provided. Behind the other hole



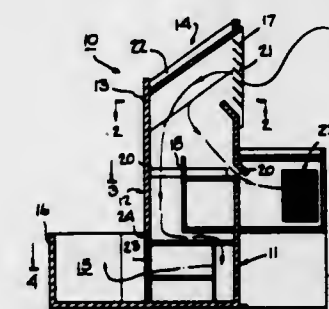
of the optical axis, and two elements are within a plain containing the optical axis and the center of the light flux passing through the other hole. The device can detect the image correctly even when the distribution of brightness of an object is asymmetrical with respect to the optical axis, since two mutually inverted images are superposed upon two photoconductive elements.

3,614,922
NATURAL AIR COOLING SYSTEM
Harris J. Sobin, Apt. 720, Caribbean Towers, 760 Ponce de Leon Ave., Santurce, Puerto Rico 00907
Filed Sept. 4, 1969, Ser. No. 855,080

U.S. Cl. 98—32

Int. Cl. F24f 13/00

17 Claims



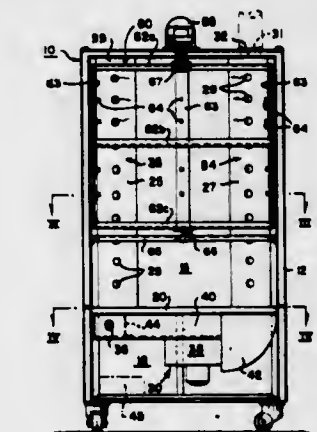
Natural cooling of buildings and their occupants is obtained through the capturing and controlled flow of naturally occurring wind. The wind is directed to flow through the buildings from a positive pressure area to a negative pressure area so as to provide natural cooling by delivering a flow of air across the inhabited portions of the rooms of the buildings.

3,614,923
FOOD WARMER
Neal W. Thompson, McKees Rocks, Pa., assignor to Small Business Administration
Filed July 16, 1969, Ser. No. 842,268

U.S. Cl. 99—234 R

Int. Cl. A47j 36/24

4 Claims

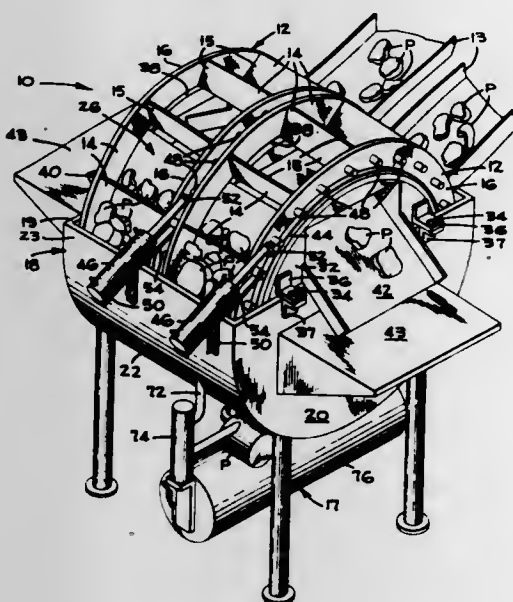


A food warmer including an upright cabinet having a warming and storage compartment, and a closed forced

air heating system for providing moisture regulated heated air to the warming and storage compartment whereby food is kept warm under a controlled atmosphere.

3,614,924
CONTINUOUS COOKER
Frank David Hickey, San Jose, Calif., assignor to
FMC Corporation, San Jose, Calif.
Filed Aug. 29, 1969, Ser. No. 854,088
Int. Cl. A47j 37/12
U.S. Cl. 99—404

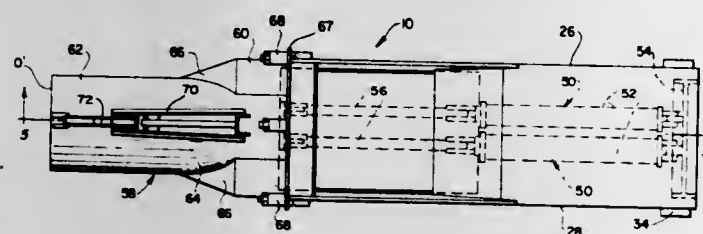
5 Claims



A deep fat cooker having multiple annular pocket reels demountably retained on a large cylindrical hub for rotary movement, cooks the food products as the reel pockets move through a heated, liquefied fat bath in an upwardly open semi-cylindrical tank. The hub has closed ends for displacing fat in the tank. The reels require no submerged axles. Independent ratchet drives for the pocket reels provide for different cooking times for the product carried by each reel.

3,614,925
APPARATUS FOR COMPACTING MATERIAL INTO DRUMS OR BAGS
Milton Clar, Bethesda, Md., assignor to Auto Pak Company, Bladensburg, Md.
Continuation-in-part of application Ser. No. 727,845, May 9, 1968. This application Apr. 30, 1970, Ser. No. 33,284
Int. Cl. B30b 15/06
U.S. Cl. 100—229

13 Claims

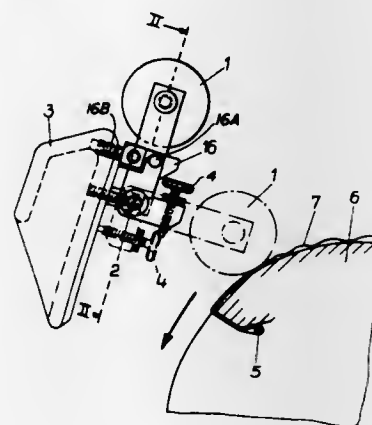


Compaction apparatus having a material receiver chamber with an inlet opening at the top and an outlet opening at the front, the top and bottom edges of the outlet opening being defined by circular arcs merging at opposite ends with straight segments which form square corners at the side extremities of the outlet opening. A com-

paction blade of cross-section substantially the same as the outlet opening, and the cross-section of the lower portion of the material receiver chamber, moves through the chamber and forces material through the outlet opening into a snout. The snout comprises, in succession, a portion of cross-section substantially the same as the receiver chamber outlet opening, a tapered transition portion, and a portion of circular cross-section, the radius of which is substantially the same as the circular arcs of said outlet opening. A receptacle received over the snout is moved along the snout as material is supplied thereto. The blade has cutting teeth which cooperate with a shear bar at the upper portion of the receiver chamber outlet opening, and the blade is guided by elongated members in a machinery compartment behind the receiver chamber.

3,614,926
DEVICE FOR TENSIONING THE MOUNTING SHEET ONTO PRINTING MACHINES
Heinz Brechtel, Frankenthal, Pfalz, Germany, assignor to Schnellpressenfabrik Frankenthal, Albert & Cie Aktiengesellschaft, Frankenthal, Pfalz, Germany
Filed Oct. 15, 1968, Ser. No. 767,797
Claims priority, application Germany, Nov. 16, 1967, P 16 11 294.0
Int. Cl. B41f 25/00
U.S. Cl. 101—1

3 Claims



A cylinder having a coarse surface and pivotably mounted adjacent to the drum of a printing machine so that the cylinder can be urged against the mounting sheet retained on the drum to smoothen out and tension the mounting when the drum is rotated against the cylinder. A ratchet catch is also provided for holding the cylinder out of contact with the drum when it is not in use.

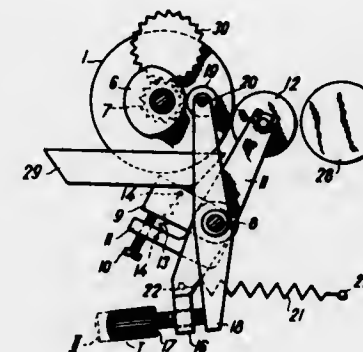
3,614,927
MEANS FOR ADJUSTING THE AMOUNT OF DAMPING LIQUID SUPPLIED TO AN OFF-SET PRINTING MACHINE
Josef Jurný, Sebranice, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia
Filed June 30, 1969, Ser. No. 837,708
Claims priority, application Czechoslovakia, July 1, 1968, 4,821/68
Int. Cl. B41l 23/02
U.S. Cl. 101—148

4 Claims

The damping liquid is transferred from an immersion roller to a damping roller by means of a transfer roller, performing a rocking movement between both rollers. The transfer roller is mounted in brackets supported pivotably on a shaft, which itself is rotatably mounted in the side walls of the machine. A two-arm lever is freely mounted on the shaft, and has on its extremity a roller engaging with the circumference of a cam rotating at a

speed different from that of the immersion roller. Adjustable stop means allow an adjustment of the position of

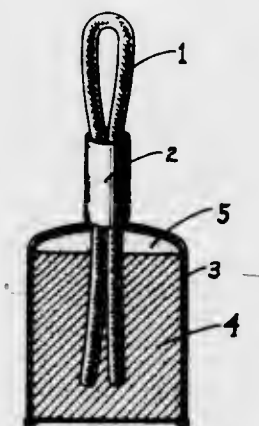
seated within said casing against said base wall. There is a non-binding fit between the primer and the aperture in the casing base wall, the primer being firmly gripped and



the transfer roller with respect to the immersion roller and the duration of their contact.

3,614,928
CAST HIGH EXPLOSIVE PRIMER
Dale S. Partridge, Shawnee Mission, Kans., Allen Lemoyne Caldwell, Snowflake, Ariz., and Charles E. Tuttle, Jr., Mission, Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Mar. 12, 1969, Ser. No. 806,406
Int. Cl. F42b 3/10
U.S. Cl. 102—24

1 Claim

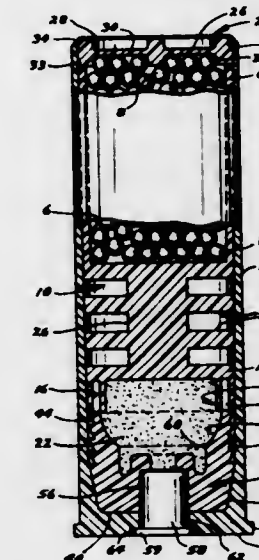


A length of detonating fuse is cut, doubled and the two ends passed through a short length of flexible tubular sleeve. The cut ends of the resulting loop of detonating fuse are then imbedded in a cup of molten high explosive so that, upon cooling, the loop with surrounding sleeve protrudes from the surface of the cast explosive, forming an assembly which is useful in attaching a connecting piece of detonating fuse or in positioning a blasting cap or electric detonator so that the end containing the base charge is maintained in firm physical contact with both the detonating fuse and the surface of the cast high explosive.

3,614,929
PLASTIC SHOTGUN SHELL
George L. Herter and Glen L. Mittelsteadt, Waseca, Minn., assignors to Herter's, Inc., Waseca, Minn.
Filed Apr. 21, 1969, Ser. No. 817,860
Int. Cl. F42b 7/06, 7/08
U.S. Cl. 102—43 P

6 Claims

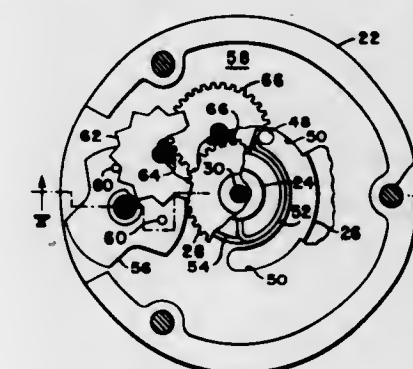
An all plastic shotgun shell comprised of a tubular plastic casing having an integral base wall with an aperture therein through which a primer extends, a plastic over-shot wad closing the end of said tubular casing opposite said base wall, a one-piece plastic shot cup and over-powder wad unit within the tubular casing, and a plastic base wad



held in place by means of a force fit between the primer and an axial pocket formed within the yieldable base wad into which the primer extends.

3,614,930
RATE CHANGE DEVICES AND PARTICULARLY IMPROVED ARMING DEVICES
Donald A. Brackman, Englewood, Ohio, and John Donald York, Connersville, Ind., assignors to Avco Corporation, Richmond, Ind.
Filed Dec. 23, 1968, Ser. No. 785,933
Int. Cl. F42c 15/12, 15/24, 15/26
U.S. Cl. 102—76 R

21 Claims



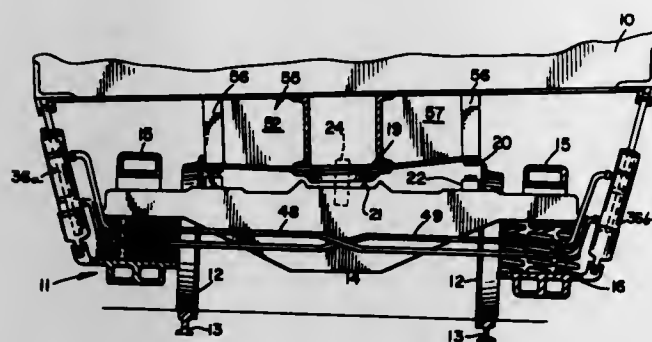
The disclosure shows two forms of arming devices for bombs having retarder fins. In both devices a G weight is relatively rotated when displaced by a deceleration force. If the deceleration force is maintained for a predetermined period of time, in one device, the bomb is armed, otherwise it is not. In the second device, if the deceleration force is maintained for a predetermined period of time, the bomb is armed in a relatively short period of time, otherwise the bomb is armed in a longer period of time. In the second device, a second G weight provides bidirectional responsiveness to deceleration forces or optionally responsiveness to both acceleration and deceleration forces.

3,614,931
HYDRAULIC SWAY STABILIZER
Franklin P. Adler, 105 Boyd Circle, Michigan City, Ind. 46360
Filed May 12, 1969, Ser. No. 823,795
Int. Cl. B61f 5/14, 5/16, 5/24
U.S. Cl. 105—199 A

7 Claims

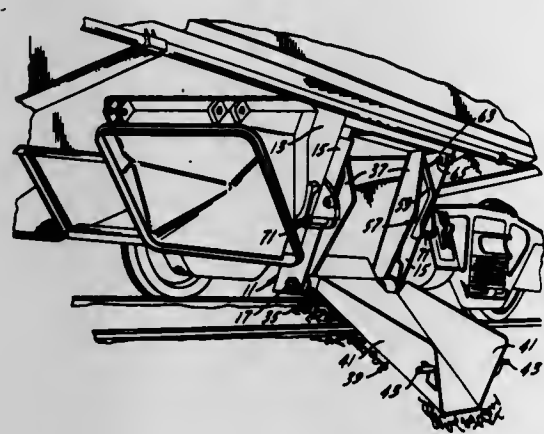
A sway stabilizer for a railway car including a shock absorber which extends between the car body and the

side frame at each side of the car truck. A conduit extends from the upper end of the chamber of the left shock absorber to the lower end of the chamber of the right shock absorber. A second conduit extends from the lower end of the left shock absorber chamber to the upper end



of the right shock absorber chamber. The cross sectional area of the conduit is much greater than the sum of the areas of the several by-pass orifices in the piston. The piston rod extends through both end members of the chamber.

3,614,932
EMBANKMENT TERRACING DOOR FOR HOPPER CARS
Sergio Rene Dany, Apartado Postal 2041, Guadalajara, Jalisco, Mexico
Filed Dec. 27, 1968, Ser. No. 787,379
Claims priority, application Mexico, Jan. 27, 1968, 103,640
Int. Cl. B61d 7/18, 7/26; E02f 5/22
U.S. Cl. 105—239 **3 Claims**

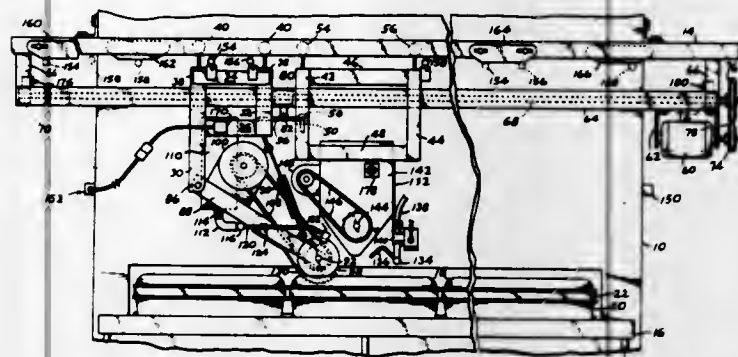


A terracing door assembly for a hopper car having a locking member that is adapted to lock the door in both its closed and open positions. When the door is closed, the locking mechanism engages the top and bottom portions of the door. In the open position, the locking mechanism engages the bottom portion of the door. A latching mechanism is provided to hold the locking mechanism in its locking positions with the latch arranged so it can selectively be held away from engagement with the locking member.

3,614,933
BREAD AND PASTRY PROCESSING APPARATUS
Edward I. Marcx, Portland, and Harvey F. Stines, Gresham, Ore., assignors to Stinemark Corporation, Gresham, Ore.
Continuation of application Ser. No. 639,343, May 18, 1967. This application Apr. 17, 1969, Ser. No. 824,723
Int. Cl. A21d 13/00
U.S. Cl. 107—4 **9 Claims**

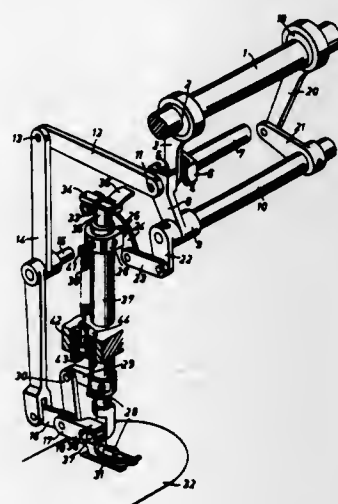
Apparatus for splitting, water-spraying and seeding the upper surfaces of bakery products preliminary to baking them is mounted directly in front of the oven. It includes a track, a carriage, and a carriage drive for moving the carriage across the bakery products. Mounted

on the carriage are cutters, a spray, and a seeder arranged, respectively, for splitting, spraying, and seeding the upper surfaces of the bakery products. These units



work during a continuous passage of the carriage across the oven door. The processed products then may be introduced immediately into the oven for baking.

3,614,934
SEWING MACHINE WITH UPPER FEED
Herbert Wenz and Heinrich Berg, Kaiserslautern, Pfalz, Germany, assignors to G. M. Pfaff AG, Kaiserslautern, Pfalz, Germany
Filed Aug. 21, 1968, Ser. No. 754,213
Claims priority, application Germany, Sept. 28, 1967, P 30 14 752a
Int. Cl. D05b 27/04
U.S. Cl. 112—212 **8 Claims**



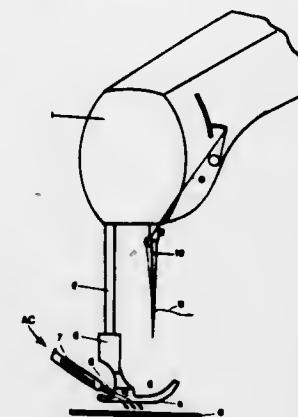
In a sewing machine having an upper feed dog structurally combined with the presser foot for both horizontal and vertical oscillating movements of said dog, and a common biasing spring arranged to urge both the presser foot and feed dog lift bars into engagement of the presser foot and feed dog with the work, an auxiliary biasing spring acting on the presser foot bar only serves to maintain the same in continuous engagement with the work, independently of pressure variations on the work by the common biasing spring resulting from the vertical feed dog oscillations.

3,614,935
DEVICE FOR DRIVING THE THREAD OUT OF THE WAY FROM UNDER THE PRESSER FOOT OF A SEWING MACHINE

Cesare L. Conti, Via Varese 18, Milan, Italy
Filed Apr. 9, 1969, Ser. No. 814,531
Claims priority, application Italy, Apr. 18, 1968, 829,935/68
Int. Cl. D05b 51/00
U.S. Cl. 112—218 R **1 Claim**

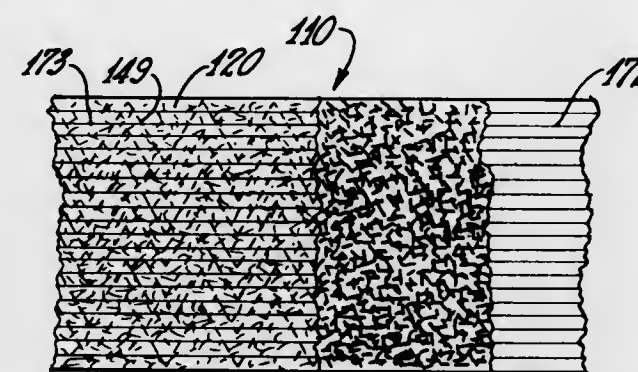
A method for driving off the needle thread from a sewing machine having a cutting mechanism for the needle-thread and the hook thread is disclosed, consisting in projecting an energetic stream of compressed air

from beneath the underside of the presser foot. The device for performing the method essentially comprises a properly oriented air duct, fed by a compressed air



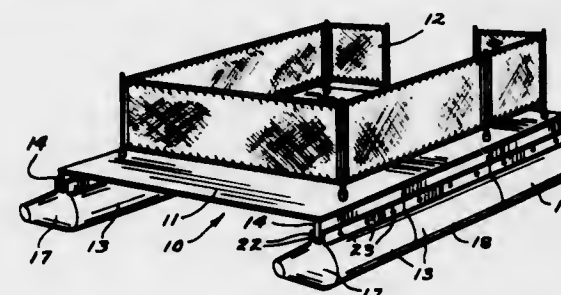
source. The area where the air-stream drives the thread is never critical and the device is extremely simple and absolutely reliable.

3,614,936
NONWOVEN REINFORCEMENT STRUCTURE AND METHOD FOR PRODUCING IT
Thomas E. Philipps, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed May 9, 1969, Ser. No. 823,459
Int. Cl. B32b 7/08
U.S. Cl. 112—420 **9 Claims**



A nonwoven structure and method of making it where the structure includes short lengths of linear material such as glass strand united by nonadhesive means into a coherent body.

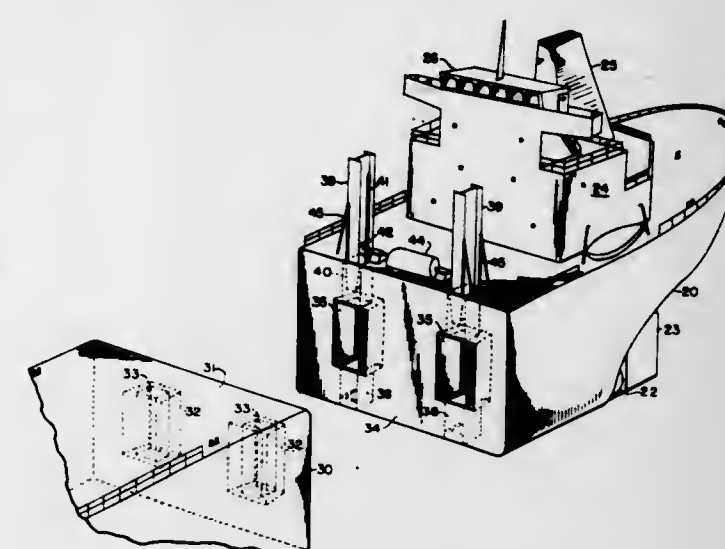
3,614,937
PONTOON STRUCTURE
David A. Schulman, 6915 Rosemary Road, Eden Prairie, Minn. 55343
Filed Apr. 9, 1969, Ser. No. 814,621
Int. Cl. B03b 1/12
U.S. Cl. 114—66.5 F **3 Claims**



A plurality of modular pontoon float sections of uniform cross sectional dimension are supported in longitudinal alignment with each other along two parallel sides of a pontoon boat deck through the instrumentality of a pair of longitudinally extending parallel flanges extending upwardly from each of the float sections to snugly receive

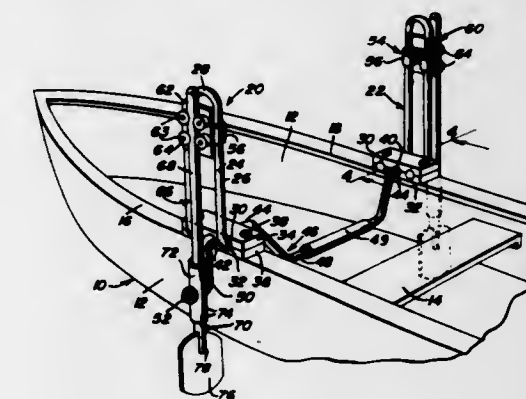
one of a pair of parallel downwardly extending deck floor joists. Transverse aligned openings are provided in the flanges and in the joists to receive bolts for releasably fastening the pontoons to the deck. Pontoon sections at a front end of each aligned set can have a sloping shape to facilitate movement of the boat through the water. The openings in the pontoon flanges or in the deck joists can be slots which will permit removal of the pontoons from the joists after the bolts are loosened but without the necessity of completely removing the bolts. Such a pontoon structure can be semipermanently moored to a pier or the shore to form part or all of a dock, wharf or bridge. It can be lengthened by adding additional float sections to a longer deck or floor.

3,614,938
SHIP CONNECTION
Peter J. Statle, 161 Parkville Ave., Brooklyn, N.Y. 11230
Filed Nov. 24, 1969, Ser. No. 879,167
Int. Cl. B63b 21/00
U.S. Cl. 114—235 **9 Claims**



A ship has an aft propulsion section and a bow cargo section releasably connected together by vertical I beam pins transfixing mating projections and recesses. The pins may be withdrawn upwardly by a winch driven spur gear which engages a rack on each pin.

3,614,939
PADDLING DEVICE FOR BOATS
Bassil H. Dib, Port St., P.O. Box 6986, Marius Ged Bldg., Beirut, Lebanon
Filed July 28, 1969, Ser. No. 845,247
Int. Cl. B63h 1/06
U.S. Cl. 115—67 **4 Claims**



A boat paddling assembly including a rotary input shaft drivingly connected to a paddle member for imparting

paddling movement thereto. The assembly includes an upstanding stationary guide from which the upper end of an upright paddle is slidably and oscillatably supported and a crank throw of a journaled crankshaft has a mid-portion of the paddle member journaled thereon with a dog clutch structure being provided on one form of the invention for selectively declutching the crank throw from the crankshaft.

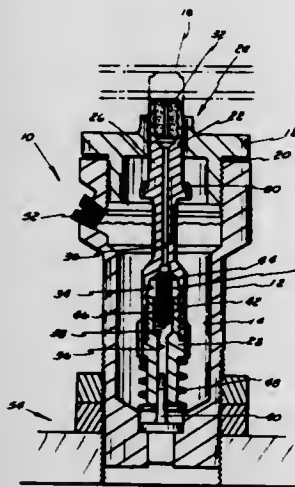
3,614,940 MARKING DEVICE WITH PRESSURIZED FLUID FLOW

Paul S. Abrams, Huntington Woods, and Rudolph G. Peterson, Detroit, Mich., assignors to Carco, Inc., Detroit, Mich.

Filed Apr. 18, 1969, Ser. No. 817,371
Int. Cl. B05c 1/00

U.S. Cl. 118—3

6 Claims



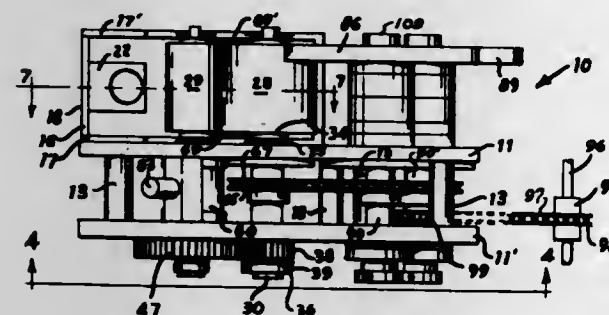
A marking device having therefor a housing with a reservoir for storing a liquid marking agent and a reciprocally mounted feed tube having its inner end extending into the reservoir and its outer end terminating in a marking nib externally of the housing. The feed tube is reciprocated during each marking stroke to engage a plunger within the reservoir to pump a charge of the liquid marking agent into the tube to the marking nib.

3,614,941 GLUE POT

Nicholas J. Perrelli, 131 Woodward Drive,
West Seneca, N.Y. 14224
Filed Oct. 3, 1967, Ser. No. 672,590
Int. Cl. B05c 1/00

U.S. Cl. 118—255

2 Claims



A glue pot having a pick-up roller partially submerged in a glue tub and a metering roller which can be adjusted relative thereto to vary the film thickness

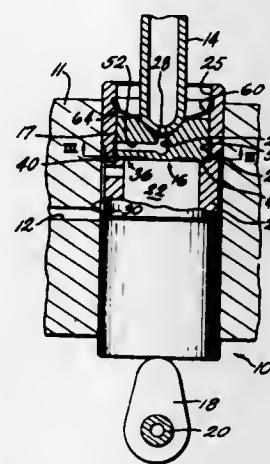
of glue on the pick-up roller. These rollers rotate in opposite directions so as to suck up glue from the tub. First and second applying rollers, which apply the glue to a workpiece, are mounted on the frame, and the first applying roller and the pick-up roller travel in counter-wiping relation. The second applying roller travels in counter-wiping relationship to the first. The applying rollers can be used to apply glue to a workpiece which is either above or below the frame. All of the supporting structure for the rollers is mounted in ball bearings having suitable structure associated therewith for shielding them against the entry of glue. All of the rollers can be mounted either on the right side or left side of the frame to provide either right or left handed operation. The rollers are driven by a cable drive through a slip-clutch which will permit the glue pot to stall when a foreign object interferes with proper operation thereof. A universal mounting permits the frame carrying the rollers to be placed at any desired orientation relative to the machine on which it is mounted.

3,614,942 METERED MECHANICAL TAPPET WITH SLOTTED PUSHROD SEAT

Ronald R. Erickson and Richard D. Cornell, Muskegon, Mich., assignors to Johnson Products, Inc., Muskegon, Mich.

Filed Apr. 20, 1970, Ser. No. 29,915
Int. Cl. F01l 1/14; F01m 9/10
U.S. Cl. 123—90.35

10 Claims



A metered mechanical tappet utilizing a pushrod seat permanently retained by a separate retainer or by a press-fit within the cavity of the tappet upon an annular shoulder of the latter. Oil flow is obtained by a slot in the surface of the seat supported by said shoulder, the slot at least extending radially from the oil reservoir directly below the seat to the outer wall of the seat, from whence it passes to the interior of the seat and to the pushrod by means of an annular path between the outer seat wall and the cavity along at least a portion of the axial extension of the seat. The actual metering is accomplished by either the slot, in which the case the annular path has a substantial radial thickness; or by the annular path, in which case its thickness is considerably less than any of the dimensions of the slot.

3,614,943 ENGINE ROCKER ARM SUPPORT MEANS

Gerald A. Schley, 6150 Charlesworth,
Dearborn Heights, Mich. 48127
Filed June 1, 1970, Ser. No. 42,365
Int. Cl. F01l 1/18

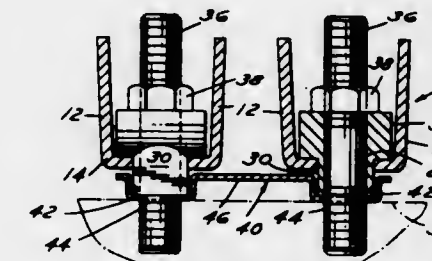
U.S. Cl. 123—90.42

4 Claims

A pair of rocker arms are each mounted to the cylinder head on its own stud, each containing a semi-cylindrical

fulcrum having a flat sided shank depending integrally therefrom and nested in a trough in a plate connecting the fulcrum, the plate preventing relative rotation between

fuel continuously or intermittently, either during the time of actuation of the starter or during this time and for an additional predetermined interval of time following termination of such actuation. The coil of the valve is

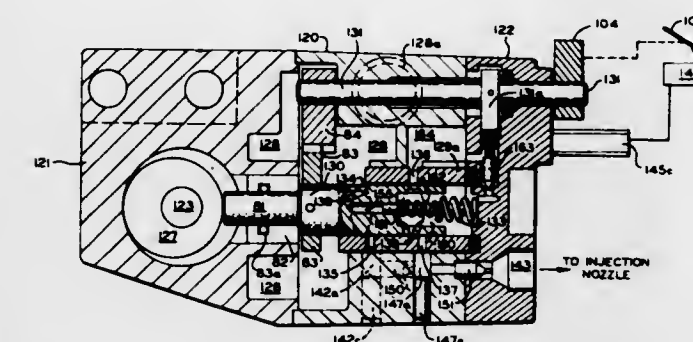


the fulcrums and cylinder head, the fulcrum shape preventing relative rotation laterally between the fulcrums and rocker arms.

3,614,944 ENGINE APPARATUS

Otmar M. Ulbing, Lisle, N.Y., assignor to Ord Systems Ltd., Port Crane, N.Y.
Continuation-in-part of application Ser. No. 786,233, Dec. 23, 1968. This application Sept. 11, 1969, Ser. No. 857,162
Int. Cl. F02m 39/00
U.S. Cl. 123—139 AY

31 Claims



The fuel-per-stroke which fuel injection systems deliver to an engine is varied in accordance with engine speed to provide a desired fuel-air mixture ratio by means of a spring-loaded check valve responsive to momentary pressure impulses occurring in a pump chamber and operative to divert increasing fuel at increasing engine speeds. The check valve spring loading is varied simultaneously with the pump delivery setting in some embodiments, and valve operation is varied in accordance with engine speed and/or acceleration in some embodiments. The system is illustrated in connection with several reciprocating fuel-injection pumps and several rotary fuel-injection pumps.

3,614,945 VALVE FOR ADMITTING FUEL INTO INTAKE MANIFOLDS OF INTERNAL COMBUSTION ENGINES DURING STARTING

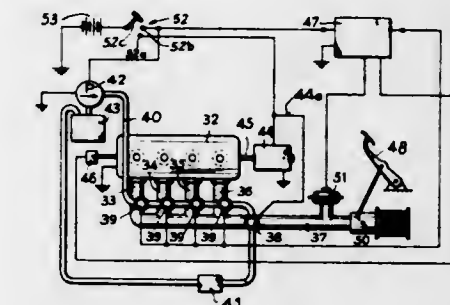
Walter Schlagmüller, Butthard, Hans Zeller, Doffingen, Rudolf Babitzka, Ludwigsburg-Hoheneck, Otto Glöckler, Renningen, and Dieter Eichler, Bonlanden, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 22, 1969, Ser. No. 843,378
Claims priority, application Germany, July 31, 1968, P 17 51 802.4
Int. Cl. F02n 17/08

U.S. Cl. 123—179 L

16 Claims

An internal combustion engine with fuel injection into the intake manifold wherein an electromagnetic valve admits additional fuel into the intake manifold in response to actuation of the starter. The valve can admit

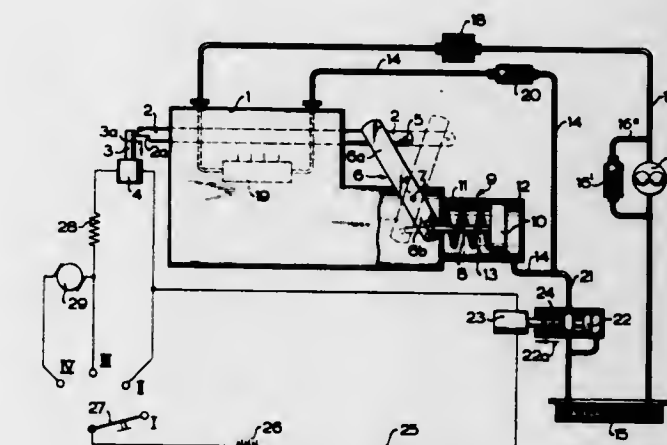


energized on closing of the starter switch whereby the fuel can flow through a passage of predetermined volume and issues from the orifice of an atomizing nozzle which is installed in the intake manifold.

3,614,946 CONTROL AND ACTUATING SYSTEM FOR DIESEL ENGINES

Heinrich Staudt, Markgröningen-Talhausen, and Konrad Eckert, Stuttgart-Bad Cannstatt, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Sept. 3, 1969, Ser. No. 854,927
Claims priority, application Germany, Sept. 4, 1968, P 17 76 017.7
Int. Cl. F02d 3/00; F02n 15/00
U.S. Cl. 123—179 L

7 Claims



A control and actuating system for operating an internal combustion engine, including a hydraulic servo system which, when energized by virtue of the de-energization of a stop magnet, moves the fuel quantity control member of a fuel injection pump into a zero position; a bolt normally limiting the maximum displacement of said control member to a setting for full load fuel delivery, said bolt is associated with a starting magnet which, when energized, moves said bolt to such an extent as to permit said control member to be positioned in a setting in which the fuel injection pump delivers fuel quantities (starting quantity) that are in excess of the full load fuel quantities.

3,614,947 ARROW PROJECTING DEVICE WITH ARROW RETRIEVING MECHANISM

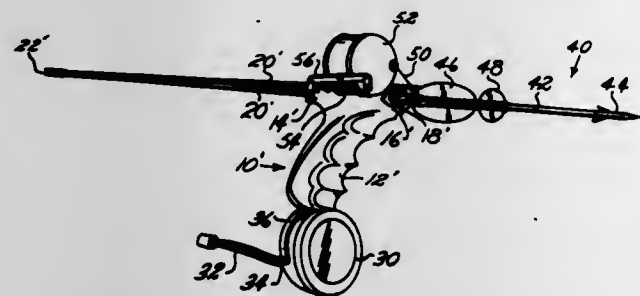
Marshall H. Feldman, P.O. Box 922,
Twenty-Nine Palms, Calif. 92277
Filed Sept. 26, 1969, Ser. No. 861,261
Int. Cl. F41b 7/00, 7/04

U.S. Cl. 124—20

11 Claims

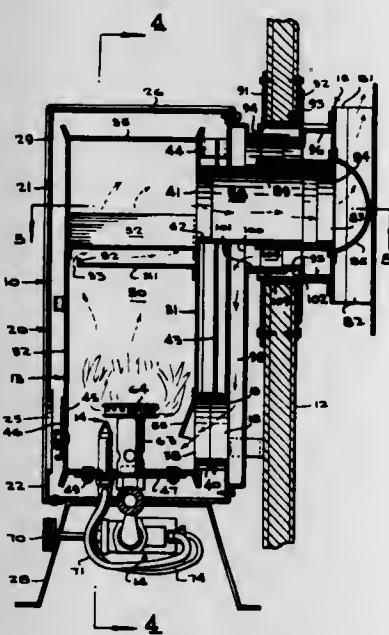
A sling handle topped by a trough member adapted to support an arrow and guide the fletching thereof. Elastic bands detachably adjustably secured to the front of the

member have rear ends interconnected by a short cord receivable in an arrow nock. A drum mounted to the side of the member supports a coil of retrieving line which is connected to the arrow. A light on the lower end of the handle illuminates the target when the sling is aimed there-



at. A retrievable arrow has a barbed head and slidable fletching to which the retrieving line is connected for forwardly disposing a section of the line between the arrow and the drum in the interests of safety. Slidable vanes on the arrow shaft shield the arrowhead to prevent snagging upon retrieval.

3,614,948
SPACE HEATER
Walter F. Jackson and James F. Wise, Clinton, N.C., assignors to Vann Industries, Incorporated, Clinton, N.C.
Filed Dec. 20, 1968, Ser. No. 785,484
Int. Cl. F23l 17/04; F24c 3/08; F24h 3/00
U.S. Cl. 126—85 28 Claims

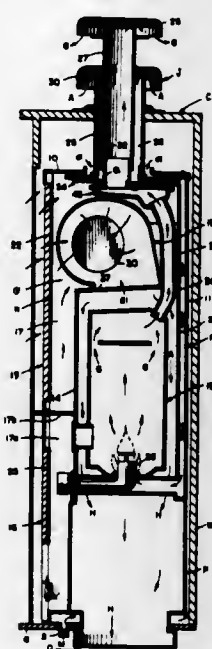


A space heater comprising a casing defining a combustion chamber, the casing having an inlet opening and an outlet opening, a burner unit mounted in the combustion chamber, first baffle means disposed in the combustion chamber between the burner unit and the outlet opening directing air heated by the burner unit longitudinally and second baffle means disposed between the burner unit and the outlet opening directing air heated by the burner unit transversely.

3,614,949
MOBILE HOME FURNITURE WITH MAKE-UP AIR SUPPLY MEANS
James C. Goodgion, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Feb. 6, 1970, Ser. No. 9,263
Int. Cl. F24h 3/02
U.S. Cl. 126—110 AA 5 Claims

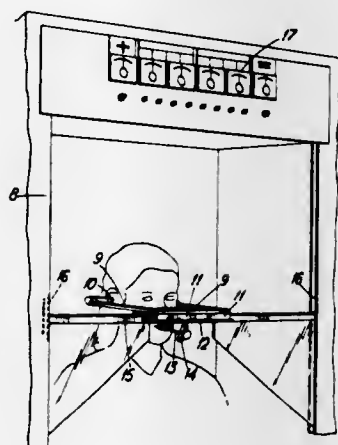
A compact sealed combustion furnace adapted to be mounted within a closet or alcove of a mobile home,

including a downflow air circulator mounted above a combustion chamber casing within an exterior casing, is provided with a make-up air supply means. More specifically, an air box is mounted above the blower and beneath the top wall of the exterior casing, the air box providing a connecting passage between an annular combustion air intake of a roof jack and a combustion air passage extending downwardly along the rear wall of the exterior casing. The top wall of the air box is spaced downwardly and separated from the exterior casing top



wall and the sides of the box are spaced inwardly and separated from the exterior casing side walls. The make-up air intake means extends through the top wall of the exterior casing outwardly of the base of the roof jack to communicate with the space between the air box top and the casing top wall. The blower draws make-up fresh air over and around the air box and into the rearward portion of the blower inlets. The incoming make-up air also scrubs a flue box which is positioned below and separated from the air box.

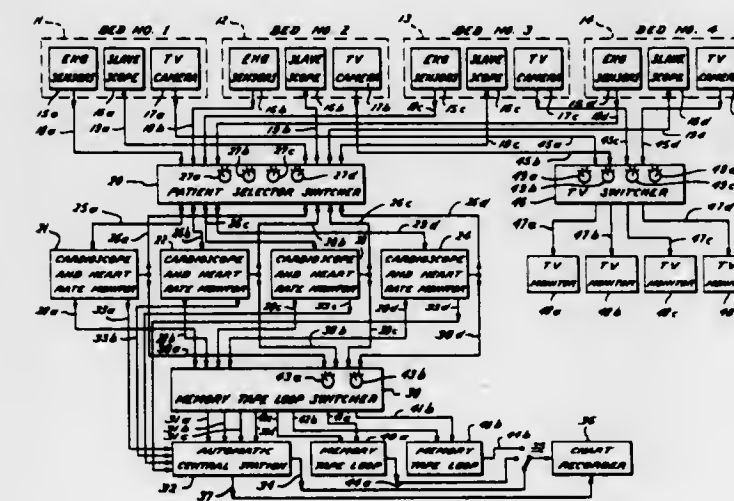
3,614,950
APPARATUS FOR LOCATION RELATIVELY TO A SUBJECT'S CEPHALIC AXIS
Graham Peter Rabey, "Greenbanks," Trout Rise, Loudwater, Hertfordshire, England
Filed Mar. 17, 1969, Ser. No. 807,583
Claims priority, application Great Britain, Mar. 25, 1968, 14,239/68
Int. Cl. A61b 5/10; A61c 19/04
U.S. Cl. 128—2 R 6 Claims



A head clamp or face bow, having a pair of coaxial ear plugs which are arranged to be inserted into a sub-

ject's outer ears to locate the subject's cephalic axis relatively to the apparatus. The ear plugs are movable towards and away from one another to accommodate heads of different size whilst maintaining the plugs equidistant from a central reference in the apparatus. A sensing device is interposed between each ear plug and a part of the apparatus which is required to be located in use relatively to the subject's cephalic axis, the sensing devices responding in use to the reaction between the subject's outer ears and the corresponding ear plugs and means are provided whereby the responses of the two sensing devices may be compared so that the subject's head may be adjusted until the reaction between the subject's outer ears and the two ear plugs are equal.

3,614,951
SWITCH-CONNECTED SYSTEM FOR MONITORING HOSPITAL PATIENTS
Cecil Caro, Fort Worth, Tex., assignor to Terrell Supply Company
Filed Jan. 21, 1969, Ser. No. 792,299
Int. Cl. A61l 5/04
U.S. Cl. 128—2.06 R 11 Claims

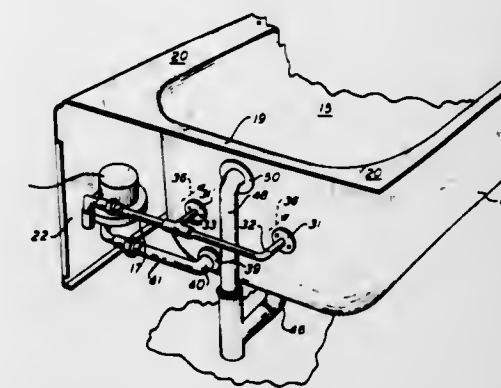


A system which includes a patient selector switcher for enabling a group of primary cardioscope instruments located at a central nursing station to be individually connected to any one of a number of cardiac sensor instruments located at different hospital bed positions and for enabling the primary cardioscope instruments to drive slave cardioscopes located at the corresponding bed positions. The system further includes a memory tape loop switcher for enabling a group of magnetic recorder instruments to be individually connected to any one of the primary cardioscope instruments. The system also includes a television switcher for enabling a group of television monitors located at the central nursing station to be individually connected to any one of a number of television cameras located at the different bed positions.

3,614,952
HYDROTHERAPEUTIC BATHTUB
Anthony Dale Agnellino, 465 Monmouth Road, West Long Branch, N.J. 07764
Filed Feb. 16, 1970, Ser. No. 11,751
Int. Cl. A61h 9/00 4 Claims

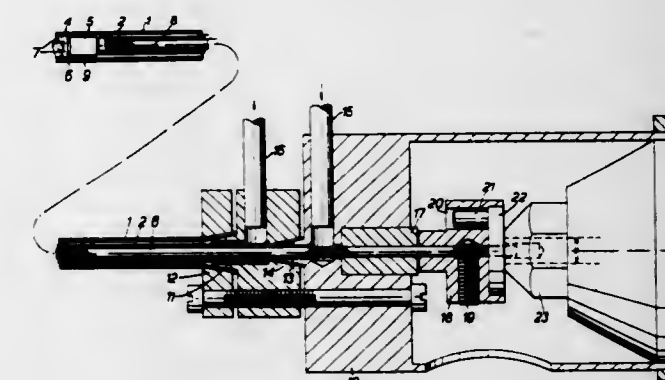
An elongated hydrotherapeutic tub with bottom, rear, front and connecting side wall portions of predetermined complementary configurations, to incline a body of water introduced into the bathtub toward the front end wall,

and a recirculation assembly wholly mounted on the outside of the front end wall of the bathtub, including jet-projecting straight portions of said recirculation assembly mounted through said front wall of the bathtub and wholly mounted on and replaceable from said front end of the bathtub, below the normal level of said body of water and extending coaxially with the longitudinal axis



of the bathtub and of said body of water, whereby recirculating streams of water may thus be projected through the body of water and toward the rear wall of said bathtub, upsetting the level and equilibrium of said body of water and agitating the body of water, with beneficial axial hydrotherapeutic action along the user's body.

3,614,953
DRILLS FOR CLEARING OBSTRUCTIONS IN ARTERIES
Edward Moss, Woodley, England, assignor to National Research Development Corporation, London, England
Filed Jan. 21, 1969, Ser. No. 792,655
Claims priority, application Great Britain, Jan. 30, 1968, 4,846/68
Int. Cl. A61b 17/32; A01n 1/00; B08b 9/02
U.S. Cl. 128—305 6 Claims

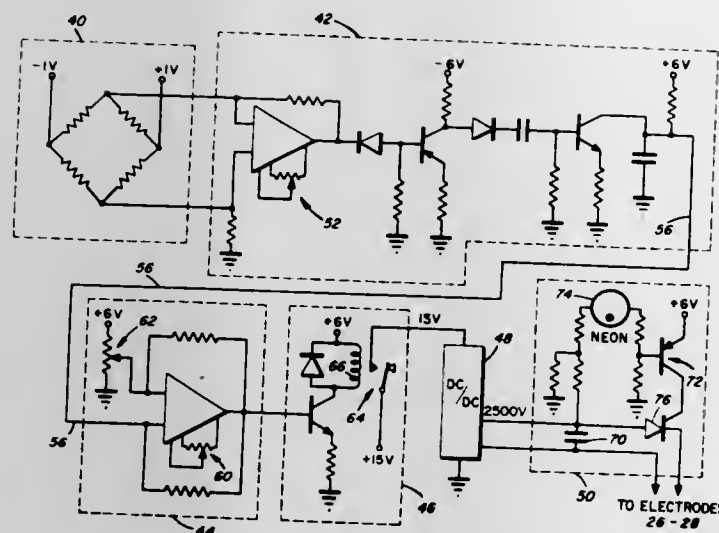


A drill for clearing small diameter tubes such as arteries comprises a rotatable bit surrounded by a non-rotating shield integral with an outer flexible tube the other end of which is gripped in a drill body. An inner flexible tube lies within the outer tube and extends to a point just short of the bit, its other end also being gripped in the drill body. A flexible shaft extends from the bit to which it is fixed, through the inner tube and a bearing in the drill body from which it protrudes to a coupling member fixed to the shaft. Ducts in the drill body lead to the space between the tubes and to the interior of the inner tube enabling flushing liquid to be introduced to and withdrawn from the region of the bit.

3,614,954
ELECTRONIC STANDBY DEFIBRILLATOR
 Mieczyslaw Mirowski, Morton M. Mower, and William S. Staewen, Baltimore, Md., assignors to Medtronic, Inc., Minneapolis, Minn.
 Filed Feb. 9, 1970, Ser. No. 9,934
 Int. Cl. A61n 1/36

U.S. Cl. 128—419 D

13 Claims

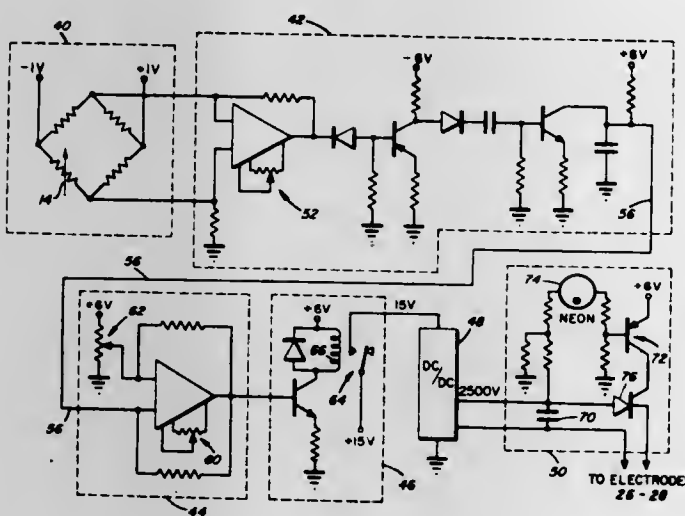


A method and means for automatically defibrillating a malfunctioning heart. With the present invention, the heart function is continuously monitored. When the function becomes abnormal, the malfunctioning heart is automatically shocked by a voltage of substantial size. If the heart does not return to its normal functions after a given interval, then it is again shocked. Normal heart activity ensures that the shocking mechanism remains inert.

3,614,955
STANDBY DEFIBRILLATOR AND METHOD OF OPERATION
 Mieczyslaw Mirowski, Baltimore, Md., assignor to Medtronic, Inc., Minneapolis, Minn.
 Filed Feb. 9, 1970, Ser. No. 9,935
 Int. Cl. A61n 1/34

U.S. Cl. 128—419 D

6 Claims



A method and means for automatically defibrillating a malfunctioning heart. With the present invention, the heart function is continuously monitored. When the function becomes abnormal, the malfunctioning heart is automatically shocked by a voltage of substantial size. If the

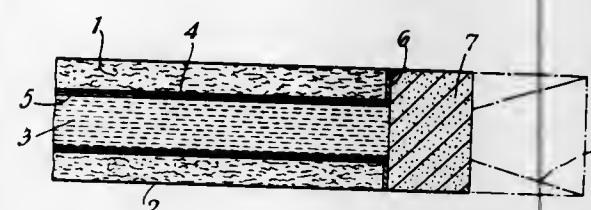
heart does not return to its normal functions after a given interval, then it is again shocked. Normal heart activity ensures that the shocking mechanism remains inert.

3,614,956
SMOKING ARTICLES
 Raymond Eric Thornton, Southampton, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 3, 1968, Ser. No. 756,917
 Claims priority, application Great Britain, Sept. 7, 1967, 40,971/67
 Int. Cl. A24d 1/04

U.S. Cl. 131—10.5

10 Claims

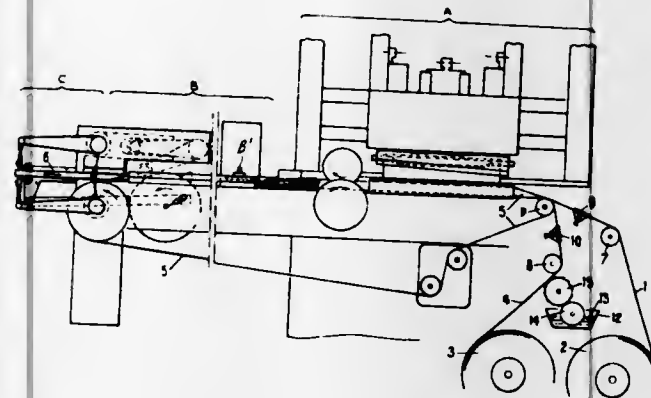


The invention relates to a tobacco-smoking article in which the tobacco is contained in an elongated annular region and an axial core comprising an absorbent capable of selectively absorbing aromatic polycyclic hydrocarbons, for example activated charcoal or basic alumina, ammonium nitrate or oxides of transition metals, is arranged so that the smoke from the combustion of the tobacco is drawn through the said core by the smoker.

3,614,957
METHOD OF MANUFACTURING CIGARS
 Martinus Verbakel, Eindhoven, Netherlands, assignor to Patent Machine Bouw N.V., Best, Netherlands
 Original application May 6, 1968, Ser. No. 726,746, now Patent No. 3,526,231, dated Sept. 1, 1970. Divided and this application Feb. 25, 1970, Ser. No. 14,066
 Int. Cl. A24b 3/14; A24c 1/30, 3/00

U.S. Cl. 131—20 A

4 Claims



First and second supply means are provided for feeding lengths of binder strip tobacco and wrapper strip tobacco. Conveyor means simultaneously transports the strips in flat-wise superimposed relationship. Guide means is provided for adjusting the lateral overlap of each of the strips with respect to one another. The guide means are adjustably mounted for movement in the direction of the width of each strip. First gluing means is provided for gluing the strips together along the interface thereof. Means is provided for depositing plugs of scrap tobacco on the binder strip and means is provided for

simultaneously wrapping the superimposed strips transversely around such plugs to overlap opposite marginal edges of the strips. Second gluing means is provided for gluing an overlapping marginal zone of one of the wrapped strips to form a substantially cylindrical rod of tobacco product. Means is provided for then cutting this product into predetermined lengths.

ERRATUM

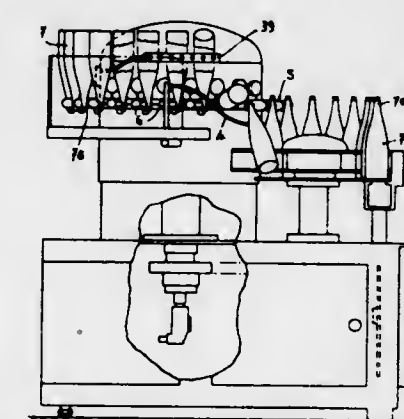
For Class 132—81.5 see:
 Patent No. 3,614,961

3,614,958
MACHINES INTENDED FOR TURNING BOTTLES, FLASKS OR THE LIKE

Rene Perrier, Le Cheylard, Ardeche, France
 Filed Jan. 15, 1969, Ser. No. 791,247
 Claims priority, application France, Feb. 9, 1968, 49,631

U.S. Cl. 134—48

12 Claims



A machine for turning bottles has a rotating drum with fixed radial arms between which the bottles are seized one by one at an input zone and borne to an output zone. Each bottle is sequentially turned partly or fully upside down during the transit. Each arm bears a pair of pads; one is rotatable around a horizontal axis and has a concave face corresponding to the curvature of the bottle neck and accompanying the bottle as it turns; the other is borne on a radially outer end of a bent finger hinged at its angle to the arm so as to be angularly displaceable. The shank of the finger projects into an axial cylindrical cavity of the arm and is actuated by a push rod sliding in this cavity against a return spring. The push rod, cushioned by an intermediate spring, is actuated through a further rod driven by a cam on the drum, so as to grip a bottle between the pads. The turn pad is equipped with a nozzle for injecting washing liquid, into the bottle neck automatically at selected positions and is supplied through a channel and turncock provided in the turn pad and arm. A valve cock governed by cams driven by the drum controls the supply to each arm and a turning joint in the axle of the drum is associated with a liquid distributor having an outlet to each arm.

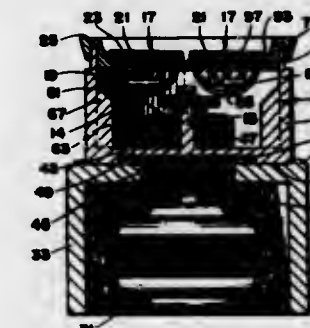
3,614,959
MEANS FOR CLEANING CONTACT LENSES OR THE LIKE
 Edgar H. Schollmaier, Norman R. Dewar, and Gerald Hecht, Fort Worth, Tex., assignors to Alcon Laboratories, Incorporated, Fort Worth, Tex.
 Filed Mar. 24, 1969, Ser. No. 809,501
 Int. Cl. B08b 3/06

U.S. Cl. 134—117

7 Claims

A contact lens holder holds contact lenses suspended within a cleaning solution being agitated by a motor

driven agitator within a cleaning container. The lens holder also fits interchangeably with a soaking container. The

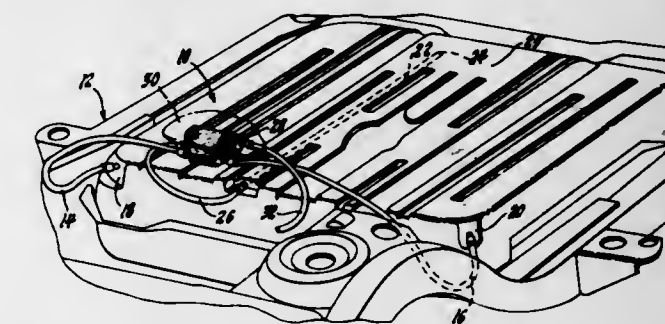


unit is compact, simple, low cost and of a construction which avoids liquid leakage problems.

3,614,960
VENT CONTROL
 Kenneth R. Pfrengle, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.
 Filed Apr. 28, 1969, Ser. No. 819,926
 Int. Cl. B65d 51/16; F16k 33/00

U.S. Cl. 137—43

1 Claim

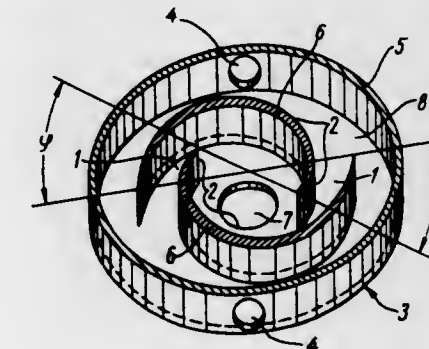


Vent lines from a vehicular gasoline tank are connected to a vent control device having a float operated valve which prevents loss of liquid fuel from the tank.

3,614,961
METHOD OF GENERATING VIBRATIONS IN THE SONIC AND ULTRA-SONIC FREQUENCY RANGES AND DEVICES FOR CARRYING SAID METHOD INTO EFFECT
 Nikolai Nikolaevich Nekrasov, Ul. Gagarina 5-a, kv. 45; Vasily Leonidovich Kazansky, Per. Chekhova 2, kv. 1; and Sergei Pavlovich Kirichenko, Ul. Kutuzova 22, kv. 52, all of Novokuibyshevsk, U.S.S.R.; and Nikolai Nikiforovich Tsyganov, Pos. Zavodskoi, ul. Klevskaya 4, kv. 4; and Alexei Alexandrovich Sergeichev, Ul. Tsyolkovskogo 10, kv. 28, both of Syzran, U.S.S.R.
 Filed Aug. 13, 1968, Ser. No. 752,272
 Int. Cl. F15c 1/16

U.S. Cl. 137—81.5

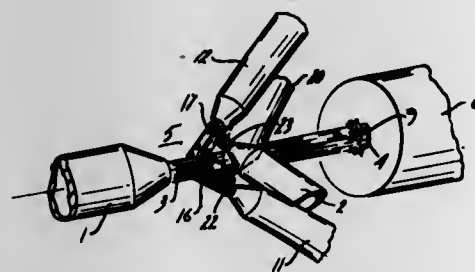
4 Claims



A method of generating oscillations in fluids comprises directing two fluids streams through nozzles at an acute angle with one another to a deflecting blade disposed at

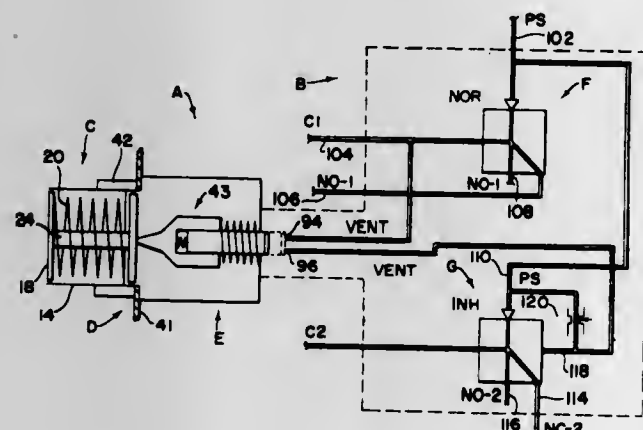
the point of intersection of the two streams of fluid fed from the nozzles so as to deflect the streams, the blade forming an acute angle with each of the nozzles at the point of intersection of the streams. The nozzles may be formed by spiral streams arranged around a discharge port with overlapping central portions serving as the deflecting blades.

3,614,962
IMPACT MODULATOR HAVING CASCADED CONTROL NOZZLES
Louis D. Atkinson, New Berlin, and Otto R. Munch, West Allis, Wis., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 3, 1969, Ser. No. 803,588
Int. Cl. F15c 1/20
U.S. Cl. 137—81.5 16 Claims



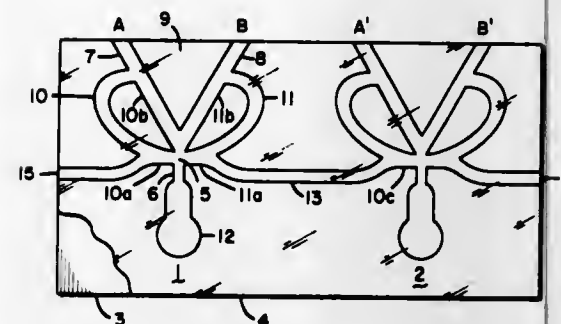
This disclosure includes an impact modulator having opposing main streams with a selected output in the absence of any control signals. Two pairs of cascaded control nozzles are mounted to opposite sides of the main stream and each establish a primary control signal stream which engages said main stream with a perpendicular control component. The nozzles are oriented to establish a momentum vector in the control stream which opposes the stream engaged. The device can be employed to establish positive gain, negative gain and logic functions.

3,614,963
FLUIDIC PUSHBUTTON/OPERATORS
David Jon Matteson, Drexel Hill, Pa., assignor to Gulf + Western Industrial Products Company, Grand Rapids, Mich.
Filed Mar. 11, 1969, Ser. No. 806,166
Int. Cl. F15c 3/00
U.S. Cl. 137—81.5 8 Claims



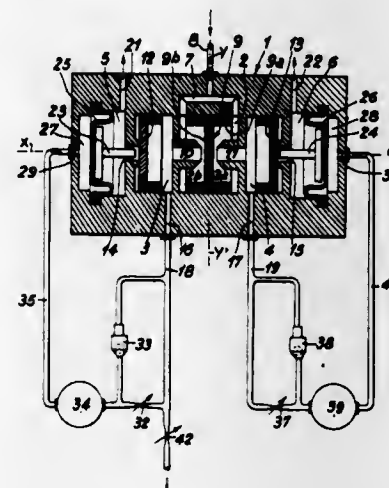
A novel fluidic switch for fluidic control circuits comprising a switch housing, a module affixed to said housing containing at least one fluidic gate; a plurality of ports for said gate; vent means associated with one of said ports; a closure movable in said housing for blocking said vent means; and an operator for actuating said closure; said switch further comprising means adapted to provide the operator with an amount of over-travel after the closure blocks said vent means.

3,614,964
CLOCK PULSE GENERATING SYSTEM
Tsu-Fang Chen, Plymouth Meeting, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Sept. 16, 1969, Ser. No. 858,260
Int. Cl. F15c 1/08
U.S. Cl. 137—81.5 5 Claims



A plurality of high frequency pure fluid oscillators are interconnected to form a high frequency clock pulse generating system. The interconnection is through a short delay duct which joins the control nozzles of adjacent oscillators together so as to phase synchronize the oscillators.

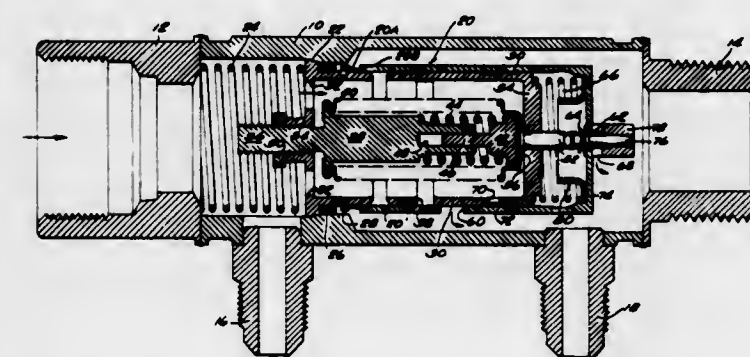
3,614,965
FIVE-PORT BISTABLE PNEUMATIC VALVE UNIT
Robert Metivier, 49 Rue du Docteur Blanche, Paris, France
Filed Oct. 22, 1969, Ser. No. 868,420
Claims priority, application France, Oct. 31, 1968, 172,192
Int. Cl. F15c 1/08
U.S. Cl. 137—119 7 Claims



This five-port bistable pneumatic valve unit comprising a body in which an inlet port connected to a source of compressed gas, first and second outlet ports and first and second exhaust ports are formed, characterized in that it comprises a central feed chamber communicating with said inlet port and having a free valve member slidably mounted therein, first and second intermediate outlet chambers both connected on the one hand through first and second connecting passages to said central chamber, respectively, and on the other hand to said first and second outlet ports, respectively, and said first and second exhaust ports, respectively, first and second flap valves freely mounted in said first and second intermediate outlet chambers respectively for closing said first and second exhaust ports, first and second push members disposed externally of said first and second outlet chambers, respectively, and registering with said first and second exhaust ports so that they can project through said exhaust

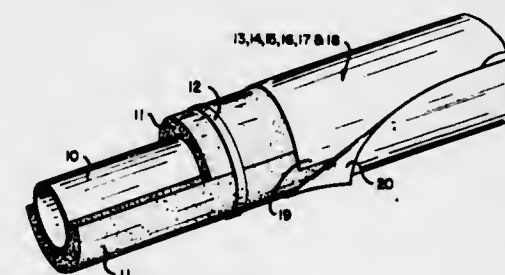
ports and unseat said exhaust port flap valves within said outlet chambers, and first and second devices for actuating said first and second push members respectively and unseat said first and second flap valves respectively.

3,614,966
PILOT OPERATED EVAPORATOR PRESSURE REGULATOR VALVE
Charles D. Orth, Cedarburg, Wis., assignor to Controls Company of America, Melrose Park, Ill.
Filed Nov. 13, 1969, Ser. No. 876,279
Int. Cl. F16k 17/10
U.S. Cl. 137—489.3 6 Claims



The interior of the bellows is sealed at atmospheric pressure so the pressure on the outside of the bellows is resisted by the atmospheric pressure within the bellows as well as by the spring. When the pressure on the outside of the bellows (which is evaporator pressure in a refrigeration system) exceeds a predetermined amount, the bellows tends to collapse and the head of the bellows pulls away from the actuating pin and allows the spring acting on the pilot valve to open the pilot valve whereupon the pressure to the right of the head of the piston is reduced, allowing the piston to move to the right against the return spring force and, thus, open the outlet by registering the port in the piston wall with the slot in the stationary sleeve. When the pressure falls below the desired amount, the bellows expands and moves the head of the bellows against the actuating pin to close the pilot valve. Leakage between the piston and sleeve to the pilot valve chamber rapidly raises the pressure therein so that the return spring can move the piston to close the outlet. Even with the outlet closed, the slight clearance between the piston and sleeve allows some refrigerant flow to insure adequate flow to the compressor to keep the compressor lubricated.

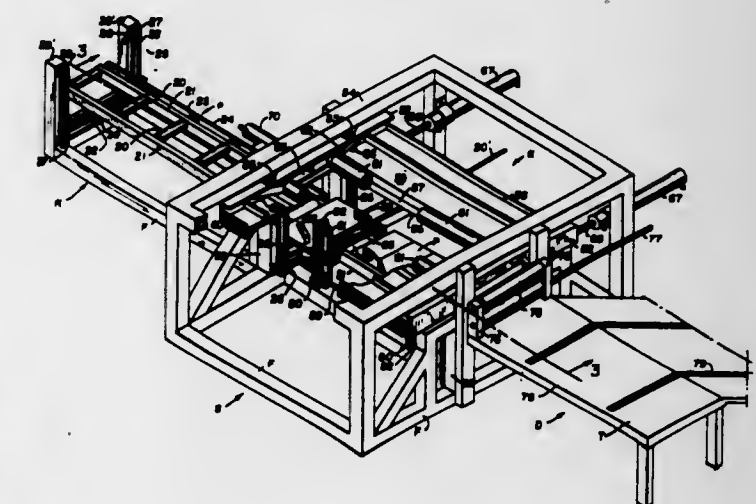
3,614,967
MULTILAYERED PIPE COATINGS AND COATED PIPE
John H. Royston, Pittsburgh, Pa., assignor to Royston Laboratories, Inc.
Filed Oct. 8, 1968, Ser. No. 765,836
Int. Cl. B32b 3/30; F16l 57/00, 59/02
U.S. Cl. 138—141 10 Claims



A pipe coating, a coated pipe and method of forming such coated pipe are disclosed wherein the pipe is surrounded by preformed insulation such as glass foam and

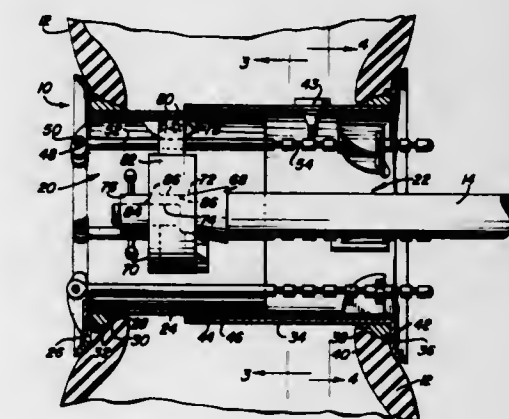
the insulation is surrounded by a mat made up of a first layer of heat softening resin, a surrounding layer of woven glass fabric, a second layer of said resin, a layer of conductive foil, a third layer of said resin and an outer layer of water impervious plastic film, said mat being placed with overlapping edges which are heat sealed together.

3,614,968
APPARATUS FOR SLICING LUMBER
John R. Hlirz, 1233 S. Bryon, Fort Collins, Colo. 80521
Filed Sept. 8, 1969, Ser. No. 856,101
Int. Cl. B27l 5/06
U.S. Cl. 144—178 7 Claims



An apparatus and method for slicing slabs from a cant wherein the slice is effected by two opposing knives with one knife being adapted to move halfway into the cant from one side thereof, and the other knife adapted to be moved halfway into the cant from the other side thereof. With this operation, the knives will not lift the grain of the wood as they slice into the cant.

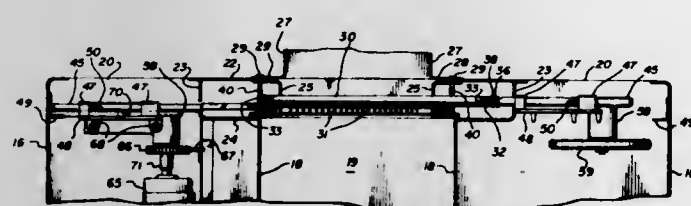
3,614,969
TIRE RECAPING RIM
Carl M. Breiner, 4101 S. 2nd St., Yakima, Wash. 98903
Filed Mar. 7, 1969, Ser. No. 805,327
Int. Cl. B29h 5/02
U.S. Cl. 144—288 4 Claims



A rim assembly having two cylindrical rim sections retained in telescoping relation for mounting a tire in preparation of multiple recapping operations. The two rim sections are removably held together by means of a plurality of notched rods, each rod being secured at one end thereof to one rim section, the opposite ends thereof passing into the second rim section. Because the second ends of the rods are notches, they are engaged by detent means attached to the second rim section. When engagement of

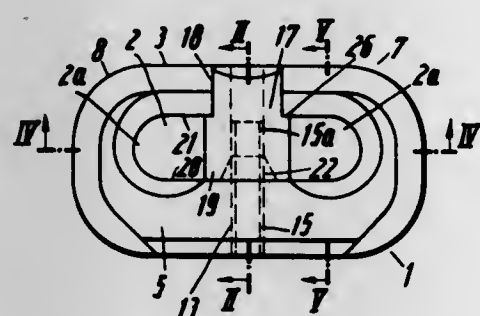
the rods and the detents is effected, the rim device may be mounted to a rotating shaft for multiple recapping operations. Means are provided for rapidly installing and removing a tire mounted rim assembly to a rotating shaft.

3,614,970
MEAT CUBING MACHINE
Rodger L. Webb, Englewood, and William A. Vaught, Denver, Colo., assignors to Denley Enterprises, Inc., Golden, Colo.
Filed Mar. 28, 1969, Ser. No. 811,402
Int. Cl. B02c 18/04; B26d 4/02
U.S. Cl. 146—78 A 8 Claims



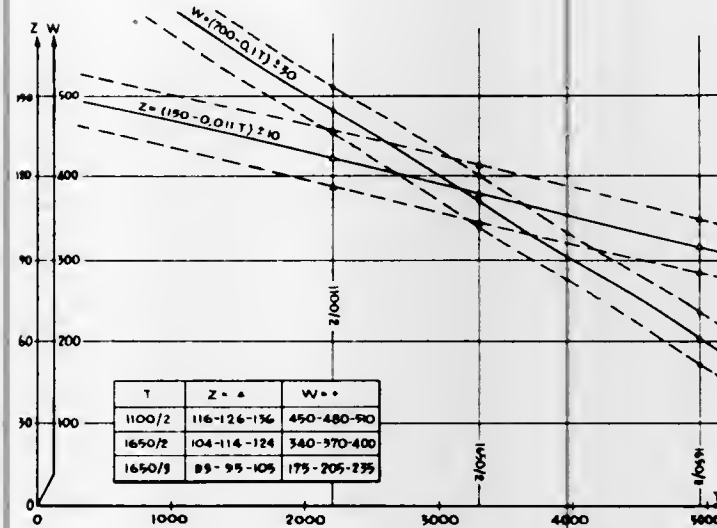
A cubing machine comprising a housing including a cutting chamber, first and second framed sets of vertically disposed, parallel, transversely spaced apart knife blades, one set above the other, with the blades of one set extending longitudinally at right angles to the blades of the other set and positioned in the cutting chamber with their cutting edges supporting the meat. Means for reciprocating the blades in opposite directions are located outside of the cutting chamber and operatively detachably connected to each frame. A horizontally disposed double edged blade, located between the framed sets, is provided with means for reciprocating the blade longitudinally and for moving the blade bodily across the cutting chamber in a horizontal plane through the meat. The blades are easily removable from their frames, and the frames are detachable from their reciprocating mechanisms. The reciprocating mechanisms for actuating the framed sets of blades and the cut-off blade comprise similar parts which reduce cost of production and facilitate assembly and detachment of parts.

3,614,971
CONNECTING LINK FOR TIRE CHAINS
Anton Muller, Unterkochen, Germany, assignor to Eisen- und Drahtwerk Erlau AG, Aalen, Wurttemberg, Germany
Filed May 16, 1969, Ser. No. 825,277
Claims priority, application Germany, May 18, 1968, P 17 55 529.2
Int. Cl. B60c 27/00
U.S. Cl. 152—243 25 Claims



Connecting link for use in tire chains for connecting chain links together and consisting of a web-like body having an elongated aperture therein and a slot in one of the longer edges opening into the aperture and a closure member extending across the aperture and into the slot for confining chain links to the respective ends of the slot. A pin extending through a bore in the body and in the closure member detachably connects the closure member to the body.

3,614,972
PNEUMATIC TIRE
Werner Görtner, Baden, Austria, assignor to Semperit Österreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria
Filed Apr. 7, 1969, Ser. No. 822,813
Claims priority, application Austria, April 10, 1968, A 3,513/68
Int. Cl. B60c 9/04
U.S. Cl. 152—356 2 Claims



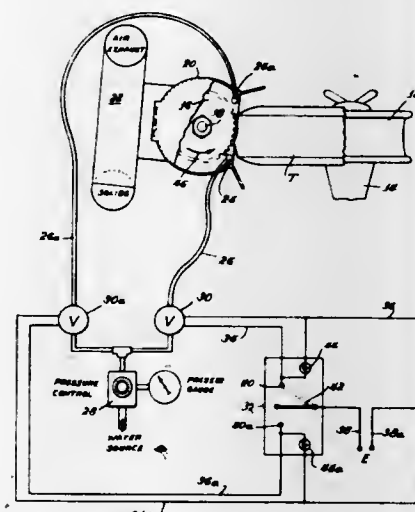
A pneumatic tire provided with reinforcing tire cords of twisted textile threads wherein the total twist of the threads W is given by:

$$W = (700 - 0.1T) \pm 30$$

where T is the total denier of the cord, and the number of threads Z per 10 cm. measured at the crown of the tire perpendicular to the cords is given by:

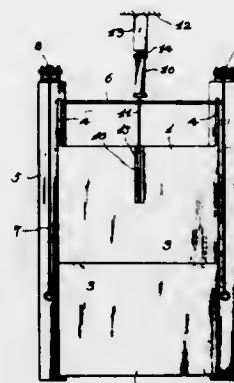
$$Z = (150 - 0.011T) \pm 10$$

3,614,973
TIRE CASING CONDITIONING MEANS AND METHOD
Wayne E. Jensen, Homewood, and George B. Davison, Glenwood, Ill.; said George B. Davison assignor to B & J Manufacturing Company, Glenwood, Ill.
Filed July 30, 1969, Ser. No. 846,140
Int. Cl. B29h 21/08
U.S. Cl. 157—13 13 Claims



Attachment for tire buffing machines by which water is sprayed onto the rotating tool ahead of its engagement with the tire to cool the tool and reduce emission of smoke during the action of the tool on the tire.

3,614,974
DEVICE FOR AUTOMATICALLY OPENING AND CLOSING A SWING DOOR AND A SEALING DEVICE FOR THE SWING DOOR
Shigeru Tajima, 40-11, 5-chome, Nakano, Nakano-ku, Tokyo, Japan
Filed Nov. 4, 1969, Ser. No. 873,845
Claims priority, application Japan, May 9, 1969, 44/42,002; July 11, 1969, 44/65,704
Int. Cl. E05f 11/54 2 Claims
U.S. Cl. 160—188



A device for automatically opening and closing a swing door in which an upper door member and a lower door member are hingedly connected to each other at an intermediate part of the swing door, and said upper door member is pivotally supported at an upper portion by a frame disposed on opposite sides of the swing door. A door opening and closing cylinder is supported above and in front of said upper door member and a piston rod received in said cylinder, is firmly secured at its forward end to the central portion of the upper door member. Actuation of the cylinder automatically moves the upper door member to hingedly connected lower door member in swinging motion whereby the swing door can be opened and closed. A sealing device for said swing door comprises a sealing cylinder firmly secured to the central portion of the upper door member and receiving therein a piston rod which supports at its forward end a clamping bar. Actuation of the sealing cylinder causes the clamping bar to press the upper door member and lower door member against the frame so as thereby to maintain an airtight seal therebetween.

3,614,975
FOLDING DOORS
Gilbert Emile Fulbert Aymond, 89 Faubourg Saint-Antoine, Paris, France
Filed Feb. 5, 1969, Ser. No. 796,698
Claims priority, application France, Feb. 6, 1968, 138,789
Int. Cl. E05d 15/26 8 Claims
U.S. Cl. 160—206



A guided folding-door comprises two hinged panels, one of which is pivotally mounted and the other has its

upper and lower portions equipped with parts which slide in slideways on horizontal transverse elements extending over the entire width of the door, said sliding parts being fixed to the rear side of the panel in such manner as not to project beyond the edge thereof, said transverse elements being positioned behind the door, and said slideways being located in the lower and upper faces of said transverse element in respect of said lower and upper parts respectively.

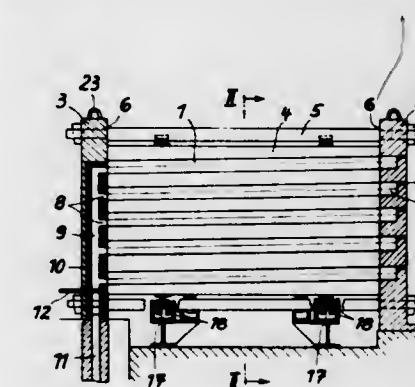
3,614,976
ROTARY METHOD OF CASTING
Gustaf F. Bolling and Gerald S. Cole, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 13, 1968, Ser. No. 760,126
Int. Cl. B22d 27/08 2 Claims
U.S. Cl. 164—122



2 1/4 MINUTES

Rotating a casting during solidification at a constant rate sufficient to inhibit convective flow in the solidifying metal to produce columnar grain structure and subsequently at an angular acceleration sufficient to inhibit the formation of a columnar structure in the solidifying metal and produce an equiaxed grain structure.

3,614,977
CASTING METHOD AND MOLD WITH CAVITY PORTIONS IN END WALLS
Yasar Karabek, Blecher, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed Aug. 18, 1969, Ser. No. 850,970
Claims priority, application Germany, Aug. 28, 1968, P 17 58 882.8
Int. Cl. B22d 29/00; B28b 7/24 13 Claims
U.S. Cl. 164—129



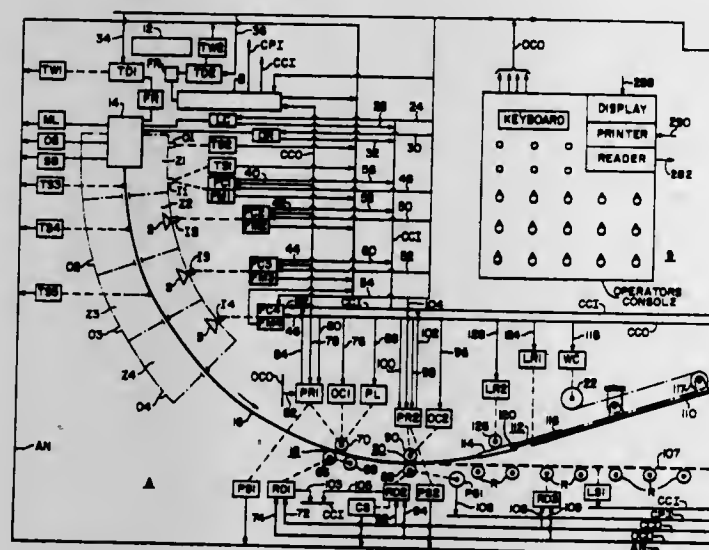
In particular when casting small metal billets, an improved method of casting and handling the cast product is provided by use of a mould having a number of casting chambers formed by two end walls and preferably two removable side walls. Grooves in the side walls register

to provide a channel which registers with corresponding recesses in the end walls, so that after casting the side walls are removed leaving the rigid cast members supported by the end walls. An inlet duct is provided in one end wall, and the end walls are connected rigidly by preferably two spacers, so that the end walls, spacers and cast members can easily be removed for further processing such as cooling.

3,614,978
COMPUTERIZED CONTINUOUS CASTING SYSTEM CONTROL RESPONSIVE TO STRAND POSITION
Michael A. Kosco, East McKeesport, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 1, 1968, Ser. No. 741,567
Int. Cl. B22d 11/12

U.S. Cl. 164—154

16 Claims



Computer controlled continuous casting of materials from the molten to the solid state. The computer keeps track of the position of the moving cast strand of each of a plurality of casting lines from the time it emerges from the mold and, in response to position of the strand, controls various elements at the proper time along the casting line, such as coolant flow, pinch rolls, straightening roller, dummy bar head separation, table or conveyor rolls, and slab cutting machine. The computer keeps track of the slab cutting machine and the position of its cutting elements, and controls the cutting operation in synchronism with movement of the strand. Also in response to position of the moving strand, the computer at appropriate times begins to monitor and compare against stored references such conditions as coolant and strand temperatures, coolant flow rates, pinch roll drive current, and pinch roll pressure. The computer also performs a pre-pour diagnostic check-up on various elements of the casting line to determine if a malfunction exists. Additionally as the casting progresses, the computer gathers and outputs information as a function of position and time with respect to each strand. The computer controls a plurality of casting lines in "parallel" by suitable multiplexing.

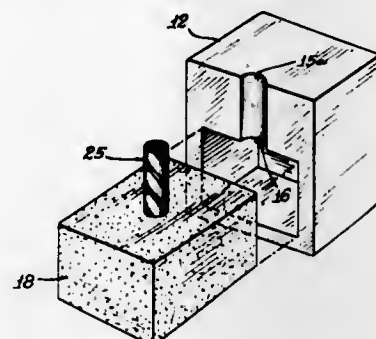
3,614,979
CORE BOX BLOW HOLE LINER
Donald H. Plkey, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 29, 1969, Ser. No. 845,805
Int. Cl. B22c 15/24

U.S. Cl. 164—228

6 Claims

A liner for the blow hole of a sand core box in the form of a wax-impregnated or coated paper tube where-

in the wax acts as a release agent as it melts during the core-making operation to facilitate stripping of the blow

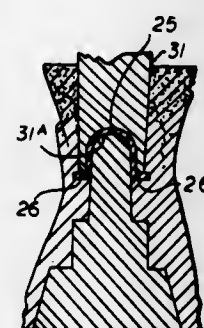


hole stool simultaneously with removal of the finished core from the core box.

3,614,980
MEANS FOR PREVENTING UNWANTED SAND, DIRT OR OTHER IMPURITIES FROM ENTERING MOLD CAVITIES PRIOR TO THE POURING OF THE CASTING MATERIAL
Roy C. Lander, Indianapolis, Ind., assignor to International Harvester Company, Chicago, Ill.
Filed May 23, 1969, Ser. No. 827,208
Int. Cl. B22c 21/00

U.S. Cl. 164—374

6 Claims



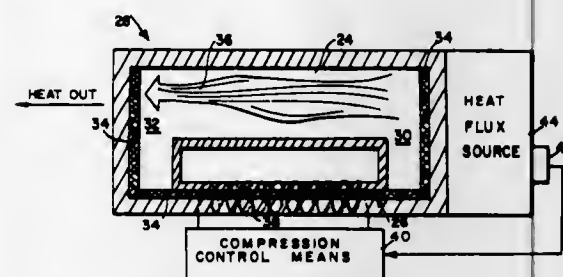
A stopper positionable within an open riser of a casting mold during the mold-forming operation which is capable of preventing loose sand, dirt or other impurities from entering the mold cavity prior to the metal pouring operation. The stopper is made of material consumable upon subjection to heat of the material being poured as it rises in the mold cavity.

3,614,981
DUAL TUBE HEAT PIPE AND MEANS FOR CONTROL THEREOF
John B. Coleman, Buffalo, and James P. Welsh, Snyder, N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 8, 1969, Ser. No. 864,677
Int. Cl. F28d 15/00

U.S. Cl. 165—32

5 Claims



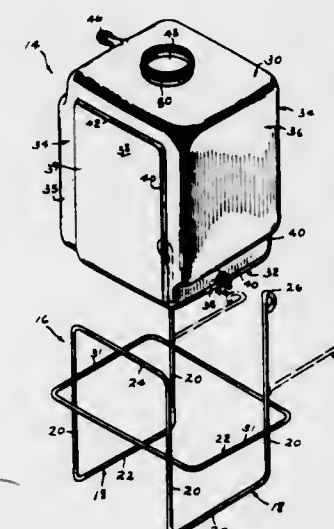
A dual tube heat pipe comprises a heat pipe wherein vapor flow from the evaporator to the condenser and the

condensate return flow through a capillary structure are contained in separate and distinct tubes independent of one another. Means may also be provided for varying the condensate capillary flow rate by controlling the effective area of the capillary structure.

3,614,982
COOLING SYSTEM
John M. Krizman, 2502 W. Lawton, South Bend, Ind. 46628
Filed Sept. 22, 1969, Ser. No. 859,987
Int. Cl. F01p 11/02

U.S. Cl. 165—51

5 Claims

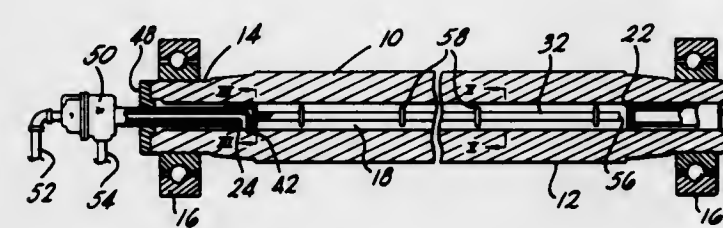


An improvement to a cooling system which includes a radiator for the circulation of a liquid coolant there-through and a coolant receptacle connected to the overflow outlet of the radiator. The improvement concerns a flexible shape-retaining wire holder which is attached to a support adjacent the radiator and which includes two generally parallel oppositely spaced U-shaped wire brackets. The coolant receptacle is seated within the wire holder and includes protruding side and bottom wall portions which are straddled by the U-shaped brackets of the holder.

3,614,983
INTERNAL SMALL BORE ROLL SYPHON
Donald L. Calkins, Three Rivers, Mich., assignor to The Johnson Corporation, Three Rivers, Mich.
Filed Apr. 9, 1969, Ser. No. 814,677
Int. Cl. F28d 11/02

U.S. Cl. 165—89

8 Claims



A syphon system for use with rotary heat exchanging rolls having a relatively small axial bore in which the heat exchanging medium is introduced and removed in order to heat or cool the roll. The medium removing apparatus is primarily mounted interiorly of the roll having conduits extending from one end of the bore. The heat exchanging medium is removed circumferentially about the inner surface of the bore, and the syphon system includes conduits for both introducing and removing the heat exchanging medium from the roll bore.

3,614,984
APPARATUS FOR COMPLETING WELLS TRAVERSING EARTH FORMATIONS
Argie J. Schexnailder, New Orleans, La., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,544
Int. Cl. E21b 21/00, 37/00

U.S. Cl. 166—152

14 Claims

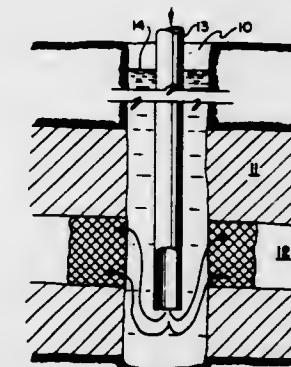


This application discloses new and improved apparatus for completing wells having earth formations which are to be fractured, acidized, or treated for inhibiting the production of unconsolidated formation materials. In the preferred embodiment of the present invention disclosed herein, a new and improved string of well tools is arranged for suspension from a string of pipe and includes a well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is maintained at a reduced pressure by first and second normally-closed valves operatively arranged at opposite ends of the member to be selectively opened at successive time intervals for quickly admitting fluids into the enclosed chamber.

3,614,985
PLUGGING A SUBTERRANEAN FORMATION BY HOMOGENEOUS SOLUTION PRECIPITATION
Edwin A. Richardson, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 30, 1970, Ser. No. 23,550
Int. Cl. E21b 33/138

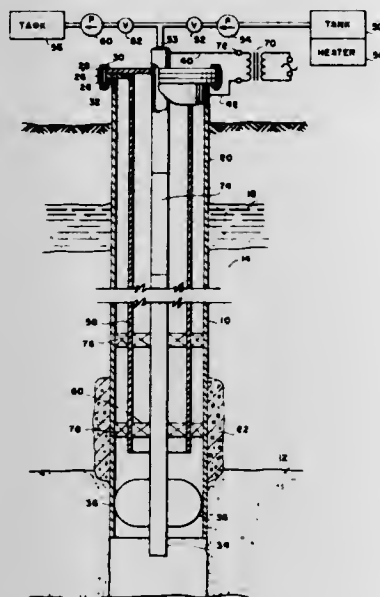
U.S. Cl. 166—294

10 Claims



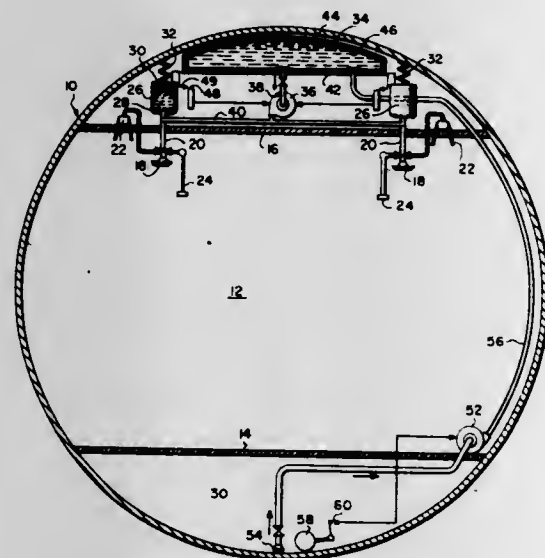
A process for plugging an earth formation by injecting fluid that forms a plugging material within the formation is improved by injecting an aqueous solution containing both a dissolved salt of a metal that precipitates as a gelatinous, hydrous or hydrated metal oxide or hydroxide at a pH higher than that of the solution and a dissolved material that reacts within the solution and raises the pH of the solution.

3,614,986
METHOD FOR INJECTING HEATED FLUIDS INTO MINERAL BEARING FORMATIONS
 William G. Gill, Corpus Christi, Tex., assignor to The Electrothermic Co., Corpus Christi, Tex.
 Filed Mar. 3, 1969, Ser. No. 803,533
 Int. Cl. E21b 43/24
 U.S. Cl. 166—303 6 Claims



Heated fluids are injected into mineral bearing formations while flowing electrical current through tubing through which the fluids are injected at a rate to produce heat in the tubing sufficient to prevent loss of heat by the fluids while moving through the tubing.

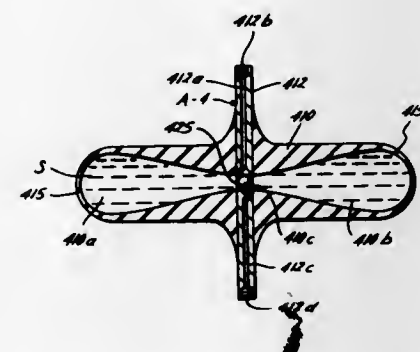
3,614,987
FIRE PROTECTION SYSTEM FOR VARIABLE PRESSURE CHAMBERS
 Ulrich Bonne, Hopkins, Minn., and Joseph L. Buckley, Arlington, Mass., assignors to Factory Mutual Research Corporation, Norwood, Mass.
 Filed Mar. 24, 1969, Ser. No. 809,515
 Int. Cl. A62c 35/00
 U.S. Cl. 169—2 15 Claims



A fire protection system for sealed chambers of the type found in such vehicles as diving bells, spaceships and the like wherein variations in ambient pressure occur. The system employs fixed sprinkler heads, each with its own reservoir for extinguishing agent to ensure an initial, instantaneous supply of agent upon actuation of the respective sprinkler heads. The head reservoirs include a

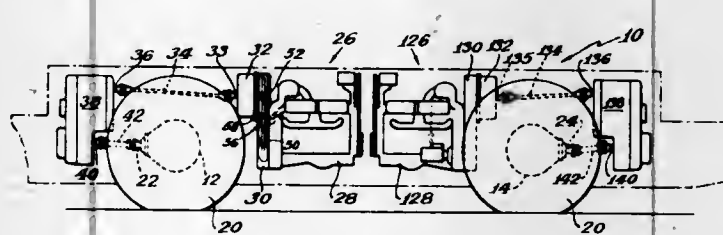
pressure transmitting means together with an agent expelling means so that the agent therein is always under a pressure in excess of ambient pressure. The head reservoirs are supplied with agent from a main storage reservoir. Also an agent run-off is collected in a sump and returned to the storage reservoir to conserve agent and avoid flooding.

3,614,988
DIFFERENTIAL PRESSURE TOOLS FOR PLUGGING HOLES IN WELL PIPE
 Lawrence K. Moore, 3716 Ingold, Houston, Tex. 77005
 Filed July 30, 1969, Ser. No. 846,203
 Int. Cl. E21b 33/13
 U.S. Cl. 166—193 15 Claims



Apparatus or tools for plugging or closing holes, cracks, or other openings in a casing or other well pipe, wherein fluid flow through the hole caused by a differential fluid pressure between the inside and the outside of the pipe is utilized for seating the apparatus over the opening, and for introducing closure material through the opening for forming a plug or closure therefor.

3,614,989
DRIVE TRAIN FOR LOW PROFILE VEHICLE
 Edward A. Bott, Crystal Lake, and Robert G. Luft, Wildwood, Ill., assignors to International Harvester Company, Chicago, Ill.
 Filed Feb. 4, 1969, Ser. No. 796,371
 Int. Cl. B60k 5/08
 U.S. Cl. 180—44 R 13 Claims

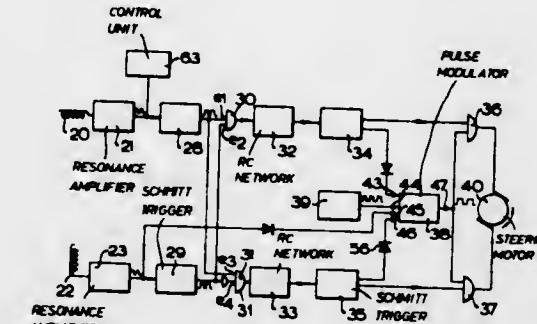


A high powered, low profile vehicle having a pair of engines arranged end-to-end between the axles, each engine drivingly connected to the adjacent axle through a transfer drive and a torque converter to a transmission located on the opposite side of the adjacent axle.

3,614,990
ELECTRICAL CONTROL ARRANGEMENT FOR STEERING OF VEHICLES
 Gerhard Schnitzler, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
 Filed Mar. 3, 1969, Ser. No. 804,061
 Claims priority, application Germany, Mar. 2, 1968, P 16 13 991.6
 Int. Cl. B62d 1/24
 U.S. Cl. 180—98 17 Claims

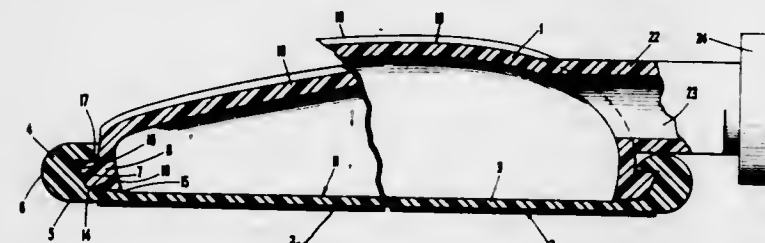
An electrical vehicle steering arrangement in which the vehicle is controlled to move along a predetermined

path. An electrical conductor stretched along the path is energized with alternating current of selected frequency. The conductor gives rise to an electromagnetic field which acts upon two coils mounted on the vehicle. One of these coils is arranged horizontally and transverse to the direction of motion of the vehicle, and is in proximity of the vehicle steering axle. The second coil is mounted in front



of the first coil in the direction of motion, and is arranged vertical to the axis of the first coil. Voltages are induced in the coils so that the voltage of the first coil serves as a reference voltage for the one induced in the second coil. The relative phase of the induced voltages within the coils is indicative of the deviation of the vehicle from the prescribed path.

3,614,991
STETHOSCOPE CHESTPIECE
 Gustav F. Machlup and David Littmann, Belmont, Mass., assignors to Minnesota Mining and Manufacturing Company, Maplewood Village, Ramsey County, Minn.
 Filed Apr. 9, 1968, Ser. No. 719,927
 Int. Cl. A61b 7/02
 U.S. Cl. 181—24 7 Claims

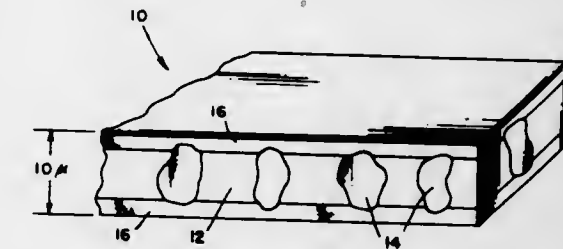


A stethoscope chestpiece construction including a diaphragm formed of a flat thin flexible resilient body having an integral angularly flared lip about its periphery adapted to snap over and engage a complementary shoulder in the body of the stethoscope head. An annular beveled section on the inner surface of the diaphragm body adjacent the lip functions as a cam surface in conjunction with the stethoscope head body to tension the diaphragm body across the head. The stethoscope head is formed of a thin plastic having reinforcing ribs on its outer surface and an integrally formed opening for attachment of a binaural tube.

3,614,992
SANDWICH-TYPE ACOUSTIC MATERIAL IN A FLEXIBLE SHEET FORM
 Harper John Whitehouse, Hacienda Heights, and Shelby F. Sullivan, Arcadia, Calif., assignors to the United States of America as represented by the Secretary of the Navy
 Filed May 26, 1969, Ser. No. 827,578
 Int. Cl. G10k 11/04; E04b 1/84
 U.S. Cl. 181—33 G 8 Claims

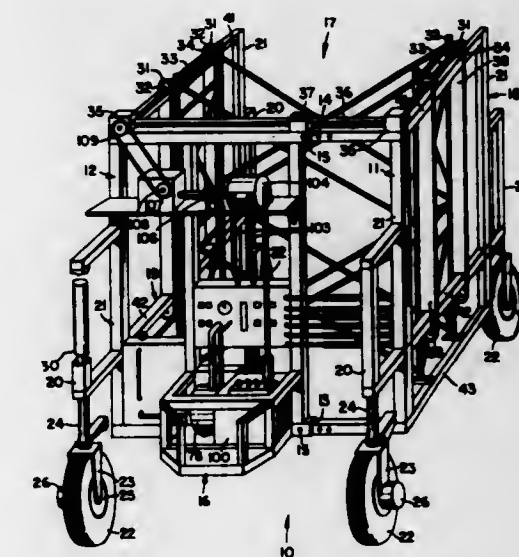
A sandwich-type, electro-mechanical, absorbing, acoustic material, in a flexible sheet form, comprising a thin sheet of elastomeric material within which are embedded

particles having a size barely greater than the thickness of the elastomeric material. The particles may be of a transducer material, generally single-crystal, and/or of a



resistive material. Two conductive sheets, one on each side of the elastomeric material, which make contact with the embedded particles complete the sandwich.

3,614,993
AUTOMATIC SCAFFOLDING ERECTING AND DISMANTLING MACHINE
 George N. Penso, 6637 Gatto Ave., El Cerrito, Calif. 94530
 Filed Oct. 30, 1969, Ser. No. 872,503
 Int. Cl. B65g 57/00; E04g 1/14
 U.S. Cl. 182—16 16 Claims

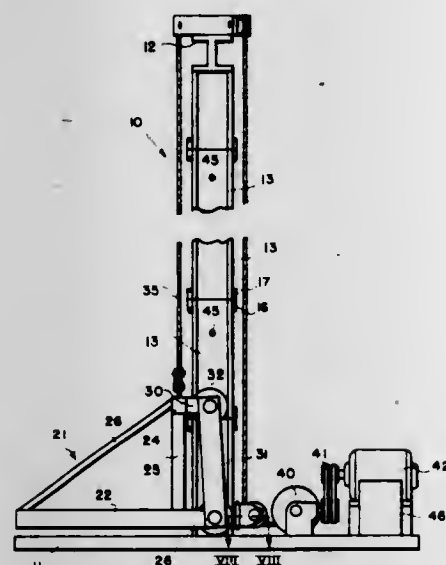


A machine for erecting and dismantling stacks of commercial scaffolding or shoring units includes an adjustable open-sided U-frame supported on four dirigible wheels which are vertically adjustable so the frame can automatically level itself and a semi-automatic elevator system with mechanically interlocked lifting hooks which will automatically raise or lower a stack of scaffolding units by an interval of one scaffolding unit whereby a scaffolding unit may be added or subtracted from the bottom of the stack. Stabilizing winches allow the stacks to be erected during windy conditions and to greater heights.

3,614,994
CONSTRUCTION HOIST
 Samuel F. Goodrum, 918 Park Ave., Syracuse, N.Y. 13204
 Filed Aug. 7, 1968, Ser. No. 750,936
 Int. Cl. B66b 9/00
 U.S. Cl. 187—2 4 Claims

A hoist for raising and lowering equipment and materials at a construction site. Parallel columns made of lengths of H-beams are secured to a base or foundation and to the building at various intervals. A horizontal platform which is guided by the H-beams is also provided. The platform is provided with two pairs of flanged wheels for each H-beam column. The treads of the wheels ride

on the inner faces of the flanges of the beams while the wheel flanges run against the outer edge of the beam flanges when the platform is unevenly loaded. The platform is raised and lowered by a cable passing over a pulley carried on a vertical cross member joining the



upper ends of the columns. Provision is made for locking the platform at the upper ends of the columns independent of the cable so that the cross member and pulley may be removed and additional lengths of H-beam extending the columns may be inserted.

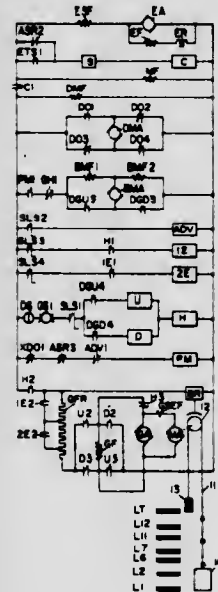
3,614,995
ZONED ELEVATOR CONTROL SYSTEM INCLUDING AN ARRANGEMENT FOR INCREASING THE NUMBER OF CARS WHICH CAN RESPOND TO LANDING CALLS IN ANY OF THE ZONES
Alfred John Probert, Farmingdale, and John Joseph Faup, Yonkers, N.Y., assignors to Otis Elevator Company, New York, N.Y.

Filed Apr. 24, 1969, Ser. No. 818,917

Int. Cl. B66b 1/20

U.S. Cl. 187—29 R

14 Claims



A zoned elevator control system for a group of cars in which the cars are distributed on a predetermined apportioned basis into various zones of the building, whereupon in the absence of calls each car is brought to a stop at a landing in the zone it is occupying. Thereafter in a zone occupied by a car the response to the

first landing call is limited to a car located in that zone. A landing call in a zone in which no car is located starts a car located in the nearest lower zone. The level of traffic in each zone is measured individually. An up or a down landing call in registration in any zone continuously for a predetermined period without an up or a down landing call respectively being cancelled indicates the zone is a heavy demand zone. As a result the limitation on the response to landing calls to a car located in that zone is removed. This enables a car in the nearest lower zone to respond to landing calls in the heavy traffic demand zone notwithstanding another car is occupying that zone. In addition while the heavy traffic demand continues any car in a zone which is in excess of the apportioned number of cars for that zone is prevented from traveling to an unoccupied zone as it otherwise would and is caused to travel to the heavy traffic demand zone. The heavy traffic demand indication is terminated by the cancellation of a landing call for the same direction as the landing call whose continuous registration instituted the demand.

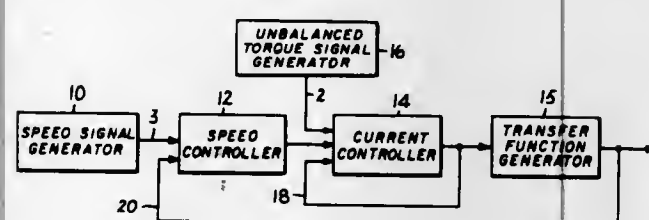
3,614,996
ELEVATOR CONTROL SYSTEM
Kenji Saito, Kunihiro Hattori, and Hiroshi Kamaike, Inazawa, and Hiroshi Sugimoto, Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 26, 1969, Ser. No. 880,165

Claims priority, application Japan, Nov. 29, 1968, 43/87,381

Int. Cl. B66b 1/30

U.S. Cl. 187—29 R

18 Claims



An elevator control system includes a negative feedback type controller applied with both a signal for counterbalancing an unbalanced torque applied to an elevator's drive circuit and stored in a memory, and a speed signal for an elevator car. The former signal is applied to the controller not only before the car starts but also after the speed signal has been applied to the controller. Thus the car is smoothly started without a discontinuity of signal level between both signals applied to the controller.

3,614,997
PLURAL CAR CONVEYOR SYSTEM CONTROLLED BY PERFORMANCE TIMES BETWEEN CARS
John Lusti, River Vale, N.J., assignor to Otis Elevator Company, New York, N.Y.
Continuation-in-part of application Ser. No. 866,417, Sept. 18, 1969, which is a continuation of application Ser. No. 664,434, Aug. 30, 1967. This application Dec. 16, 1969, Ser. No. 885,607

Int. Cl. B66b 1/20

U.S. Cl. 187—29

117 Claims

An conveyor control system for a group of cars in which the cars respond to calls for service in accordance with the relationship between the work load of each individual car and the average of the work loads of all the cars in the group. The work load of a car preferably is expressed in terms of the performance time separating it from the car immediately ahead of it in a prescribed way of travel and is a function of both the distance between it and the car immediately ahead of it and the number of landings between them at which the car in question

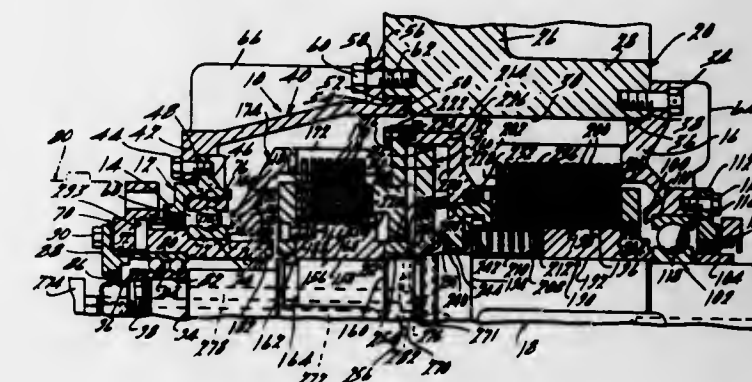
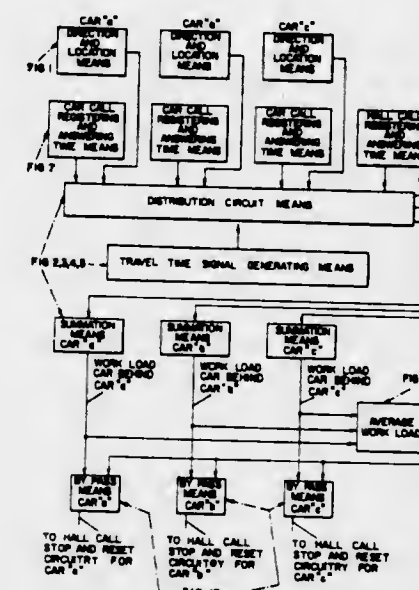
will answer calls for service. If the work load of any car is less than the average the car immediately ahead of it is enabled to bypass without stopping at those landings at which it otherwise would in answer to calls. If the com-

3,614,999
CLUTCH AND BRAKE WITH COOLING MEANS
Gordon M. Sommer, Grosse Point Woods, Mich., assignor to G. M. Sommer Co., Inc., Detroit, Mich.
Filed Mar. 6, 1969, Ser. No. 804,771

Int. Cl. F16d 67/04

U.S. Cl. 192—18 A

13 Claims



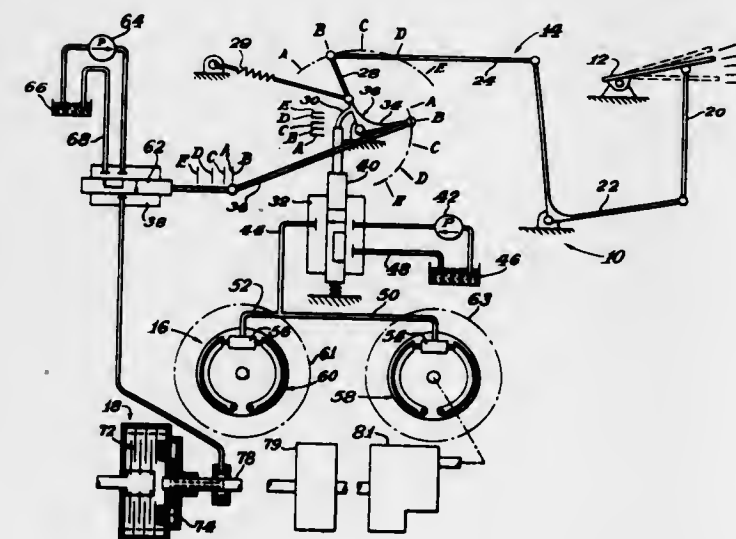
bined work loads of any one car and the car immediately behind it are less than the average, that one car is available and will operate to provide direct service to a selected one of the hall calls in registration.

3,614,998
COMBINED CLUTCH AND BRAKE CONTROL SYSTEM FOR A VEHICLE
Kenneth E. Houtz, Streamwood, Ill., assignor to International Harvester Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 860,105, Sept. 22, 1969, which is a continuation of application Ser. No. 664,347, Aug. 30, 1967. This application May 18, 1970, Ser. No. 38,093

Int. Cl. F16d 67/02

U.S. Cl. 192—13 R

6 Claims



A control system for a vehicle having hydraulically operated brake and clutch mechanisms. A single control element provides simultaneous modulation of the brake and clutch pressures within the range between full brake application with clutch release, and brake release with full clutch release, and brake release with full clutch application. The control system is designed to provide fail safe operation.

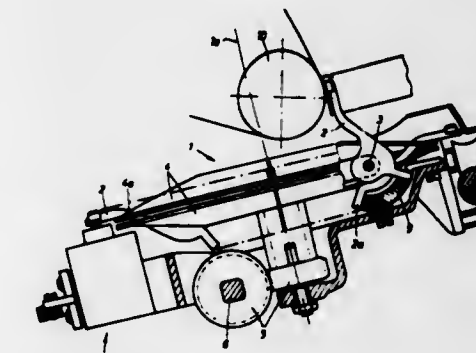
3,615,000
TYPE LEVER SELECTION ARRANGEMENT
Folker Galaske, Gerhard Graf, Karl Merkle, and Helmut W. Schilling, Pforzheim, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,636
Claims priority, application Germany, Apr. 27, 1968, P 17 61 288.3

Int. Cl. B41j 1/22

U.S. Cl. 197—18

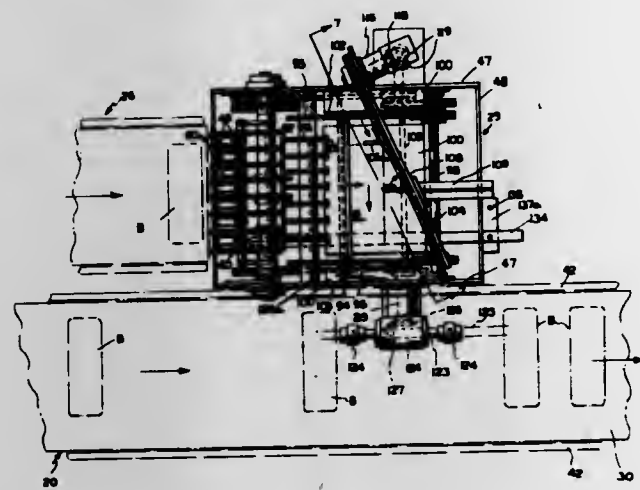
11 Claims



An arrangement for selecting individual type levers intended to perform printing, from a plurality of adjacent type levers which are assembled to form a continuously rotating rim-shaped magazine. A mechanical selection is effected by a shooting magnet acting upon the upper free end of the type levers. The timing control for the magnet is determined by a pulse generator which is ar-

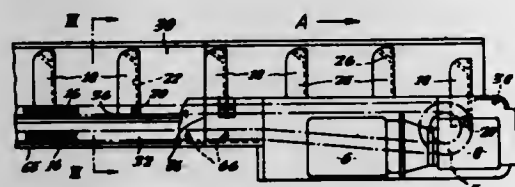
ranged in front of the magnet a predetermined distance to compensate for the time required for selection and re-acton of a type lever.

3,615,001
HIGH SPEED TRANSFER SYSTEM
Hiram E. Temple, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Original application Nov. 19, 1965, Ser. No. 508,684, now Patent No. 3,466,835, dated Sept. 16, 1969. Divided and this application Feb. 25, 1969, Ser. No. 825,471
Int. Cl. B65g 47/00
U.S. Cl. 198—20 R 12 Claims



A transfer machine for supplying a longitudinally forwardly moving main conveyor with products such as bread loaves wherein a sweep moving transversely to the conveyor moves bread loaves only to empty stations or spaces on the conveyor. Products such as bread loaves are fed only to empty stations on the main conveyor and the sweep is so timed with the movement of the advancing conveyor that the product is delivered to the empty station at precisely the time that the station passes a predetermined delivery location.

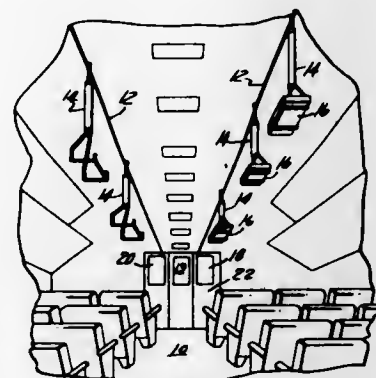
3,615,002
SCRAPER-CHAIN CONVEYORS
Robert B. Bolton, 14 Middle Drive, Ponteland Northumberland, England
Continuation-in-part of application Ser. No. 657,883, Aug. 2, 1967. This application Mar. 25, 1969, Ser. No. 810,095
Claims priority, application Australia, Mar. 27, 1968, 35,634/68
Int. Cl. B65g 19/04
U.S. Cl. 198—170 4 Claims



A scraper chain conveyor of the single chain type has a trough to receive the material being conveyed, an endless chain passing round end sprockets, one run of which extends along one side of the trough, and a series of pivoted flights spaced along the chain, which flights are

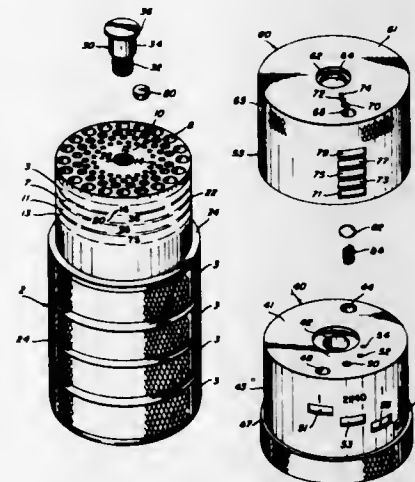
maintained transversely to the trough throughout the driving run, and assume a trailing attitude relative to their pivots during the return run.

3,615,003
FOOD CONVEYOR SYSTEM FOR A VEHICLE
Jacob A. Rust, 1026 Alba Drive, Orlando, Fla. 32804
Filed May 1, 1969, Ser. No. 820,722
Int. Cl. B65g 17/20
U.S. Cl. 198—177 R 2 Claims
A conveyor system for delivering food trays to a passenger compartment in a passenger transporting vehicle. A plurality of carrier assemblies are removably mounted at spaced locations on a cable having an elastic covering which travels throughout the passenger compartment of the vehicle. Each carrier assembly includes a spring member providing a biasing support between



a cable engaging portion and a tray engaging portion of the carrier assembly thereby allowing relative movement between these two portions of the carrier assembly so as to prohibit displacement of the tray and proper orientation of the carrier assembly regardless of the attitude or change in position of the vehicle.

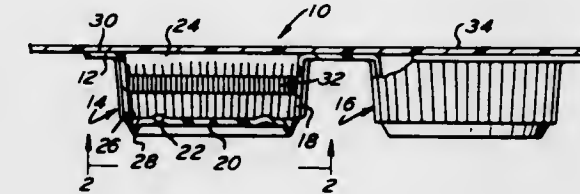
3,615,004
INDEXING DRILL CONTAINER
John L. Wescott, 3702 N. 48th Place, Phoenix, Ariz. 85018
Filed Apr. 6, 1970, Ser. No. 25,692
Int. Cl. B65d 85/24
U.S. Cl. 206—17 3 Claims



A cylindrical container has a plurality of recesses longitudinally oriented along the perimeters of concentric circles disposed about the longitudinal axes of the cylinder. The recesses are sized and dimensioned to receive twist drills and similar tools in varying sizes. Two covers, the

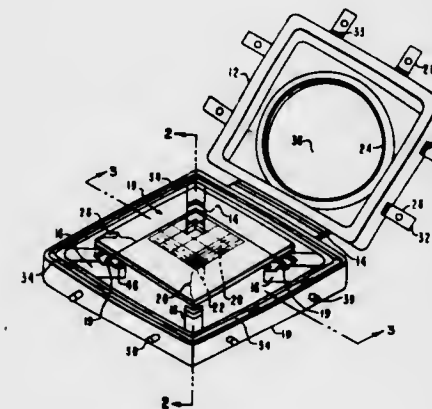
first fitting over the end of the cylinder in which the recesses are drilled and the second fitting over the first cover, are rotatably secured to the end of the cylinder. Index legends are scribed on the cylindrical surface of the cylinder adjacent the covered end. The two covers are provided with apertures so disposed that only one recess is open at a time, and the corresponding drill size legend in the index is visible on the side of the cylinder through registered windows in the sides of the covers. The visible index legend corresponds to the size drill stored in the corresponding recess. Detent means are also provided to hold the covers relative the cylinder in a closed position or in any one of a plurality of preselected open positions communicating with the various recesses in the cylinder.

3,615,005
TAMPERPROOF PACKAGE
Joseph M. Segel, Merion, and Roy E. Okell, Broomall, Pa., assignors to The Franklin Mint, Inc., Yeadon, Pa.
Filed Feb. 12, 1969, Ser. No. 798,715
Int. Cl. B65d 83/00
U.S. Cl. 206—56 9 Claims



A tamperproof and easy-open package of polymeric plastic materials is disclosed wherein a base sheet is provided with specially designed receptacles integral therewith and defined by corrugated side walls with a sharp top edge and an end wall. A top sheet overlies the open end of the receptacle and is welded to a peripheral flange portion of the base sheet with the welds circumscribing the receptacles. When downward pressure is applied on the top of the receptacle, the end wall is pushed in, the receptacle ruptures at a weak section between the corrugated side wall and the end wall before the end wall makes contact with an article within the receptacle.

3,615,006
STORAGE CONTAINER
Morris S. Freed, North Plainfield, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 26, 1969, Ser. No. 836,701
Int. Cl. B65d 85/48
U.S. Cl. 206—62 R 4 Claims

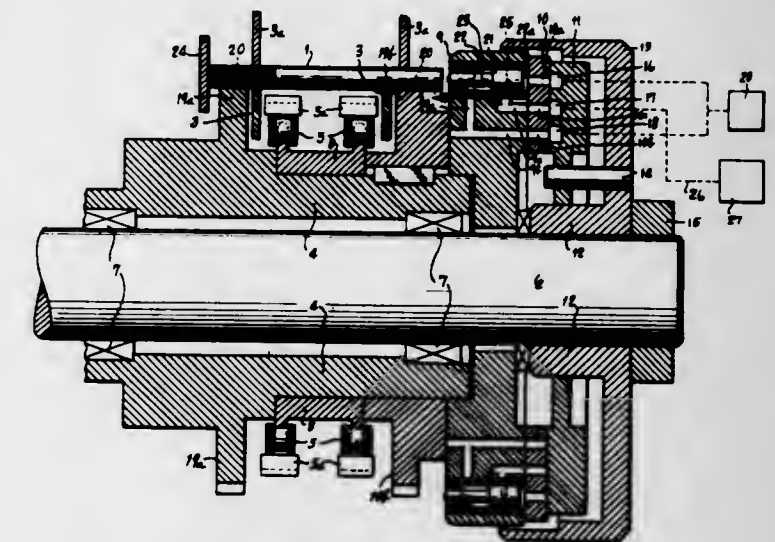


A container for a plate, such as a glass mask used in the fabrication of microelectronic integrated circuit devices

or other plate which is breakable or has a precision surface liable to damage by contact, having supports for the plate and a member integral to the container for biasing the plate against the supports is provided. The supports and biasing members apply substantially directly opposing forces at the periphery of the plate. The container protects such a glass mask or other plate against breakage or damage and allows rapid insertion or removal of the plate. The container is therefore adapted for storing and handling glass masks used for the high volume production of integrated circuits.

3,615,007
CONTINUOUS LOOSE END INSPECTION SYSTEM
Leslie Elmer Payne, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Co., Winston-Salem, N.C.
Filed Sept. 10, 1969, Ser. No. 856,700
Int. Cl. B07c 5/34 12 Claims

Apparatus for inspecting cigarette ends comprising a rotating drum having individual holders thereon for transporting cigarettes in a production line through an inspection station and inspecting means at each holder in form of a piston with a probe on its end which is forced against the adjacent end of a cigarette in the holder by a predetermined pneumatic pressure supplied at the inspection station which pressure is used to actuate a memory and reject system when the cigarette is found to be defective. If a cigarette end is loosely packed or foreshortened, the piston will be displaced beyond a predetermined distance,

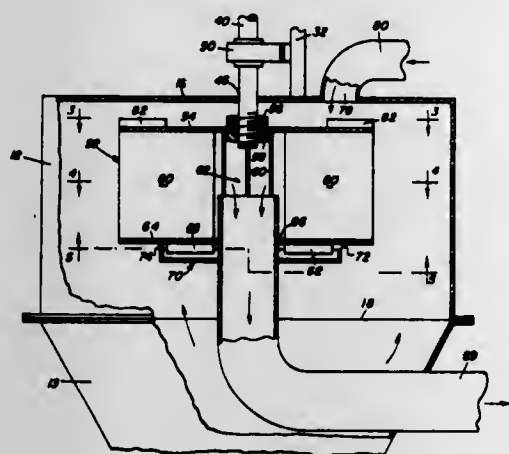


permitting the actuating pressure to be diverted into the memory-reject system displacing a piston in a drum located further along a conveyor chain that interrupts the travel on and positively removes the inspected cigarettes from the inspecting drum. The rotation of the latter drum is timed so that the memory device will actuate the reject means as a defective cigarette passes on the conveyor chain.

3,615,008
CENTRIFUGAL CLASSIFYING SYSTEM
Smith M. Alpha, St. Mary Parish, La., assignor to Silver Lining Inc., St. Mary Parish, La.
Filed Feb. 17, 1969, Ser. No. 799,569
Int. Cl. B07b 7/083 2 Claims

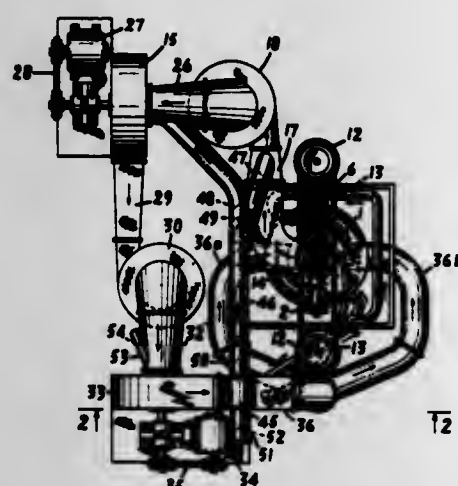
This disclosure relates to a centrifugal classifying, or particle separation, system wherein solid particles are admitted to a rotating distributor plate. Centrifugal force throws the particles off the plate radially outwardly toward the sides of a cylindrical housing, and thus into a

stream of air flowing upwardly and into a rejector mechanism. This mechanism is a cylindrical fan of the "squirrel cage" type, having a large number of vertically aligned blades around its circumference. Air is fed into the housing surrounding the rejector drum and flows through the blades to a discharge chamber located inside the rejector, carrying with it particles of the material



being thrown off the distributor plate. The size of the particle entrained in the air flow and carried into the discharge chamber will depend upon the rate of flow and upon the speed of rotation of the rejector blades. The particles not entrained and those prevented from passing through the rejector blades will fall to the bottom of the housing for removal, and in this manner the desired particles may be separated from the remainder.

3,615,009
CLASSIFYING SYSTEM
Walter J. Norton, Altamonte Springs, Fla., assignor to The Georgia Marble Company, Atlanta, Ga.
Filed Mar. 3, 1969, Ser. No. 803,740
Int. Cl. B07b 7/083, 7/10
U.S. Cl. 209—139 A 10 Claims

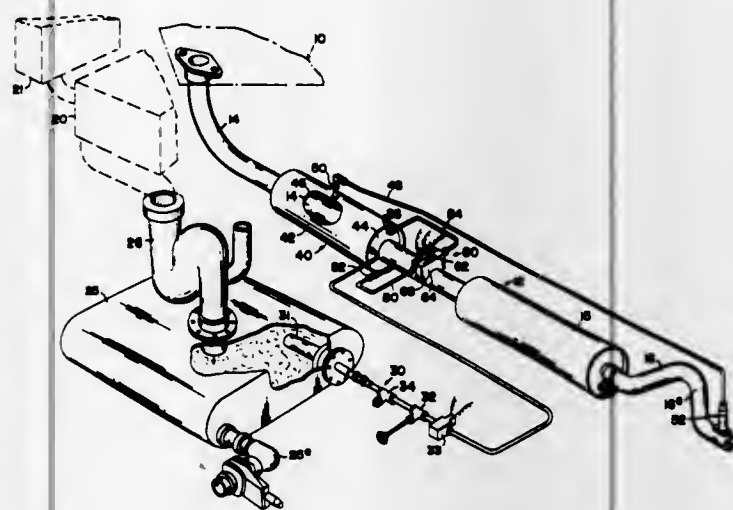


A classifying system of the type in which an air stream is recirculated through the system and in which finer particles are separated from coarser particles by being drawn through a particle separator which passes there-through finer particles while rejecting coarser particles and including a centrifugal separator into which the finer particles are drawn with the stream of air and removed from the system, a first blower for maintaining the centrifugal separator under suction by removing air and ultrafine material therefrom, and a second blower for returning air to an air swirling chamber from which air passes in countercurrent fashion with the coarser particles to separate finer particles therefrom and return them to the particle separator.

ERRATA

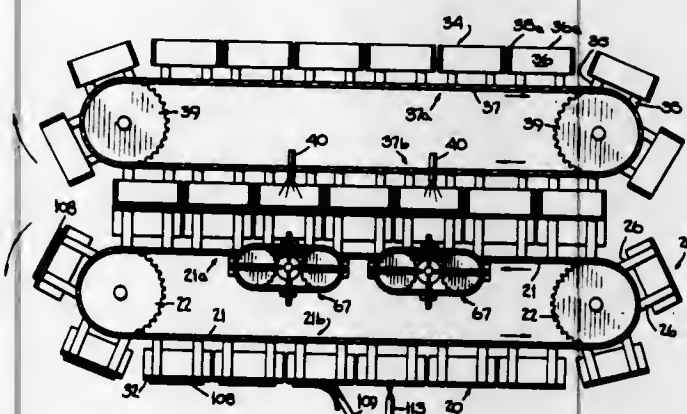
For Classes 209—211 and 209—349 see:
Patent Nos. 3,615,014 and 3,615,021

3,615,010
WASTE DISPOSAL SYSTEM
James S. Reid, Hudson, and Harry W. Green, North Olmsted, Ohio, assignors to The Standard Products Company, Cleveland, Ohio
Continuation of application Ser. No. 668,867, Sept. 19, 1967. This application Feb. 2, 1970, Ser. No. 7,448
Int. Cl. B01d 1/14
U.S. Cl. 210—65 12 Claims



A waste disposal system in which the exhaust system of a vehicular unit is employed to supply heat to a dissipatus drum in which liquid waste material is introduced. The flow of waste material into the drum is controlled by a pump actuated by a thermostatic pump control switch.

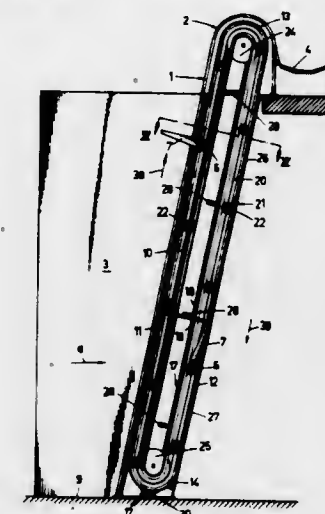
3,615,011
APPARATUS AND METHOD FOR CONTINUOUS FILTERING
William S. Eakins, St. Andrews Lane, Glen Cove, N.Y. 11542
Application Dec. 21, 1966, Ser. No. 613,691, now Patent No. 3,460,674, dated Aug. 12, 1969, which is a continuation-in-part of application Ser. No. 578,361, Sept. 9, 1966. Divided and this application July 30, 1969, Ser. No. 845,984
Int. Cl. B01d 25/22, 35/08
U.S. Cl. 210—77 21 Claims



A traveling filter comprising a plurality of trays disposed to travel along a path, a plurality of frames adapted to travel along a second path and through a portion of said path mate with the trays to confine material thereon, and a plurality of conduit means adapted to travel along

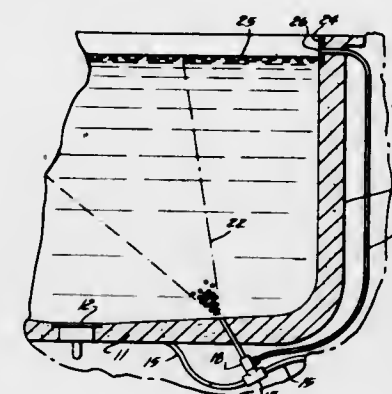
a third path and adapted to be advanced and retracted to establish communication with and discharge liquid from said trays.

3,615,012
DEVICE FOR PURIFYING LIQUIDS, PARTICULARLY WATER
Andre Verbandt, 130 Parmentierlaan, Knokke, Belgium
Filed Oct. 7, 1969, Ser. No. 864,352
Claims priority, application Belgium, Oct. 9, 1968, 64,519; Sept. 26, 1969, 79,567
Int. Cl. B01d 35/16
U.S. Cl. 210—159 9 Claims



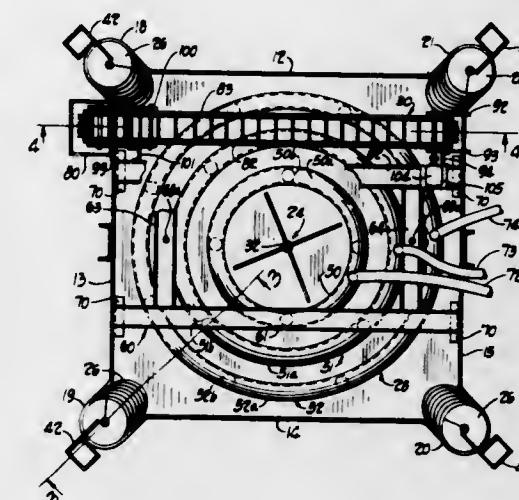
A device for removing floating debris from water running in a channel, including a grate of inclined parallel bars, two pairs of gear wheels, and two parallel continuous chains running over the gear wheels and extending longitudinally of the bars. The device includes drive means for rotating the gear wheels, and a horizontal beam having teeth affixed thereto which are adapted to engage between the bars of the grate in a raking position to carry solid impurities retained against the grate.

3,615,013
SWIMMING POOL APPARATUS
Wayne P. Reece, Orlando, Fla., assignor to Tropicana Pools, Inc., Orlando, Fla.
Filed July 17, 1969, Ser. No. 842,514
Int. Cl. E04h 3/20
U.S. Cl. 210—169 2 Claims



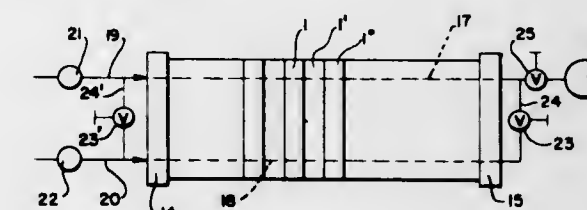
A swimming pool aerator apparatus for bubbling air into a swimming pool having a water line from the swimming pool filter system leading to one or more aspirator pumps connected to the bottom of a swimming pool for water to pass from the filter system through the aspirator pump into the swimming pool. An air line is connected from above the water level of the swimming pool down to the aspirator pump whereby water passing through the aspirator pump will draw air into admixture therewith which air will bubble through the water in the swimming pool. Several swimming pool aerators are connected in

3,615,014
METHOD OF AND APPARATUS FOR SOLID WASTE RECOVERY
Frank J. Hruby, 2809 County Road 18, Ravenna, Ohio 44266
Filed Jan. 21, 1970, Ser. No. 4,690
Int. Cl. B04b 5/12 17 Claims



Solid waste, especially household scrap, is separated into component substances on the basis of their relative densities by entraining the waste in a liquid and swirling the liquid and waste in a vessel having a peripheral side wall with one or more corner portions. The heaviest component substances are collected in the corner portions of the vessel and other solid waste still entrained in the liquid is removed at locations inwardly of the side wall. In a preferred embodiment, a rotor is located centrally of a square vessel to swirl liquid and waste. Collecting members, preferably of a conveyor type, are located in the corner portions of the vessel to collect and remove the heavier waste and suction conduits are inserted into the vessel inwardly of the side wall at particular radial distances from the center of the vessel to remove entrained waste of different densities. The vessel is provided with an upwardly convex bottom wall and a skimmer at the top for removing floating waste.

3,615,015
FILTER PRESS
Oswald Busse and Hugo Klesper, Michelbach, Germany, assignors to Passavant Werke, Michelbacherhutte, Germany
Filed Oct. 23, 1969, Ser. No. 868,792
Claims priority, application Germany, Oct. 29, 1968, P 18 05 893.0
Int. Cl. B01d 25/12 12 Claims



A filter press wherein the effective filtering area may be enlarged by the construction whereby the space between adjacent filter plates is sub-divided into chambers,

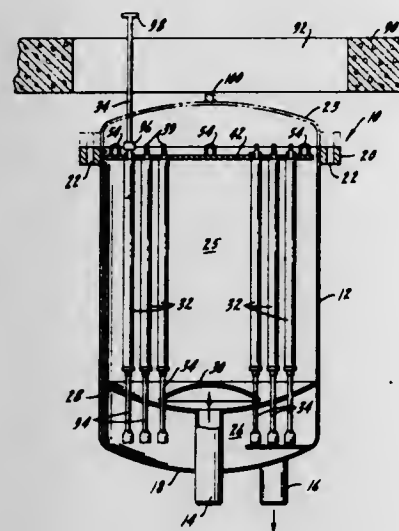
each isolated from each other but in fluid communication with corresponding chambers in the spaces between adjacent filter plates. A separate fluid conveyance device may be provided for each group of connected chambers.

3,615,016
FILTER TANK HAVING REPLACEABLE
FILTER CARTRIDGES

Alfonse J. Soriente, Gillette, N.J., and Stanley H. Wapner, New York, N.Y., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Oct. 3, 1968, Ser. No. 764,874
Int. Cl. B01d 25/02
U.S. Cl. 210—232

17 Claims



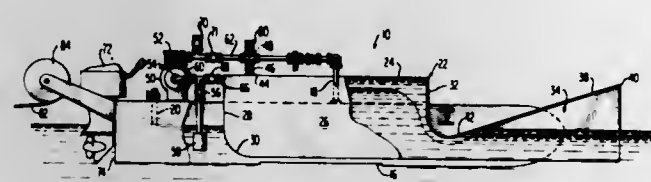
Apparatus enabling remote removal of a plurality of annular filter cartridges from a tank includes a wrenching portion on top of each cartridge, enabling it to be easily turned and unseated by an operator outside the tank. A cartridge locating plate having a plurality of apertures is positioned to fit over the wrenching portions, while permitting them to be rotated. Each wrenching portion includes release means which prevent the cartridge from dropping from the plate, so that the plate and cartridges may be lifted together and removed from the tank. The release means permit the easy removal of the cartridges from the plate after removal from the tank. The filter cartridges may be screw-mounted on the seat means, or novel mounting means may be employed. These novel mounting means include a cartridge receiver on top of the seat means, and having a cam slot, together with upwardly biased cam follower means on the bottom of the filter cartridge.

3,615,017
OIL ENTRAPMENT AND CONTAINMENT
WATERCRAFT

Joe M. Valdespino, 5023 Golf Club Parkway, Orlando, Fla. 32808

Filed Dec. 15, 1969, Ser. No. 884,899
Int. Cl. E02b 15/04
U.S. Cl. 210—242

10 Claims



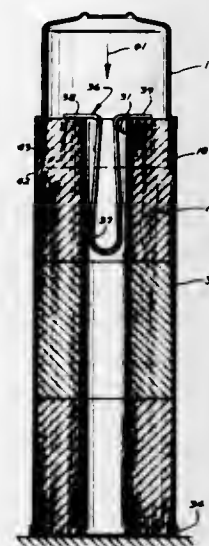
An oil slick entrapment and containment watercraft has a pair of pontoons buoyantly supporting an open-bottomed entrapment tower and a funnel-shaped surface

skimming shroud. The open bottom of the entrapment tower is below the water level; and, as the craft moves on the water having an oil slick, the oil passes into the skimmer and into the entrapment tower where the column of liquid is raised by vacuum applied to the top of the entrapment tower. Oil rises to the top of the water in the entrapment tower due to the difference in specific gravity and without emulsifying and is then pumped off the top. A single pump carried by the craft is connected by suitable piping arrangements and provides multiple functions including; drawing vacuum in the entrapment tower by aspirating air from the entrapment tower through an aspirator, supplying air to the pontoons, and pumping the oil from the entrapment tower. The buoyancy of the pontoons is controlled by supplying air and water to the top of the pontoons allowing the water to escape out of a slot in the bottom of the pontoons and providing air purge lines in the pontoons.

3,615,018
METHOD AND APPARATUS FOR PLACING
FILTER ELEMENT IN HOUSING
Lloyd R. Johnson, Tracy, Minn. 54617
Continuation of application Ser. No. 818,981, Apr. 24, 1969. This application Feb. 19, 1970, Ser. No. 12,868
Int. Cl. B01d

U.S. Cl. 210—232

11 Claims



A container for storing a tissue paper filter element usable in combination with a cylinder, as an oil cleaner housing, to load the element in the housing. The container has an inside wall with a transverse size and shape substantially equal to the transverse size and shape of the housing so that the housing can be telescoped into the container to place a tissue paper filter element in the housing. The method of loading the tissue paper filter element into the housing includes progressive feeding of the housing into the container and circumferentially compressing the tissue paper filter element as the housing telescopes over the element.

3,615,019
UNDERDRAIN SYSTEM FOR WATER
FILTRATION PLANT

Fred J. Early, Jr., 369 Pine St., San Francisco, Calif. 94104

Filed Aug. 13, 1970, Ser. No. 63,481
Int. Cl. B01d 23/18

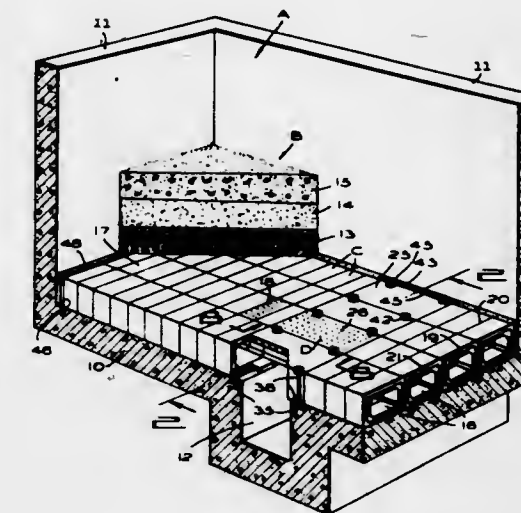
U.S. Cl. 210—293

12 Claims

An underdrain system for water filtration plant, wherein a filter basin has a floor and upwardly-extending walls rising therefrom to define a crib for holding filter media, the basin having a gullet in its floor. Rows of underdrain

blocks are provided on the floor and adjacent underdrain blocks are end-abutted with compressed sealing rings being interposed therebetween to form water-tight joints. Moreover, a row of gullet blocks are centered over the gullet, and these blocks are side-abutted, with compressed rings being arranged between the sides of adjacent gullet blocks to form water-tight joints. The latter sealing rings

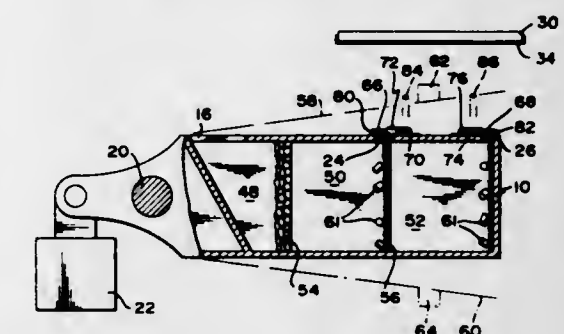
mounted side by side as an assembly with all discharging into the same receivers. The cross sectional area of the passageway is reduced from inlet to outlet, preferably regularly and continuously, to improve the tendency of particles of larger size to concentrate progressively at the front end of the liquid plug. The area reduction may also be by abrupt narrowing as by a longitudinal partition placed in the passageway part way along its length.



3,615,021
SCREEN PARTICLE SEPARATOR
T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Douglas G. Ritchie, Pasadena, Calif.
Original application Jan. 24, 1968, Ser. No. 700,120, now Patent No. 3,472,372, dated Oct. 14, 1969. Divided and this application Oct. 6, 1969, Ser. No. 864,039
Int. Cl. B07b 1/28

U.S. Cl. 209—349

1 Claim

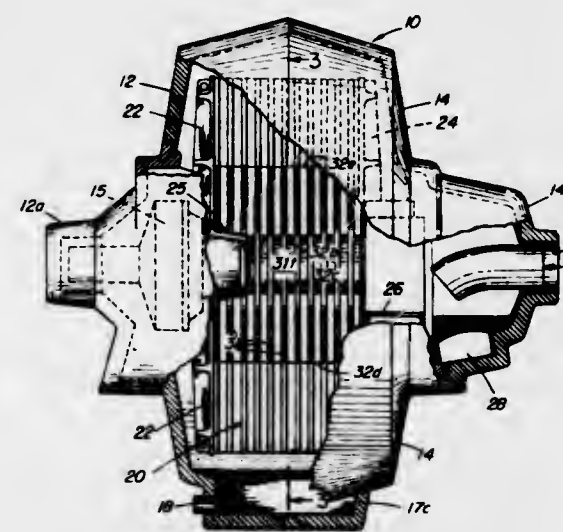


extend between the floor of the filter basin and the bottoms of the gullet blocks to provide water-tight joints. Both types of blocks define water passageways in their interiors, and all of the abovementioned blocks have top walls formed with holes therein, whereby filtered water may flow from the filter media to the gullet, and backwash water may be conveyed from the gullet to and through the filter media in a reverse direction to clean the media.

3,615,020
APPARATUS FOR SEPARATION AND FRACTIONATION OF MATERIAL SUSPENDED IN A LIQUID
Gunnar Olgard, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjärnan
Filed Oct. 6, 1969, Ser. No. 863,847
Claims priority, application Sweden, Oct. 7, 1968, 13,497/68
Int. Cl. B01d 43/00

U.S. Cl. 210—322

17 Claims



Apparatus for separation and fractionation of material suspended in a liquid has a plurality of helical passageways, preferably in flat spiral form, concentrically mounted as a unit which is rotated to pick up plugs of liquid and another phase alternately and discharge the liquid plugs into separate receivers. Identical units are

A mechanism useful in an unmanned spacecraft for screening a soil sample to obtain particles for television viewing. The mechanism comprises a bin for receiving the soil sample, apparatus for rapidly oscillating the bin about a pivot to create centrifugal forces pushing the soil particles through coarse and fine screens, a heated plastic sheet for receiving particles thrown out of the bin, and a translating mechanism for carrying the plastic to a vidicon tube for television observation of the particles. The translating mechanism includes slides which move along rods, each rod hermetically enclosed within a bellows to prevent the evaporation of lubricants when operated in a vacuum environment such as exists on the moon.

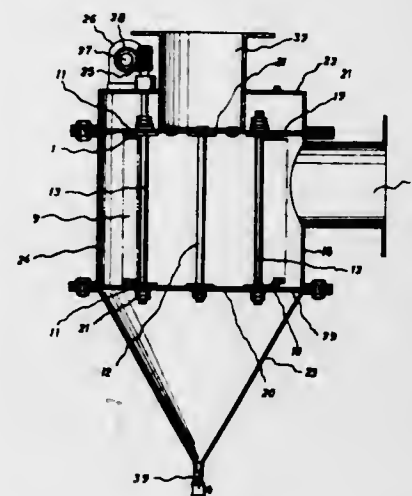
3,615,022
FILTER ELEMENT ASSEMBLY IN THE FORM OF AN ENDLESS LOOP AND THE PROCESS FOR FABRICATING THE SAME

Tadashi Hagihara, 4-1 Nagasaki Minami 5-chome, Toshima-ku, Tokyo, Japan

Filed Feb. 11, 1970, Ser. No. 10,482
Int. Cl. B01d 25/18

U.S. Cl. 210—357

3 Claims



A self-reactivation-type filter element assembly comprising a plurality of filter element units each including

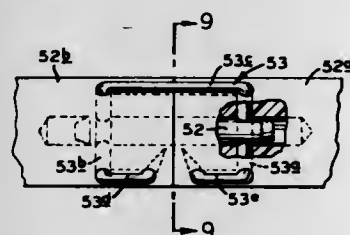
a plurality of filter pieces interconnected to each other in partially overlapping relation for relative movement and adapted to rotate about its own axis along a polygonal path within a filter. Each of said filter pieces comprises a sector or narrower elongated portion provided with an acute projection at one end and an integral elongated shank or wider elongated portion provided with through bores at the opposite ends. Pins extend through the aligned bores in one end of the shank or wider portion of one filter piece and in the other end of another filter piece which are in partially overlapped relation.

3,615,023 CENTERING DEVICES FOR ENDLESS FILTER BELT

August C. Barnehl, Stamford, and Franz Bliem and Ernst R. Kus, Norwalk, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.
Original application Jan. 25, 1968, Ser. No. 700,579, now Patent No. 3,503,517, dated Mar. 31, 1970. Divided and this application Nov. 19, 1969, Ser. No. 870,551
Int. Cl. B01d 33/14

U.S. Cl. 210-401

3 Claims

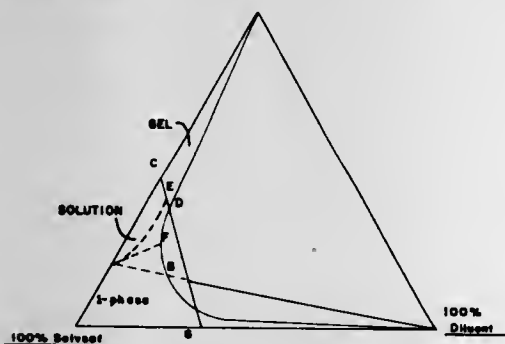


A pair of oppositely arranged belt centering devices for belt type vacuum drum filter apparatus, engaging respective side edge portions of the filter belt, each such device featuring a pair of glide shoes slidably engaging oppositely arranged tracks on the filter belt, the devices themselves being biased away from each other and from the side edges of the belt so that between them they exert a transverse stretch upon the filter media, also featuring specially molded flexible strip elements providing the tracks at the edges of the belt, and connector means for securing the ends of the strip to one another.

3,615,024
HIGH FLOW MEMBRANE
Alan S. Michaels, Lexington, Mass., assignor to Amicon Corporation, Lexington, Mass.
Continuation-in-part of application Ser. No. 669,648, Sept. 21, 1967. This application Aug. 26, 1968, Ser. No. 755,320
Int. Cl. B01d 13/00, 39/00

U.S. Cl. 210-490

6 Claims



An anisotropic high flux low pressure polymeric membrane capable of being dried without loss of beneficial mechanical and processing characteristics, and having in a continuous polymer phase a barrier layer containing pores from 1 to 1000 millimicrons in diameter and an open porous support layer, the polymer absorbing less than 10 percent moisture at 100 percent relative humidity at 25° C.

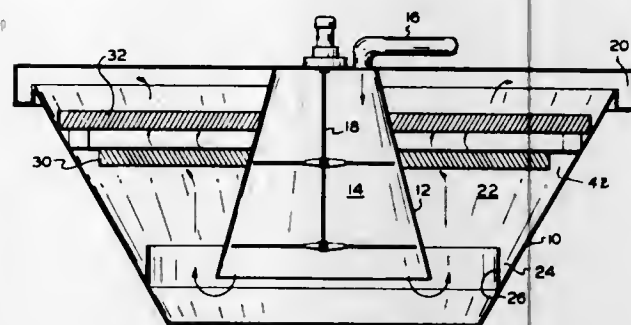
3,615,025 SOLIDS-LIQUID SEPARATOR WITH VERTICALLY SPACED TUBE-SETTLERS

Archie H. Rice and Curtis E. McCann, Corvallis, Oreg., assignors to Neptune Microflocc, Incorporated, Corvallis, Oreg.

Filed Dec. 19, 1969, Ser. No. 886,680
Int. Cl. B01d 21/02, 21/24

U.S. Cl. 210-521

8 Claims



Apparatus for removing entrained solids from liquids includes container with inlet in lower position and outlet at top. Two vertically spaced layers of inclined channels are positioned in container so that liquid must flow upwardly through channels of each layer. Separation of layers prevents disturbance from eddy currents or other turbulence in liquid and enhances separation of solids.

3,615,026 APPARATUS FOR SHIFTING FLOWER POTS AND FOR LIFTING AND LOWERING SUCH POTS IN GARDENING NURSERIES

Ulrich Englert, Horthelm, Württemberg, Germany, and Konrad Dabritz, Königsbergerstr. 31, Muhlacker, Württemberg, Germany

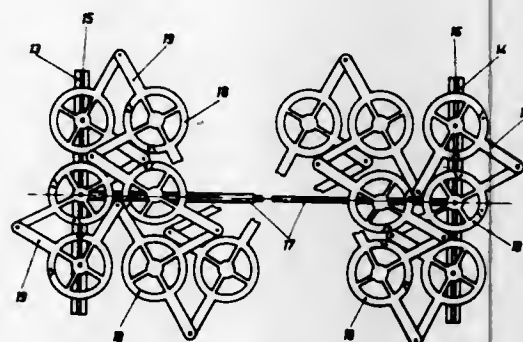
Filed June 20, 1968, Ser. No. 738,493

Claims priority, application Germany, June 24, 1967, P 15 82 719.7; Dec. 18, 1967, P 15 82 722.2

Int. Cl. A47g 29/00

U.S. Cl. 211-80

4 Claims



Extension arms are connected to a plurality of flower pot holders, each of which is adapted to receive a flower pot. The extension arms are relatively movably connected to each other so that said holders and arms form a grid structure in which the spacing of said holders is variable. A series of forks, each of which is adapted to embrace and support a pot, are connected by a linkage, which is provided with handles operable to vary the spacing of said forks.

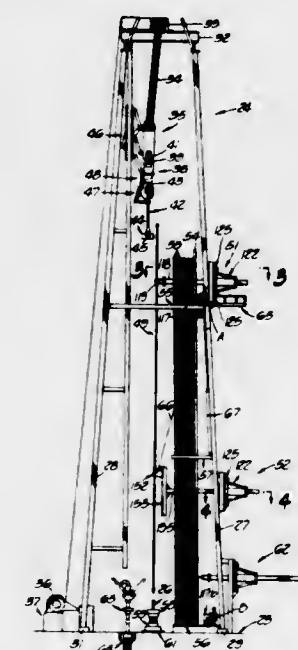
3,615,027
PIPE RACKING CONTROL SYSTEM
John E. Ham, Los Angeles, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.
Filed Nov. 26, 1968, Ser. No. 779,171
Int. Cl. E21b 19/14

U.S. Cl. 214-2.5

21 Claims

Control and operating systems for well pipe racking apparatus in which a number of vertically spaced racker arms are moved longitudinally to extend and retract the

racker arms as well as laterally relative to the pipe racking finger board, the racker arms having pipe supporting means for moving a length of pipe between the racking finger board and a position disposed over the rotary table of a drilling rig, and in which the control and operating systems include a hydraulic operating system comprising a reversible variable displacement pump for supplying fluid at a selected rate to either of a pair of motors, one of which effects longitudinal movement of one of the racker arms and the other of which effects lateral movement of said one of the racker arms. Such control and operating systems in which a second reversible variable displacement pump is employed to selectively supply fluid

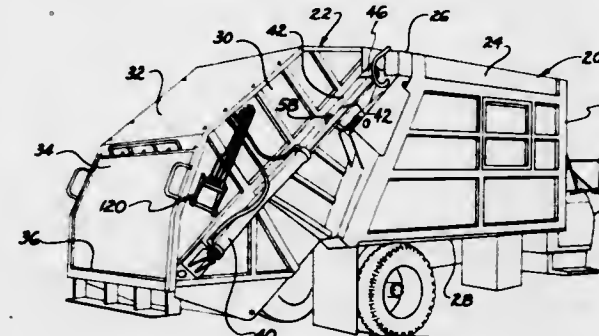


to either of a pair of motors for effecting longitudinal movement and lateral movement of the rest of the racker arms. Such control and operating systems in which the control system includes selectively operable control circuits for enabling actuation of an upper and a lower racker arm from the same location or, alternatively, to enable operation of the lower racker arm from said location and operation of the upper arm from another location. Such a control system in which a variable displacement pump is adjusted and caused to operate in reversed directions to displace fluid to the racker arm operating motors at a rate proportional to the extent of movement of a control member.

3,615,028
REFUSE HANDLING APPARATUS
William S. Appleman and Donal W. Chaney, Gallon, Ohio, assignors to Harsco Corporation, Harrisburg, Pa.
Filed Feb. 19, 1969, Ser. No. 800,619
Int. Cl. B65f 3/00

U.S. Cl. 214-83.3

5 Claims



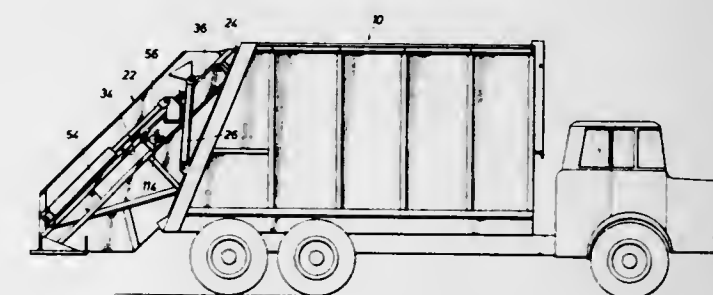
A refuse truck of the rear loading type provided with a novel packer blade and associated control apparatus. More specifically, the packer blade is mounted on a carriage that is arranged to reciprocate on an inclined track

means so as to load and pack the truck body and the blade and carriage are respectively actuated by separate hydraulic cylinders which are in turn controlled in a novel manner so as to operate the carriage and the blade through successive cycles each of which is controlled by a respective pressure responsive controller. As a result, each of said cycles is automatically terminated by the occurrence of a predetermined pressure value and the mechanism will automatically proceed to the next succeeding cycle.

3,615,029
REAR LOADING REFUSE VEHICLE
Orin M. Anderson, P.O. Box 14147,
San Antonio, Tex. 78214
Filed Mar. 21, 1969, Ser. No. 809,104
Int. Cl. B65f 3/00

U.S. Cl. 214-83.3

1 Claim



A rear loading refuse vehicle having a rear end opening, a hollow door hingedly connected to the body for swinging movement into and out of closing relation to the opening and having spaced apart, upright, planar side walls each provided with an upwardly and forwardly inclined slot extending therethrough. Each slot has a slide assembly movably extended therethrough for sliding movement longitudinally in the slot and having means engageable with surface portions of the wall to hold the assembly in the slot. A sweep panel extends between the assemblies in the slots and is movably mounted thereon for movement with the assemblies and for rotation about its upper end to allow the panel to sweep through the hopper to sweep refuse from the hopper and to move upwardly to move the refuse into the body through the opening.

Power means is provided for moving the slide assemblies in the slots and for rotating the sweep panel and means is provided for actuating the power means to move the panel to a lower position and rotate the panel to sweep the refuse from the hopper and move the panel upwardly to move the refuse into the body through the opening.

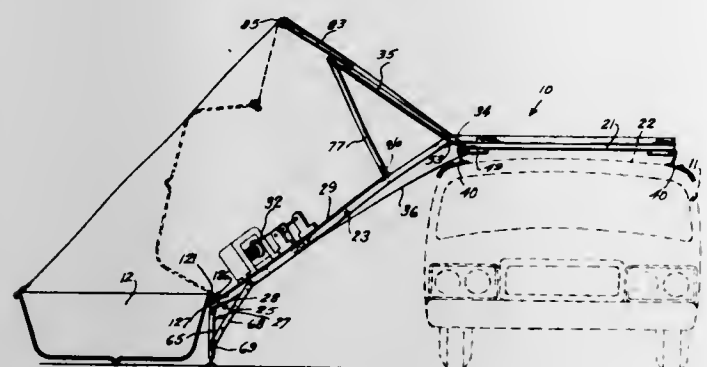
3,615,030
SELF-LOADING BOAT CARRIER
Emory Wuest, 4135 N. Monitor Ave., Chicago, Ill. 60634, and Adolph G. Klemm, 10956 Wellington, Melrose Park, Ill. 60164
Filed Sept. 18, 1969, Ser. No. 859,124
Int. Cl. B60n 9/00

U.S. Cl. 214-450

6 Claims

A device mountable atop an automobile which includes a frame attachable to the roof of the automobile, the frame carries a bed, atop of which a boat may be mounted. The bed has roller wheels associated therewith and the frame has foldable leg means attached thereto which are adapted to extend from the portion of the frame atop the automobile outwardly and downwardly to a position adjacent the side of the automobile. The bed is adapted to roll off the frame onto the legs. The bed carries a winch and the frame has a jib boom associated therewith cooperating with the winch cable to lift a boat from alongside of the ends of the legs to a position atop

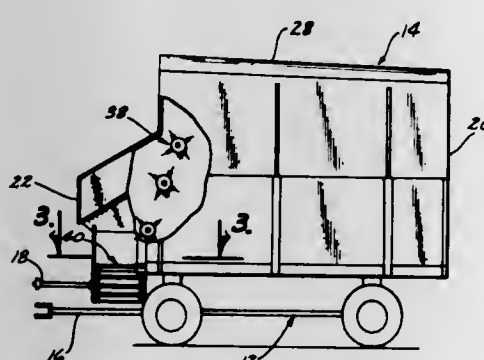
the bed, the winch cable thereafter being capable of attachment to a portion of the frame to lift the bed with conveyor and serves to deliver material deposited thereupon to the faster rotor which coacts with the slower rotor



the boat mounted thereatop along the legs to a position atop the frame.

3,615,031
FORAGE BOX
Dorland H. Schuler, Griswold, Iowa 51535
Filed Jan. 12, 1970, Ser. No. 2,046
Int. Cl. B60p 1/38
U.S. Cl. 214—519

7 Claims



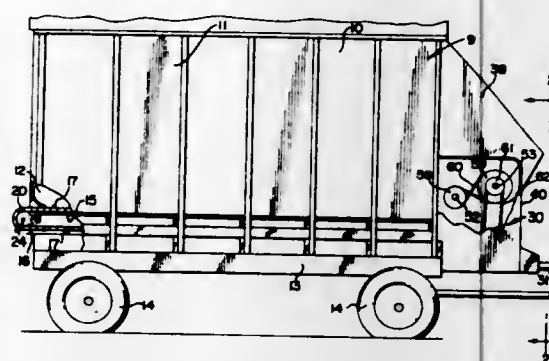
A forage box including a floor conveyor means adapted to convey forage material or the like forwardly to a discharge conveyor means at the forward end of the box. The discharge conveyor means has a discharge end spaced outwardly of one side of the box to facilitate the discharge of material into an elevator or the like. The discharge conveyor means is of the slat and chain type and has a plate means removably mounted thereon which prevents material from passing downwardly there-through when in position. The plate means is removable so that the material on the discharge conveyor will pass downwardly therethrough into a silo pit or the like when the plate has been removed. The plate means includes means for inserting the plate in the discharge conveyor and also includes means for detachably maintaining the same thereon.

3,615,032
FORAGE METERING MECHANISM
Arnold Zimmerman, Downers Grove, and Peter Sammarco, Bellwood, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Sept. 24, 1969, Ser. No. 860,561
Int. Cl. B60p 1/36
U.S. Cl. 214—519

9 Claims

A mechanism to meter the unloading of material onto a conveyor from a self-unloading wagon, the mechanism comprising a pair of parallel rotors superposed with respect to the conveyor and being rotatable in opposite directions and at substantially different speeds, wherein the slower rotor acts to block material from falling upon the

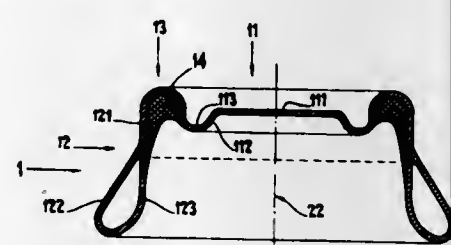
conveyor and serves to deliver material deposited thereupon to the faster rotor which coacts with the slower rotor



to shred and meter material passing therebetween to thereby meter the size and amount of it passing to the conveyor.

3,615,033
CLOSURE CAP
Armando Podesta, Milan, Italy, assignor to Societe de Conditionnement en Aluminium Scal GP, Paris, France
Filed May 14, 1969, Ser. No. 824,472
Int. Cl. B65d 41/10
U.S. Cl. 215—39

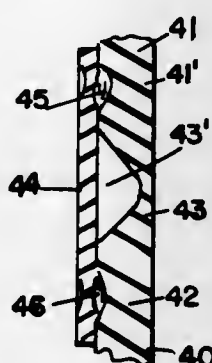
2 Claims



A thin metal cap for closing containers with necks having an upper collar in which the cap is formed with a base portion having an elevated central disc, a truncated cone joining the outer edge of the central disc with a vertically disposed skirt portion having an upper cylindrical portion and a lower frustoconical portion with the lower edge rolled inwardly through an angle of 200° to 250°.

3,615,034
FRANGIBLE CONTAINER
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 609,397, Jan. 16, 1967. This application Dec. 12, 1968, Ser. No. 783,320
Int. Cl. B65d 17/00
U.S. Cl. 220—27

3 Claims



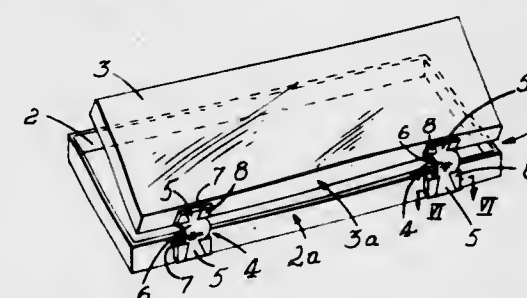
An apparatus for molding hollow containers which may be easily opened and the article itself are provided. The apparatus produces a thin-walled hollow container having a narrow strip-like portion of its wall reduced in

thickness to such a degree that the container may be easily opened. In one form, the container is severed by twisting. In another form, the wall is shaped with a strip-like portion which is severable by pulling on same. A cutting means may also be applied to effect opening. Auxiliary supporting means may also be provided to normally prevent severance of the weakened portion of the container.

3,615,035
UNITARY HINGES OF SYNTHETIC RESINOUS OR LIKE MATERIAL

John William Brian Newton, Johannesburg, Transvaal, Republic of South Africa, assignor to Newton and Taylor (Proprietary) Limited
Filed Aug. 12, 1969, Ser. No. 856,247
Claims priority, application Republic of South Africa, Aug. 20, 1968, 68/5,394
Int. Cl. B65d 51/04; E05d 9/00
U.S. Cl. 220—31 S

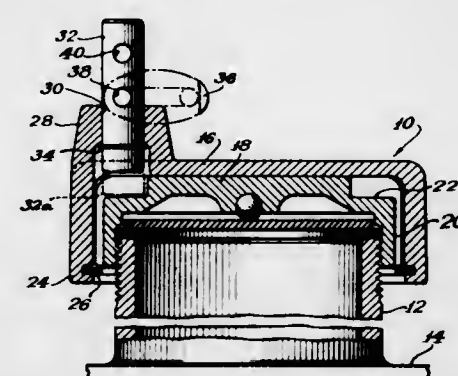
8 Claims



A hinge unit of the type comprising a pair of leaves; and a web integrally connecting the leaves together, the leaves and the web being made of synthetic resinous or like material and the web presenting a bending zone about which the leaves are pivotable relative to one another, which is characterized in that at least one of the leaves presents a mounting formation, such as a dove-tailed tongue, which is interengageable with a complementary hinge mounting formation, such as a dove-tailed groove, on a member, such as a container part, which is to be hingedly mounted.

3,615,036
LOCKING FILLER CAP
John J. Mross, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Original application Oct. 17, 1968, Ser. No. 768,262, now Patent No. 3,537,283, dated Nov. 3, 1970. Divided and this application Mar. 16, 1970, Ser. No. 19,583
Int. Cl. B65d 41/04
U.S. Cl. 220—39

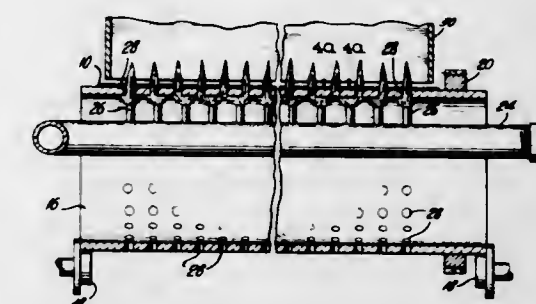
3 Claims



A three-piece locking cap with disconnecting drive, which cap is adaptable to two uses or functions and which includes a filler cap, a separable outer cap, and drive establishing means such as a locking pin having padlock openings therein. The cap has a non-locked closure function provided by the filler cap only, and an interrupter type locking function when the outer cap and locking pin are applied to the filler cap. The pin is selectively moved into drive establishing position of interengagement between the caps, or padlocked to the outer cap in a drive interrupter or disconnecting position.

3,615,037
APPARATUS FOR PROVIDING FABRIC WITH EMBROIDERY SIMULATION
John Viscardi, Lodi, N.J., assignor to Velourit Company, Inc.
Filed Sept. 22, 1969, Ser. No. 859,769
Int. Cl. B32b 31/26
U.S. Cl. 156—497

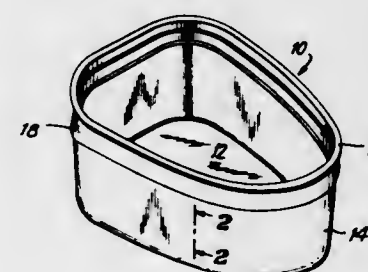
9 Claims



A method and apparatus for achieving a fabric which has an eyelet embroidery simulation. Holes are burned through the fabric according to a predetermined pattern, and the fabric is flocked also according to a predetermined pattern in the region of the holes burned therethrough, so as to achieve in this way a fabric which simulates an eyelet embroidered fabric. The fabric is maintained in continuous movement while extending around and engaging a rotary shell formed with openings passing therethrough according to the predetermined pattern and receiving in its interior a pipe and nozzles which supply a combustion-supporting fluid to achieve flames passing through the openings as the fabric moves with the rotary shell so that in this way the openings are burned through the fabric. As the fabric continues to be fed beyond the shell it is flocked.

3,615,038
LAMINATED CONTAINER BODY
Charles Robert Brownold, Aurora, Richard Joseph Karas, Addison, and Henry Germanus Maeder, Jr., St. Charles, Ill., assignors to American Can Company, New York, N.Y.
Filed Apr. 21, 1970, Ser. No. 30,519
Int. Cl. B65d 25/14
U.S. Cl. 220—63 R

9 Claims



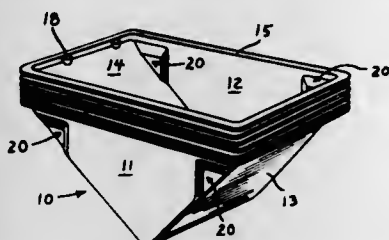
A container for packaging a food product such as ham or the like is made from a plastic laminate comprising two outer layers of high density polyethylene, two adjacent layers of low density polyethylene, and a central layer of saran.

3,615,039
NESTABLE CONTAINER
Frank A. Ward, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.
Filed July 28, 1969, Ser. No. 845,466
Int. Cl. B65d 21/02
U.S. Cl. 220—97 C

6 Claims

The container has triangular side panels and generally rectangular end panels joined to a peripheral flange at the open end. Each triangular side panel has a triangular recess at each corner adjacent the peripheral flange. The container is arranged for nesting inside an identical con-

tainer and the recess relieves the drag at the corners to facilitate denesting. Each recess also provides an upright



shoulder for laterally aligning the nested containers and for guiding the subjacent container when denested.

3,615,040 APPARATUS FOR AUTOMATICALLY ZEROIZING COUNTERS ASSOCIATED WITH FLUID DISPENSING UNITS

Hans Erik Eklund and Leif Gunnar Persson, Malmö, Sweden, assignors to Aktiebolaget Ljungmans Verkstader, Malmö, Sweden

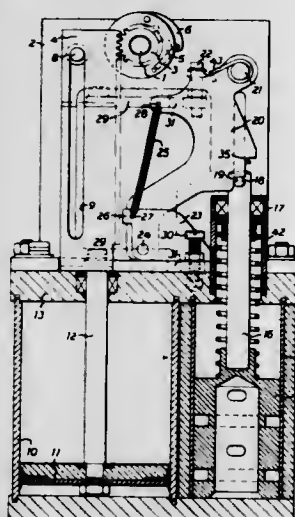
Filed June 4, 1969, Ser. No. 830,377

Claims priority, application Sweden, June 10, 1968, 7,759/68

Int. Cl. B67d 5/26

U.S. Cl. 222—33

7 Claims



An apparatus for zeroizing counters in fluid dispensing units, in which a slide valve is connected directly in the main fluid flow conduit and is actuable by the fluid pressure in said conduit for operating a zeroizing mechanism in such a way that said conduit is kept closed until the counters are zeroized, whereby all manual adjustments hitherto necessary are eliminated.

3,615,041 PERIODICALLY ACTUATED AEROSOL DISPENSER

Garth Lamont Bischoff, 190 N. Cypress St., Orange, Calif. 92666

Continuation-in-part of application Ser. No. 301,049, Aug. 9, 1963, now Patent No. 3,182,857, dated May 11, 1965. This application Mar. 25, 1970, Ser. No. 22,595

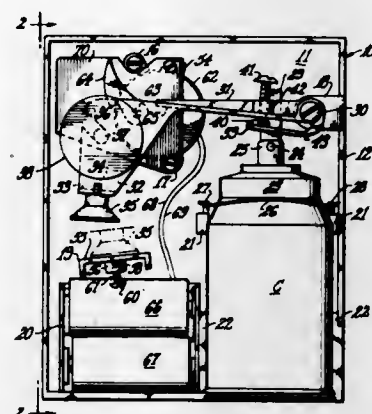
Int. Cl. G04c 23/38

U.S. Cl. 222—70

4 Claims

Apparatus is contained in a housing having an insertion socket for successive aerosol containers, such as dispense insecticides by release at timed intervals. The apparatus provides a battery-driven electric motor having a lifting cam; on each single rotation, the cam trips a transverse drop-lever which triggers the spring-loaded release valve of the dispenser. At end of each rotation, the motor is shut off by a magnet on the cam, which opens a magnetic reed valve to break the battery-to-motor circuit. During off period, a capacitor is charged through a secondary circuit, and then discharged to the motor to initiate another motor-and-cam rotation which removes the cam-magnet from the reed valve, allowing latter to close

battery-to-motor circuit so as to power remainder of revolution. The period required for the capacitor to charge is set as the desired interval between successive discharges of the aerosol release valve. The actuating drop-lever also has adjustable tension means at its trigger end, plus



hold-down time-release means embodied in a suction cup and vacuum-release platform at its other end. An insertion slot is provided on the drop-lever for attachment of selected weights used to counterbalance spring tension of the dispenser release valve.

3,615,042 PLUG VALVE ASSEMBLY FOR FLUID PRODUCT DISPENSER HAVING A STEM CONFIGURATION FOR EASY MANIPULATION AND GOOD SEALING

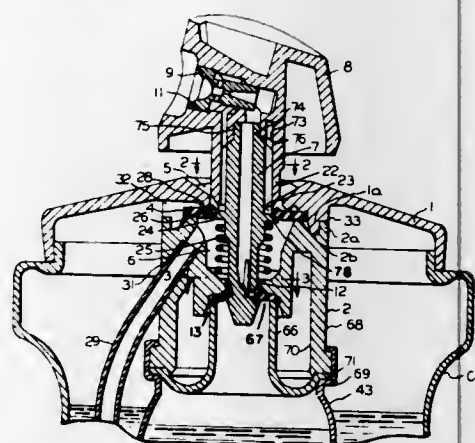
Jean Marand, St. Benoit, France, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

Continuation-in-part of application Ser. No. 718,165, Apr. 2, 1968. This application Oct. 15, 1968, Ser. No. 778,905

Int. Cl. D65d 6/14

U.S. Cl. 222—193

28 Claims



A valve stem configuration adapted to provide easy manipulation and good sealing for incorporation in a plug valve assembly for dispensers of fluid products adapted to be attached to a product container for containing the fluid product to be dispensed. The product container accommodates a propellant cartridge within the product container. The valve stem is hollow and has a pushbutton actuator on the upper end thereof which has a nozzle therein communicating with said hollow stem. A cap member fits over a product container and has an aperture therein through which the hollow stem is movable, and a support is secured to the under side of said cap and has a hollow central portion through which said hollow stem is movable. A dip tube is secured in said support and opens into said hollow interior, and a fluid product flow path extends along said hollow stem exteriorly of the hollow thereof from a point adjacent said hollow interior. A first flexible gasket means is positioned in said plug valve assembly through which said hollow stem passes

for obturating said fluid product flow path between said fluid product flow path and said hollow interior. The support has a downwardly open recess therein, and a second flexible gasket means is positioned in the bottom of said recess through which said hollow stem passes. The lower end of the hollow stem has a reduced diameter neck and at least one aperture therein opening into the space around the neck, said aperture being obturated by said second flexible gasket means. A retaining ring holds said second gasket means in said recess and secured to said support and has the outer lower edge secured in gas tight relationship to a propellant cartridge.

3,615,043 FLUID METERING AND DISTRIBUTING SYSTEM

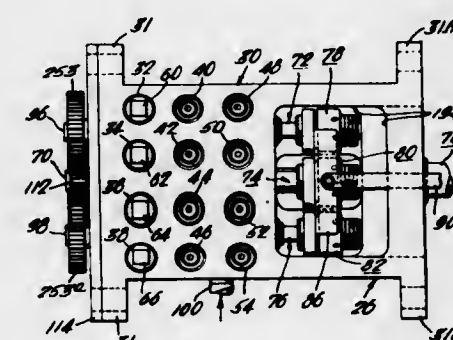
Russell B. Hussey, East Longmeadow, Mass., and John A. Kimberley, Granby, Conn., assignors to AMBAC Industries, Incorporated, Garden City, N.Y.

Filed Mar. 7, 1969, Ser. No. 805,251

Int. Cl. F02m 41/08

U.S. Cl. 222—250

8 Claims



A shuttle-piston type of fluid metering device in which the length of stroke of the shuttle piston is adjustable by control of the position of the piston for which one end-chamber of the cylinder becomes closed to arrest the piston stroke. Preferably the discharge path for said chamber extends through a pair of adjacent axially disposed and displaced bores in the piston, these two bores being bridged during travel of the piston by an annular passageway in an external axially-positionable control member. When the piston reaches a predetermined position in the cylinder, the external interconnecting passageway is thereby blocked and the corresponding end-chamber thereby sealed off to provide arrest of the piston travel. The axial position of the external member containing the annular passageway therefore controls the length of stroke of the piston and the amount of fluid pumped per stroke of the piston. A system adaptable to supply fuel to anywhere from one to twelve engine cylinders employs three such fluid-metering devices supplying two synchronized fluid-distributing shafts to produce twelve outputs, various groups of which outputs can be used depending upon the number of cylinders in the particular engine.

3,615,044 DEVICE FOR REDUCING THE CROSS-SECTIONAL AREA OF A STREAM OF MATERIAL

Francis Bonneric, Fleury-les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Feb. 12, 1969, Ser. No. 798,632

Claims priority, application France, Feb. 15, 1968, 139,917

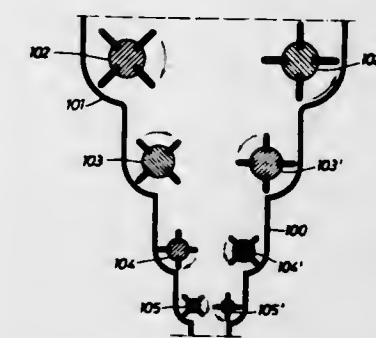
Int. Cl. G01f 13/00; B65g 65/46

U.S. Cl. 222—280

8 Claims

Distributor for processing a solid material in the divided state such as tobacco in the form of flakes or shreds and adapted to deliver continuously a uniform

outflow of predetermined cross-sectional area starting from a nonhomogeneous input stream, said distributor being of the type comprising a passageway in which pairs of rotary units increase the velocity of the stream of material in proportion to the reduction in cross-sectional area of the passageway between the upstream and down-



stream side of the pair considered, wherein the rotary units of at least one pair are so designed as to provide therebetween a free cross-sectional area of flow which is not reached by the rotating components and which decreases in the downstream direction as a direct function of the reduction in overall diameter of the rotary units.

3,615,045 ADAPTER TOP FOR GLASS DECANTERS

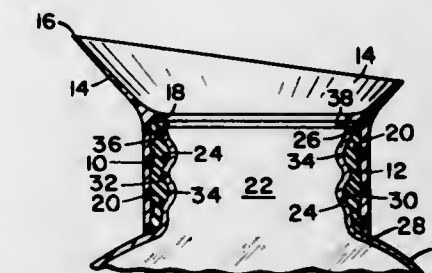
Albert P. Fiorini, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 1, 1969, Ser. No. 811,767

Int. Cl. B65d 25/40; B67c 9/00

U.S. Cl. 222—542

1 Claim



A one-piece adapter top for facilitating the pouring and holding of a glass decanter is permanently secured to an undulated neck portion of the decanter by means of a press-on compression fit provided by a deformable elastic gasket positioned between a portion of the adapter and said neck portion.

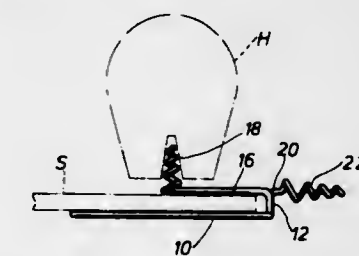
3,615,046 WIG STAND

Christine J. Bashara, 2710 Steel, Houston, Tex. 77006

Filed June 3, 1970, Ser. No. 42,994

Int. Cl. D06c 15/00; A41h 5/00

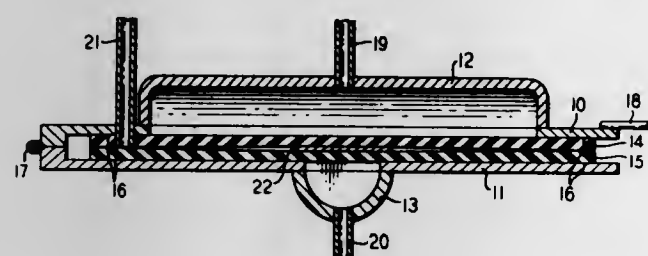
7 Claims



A wig stand in the form of a support for a head form for a wig which stand is formed with a base having a planar portion to rest upon a flat supporting surface and

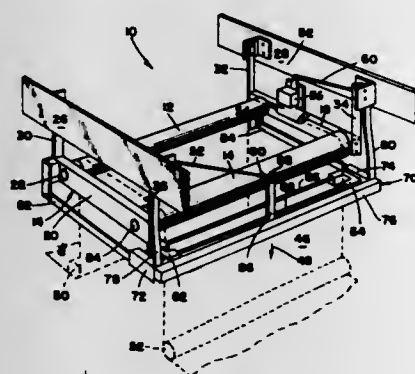
arm portions parallel to and spaced from said planar portion and having end portions positioned to serve as handles for holding the stand or which may be inserted into an opening in a head form to support the head form on the stand. Either of said end portions may be used to support a head form while the other is used as a handle. One of the arm portions is positioned over the base in spaced relation thereto to form with the base a clamp by which the stand may be supported on a shelf or the like or on a vertically disposed flat object such as the front wall of an open drawer.

3,615,047
APPARATUS AND METHOD FOR SEPARATING SCRIBED PLATES OF BRITTLE MATERIAL
David Feldman, Springfield, and John T. Sibilia, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 30, 1969, Ser. No. 837,845
Int. Cl. B26f 3/00
U.S. Cl. 225-1 2 Claims



Apparatus for separating a scribed plate of brittle material utilizes two flexible membranes between which the plate is vacuum clamped. A uniform force such as fluid pressure forces the membranes into a die which causes the membranes to transmit uniaxial stresses to the plate to separate it along scribe lines. Separation along a set of scribe lines orthogonal to the first set is achieved by using a die which is orthogonal to the first die.

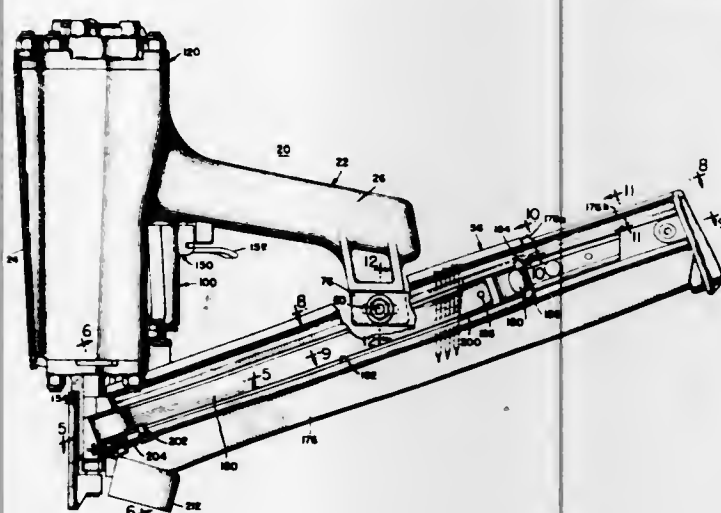
3,615,048
APPARATUS FOR ADJUSTING THE LATERAL POSITION OF A CONTINUOUS MOVING WEB
John R. Martin, Rockford, Ill., assignor to Martin Automatic Incorporated, Rockford, Ill.
Filed Apr. 3, 1969, Ser. No. 813,110
Int. Cl. B65h 25/26
U.S. Cl. 226-20 10 Claims



Apparatus is provided for controlling the lateral position of a continuous web moving through a machine such as a printing press. First and second spaced rolls are mounted on a carriage for rotation about parallel axes, with the web leaving the second roll parallel to the web arriving at the first roll. Flexible straps support the carriage, each strap being flexible substantially only normally of the plane including the respective strap

and the line in the plane of the approaching web tangent to the mid-point of the first roll, thereby constraining the carriage to rotation about that line as a fixed axis. Edge detectors sense the lateral position of the web and produce a control signal used to drive the carriage about its axis to control the lateral position of the web. The edge detectors may be mounted adjacent the second roll for rotation with the carriage about a fixed axis substantially coincident with the mid-line of the leaving web tangent to the second roll.

3,615,049
FASTENER DRIVING TOOL
Allen R. Oberfell, Park Ridge, Edward J. Novak, Franklin Park, and Richard H. Doyle, Mount Prospect, Ill., assignors to Fastener Corporation, Franklin Park, Ill.
Filed Sept. 15, 1969, Ser. No. 857,930
Int. Cl. B27f 7/06
U.S. Cl. 227-8 5 Claims



There is provided a fastener driving tool of the type including a drive piston slidably mounted with a main cylinder and movable through a drive stroke by the supply of pressurized fluid above the piston and movable through a return stroke by the exhaust of the cylinder above the drive piston. Metered passage means are provided through the piston to provide a positive head of pressure below the piston during the return stroke of the piston, thereby preventing ingestion of dust-laden contaminated outside air. In addition, the fastener driving tool is provided with an improved magazine construction formed of sheet metal having a track for supporting the heads of nail type fasteners. The strips of fasteners are loaded through an opening in the rear of the magazine assembly and are advanced toward the drive track of the device by a pusher which may be pulled back and cammed over a strip of fasteners inserted into the magazine until it picks up the last fastener of the strip. In addition, the fastener driving tool is provided with a projection which locks a safety member upon depletion of the fasteners within the magazine assembly to a predetermined point.

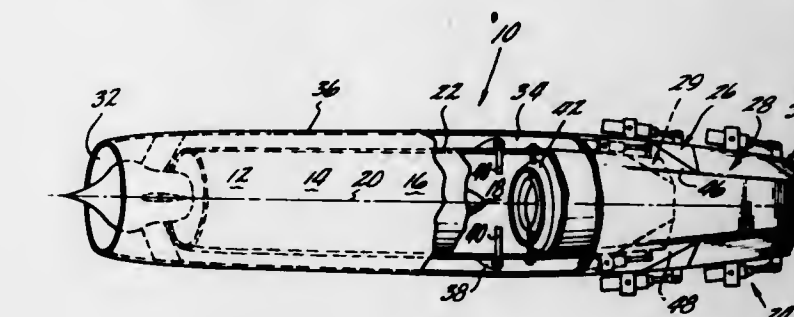
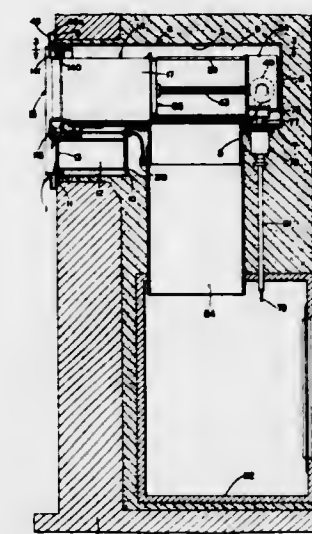
3,615,050
AFTER-HOUR BANK DEPOSITORY
Charles U. Deaton, Denver, Colo., and Paul A. Leipelt, Canton, and Leo J. Grosswiller, Jr., East Canton, Ohio, assignors to Diebold, Incorporated, Canton, Ohio
Filed Apr. 20, 1970, Ser. No. 29,824
Int. Cl. E05g 1/00
U.S. Cl. 232-43.3 32 Claims

An electrically operated automatic after-hour bank depository which has a movable security chamber for handling bags or receiving envelopes. The security chamber is closed by a key locked main door having an envelope slot therethrough. A secondary door closes the main door and envelope slot. A bag or an envelope deposited in the

security chamber, either by opening the main and secondary doors, or by envelope insertion through the slot upon opening the secondary door, after closure of the doors is automatically conveyed in the security chamber by a power operated truck mechanism to a horizontally located opening at the rear of the unit through which the bag or envelope drops vertically downward through a chute into a receiving chest or safe. Closing of the doors initiates automatically the movement of the deposit to the

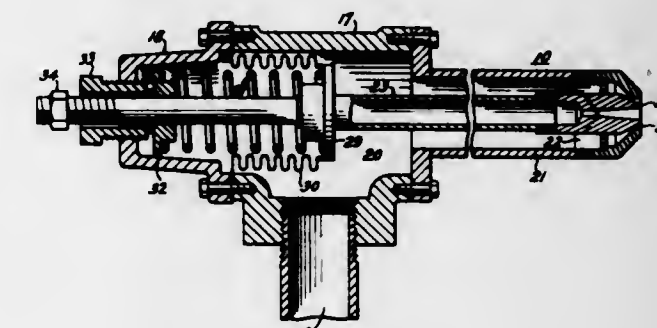
a swirling flow of oxidizing and atomizing gas in sufficient volume to provide a stoichiometric volume of oxygen and at the same time to atomize the fuel.

3,615,052
VARIABLE AREA EXHAUST NOZZLE
Julius W. Tumavicus, Old Saybrook, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 17, 1968, Ser. No. 768,476
Int. Cl. B64c 15/06
U.S. Cl. 239-265.39 18 Claims

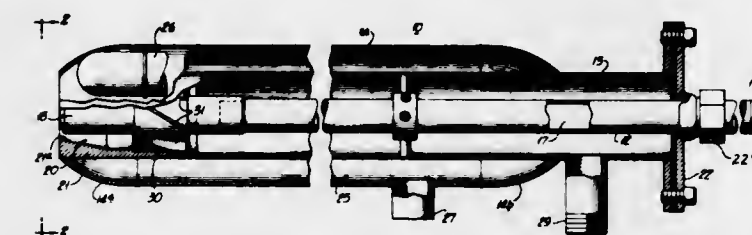


A variable area exhaust nozzle for a thrust generating engine which includes an exhaust duct member with fixed side walls and with a plurality of pivotable flaps attached thereto and cooperating therewith to define a high aspect ratio exhaust nozzle when the flaps are pivoted inwardly to their minimum area position and a low aspect ratio exhaust nozzle when the flaps are pivoted outwardly to their maximum area position.

3,615,053
GAS PRESSURE REGULATED ATOMIZER TIP FOR GAS/OIL BURNER
Bradford K. Pease and Richard J. Reinbold, Allentown, Pa., assignors to Bethlehem Steel Corporation
Filed June 16, 1970, Ser. No. 46,709
Int. Cl. B05b 7/12
U.S. Cl. 239-407 3 Claims



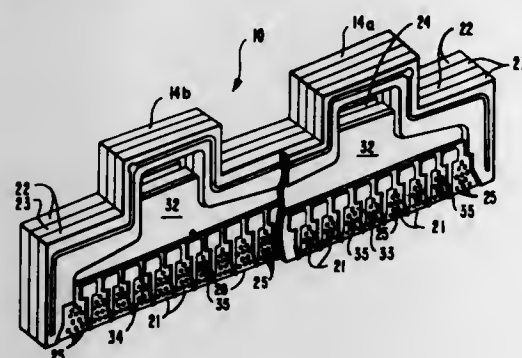
3,615,051
METHOD AND APPARATUS FOR THE COMBUSTION OF FUELS
Donald M. Gettig, Elk Grove Village, and Edward A. Grobel, Mundelein, Ill., assignors to Chemetron Corporation, Chicago, Ill.
Filed May 29, 1968, Ser. No. 733,018
Int. Cl. A01n 17/02
U.S. Cl. 239-8 3 Claims



A fuel burner for burning large volumes of combustible fluid fuels is formed of three concentric tubes forming an inner chamber for the conveyance of the fuel, an intermediate annular chamber for conveying both oxidizing and atomizing gas, and an outer annular chamber for coolant. The fuel is directed from the nozzle in streams generally outwardly, and the oxidizing and atomizing gas is given a violent whirling motion which intersects the fuel streams at an angle so as to completely atomize the fuel and to supply stoichiometric volumes of oxygen. The method includes the steps of spraying fuel in streams from the end of a nozzle and of intersecting the streams with

A burner suitable for firing a gaseous fuel or a combination of a gaseous and a liquid fuel with the gas being used to atomize the liquid fuel. Primary gas is introduced tangentially into the oil stream in the throat of a venturi nozzle designed to expand the mixture. Secondary gas discharges through an outer annulus and impinges on the gas-oil mixture discharging from the venturi nozzle. The size of the annulus for admitting the secondary gas is rendered adjustable by automatically moving the oil atomizing nozzle in and out of said annulus, so as to maintain constant gas pressure in the primary gas tube at all gas inlet rates. The velocity of the mixture discharging from the nozzle will then be constant at all gas flow rates. The burner has given excellent results in atomizing fuel oil with gas flows as low as 17% of the total B.t.u. fired at a high firing rate (30 g.p.h. oil equivalent total fuel in the case of the burner tested), and also with 50% gas at a low firing rate (10 g.p.h. equivalent total fuel).

3,615,054
INJECTORS
Richard J. La Botz, Fair Oaks, Calif., assignor to
Aerojet-General Corporation, Azusa, Calif.
Filed Sept. 24, 1965, Ser. No. 489,970
Int. Cl. B05b 1/14; F23d 13/44
U.S. Cl. 239—553.3 13 Claims



This invention relates to improvements in rocket engine injectors.

According to the present invention, a rocket engine injector has an injector face constructed from a plurality of discrete thin wafers, each having planar surfaces and edge surfaces. A controlled pattern of flow passages is formed in one planar surface of each wafer, each flow passage terminating at an edge surface of the wafer. The wafers are joined together in a stack and the passage terminating edge surfaces from the injector face of the injector. The flow passages are adapted to pass liquid propellant therethrough.

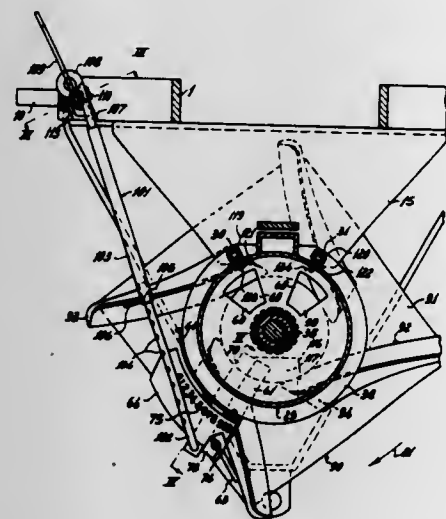
According to one form of the invention, the liquid propellant is delivered to the injector face in such a manner that the fuel flows through passages on certain wafers and the oxidizer flows through passages on other wafers.

According to another form of this invention, fuel and oxidizer vents are provided whereby propellant leaks on the planar surfaces of the wafers will be driven from the planar surfaces.

3,615,055
SPREADING IMPLEMENTS
Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands

Filed Dec. 20, 1968, Ser. No. 785,497
Claims priority, application Netherlands, Dec. 27, 1967, 6717659

Int. Cl. A01c 17/00
U.S. Cl. 239—665 17 Claims

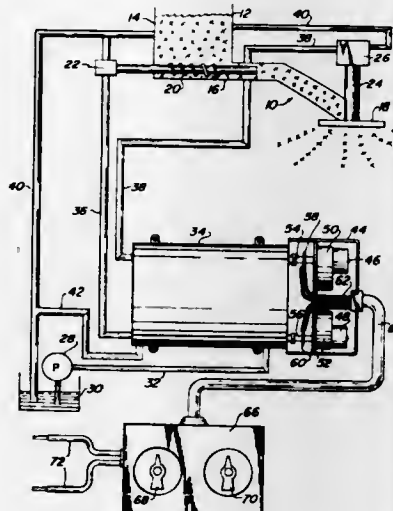


This invention relates to spreading implements comprising a frame movable over the ground, a container for material to be spread, a spreading member, at least one outlet port through which material from the container

can reach the spreading member and a flow control member movable relative to one or more outlet ports to govern the open area of the latter and adjusting or setting mechanism for said flow control member. The flow control includes an adjusting mechanism which can be manually moved simply and quickly to shut off flow or to set the flow of material to a pre-selected amount.

3,615,056
REMOTE CONTROL ELECTRIC ACTUATING DEVICE
Paul C. Weiss, Evanston, Ill., assignor to AMBA Industries Incorporated, Garden City, N.Y.
Original application Aug. 9, 1968, Ser. No. 751,446, now Patent No. 3,549,120. Divided and this application May 12, 1970, Ser. No. 36,645

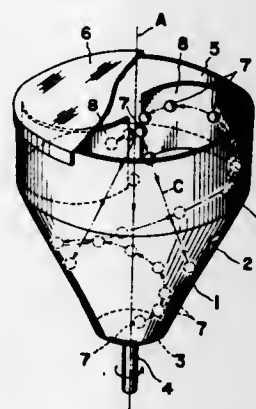
Int. Cl. A01c 19/00; E01c 19/20
U.S. Cl. 239—677 4 Claims



Electrically controlled hydraulic valve arrangements with integral hydraulic override whereby the flow of fluid through one valve controls in part the operation of the other valve; the two valves being connected to operate different hydraulically driven motors connected respectively to a conveyor mechanism and a spreader mechanism for distribution of sand or aggregate.

3,615,057
ROTARY MILL
Tatsuo Hagiwara, Tokyo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Japan
Filed Mar. 6, 1969, Ser. No. 804,854
Claims priority, application Japan, Mar. 12, 1968, 43/15,566

Int. Cl. B02c 17/04, 17/10
U.S. Cl. 241—53 7 Claims

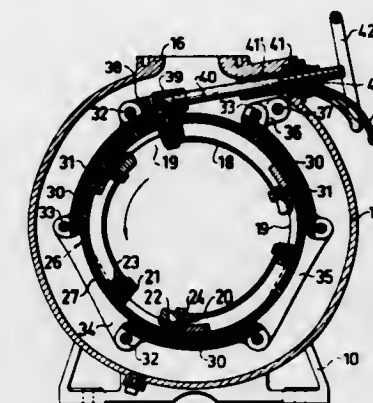


A rotary mill for fine comminution with the aid of grinding bodies comprises a rotary shell having a substantially conical inner surface increasing in diameter in going from bottom to top and which is adapted to rotate about a central vertical axis of the rotary shell, and at

least one guide plate is arranged in the upper portion of the interior of the rotary shell for directing grinding bodies downwardly after they are moved upwardly along the substantially conical inner surface in spiral paths by centrifugal forces.

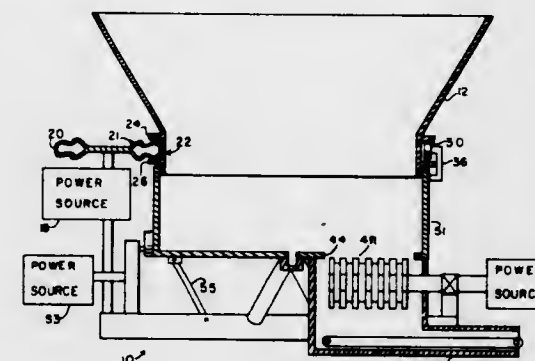
3,615,058
REFINER FOR FIBRE SUSPENSIONS
Harry Vilhelm Nilsson, Vanersborg, Sweden, assignor to Aktiebolaget Vargons Mek. Verktad, Vargon, Sweden
Continuation-in-part of application Ser. No. 662,653, Aug. 23, 1967, This application July 3, 1969, Ser. No. 838,893
Claims priority, application Sweden, Sept. 30, 1966, 13,228/66

Int. Cl. B02c 17/02
U.S. Cl. 241—85 6 Claims



A refiner for fibre suspensions comprises a stationary distributor drum with an inlet for fibre suspensions and a grinding apparatus surrounding outlets in the distributor drum. The grinding apparatus includes a perforated, rotatable, cylindrical wall surrounded by a plurality of perforated, arcuate grinding plates spaced and secured around the periphery of the cylindrical wall and connected together by a linkage coupled to an adjustment device which can control the clearance between the grinding plates and the cylindrical wall. Each grinding plate extends opposite an outlet of the distributor drum and a portion of the drum ahead of the outlet as viewed in the direction of rotation of the cylindrical wall.

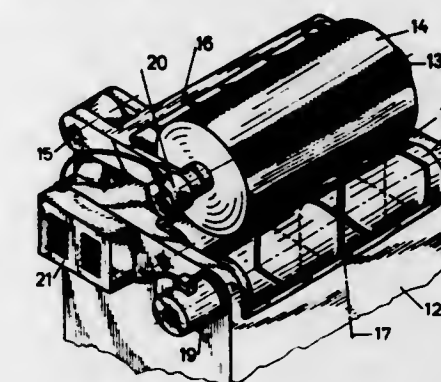
3,615,059
PNEUMATIC DRIVE MEANS FOR GRINDING APPARATUS
Eugene Charles Moeller, 2017 24th Street Road, Greeley, Colo. 80631
Filed Apr. 14, 1969, Ser. No. 815,694
Int. Cl. B02c 4/00, 4/06, 11/04
U.S. Cl. 241—224 6 Claims



A grinding mechanism for grinding various materials and having a hopper divided into two portions. The hopper portions having separate mechanisms for advancing material wherein the upper portion is advanced by a pneumatic tire for reducing noise and increasing the reliability and life expectancy of the apparatus and the lower portion uses oscillatory motions.

3,615,060
APPARATUS FOR WINDING ENDLESS YARNS ON A SPOOL
Rudolf Jenny, Horgen, Switzerland, assignor to Maschinenfabrik Schwelzer AG, Horgen, Switzerland
Filed Mar. 21, 1969, Ser. No. 809,334
Claims priority, application Switzerland, Apr. 25, 1968, 6,169/68

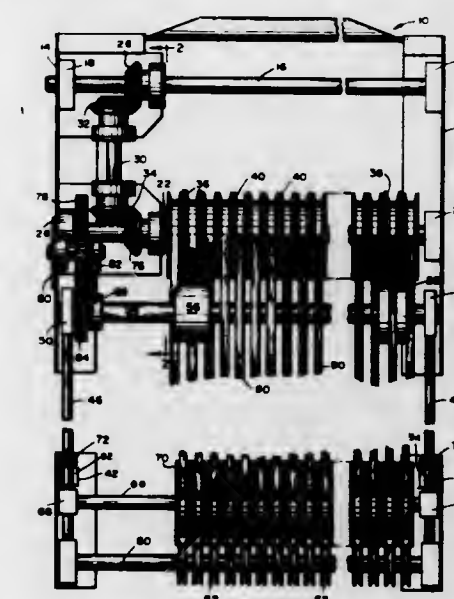
Int. Cl. B65h 54/42
U.S. Cl. 242—18 DD 4 Claims



A method and apparatus for winding endless yarns on a spool is disclosed, the method and apparatus providing a winding having a constant winding ratio, i.e., a so-called "precision winding," wherein the number of spool revolutions per thread-guide stroke in a cross winding arrangement remains constant. The inventive method and apparatus is applicable for winding an endless yarn fed at a constant speed onto a spool driven at its circumference by a drive cylinder. The thread is fed to the spool via a grooved drum or a thread-guide operated by a grooved drum. The drive cylinder is driven in known manner at a constant speed. Yet, the grooved drum itself is driven in dependence upon and as a function of the number of rotations of the yarn spool or the diameter of the yarn spool and thus a constant winding ratio is maintained.

3,615,061
INSTANTANEOUS CORRECTIVE RESPONSE DRIVE MECHANISM FOR CONTINUOUS FILM PROCESSORS
Alex Bagdasarian, Arlington, Mass., assignor to Artisan Industries Inc., Waltham, Mass.
Continuation-in-part of application Ser. No. 620,703, Mar. 6, 1967. This application June 24, 1969, Ser. No. 840,127

Int. Cl. B65h 17/42; G03d 3/12
U.S. Cl. 242—55.01 32 Claims

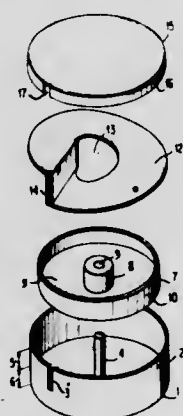


An improved film transport device for transporting film or other strip material, which device includes a rack having a top driven shaft and a plurality of primary over-driven spools thereon. Spaced apart from the shaft is a

fixed shaft having a plurality of idle spools thereon. The overdriven and idle spools define a plurality of loop-to-loop arrangements of film material. Spaced apart from the overdriven spools is a continuously driven friction drive roller. During normal operating conditions, the film is moved through the loop-to-loop arrangement by the overdriven spools, and the friction drive roller does not engage said spools. When an increase in film tension is felt within the loop-to-loop arrangement, there is engagement between the overdriven spools and the friction drive roller whereby additional overdriving force is imparted to said overdriven spools to relieve the increase in film tension.

3,615,062
PUSH-IN TYPE FILM/TAPE CASSETTE
Howard A. Goodman, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 1, 1969, Ser. No. 820,981
Int. Cl. B65h 17/48
U.S. Cl. 242—55.21

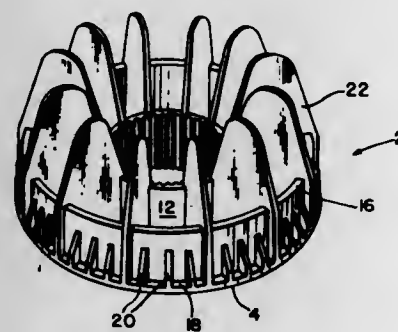
8 Claims



A film or tape cassette for receiving film or tape (film/tape) positively driven into said cassette, comprising a cover member, a take-up reel, and a spiral film guide, whereby film entering said cassette is guided by said spiral film guide about the outer diameter of the take-up reel, which is frictionally driven by the entering film/tape about a center hub, to wind the film/tape from the outer diameter to the inner diameter of the take-up reel, as opposed to currently winding from the center hub outwardly, for ready replay without rewinding.

3,615,063
PLASTIC CORE FOR PAPER ROLLS
Dana B. Bates, Kirkland, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Apr. 30, 1970, Ser. No. 33,270
Int. Cl. B65h 75/18
U.S. Cl. 242—68.6

5 Claims

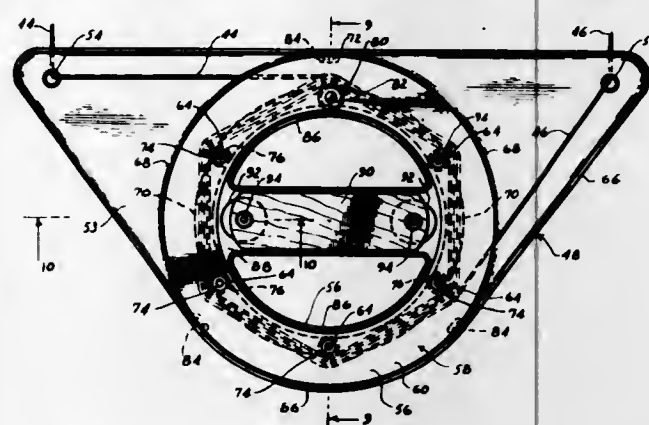


A plastic core for rolls of paper having a generally circular flat base portion with a circular hole centrally located therein and further including a plurality of upstanding walls on the same side of the base member, one wall immediately adjacent the centrally located hole and another of the walls being slightly spaced from the outer periphery of the base member. The core further includes

a plurality of webs having a tapered configuration extending between the walls and protruding upwardly therefrom and a plurality of reinforcing members integrally molded with and extending from the outer sides of the outermost wall and the base member, extending only as far as the outer circumference of said base member.

3,615,064
TWO STRING KITE AND CONTROL THEREFOR
Donald P. Gellert, St. Thomas, Virgin Islands, assignor to U.S.M. Precision Products Inc.
Filed July 5, 1968, Ser. No. 742,687
Int. Cl. A63h 27/08; B64c 31/06; B65h 75/38
U.S. Cl. 242—96

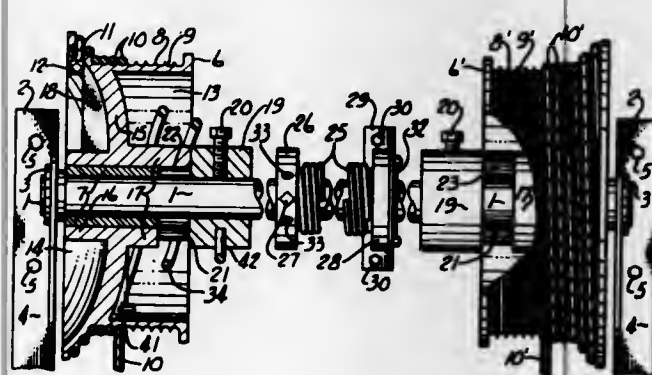
11 Claims



A kite comprises a flexible sheet carrying a central rigid member and two spar members spaced from the rigid member, a resilient wire extending between the two spar members to spread the spar members apart so as to maintain tautness of the sheet. A pair of kite strings is operatively connected to the kite, one of said strings being in operative connection with each one of said spar members, whereby controlled movement of the kite strings produces relative movement of one of the spar members with respect to the rigid member, thereby varying the effective area of one section of the sheet, thereby to cause controlled guidance of the kite. Also, disclosed is a remote, hand held control device from which the two kite strings are released from two spaced points thereon, a handle being provided to the rear of these spaced release points. A reel carried by the control device, upon which the two kite strings are wound, is of relatively large diameter and has a very narrow drum portion, whereby the two kite strings wound thereon lie uniformly about the drum portion.

3,615,065
TORSION COUNTERBALANCE WITH CABLE PRETENSIONING DEVICE
Adelma O. Elliott, 1130 Osterhout Road, Kalamazoo, Mich. 49002
Filed Dec. 9, 1968, Ser. No. 782,168
Int. Cl. B65h 75/48
U.S. Cl. 242—107

8 Claims

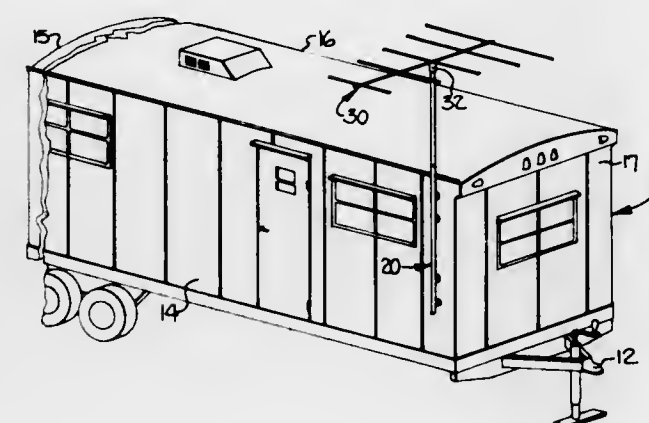


A counterbalance with a cable pretensioning device which is particularly adaptable to torsion spring

counterbalances or rotary shaft driven lift garage doors or the like to prevent undue slack in the winch lines or cables. The coupling between the cable drum and the means which drives the drum permits limited relative rotary movement. The coupling is preferably spring biased such that the winding drum is biased for rotation in its wind-up direction relative to the drive side of the coupling.

3,615,066
ANTENNA MOUNTING STRUCTURE
Adolph F. Warnecke, 4624 Bragg Blvd., Fayetteville, N.C. 28303
Filed Mar. 12, 1970, Ser. No. 19,048
Int. Cl. H01q 1/12
U.S. Cl. 248—206 R

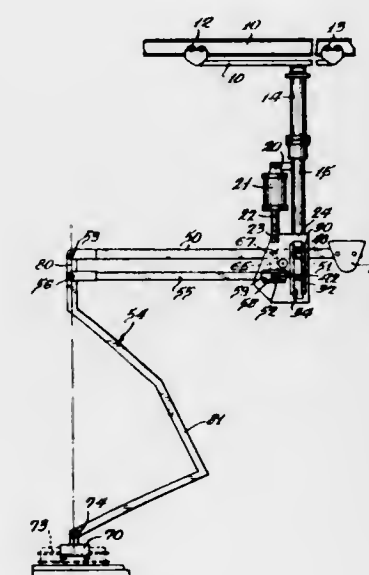
1 Claim



A mounting structure for securing an antenna to the exterior surface of a mobile home or the like. The structure includes an elongated tubular post having a plurality of laterally facing vacuum cups secured thereto for gripping the exterior surface of the mobile home. An adhesive is positioned between the cups and the exterior surface to increase the bond therebetween.

3,615,067
LOAD BALANCER
Noel G. Goudreau, Mendota, Ill., assignor to Conco, Inc.
Filed Mar. 19, 1969, Ser. No. 808,424
Int. Cl. A47f 5/00
U.S. Cl. 248—325

8 Claims

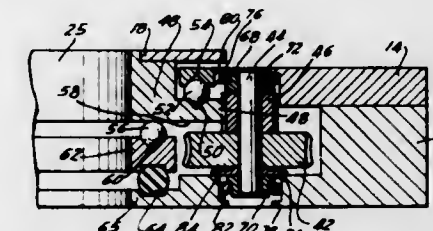


A loading balancer assembly of the type using a counterweighted parallelogram linkage wherein the load car-

rying arms include an offset portion together with means for applying a force to one of the arms that is sufficient to preclude creeping movement of the load carrying arm having the offset portion due to the presence of the offset portion therein.

3,615,068
PRECISION ROTARY TABLE
Arthur Edelstein, Jamaica, N.Y., assignor to Ardel Instrument Co., Inc., Jamaica, N.Y.
Filed July 14, 1969, Ser. No. 841,417
Int. Cl. A47b 95/00, 91/00
U.S. Cl. 248—349

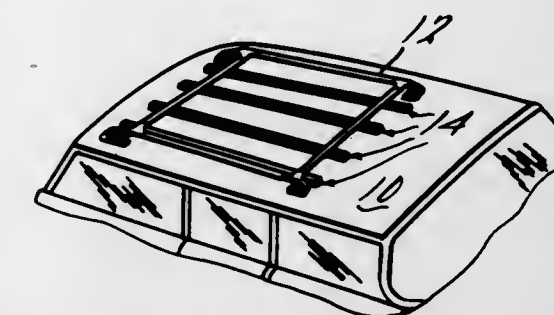
17 Claims



A precision rotary table for use in electro-optical research includes a stationary base member and a movable support part operatively connected to the base member and rotatable relative thereto. Precise positioning of the movable part in response to actuation of a manually operated means is effected by employing gearing mechanism in which the various rotating parts are continuously subjected to a constant force in a direction such that the meshing gears are placed in back-lash-free engagement with each other. An attachment device may be rotatably connected to the movable part, that device including mechanism which permits quick movement of the attachment device between two preselected positions.

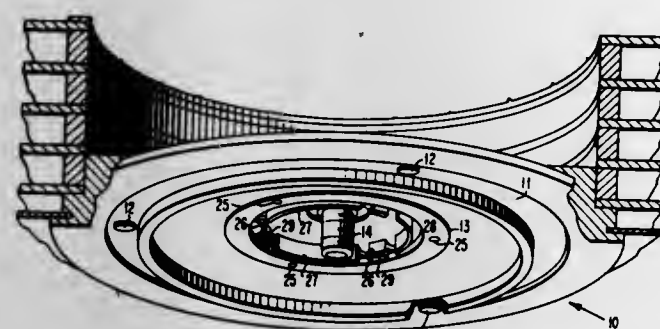
3,615,069
LOAD SUPPORTING SLAT FOR LUGGAGE RACK OR THE LIKE
John A. Bott, 931 Lake Shore Drive, Grosse Pointe Shores, Mich. 48236
Filed May 8, 1969, Ser. No. 822,940
Int. Cl. F16m 11/00
U.S. Cl. 248—350

1 Claim



A two-piece slat for supporting luggage, or the like, on an automobile body. A plurality of such slats are used to define the bed of an automobile luggage rack. The construction of each slat includes a supporting rail fastened to the automobile body and a molding covering the rail. The rail is provided with various holes adapted to receive fasteners for securing the rail to a given automobile body with only a selected number of such holes being used at any one time. The molding is snap-fitted over the supporting rail and covers all the holes therein and the fasteners. The molding is made from relatively thin stainless steel while the rail is made from heavier galvanized steel. The molding possesses an attractive bright appearance and completely covers the rail and its fasteners while at the same time protecting the luggage from sharp corners, or the like, on the rail and the fasteners.

3,615,070
CENTERING AND HOLDING APPARATUS
 Richard J. Charlton, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
 Filed Apr. 16, 1969, Ser. No. 816,746
 Int. Cl. F16m 13/00
 U.S. Cl. 248—415 8 Claims

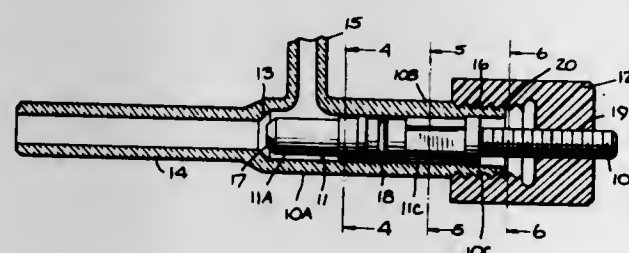


Apparatus for radially centering and axially aligning an object, such as a magnetic disk pack, with respect to a spindle of a disk file and holding the disk pack in place. The spindle is topped by a cylindrical surface beveled at the outer edge. The centering apparatus comprises a ring slotted to provide three spring-loaded tabs arranged to be of interference fit with the cylindrical surface. The beveled edge serves as a cam to spread the tabs of the ring radially and the tabs engage the cylindrical surface to hold and center the disk pack. A set of three buttons is provided with the centering apparatus to rest on a surface of the spindle to axially align the pack.

3,615,071
FLEXIBLE MOLD
 Jack R. Harper, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
 Filed Apr. 16, 1969, Ser. No. 816,779
 Int. Cl. B28b 7/06
 U.S. Cl. 249—112 3 Claims

A method of forming shaped articles of polyester, polyurethane or epoxy resin by using a flexible mold wherein a thin continuous film of a methyl ethyl ketone soluble copolymer of vinylidene chloride and acrylonitrile is applied to the shape forming surface of the flexible mold prior to molding an article is disclosed. This process provides a shaped article having a thin coating of the copolymer of vinylidene chloride and acrylonitrile on the surface. This process extends the useful life of the mold.

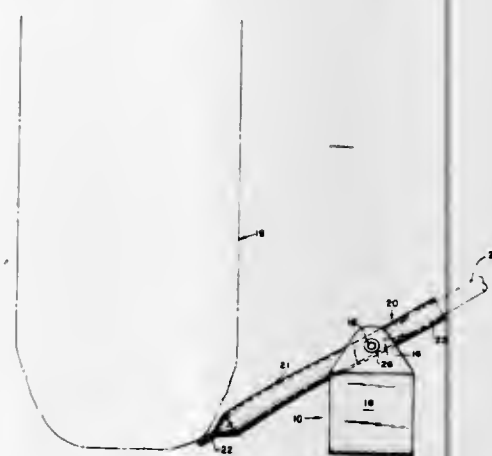
3,615,072
VALVE STRUCTURE WITH NONROTATING STEM
 Erwin K. Kaucher, Souderton, Pa., assignor to Fischer & Porter Co., Warminster, Pa.
 Filed Aug. 6, 1969, Ser. No. 848,015
 Int. Cl. F16k 31/50
 U.S. Cl. 251—265 2 Claims



A valve structure for precisely controlling fluid flow, the valve including a differential thread arrangement adapted to axially shift a stem within a valve body to

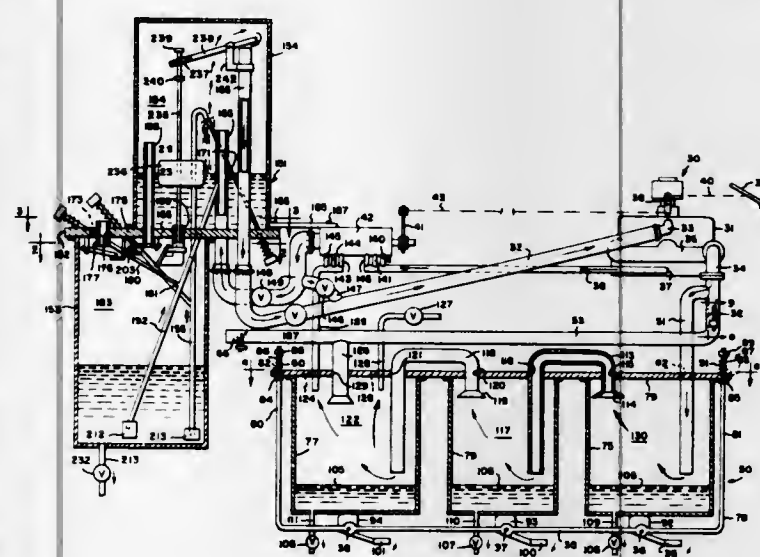
cause a head at the end of the stem to engage a valve seat without rotation of the stem, thereby minimizing scoring or distortion of the seat.

3,615,073
WHEEL LIFT ASSIST
 Howard L. Lickey, 115 Bosworth St., Sildell, La. 70458
 Filed Nov. 1, 1968, Ser. No. 772,513
 Int. Cl. B66f 3/00
 U.S. Cl. 254—131 1 Claim



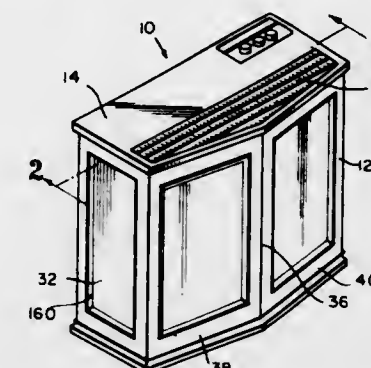
The invention involves a simple compact wheel lift for vehicles which lifts and simultaneously urges the wheel toward the vehicle.

3,615,074
APPARATUS FOR MOISTURIZING GASES
 Daniel Cook, 2909 40th Ave., Gulfport, Miss. 39501
 Filed June 6, 1968, Ser. No. 735,067
 Int. Cl. F02d 9/04, 19/00; F02m 17/34
 U.S. Cl. 261—18 8 Claims



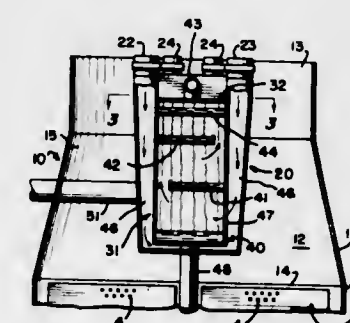
An apparatus is provided for reducing fuel and lubricating oil consumption and increasing power in internal combustion engines which includes an improved moisturizing unit for addition of moisture to gases being fed to the air intake manifold. The apparatus operates at peak efficiency at low or high speeds, and it may be used in warm or cold climates. The moisturizing unit includes first and second vessels and conduits introducing gases and water into the vessels. An atomizer is mounted in the first vessel. A conduit including an aspirator is connected to the second vessel for withdrawing water by aspiration and introducing the water into the first vessel. A conduit for equalizing pressures in the vessels is provided. An improved variable valve is also provided.

3,615,075
MOLDED PLASTIC HUMIDIFIER
 Richard I. Helman, Everett D. Wiseman, and Trueman P. Jordan, Columbus, Ind., assignors to Vernco Corporation, Columbus, Ind.
 Filed Aug. 12, 1969, Ser. No. 849,341
 Int. Cl. B01f 3/04
 U.S. Cl. 261—30 27 Claims



A humidifying apparatus, the preferred form of which comprises an upper roller, a lower roller, a foraminous belt trained about the rollers, and a one-piece, integrally molded, upstanding plastic housing. The housing is formed to provide, at its lower portion, a liquid-tight reservoir for receiving water, first means for journal mounting the lower roller for rotation in the reservoir below its intended water level, and second means for supporting the upper roller above the intended maximum water level of the reservoir. The first means is preferably formed to include, at each side of the reservoir, an upstanding flange having a generally V-shaped, upwardly opening notch formed therein for receiving the adjacent end of the lower roller, the lower roller being weighted so that it is gravity biased toward its seating in the notches. The second means is preferably formed to include, at each side of the housing, a pair of spaced-apart, inwardly extending flanges arranged to receive therebetween the adjacent end of the upper roller. A block for journal mounting each end of the upper roller is provided, each block extending between and being supported by one pair of flanges. The motor for driving the upper roller, the blocks for journalling the upper roller, and the gear box for drivingly connecting the motor to the upper roller are supported in slots formed in the flanges at the sides of the housing.

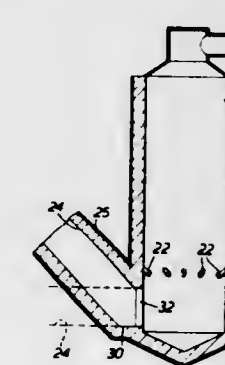
3,615,076
STEAM MANIFOLD AND FEED WATER HEATER FOR CONDENSERS
 Robert J. Stoker, Phillipsburg, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
 Filed Dec. 22, 1969, Ser. No. 886,865
 Int. Cl. B01f 3/04
 U.S. Cl. 261—113 9 Claims



A combined steam manifold and feed water heater apparatus positioned in the steam dome of a condenser. The manifold arrangement is positioned to receive steam from the turbine and direct it to feed water heaters

located outside the condenser. A direct contact feed water heater receives steam directly from the turbine and water to be heated from a source outside the condenser. The steam heats the water and the heated water is discharged through the steam dome to a consumer located outside the condenser. The apparatus is positioned to permit steam to be condensed to pass through the steam dome to the condenser.

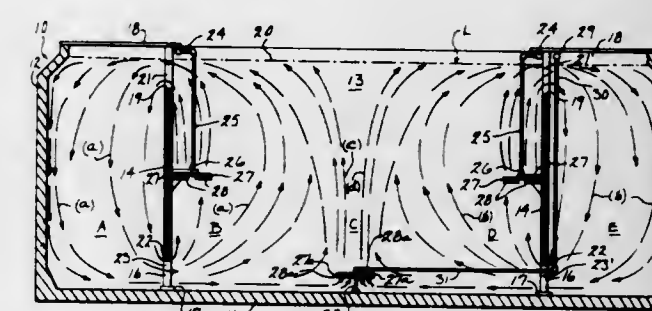
3,615,077
GAS COOLING TOWERS
 Kenneth Roy Parker, Sutton Coldfield, and Kenneth Darby and John Beardon, Harborne, Birmingham, England, assignors to Lodge-Cottrell Limited, Parade, Birmingham, England
 Filed June 23, 1969, Ser. No. 835,652
 Claims priority, application Great Britain, July 9, 1968, 32,724/68
 Int. Cl. B01f 3/04
 U.S. Cl. 261—118 11 Claims



An evaporative gas cooling tower particularly for cooling waste gas of incineration prior to electro-precipitation comprises a divider member extending across its inlet duct to divide the gas entering the tower into two streams which meet and mix within the tower.

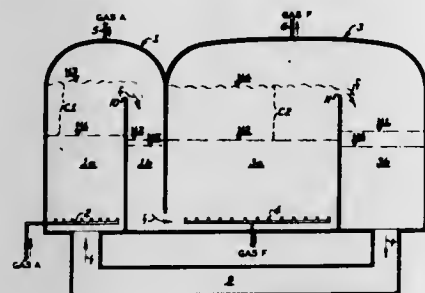
3,615,078
APPARATUS FOR AND METHOD OF AERATING LIQUOR IN LARGE SEWAGE TREATMENT TANKS
 Paul M. Thayer, Milwaukee, Wis., assignor to Water Pollution Control Corp., Milwaukee, Wis.
 Filed Dec. 3, 1969, Ser. No. 881,709
 Int. Cl. B01f 3/04
 U.S. Cl. 261—123 10 Claims

The aeration tank has oppositely-disposed side walls



and has a series of baffles spaced inwardly from each side wall and extending parallel thereto, each baffle terminating a substantial distance short of the liquid level and short of the bottom of the tank. Extending along the inner side of each baffle about midway of the depth of the tank is a row of relatively low pressure air diffusers, and extending along the bottom of the tank midway between the two rows of low pressure diffusers is a row of relatively high pressure diffusers.

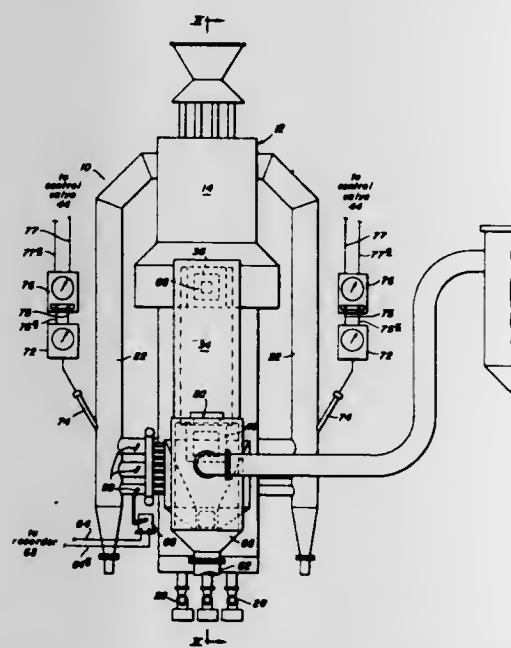
3,615,079
GAS HEAT EXCHANGER HAVING LIQUID
HEAT CARRIER
 Georges Cohen de Lara and Michel Delachanal,
 Grenoble, France, assignors to Societe Grenobloise
 d'Etudes et d'Applications Hydrauliques (Sogreah),
 Grenoble, France
 Filed Mar. 22, 1968, Ser. No. 715,424
 Claims priority, application France, Mar. 24, 1967,
 5,086
 Int. Cl. B01f 3/04
 U.S. Cl. 261-146



In this exchanger a gas to be cooled or heated is placed in direct contact with a liquid heat carrier by bubbling the gas therethrough.

ERRATUM
 For Class 263-41 see:
 Patent No. 3,615,082

3,615,080
APPARATUS FOR AND METHOD OF MANUFACTURING WHITE PORTLAND CEMENT CLINKER
 Stewart W. Tresouthick, McCandless Township, Allegheny County, Pa., assignor to United States Steel Corporation
 Filed Dec. 18, 1969, Ser. No. 886,232
 Int. Cl. F27b 1/00
 U.S. Cl. 263-29



An apparatus for and method of manufacturing white portland cement clinker are disclosed. The apparatus has a reactor provided with a reactor bed adapted to receive and process white portland cement clinker raw material. The reactor has a heating and drying zone for removing the water from the raw material; a calcining adjacent the heating and drying zone for calcining the calcareous portion of raw material; a reaction zone adjacent the calcining zone for clinkering the raw material; a gas distribution zone adjacent the reaction zone for receiving a heating and reducing fluid having a pressure sufficient to traverse the

8 Claims

reaction zone, the calcining zone and the heating and drying zone with a residual remaining pressure; and a gas seal zone adjacent the gas distribution zone. A divider in the gas seal zone split the flow of the sintered raw material into two channels. Each channel has a constricted passage in the direction of the flow of the sintered raw material to produce a pressure drop through the gas seal zone greater than the pressure in the heating and reducing fluid. A cooling zone of the reactor adjacent the gas sealing zone cools the sintered raw material. A cooling plenum in the cooling zone is connected to the heating and drying zone and has a first louver which defines with an exit louver the cooling zone, thus retaining the sintered raw material in the cooling zone while emitting the heating and reducing fluid from such cooling zone. A discharge means in a discharge zone of the reactor discharges the sintered material while sealing the discharge zone from the atmosphere.

The method includes the steps of:

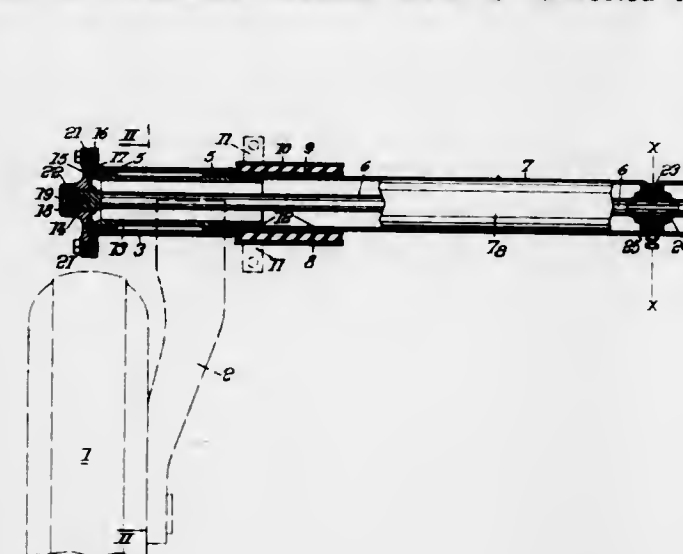
- (a) receiving the raw material in the reactor bed of the reactor;
- (b) passing the raw material through a heating and drying zone to remove the water from the raw material;
- (c) passing the dried raw material through a calcining zone adjacent the heating and drying zone to calcine the calcareous portion of the raw material;
- (d) passing the reacted raw material through a gas distribution zone adjacent the reaction zone to receive a heating and reducing fluid produced from a fluid fuel burned in a deficiency of oxygen-bearing gas and having a pressure sufficient to traverse the reaction zone, the calcining zone and the heating and drying zone with a residual remaining pressure;
- (e) passing the raw material through a gas sealing zone adjacent the gas distribution zone;
- (f) splitting the flow of the sintered raw material in the gas seal zone into two channels, each channel having a constricted passage in the direction of the flow of the raw material to produce a pressure drop through such gas seal zone greater than the original pressure in such heating and reducing fluid;
- (g) passing the sintered raw material through a cooling zone adjacent the gas seal zone to cool the sintered raw material under reducing conditions;
- (h) receiving the heating and reducing fluid at the residual remaining pressure in a cooling plenum in the cooling zone;
- (i) retaining the raw material in the cooling zone while emitting the heating and reducing fluid from the cooling plenum into the cooling zone;
- (j) retaining the raw material in the cooling zone while emitting the heating and reducing fluid from the cooling zone through an exit louver;
- (k) passing the sintered raw material through a discharge zone adjacent the cooling zone; and
- (l) discharging the raw material while sealing the discharge zone from the atmosphere.

3,615,081
TORSION BAR SUSPENSION SYSTEMS FOR MOTOR VEHICLES
 Raymond A. Ravenel, Sceaux, France, assignor to Societe Anonyme Andre Citroen, Paris, France
 Filed July 22, 1968, Ser. No. 746,344
 Claims priority, application France, Aug. 1, 1967, 116,541
 Int. Cl. B60g 11/18, 11/60, 3/14
 U.S. Cl. 267-57

In a vehicle suspension system each wheel of a pair is rotatably mounted at one end of an arm, the other end of which is pivotally mounted on the end of a transverse tubular member. The arms are secured to the outer ends

8 Claims

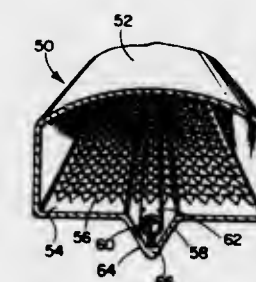
of a torsion bar means extending within the transverse member and secured to the middle of the transverse member. The transverse member itself is connected to the



vehicle body through resilient blocks which insulate the vehicle body from vibration from the wheels and arms and act as additional torsion elements.

3,615,082
FURNACE MUFFLE
 Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, Waltham, Mass.
 Filed Sept. 2, 1969, Ser. No. 854,648
 Int. Cl. F27b 5/04
 U.S. Cl. 263-41

5 Claims



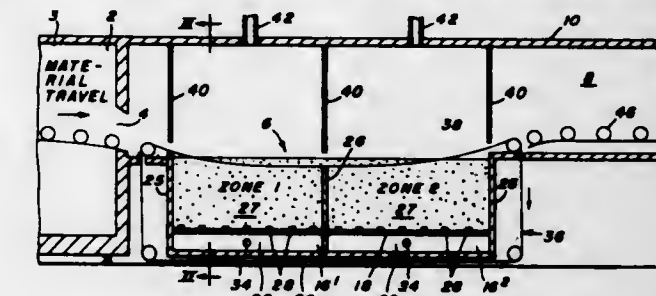
A furnace muffle of unique welded construction and especially adapted for operation at extreme operating temperatures. The muffle is formed as an elongated tubular member having one or more gas pipes integrally formed therein to introduce a gaseous atmosphere within the muffle. The entire muffle structure including the gas pipes is formed of a metal which has experienced the same work history during fabrication, and individual elements of the muffle structure are welded in a unique manner to provide a unitary muffle construction capable of superior operation at elevated temperatures.

3,615,083
FLUIDIZED BED METHOD AND APPARATUS FOR CONTINUOUSLY QUENCHING COILED ROD AND WIRE
 Jerome Feinman, Monroeville, and Richard L. Sallo, Greensburg, Pa., assignors to United States Steel Corporation
 Filed July 2, 1969, Ser. No. 838,562
 Int. Cl. C21d 9/56
 U.S. Cl. 266-3 R

Apparatus consisting of a chamber having a two-zone fluidized bed is utilized for quenching rod or wire in open-

3 Claims

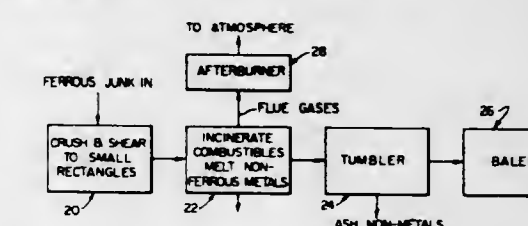
coil, continuous loop form to obtain a metallurgical patterned structure consisting of fine pearlite, some coarse pearlite, and very little free ferrite in high carbon steel rod or wire.



pearlite, and very little free ferrite in high carbon steel rod or wire.

3,615,084
PROCESS AND APPARATUS FOR SALVAGING JUNK MATERIAL
 Fidelis J. Wasinger, 1972 S. Parker Road, Denver, Colo. 80222
 Filed Jan. 8, 1969, Ser. No. 789,764
 Int. Cl. C22b 7/00
 U.S. Cl. 266-33

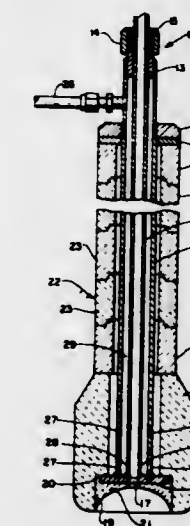
17 Claims



Process and apparatus for salvaging bulky junk material of principally ferrous content characterized by crushing to predetermined thickness and thence shearing same into relatively small rectangular pieces, continuously conveying the pieces through a furnace to combust entrained combustible materials and separate, by melting, non-ferrous metals, resulting in a final ferrous product for subsequent refining which contains a minimum of contaminants to be removed in the refining process. Optionally, undesired combustible air pollutants formed in the furnace are also oxidized before discharge into the atmosphere to thus permit practice of the invention in loci where air pollution is not tolerated.

3,615,085
APPARATUS FOR TREATING METALLIC MELTS
 Gert P. Bernsmann, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
 Filed Feb. 26, 1969, Ser. No. 802,518
 Int. Cl. C21c 7/00
 U.S. Cl. 266-34 T

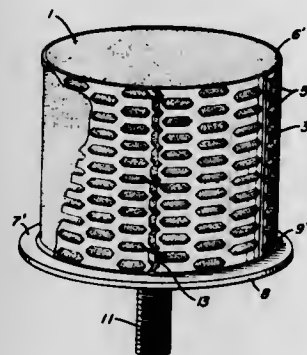
6 Claims



Apparatus for treating a metallic melt, such as molten steel in a ladle is disclosed. The apparatus includes an inner tubular member, through which an additive is delivered to within the melt, and a coaxially disposed outer

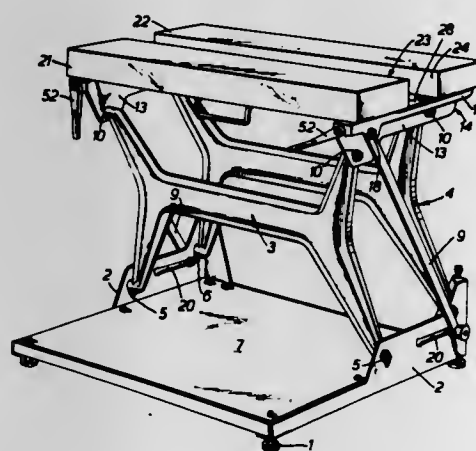
tubular member, the annulus between the two tubular members serving as a passageway for gas delivered to the melt. The gas is introduced into the melt through a porous refractory element positioned about the ends of the tubular members.

3,615,086
APPARATUS FOR STIRRING MOLTEN METAL
David A. Jepson III, deceased, late of Kalamazoo, Mich., by David A. Jepson II and Margaret Jepson, sole heirs-at-law and legal representatives, Kalamazoo, Mich., and Thomas K. McCluhan, North Tonawanda, and Loren L. Whitney, Lewiston Heights, N.Y., assignors to Union Carbide Corporation
Filed June 20, 1969, Ser. No. 836,691
Int. Cl. C21c 7/00
U.S. Cl. 266—34 PP 6 Claims



A porous plug assembly wherein the porous plug is provided with a gas impermeable bottom surface seal and a gas permeable side wall sheath.

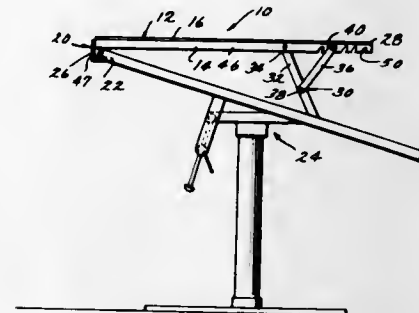
3,615,087
WORKBENCHES
Ronald Price Hickman, "Badgers," Middle St., Nazeing, Waltham Abbey, Essex, England
Filed Mar. 3, 1969, Ser. No. 803,600
Claims priority, application Great Britain, Mar. 4, 1968, 10,484/68
Int. Cl. B25b 1/10, 1/24
U.S. Cl. 269—244 14 Claims



A workbench of saw-horse height has its top formed by a pair of longitudinally extending top members which form a working surface and which are carried by transverse supports. One of the top members is fixed with respect to the supports but the other is horizontally movable towards and away from the fixed top member to form a vise between the opposed vertical faces of the top members. Adjacent each end the top members are interconnected by screw threaded rods which are restrained against

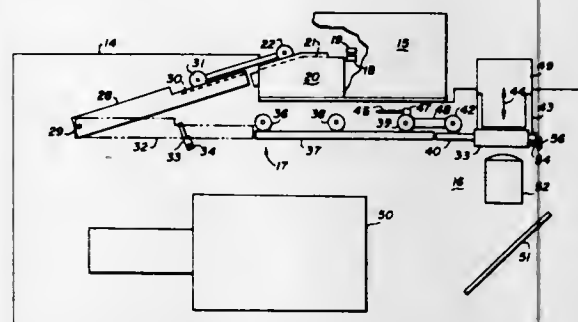
axial movement at their ends adjacent the fixed top members but which are received in nuts connected to the movable top member. The connection of the nut to the movable top member allows independent operation of the screw threaded rods to permit the gap between the vertical faces to be greater at one end than at the other.

3,615,088
ATTACHMENT FOR ANIMAL OPERATING TABLE
Warren R. Compton, 244 Brisbane Road, Oak Ridge, Tenn. 37030
Filed Apr. 7, 1969, Ser. No. 813,843
Int. Cl. A61g 13/00
U.S. Cl. 269—323 14 Claims



An attachment for a tiltable animal operating table comprising a board means which has one end that fits over the raised end of the table and which has adjustable legs for elevating the other end of the board means with the result that the overall elevation of the operating table can be raised.

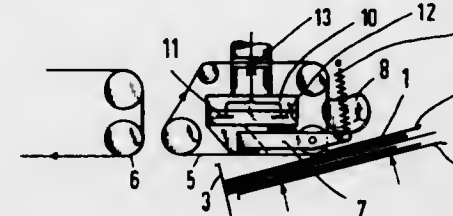
3,615,089
CARD TRANSPORT
Gerald J. Laughlin, Palo Alto, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed May 29, 1969, Ser. No. 828,923
Int. Cl. B65h 9/06
U.S. Cl. 271—3 2 Claims



The disclosed embodiment of the present invention is a mechanism for transporting an aperture card from a card reader, which reads the punched address on the card, to an optical scanning station, which scans the optical information in the film area of the card. The card reader reads the information in the form of punched holes on the card beginning with the left end and progressing toward the right end of the card, with the result that the card is ejected from the card reader with the left end leading. The present invention reverses the direction of travel of the cards ejected from the card reader such that the location of the aperture can be properly referenced from the right end of the card in the optical scanner. The direction of travel is reversed by means of a pivoted track section which accepts cards at one angular position and ejects cards in the opposite direction at a second angular position. The ejected card is received by a second track section which conveys the card to the optical scanning station. Each card is properly positioned in the optical scanning station by means of a pair of card edge guides and a card

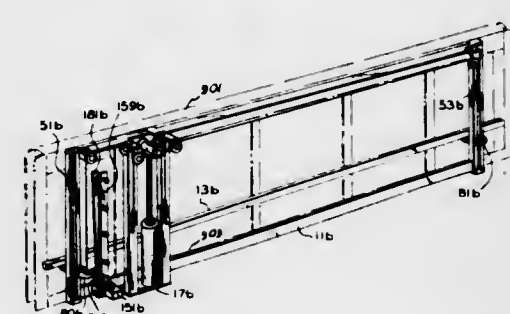
end stop. One card edge guide is movable to permit a pair of card extractors and a pair of rollers to remove the card edgewise from the scanning station.

3,615,090
APPARATUS FOR THE PNEUMATIC SEPARATION OF DOCUMENTS
Heinz Lomnicky, Balerbrunn-Buchenhain, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 8, 1968, Ser. No. 774,422
Claims priority, application Germany, Nov. 10, 1967, P 15 49 892.7
Int. Cl. B65h 3/12
U.S. Cl. 271—26 8 Claims



Apparatus for individually separating the uppermost document from a pile of such documents. The pile of documents is supported at an acute angle to a perforated suction tape. A suction arm alternately moves between the uppermost document in the pile and the suction tape so as to transfer the top document from the pile to the tape. In so doing the document is bent at an angle so as to avoid the double removal of documents. Suction air is provided to the arm during the transfer after which the supply to the arm is terminated to the arm and applied to the tape for removal of the separated document.

3,615,091
STRIP FEEDER
David L. McGee and David A. Skalbeck, Portland, Oreg., assignors to Plymak Company, Inc., Portland, Oreg.
Filed Apr. 18, 1969, Ser. No. 817,540
Int. Cl. B65h 1/00
U.S. Cl. 271—62 8 Claims

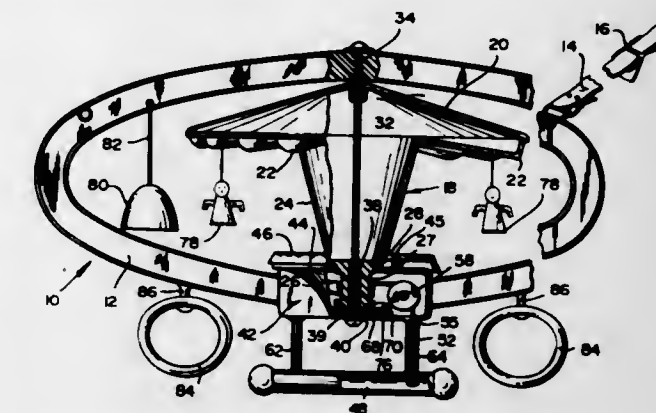


A strip feeder in which the strip capacity is nearly the full height of the feeder frame. The strip elevator is operated by a half-length cylinder through a mechanical advantage device. The upward pressure on the strips is controlled to avoid jamming as the elevator rises.

3,615,092
SPRING RESISTANT TYPE CRIB EXERCISING DEVICE WITH ROTATING CAROUSEL
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Feb. 16, 1970, Ser. No. 11,504
Int. Cl. A63b 21/10, 21/02
U.S. Cl. 272—83 A 14 Claims

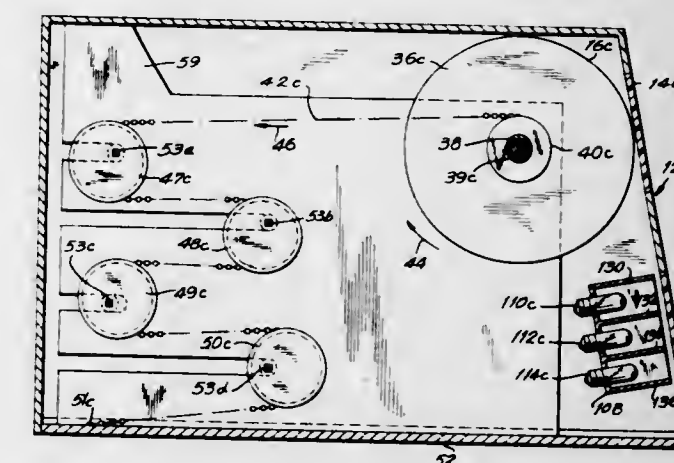
A carousel adapted to be mounted in a crib above an infant lying therein. Beneath the carousel is a trapeze bar. The carousel is rotatably mounted on a frame suspended by straps which are tied to the side rails of the

crib. When the child pulls down on the trapeze bar, the carousel is caused to spin while at the same time storing energy in a spring. The carousel has toy figurines suspended therefrom and centrifugal force causes the figu-



ines to rotate in a radially outward path. Striker bells are positioned in this path so that the rotating figurines strike the bells. When the child releases the trapeze bar, the stored energy in the spring spins the carousel in the opposite direction and raises the trapeze bar.

3,615,093
CHANCE INDICATOR WITH DRIVE HAVING EFFECTIVELY DISSIMILAR CAMS
Elton T. Barrett, 40234 Marcella Lane, Hemet, Calif. 92343
Continuation of application Ser. No. 658,274, Aug. 3, 1967. This application Dec. 3, 1969, Ser. No. 876,173
Int. Cl. A63b 71/00; A63f 1/18
U.S. Cl. 273—143 R 5 Claims

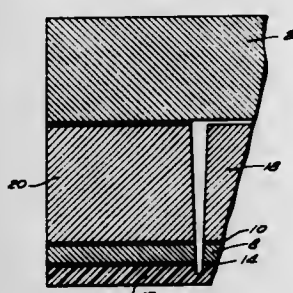


In an electrically operated market game, having windows or other means for selecting particular indicia displayed on a plurality of motor driven fluctuating dials rotatably mounted on a shaft and driven by means of a drive mechanism having parallel shafts, each having at least one eccentric cam, a drive chain or other flexible tensile member attached to a base and drawn around the eccentric cam on each shaft and attached to a respective dial so that when the cams turn so as to increase or decrease their radii, the chain is pulled or slackened and the dials move; and a spring return mechanism which pulls the dials back against the chain to take up slack.

3,615,094
METHOD OF PRODUCING AN INLAY PUZZLE
Gordon P. Connor, Wausau, Wis., assignor to Connor Forest Industries, Wausau, Wis.
Filed May 11, 1970, Ser. No. 36,338
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R 4 Claims

The stock from which puzzle pieces and frame are cut has thin picture and plastic film plies laminated to its outer face. Strong adhesive holds the picture to the stock

but "low-tac" adhesive is used for the film ply. Working from the rear face of the stock with a high-speed router of small section, the puzzle pieces and the pictures thereon are severed from each other and from the frame leaving



them still attached to the film. The backboard is then adhesively attached to the frame without attachment to the puzzle pieces. Removal of the plastic film by the customer leaves the puzzle pieces free in the frame.

3,615,095
GOLF STANCE RULER
Lucien Lafontaine, 637 Place Fleury,
Montreal 357, Quebec, Canada
Filed Sept. 12, 1969, Ser. No. 857,469
Int. Cl. A63b 69/36

U.S. Cl. 273-187 R

3 Claims



A portable ruler for golfers includes an elongated first member including two slots and two bars slidably mounted in the slots. The first member includes two series of numbered graduations designating the different widths of golfers' shoulders. Each slideable bar includes a series of graduations and numbers corresponding to those conventionally used to identify gold clubs. When an end of each bar is properly aligned with a particular shoulder width indicating graduation, to accommodate a particular golfer, the numbers on the respective bars point to the proper placement positions of one of the golfer's feet and the golf ball for the various clubs. A fixed mark on the first member indicates the proper position of the golfer's other foot.

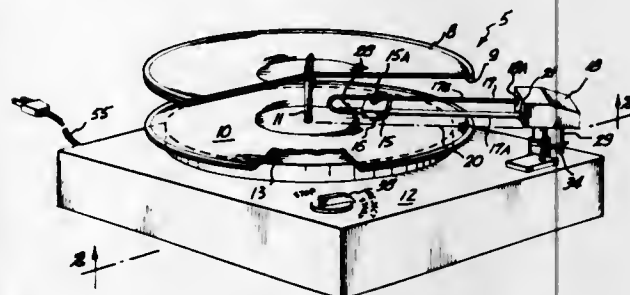
3,615,096
RADIAL ARM PHONOGRAPH WITH RECORD CHANGER
Elwood G. Norris, 2505 20th E.,
Seattle, Wash. 98102
Continuation-in-part of application Ser. No. 600,338, Nov. 15, 1966, now Patent No. 3,418,435. This application
Dec. 20, 1968, Ser. No. 785,555
Int. Cl. G11b 17/08, 3/10

U.S. Cl. 274-10 R

22 Claims

Disclosed is a phonograph having a pickup head supported on a tone arm which remains fixed during record play with the pickup stylus contacting the record groove

and transiting a path coincident with a radius of the record as the pickup head moves along the tone arm. Automatic head position control systems are shown for sensing the approach of the stylus to the end of the record, raising the stylus from the record, and reeling the head along the tone arm to the initial playing position. A tone arm positioning system is shown for turning the

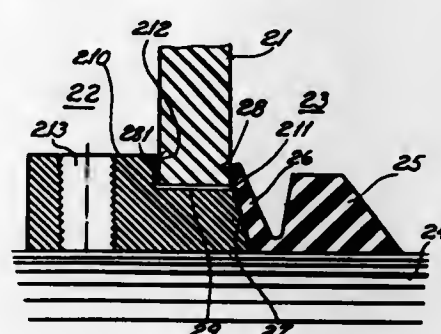


tone arm out of the way to permit new records to be lowered onto the turntable and then to reposition the tone arm over the record to be played. A record stack sensing system cooperates with the tone arm rotation system to gauge the height of the record to be played and to position the tone arm at the desired height for playing such record.

3,615,097
SEAL ASSEMBLY
Sven-Erik Malmstrom, Fabriksgatan, Sweden, assignor to Forsheda Gummifabrik Aktiebolag, Forsheda, Sweden
Filed Feb. 3, 1969, Ser. No. 796,125
Claims priority, application Sweden, Feb. 2, 1968, 1,379/68

Int. Cl. F16j 15/32
U.S. Cl. 277-95

8 Claims



Seal between two chambers in which two different pressures prevail and which is separated by wall through which a shaft passes, comprising a body ring of rubber which is stretched round the shaft, thereby fixing in right position an integral annular lip which presses axially along an annular sealing surface against the side of the wall where the prevailing pressure is highest by means of the inherent tension of the lip and due to the influence of the ambient pressure characterized thereby that the free surface of lip facing the wall is little compared with the radial thickness of the body ring.

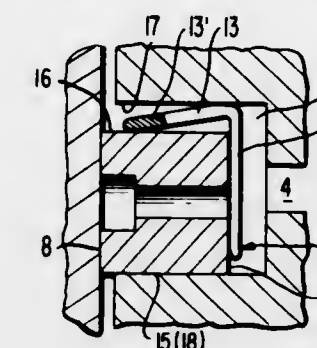
3,615,098
OIL SCRAPING PISTON-RING ASSEMBLY
Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1970, Ser. No. 22,959
Claims priority, application Japan, May 19, 1969, 44/37,991
Int. Cl. F16j 9/06

U.S. Cl. 277-143

4 Claims

An oil scraping piston-ring assembly which has its piston-ring internal surface disposed perpendicular to the upper or lower surface thereof or inclined upwardly or downwardly. A compression element of steel strip mate-

rial has a plurality of oil passing slits and is formed into a ring having a cross-sectional configuration of either V or L shape. The compression element has two portions, one rising vertically or obliquely and the other extending obliquely outwardly or horizontally outwardly. When the piston-ring is assembled with the compression element and is inserted in a piston groove, the compressive forces

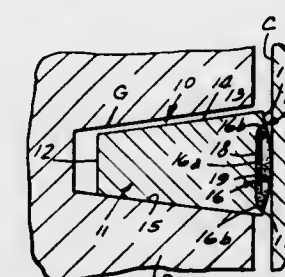


between the sliding surface of the oil scraping piston-ring and the inside surface of the cylinder and also between the upper or lower surface of the piston groove and the corresponding surface of the piston-ring are greatly strengthened and the leakage of the lubricating oil therethrough into the combustion chamber is substantially decreased.

3,615,099
MULTIPLE LAYER FACED PISTON RINGS
Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.
Filed Feb. 26, 1969, Ser. No. 802,350
Int. Cl. F16j 9/22

U.S. Cl. 277-235 A

7 Claims



Piston rings with multi-layer hard facings composed of an outer break-in layer of refractory porous scuff resisting material, such as molybdenum, over and bonded to a more refractory, less porous material such as a tungsten carbide alloy which, in turn, is bonded to a base ring body material such as iron. The outer layer, although refractory, functions during the engine run-in period better than the underlying material because it is softer and more porous, and as it wears away and oxidizes, a more refractory less porous underlying layer comes into operation to insure long lasting highly efficient sealing of the compatible ring and cylinder surfaces formed during the break-in operation of the engine.

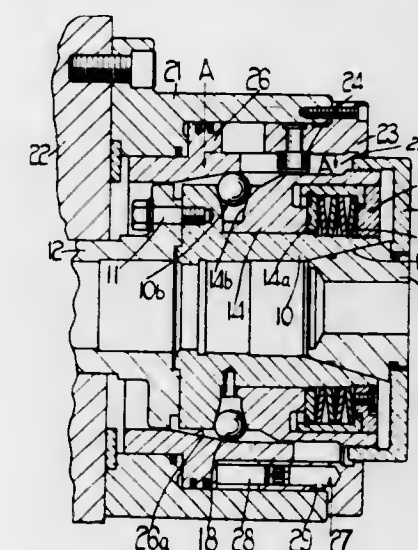
3,615,100
CHUCKS
John Banner, Stourport, England, assignor to Edward Williams, Birmingham, England
Filed Apr. 23, 1969, Ser. No. 818,741
Claims priority, application Great Britain, May 21, 1968, 24,151/68
Int. Cl. B23b 31/30

U.S. Cl. 279-4

3 Claims

The invention relates to a fluid operable chuck comprising in combination a central part adapted for connection to a spindle whereby the chuck can be rotated, said part being shaped internally (as at 10a) to co-act with

the complementary surface of a collet whereby movement of the collet towards the spindle will cause the collet to be closed, a tubular member slidable on the part, and a seating portion on the member for engagement with the collet, resilient means acting between a shoulder on the member and an abutment on the part to urge the seating portion inwardly relative to the part, a plurality of annularly arranged anti-friction balls disposed between a

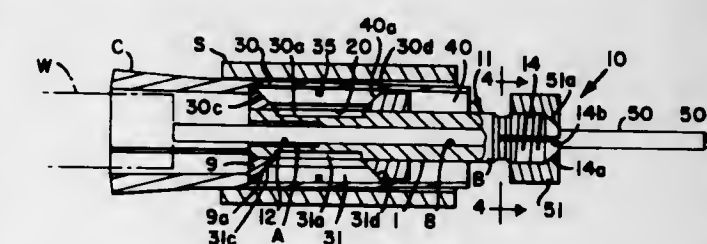


pair of complementarily inclined surfaces on the part and member respectively, a relatively fixed cylinder surrounding the part and member, and a fluid operable annular piston in the cylinder, the piston having a conical internal surface for co-action with the balls whereby movement of the piston in one direction will move the balls radially inwards between said surfaces to move the member relative to the part against the action of the resilient means to release the seating from the collet.

3,615,101
COLLET STOP
Clark E. Oliver, 10849 W. Estates Drive,
Cupertino, Calif. 95014
Filed Mar. 19, 1969, Ser. No. 808,500
Int. Cl. B23b 13/12

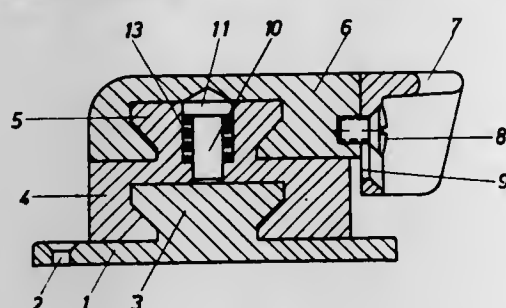
U.S. Cl. 279-15

13 Claims



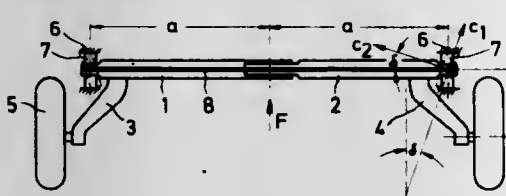
A collet stop with detachable axially extending collet engaging members retained on an externally threaded cylindrical body by an O-ring. An annular locking member disposed in threaded engagement with the cylindrical body has a tapered end for controlling the extent of the collet engaging members projecting from said body for pressing the collet engaging members into locking engagement with the inner cylindrical wall of a collet. A second annular locking member in threaded engagement with a tapered yieldable threaded end of the cylindrical body retains an adjustably positioned, optionally employed, work stop rod at one end of the cylindrical body opposite from the end of the cylindrical body that holds an optionally employed solid work stop. In a modification of the collet stop, an expansible sleeve is used as the collet engaging member for locking the collet stop with the collet.

3,615,102
SAFETY TOE IRON FOR SKI BINDINGS
 Hannes Marker, 51-53 Hauptstrasse, 81 Garmisch-Partenkirchen, Germany, and Ernst-Richard Schriewer, Garmisch-Burgrain, Germany; said Schriewer assignor to said Marker
 Filed Mar. 18, 1969, Ser. No. 808,055
 Claims priority, application Germany, Mar. 19, 1968, P 16 78 282.4
 Int. Cl. A63c 9/00
 U.S. Cl. 280—11.35 T 12 Claims



A soleholder member is connected by a carrier to a baseplate which is fixed to the ski. The carrier is movable from its central position against the force of at least one spring element relative to the baseplate transverse to the longitudinal direction of the ski and about a vertical axis. The soleholder member is movable relative to the carrier in the longitudinal direction of the ski and about a vertical axis. A locking device is interposed between the carrier and the soleholder member and serves to hold the latter in its normal position relative to the carrier and to automatically unlock the soleholder member when the carrier has performed a predetermined movement relative to the baseplate from its central position.

3,615,103
MOTOR VEHICLE AXLE WITH WHEELS GUIDED BY MEANS OF PULL RODS
 Ekkehard Döhrling, Wolfsburg, and Fritz Schael, Ehmen, Germany, assignors to Volkswagenwerk AG, Wolfsburg, Germany
 Filed Nov. 18, 1969, Ser. No. 877,619
 Claims priority, application Germany, Nov. 19, 1968, P 18 09 698.5
 Int. Cl. B60g 11/18
 U.S. Cl. 280—124 8 Claims

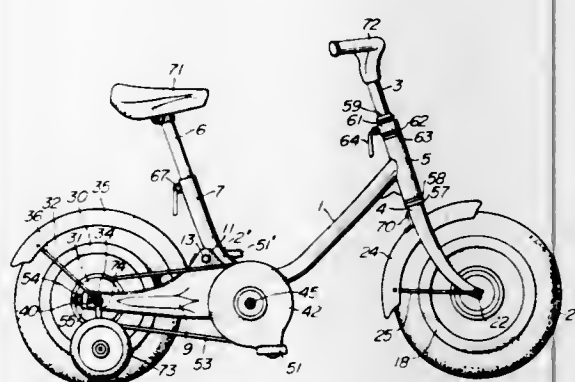


Motor vehicle axle having supporting journals for pull rods mounted one inside the other and elastic bearings on the vehicle for supporting the outside ends of the journals.

3,615,104
COLLAPSIBLE BICYCLE
 Kei Fujiyoshi, Toyonaka-shi, Kotaro Hata, Nara-shi, Toshikazu Fujii, Yao-shi, Tsunemitsu Yaso, Sakai-shi, Katsuji Kagayama, Osaka, Hiroshi Fujimoto, Yao-shi, Sigehiro Houshiyuu, Sakai-shi, Tosimi Otuka, Tondabayashi-shi, and Sigeru Morita, Sakai-shi, Japan, assignors to Matsushita Electric Industrial Co., Inc., Osaka, Japan
 Filed Dec. 10, 1969, Ser. No. 883,805
 Claims priority, application Japan, Dec. 11, 1968, 43/92,499, 43/92,501, 43/92,502
 Int. Cl. B62k 15/00
 U.S. Cl. 280—287 4 Claims

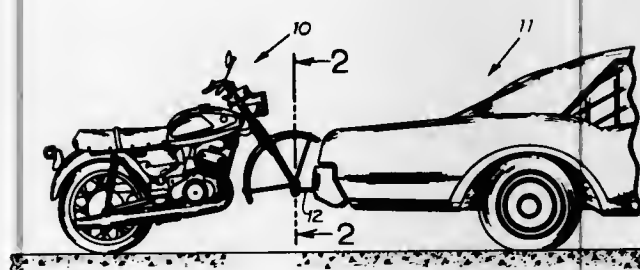
A bicycle of the present invention comprises a body including a front body section and a rear body section,

said front body section comprising a pipe member having a connecting means for a handle and a front fork at its front end and a connecting means for a seat at its rear end, said pipe member being arcuately curved at its intermediate portion, said rear body section being provided at its rear ends with a bearing portion for a rear



wheel and at its front end with a chevron shaped portion, said chevron shaped portion being provided at its forward side with a forwardly opening recess and at its bottom side with a portion for receiving a crankshaft, said front and rear body sections being removably connected together, so that they can readily be assembled or disassembled prior to or after use of the bicycle.

3,615,105
MOTORCYCLE HITCH
 Samuel Steven Harris, Rte. 1, Selma, Ind. 47383
 Filed June 18, 1969, Ser. No. 834,257
 Int. Cl. B62d 53/04
 U.S. Cl. 280—292 5 Claims



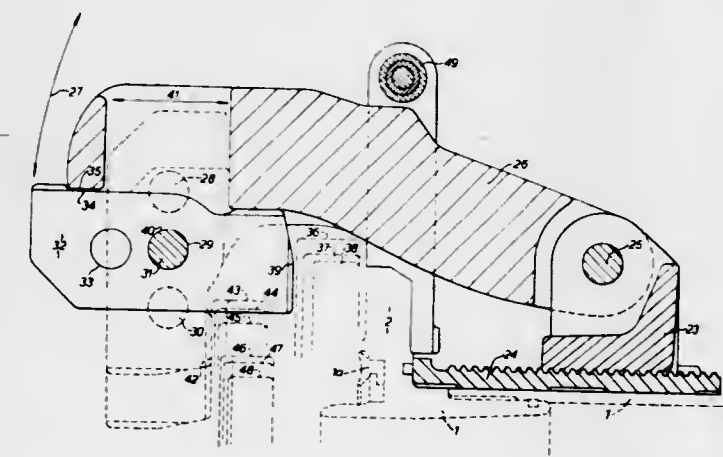
A motorcycle hitch replacing the ball of the trailer hitch on an automobile. The motorcycle hitch includes a cylindrical tube which is fixed to the front fork of the motorcycle by the front axle bolt of the motorcycle after the front wheel of the motorcycle has been removed. A bolt has its head welded to the central portion of the tube and, along with a lock washer, fixes the tube to the trailer hitch.

3,615,106
MANUFACTURE OF HARD COVERED BOOKS
 Thomas P. Flanagan, Green Brook, and Paul P. Puletti, Glen Gardiner, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
 No Drawing. Filed Apr. 4, 1969, Ser. No. 813,770
 Int. Cl. C08f 43/08
 U.S. Cl. 281—21 5 Claims

A method for binding hard covered or edition bound books wherein the hot melt adhesive composition which is utilized comprises a blend of (a) a copolymer of ethylene with either vinyl acetate or an alkyl acrylate comonomer, (b) a tackifying resin, (c) polyethylene, and (d) a

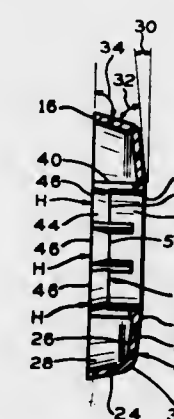
diluent. The described compositions exhibit a high degree of permanent set which is particularly useful in binding rounded, hard covered books.

3,615,107
PIPE COUPLINGS
 Arthur L. Paddington, Thorpe Willoughby, near Selby, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
 Filed Aug. 12, 1969, Ser. No. 849,391
 Claims priority, application Great Britain, Aug. 13, 1968, 38,726/68
 Int. Cl. F16l 23/00
 U.S. Cl. 285—18 5 Claims



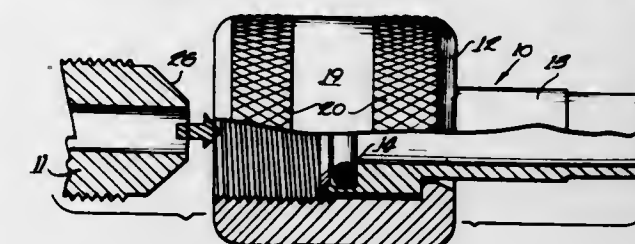
A pipe coupling for connecting together a pair of flanged pipes, comprising several arms pivoted on a support member arranged in screw-threaded engagement with one pipe behind its end flange so that it is axially movable on the pipe, each arm carrying a latch engageable behind the end flange of the other pipe to hold the two pipes together, the latches being adjustable on the arms to suit end flanges of different size.

3,615,108
ESCUTCHEON PLATE
 Stephen E. Toth, Brooklyn Heights Village, Ohio, assignor to Sajar Plastics Inc., Middlefield, Ohio
 Filed Mar. 24, 1969, Ser. No. 809,551
 Int. Cl. F16l 5/00
 U.S. Cl. 285—46 7 Claims



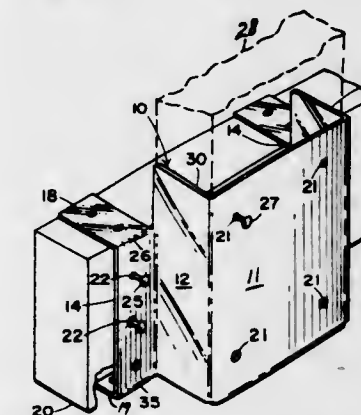
An escutcheon plate for use with plumbing fixtures is molded in one-piece of synthetic plastic material. The plate has a central circular hole through which a pipe or the like is received. A plurality of resilient fingers project rearwardly from the plate adjacent the hole. The fingers include gripping portions projecting radially inward and lying on the circumference of a circle having a smaller diameter than the diameter of the hole.

3,615,109
COUPLER FITTING FOR USE WITH BOTH VACUUM AND PRESSURE SYSTEMS
 Gregory Brinda, 107 Long Ave., and Thomas J. Crain, 109 Long Ave., both of North Aurora, Ill. 60542
 Filed Aug. 14, 1969, Ser. No. 849,962
 Int. Cl. F16l 19/02
 U.S. Cl. 285—332.2 14 Claims



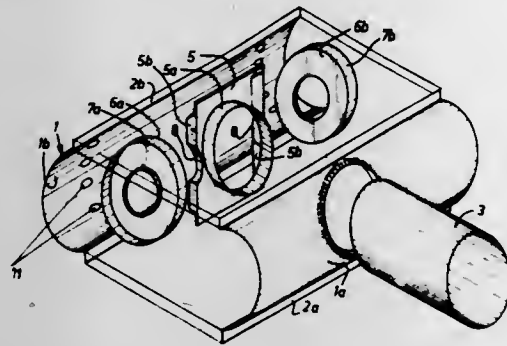
A coupler fitting for use with standard SAE flare fittings which will hold both pressure and vacuum. The coupler includes an internally threaded coupling nut which is adapted to threadedly engage the external threads of a male flare fitting and an elongated barb provided with a central bore therethrough. The interior of the forward end of the barb includes a frusto-conical inwardly and rearwardly flared stop surface which is adapted to mate with the flared end of the male flare fitting, and a circumferentially extending groove is provided in the barb adjacent the frusto-conical stop surface. The groove has a front wall which curves outwardly and rearwardly from the flared surface of the male fitting and a rear wall which extends radially inwardly beyond the innermost point of the front wall. An O-ring is snugly received by the groove and has a thickness substantially the same as the axial distance between the front and rear groove wall. The O-ring extends inwardly beyond an imaginary extension of the frusto-conical stop surface across the groove and is compressed into the groove by the flared end of the male flare fitting as the male flare fitting mates with the frusto-conical surface.

3,615,110
DEMOUNTABLE SOCKETS FOR GUARDRAIL POSTS
 James E. Fugate, 9740 SW. 167th St., Perrine, Fla. 33156
 Filed Apr. 21, 1969, Ser. No. 817,951
 Int. Cl. F16b 7/00
 U.S. Cl. 287—20.95 1 Claim



A demountable socket for guardrail posts having a front and pair of sidewalls forming an opening for receiving a guardrail post with a bottom wall extending at right angle with the front wall and in spaced relation with the sidewalls, and tabs for fastening the socket to the sides of a purlin extending outwardly at right angle along the free edges thereof with upper portions separated from the sidewalls and lower portions extending beyond the lower edge of the sidewalls, with both upper and lower portions positioned at right angle to the tabs and parallel to the bottom wall for further fastening the socket to the upper and lower surfaces of the purlin.

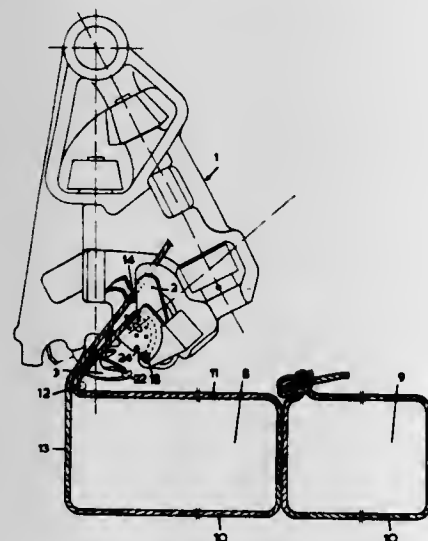
3,615,111
METHOD OF ASSEMBLING TWO TUBULAR MEMBERS IN ENCASTRÉ RELATIONSHIP
 Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
 Filed Oct. 16, 1969, Ser. No. 866,893
 Claims priority, application France, Oct. 25, 1968, 3,572
 Int. Cl. F16b 3/00
 U.S. Cl. 287—189.36 R



An assembly of two tubular members in encastré relationship includes a first tubular member formed by two semi-shells one of which has a flared aperture for the receipt of a second tubular member. That end of the second tubular member which lies within the first is secured to a sheet member or partition, edges of which are secured to flanges forming parts of the semi-shells. On either side of this partition two further partitions are disposed laterally which are secured to the internal surface of both semi-shells and to end flanges of the first mentioned partition member.

The method of assembly includes inserting the second tubular member into the flared aperture of one of the semi-shells welding the inserted end into the first mentioned partition and subsequently welding the partition to the flanges of the semi-shells and welding the laterally disposed partitions to the first mentioned partition and to the interior surfaces of the semi-shells.

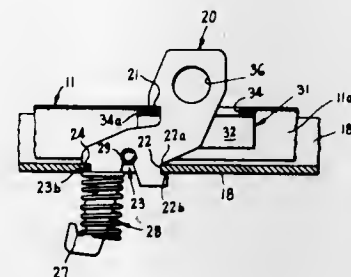
3,615,112
BALER KNOT TYING MEANS
 Gerhardus Minke, Appingedam, Netherlands, assignor to Ter Borg & Mensinga's Machinefabriek N.V., Appingedam, Netherlands
 Filed Apr. 25, 1969, Ser. No. 819,220
 Claims priority, application Netherlands, Apr. 25, 1968, 6805885
 Int. Cl. B65h 69/04
 U.S. Cl. 289—13



A baler of the kind comprising a baling chamber and a tying device including a movable needle and a knoter,

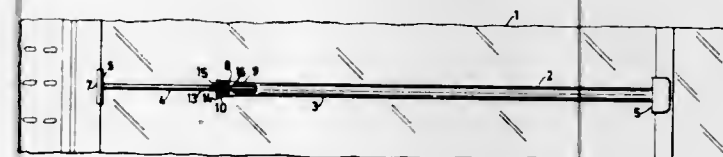
characterized by a clamping device capable of clamping a twine, passed from the baling chamber to the knoter, in front of the entrance to the knoter.

3,615,113
ENCLOSURE LATCH
 Christian De Visser, Clinton, Ill., assignor to General Electric Company
 Filed Oct. 17, 1969, Ser. No. 867,314
 Int. Cl. E05c 19/12
 U.S. Cl. 292—128



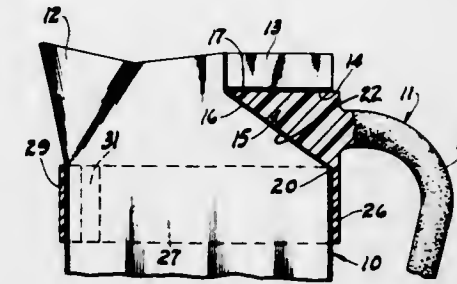
A latch for a box-like enclosure including a one piece latch element, a spring surrounding a long leg of the latch element and bearing against the under surface of the enclosure, a roll pin removably positioned in an opening of the latch element to add stability in directions perpendicular to the plane of motion of the latch element, the latch element further having a shoulder engageable with a side wall of the slot of the enclosure receiving the latch element to prevent the latch element from being pulled out of the slot and having an upper hook formed integrally therewith capable of engaging the cover portion of the enclosure to accomplish the latching function.

3,615,114
BURGLAR PROOF LOCK FOR SLIDING GLASS DOORS
 Anthony J. Harris, 4712 NW. 168th Terrace, Opa-Locka, Fla. 33054
 Filed Oct. 22, 1969, Ser. No. 868,457
 Int. Cl. E05c 17/04, 19/18
 U.S. Cl. 292—288



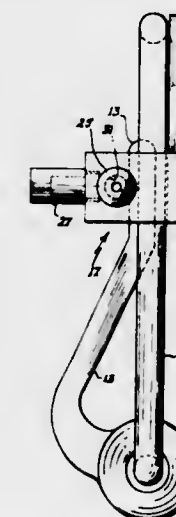
Apparatus is provided for a safe, inexpensive, and almost effortless means of locking sliding glass doors in the closed position. Apparatus is so constructed whereas to be shake and pry proof by any outside efforts. Apparatus is put into operation by placing apparatus at the desired height between the back of one glass door frame, and the front side of the other glass door frame, and extending apparatus between them. Apparatus is so designed as to automatically lock itself at any length within its limits. Apparatus is constructed of a piece of tubing out of which a solid rod telescope in or out to the desired length. Both ends of apparatus are so designed as to fit onto, and against sliding glass door frame, and once placed in the desired position, will stay there until unlocked and removed. Once place into proper position, sliding glass doors cannot be opened until apparatus is removed.

3,615,115
DETACHABLE CARTON HANDLE
 James B. Simms, 8441 Birch Road, Taylor, Mich. 48180
 Filed May 4, 1970, Ser. No. 34,383
 Int. Cl. A47b 95/02
 U.S. Cl. 294—31.2



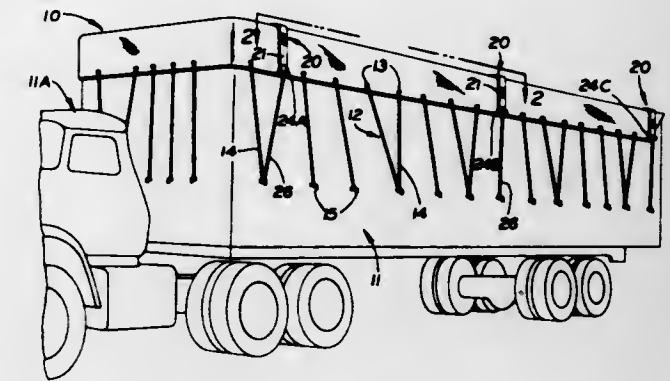
A detachable carton handle for use on large milk cartons and the like, and which includes a rectangular housing comprising a U-shaped rear housing portion and a mating U-shaped front housing portion hingedly connected to said rear housing portion, whereby the rectangular housing may be opened for detachably mounting the handle on a carton. A releasable locking means is provided for securing the U-shaped rear housing portion to the U-shaped front housing portion after these portions have been mounted on a carton. A handle is attached to the U-shaped rear housing portion. A retainer member is integrally formed on the rear housing portion for insertion into the opening on one side of the upper end of a carton under the top seal joint at a point opposite to the pouring lip of the carton.

3,615,116
PELICAN HOOK REMOTE RELEASE MECHANISM
 Sidney Rosenthal, Newton, James C. Payne, Bedford, and Hazard C. Benedict, Waltham, Mass., assignors to the United States of America as represented by the Secretary of the Air Force
 Filed Mar. 25, 1969, Ser. No. 810,263
 Int. Cl. B66c 1/34
 U.S. Cl. 294—83 AE



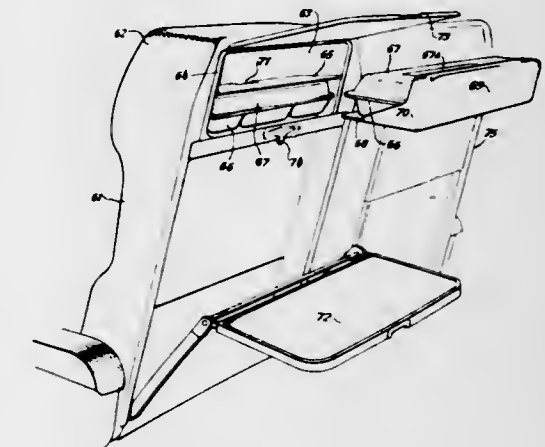
A pelican hook release mechanism having a housing attached to the upper portion of the frame member. A shear wire holds a release pin in position between two lobes on the housing. An explosion chamber and means for retaining an explosive squib or cartridge is disposed in one lobe and a pin receiver barrel is disposed opposite in the other lobe. The hook is released when the release pin is driven into the receiver barrel by the pressure from the explosion chamber in the squib retainer lobe.

3,615,117
ANTISAIL TARPAULIN
 Paul E. Neidlinger, Akron, Ohio, assignor to East Akron Tarp & Ratchet Mfg. Co., Inc., Akron, Ohio
 Filed Aug. 25, 1969, Ser. No. 852,780
 Int. Cl. B60p 7/00
 U.S. Cl. 296—100



A tarpaulin for use primarily on open top trailers is fastened to the trailer in a standard manner. The top of the tarpaulin, however, is provided with at least two laterally extending pockets open at both ends and spaced longitudinally along the tarpaulin at points found to bellow due to air pockets formed thereunder during use. A flat strap having a connecting means at each end is threaded through each laterally extending pocket. The strap is then pulled tightly against the trailer and fastened thereto to prevent the occurrence of air pockets under the tarpaulin.

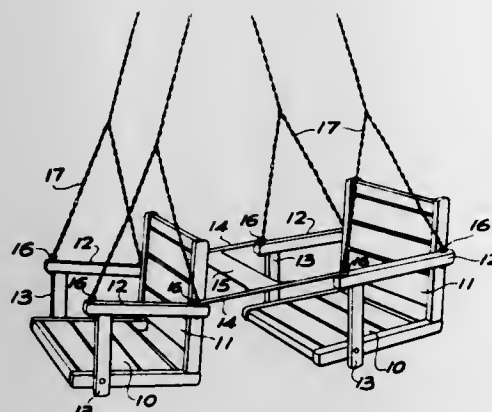
3,615,118
INSTALLATIONS FOR FOOD CATERING
 Travis S. Buxton, Luton, England, assignor to Antair International Airways Limited, London, England
 Filed Mar. 27, 1969, Ser. No. 811,127
 Claims priority, application Great Britain, Dec. 4, 1968, 57,636/68; Mar. 3, 1969, 11,152/69
 Int. Cl. A47c 7/62
 U.S. Cl. 297—191



The invention described, concerned with the stowage and self-service of meals in vehicles, resides primarily in a vehicle seat back which has a head rest (being the upper part of the seat back and in practice usually defined by its own distinctive contour, which is of greater front-to-back thickness than the seat back proper) provided with stowage accommodation for one or more meal containers, stowed in a substantially horizontal attitude: the invention includes a vehicle equipped with seats having backs so characterised.

3,615,119
TANDEM SWINGS
 Roy L. Irwin, 2712 Ridge Ave., Warren, Ohio 44484
 Filed Mar. 28, 1969, Ser. No. 811,517
 Int. Cl. A63g 9/02
 U.S. Cl. 297—281

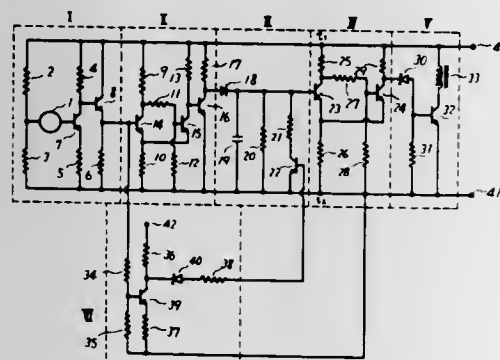
1 Claim



A pair of swings arranged in tandem relation and spaced with respect to one another are disclosed as being supported individually from an overhead support by means of flexible chains etc. This spacing between the tandem swing seats is such that when they are at their lowermost position relative to a single support point thereabove they are off center with respect to a vertical line through the common support point.

3,615,120
ANTI-SKID BRAKE CONTROL DEVICE
 Hayao Yamazaki, Ikoma-gun, Nara-ken, and Tosiaki Okamoto, Hekikai-gun, Aichi-ken, Japan; said Yamazaki, assignor to Hayakawa Denkiogyo Kabushiki Kaisha, Osaka, Japan
 Filed Sept. 10, 1969, Ser. No. 856,588
 Claims priority, application Japan, Sept. 11, 1968, 43/65,349, 43/65,350
 Int. Cl. B60t 8/12
 U.S. Cl. 303—21 BE

7 Claims

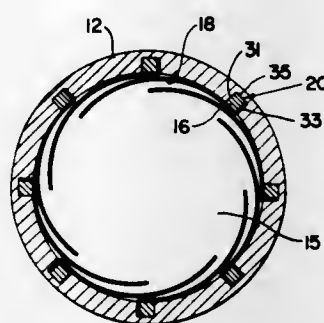


An anti-skid device for vehicles having a brake releasing circuit activated in response to a detected signal indicating retardation of the wheels in excess of a predetermined value and deactivated by a detected signal indicating acceleration of the wheels, a charge storage circuit being charged in response to a detected signal indicating retardation of the wheels and discharged only in response to a detected signal indicating acceleration of the wheels, and a circuit for making the brake releasing time shorter in response to a faster acceleration as detected by the acceleration-retardation signal detector.

3,615,121
BEARING FOIL ANCHORING ARRANGEMENTS
 Morris A. Barnett, Palos Verdes Estates, Edward L. Edlefsen, Los Angeles, and Robert D. James, Gardena, Calif., assignors to The Garrett Corporation
 Filed Apr. 1, 1969, Ser. No. 811,951
 Int. Cl. F16c 17/16

U.S. Cl. 308—9

11 Claims

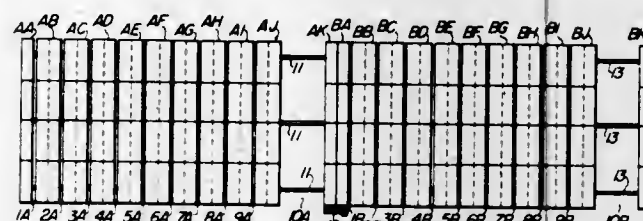


A foil anchoring arrangement for a fluid foil bearing is described especially as related to journal type and thrust type bearings. The arrangement includes a pin having a rectangular cross section and a foil which is spot welded to one surface. A channel in a stationary element of the bearing is provided to receive the pin partially wrapped by the foil and maintain it from rotating under the forces encountered by the foil during bearing operation.

3,615,122
SHIFTABLE STACK ASSEMBLY OPERATING SYSTEM
 Han-Ichiro Naito, Akishima-shi, and Tsuneo Yamaguchi, Tokyo, Japan, assignors to Elecompack Company Limited, Tokyo, Japan
 Filed Feb. 12, 1969, Ser. No. 798,580
 Claims priority, application Japan, Feb. 15, 1968, 43/9,157; Mar. 5, 1968, 43/13,799; June 13, 1968, 43/40,246; Oct. 5, 1968, 43/72,776; Dec. 7, 1968, 43/89,832
 Int. Cl. A47b 53/00

U.S. Cl. 312—199

12 Claims



A system for operating a shiftable stack assembly which is so designed that a desired aisle is automatically formed in accordance with a position card on which the storage position of an article accommodated in the stack assembly and desired to be taken out therefrom is previously recorded or by operating keys on a keyboard in accordance with a code number representative of the storage position information, or the operation of the shiftable stack assembly is restricted by a qualification, and further the date of operation, the operator, storage position, etc. are recorded automatically.

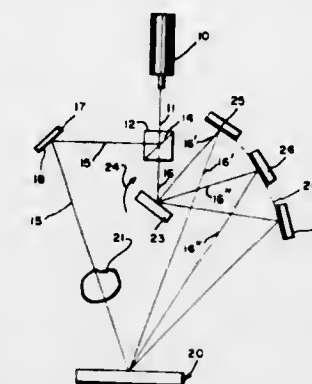
3,615,123
MULTIPLE EXPOSURE HOLOGRAPHIC SYSTEM
 Ralph F. Wuerker, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.
 Filed May 26, 1969, Ser. No. 827,778
 Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

8 Claims

A holographic system for recording multiple-exposure holograms. The holograms are taken by a pulsed laser and each repetitive reference beam is deflected so that it reaches

the recording material at a plurality of discrete different angles. Each of the multiple-exposure recordings of the hologram may be reproduced by a reference beam having the same angle as that at which it was taken. The reference beam may, for example, be deflected by utilizing an electro-

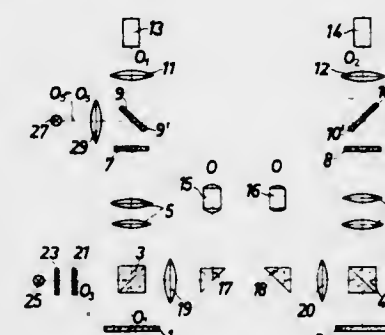


optical retarder followed by a birefringent crystal for deflecting the beam in accordance with its direction of polarization. The paths of the reference beams for each discrete angle may be equalized by the provision of a plurality of reflectors disposed along an ellipse having the recording material and a first reflector as its focal points.

3,615,124
APPARATUS FOR MARKING POINTS IN PHOTOGRAMS
 Peter Blankenburg, Dresden, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, Germany
 Filed May 16, 1969, Ser. No. 825,138
 Claims priority, application Italy, May 16, 1968, 37,014/68
 Int. Cl. G02b 27/32

U.S. Cl. 350—10

3 Claims



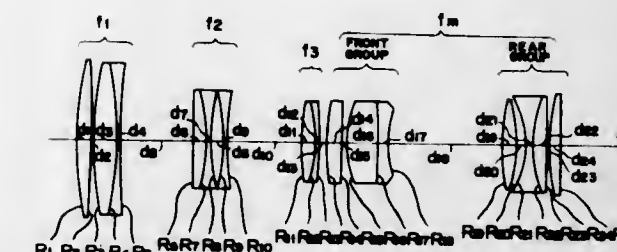
An apparatus for marking points in photograms by means of optical rays comprising a viewing system, a measuring system and a marking system. The optical rays and the observation ray-path traverse one and the same optical means. A diaphragm serves as measuring mark in the viewing system and the measuring system and serves at the same time as a ray-limiting means in the marking system.

3,615,125
COMPACT TELEPHOTO TYPE ZOOM LENS
 Takashi Higuchi, Yokohama-shi, and Soichi Nakamura, Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
 Filed June 26, 1968, Ser. No. 740,168
 Claims priority, application Japan, July 4, 1967, 42/42,564
 Int. Cl. G02b 15/14

U.S. Cl. 350—184

2 Claims

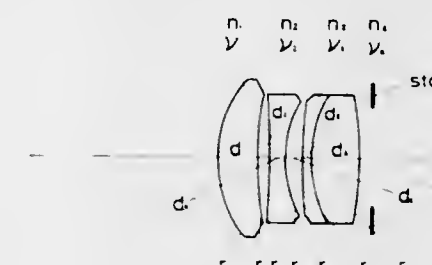
A compact telephoto zoom lens is provided comprising a zooming system composed of three groups of converging, diverging and converging lenses from the side of the object, and a relay lens system connected to said zooming



by moving the second group of the zooming system axially, and correcting the deviation of the image caused by said movement by the movement of the third group.

3,615,126
PHOTOGRAPHIC OBJECTIVE WITH A REAR STOP
 Tadashi Kojima, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Chuo-ku, Tokyo, Japan
 Filed Nov. 24, 1969, Ser. No. 879,415
 Claims priority, application Japan, Nov. 27, 1968, 43/86,351
 Int. Cl. G02b 9/20
 U.S. Cl. 350—227

4 Claims



A photographic objective with a rear stop comprises three lens groups generally arranged in Tessar type, but the axial spacing between the lens groups is minimized while the thickness of the first and third lens groups is made relatively large to reduce the back focal length of the objective without increasing, if not eliminating, the vignetting at the rear stop for a ray having a half field angle approaching 30° and with simultaneously providing a favorable correction of various higher order aberrations.

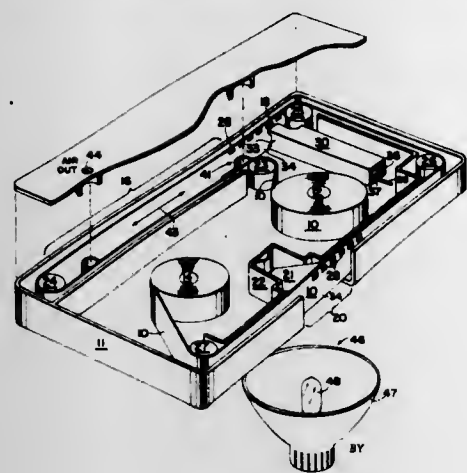
3,615,127
MOTION PICTURE SYSTEM WITH COMPACT MULTIPURPOSE CASSETTE
 Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
 Filed Aug. 28, 1968, Ser. No. 755,901
 Int. Cl. G03b 23/02

U.S. Cl. 352—78

17 Claims

Motion picture apparatus including a compact film handling cassette adapted to facilitate film exposure operations when mounted in a camera and film processing and projection operations when mounted in a projector. Such cassette is supplied with a strip of unexposed photographic film interconnected between a pair of reels and includes a film gate to facilitate exposure and projection operations, a processing station and a drying station. Exposure of the film may be effected during a first advancement thereof from the supply reel to the takeup reel

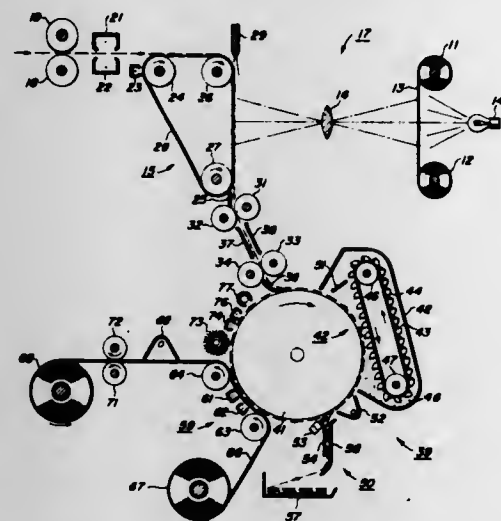
across the film gate. Processing may be effected as the exposed film is returned through the processing station to the supply reel, and drying and exposure operations may be effected as it is once again advanced from the supply



reel, through the drying station and across the film gate, onto the takeup reel. Projection operations are also facilitated by a prism permanently mounted within the cassette.

3,615,128
APPARATUS FOR ELECTROSTATIC PRINTING
Gopal C. Bhagat, Rochester, N.Y., assignor to
Xerox Corporation, Rochester, N.Y.
Filed July 11, 1968, Ser. No. 744,183
Int. Cl. G03g 15/00

U.S. Cl. 355-3



A method and apparatus for printing electrostatically including charging a photosensitive plate and exposing it to an optical pattern to form a latent image; placing the plate on a conveyor, developing the latent image and affixing the developed image to the plate to form a xeroprinting master; and charging the master, illuminating the master, developing the master and transferring from the master to a copy sheet the unfused toner to form a copy of the master on the copy sheet.

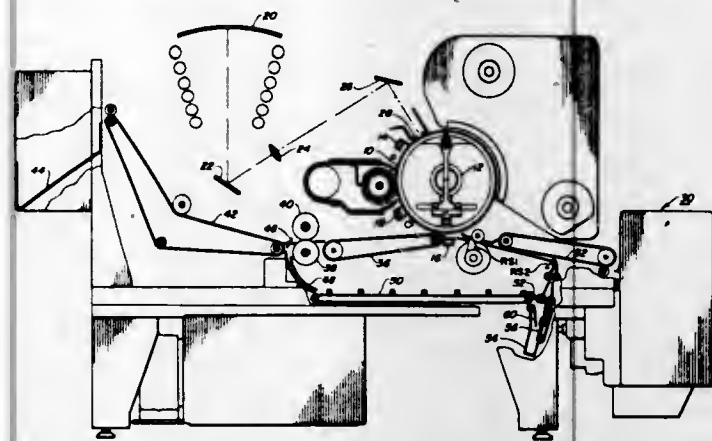
3,615,129
DUPLEXING XEROGRAPHIC REPRODUCING MACHINE WITH A COPY SHEET REVERSING STATION
William A. Drawe and John W. Wagner, Penfield, and John F. Witley, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 12, 1968, Ser. No. 752,075
Int. Cl. G03g 15/00

U.S. Cl. 355-3

12 Claims

A xerographic reproducing device capable of being selectively operated in either of two modes. The first

mode involves the conventional xerographic reproduction of originals onto one side of sequentially fed copy sheets. The second mode is a duplexing mode wherein the copy sheets are fed through an alternate path to sequentially and automatically produce printed material on both sides of copy sheets. Conversion to the duplexing mode is

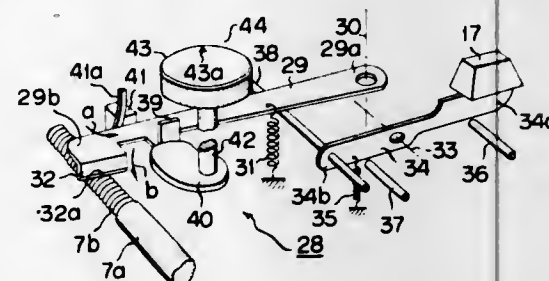


achieved by the actuation of a single switch which diverts the movement of copy sheets with fused xerographic images to a duplexing tray. The original being copied may then be changed and the image bearing sheets, retained in the duplexing tray, fed through the reproducing apparatus again for creating images on the second side of the sheets.

3,615,130
WET TYPE PHOTOSTATIC DEVICE WITH LENGTH CONTROL
Shigeru Suzuki, Yokohama-shi, and Tadatoshi Sakamaki, Kawasaki-shi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Feb. 25, 1969, Ser. No. 802,024
Claims priority, application Japan, Feb. 29, 1968, 43/13,081
Int. Cl. G03g 15/00, 15/10

U.S. Cl. 355-10

2 Claims



A wet type electronic photographic copying device in which a copy to be made is independently inserted in the device and visually aligned and superposed with an original to be subjected to passage through the device and corona discharge. A power supply drives roller means and energizes the corona discharge. Control means or the power supply includes a switch opened and closed by movement of a rocking lever that abuts a cam to determine the length of energization.

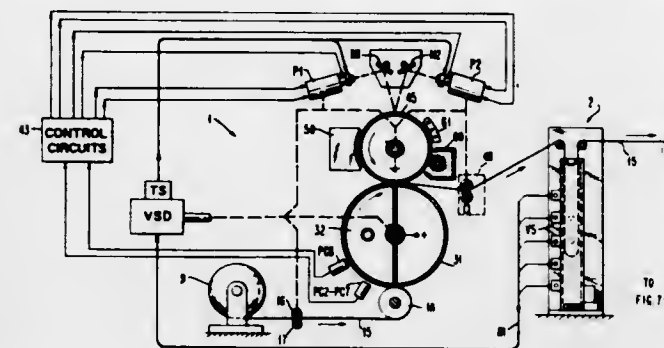
3,615,131
DOCUMENT PROCESSING MACHINE
Arthur J. Sable, Riverside, Calif., and Charles J. Bashe, Armonk, and Robert E. Sandt, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Original application Jan. 26, 1966, Ser. No. 523,204, now Patent No. 3,493,301. Divided and this application Jan. 10, 1969, Ser. No. 803,516
Int. Cl. G03g 15/00

U.S. Cl. 355-14

17 Claims

Apparatus for preparing a succession of documents in selected quantities of copies of each document, wherein each document has variable data content and may be

copied with foreign background data, wherein preparation is accomplished by printing the variable data in a required format together with control symbols identifying the required form background and indicating the number of copies to be made and distribution thereof, reading the control symbols, selecting the background data thereby, and overprinting the selected background in each selected document, reading the control symbols indicating the

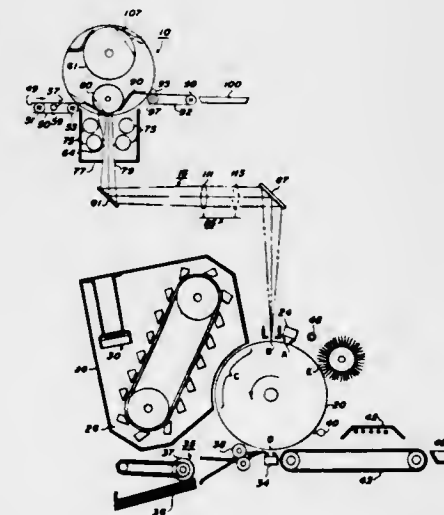


number of copies to be made and printing the required numbers, of each document, adding to the copies the ordinal number thereof, inserting the documents and copies into piles in accordance with indications of the control symbols in ordinal numbers, and providing a variable speed drive along with variable intensity illumination in order to provide a constant photoconductor exposure level regardless of speed.

3,615,132
METHOD OF PRINTING MULTIPLE COPIES OF COMPOSITE INFORMATION ON STANDARD SIZE COPY SHEETS
Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Oct. 17, 1966, Ser. No. 587,110. Divided and this application Aug. 14, 1969, Ser. No. 850,141
Int. Cl. G03g 13/04

U.S. Cl. 355-17

3 Claims

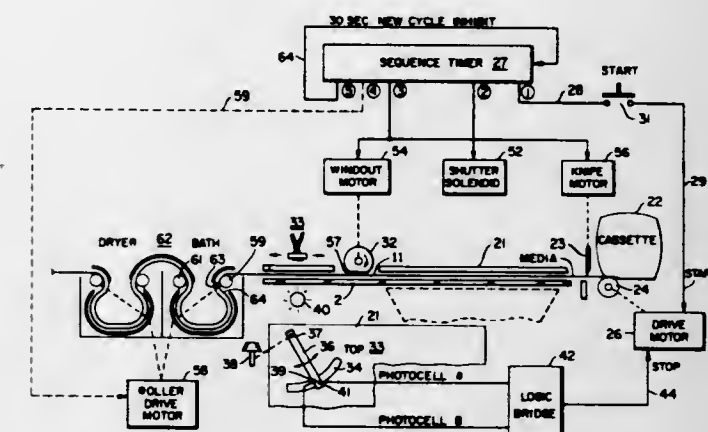


A method of printing multiple copies of composite information on standard size copy sheets comprising attaching an add-on slip bearing first information to a standard size sheet bearing second information, printing at least one copy of the composite information at an optically reduced predetermined size corresponding to a standard size copy sheet, and making multiple prints of the optically reduced copy of composite information at a 1:1 ratio on standard size copy sheets.

3,615,133
PHOTOCOPY APPARATUS
Henry N. Fairbanks and Daniel H. Robbins, Rochester, N.Y., assignors to Itek Corporation, Lexington, Mass.
Original application Oct. 17, 1966, Ser. No. 587,248, now Patent No. 3,472,590, dated Oct. 14, 1969. Divided and this application Apr. 24, 1969, Ser. No. 828,063
Int. Cl. G03b 27/58

U.S. Cl. 355-27

6 Claims

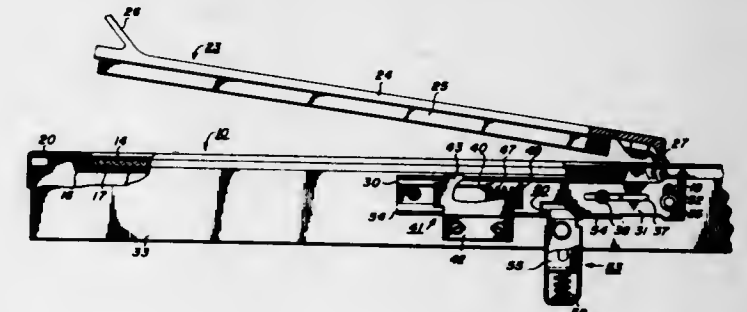


A photocopy apparatus having a sheet feeding mechanism, a leading edge detector, and a pivoting copy holder. The sheet feeding mechanism consists of a flattened roller used to deliver an exposed sheet to a developer. The flattened portion of the roller obviates the necessity of matching drive speeds between rollers in the developer and the sheet feeding roller. The edge detector consists of a pair of movable photocells. The photocells are coupled to a logic bridge circuit so that, when the leading edge of the copy paper covers the first photocell, the delivery roller is stopped. The edge detector is movable to allow adjustment in the amount of copy paper to be fed to the exposure station.

3,615,134
COUNTERBALANCED AND SELF-CLOSING PLATEN COVER
Dean R. Newcomb, Macedon, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Sept. 29, 1969, Ser. No. 861,880
Int. Cl. G03b 27/62

U.S. Cl. 355-75

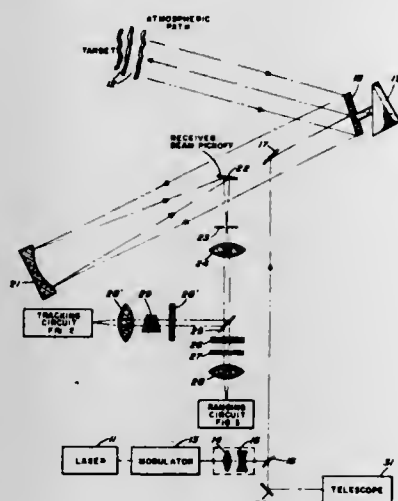
4 Claims



Apparatus is herein disclosed for controlling the positioning of a cover suitable for protecting a platen as utilized in automatic reproducing machines. The cover is operatively connected to a control mechanism to move a slide in a horizontal direction as the platen cover is raised or lowered. A pair of mechanically biased members act on the slide, and coact with each other to support the cover in a stationary position when the cover is raised above a predetermined position and automatically moves the cover into closure when it is placed below the predetermined position.

3,615,135
LASER RANGING WITH POLARIZATION MODULATION
 Richard A. Frazer, King George, Va., assignor to the United States of America as represented by the Secretary of the Navy
 Filed May 16, 1969, Ser. No. 825,225
 Int. Cl. G01c 3/08
 U.S. Cl. 356—5

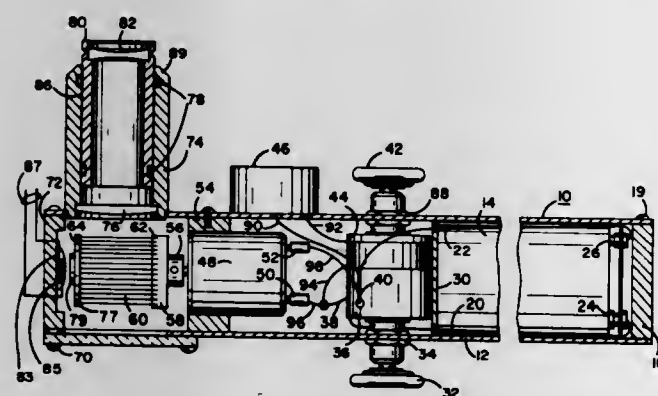
7 Claims



This invention is a ranging and tracking system which utilizes a laser. In the system the laser beam is passed through a modulator to a target. The beam is directed by a tracking mirror which also gathers the reflections of the beam. The reflected beam is directed to a tracking photomultiplier which converts the reflections to an electrical error signal and uses it to drive the tracking mirror. The reflected beam is also passed through a polarization analyzer to a range photomultiplier which triggers a range counter to stop counting. Initially, a pulsing circuit is operative to simultaneously pulse the modulator and start the range counter. The modulator shifts the polarization angle of a selected portion of the laser beam and the polarization analyzer will pass only that portion of the beam which has the shifted polarization angle.

3,615,136
STROBOSCOPE VIEWING DEVICE
 Lawrence J. Kamm, San Diego, Calif., assignor to March 23rd Corporation, doing business as Minecar Company, San Diego, Calif.
 Filed Mar. 17, 1969, Ser. No. 807,799
 Int. Cl. G01p 3/40
 U.S. Cl. 356—25

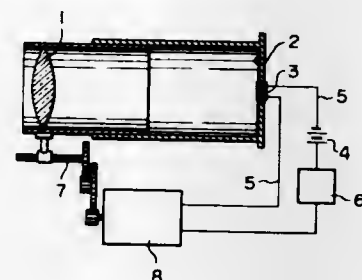
2 Claims



A stroboscope viewing device that has a group of parallel, spaced plates that are rotated at selectable and controlled speeds to provide stop motion viewing of a rotating or reciprocating object and that directs a separate pulsing light source onto the moving object in synchronism with the viewing of the object through the rotating plates.

3,615,137
FOCUSING DEVICE FOR OPTICAL SYSTEM
 Isao Yamaguchi and Tatsushi Kitano, Tokyo, Japan, assignors to Canon Camera Company Incorporated, Tokyo, Japan
 Continuation-in-part of application Ser. No. 238,935, Nov. 20, 1962. This application Oct. 9, 1967, Ser. No. 678,475
 Int. Cl. G01j 1/00
 U.S. Cl. 356—122

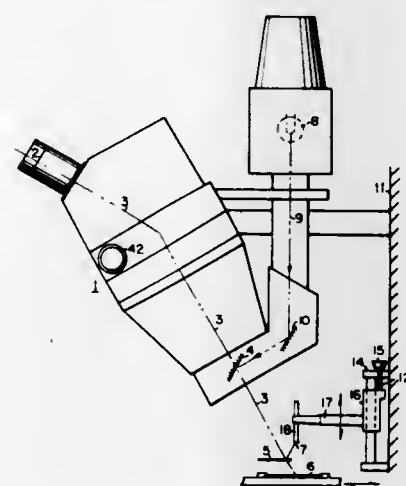
3 Claims



The present invention provides a focussing device for focussing the image of an object in a focal plane comprising an objective lens movable relative to the focal plane, a current measuring device, and an electrical circuit including a source of voltage interconnecting the cell and the device, the focal plane of the photoconductive cell being of a photoconductive material having a property specific to the photoconductive material used, the current measuring device measuring the extreme value of the current flowing through the circuit for the extreme value of the resistivity of the cell when the total light rays focus to a sharp image on the cell.

3,615,138
DICHROIC MIRROR ALIGNMENT SYSTEM
 Donald G. Pedrotti, Cupertino, and Rainer Reimann, Saratoga, Calif., assignors to Hugel Industries Inc., Sunnyvale, Calif.
 Filed Oct. 31, 1969, Ser. No. 872,976
 Int. Cl. G01b 11/27; G02b 5/28
 U.S. Cl. 356—153

6 Claims



An optical system for observing manipulation of two objects to be related in a predetermined manner; i.e., a microscope and a dichroic mirror to provide superimposed images of a flip-chip and of a substrate, which are to be bonded together after a desired positional relation between patterns for electrical connections on both are established. The optical axis of the microscope intersects the dichroic mirror such that a reflected image of the flip-chip and a transmitted image of the substrate are formed for viewing. Each have a distinctive color, aiding in the manipulation.

3,615,139
ARRANGEMENT FOR PHOTOELECTRIC DIMENSION MEASURING
 Lars-Åke Boström, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
 Filed Dec. 4, 1968, Ser. No. 781,026
 Claims priority, application Sweden, Dec. 7, 1967, 16,806/67
 Int. Cl. G06b 11/02, 11/10
 U.S. Cl. 356—160

4 Claims

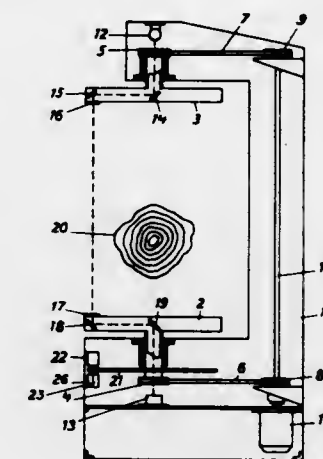
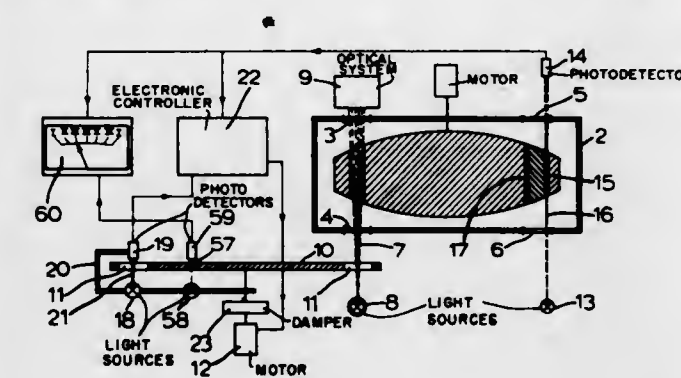


Photo-electric measuring apparatus generates a light beam which passes across the gap of two rotating wheels while being parallel to the common axis of the wheels. The object whose dimension is to be measured passes through the gap. As the wheels rotate electric pulses are generated at rate of a given number per unit distance. These pulses are counted whenever the beam is blocked by the object.

3,615,140
APPARATUS FOR MEASURING THE REFRACTIVE INDEX OF A SOLUTION IN ROTATING CENTRIFUGE CELLS
 Johan G. F. Doornekamp and Bauke S. Sleswerda, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
 Filed Nov. 7, 1969, Ser. No. 874,908
 Claims priority, application Netherlands, Nov. 8, 1968, 6815905
 Int. Cl. G01n 21/24
 U.S. Cl. 356—197

10 Claims

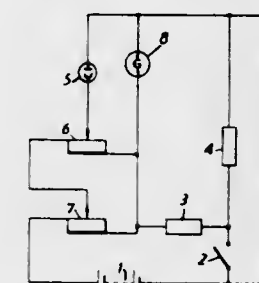


An apparatus for measuring the refractive index of a solution in a rotating centrifuge provided with a multi-cell rotor and with a selector circuit for observing a given cell with application of a light source continuously omitting radiation and a motor-operated rotary disc, serving as a gate, whose speed of revolution is derived from that of the rotor, both the rotor and the disc being equipped with means for the generation of pulses with a frequency that is directly proportional to the number of revolutions and wherein use is made of an electronic controller which feeds the disc drive with pulses of a frequency equal to that of the rotor pulses, unless said motor is rotating at too high a speed, while in the case of a synchronous or

lagging speed of revolution the time duration of the pulses to be fed to the motor is reduced by the pulses generated by the disc, in so far as the latter pulses come within the time duration of the pulses to be fed to the motor, and the disc is coupled with a damper for the suppression of rotational vibrations.

3,615,141
PHOTOGRAPHIC EXPOSURE METER ARRANGEMENT WITH PHOTOCONDUCTIVE CELL
 Hubertus Reimann and Siegfried Schutze, Dresden, Germany, assignors to VEB Pentacon Dresden Kamera- und Kinowerke, Dresden, Germany
 Filed Sept. 30, 1968, Ser. No. 763,624
 Int. Cl. G01j 1/44
 U.S. Cl. 356—226

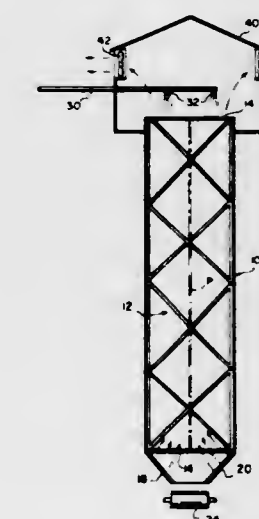
4 Claims



Exposure meter arrangement with photo-conductive cell and a battery feeding the latter, also a galvanometer the pointer zero position of which indicates the balancing of the measuring apparatus brought about by resistance attenuation elements, and thus the correct combination of the exposure factors according to brightness, wherein on the one hand the entire measuring apparatus including galvanometer is connectible through a switch to the battery and in that on the other hand when the battery is disconnected from the entire measuring apparatus a permanent current at the level of the self-discharge current of the battery is fed to the galvanometer through an auxiliary current path which is of high ohmic value in comparison with every resistance value of the measuring apparatus.

3,615,142
PRILLING TOWER
 Lars-Olov Dahlbom, Garpenberg, Sweden, assignor to Kema Nord AB, Stockholm, Sweden
 Filed Jan. 29, 1969, Ser. No. 794,976
 Claims priority, application Sweden, Jan. 30, 1968, 1,234/68
 Int. Cl. B29c 23/00; B22d 23/08
 U.S. Cl. 18—2.7

11 Claims



A prilling tower includes a shaft the walls of which are made of a flexible nonwettable corrosion resistant material having low thermal conductivity. The walls are pref-

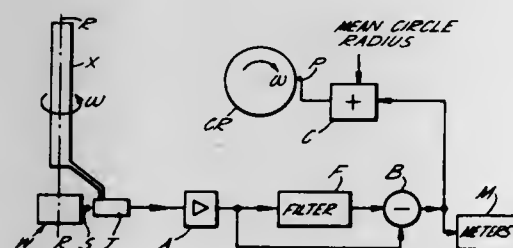
erably formed of plastic material or plastic coated fabric. The walls may be employed for covering the shaft walls of a conventional prilling tower, or the walls may be attached to a rigid framework. In one form of the invention, the tower comprises at least two shafts having one shaft wall in common.

3,615,143 PROFILE TESTING

John Denzil Barr, Oadby, Richard Edmund Reason, Market Harborough, Thomas Charles Reeve, London, Robert Claude Spragg, Leicester, Arthur Tisso Starr, New Barnet, Peter Frederic Thomas Cryer Stillwell, Aldershot, and David John Whitehouse, Melton Mowbray, England, assignors to The Rank Organisation Limited, London, England

Filed Apr. 4, 1969, Ser. No. 813,649
Claims priority, application Great Britain, Apr. 10, 1968, 17,260/68

Int. Cl. G01b 7/28, 7/34, 19/26
U.S. Cl. 33—174 5 Claims



In testing the circumferential surface of an object relative rotation is effected at an angular velocity between the object and a detector device which provides signals representative of the surface characteristics of the object around a closed circumferential path. The signals are passed through a filter device which passes the constant component and one or more selected harmonic components of the signals in accordance with a reference shape for the object. The filter device according to the invention has an effective impulse response such that the sum of the ordinates of this impulse response at times $t = 0$, where $r = 0, 1, 2, 3 \dots$ is of the form:

$$(a_0 + 2 \cos(\omega t) + a_2 \cos(2\omega t) + \dots + a_m \cos(m\omega t))$$

where $a_0 \neq 2$ and $a_2 \dots a_m$ individually have values of 2 or zero, and where the values of the ordinates of the impulse response are negligible for $r > 3$. Preferably the impulse response has the form $(1 + 2 \cos \omega t)$ for $0 < t \leq 2\pi/\omega$ and zero elsewhere.

3,615,144 HANGER AND TRACK FOR SLIDING DOORS AND THE LIKE

Gordon J. Piemeng, 1321 N. Myer St.,
Burbank, Calif. 91506

Filed Dec. 3, 1969, Ser. No. 881,655

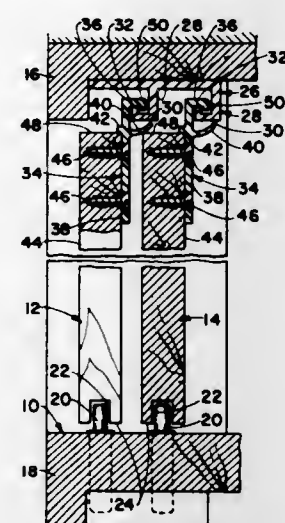
Int. Cl. E05d 13/02

U.S. Cl. 49—411

8 Claims

An elongate longitudinal, preferably L-shaped cross section and plastic track is secured at an upper edge of a door opening and longitudinally slidably supports a door through hangers fastened to said door. Each hanger is inverted generally L-shaped in cross section engaging upwardly over a track flange and downwardly into said track with a resiliently deformable keeper projecting generally transversely underlying and adjacent said track. The keeper thereby normally restricts upward movement of the hanger to retain engagement between the hanger and track but is resiliently distortable upwardly against

the track for permitting upward movement of the door and hanger to disengage said hanger from said track. The hangers may be formed unitary of plastic with the keepers



of reduced cross section for relative resiliency and the remainders of the hangers increased cross section for relative rigidity.

3,615,145 CAM LOCK FOR FLAT KNITTING MACHINE

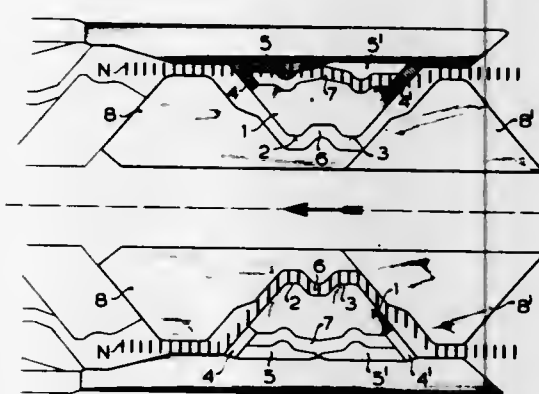
Ernst Goller, Pfullingen, and Wilhelm Hadam, Reutlingen, Germany, assignors to H. Stoll and Company, Reutlingen, Germany

Filed Aug. 8, 1969, Ser. No. 848,513

Claims priority, application Germany, Aug. 9, 1968, P 17 85 099.6

Int. Cl. D04b 7/04

U.S. Cl. 66—78 10 Claims



Locks for transferring stitches between needle beds of a flat knitting machine. A symmetrical mirror-image arrangement of cams form opposed stitch transfer and stitch receiving channels. Switch cams select the path of movement of the needle butts through the cams and hence determine the direction of stitch transfer, regardless of the direction of travel of the lock carriage.

3,615,146 COMBINATION TOASTER AND FRYING PAN

James N. Reaben, 4539 Sunburst St.,
Bellair, Tex. 77401

Filed Sept. 25, 1967, Ser. No. 676,985

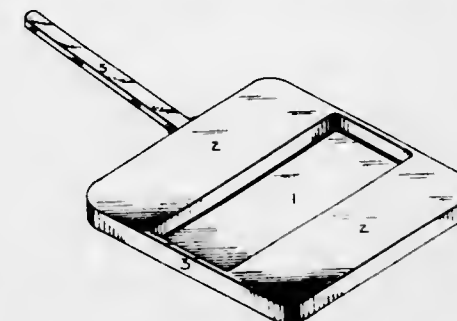
Int. Cl. A47j 37/10

U.S. Cl. 99—339

1 Claim

A cooking utensil which will permit the frying of bacon, hamburger, eggs, sausage, etc. while toasting

bread, buns, frozen waffles, etc. on an elevated surface free from bacon and other grease. The preferred shape is rectangular. The basic design is a depressed cooking area



between two flat cooking surfaces. A preferred material is $\frac{1}{16}$ " aluminum alloy.

3,615,147 APPARATUS FOR MOLDING AN OUTER LAYER OF VISCOUS MATERIAL ABOUT A CORE OF ANOTHER MATERIAL

Torahiko Hayashi, 2-3 Nozawa-cho,
Utsunomiya-shi, Japan

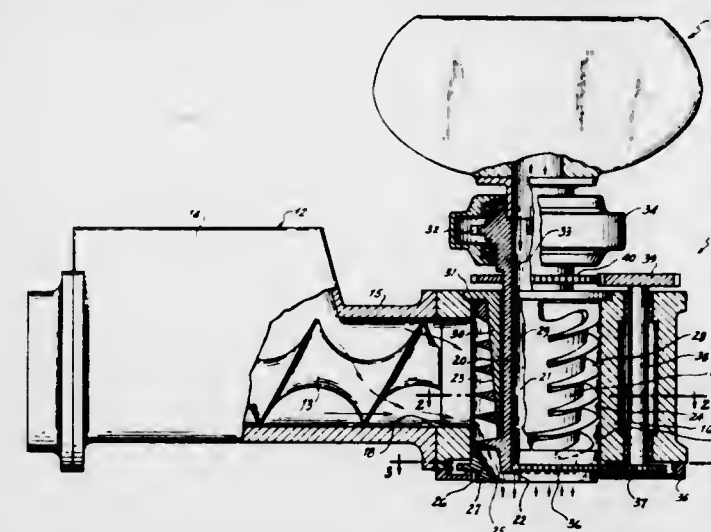
Filed Jan. 9, 1969, Ser. No. 790,099

Claims priority, application Japan, Jan. 13, 1968, 43/1,585

Int. Cl. A21c 11/20

U.S. Cl. 107—1

9 Claims



An apparatus for molding bread dough or other viscous material as an outer layer or crust about a core of another material, such as jam or cream, has a hollow assembly defining an inner passage with a discharge opening at one end through which the core material issues, and a housing extending around the hollow assembly and spaced radially from the latter to define an outer passage in which the crust material is propelled by a rotary conveyor screw to issue through an annular outlet defined between the hollow assembly and a ring member which is rotated independently of the conveyor screw, and preferably at a lower speed than the latter. Further, it is preferred that the conveyor screw consist of a helical rib member having the spaces between its turns closed at their radially inner sides by the outer surface of the hollow assembly and as to which the helical rib member is rotatable.

3,615,148 WATER SYSTEM FOR STEAM RANGES

Sydney Simon, Pittsburgh, Pa., assignor to Sydney Simon and Morris Simon, Pittsburgh, Pa.

Filed Feb. 4, 1969, Ser. No. 796,374

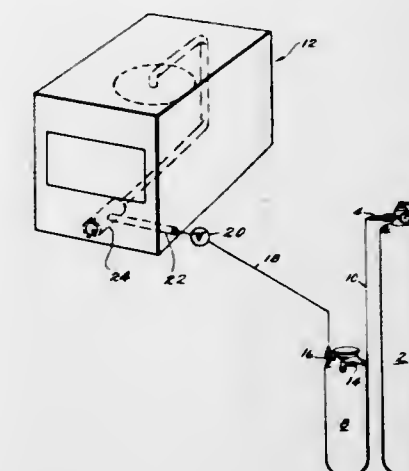
Int. Cl. A21b 1/08

U.S. Cl. 126—20

12 Claims

A portable adaptable water feeding system for steam

ranges comprising an apparatus utilizing pressurized gas to retard or prevent the growth of bacteria and as a pump



to drive fluid from a tank into the steam generating chamber of a food steamer or cooking appliance.

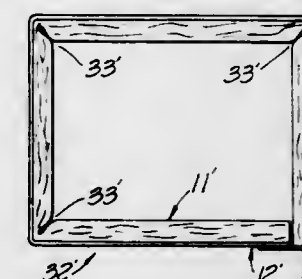
3,615,149 HEAT INSULATING PRODUCT

Joseph G. Malone, 576 Winston Ave., San Marino, Calif. 91108, and H. Morton Smith, 2373 Oak Ranch Road, La Habra, Calif. 90631

Filed Sept. 20, 1968, Ser. No. 761,156

Int. Cl. F16l 59/14

U.S. Cl. 138—151 13 Claims



A heat insulating product formed from a blanket of fiber glass by itself or laminated to foil or other flexible sheet material wherein the shape and density of one or more portions of the blanket have been permanently modified for a useful purpose as for example to fit about obstructions or to facilitate hinging of the blanket along a desired axis. The hinge has a pronounced memory and tendency to return to the normal state thereof as first made and can be flexed repeatedly without harmful effects. The material lends itself admirably to lining multi-sided chambers with a single plaque of either the laminated or nonlaminated material. The material is processed quickly and economically by the application of heat and pressure to selected areas and, if desired, such areas may be coated with a protective layer beneficial in strengthening and protecting such areas, or in holding adjacent portions of the blanket in different planes or positions.

3,615,150 MEANS FOR DRAINING KETCHUP BOTTLES

William G. Indrunas, 251 E. 32nd St.,
New York, N.Y. 10016

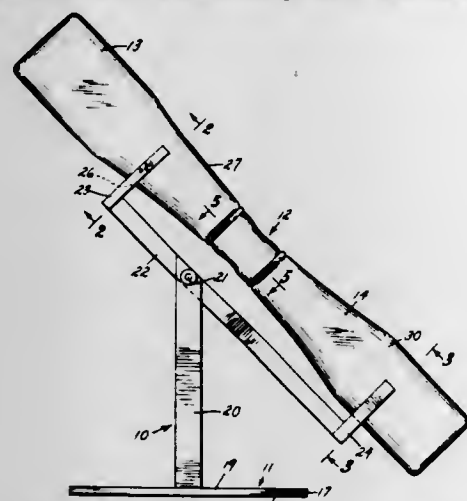
Filed Oct. 31, 1969, Ser. No. 872,846

Int. Cl. B65b 1/06, 3/06; B67c 3/00

U.S. Cl. 141—375 2 Claims

A device for supporting a pair of bottles for the drainage of a thixotropic fluid from one bottle to another,

including means for interconnecting said bottles at the mouths thereof, and supporting said bottles for drainage



such that the principal axes of the bottles are aligned at an acute angle with respect to the horizontal.

ERRATUM

For Class 181—5 sec:
Patent No. 3,615,162

3,615,151

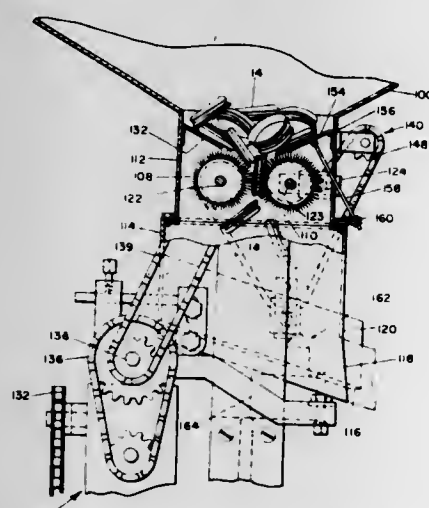
CLOSURE HANDLING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Original application Mar. 27, 1967, Ser. No. 626,040.
Divided and this application July 25, 1968, Ser. No. 747,651

Int. Cl. B65g 47/24

U.S. Cl. 198—33

1 Claim



Randomly arranged shallow closures are guided between opposed rotary brushes. Closures enter between the brushes with the open end of a closure facing either one or the other of the opposed brushes. As a closure passes between the brushes, the bristles of one brush enter the open end of the closure, the opposing brush bearing against the closed end. The engagement of the bristles with the open end of a closure causes the closure to move to a position with its open end facing upwardly when released by the brushes.

3,615,152
CONVEYOR BELTS

Jacques Bouzat, Roland Jong, and Bernard Ragout, Clermont-Ferrand, France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed July 7, 1969, Ser. No. 839,503

Claims priority, application France, July 8, 1968, 158,387

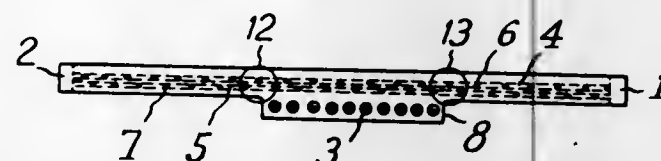
Int. Cl. B65g 15/36, 15/40

U.S. Cl. 198—193

1 Claim

This invention relates to reinforced conveyor belts having a longitudinal reinforcing layer and a number of

transverse reinforcing layers constituted by parallel elements that are inclined with respect to the median plane of the belt. These transverse layers are arranged symmetrically in relation to the median plane so that their ele-



ments cross each other forming, with said plane, angles of equal and opposite direction. The width of the longitudinal reinforcing layer is smaller than the width of any one of the transverse reinforcing layers being between $\frac{1}{4}$ and $\frac{3}{4}$ of such width.

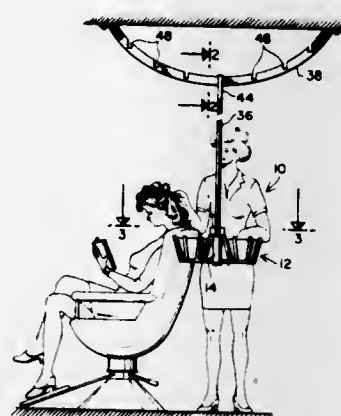
3,615,153

ADJUSTABLY SUPPORTED PLATFORM
Eunice E. Cagle, Rte. 4, Hanceville, Ala. 35077
Filed Apr. 22, 1970, Ser. No. 30,652

Int. Cl. A47f 5/08

U.S. Cl. 211—113

9 Claims



A platform is mounted on a substantially vertical supporting rod. The vertical rod is mounted for movement by the operator to various positions within the work area. The platform extends perpendicularly from the vertical rod and is journaled for rotation in a horizontal plane. The journal between the platform and the rod is formed by a sleeve and indexing teeth are provided in a concentric ring at the base of the sleeve, which engages a matingly indexed cap on the rod. A vertical component of the weight of the platform holds the indexed portions in engagement. To rotate the platform the indexed portions must first be disengaged by lifting the sleeve so that the sleeve slides upwardly along the rod. Various embodiments encompass different supports for the vertical rod and include a pendant support from an overhead track, as well as a floor support including a caster and a generally horizontal guide rail. Another embodiment includes a rim journaled for rotation about the cylindrical base of a chair and an indexing detent to prevent rotation of the rim after the desired position of the vertical supporting rod has been obtained.

3,615,154
GRIPPER

Dale H. Pryor, Houston, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Sept. 19, 1969, Ser. No. 859,489

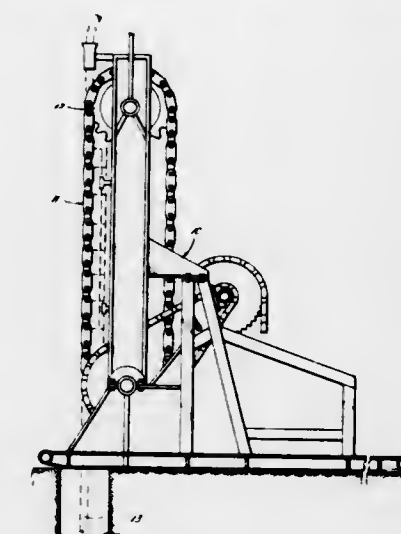
Int. Cl. B65h 17/34

U.S. Cl. 226—173

5 Claims

A retractor having an endless train made up of a plurality of grippers. The grippers have contoured gripping faces which are contoured to grip pipe of different sizes and the degree of movement of the grippers toward and away from pipe engaging positions is selectively controlled relatively to the size of pipe being

gripped. The grippers are mounted on pivot pins at positions to either side of the center line of the piston



supplying the gripping force to increase the resultant gripping force exerted by the grippers.

3,615,155

RECORDING TAPE CARTRIDGE

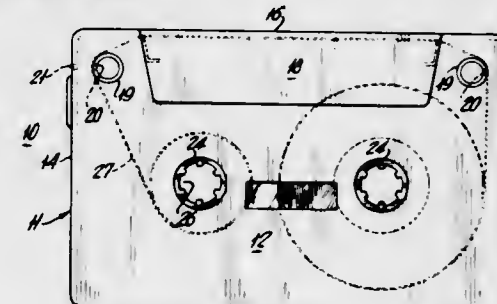
Emery Gelbman, 90 Squirrel Lane, Levittown, N.Y. 11756

Filed Mar. 26, 1969, Ser. No. 810,745

Int. Cl. G11b 15/08, 23/06, 23/10

U.S. Cl. 242—188

9 Claims



A magnetic type cartridge includes a casing which houses an endless tape having a storage section wound on a spool or a double ended tape extending between a pair of spools, the tape having one or more transparent control sections and advancing about a tubular guide post. The post has a side opening aligned with a casing end opening, an open end registering with an opening in the casing top wall, and a reflector or prism surface inclined to direct light from one opening to the other. A lamp registers with each end opening and a photoconductor registers with each top wall opening. Networks are provided which are responsive to the photoconductor to control the tape drive.

3,615,156

REEFING LINE CUTTER

Gerald M. Blain and William H. Colburn, Jr., San Jose, Calif., assignors to Space Ordnance Systems Inc., Sangus, Calif.

Filed June 6, 1969, Ser. No. 830,954

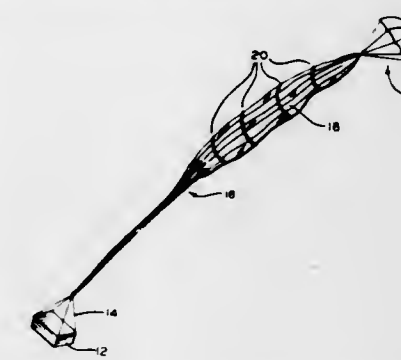
Int. Cl. B64d 17/58

U.S. Cl. 244—150

6 Claims

An explosively actuated cutter assembly for severing the reefing lines which hold together the canopy of a parachute as the latter is deployed. The explosive which drives the cutter blade through the reefing line is detonated by utilizing the tension developed in the reefing line by the tendency of the parachute to unfurl to drive a firing pin against a primer. The explosive train within each cutter assembly may be identical; that is, there is no necessity for different delay times to provide sequential severing of the reefing lines to that nearest the parachute canopy apex

from the load since the reefing lines are automatically tensioned in that order as the parachute is unfurled. An inexpensive bracket is provided in combination with the movable cutter assembly to hold the reefing line with an



initial kink or bend which is straightened by tension in the line, thereby causing relative movement of the bracket and cutter assembly to drive the firing pin against the primer and initiate the explosive train.

3,615,157

HYDRAULIC JACK

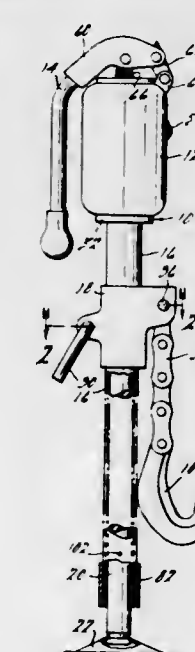
Luigi D'Amico Trotta, Caracas, Venezuela, assignor to Multiprens, C.A., Caracas, Venezuela
Filed Jan. 23, 1969, Ser. No. 793,277

Claims priority, application Venezuela, Mar. 7, 1968, 365

Int. Cl. B66f 3/24

U.S. Cl. 254—93 H

3 Claims



There is herein disclosed a hydraulic jack for use with automobiles or the like, having a pump handle connected to a piston for pumping hydraulic fluid from a reservoir to a lifting cylinder. The lifting cylinder surrounds a stationary, ground supported piston and carries a hook for connection to an automobile bumper or the like.

3,615,158

TRACTOR-WAGON HITCH GUIDE

Harland H. Sternhagen, Box 184, Rte. 2, Westfield, Wis. 53964

Filed July 30, 1969, Ser. No. 845,963

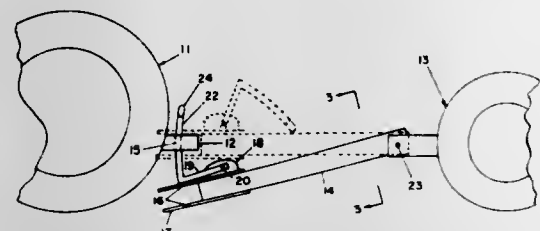
Int. Cl. B60d 1/00

U.S. Cl. 280—477

1 Claim

A tractor-wagon hitch guide that allows a single operator to accurately align the tractor towbar and wagon tongue to facilitate connecting. The guide includes a connecting member pivotally mounted on the tongue or draw bar of the wagon or other implement to be towed and an arcuate bar or rod connected to and extending upwardly from the member mounted on the tongue or

draw bar, the arc of said rod having a radius equal to the distance between the pivot point of said wagon tongue

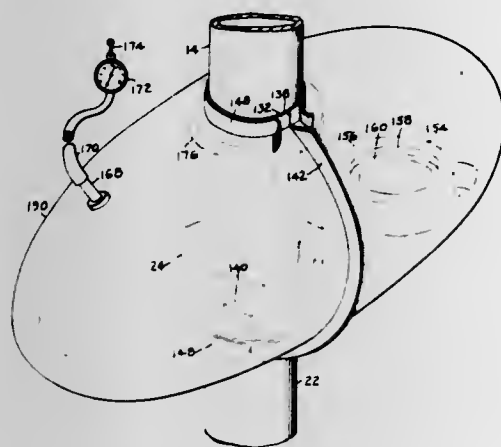


and the engaging portion of the hitch member attached on said tongue.

3,615,159
METHOD AND APPARATUS FOR CHANGING GAS FITTINGS, METERS AND THE LIKE
Charles E. Muñoz, P.O. Box 17758,
El Paso, Tex. 79917
Filed Nov. 12, 1968, Ser. No. 775,053
Int. Cl. F16I 55/00

U.S. Cl. 285-18

11 Claims



To allow removal and replacement of any domestic-type gas meter, or other on-the-line components, without access to premises beyond the meter and without the slightest interruption or significant pressure drop in the gas supply to the premises, and without requiring special fittings in the supply line, a separable or flexible casing is designed to fit about the region of connection between the meter's outlet connection and the house or service gas line. The casing is closed and sealed about this region and purged of air, whereupon the service line is disconnected at its standard coupling and the meter, and a relatively portion of the casing, are moved to bring an auxiliary gas supply into connection with the service line. The casing can then be opened, and the meter, or other component, totally disconnected, and/or replaced, without affecting the gas supply to the premises.

3,615,160
TUBE AND SEALED JOINT ASSEMBLY
Harry A. Feather, Sarasota, Fla., assignor to
Hynautic, Inc., Nokomis, Fla.
Filed Nov. 3, 1969, Ser. No. 873,355
Int. Cl. F16I 33/00

U.S. Cl. 285-250

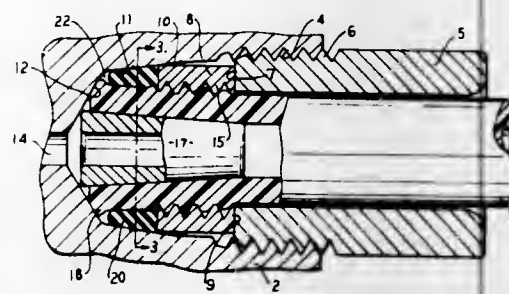
9 Claims

A body of a hydraulic device has a tube receiving bore with annular wedging, sealing, and seating surfaces, respectively. A deformable plastic tube is embraced by a rigid lock collar and carries a deformable annular seal.

A rigid expanding and reinforcing tapered sleeve is arranged in the tube with a portion protruding from the tube end.

Upon initial insertion of the tube into the bore, the seating area pushes the sleeve farther into the tube and interlocks the tube with the collar, and then the collar

engages the wedging surface which frictionally constrains the collar from rotation. The sleeve progressively expands the tube into tighter sealing relation with the collar with-

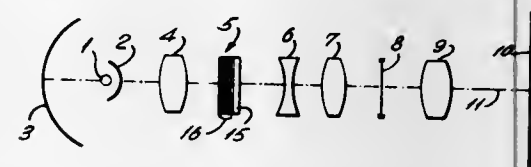


out twisting or abrading the tube. An annular seal is in sealed contact with the sealing and seating surfaces and the inner end of the collar.

3,615,161
XENON ARC PICTURE PROJECTION
Herbert E. Bragg, Oxford, N.J., assignor to
CinemaScope Products Inc., New York, N.Y.
Filed Sept. 18, 1968, Ser. No. 760,519
Int. Cl. G02b 5/28

U.S. Cl. 350-166

5 Claims

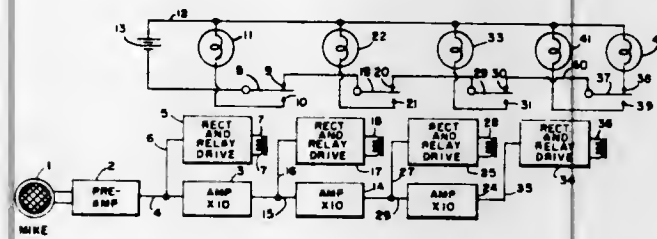


An optical system for the projection of pictures in color where the projection is effected by the use of a xenon arc with color film having images to be projected where the color values in the film have been selected for best color appearance when projection is effected using a carbon arc as the light source. The optical system contains unique transmissive or reflective filtering means for adjusting the visual effect of each of the primary colors used in the color film when projected by the Xenon arc source. It is essential to make such adjustments to obtain the best color combination in the projection of images carried by a film selected and processed to give the best color appearance when using a carbon arc for projection.

3,615,162
SOUND INTENSITY INDICATOR SYSTEM
Alfred W. Barber, Bayside, N.Y.
(32-44 Francis Lewis Blvd., Flushing, N.Y. 11358)
Filed Apr. 11, 1969, Ser. No. 815,285
Int. Cl. G01h 1/08

U.S. Cl. 181-.5

7 Claims

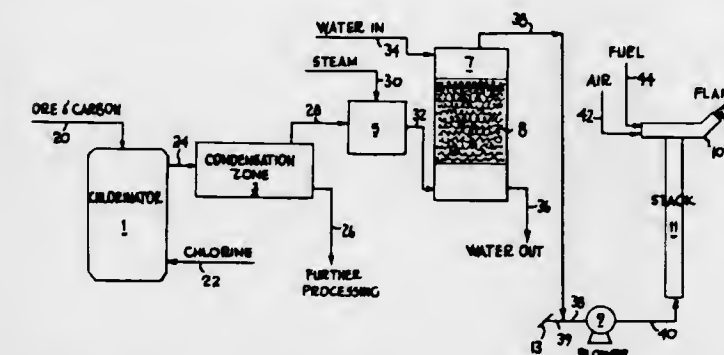


Discrete sound levels are indicated by a series of lamps. Each lamp indicates a sound intensity within a predetermined range. Lamp colors are chosen to signify intensity classifications.

CHEMICAL

3,615,163
TREATMENT OF TITANIUM TETRACHLORIDE WASTE GAS
Stanley F. Brzozowski, New Martinsville, W. Va., assignor to
PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 15, 1969, Ser. No. 884,827
Int. Cl. B01d 47/00; C01g 23/02, 23/06
U.S. Cl. 23-2 C

7 Claims



Waste gas from the chlorination of titaniferous ores is treated with steam before being vented and burned.

3,615,164
PROCESS FOR SELECTIVE REMOVAL BY METHANATION OF CARBON MONOXIDE FROM A MIXTURE OF GASES CONTAINING CARBON DIOXIDE
Bernard S. Baker, Chicago; Jack Huebler, Deerfield; Henry R. Linden, Hinsdale, and John Meek, Deerfield, all of Ill., assignors to Consolidated Natural Gas Company, Inc., Pittsburgh, Pa.; Southern California Gas Company and Southern Counties Gas Company, Los Angeles, Calif., part interest to each
Continuation-in-part of application Ser. No. 337,796, Jan., 1964, now abandoned. This application Jan. 10, 1968, Ser. No. 701,036
Int. Cl. C01b 2/16; B01d 53/00; C01b 1/30

U.S. Cl. 23-2

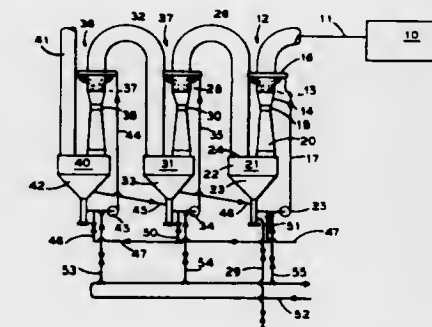
11 Claims

A process for recovering a substantially carbon monoxide free mixture of gases particularly useful as a low-cost fuel for acid fuel cells from a mixture of gases including hydrogen, carbon monoxide, and carbon dioxide wherein the quantity of carbon dioxide is high relative to the quantity of carbon monoxide. The carbon monoxide is selectively methanated in the presence of the high proportion of carbon dioxide by heating the gaseous mixture at about 100°-220° C. in the presence of a ruthenium or rhodium catalyst on an alumina support.

3,615,165
GASEOUS SULFUR DIOXIDE ABSORPTION SYSTEM
John L. Clement, Akron, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed Dec. 10, 1968, Ser. No. 782,592
Int. Cl. B01d 53/34

U.S. Cl. 23-2 R

2 Claims



A system for the absorption of SO₂ from gases of combustion where the gases are passed in series through a

plurality of direct contact zones. The absorption liquid is made up of a solution of magnesium and sulfur which is sprayed into the gas, and the makeup water in the solution is selectively added into the last stage zone for optimum SO₂ absorption efficiency of the entire system.

3,615,166
CATALYSTS FOR PURIFICATION OF WASTE GASES CONTAINING OXIDES OF NITROGEN
Saul G. Hindin, Mendham, and Joseph C. Dettling, Jackson, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.
Filed June 16, 1969, Ser. No. 833,775
Int. Cl. C01b 2/30

U.S. Cl. 23-2 E

12 Claims

Improved catalysts for use in the purification of waste gases containing oxides of nitrogen comprise high surface area thoria or zirconia as a support for a catalytic deposit. The catalysts exhibit exceptionally high stability in the reaction environment.

3,615,167
PROCESS OF VANADIUM RECOVERY FROM AN ORGANIC MEDIUM
Jean Berthou, Decines, and Jean Philippe, Caluire, both of France, assignors to Progil, Paris, France
Filed June 5, 1969, Ser. No. 830,858
Claims priority, application France, June 11, 1968, 50092
Int. Cl. C22b 59/00

U.S. Cl. 23-19 V

8 Claims

Vanadium is recovered from residues of reaction masses obtained by oxidation of organic compounds in the presence of vanadium catalysts by treating with a strong mineral acid, adding a solvent for the organic products to separate off an aqueous layer containing the vanadium, bringing the pH to 5-7, adding an oxidation agent such as sodium hypochlorite and then adding an ammonium salt to precipitate ammonium metavanadate.

3,615,168
GROWTH OF CRYSTALLINE RARE EARTH IRON GARNETS AND ORTHOFERRITES BY VAPOR TRANSPORT
Friedel H. P. Wehmeier, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 12, 1969, Ser. No. 849,351
Int. Cl. C22b 59/00

U.S. Cl. 23-21

7 Claims

A process for the production of crystals of the yttrium and rare earth iron garnets and orthoferrites by vapor transport using HCl or Cl₂ has been developed. It has been found that the addition of a sufficient amount of FeCl₃ to the reactants suppresses the decomposition of the deposited material and allows the production of crystals of excellent quality. The process is adaptable to sealed capsule or open tube operation.

3,615,169
PROCESS FOR THE PREPARATION OF RARE EARTH FLUORIDES
Karl F. Thom, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 30, 1969, Ser. No. 872,726
Int. Cl. C22b 55/00

U.S. Cl. 23-21

11 Claims

A method is disclosed for the preparation of anhydrous fluorides of high purity substantially free from oxyfluorides of trivalent metals of group 3b of the periodic system particularly of scandium, yttrium and the lanthanide rare earth metals by pyrolysis of fluoroaliphatic-sulfonates of these metals. A process for producing the latter salts which are isolated as complexes with water or organic molecules is also disclosed. These salts have unusual solubility properties.

3,615,170 PROCESS FOR SEPARATING METALS USING DOUBLE SOLVENT EXTRACTION WITH BRIDGING SOLVENT MEDIUM

Wayne C. Hazen, Wheat Ridge; Pablo Hadzeriga, Arvada, and Paul R. Kruesi, Golden, all of Colo., assignors to Molybdenum Corporation of America, New York, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,654
Int. Cl. C22b 59/00

U.S. Cl. 23-22 14 Claims
Solutions of metal values are fractionated by a double solvent liquid-liquid extraction process wherein the solution is contacted with one extractant to selectively remove at least one metal value, then the solution is contacted with a second extractant to selectively remove another metal value, and the solution depleted of both metal values is recycled in a bridge between the two extractants. The process permits separation in aqueous and nonaqueous media; and it improves separation efficiency by allowing equilibration of metal values between the unmixed extractants and by permitting countercurrent flows. The process is especially useful to fractionate rare earth metal values and yttrium.

3,615,171 PROCESS OF SEPARATING YTTRIUM FROM LANTHANIDE RARE EARTHS

George W. Mason, Clarendon Hills; Sonia Lewey; Allen F. Bollmeier, Joliet, and Donald F. Peppard, Oak Park, all of Ill.

Filed June 15, 1970, Ser. No. 46,191
Int. Cl. C01b 59/00

U.S. Cl. 23-22 10 Claims
Yttrium values are separated from lanthanide rare earth values which are present together as bromides in an aqueous feed solution containing excess bromide ions by extracting the lanthanide rare earth values and some of the yttrium values from the feed solution with bis-2-ethyl hexyl chloromethyl phosphonate, scrubbing the yttrium values from the extractant with an aqueous scrub solution of hydrogen bromide and lithium bromide, and separating the yttrium values from the aqueous feed and scrub solutions.

3,615,172 PREPARATION OF CRYSTALLINE CARBONATOTRIZONATES OF AMMONIUM AND POTASSIUM

Franklin Charles Fulson, Lewiston, N.Y., assignor to NL Industries, Inc., New York, N.Y.

Filed Feb. 12, 1969, Ser. No. 798,804
Int. Cl. C22b 59/00; C01g 25/00

U.S. Cl. 23-22 7 Claims
Ammonium or potassium carbonatotrizonate is prepared as a crystalline, water-soluble product by the reaction, in a liquid medium consisting essentially of a lower aliphatic alcohol and a minor amount of water, of a water-soluble zirconium chloride and the carbonate or bicarbonate of the alkali.

3,615,173 SEPARATION OF RARE EARTH ELEMENTS BY ION EXCHANGE

J. Oscar Winget, Sparks, and Roald E. Lindstrom, Reno, both of Nev.

Filed Apr. 3, 1969, Ser. No. 813,048
Int. Cl. C22b 59/00

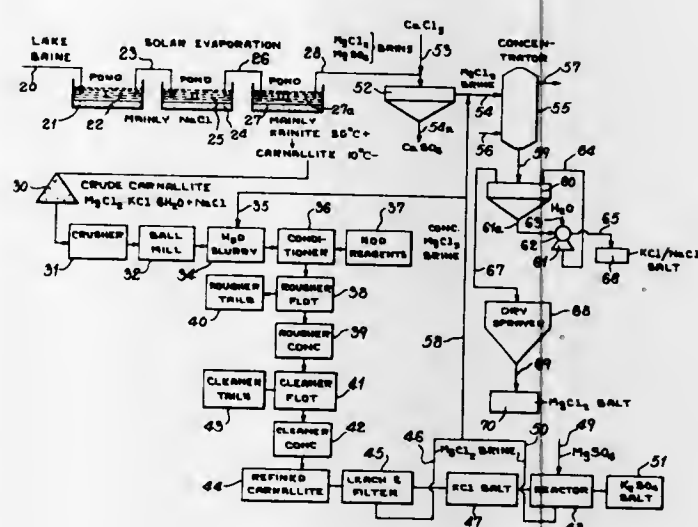
U.S. Cl. 23-23 2 Claims
Diethylenetriaminepentaacetic acid or hydroxyethylethylenediaminetriacetic acid is used as retaining agent in separating rare-earth elements on a cation-exchange resin column. The rare-earth metals and their compounds find a wide variety of uses such as use in special alloys, in lasers, in dielectric ceramics, in nuclear technology, in phosphors, etc.

3,615,174 PROCESS FOR THE SELECTIVE RECOVERY OF POTASSIUM AND MAGNESIUM VALUES FROM AQUEOUS SALT SOLUTIONS CONTAINING THE SAME

William J. Lewis, South Ogden, Utah, assignor to NL Industries, Inc., New York, N.Y.

Filed June 28, 1968, Ser. No. 740,886
Int. Cl. B03b 1/00; B03d 1/02; C01f 5/26

U.S. Cl. 23-38 11 Claims



Kainite immersed in brine in equilibrium converted to carnallite by cooling to about 10° C. or under. Carnallite so obtained purified by cold flotation. Purified carnallite water leached to yield magnesium chloride brine and potassium chloride salt. Latter optionally converted to potassium sulfate by reaction with kainite, or by reacting the carnallite with kainite. Naturally occurring brine concentrated to precipitate principally sodium chloride, mother liquor warm concentrated to precipitate kainite, cooled under mother liquor for conversion to carnallite. A crude kainite fraction purified by warm flotation and a crude carnallite fraction purified by cold flotation reacted together to yield magnesium chloride brine and potassium sulfate salt.

3,615,175 PREVENTING PHYSICAL EXPLOSION DUE TO THE INTERACTION OF LIQUID WATER AND MOLTEN CHEMICAL COMPOUNDS

Hugh Wharton Nelson, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

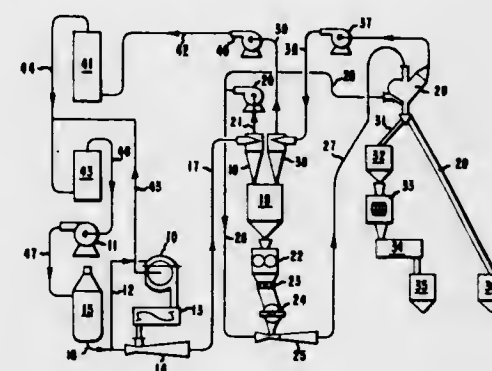
Filed Mar. 24, 1969, Ser. No. 809,988
Int. Cl. C01d 11/00; D01n 33/00; D21c 11/12

U.S. Cl. 23-48 3 Claims
A method for preventing physical explosions, particularly of the smelt-water reaction type, in kraft chemical recovery furnaces. Upon detection of the presence of liquid water in the furnace, a solid compound capable of highly endothermic chemical reaction upon thermal decomposition is introduced into the furnace to cover the molten smelt on the furnace bottom. The decomposition reaction serves to inert the furnace with the nonflammable gases produced thus eliminating further heat production due to combustion in the char bed while solidifying the molten smelt (i.e., removing sensible heat stored therein) which is the source of explosive energy. The materials which may be employed for this purpose are alkali and alkaline earth carbonates and bicarbonates including sodium bicarbonate, ammonium carbonate and ammonium bicarbonate.

3,615,176 SODIUM CYANIDE PROCESS AND BRIQUETS FORMED THEREFROM

William Riley Jenks, and Olyn Wayne Shannon, both of Memphis, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 734,767, June 5, 1968, now abandoned. This application Apr. 28, 1969, Ser. No. 824,354

Int. Cl. C01c 3/10; B29j 1/00
U.S. Cl. 23-84 13 Claims

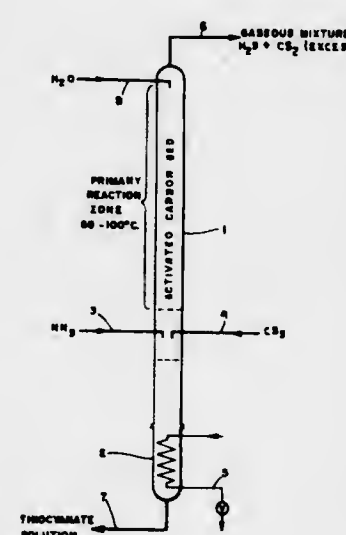


Predensifying anhydrous sodium cyanide crystals and then compacting the resulting classified granules produces anhydrous sodium cyanide in briquet form that possesses unique characteristics. The briquets are essentially nonporous in structure with unit density approaching true crystal density and possess uniform internal hardness, remarkable durability and a high rate of solution. Using closed circuit hot air for conveying and drying, reduces sodium carbonate and formate content and the sodium cyanide is high in chemical purity.

3,615,177 PRODUCTION OF AQUEOUS AMMONIUM THIOCYANATE SOLUTIONS AND THIOCYANATE COMPOUNDS

Helmut Magerlein, Erlenbach; Gerhard Meyer, Obernburg, and Hans-Dieter Rupp, Erlenbach, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany
Filed Oct. 21, 1968, Ser. No. 769,148
Claims priority, application Germany, Oct. 21, 1967, P 15 42 339.4

Int. Cl. C01c 3/00; C01b 11/16, 31/08
U.S. Cl. 23-75 21 Claims



Ammonia and carbon disulfide are reacted at about 60-100° C. on an activated carbon, preferably in a continuous manner permitting high yields of a relatively pure ammonium thiocyanate or the corresponding alkali metal and alkaline earth metal thiocyanates.

3,615,178 PROCESS FOR THE PURIFICATION OF TITANIUM TETRACHLORIDE FROM TRACES OF CARBON COMPOUNDS

Fabrizio Guicciardi, and Paolo Palagi, both of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Apr. 30, 1969, Ser. No. 820,663
Claims priority, application Italy, May 3, 1968, 16.033A/68
Int. Cl. C01g 23/02

U.S. Cl. 23-87 TP 3 Claims
This application discloses a process for purifying titanium tetrachloride from the carbon residues resulting from the purification of TiCl₄ by means of organic compounds, the raw titanium tetrachloride being treated with aluminum trichloride at temperatures ranging between 100° C. and boiling temperature, and in the presence of from 0.01 to 1 percent (by weight of the TiCl₄) of finely divided TiO₂ having a particle size ranging between 0.05 and 10 microns.

3,615,179 PREPARATION OF MAGNESIUM PERCHLORATE

David S. Rosenberg, Niagara Falls; Alfred O. Minkkel, Grand Island, and Walter M. Zimberg, Tonawanda, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,552
Int. Cl. C01b 7/00

U.S. Cl. 23-85 10 Claims
Magnesium perchlorate of very high purity is prepared by the reaction of magnesium metal with water in the presence of an activating amount of perchloric acid to form MgO(H₂O)₂ in aqueous suspension. Concentrated perchloric acid is gradually added to the suspension of MgO(H₂O)₂ while vigorously agitating the mixture to produce magnesium perchlorate. The product is useful as an electrolyte in storage batteries.

3,615,180 METHOD OF IMPROVING THE QUALITY OF SYNTHETIC CRYOLITE

Makoto Kadotani, Ube-shi, and Seishiro Isobe, Yamaguchi-shi, both of Japan, assignors to Central Glass Co. Ltd., Yamaguchi-ken, Japan
Filed Jan. 5, 1970, Ser. No. 793

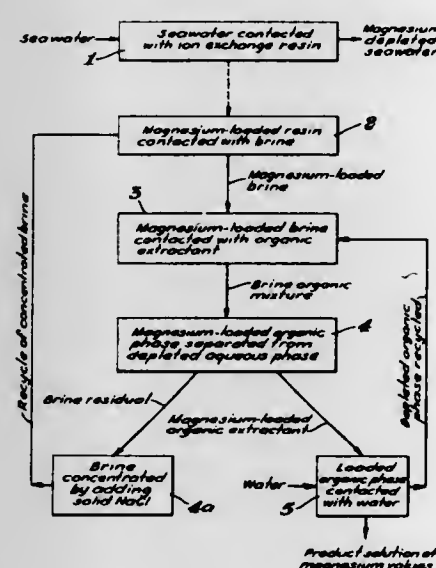
Int. Cl. C01f 7/54 5 Claims
A method of producing synthetic cryolite having a reduced ignition loss, which comprises repulping synthetic cryolite in an aqueous solution of below pH 4 of an acid selected from the group consisting of hydrochloric acid, nitric acid and sulfuric acid, for at least 10 minutes at a temperature below the boiling point of said aqueous solution, and thereafter recovering the purified synthetic cryolite.

3,615,181 PROCESS FOR PRODUCING SOLUTIONS OF MAGNESIUM VALUES

William C. Bauman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Aug. 22, 1969, Ser. No. 852,339
Int. Cl. C01f 5/30, 5/26

U.S. Cl. 23-91 15 Claims
Disclosed herein is a process for providing relatively pure and concentrated aqueous solutions of magnesium values, e.g. MgCl₂. The process comprises contacting sea water or similar dilute and impure solutions of magnesium values, with a cation-type ion exchange resin. Aqueous brine is subsequently exchanged with the resin to provide an aqueous brine solution of magnesium values. This solution is contacted with a water-immiscible organic phase comprising an organic acid and an amine. Magnesium values are thereby

extracted into the organic phase. Subsequently the organic extractant phase is contacted with an aqueous stripping

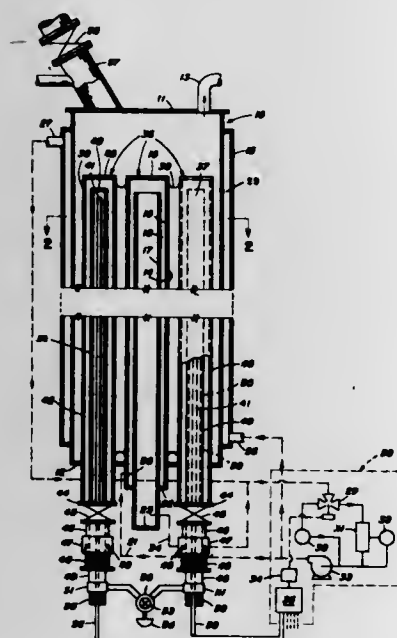


medium, e.g. water, to provide a relatively pure solution containing up to about 20 weight percent magnesium values.

3,615,182
PROCESS FOR GENERATING METAL HALIDES
Oliver W. Moles, Edmond, Okla., and Bryce H. McMullen, New Shrewsbury, N.J., assignors to NL Industries, Inc., New York, N.Y.
Division of Ser. No. 586,709, Oct. 14, 1966, Pat. No. 3,492,097.
Filed Nov. 14, 1969, Ser. No. 871,318
application Nov. 14, 1969, Ser. No. 871,318
Int. Cl. C01f 7/56, 7/58

U.S. Cl. 23-93

2 Claims



The present invention relates in general to the production of a metal halide and more especially to an improved process and apparatus for producing vaporous aluminum chloride.

3,615,183
REMOVAL OF CHROMIUM FROM ALUMINUM NITRATE
Wilbur Don Wise, Benton, Ark., assignor to Reynolds Metals Company, Richmond, Va.
Filed Feb. 5, 1970, Ser. No. 9,037
Int. Cl. C01f 7/24, 7/66

U.S. Cl. 23-102 R
Aluminum nitrate solutions contaminated with dissolved chromium, and particularly those obtained in the extraction of clay or bauxite with nitric acid, are substantially freed from chromium by treatment with an alkali persulfate in the presence of hematitic iron oxide solids.

3,615,184
PROCESS OF PRODUCING ALKALI METAL ORTHOPHOSPHATES
Oskar Gehrig, and Theodor Riehm, both of Mannheim, Germany, assignors to Joh. A. Benckiser GmbH, Chemische Fabrik, Ludwigshafen, Germany
Filed Dec. 29, 1967, Ser. No. 694,700
Claims priority, application Germany, Dec. 30, 1966, B 90523
Int. Cl. C01b 25/30

U.S. Cl. 23-107
Alkali metal salts of orthophosphoric acid are obtained by continuously reacting the required amounts of concentrated phosphoric acid with 40 percent to 65 percent of phosphorus pentoxide, with a 40 percent to 70 percent alkali metal hydroxide solution in a flash reactor, continuously passing the resulting reaction product through a single-effect or a multiple-effect evaporator which may be under vacuum to concentrate the same, thereby utilizing the steam set free in the reactor and, if multiple-effect evaporators are used, the steam generated in each preceding evaporator to heat the following evaporator, and separating the crystals from the mother liquor which may be recirculated into the reactor and/or the evaporators. Proceeding in this manner permits one to produce crystalline alkali metal orthophosphates in substantially dry form without additional supply of heat energy.

The apparatus assembly for carrying out this improved process consists of a flash reactor with stirring device, a single-effect evaporator or a multiple-effect evaporator connected in series with the reactor, a device for separating crystals from liquid such as a centrifuge, and a vacuum device. Pipes connecting the evaporators with, and conducting the condensed steam therefrom to, heat exchangers for preheating the reaction components may be provided, likewise pipes connecting the liquid discharge of the separating device with the reactor and/or the evaporators.

Examples of alkali metal orthophosphates obtained by the process and apparatus of this invention are monosodium and monopotassium orthophosphates, disodium orthophosphates with and without water of crystallization, trisodium orthophosphate.

3,615,185
PROCESS FOR THE PRODUCTION OF TRISODIUM PHOSPHATE
Joel B. Jacobs, Lakewood, and Steve Taborosi, Woodbridge, both of N.J., assignors to FMC Corporation, New York, N.Y.
Filed Nov. 22, 1968, Ser. No. 778,303
Int. Cl. C01b 25/28

U.S. Cl. 23-107
A free-flowing crystalline noncaking trisodium phosphate dodecahydrate product is formed by crystallization from water solution in the presence of a small amount of sodium sulfate so that the product formed by evaporation will actually have cocrystallized therewith about 0.25 to 0.80 percent by weight of sodium sulfate on the dry crystal basis. The product prepared by this method of cocrystallizing the trisodium phosphate with a trace of sodium sulfate has the advantage of being a noncaking material under storage conditions of ordinary variable atmospheric temperature and humidity.

3,615,186
PROCESS OF MAKING HYDRATES OF POTASSIUM-MAGNESIUM PHOSPHATES
Wilhelm Jahn-Held, and Otto Braun, both of Kassel-Wilhelmshohe, Germany, assignors to Aktiengesellschaft, Kassel, Germany
Filed Dec. 9, 1969, Ser. No. 883,556
Int. Cl. C01b 25/26, 25/30, 25/32

U.S. Cl. 23-107
Hydrates of potassium-magnesium phosphates are made by (a) reacting phosphoric acid with an aqueous solution of an aliphatic water-soluble amine wherein the amine is present in

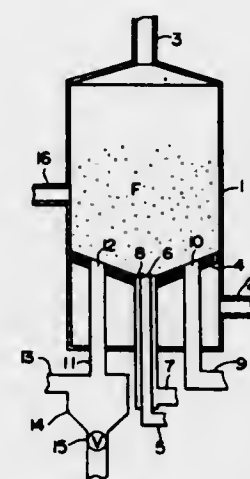
8 Claims

an excess sufficient to cause only about one half of the amount of the amine to be used up in the reaction; (b) then dissolving in the solution K_2SO_4 in an amount per equivalent of P_2O_5 equal to the stoichiometric amount or up to 5 percent in excess thereof; (c) then pouring an aqueous solution of $MgSO_4$ into the mixture while stirring, the amount of $MgSO_4$ being about 2 equivalents per equivalent of P_2O_5 and causing precipitation at a pH between about 11.0 and 14.0 and (d) separating the precipitated $KMgPO_4$ hydrate.

3,615,187
PROCESS FOR THE PRODUCTION OF SPHERICAL ALUMINA-SILICA-CONTAINING SOLID PARTICLES WHICH ARE PREDOMINANTLY MULLITE
Yuichi Suzukawa, Hisashi Kono, Kenji Tera, and Muneki Saito, all of Ube-shi, Japan, assignors to Ube Industries, Ltd., Ube-shi, Japan
Filed Sept. 12, 1969, Ser. No. 857,449
Claims priority, application Japan, Sept. 17, 1968, 43/66627
Int. Cl. C01b 33/26

U.S. Cl. 23-110 R

7 Claims



A process for producing spherical alumina-silica-containing solid particles which comprises introducing a powdered raw material (A) containing alumina and silica as well as a compound selected from the group consisting of magnesia and magnesium compounds capable of forming magnesia under burning conditions to a fluidized bed with the forced circulation flow of the solid particles, in the presence of a solid seed material (B) having a particle diameter one-tenth to two-thirds that of the product particles and consisting essentially of silica, alumina and magnesia; burning said powdered raw material (A) and said seed material (B) in said fluidized bed to coat said seed material (B) with said powdered raw material (A); and thereafter recovering the resulting solid particles which are predominantly mullite.

3,615,188
PROCESS FOR THE PREPARATION OF MORDENITE
Herman W. Kouwenhoven, and Martinus J. L. Van Beem, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,767
Claims priority, application Netherlands, Sept. 29, 1967, 6713254
Int. Cl. C10b 33/28; B01J 11/40

U.S. Cl. 23-113
A method of preparing mordenite by hydrothermal treatment of a silica-alumina cogel prepared by precipitation of alumina on a silica gel (as opposed to a coprecipitate) in which the cogel is heated in an alkali solution having excess alkali (calculated basis the alkali-metal oxide), the total amount of alkali being equal to $Ax/102+by/1000$, where A is the molecular weight of the alkali oxide, x is the weight of alumina in the cogel, in grams; y is the weight of water in the total solution, in grams; and b is the weight, in milligrams, of excess alkali (basis a molar alkali-alumina ratio of 1 per gram

of water and is in a range between 7-30 milligrams per gram of water.

3,615,189
PROCESS FOR PREPARING GYPSUM HEMIHYDRATE
Masashi Hayakawa, Tokyo; Kazunari Ueno, Tokyo, and Yoshiko Yasutake, Ube-shi, all of Japan, assignors to Central Glass Co., Ltd., Ube-shi, Japan
Continuation of application Ser. No. 622,452, Mar. 13, 1967, now abandoned. This application June 9, 1969, Ser. No. 831,743
Int. Cl. C01f 11/46

U.S. Cl. 23-122
Stable calcium sulfate hemihydrate is produced by suspending particulate gypsum in a reaction mixture comprising a water solution of a water-soluble inorganic salt such as a salt of an alkali metal, an alkaline earth metal or ammonium, and at least one of the group consisting of phosphoric acid and water-soluble phosphate salts; and heating the reaction mixture at a temperature and for a period of time sufficient to convert the particulate gypsum to particulate calcium sulfate hemihydrate containing a small quantity of phosphoric acid in solid solution, and separating the particulate calcium sulfate hemihydrate from the reaction mixture.

3,615,190
OXIDATION OF LEAD BLAST FURNACE MATTE
John D. Corrick, Olney, and Joseph A. Sutton, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Interior
Filed Jan. 29, 1969, Ser. No. 794,979
Int. Cl. C22b 13/04; C01g 21/20

U.S. Cl. 23-125
A process for oxidizing lead blast furnace matte comprising treating the matte with oxygen in an acidic aqueous solution having a pH not in excess of about 1.5 and a temperature not in excess of about 50° C. This results in oxidation of metallic sulfides, e.g., lead, copper and iron sulfides, in the matte to sulfates which can then be separated by conventional leaching methods. The process thus enables recovery of both lead and copper from the matte.

3,615,191
METHOD OF PREPARING LITHIUM SULFIDE
Ricardo O. Bach, and Arthur S. Gillespie, Jr., both of, Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.
Filed Aug. 27, 1969, Ser. No. 853,516
Int. Cl. C01b 17/22

U.S. Cl. 23-134
A method of preparing lithium sulfide which comprises forming a reaction mixture of lithium metal and an anhydrous, organic solvent, especially an ether such as tetrahydrofuran capable of dissolving small amounts of lithium metal, heating the reaction mixture to reflux temperature, and introducing hydrogen sulfide into the mixture to form lithium sulfide.

3,615,192
OXIDATION OF HYDROGEN CYANIDE TO CYANOGEN IN A LIQUID MEDIUM UTILIZING A COPPER CATALYST
Kenneth L. Olivier, Placentia, Calif., assignor to Union Oil Company of Calif., Los Angeles, Calif.
Filed Aug. 1, 1969, Ser. No. 846,922
Int. Cl. C01c 3/00

U.S. Cl. 23-151
Hydrogen cyanide is oxidized to cyanogen by contacting hydrogen cyanide and oxygen with a substantially anhydrous liquid medium comprising a minor amount of copper at a temperature between 0° C. and about 150° C. and a pressure sufficient to maintain liquid phase conditions.

5 Claims

3,615,193

PRODUCTION OF PHOSPHORIC ACID

Theodore B. Simpson, 910 Wardman Drive, Brea, Calif.
 Substitute for application Ser. No. 492,921, Oct. 4, 1965, now abandoned. This application Aug. 20, 1969, Ser. No. 851,742
 Int. Cl. C01b 25/18, 25/16

U.S. Cl. 23—165

5 Claims

In the evaporation of concentrated wet process phosphoric acid it is difficult to produce a concentrated acid having a low viscosity. If residence or retention times of 15 seconds to 1 minute are correlated with the evaporation temperature employed such low-viscosity phosphoric acids are obtained.

3,615,194

PROCESS FOR THE PREPARATION OF AN ANHYDRIDE OF TRIVALENT PHOSPHORUS

Allan K. Reed, Columbus; William M. Goldberger, Bexley, and David D. Whyte, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
 Filed Sept. 24, 1969, Ser. No. 860,776
 Int. Cl. C01b 25/12, 25/16

U.S. Cl. 23—165

16 Claims

A process for the preparation of an anhydride of trivalent phosphorus wherein an anhydride of pentavalent phosphorus is reduced by carbon monoxide in a DC plasma flame is disclosed. The anhydride of trivalent phosphorus is useful as an intermediate in the preparation of detergent builders for use in detergent compositions.

3,615,195

FLUOSILICIC ACID RECOVERY

Lawrence W. Bierman, Jr., and Jerry L. May, both of Pocatello, Idaho, assignors to J. R. Simplot Company, Boise, Idaho

Filed Dec. 11, 1968, Ser. No. 812,497

Int. Cl. C01b 25/22

U.S. Cl. 23—165

8 Claims

This disclosure is concerned with a process whereby fluorine values in the form of fluosilicic acid may be effectively and economically recovered from dilute phosphoric acid wash solutions obtained in the manufacture of phosphoric acid by the wet-process.

3,615,196

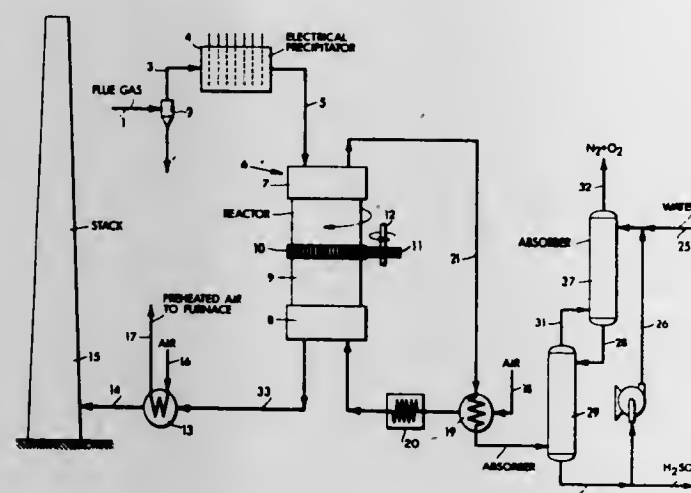
PROCESS FOR THE PURIFICATION OF FLUE GAS

Albert B. Welty, Jr., Westfield; Anantha K. S. Raman, Millington, and Carl M. Lathrop, Madison, all of N.J., assignors to Esso Research and Engineering Company
 Continuation-in-part of application Ser. No. 569,980, Aug. 3, 1966, now abandoned. This application May 5, 1969, Ser. No. 821,934

Int. Cl. C01b 17/78, 17/56

U.S. Cl. 23—168

8 Claims



Sulfur dioxide is removed from flue gas by contacting the flue gas into contact with a vanadium pentoxide absorbent, then passing air in contact with the absorbent, causing desorption of SO₂. The reaction may be carried out in a rotating reactor containing a plurality of beds of absorbent.

3,615,197

PROCESS FOR THE PRODUCTION OF SULFUR TRIOXIDE

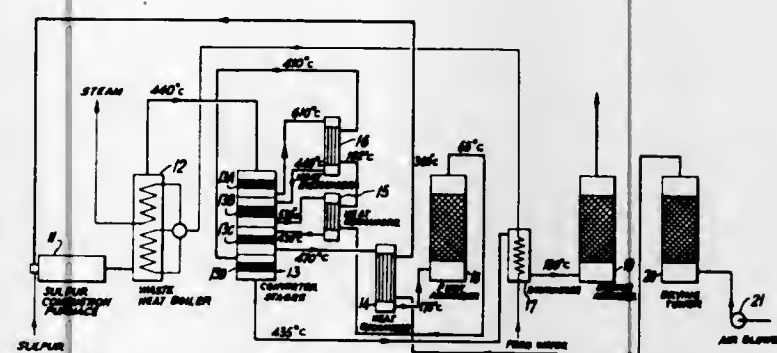
Walker Jaeger, Stroudsburg, Pa., assignor to Oviltron Corporation, Newburgh, N.Y.

Filed Apr. 16, 1969, Ser. No. 816,687

Int. Cl. C01b 17/68, 17/76

U.S. Cl. 23—176

5 Claims



Sulfur trioxide is produced by burning elemental sulfur to sulfur dioxide which is cooled to a kindling or ignition temperature by indirect heat exchange in a waste heat boiler at which temperature the sulfur dioxide is partially catalytically oxidized to sulfur trioxide by passing it through a first group of catalytic converters following which it is then cooled and removed from the gas stream in an intermediate absorber. The remaining tail gas from the absorber is reheated by means of heat exchangers serially connected to the first group of converters and the thus-heated tail gas then finally converted in a last stage catalytic converter to sulfur trioxide which is recovered in a second absorber, this process being known as the double absorption process.

3,615,198

PROCESS EMPLOYING POTASSIUM SULFITE FOR RECOVERING SULFUR DIOXIDE FROM GASES CONTAINING SAME

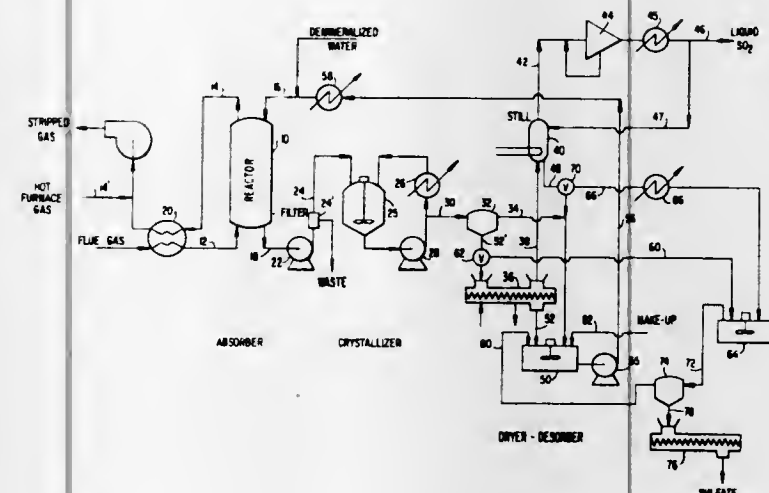
Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, both of Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of application Ser. No. 616,682, Feb. 16, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 594,431, Nov. 15, 1966, now abandoned. This application May 15, 1969, Ser. No. 847,754

Int. Cl. C01b 17/56, 17/48

U.S. Cl. 23—178

17 Claims



Sulfur dioxide is recovered from waste gases by contacting the gas with aqueous potassium sulfite to produce potassium bisulfite and subsequently separating the bisulfite and SO₂ partial pressure lowering materials to obtain purer potassium bisulfite or potassium pyrosulfite which can be decomposed to release sulfur dioxide.

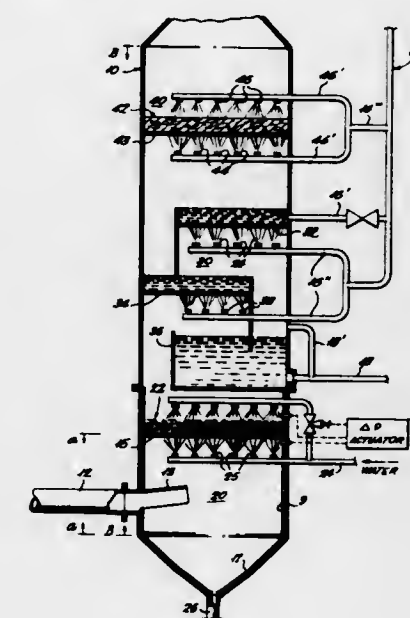
3,615,199

PROCESS AND APPARATUS FOR PURIFYING GAS

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, both of Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.
 Continuation-in-part of application Ser. No. 594,431, Nov. 15, 1966, now abandoned, and a continuation-in-part of 616,682, Feb. 16, 1967, now abandoned. This application Nov. 9, 1967, Ser. No. 681,661
 Int. Cl. C01b 17/60, 17/48

U.S. Cl. 23—178

17 Claims



Apparatus and process for preventing plugging of a reactor used in a system involving reaction between components, e.g. SO₂, in a gas and a salt solution, e.g. a sulfite solution which is close to its saturation point, while avoiding substantial dilution of the sulfite solution to produce a spent bisulfite solution from which the bisulfite is subsequently separated and decomposed to release sulfur dioxide. Examples of sulfites include potassium, cesium, or rubidium sulfites. The apparatus includes a reaction zone having at least one, or more contact trays which are sprayed from beneath with the aqueous salt solution, e.g. sulfite solution. An entrainment zone above the trays can be used to advantage and this involves a woven mesh contact material which is sprayed from both sides with the salt solution to remove entrained materials from the gas leaving the reactor. Also, particulate solid or liquid-soluble gaseous contaminants can be removed from the gas before contacting it with the sulfite solution by contacting it with a fluid-permeable, impingement target in the presence of a concurrently flowing liquid stream which is also contacting the target. It is desirable to prevent plugging of the gas inlet opening to the reactor by using a bonnet arranged over the gas inlet opening.

3,615,200

PROCESS FOR CONCENTRATING INERT COMPONENTS IN PRESSURIZED SYNTHESIS LOOP

Keizo Konoki, Chiba, Japan, assignor to Toyo Engineering Corporation, Tokyo, Japan

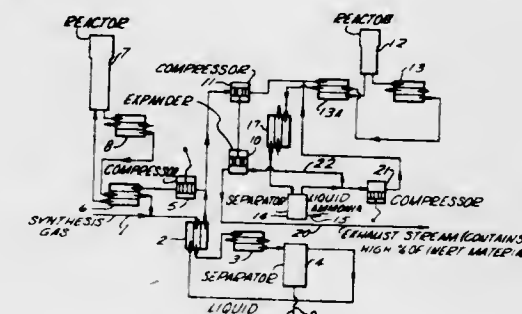
Filed June 13, 1968, Ser. No. 736,844

Claims priority, application Japan, June 14, 1967, 42/37597

Int. Cl. C01c 1/04; B01j 9/00; C07c 29/16

U.S. Cl. 23—199

10 Claims



In a circulating pressurized synthesis system, such as an ammonia synthesis system and a methanol synthesis system, a

portion of the circulating stream of the circulatory synthesis system is separated from the circulating stream, fresh reactants are, if desired, added to the portion, and then the portion is compressed at least once to a pressure higher than that of the circulatory pressurized synthesis system. The compressed portion is passed through a synthesis reactor containing catalyst at high temperature so that a further reaction is promoted. The product obtained by the further synthesis reaction is separated from the effluent of the synthesis reactor, and, if desired, the energy which is generated by expanding the balance of the effluent to a pressure lower than that of the circulatory pressurized synthesis system is utilized to supply the power necessary to initially compress the portion.

3,615,201

PROCESS FOR THE PRODUCTION OF MAGNESIUM OXIDE

Tullio Cesca, Milan; Bruno Pescarolo, Milan, and Remo Monaldi, Vercelli, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed July 3, 1968, Ser. No. 742,157

Claims priority, application Italy, July 5, 1967, 18021/a
Int. Cl. C01f 5/20, 5/24

U.S. Cl. 23—201

7 Claims

Magnesium oxide is produced by precipitating the hydrated magnesium carbonate resulting from the reaction of a saturated solution of magnesium sulfate with solid ammonium bicarbonate in the presence of a dilute solution of ammonium sulfate; drying the crystalline fraction thus obtained; and thence calcining the same.

3,615,202

PROCESS FOR THE MANUFACTURE OF TITANIUM DIOXIDE

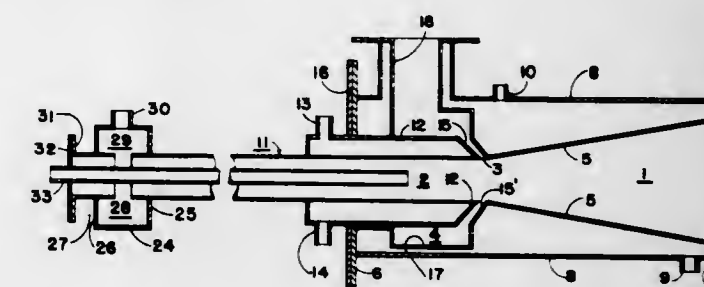
David R. Stern, Fullerton; Richard M. Gundzik, Hacienda Heights, Calif.; Peter M. Jones, Grimsby, and Peter J. Lynskey, Lacey, England, assignors to Kerr-McGee Corporation and Laporte Industries Limited, London, England, part interest to each

Division of Ser. No. 497,896, Oct. 19, 1965, Pat. No. 3,512,219.
 Filed Nov. 28, 1969, Ser. No. 870,501
 1969, Ser. No. 870,501

Int. Cl. C01g 23/04

U.S. Cl. 23—202

16 Claims



A process for the manufacture of titanium dioxide by the vapor phase oxidation of titanium tetrachloride. The titanium tetrachloride and oxidizing gas are preheated separately and the oxidizing gas is introduced through a supply conduit at an established rate of flow into a reaction zone and the titanium tetrachloride is introduced into the reaction zone with a downstream component of velocity.

3,615,203

METHOD FOR THE PREPARATION OF GROUPS III-V SINGLE CRYSTAL SEMICONDUCTORS

Kunio Kaneko, and Naoto Watanabe, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1969, Ser. No. 805,626

Claims priority, application Japan, Mar. 8, 1968, 43/15116

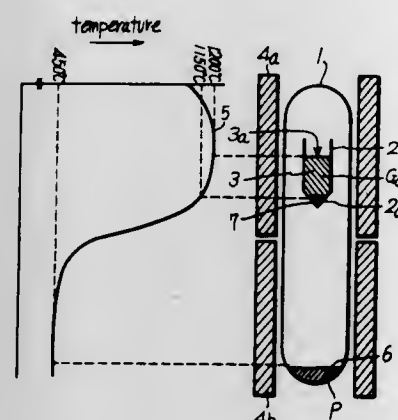
Int. Cl. C01b 27/00; B01j 17/00

U.S. Cl. 23—204

5 Claims

Method of making an intermetallic compound semiconductor composed of two elements, one of which is a group III metal which has a relatively low vapor pressure at

the melting point of the desired intermetallic compound, and the other is a Group V element which has a relatively high vapor pressure at the same temperature which involves establishing a temperature differential along a confined fused mass of the first element and exposing the higher



temperature surface of the mass to vapors of the high vapor pressure element, thereby simultaneously forming and growing at least a single crystal of the intermetallic compound at a lower temperature portion of the confined zone.

3,615,204 PREPARATION OF ANATASE TITANIUM DIOXIDE PIGMENT

John J. Libera, Affton, and Eckard J. Puetz, Lemay, both of Mo., assignors to NL Industries, Inc., New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 860,015
Int. Cl. C01g 23/06, 23/08

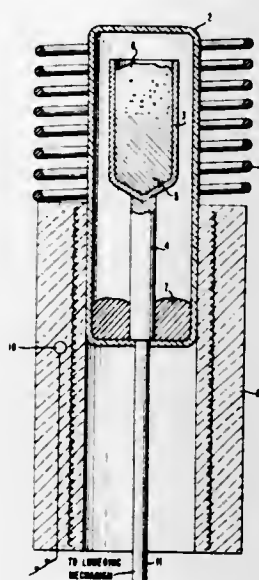
U.S. Cl. 23—202 R 4 Claims
This invention relates in general to a process for preparing a high-quality titanium dioxide pigment in which the titanium dioxide is in the anatase crystal form. The process comprises hydrolyzing in a particular manner the titanium values from a titanium sulfate-ferrous sulfate solution in which the concentration of titanium is from 80 to 180 g.p.l. TiO_2 and the $\text{FeSO}_4/\text{TiO}_2$ ratio is from 2.20 to 2.75 and treating and calcining the hydrate so formed to produce a high-grade anatase TiO_2 pigment. Using the hydrolysis process of the instant invention, a high-grade anatase titanium dioxide pigment may be produced from a solution which does not require the conventional crystallization step to remove most of the iron values and the concentration step to increase the titanium content in the liquor to at least 200 g.p.l. TiO_2 .

3,615,205 METHOD FOR THE SYNTHESIS AND GROWTH OF HIGH PURITY III-V SEMICONDUCTOR COMPOSITIONS IN BULK

Samuel E. Blum, Bronx, and Richard J. Chicotka, Jefferson Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 14, 1968, Ser. No. 767,367
Int. Cl. C01b 25/08; B01j 17/00

U.S. Cl. 23—204 11 Claims
Ingots of high purity III-V semiconductor compositions are prepared by encapsulating the molten Group III element with a barrier material that is permeable to the vapors of the Group V element while being impermeable to contaminants inherent in the system such as silicon and the like. The synthesis of the composition may be carried out in a conventional vertical sealed quartz enclosure. A crucible containing the Group III element and a barrier material and the Group V element are disposed within the sealed enclosure. The barrier material acts as a permeable membrane for vapors of the Group V element and as an impermeable membrane, or getter, for contaminants inherent in the system. Thus, vapors of the Group V element is

permitted to diffuse through the barrier layer to react with the molten Group III element to form the III-V composition



to the exclusion of contaminants. Ingots of highly pure III-V compositions are prepared in this manner.

3,615,206 PROCESS OF PREPARING BROMINE HEPTAFLUORIDE

Charles E. Fogle, Sunnyvale, and Robert T. Rewick, Mountain View, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 28, 1965, Ser. No. 457,901
Int. Cl. C06b 7/24

U.S. Cl. 23—205 9 Claims
1. A process for the preparation of bromine heptafluoride comprising the steps of reacting bromine pentafluoride with fluorine in the presence of a compound having the formula MBrF_6 , wherein M is an alkali metal, at a temperature of from about 110°C . to about 340°C . and separating bromine heptafluoride from the unreacted reactants and other reaction products.

3,615,207 PRODUCTION OF HYDROGEN PEROXIDE BY ANTHRAQUINONE PROCESS

Nathan D. Lee, Lambertville, N.J., assignor to FMC Corporation, New York, N.Y.
Filed June 16, 1969, Ser. No. 833,676
Int. Cl. C01b 15/02; B01j 11/08

U.S. Cl. 23—207 4 Claims
An improvement in the catalytic hydrogenation of an anthraquinone working compound is obtained during the production of hydrogen peroxide by employing a hydrogenation catalyst containing 0.05 to 5 percent of palladium dispersed over the surface of alumina supporting spheres, said spheres having substantially no pores larger than about 0.06 microns in diameter, having a BET surface area of between 20 and 200 m^2/g , and having the palladium metal penetrating the pores of the support surface no greater than about 50 microns.

3,615,208 METHOD AND APPARATUS FOR CARBON BLACK PRODUCTION

John W. Byron, Borger, Texas
Filed Feb. 6, 1969, Ser. No. 797,212
Int. Cl. C 09c 1/50

U.S. Cl. 23—209.4 5 Claims
Removal of grit from the gaseous mass in a carbon black furnace by passing the gaseous mass over a radial port or depression in the wall of the lower periphery of the furnace thereby entrapping the grit which is thereafter removed by means of a draw-off conduit.

3,615,209 METHOD OF GRAPHITIZATION

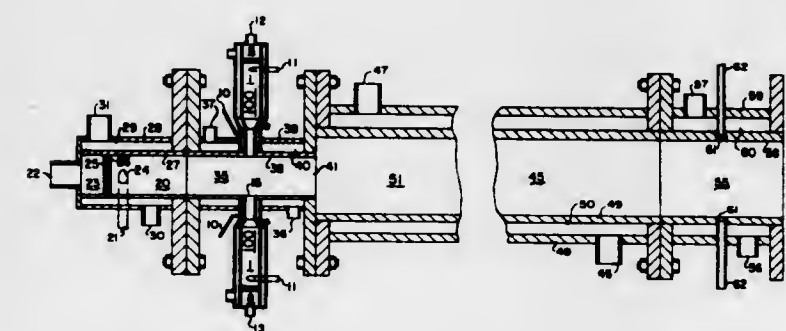
Mack P. Whittaker, Johnson City, and William F. Wilson, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 782,762, Dec. 10, 1968, now abandoned. This application June 30, 1969, Ser. No. 837,951
Int. Cl. C01b 31/04

U.S. Cl. 23—209.1 5 Claims

3,615,210 PROCESS FOR PRODUCTION OF CARBON BLACK

Merrill E. Jordan, Walpole; Allan C. Morgan, Sudbury, and William G. Burbine, Whitman, all of Mass., assignors to Cabot Corporation, Boston, Mass.
Filed Apr. 2, 1970, Ser. No. 25,039
Int. Cl. C09c 1/50

U.S. Cl. 23—209.4 16 Claims

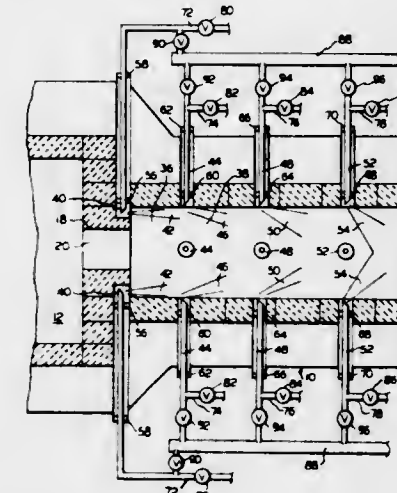


Process for the production of carbon black wherein a hydrocarbonaceous liquid feedstock is atomized by the injection thereof as a coherent penetrating stream transversely into an enclosed high energy gas stream produced by the combustion of a fuel and oxidant gas and thereafter conducting the thusly atomized feedstock transversely into a combustion product and/or oxygen-containing gas stream under carbon black forming conditions.

3,615,211 METHOD AND APPARATUS FOR MANUFACTURE OF CARBON BLACK

James E. Lewis, Houston, Tex., assignor to Ashland Oil, Inc., Houston, Ky.
Filed Jan. 12, 1968, Ser. No. 697,461
Int. Cl. C09c 1/50

U.S. Cl. 23—209.4 11 Claims



A method and apparatus for producing carbon black from hydrocarbons in which a hydrocarbon feed stock, such as a

liquid hydrocarbon oil, is converted to carbon black in a tunnel-type carbon black furnace, having a combustion zone whose diameter is greater than its axial length, a reaction zone whose diameter is substantially smaller than that of the combustion zone and which is substantially longer in axial length than the combustion zone and a restricted diameter choke, whose diameter is substantially smaller than the diameter of the reaction zone, between the combustion zone and the reaction zone, by burning a combustible mixture, such as a mixture of air and natural gas, in the combustion zone; mixing the flue gases from the burning of the combustible mixture with the feed stock to heat the feed stock prior to its passage through the restricted diameter choke and into the reaction zone; and injecting a quenching fluid, such as low-pressure steam, into the reaction zone, in progressively larger volumes, from the influent end to the effluent end of the reaction zone, including the introduction of a quantity of the quench fluid in the area of the reaction zone adjacent the juncture between the restricted diameter choke and the walls of the reaction zone itself, for example, by introducing the quench fluid at a plurality of points spaced from the juncture of the choke and the walls of the reaction zone to a point in the reaction zone at which the reaction mixture is generally quenched in accordance with the prior art. It is also contemplated that the angle which the injected quench fluid forms with the walls of the reaction zone should progressively increase from the influent to the effluent end of the reaction zone to form an annular veil of quench fluid defining a general cone shape with its base adjacent the influent end and its apex toward the effluent end.

3,615,212 METHOD OF MANUFACTURING CARBON FIBERS

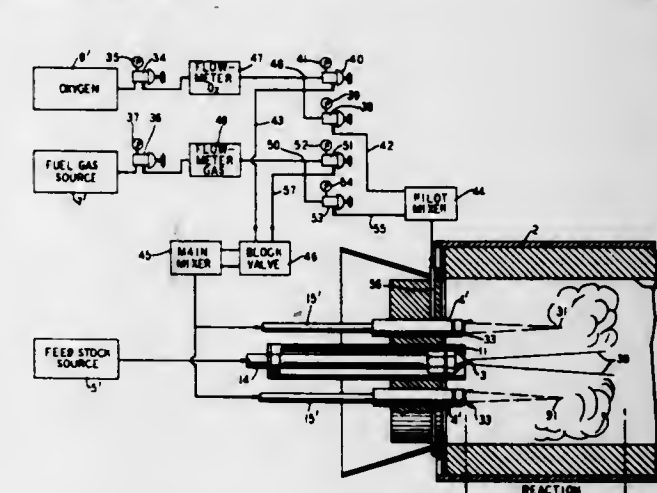
Ian Whitney, Wirksworth, and John William Johnson, Allestree, Derby, both of England, assignors to Rolls-Royce Limited, Derby, England
Filed Mar. 5, 1969, Ser. No. 804,639
Claims priority, application Great Britain, Mar. 6, 1968, 10819/68

U.S. Cl. 23—209.4 16 Claims
Polymeric fibers are heated to elevated temperatures in a bed of heated solid particles, as for instance hollow alumina ballottini. The bed is fluidized with a medium such as air as the fibers contact the heated bed. The method is useful to preoxidize or pyrolyze and optionally to postoxidize polymeric fibers such as polyacrylonitrile, ultimately producing carbon fibers of high strength.

3,615,213 METHOD AND APPARATUS FOR THE PRODUCTION OF CARBON BLACK

Thomas L. Shepherd, Essex Fells, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.
Division of Ser. No. 504,776, Oct. 24, 1965, Pat. No. 3,477,816.
Filed May 1, 1969, Ser. No. 820,866
1969, Ser. No. 820,866
Int. Cl. C09c 1/48

U.S. Cl. 23—209.4 2 Claims



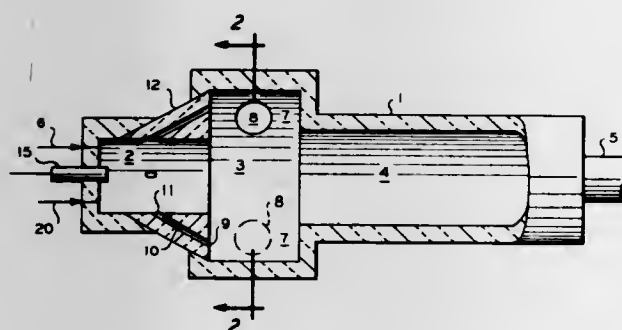
An improved system for manufacturing carbon black in which a central nozzle, which emits a hydrocarbon spray, is

surrounded by a plurality of auxiliary nozzles from which high velocity oxy-fuel flames are emitted. The auxiliary nozzles are surrounded by pilot nozzles and pressure and flow regulating means are provided in the feed conduits to both the auxiliary nozzles and pilot nozzles surrounding same so as to enable independent control of the flow rate of the oxy-fuel mixture to said auxiliary and pilot nozzles.

3,615,214
CARBON BLACK PROCESS AND APPARATUS
Glenn J. Forseth, Borger, Tex.; Eulas W. Henderson, Bartlesville, Okla.; Robert E. Dollinger, Borger, Tex., and Sheldon A. Cunningham, Corvallis, Oreg., assignors to Phillips Petroleum Company
Filed Mar. 27, 1969, Ser. No. 810,965
Int. Cl. C09c 1/50

U.S. Cl. 23—209.4

10 Claims



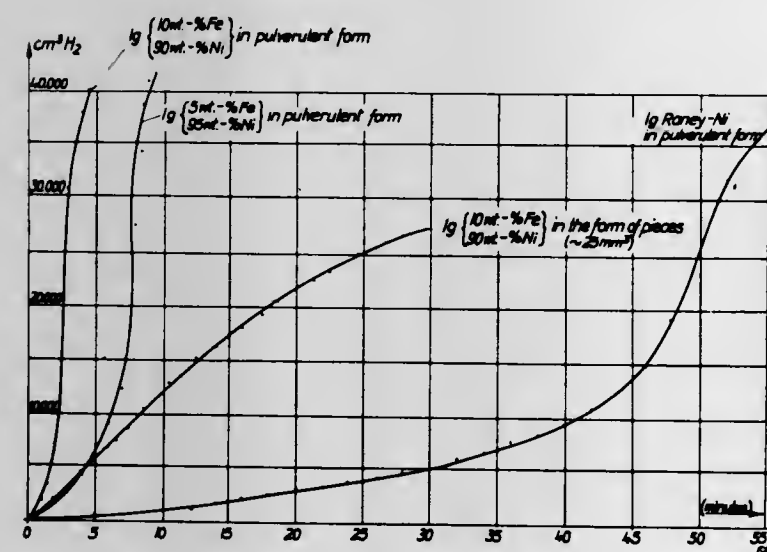
The production of carbon black by the pyrolytic decomposition of a hydrocarbon feed within a reactor having an axial zone, a precombustion zone, a combustion zone, and a reaction zone wherein flow of a portion of the reactants is established between the axial zone and the precombustion zone through at least one conduit connecting said zones.

3,615,215
RANEY CATALYST FOR GENERATING HYDROGEN BY DECOMPOSITION OF BORANES
Hans Von Dohren, Frankfurt am Main, and Andreas Basch, Niedereschbach, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany
Filed Dec. 8, 1969, Ser. No. 882,966
Claims priority, application Germany, Dec. 12, 1968, P 18 14 108.7

U.S. Cl. 23—211

Int. Cl. C01b 1/02, 1/25

6 Claims



Hydrogen is generated by catalytic decomposition of boron hydrides in the presence of a Raney catalyst having from 10 to 97.5 percent by weight of nickel and from 2.5 to 90 percent by weight of iron in the crystal lattice.

3,615,216
WATER GAS SHIFT PROCESS FOR PRODUCING HYDROGEN USING A CESIUM COMPOUND CATALYST
Clyde L. Aldridge, Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed Mar. 26, 1968, Ser. No. 715,948
Int. Cl. C01b 1/02, 1/03

U.S. Cl. 23—213

7 Claims

Cesium salts derived from acids having an ionization constant below 1×10^{-3} and carried on a support having high-surface area are used to catalyze the reaction $\text{CO} + \text{H}_2\text{O} \rightleftharpoons \text{CO}_2 + \text{H}_2$ at temperatures between 400° and 700° F.

3,615,217
LOW TEMPERATURE COPPER-ZINC SHIFT REACTION CATALYSTS AND METHODS FOR THEIR PREPARATION

John F. O'Brien, Edward K. Dienes, and Arthur L. Hausberger, all of Louisville, Ky., assignors to Catalysts & Chemicals, Inc., Louisville, Ky.

Filed June 27, 1966, Ser. No. 560,827

Int. Cl. C01b 1/00; B01j 11/00, 11/26

U.S. Cl. 23—213

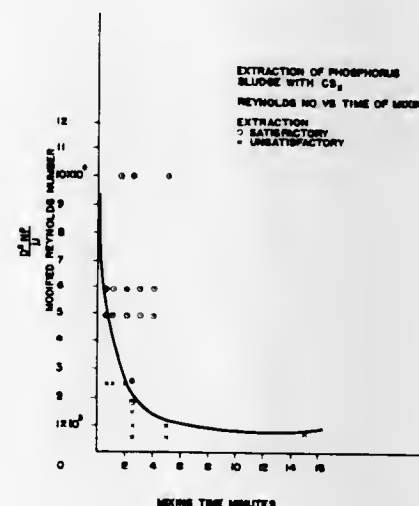
4 Claims

It is known that if a copper oxide-zinc oxide catalyst is made by specific techniques the catalyst when reduced at moderate temperatures permits a high conversion of carbon monoxide in water gas to hydrogen and carbon dioxide at a temperature of 550° F. and lower. The catalyst can also contain alumina. Improved low temperature copper-zinc shift catalysts can be made by concomitantly precipitating copper carbonate and zinc carbonate, the zinc carbonate precipitation commencing first, by thermally decomposing an aqueous solution having dissolved therein both copper ammine carbonate and zinc ammine carbonate.

3,615,218
RECOVERY OF PHOSPHORUS VALUE FROM PHOSPHORUS SLUDGE
Leo B. Post, New City, N.Y.; Roy E. Paul, and William R. Crudup, Columbia, Tenn., assignors to Stauffer Chemical Company, New York, N.Y.
Filed Aug. 5, 1968, Ser. No. 750,192
Int. Cl. C01b 25/04

U.S. Cl. 23—223

8 Claims



A process for recovering phosphorus values from phosphorus sludge comprising (1) mixing the sludge with from about 1 to about 8 parts by weight carbon bisulfide per part by weight phosphorus sludge; (2) agitating the mixture to a Reynolds number value of from about 2×10^5 to about 1.0×10^6 for a period of from about 0.2 minute to about 16 minutes; (3) filtering the resulting mixture to remove particulate material and thereafter recovering the phosphorus value from the carbon bisulfide fraction.

3,615,219
SULFUR DIOXIDE REMOVAL FROM A GAS
Pranas Budininkas, Cicero; George A. Remus, Chicago, and Jack D. Zeff, Deerfield, all of Ill., assignors to General American Transportation Corporation
Filed July 2, 1968, Ser. No. 742,028
Int. Cl. C01b 17/04

U.S. Cl. 23—226

11 Claims

A process that removes sulfur dioxide from a gas containing sulfur dioxide treats the gas at an elevated temperature in the presence of a reducing gas and a catalyst for the reaction between the reducing gas and sulfur dioxide. When gas containing sulfur dioxide, such as flue gas and smelter gas, contains oxygen gas above a very low concentration, it is necessary to modify the process either by the use of additional reducing gas or by a pretreatment of the gas so as to decrease selectively the oxygen gas content or by the use of both modifications.

3,615,220
PROCESS FOR RECOVERING SULFUR VALUES FROM PYRITES BY SMELTING
Robert F. Burke, Riverdale, N.J., assignor to The Lummus Company, Bloomfield, N.J.
Filed Apr. 1, 1969, Ser. No. 812,134
Int. Cl. C01b 17/06

U.S. Cl. 23—224

4 Claims

A process for recovering sulfur values from pyrites smelting effected under nonoxidizing conditions using a carbon fuel wherein a hydrogen-containing gas, such as steam or hydrogen, is admixed with the off-gas, the mixture cooled to a temperature between 300° and 450° C. and contacted with a Claus reaction catalyst to generate hydrogen sulfide by reaction between the reducing gases of the off-gas, sulfur and the hydrogen-containing gas. The sulfur dioxide in the off-gas is then reacted with the hydrogen sulfide via the Claus reaction to produce elemental sulfur.

3,615,221
PROCESS FOR REDUCTION OF SULFUR DIOXIDE WITH HYDROCARBON VAPOR
Donald McMillan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 21, 1969, Ser. No. 818,028
Int. Cl. C01b 17/04

U.S. Cl. 23—226

7 Claims

A process is disclosed for reducing sulfur dioxide to hydrogen sulfide and sulfur by:
1. mixing sulfur dioxide with a hydrocarbon vapor;
2. preheating the mixture to 500° – 560° C;
3. mixing the preheated material with the combustion products of a hydrocarbon;
4. converting a portion of the sulfur dioxide to hydrogen sulfide and sulfur; and,
5. cooling the converted material.

3,615,222
METHOD AND APPARATUS FOR MEASURING THE AMOUNT OF A COMPONENT IN A BIOLOGICAL FLUID
Louis W. Mead, Lexington, Mass., assignor to New England Nuclear Corporation
Filed Sept. 4, 1968, Ser. No. 757,340
Int. Cl. G01n 23/00, 33/16

U.S. Cl. 23—230

28 Claims

A technique for clinically measuring the amount of a component, such as thyroxine, in a biological fluid, such as serum, of the type in which the amount of such component bound to a binding agent therefor, such as a protein, is measured by measuring the capacity of the binding agent to bind a tracer labeled compound and in which such capacity is measured by the use of a solid particulate adsorbent or absorbent for selectively adsorbing or absorbing the unbound tracer labeled compound from a liquid containing the same together with the bound tracer labeled compound and the

bound component, the improvement comprising mixing the solid adsorbent and liquid in a container in which the solid particulate adsorbent is secured to the upper end thereof and the liquid is contained in the lower end, the mixing being carried out by inversion of the container. By this procedure, it is possible to simultaneously mix the solids and liquids of a plurality of specimens and controls and to thereby simultaneously incubate and centrifuge them to insure that all specimens and controls are subjected to identical conditions to thereby minimize errors and the time required to carry out such measurements.

The compounds used for carrying out the tests may be conveniently stored and shipped in the same container in



which mixing, incubation, centrifuging and tracer measurement are carried out and which is in the form of a transparent or translucent, relatively rigid, tubular vial of a molded resin made up of two parts, in one of which is secured the adsorbent and in the other of which is located the liquid. During shipment and storage one part functions as a cap for the other, which is also capped and when the test is to be carried out, the parts are disassembled and reassembled with the open mouths of the two parts mated together to form a single chamber and with the solids-containing part located above the liquid-containing part so that the solids secured in the upper part do not come in contact with the liquid in the lower part until the container is inverted.

3,615,223
CEMENT RETARDER DETERMINATION
James E. Burroughs, Mount Prospect, and William G. Kator, Des Plaines, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed June 6, 1969, Ser. No. 831,061
Int. Cl. G01n 21/20

U.S. Cl. 23—230 R

3 Claims

Method for determining the distribution of a retarder calcium lignosulfonate or tartaric acid, in the dry ingredients of an oil well-cementing composition, wherein a test sample is mixed with an agent to react with or dissolve the retarder, and a spectrophotometric analysis is made to determine the percentage of the retarder in the mix.

3,615,224
CHROMATOGRAPHIC ANALYSIS
Ivan J. Stern, Morton Grove, and Jawed Fareed, Des Plaines, both of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Nov. 13, 1969, Ser. No. 876,553
Int. Cl. G01n 21/00, 31/04, 33/16

U.S. Cl. 23—230 B

12 Claims

A method for the microdetermination of 2,8-dioxyadenine in whole blood plasma by strong acid cation exchange resin

chromatography with a linear or stepwise gradient increase in concentration of HCl for elution.

3,615,225

COLOR PHOTOGRAPHIC MATERIAL

Rigobert Otto, Leverkusen; Hans-Heinrich Credner, Munich; Arthur Henri De Cat, Morsel, and Walter Puschel, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 3, 1968, Ser. No. 780,894

Claims priority, application Germany, Dec. 12, 1967, P 15 97 510.7

Int. Cl. G03c 1/40

U.S. Cl. 96—100

3 Claims

Light-sensitive photographic material containing at least one silver halide emulsion layer which contains an effective amount of a colored cyan-forming coupler that has an absorption maximum of between 460μ to about 510μ .

3,615,226

METHOD OF TESTING SHORTENING

Nathaniel P. Apter, McKeesport, Pa., assignor to Apter Industries, Inc.

Filed Dec. 26, 1968, Ser. No. 786,912

Int. Cl. G01n 31/22

U.S. Cl. 23—230 R



A method of qualitatively testing the free fatty acid concentration of shortening, including the steps of admixing a measured volume of the shortening in a container of an alcohol-sodium hydroxide solution, including an alkaline indicator, and having a fixed alkaline concentration equivalent to a known concentration of free fatty acids; agitating the mixture; and observing any color change in the test solution.

3,615,227

METHOD FOR THE DETERMINATION OF DISTRIBUTION FACTORS

Helge Jan Arnold Rydberg, Molndal, and Hans Reinhardt, Goteborg, both of Sweden, assignors to Incentive AB, Stockholm, Sweden

Continuation of application Ser. No. 601,183, Dec. 12, 1966, now abandoned. This application May 5, 1969, Ser. No. 824,370

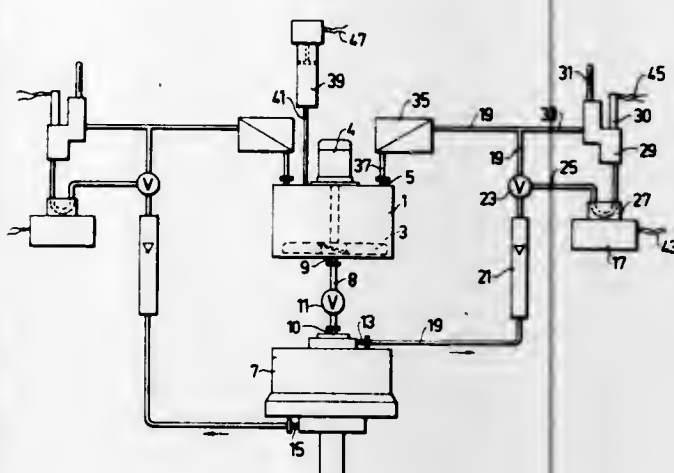
Int. Cl. B01d 11/04; G01n 27/56

U.S. Cl. 23—230

3 Claims

A method for investigating and controlling a two-phase liquid system, and for determining the partition factor of a substance between two substantially immiscible liquids. The liquids are intimately mixed in a mixing zone in the presence of the substance to be tested, said substance being introduced therein in any suitable manner. The liquids are

separated into their two phases, the separator having one outlet for each phase. The individual phases are conducted to



corresponding testing stations where the concentration of said substance in each phase is measured.

3,615,228

GLUCOSE DETERMINATION METHOD EMPLOYING ORTHOTOLUIDINE

Bernard J. Thiegs, Indianapolis; Robert F. Mack, Indianapolis, Ind., and John Di Giorgio, Canoga Park, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1969, Ser. No. 878,573

Int. Cl. G01n 21/22, 31/22, 33/16

U.S. Cl. 23—230 B

9 Claims

An improved orthotoluidine reagent composition for use in determination of glucose in biological fluids effective sufficient hydrazine to provide a uniform intensity of color when the composition is reacted with a predetermined amount of glucose, such as a standard solution.

3,615,229

USE OF OXALIC ACID FOR THE HYDROLYSIS OF STEROID CONJUGATES IN PREGNANCY ANALYSIS

Paige K. Besch, Houston, Tex., and Nicholas Vorys, Columbus, Ohio, assignors to Searle Reference Laboratories, Inc.

Filed May 26, 1969, Ser. No. 827,955

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

11 Claims

A method for the determination of pregnancy estrogen concentrations by hydrolysis and/or cleavage of conjugated steroids found in urine by treatment with organic acids. The urine of a pregnant woman contains "placental estriols" that may be hydrolyzed with oxalic acid to liberate estrogens. The liberated estrogens are extracted into an organic solvent, which may be compared with standard concentrations of estriol by known colorimetric methods.

3,615,230

DEVICE FOR AUTOMATICALLY CARRYING OUT CHEMICAL ANALYSES

Rudolf Barack, and Detlev Siemon, both of Uberlingen (Bodensee), Germany, assignors to Bodensee-Werk Perkin-Elmer & Co. GmbH, Uberlingen (Bodensee), Germany

Filed Dec. 11, 1967, Ser. No. 689,516

Claims priority, application Germany, Dec. 15, 1966, B 90 305

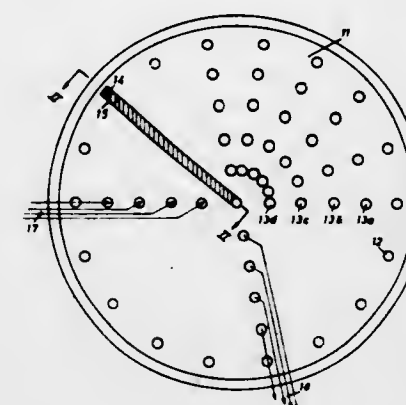
Int. Cl. B65b 43/60

U.S. Cl. 23—253 R

8 Claims

A method and apparatus for automatically carrying out chemical analyses. The apparatus comprises a series of sample holders, a dosing pump, a transporting device for guiding the sample holders past the dosing pump, a plurality of reaction vessels associated with each sample holder, and control means for moving the dosing pump relative to the

holders and for providing for withdrawal of an unmeasured quantity of sample from the sample holders and for



dispensing this sample quantity in smaller measured quantities into associated reaction vessels.

3,615,231

PROCESS UTILIZING THE SENSIBLE HEAT OF SMELTER GASES TO RECOVER SULFUR THEREFROM

John T. Cullom, 628 6th Ave., San Manuel, Ariz.

Filed June 18, 1969, Ser. No. 834,355

Int. Cl. C01b 17/06

U.S. Cl. 23—226

8 Claims

The sensible heat of sulfur dioxide-containing flue gas is utilized to generate steam and to preheat methane or an equivalent hydrocarbon, the steam and hot methane being catalytically reformed to produce hydrogen. The hydrogen thus produced is employed to reduce the sulfur dioxide content of the flue gas to hydrogen sulfide, the hydrogen sulfide being reacted with a further quantity of sulfur dioxide to produce elemental sulfur which is recovered.

3,615,232

METHOD AND REAGENT FOR DETERMINING TOTAL CHOLESTEROL IN BLOOD SERUM

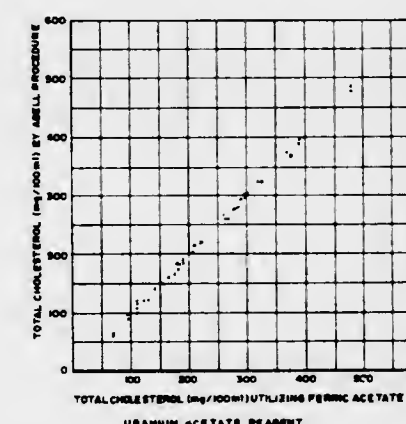
Amritlal C. Parekh, and David H. Jung, both of Indianapolis, Ind., assignors to Research Corporation, New York, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,954

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

10 Claims



In a method for the determination of total cholesterol in blood serum, plasma or other cell free body fluid the steps of adding a reagent comprising a mixture of ferric acetate $[\text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_3]$ and uranium acetate $[\text{UO}_2(\text{C}_2\text{H}_3\text{O}_2)_2]$ to the fluid whereby the total cholesterol content thereof is solubilized and those chromogens which interfere with the determination are precipitated and separating the liquid phase containing solubilized cholesterol from the precipitate. The cholesterol content is then determined quantitatively, preferably colorimetrically, employing as a color-developing reagent a mixture of ferrous sulfate and sulfuric acid. The invention also includes the ferric acetate-uranium acetate reagent and the ferrous sulfate-sulfuric acid color reagent.

3,615,233

DISPOSABLE CARBON DIOXIDE ABSORBER

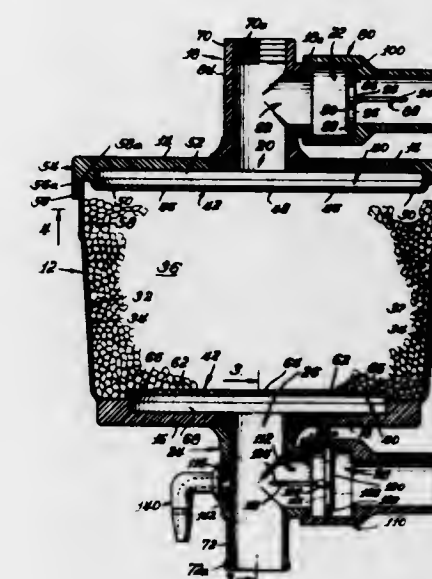
William E. Doering, Chicago, Ill., and Gary K. Porter, Hatboro, Pa., assignors to Chemetron Corporation, Chicago, Ill.

Filed July 28, 1969, Ser. No. 845,355

Int. Cl. B01j 1/24

U.S. Cl. 23—252 R

18 Claims



A disposable carbon dioxide absorber having self-contained valves and being designed to be used once and then disposed of in order to eliminate certain hazards of reinfection and cross-infection.

3,615,234

SYSTEM FOR PROCESSING AND ANALYZING BIOLOGICAL SAMPLES

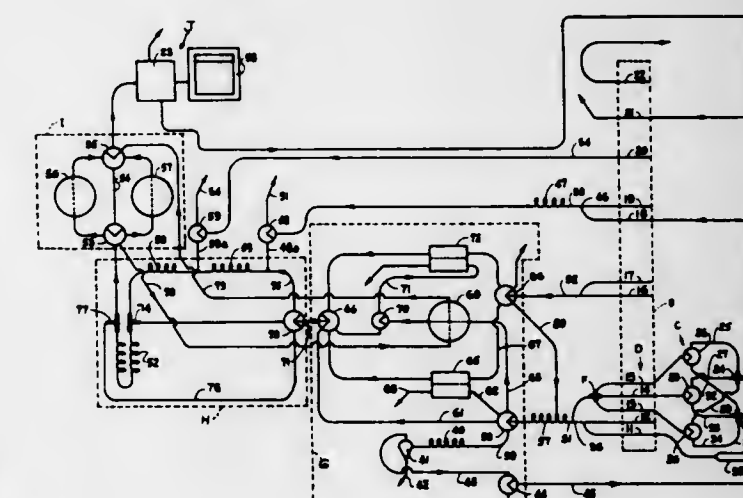
Frants J.B.T. Ludvigsen, Greenville, S.C., assignor to Technicon Corporation, Tarrytown, N.Y.

Filed May 28, 1968, Ser. No. 732,731

Int. Cl. G01n 33/16

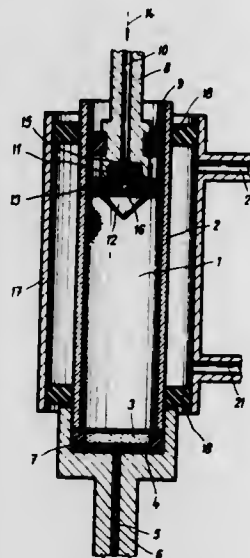
U.S. Cl. 23—253

4 Claims



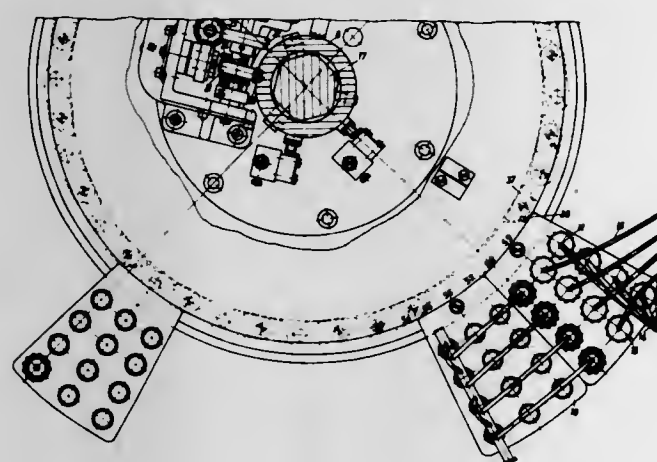
A system for analyzing biological samples which includes a valving arrangement that cooperates with various size tubing so that a sample can be mixed with a diluent to a desired degree of concentration. The system is adapted to be programmed so that reagents and the like can be added to the sample according to the test being run.

3,615,235
THROUGH-FLOW REACTOR
 Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia
 Filed Oct. 8, 1968, Ser. No. 765,830
 Claims priority, application Czechoslovakia, Oct. 9, 1967, PV 7129-67
 Int. Cl. G01n 31/22, 31/08, 33/16
 U.S. Cl. 23—253 R



A through-flow reactor which forms a part of an analyzer of substances such as amino acids delivered from a chromatographic column where they have been divided into zones having sharp concentration gradients. The reactor includes a tubular body having an inlet end and an outlet end, the tubular body containing a porous packing material, the inlet end of the tubular body housing a porous body above and bearing on the porous packing material and separating the source of the substances undergoing analysis from the porous packing material of the reactor and the outlet end housing a porous body below and bearing on the porous packing material, the porous packing material and each porous body being nonchemically reactive with the substances flowing through the reactor. This reactor construction reduces distortion of the concentration gradients as they pass through the reactor.

3,615,236
APPARATUS FOR AUTOMATIC CHEMICAL ANALYSES
 Rolf Tamm, Mimmhausen, Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Überlingen (Bodensee), Germany
 Filed Mar. 18, 1969, Ser. No. 808,095
 Claims priority, application Germany, Mar. 19, 1968, B 75 061/421
 Int. Cl. G01n 1/00, 1/14
 U.S. Cl. 23—253 R



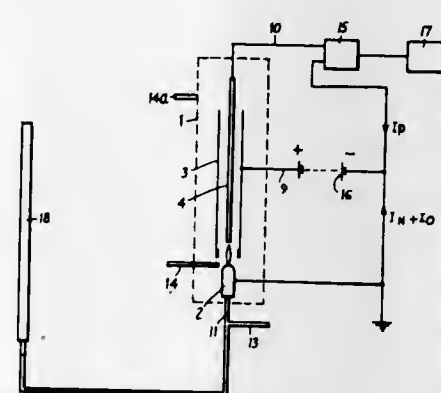
Automatic chemical analyses apparatus includes a known turntable carrying a circumferentially arranged large series of

9 Claims

(radial arrays of) reaction vessels, into each of which a sample is placed, and at other rotational positions of the turntable various "sample-treating" means are located (including means for adding reagents, means for sucking off all or part of the sample, stirring means for mixing the various contents of the vessels, and the like). The present apparatus includes a generally circular mounting plate, above the turntable and slidable on a stationary vertical guiding column (coaxial with the rotation axis of the turntable). At various circumferential positions along the mounting plate periphery, secondary radially extending projection plates, carrying the various different sample-treating devices are removably attached. Moving the entire mounting plate assembly up and down causes the various sample-treating devices to enter into and "clear" the various reaction vessels in the turntable. Certain additional devices, which are always utilized at a fixed point in the turntable cycle (e.g., means for placing samples in each of the vessels in a particular radial array) may be positioned in between the various peripherally attached secondary projections, without causing any problems of physical interference, since the mounting plate and its projections do not rotate, but only the underlying turntable with its reaction vessels. The various peripherally attached secondary "projections" may be disconnected and moved to different circumferential positions on the main-mounting plate (or projections carrying different sample-treating devices interchanged in an analogous manner), thereby affording great versatility as to the different types and timing of steps of analyses performed by the described apparatus.

3,615,237
FLAME IONIZATION DETECTOR
 Frank P. Speakman, Cambridge, England, assignor to Pye Limited, Cambridge, Mass.
 Filed Oct. 18, 1968, Ser. No. 768,788
 Claims priority, application Great Britain, Oct. 31, 1967, 49512/67
 Int. Cl. G01n 31/12
 U.S. Cl. 23—254 E

4 Claims



A thermionic flame ionization detector, particularly for the detection of phosphoro-organic compounds and comprising a flame jet and two electrodes which are arranged such that the wanted ionic current is derived from between the two electrodes and the unwanted currents are derived between one electrode and the jet.

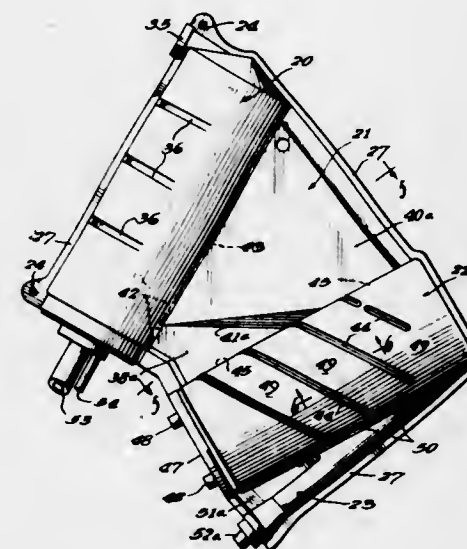
3,615,238
OXYGENATOR
 Donald J. Bentley, c/o Bentley Laboratories 3107 S. Kilson St., Santa Ana, Calif., and Richard A. De Wall, 247 Northview Road, Dayton, Ohio
 Division of Ser. No. 601,000, Dec. 17, 1966, Pat. No. 3,488,158.
 Filed Sept. 11, 1969, Ser. No. 857,044
 application Sept. 11, 1969, Ser. No. 857,044
 Int. Cl. A61m 1/03
 U.S. Cl. 23—258.5

17 Claims

An improvement in a unitary blood oxygenator of the type having an oxygenating chamber, a settling chamber and a heat exchange chamber in communication with each other characterized by ribs formed in the oxygenating chamber for positioning the debubbling sleeve spaced from the walls of

the chamber; further characterized by the provision of a settling chamber of reduced volume, preferably being thin in horizontal cross section and further characterized by

means at a sample tube treatment station and each of the multiple fingers is representative of a single sample tube advanced through such treatment stations. The fingers are adapted to sweep over contacts representative of the stopping stations of the sample tubes and when a selected tube reaches its particular treatment station a finger of the rotatable member corresponding with the treatment means at that station makes electrical contact to produce a signal which energizes such treatment means. The apparatus also includes means for shifting the spring fingers between operative and inoperative positions and for synchronizing the operation of the programming means with other components of the analyzer.



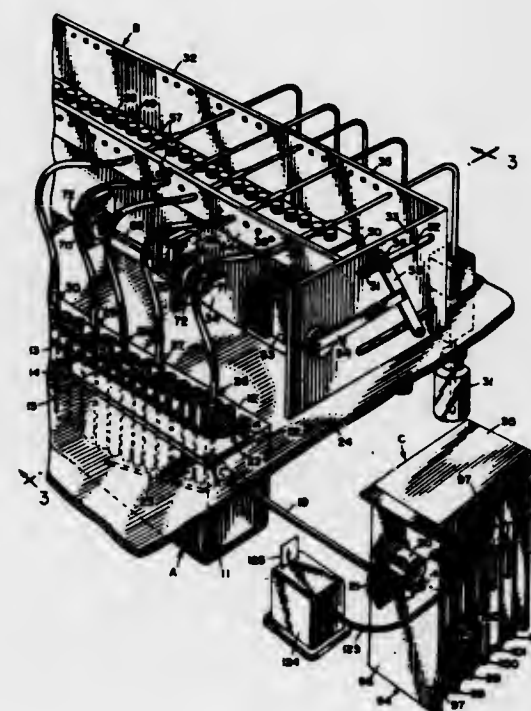
3,615,240
MICROPIPETTE COMPRISING A PAWL MECHANISM FOR DRIVING A ROTARY MEMBER
 Manuel Claude Sanz, Canton, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.
 Filed Feb. 24, 1970, Ser. No. 13,779
 Claims priority, application Switzerland, Feb. 26, 1969, 2864/69
 Int. Cl. G01n 1/00, 1/14
 U.S. Cl. 23—259

25 Claims

refinements in the heat exchange jacket about the heat exchange chamber in the form of angularly oriented, indented ribs in the shell of the heat exchange chamber.

3,615,239
AUTOMATED ANALYZER AND PROGRAMMER THEREFOR
 Alan R. Jones, Miami, and Charles W. Chapman, Miami Lakes, both of Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.
 Filed Mar. 12, 1969, Ser. No. 806,589
 Int. Cl. B011 9/06, 1/100; G01n 1/10
 U.S. Cl. 23—259

19 Claims



A device for drawing and distribution of liquid, as exemplified in a pipette, operated alternately in two directions, for drawing and distributing liquid, having an enclosure for the liquid storing purposes, comprising a pawl mechanism for driving a rotary member, an armature rotatably mounted around the rotary member, a support on the armature for pivotal movement at right angles to the rotational axis of the armature, first and second pawls secured to opposite sides of the support axis, and capable of being selectively brought into engagement with the teeth of the rotary member by rocking the support in one direction in the case of the first pawl, and in the opposite direction in the case of the second pawl.

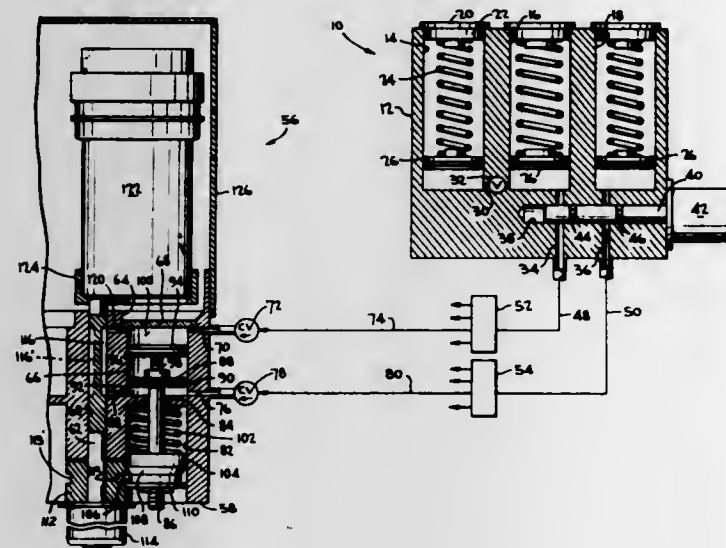
3,615,241
FIREFLY PUMP-METERING SYSTEM
 George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Chris J. Plakas, 304 Holiday Park Drive, Apt. #276, Champaign, Ill.
 Int. Cl. G01n 1/14; B67d 5/16
 U.S. Cl. 23—259

6 Claims

An apparatus especially suited for use in automated chemical analysis wherein the operations of delivering fluids to sample tubes and of extracting fluids from such tubes are programmed by mechanical-electrical programming means. Such programming means includes a plurality of rotatable elements each equipped with a multiplicity of spring fingers. Each rotatable element corresponds with the treatment

A pumping and metering dual piston system for simultaneously injecting controlled amounts of sample and reactants into a reaction chamber and an enzyme into an adjacent injection chamber. A rotary shaft is actuated to communicate the injection chamber with the reaction chamber and to actuate a mechanism for forcing the enzyme from the injection chamber to the reaction chamber.

Additionally, the shaft supports and operatively rotates detector apparatus from a magnetic and light radiation



shielded position to a position for monitoring the reaction chamber constituents.

3,615,242

MULTIPLE-INJECTOR CARBON BLACK FURNACE

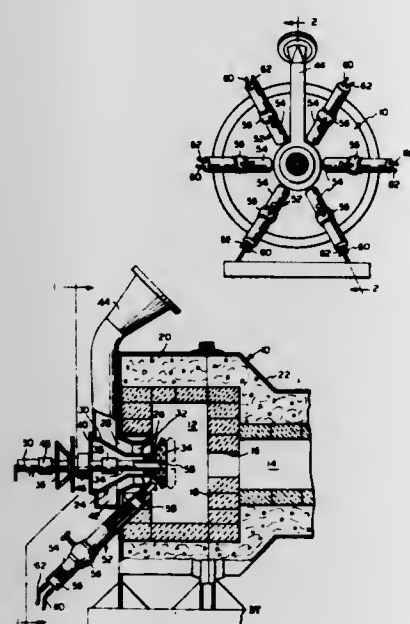
Robert M. Anderson, Houston; Andrew L. Askew, Jr., Houston, Tex., and Lee A. Kline, Cleveland, Ohio, assignors to Ashland Oil, Inc., Houston, Tex.

Filed Nov. 4, 1968, Ser. No. 773,057

Int. Cl. C09c 1/50; F23c 5/06

U.S. Cl. 23—259.5

17 Claims



A furnace-type carbon black reactor, including, a large-diameter, short axial length, cylindrical heating zone, a smaller diameter, greater axial length, cylindrical reaction zone connected to the effluent end of the heating zone, an orifice ring mounted in the reaction zone at the juncture of the heating zone and the reaction zone, an opening in the inlet end of the combustion zone, a streamlined, generally dumbbell-shaped central combustion-supporting gas guide, having the neck thereof passing through the opening in the heating zone, a generally disc-shaped combustible mixture deflector mounted adjacent the inner end of the central guide, the walls of the heating zone surrounding the neck of the central guide being contoured to form a streamlined annular space about the central guide, a combustion-supporting gas plenum surrounding the rearward end of the central guide and in open communication with the annular space about the central guide, an opening through the center of the central guide, and the deflector, a hollow tubular

deflector support connected to the disc-shaped deflector and slideably mounted through the center of the central guide, adjusting means for moving the tubular deflector support and the deflector forwardly and rearwardly with respect to the end walls of the heating zone, a gate-type valve means mounted on the tubular deflector support near the rearward end thereof, a removable, elongated feedstock injection means slideably mounted through the gate valve, through the tubular deflector support and terminating at its inward end in a feedstock spray nozzle adjacent the inner face of the deflector disc, means for slideably removing the feedstock injector means from the tubular deflector support, and a plurality of individually removable combustible mixture injector means, including, a liquid fuel inlet line and a dispersing gas line and terminating at its free end in a spray nozzle, the combustible mixture injector means being spaced about the heating zone and each of the injector means passes through a quick-opening gate valve, passes through the wall of the heating zone and has its spray nozzle positioned behind the deflector disc. In a second embodiment, the central guide and deflector disc are eliminated, the combustion-supporting gas plenum is an annular tube surrounding the inlet end of the heating zone, combustion-supporting gas inlet tubes are connected to the annular tube at radially spaced points about the heating zone and pass through the walls of the heating zone, a gate-type valve is mounted in each combustion-supporting gas tube, and individually removable combustible mixture injector means are slideably mounted through the combustion supporting gas tubes and gate valves and include a liquid fuel inlet line, a dispersing gas inlet line and a spray nozzle at the inner, terminal end of the injector means.

3,615,243

APPARATUS FOR EXTRACTING LIQUID FROM A MOBILE SEMISOLID CELLULAR SYSTEM

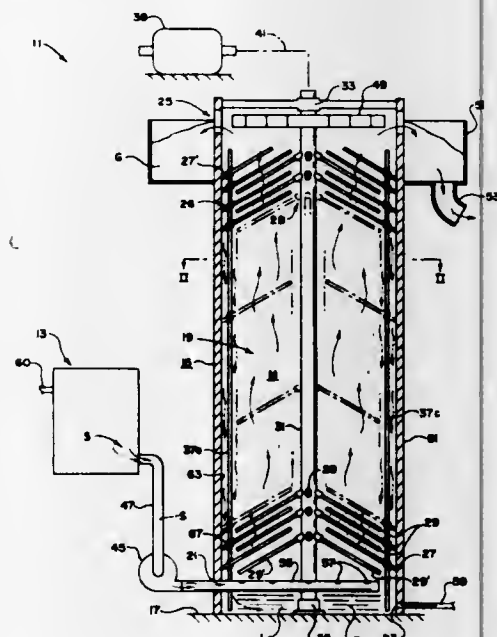
Clarence W. Scott, 435 N. Highland #3, Memphis, Tenn.

Filed May 22, 1969, Ser. No. 827,001

Int. Cl. B01d 11/02, 9/04; B01f 5/26

U.S. Cl. 23—267

5 Claims



Apparatus for separating or extracting liquid phase substances from gel phase substances in a semisolid mobile cellular system wherein there exists a substantial difference in density between the liquid and gel phase substances of the system. The apparatus is particularly useful for separating or deliquoring black liquor soap substances manufactured in a chemical pulping operation. The apparatus, in a preferred form, includes a long tall cylindrical vessel or tank, a vertical rotor mounted on the vertical center axis of the tank interior having a series of press rods radially fixed cantilever fashion on the rotor shaft and projecting toward the cylindrical interior tank wall, a second series of press rods generally cantilever fixed to the tank wall interior and projecting radially toward the rotor axis and alternatingly arranged with

the movable radially extending rotor press rods. The semisolid cellular soap substance or the like is pumped into the tank and the rotor driven at a slow speed (3–5 r.p.m.) to cause the cellular substance to be squeezed between the alternately arranged fixed and movable press rods. This causes the liquid phase substance to collect on the trailing side of each of the press rods and the liquid to be conducted to a liquid pool formed either at the upper or lower elevation of the tank depending on whether the liquid phase substance is heavier or lighter than the gel phase substance in the semisolid cellular system being processed.

3,615,244

DISPENSING APPARATUS

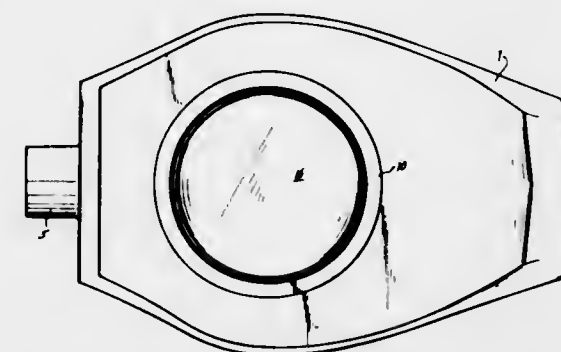
Alfred Long, New Haven, and Noel N. Coe, Woodbridge, both of Conn., assignors to Olin Mathieson Chemical Corporation

Continuation-in-part of application Ser. No. 689,974, Dec. 12, 1967, now Patent No. 3,495,948. This application July 18, 1969, Ser. No. 842,941

Int. Cl. B01d 11/00, 15/02, 59/22

U.S. Cl. 23—272.7

2 Claims



This dispenser divides an inlet fluid stream and flows a first, larger portion of the inlet stream through a first chamber and a second, smaller portion of the inlet stream through a second chamber. The previous end of an adjustably positioned, solute-containing magazine extends into the second chamber and is contacted by the second, smaller portion of the inlet stream to dissolve the solute. The first and second portion streams are recombined and discharged.

3,615,245

APPARATUS FOR ROD DISPLACEMENT CRUCIBLE-FREE ZONE MELTING

Reimer Emels, Ebermannstadt, and Wolfgang Keller, Pretzfeld, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

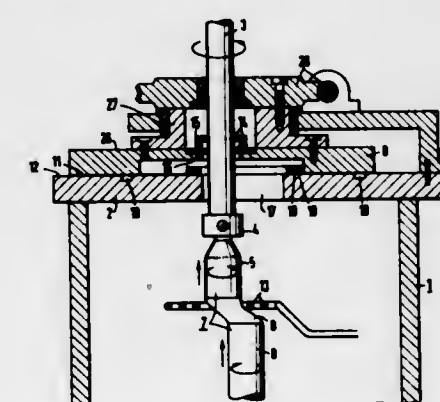
Filed Sept. 22, 1967, Ser. No. 669,967

Claims priority, application Germany, Sept. 24, 1966, S 106085

Int. Cl. B01j 17/10

U.S. Cl. 23—273 SP

6 Claims



Apparatus for crucible-free zone melting a crystalline rod comprising a melting zone chamber having a substantially horizontal wall formed with an opening therein, a slide member adjacent the horizontal wall outside of the chamber

for sealingly covering the opening, a pair of spaced holders mounted in the chamber for vertically end supporting a crystalline rod between them, means for relatively displacing the end holders toward one another, an annular heating device surrounding and spaced from the rod and adapted to form a molten zone in the rod wherefrom a portion of the rod recrystallizes, means for displacing the slide member and the rod holder for the recrystallizing rod portion in a substantially horizontal direction transverse to the axis of the rod, and means for rotating at least the rod holder for the recrystallizing rod portion comprising a drive shaft extending vacuum-tightly through an opening in the slide member and the opening in the wall and connected to the rotatable holder in the chamber.

3,615,246

STEADY STATE ETCHING SYSTEM

Robert T. Lindstrom, Orlando, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 604,940, Dec. 27, 1966, Pat. No. 3,505,135.

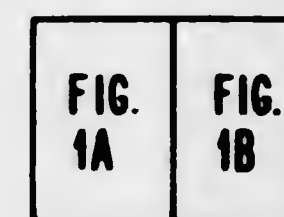
Filed Oct. 8, 1969, Ser. No. 870,900

1969, Ser. No. 870,900

Int. Cl. B01d 9/02

U.S. Cl. 23—273

6 Claims



A steady state system for the etching of printed circuit boards is provided. A metal is removed from an etchant at the rate in which it is dissolved into the etchant and etching reagent consumed during the etching process is replaced at an equivalent rate. Also provided is an improved crystallization tower which is used to continuously remove the dissolved metal. The tower is provided with a series of adjustable baffles to vary the inner diameter of the tower to control crystal size throughout the column. Additionally, there is included a crystal ejection chamber from which precipitated crystals are ejected by a centrifugal force.

3,615,247

MODIFIED COMBUSTION ZONE IN A THERMALLY INSULATED APPARATUS

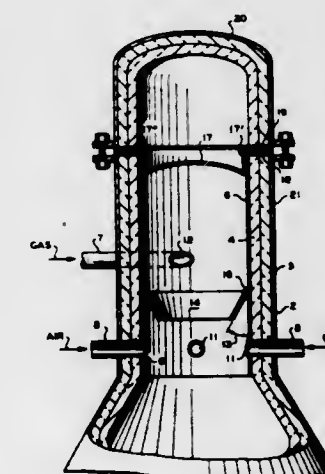
George J. Steeves, Pasco, and William C. Crawford, Kennewick, both of Wash., assignors to Phillips Petroleum Company

Filed Dec. 23, 1968, Ser. No. 785,950

Int. Cl. F27d 1/12, 3/00; F23d 15/02

U.S. Cl. 23—277 C

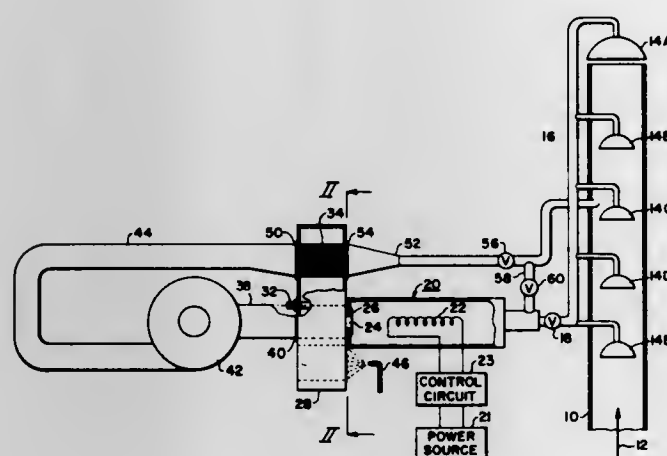
6 Claims



A canopylike insert is placed intermediate the combustible gas inlet and the air inlet in a thermally insulated reactor to

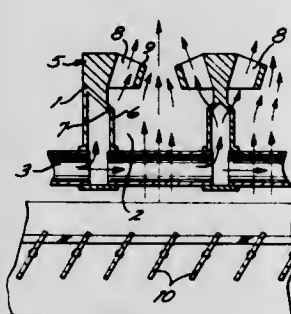
prevent burnout of the insulation by directing the flow of combustible gas into contact with air at a position removed from the reactor lining. A false dome may also be provided near the reactor closure means to prevent gasket burnout.

3,615,248
SMOKE CONTROL SYSTEM
George J. Holler, Jr., 210 S. Marietta St., St. Clairsville, Ohio
Filed Jan. 12, 1970, Ser. No. 2,163
Int. Cl. F23g 7/06
U.S. Cl. 23-277 C 6 Claims



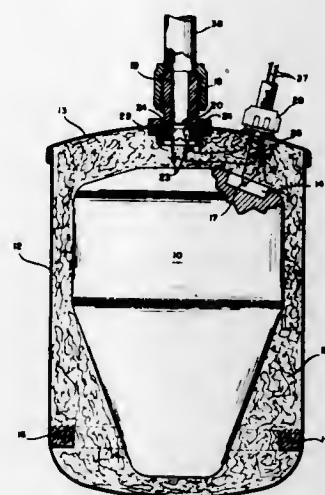
A smoke control system utilizing an afterburner and a filter formed from expanded blast furnace slag, the filter being in the form of a cartridge carried with other filter cartridges in a rotatable drum assembly whereby a clean filter can be rotated into position to permit products of combustion to pass therethrough while dirty filters are rotated to a position where they can be cleaned automatically for reuse.

3,615,249
GAS BURNER FOR FUMES AND THE LIKE
Arthur E. Martois, 2279 W. 233rd St., Torrance, Calif.
Filed Apr. 22, 1970, Ser. No. 30,762
Int. Cl. F23g 7/06
U.S. Cl. 23-277 C 5 Claims



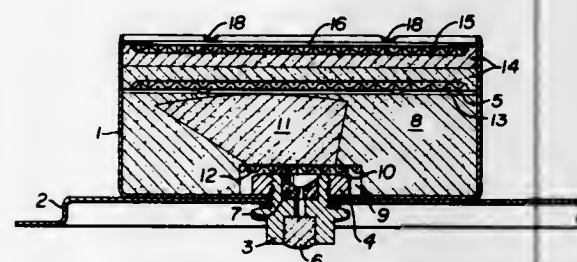
This invention relates to a gas burner for mixing combustible industrial noxious fumes and vapors with gases and air for combustion in a furnace to thus reduce air pollution. The metal portions of the burner are constructed so that they will quickly burn out due to high temperatures within the furnace, and also so that these metal parts will be protected with a ceramic shield or blocks to prevent damage to the burners. My gas burner will materially reduce air pollution from industrial plants, packing houses, etc., which emit combustible and noxious vapors into the air, which can be readily burned when they are passed through a burner together with the natural gas and air which is burned in these devices.

3,615,250
SUPPLEMENTAL OXYGEN SUPPLY SYSTEM
Richard L. Vernon, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 26, 1969, Ser. No. 810,656
Int. Cl. B01j 7/00
U.S. Cl. 23-281 8 Claims



An oxygen supply system for aircraft passengers in which a solid oxygen-yielding composition is stored in a hermetically sealed container. An electrical ignition system initiates thermal decomposition of the composition and removes a fusible seal from the container. Oxygen gas is released upon decomposition of the solid composition. A testing circuit is provided to automatically test the operativeness of the ignition system and the fusible container seal. A plurality of containers, linked to a common activating and testing system, provide oxygen for an aircraft passenger compartment.

3,615,251
OXYGEN-PRODUCING CANDLE
Frederick K. Klenk, Forward Township, Butler County, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Dec. 11, 1969, Ser. No. 884,221
Int. Cl. B01j 7/00
U.S. Cl. 23-281 4 Claims



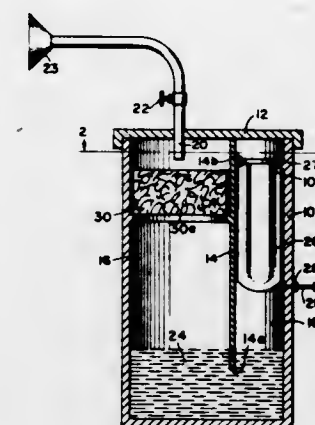
In an oxygen-producing candle having an ignition core that is ignited by flash powder, improved ignition is obtained by disposing a metal screen between the ignition core and the flash powder.

3,615,252
OXYGEN-GENERATING DEVICE
Anita J. DiPietro, P.O. Box 295, Alma, Mich.
Filed Apr. 14, 1969, Ser. No. 815,765
Int. Cl. B01j 7/02, 7/00; C01b 13/02
U.S. Cl. 23-282 11 Claims

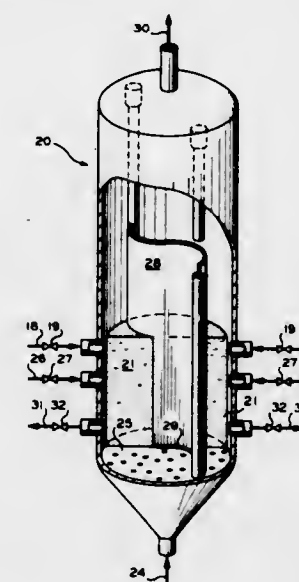
An oxygen-generating device comprising a canister which has oxygen-generating material for reacting with a reacting agent, preferably water, which is placed in a closed pierceable container also disposed in the canister. Means for releasing the reacting agent, preferably a needle, is mounted

in the canister for piercing the container to release the reacting agent to the oxygen-generating material. A filter is

Mapre type, i.e. have a rectangular thread profile. The modification concerns the depth of the thread. Its use is advantageous for promoting the reaction of fibrous cellulose



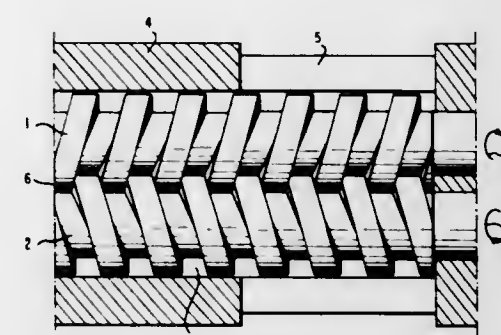
3,615,253
BATCH-CONTINUOUS REACTOR
Fred M. Warzel, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 21, 1969, Ser. No. 826,399
Int. Cl. B01j 9/20; C08g 35/00; F26b 17/00
U.S. Cl. 23-284 4 Claims



Material increases in throughput and output of batch-type reactors are obtained by avoiding operational time losses in dumping and filling and startup. The improvements are achieved by a flexible divider which extends upwards from the bottom of the unit and which moves from one side of the reactor to the other to increase and decrease, respectively, the volumes of the sections of the reactor. One section can be functional while the other section is being emptied and refilled. The combined output of the sections approaches the output of a continuous reactor.

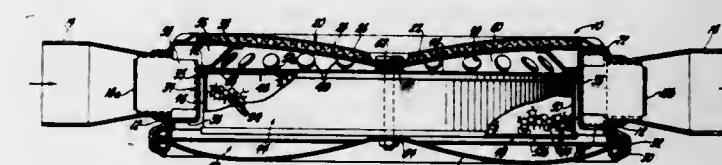
3,615,254
SCREW PRESS USEFUL IN THE MANUFACTURE OF ALKALI CELLULOSE AND CELLULOSE ETHERS
Franz Eichenseer, Wiesbaden-Schierstein, and Hans Kletschke, Essen-Kupferdreh, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Division of application Ser. No. 786,843, Dec. 20, 1968, now abandoned, which is a continuation of application Ser. No. 547,659, May 4, 1966, now abandoned. Filed Sept. 29, 1969, Ser. No. 864,269
Claim priority, application Germany, May 6, 1965, K 56022.
Int. Cl. B01j 1/00; B28b 1/10; C08b 11/20
U.S. Cl. 23-285 3 Claims

This application discloses a new modification of a two-screw press of the known type in which the screws are of the



with alkali, or with alkali and with a liquid or solid etherifying agent, or for promoting the reaction of fibrous alkali cellulose with a liquid or solid etherifying agent.

3,615,255
CATALYTIC CONVERTER
Lester E. Patterson, Grand Blanc; William L. Alley, Flushing, and Michael R. Foster, Davison, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 19, 1970, Ser. No. 38,771
Int. Cl. F01n 3/14
U.S. Cl. 23-288 F 3 Claims

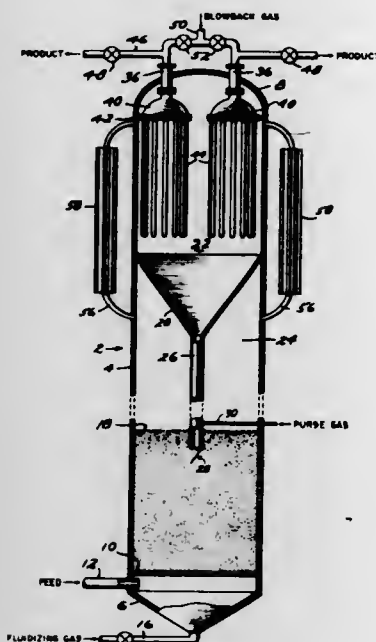


A catalytic converter having an outer cylindrical housing and an inner cylindrical element adapted to receive in spaced relationship thereto a flat cylindrical catalyst element and having three distinct manifold portions: an annular portion between the housing and the element, an inner portion above the catalyst element and a lower portion below and surrounding the catalyst element. The annular portion communicates with the inner portion through a plurality of holes in the inner element and the inner portion communicates with the lower portion through the catalyst element whereby exhaust gases entering the annular portion are distributed around and radially into the inner portion and then flow uniformly downwardly through the catalyst element and into the lower portion to be discharged from the converter.

3,615,256
SYSTEM FOR SEPARATING CATALYST FROM A FLUID BED REACTOR
George M. Miller, Winchester, and Constantine D. Miserlis, Arlington, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.
Filed Apr. 21, 1969, Ser. No. 817,785
Int. Cl. B01j 9/20; B01d 46/04, 46/24
U.S. Cl. 23-288 S 10 Claims

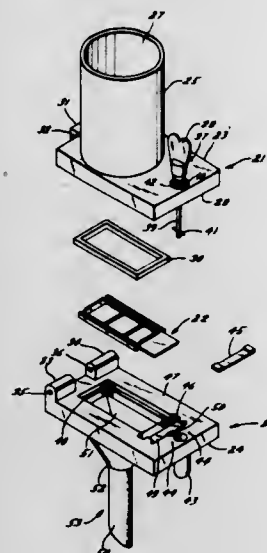
System for stripping catalyst dust from the effluent stream of a fluid catalyst bed reactor, including an enclosed separation chamber in the reactor above the fluid bed, a plurality of cooling conduits mounted outside the reactor for carrying the effluent plus entrapped catalyst dust from the reactor to the separation chamber; and, within the chamber,

one or more filtering means for stripping catalyst dust from the effluent, the effluent being continuously removed from



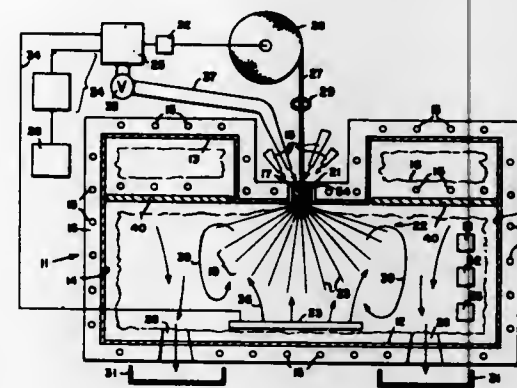
the separation zone via the filtering means and the separated catalyst dust being returned to the fluid bed.

3,615,257
FILTER CASSETTE AND HOLDER THEREFOR
John K. Frost, Lutherville, Md.; John Kitzle, Clifton, and Dewey H. Palmer, Oradell, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed Oct. 14, 1968, Ser. No. 767,205.
Int. Cl. B01d 23/28; B01f 11/00
U.S. Cl. 23-292



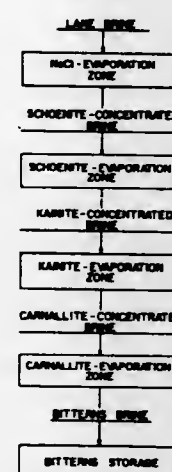
Filter cassette which basically includes a base frame composed of a bottom and extending sides from a portion of the perimeter of the bottom to form a chamber for receiving a pre-cut filter. The bottom has means which aids in supporting the filter within the chamber and aids in permitting the fluid to drain from the underside of the filter. The base frame also has means upon it for mounting a resilient retaining frame. The retaining frame has a central opening and is adapted to be resiliently mounted upon the base frame. The base frame and the retaining frame cooperate to retain the filter between them in the chamber while permitting fluid to pass through the filter. A holder is provided to support the cassette during the filtration process.

3,615,258
MAKING FIBERS FROM ELECTROSTATICALLY CHARGED VAPOR
John P. Glass, c/o Cava Industries, 79 La Grange Ave., Essington, Pa.
Division of Ser. No. 480,918, Aug. 19, 1965. Filed Oct. 17, 1968, Ser. No. 769,477
Int. Cl. B01d 7/00
U.S. Cl. 23-294



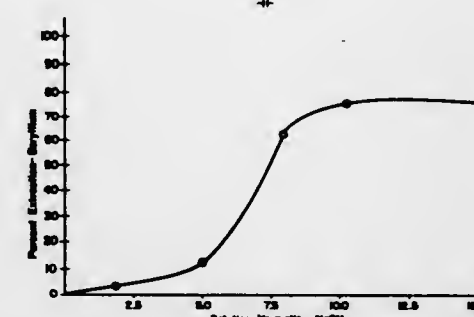
Method of making fibers by crystallization from vapor comprising creating a vapor of fiber-producing material, forming a plurality of growing elongated fibers by condensing fibrous crystals from the vapor in a growing zone, constraining the fibers into a strand, dispersing and separating the ends of the fibers by applying an electrostatic charge thereto so that the ends are separated and individually exposed to vapor, measuring the rate of growth of the fibers by measuring the capacitance to ground of the fibers, and withdrawing the fibers from the growing zone in accordance with the rate of fiber growth.

3,615,259
SOLAR POND SYSTEM FOR THE PRODUCTION OF CONCENTRATED BRINES UTILIZING PLURAL SERIAL SOLAR SUBZONES
Ulrich E. G. Neitzel, Ogden, Utah, assignor to Great Salt Lake Minerals and Chemicals Corporation, Ogden, Utah
Continuation-in-part of application Ser. No. 735,840, June 10, 1968, Continuation-in-part of application Ser. No. 736,071, Aug. 28, 1968. This application Mar. 17, 1969, Ser. No. 807,573
Int. Cl. B01d 9/00
U.S. Cl. 23-298



A solar evaporation zone receives a brine of a given concentration with respect to a particular soluble salt and produces effluent brine of a higher concentration with respect to that salt. A crystal crop of other salts, characterized by a propensity to entrain a high weight-percent of brine, is deposited in the zone. The zone is subdivided into a plurality of subzones arranged for series flow so that the densest brine in the evaporation zone is contacted by a relatively small portion of the crystal crop. As a result, the yield of concentrated brine from the evaporation zone is increased.

3,615,260
LEACHING BERYLLIUM
Charles K. Hanson, Salt Lake City, Utah, and Milton E. Wadsworth, Manila, Philippines, assignors to University of Utah
Continuation-in-part of application Ser. No. 554,459, June 1, 1966, now abandoned. This application Jan. 2, 1969, Ser. No. 805,073
Int. Cl. C01f 3/00; C01b 33/24
U.S. Cl. 23-299



A method of leaching beryllium from beryllium ore and separating the beryllium from contaminants in the leach liquor, the leaching method comprising exposing beryllium ore to a concentrated caustic solution under elevated temperature conditions. The beryllium along with certain contaminants is separated from the leach liquor by (a) diluting the solution, adding calcium chloride or other soluble calcium salt, and coprecipitating beryllium, calcium hydroxide and other contaminants, or by (b) diluting the solution, adding calcium hydroxide, or calcium oxide and heating in an autoclave to suitable temperature for an appropriate time interval. Contaminates, including silica, may be removed from the leach solution by adding calcium hydroxide (or oxide) without reducing the pH (without diluting the solution) and heating in an autoclave at suitable temperature for an appropriate time interval. The beryllium under these conditions remains in the solution. Under conditions (a) or (b) the precipitate which includes the beryllium is treated by common chemical procedures for isolation of the beryllium as beryllium hydroxide.

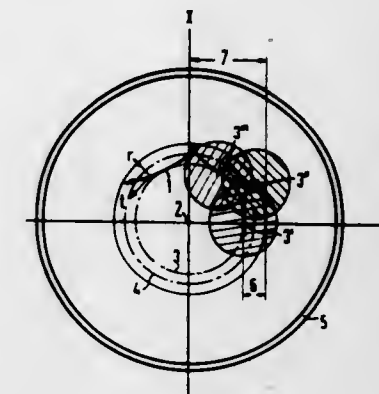
3,615,261
METHOD OF PRODUCING SINGLE SEMICONDUCTOR CRYSTALS
Donald R. Causey, and John R. Lenzing, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 2, 1969, Ser. No. 812,897
Int. Cl. B01j 17/00; H01l 7/40
U.S. Cl. 23-301 SP

A method of making an ingot length of a single semiconductive crystal having substantially uniform resistivity throughout most of the length of the ingot is disclosed. An inert helium atmosphere is placed about a mass of silicon material and then the silicon mass is melted. A seed of silicon is inserted into the melt and withdrawn at a rate which provides a substantially uniform ingot diameter. As the seed is withdrawn from the melt, the pressure in the system is slowly reduced to vaporize the impurity from the melt so as to maintain a substantially constant impurity concentration in the melt during the formation of the ingot.

3,615,262
CRYSTAL SEED FOLLOWING A HYPERCYCLOID PATH IN MELT
Rudolf Kappelmeyer, Oberhaching near Munich; Max-Hugo Kellerbauer, Munich, and Karl Danassy, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 26, 1968, Ser. No. 762,992
Claims priority, application Germany, Oct. 4, 1967, S 112259
Int. Cl. B01j 17/18

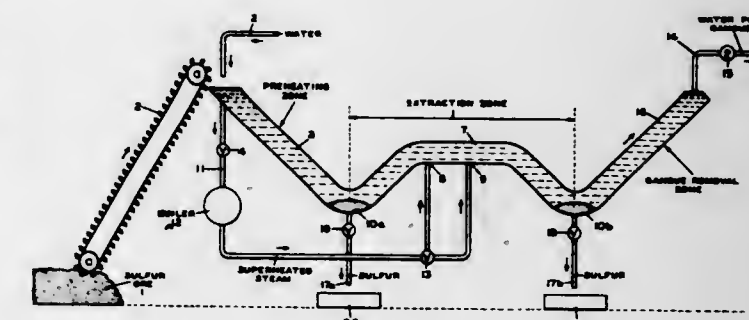
Described is a method of producing a monocrystal rod, which is vertically held at its end, with homogeneous or almost homogeneous doping, by pulling from a crucible according to the Czochralski method. The holder of the seed

crystal, which is immersed into the melt, is given an eccentric movement with respect to the melt contained in the crucible. According to the invention the holder of the seed crystal



which moves along the eccentric path is given an additional movement which produces a hypercycloid path with respect to the melt.

3,615,263
SULFUR RECOVERY
Ruel Carlton Terry, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Feb. 27, 1969, Ser. No. 802,817
Int. Cl. C01b 17/08
U.S. Cl. 23-308 S



Sulfur is continuously extracted from sulfur-bearing ore, found or brought to the surface, by injecting said ore through a tubular conduit containing a downstream sulfur extraction section. After sulfur is extracted, the residual trailings are further processed upstream through a second tubular conduit to an exit point.

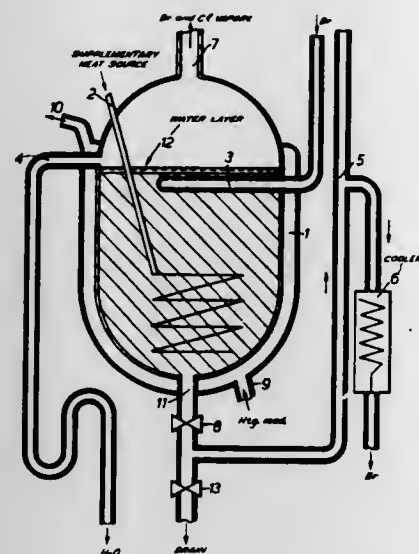
3,615,264
HYDROTHERMAL METHOD OF GROWING ZINC OXIDE CRYSTALS
James W. Berry, and Archie J. Deutschman, Jr., both of Tucson, Ariz., assignors to Owens-Illinois, Inc.
Filed Dec. 21, 1967, Ser. No. 692,267
Int. Cl. C01g 9/02

A method for inhibiting corrosion of the reaction vessel during the hydrothermal growth of zinc oxide crystals in an alkaline solution of KOH wherein the solution contains potassium phosphate as the corrosion inhibitor.

3,615,265
PROCESS FOR DRYING BROMINE
Rainer Gartner, Loderburg, Germany, assignor to Veb Kombinat Kali, Sondershausen, Germany
Filed Sept. 19, 1969, Ser. No. 859,459
Int. Cl. C01b 7/00; B01d 1/02, 1/22
U.S. Cl. 23-307

Bromine, kept at an elevated temperature, preferably at

about its boiling point, gradually loses water and may be americium to the +5 oxidation state and then passing the resultant solution through a stationary phase or static bed of



obtained essentially dry without any drying agent. The process is also useful to remove chlorine.

3,615,266

SILICON CHALCOGENIDES

Paul C. Donohue, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1970, Ser. No. 15,888

Int. Cl. C01b 33/00; B01j 17/00; C04b 35/00

U.S. Cl. 23—315

Binary, ternary and quaternary silicon chalcogenides of the formula $Si_mS_xSe_yTe_z$

wherein m is 9.3 ± 0.3 , $x+y+z=4$, x is 0 to 3.2, and y and z are 0 to 4, having a crystal structure of cubic symmetry when the chalcogen is Se or S/Se and a closely related crystal structure of pseudocubic symmetry when one of the chalcogens is Te. Process for the preparation of the above chalcogenides comprising heating for at least about 15 minutes at about 800°C . to $1,600^\circ\text{C}$. and at least about 30 to 65 kilobars pressure the elementary components, mono- and dichalcogenides of silicon, and the binary and ternary chalcogenides of this invention. The dichalcogenides of this invention are useful as semiconductors and in detecting heat and infrared radiation.

3,615,267

SEPARATION OF NEPTUNIUM FROM URANIUM HEXAFLUORIDE CONTAINING THE SAME

Waldo R. Golliber, Robert L. Harris, and Reynold A. LeDoux, all of Paducah, Ky., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 11, 1969, Ser. No. 806,293

Int. Cl. C01g 43/06

U.S. Cl. 23—337

This invention relates to a method of selectively removing neptunium values from a gaseous mixture containing neptunium hexafluoride and uranium hexafluoride by passing the mixture through a bed of pelletized cobaltous fluoride at a temperature in the range 220°F . to 440°F . to effect removal of neptunium by the cobaltous fluoride.

3,615,268

ISOLATION AND PURIFICATION OF AMERICIUM FROM OTHER 5f AND 4f ELEMENTS BY EXTRACTION CHROMATOGRAPHY

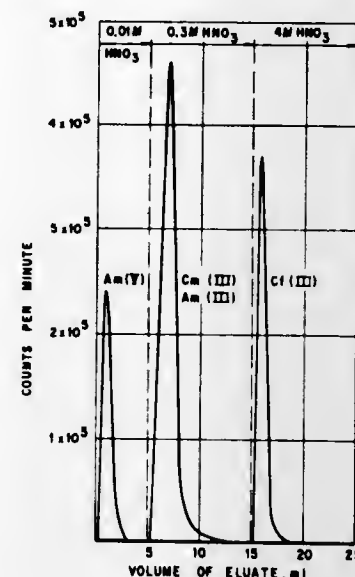
Fletcher L. Moore, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 29, 1968, Ser. No. 780,101

Int. Cl. C01g 56/00

U.S. Cl. 23—338

A method for selectively removing americium values from an aqueous solution containing americium as well as other 5f and/or 4f elements which comprises selectively oxidizing the



an inert material having impregnated on its surface a diester of orthophosphoric acid such as di(2-ethylhexyl)phosphoric acid.

3,615,269

CERTAIN FLUORODIAZONIUM COMPOUNDS

Luke A. Schaap, South Holland; Alex Zletz, Chicago Heights, Ill., and Thomas D. Nevitt, Valparaiso, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed May 18, 1966, Ser. No. 551,086

Int. Cl. C01h 21/52

U.S. Cl. 23—357

1. As a composition of matter, fluorodiazonium tetrafluoroborate.

2. As a composition of matter, fluorodiazonium hexafluorophosphate.

3,615,270

METAL BERYLLIUM HYDRIDES AND METHOD FOR PREPARING THE SAME

John A. Snover, Beverly Farms, Mass., assignor to Metal Hydrides Incorporated, Beverly, Mass.

Filed Aug. 20, 1962, Ser. No. 218,803

Int. Cl. C01b 6/24

U.S. Cl. 23—360

1. The method for preparing metal beryllium hydrides conforming to the formula $M_2(\text{BeH}_4)_m$ where M is a metal selected from the group consisting of alkali metals and alkaline earth metals and m is the valence of the metal M , which comprises mixing an organo metal beryllium compound conforming to the formula $M(\text{BeR}_3)_n$ with a solution in an ether solvent of a compound conforming to the formula $M(\text{AlH}_4)_m$ thereby forming a liquor containing a compound conforming to the formula AlR_3 dissolved therein and a precipitated compound conforming to the formula $M_2(\text{BeH}_4)_m$, being selected from the group consisting of methyl, ethyl, propyl, isopropyl, secondary butyl, tertiary butyl, isobutyl, n-pentyl, n-butyl, n-hexyl, n-octyl, Stearyl, cyclopentyl, cyclohexyl, phenyl, 1,1-diphenylhexyl, 1-phenyl-2-butenyl, 1-phenyl-1-methylethyl, and 3-methyl-2-butenyl radicals.

3,615,271

PREPARATION OF TITANIUM CARBONITRIDE

John W. Dietz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 28, 1970, Ser. No. 6,541

Int. Cl. C01b 21/06

U.S. Cl. 23—359

A process for the production of finely divided titanium carbonitride is disclosed. Titanium tetrachloride is reacted with methylamine in an inert atmosphere to form a titanium chloride amine complex. The complex is then heated in an

atmosphere of ammonia or methylamine to about 600°C . over a period of several hours. The atmosphere is then changed to hydrogen or a mixture of hydrogen with argon, methane and/or ammonia, and the temperature is increased to 900°C . Finally, the atmosphere is changed to argon and the temperature is increased to $1,200^\circ\text{C}$. A high surface area carbonitride product is recovered upon cooling.

3,615,272

CONDENSED SOLUBLE HYDROGENSILSESQUOXANE RESIN

Warde T. Collins, and Cecil L. Frye, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 4, 1968, Ser. No. 773,314

Int. Cl. C01b 33/04

U.S. Cl. 23—366

Hydrogensilsesquioxane, free of hydroxyl content, of the general formula $(\text{HSiO}_3/2)_n$ where n is an even integer of 10 or more, is disclosed. The condensed hydrogensilsesquioxane is prepared by condensation of trichloro-, trimethoxy- or triacetoxysilanes in a sulfuric acid medium. A specific example is $(\text{HSiO}_3/2)_2$ where n has an average value of 20 or more. This material is a resinous polymer which contains small amounts of volatile oligomers and is useful as a protective coating.

3,615,273

STRIP FOR OBTAINING A BARBED ELEMENT

Jacques Leon Alexandre Sec, Paris, France, assignor to Rador S. A., Luxembourg

Filed Sept. 12, 1969, Ser. No. 857,609

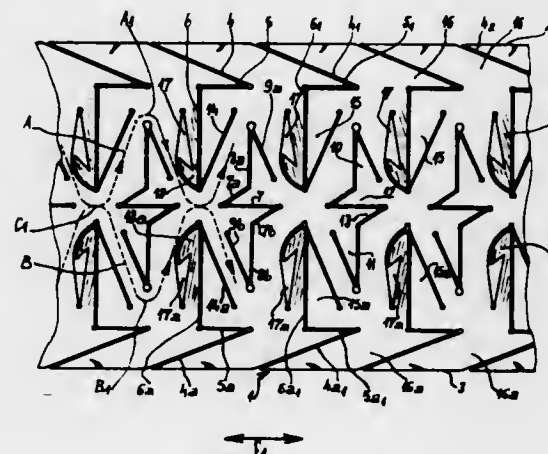
Claims priority, application Switzerland, Sept. 13, 1968,

13712/68

Int. Cl. B21c 37/02

U.S. Cl. 29—190

6 Claims



Strip for obtaining a barbed member in which are made lateral cuts each consisting of an oblique first cut emerging on the lateral edge, a second cut, parallel to said lateral edge and communicating with the end of said first cut, and a third cut extending from the free end of this second cut to the vicinity of the longitudinal axis of the strip, said lateral cuts being combined with median cuts extending between two successive sets of lateral cuts, said median cuts each having a longitudinal portion from whose ends there extend two portions of cuts limiting appreciably triangular parts.

3,615,274

MATERIAL FASTENING MEANS

John Belada, Glassboro, N.J., assignor to A. R. Molino, Glassboro, N.J.

Division of Ser. No. 582,003, Sept. 26, 1966, Pat. No. 3,470,596.

Filed Jan. 31, 1969, Ser. No. 828,023

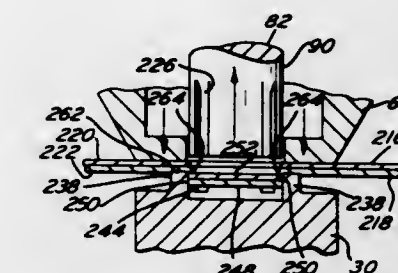
application Jan. 31, 1969, Ser. No. 828,023

Int. Cl. B23p 11/00

U.S. Cl. 29—191

A fastening means and method for securing together two sheets of metallic material with one sheet positioned over the other by having a region encompassed by a plurality of disconnected lines defining the edges of the region, the

region of the sheets and its edges being displaced with respect to the portion of the sheets surrounding the region and joined by one or more connecting strips. The portion of the sheets surrounding the region has an extruded edge



corresponding to each edge of the regions extending from the bottom surface portion surrounding the region over and beyond a corresponding displaced edge for securing together the sheets of material.

3,615,275

HOMOGENEOUSLY FINE-GRAINED VAPOR-DEPOSITED MATERIAL IN BULK FORM

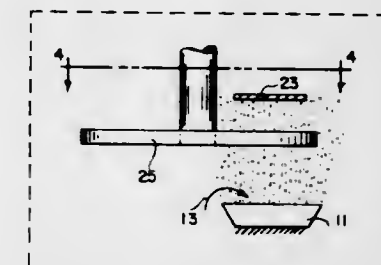
Charles D. Turk, Norwood, and Harris L. Marcus, North Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 12, 1967, Ser. No. 689,944

Int. Cl. B32b 15/00

U.S. Cl. 29—194

2 Claims



In one form of the invention a substrate in the condition and form of a hot titanium strip is advanced over a refractory mask in which are slots for admitting to a face of the strip the vapor of a crystalline material. Crucibles are arranged in a sequence beneath the mask to supply the vapor through the slots for deposition in very thin layers on the substrate.

In another batch form of the invention the substrate comprises a fixed substrate sheet located above a slotted rotating shutter. Below the shutter is a crucible containing the material to be vaporized and deposited in the very thin layers upon the substrate.

In both forms, the apparatus above described is located in a chamber which may be evacuated or contain a desired atmosphere. In each case the substrate is maintained at a temperature such that, as successive very thin layers of the vaporant are laid down, each condenses before the next is applied so that the latter will nucleate and condense without continuous columnar grain growth normal to the plane of the multiply material on the substrate. A number of layers are laid down until the material deposited on the substrate reaches a bulk thickness in the range of about 1 to 10 mils. The resulting homogeneously grained and layered composite is then stripped from the substrate.

3,615,276

PROTECTED METAL ARTICLE

Fred G. Singleton, Pittsburgh, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

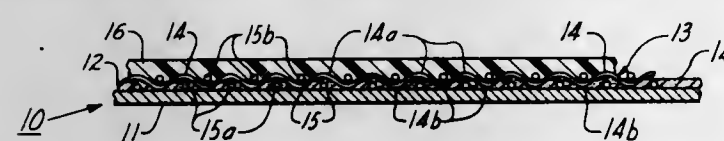
Filed Feb. 3, 1969, Ser. No. 795,845

Int. Cl. B32b 15/14

U.S. Cl. 29—195

A protected metal article consisting of a core of sheet steel coated sequentially with a protective metal consisting essentially of zinc; a fibrous glass cloth impressed into the

protective metal and a weather-resistant outer coating applied to the fibrous glass cloth. The fibrous glass cloth may comprise either a glass fiber thread woven fabric or a bonded mat formed from randomly oriented continuous glass fiber filaments. The article is prepared by applying a molten

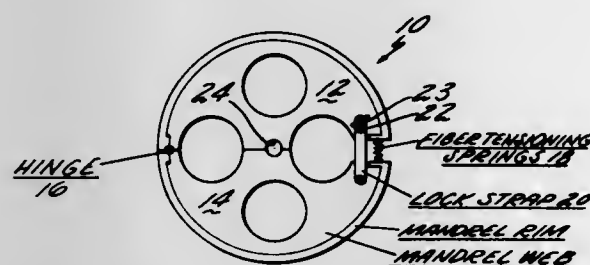


protective metal coating consisting essentially of zinc to a steel sheet and, while the coating is in its molten condition, impressing a fibrous glass cloth into the protective metal and fusing the protective metal whereby the fibrous glass cloth is partially embedded within the protective metal.

3,615,277
METHOD OF FABRICATING FIBER-REINFORCED ARTICLES AND PRODUCTS PRODUCED THEREBY
Kenneth G. Kreider, Glastonbury; Eugene J. Delgrosso, Wallingford, and Thomas J. Derby, Manchester, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed May 2, 1969, Ser. No. 821,378
Int. Cl. B23p 3/00

U.S. Cl. 29—195

2 Claims

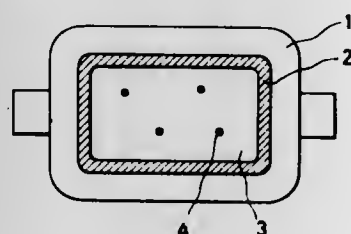


Filaments characterized by high strength, high rigidity, and high resistance to deterioration at elevated temperatures are utilized in a process of fabricating a multilayer fiber-reinforced metal matrix composite by winding a filament on a spring-loaded mandrel covered with brazing foil, preheating the mandrel, plasma arc spraying metal matrix material in coalescent form onto the filament windings so as to form a monolayer tape, and low pressure braze bonding a plurality of such tapes together in layers, the process being characterized by a high degree of reproducibility.

3,615,278
ENAMELING GRADE STEEL AND METHOD OF PRODUCING THE SAME
Zensaku Yamamoto; Susumu Sato; Shujiro Ono; Hiroshi Horiguchi, Muroran, Hokkaido; Shozo Ariga, Setagaya-ku, Tokyo; Shogo Takashi, Suginami-ku, Tokyo, and Hiroshi Sato, Suginami-ku, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Chiyoda-ku, Tokyo, Japan
Continuation of application Ser. No. 417,009, Dec. 9, 1964, now abandoned. This application Mar. 19, 1969, Ser. No. 814,499
Claim priority, applications Japan, Dec. 14, 1963, Dec. 14, 1963, Dec. 14, 1963, Dec. 14, 1963, Sept. 4, 1964; 38/67288, 38/67289, 38/67290, 38/67291; 39/50761.
Int. Cl. B32b 15/00

U.S. Cl. 29—196.1

3 Claims



Enameling grade steel ingots or sheets made therefrom, the ingots having a relatively thin outer rimmed layer and a

thicker core, the latter being enriched by an alloying metal or metals, especially consisting of Cr, Mn, Al, V, and Ti, which are capable of preventing carbon migration toward the surface or capable of gathering the carbon precipitating in the outer layer toward the core portion during heat treatment or enamel firing above the A₁ transformation point. Also disclosed is a method of making the ingots.

3,615,279
METAL COMPOSITE HAVING AN ALUMINUM ALLOY LAYER BONDED TO A TITANIUM ALLOY LAYER
Bennie Ray Ward, Jr., Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 497,554, Oct. 18, 1965, Pat. No. 3,359,142.
Filed Dec. 4, 1967, Ser. No. 720,421
application Dec. 4, 1967, Ser. No. 720,421
Int. Cl. B32b 15/00

U.S. Cl. 29—197
There is disclosed a high-strength metal composite made of at least one layer of heat-treatable aluminous metal bonded to a layer of titanium alloy which is susceptible to strengthening by heating in the temperature range for solution treatment of the aluminous metal. Thus, one heat treatment may be used to simultaneously solution heat-treat the aluminous metal and age the titanium alloy. Specific examples discussed include four types of composites of 2024 and 7075 aluminum alloys with Ti-6Al-4V and Ti-4Al-3 Mo-1V titanium alloys.
8 Claims

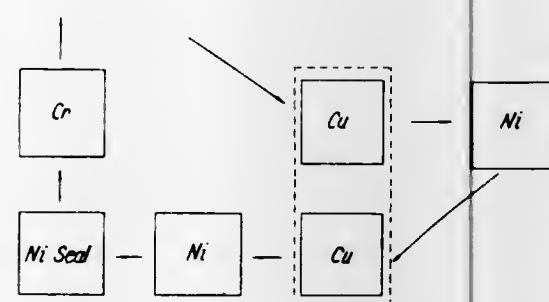
3,615,280
ALUMINUM BRONZE ARTICLE HAVING A HARDENED SURFACE
Quentin F. Ingerson, Milwaukee, Wis., assignor to Ampco Metal, Inc., Milwaukee, Wis.
Division of Ser. No. 589,802, Oct. 27, 1966, Pat. No. 3,505,104.
Filed Feb. 10, 1970, Ser. No. 10,288
1970, Ser. No. 010,288
Int. Cl. B32b 15/00

U.S. Cl. 29—199
An aluminum bronze article having an improved wear resistance and surface hardness. The article comprises a base alloy aluminum bronze having an aluminum content in the range of 5 to 13 percent and an outer coherent surface having an aluminum content of 13 to 16 percent. The coherent aluminum-enriched surface is produced by diffusion and simultaneous alloying of aluminum into the microstructural phases present in the base alloy. The aluminum-enriched microstructure phases present at the outer surface of the article are hard and wear resistant.
4 Claims

3,615,281
CORROSION-RESISTANT CHROMIUM-PLATED ARTICLES
Peter J. Ramsden, Surrey, England, assignor to Electro Chemical Engineering Company Limited, Surrey, England
Filed Apr. 26, 1968, Ser. No. 724,340
Claims priority, application Great Britain, Apr. 26, 1967, 19173/67
Int. Cl. B32b 15/00

U.S. Cl. 29—199

7 Claims



In plated articles comprising a series of nickel or nickel alloy layers on a substrate, with or without a basal layer of copper or a copper alloy, and having as surface either a nickel-seal followed by a chromium layer, or a microcracked chromium layer, an intermediate copper or copper alloy

layer is provided below the nickel or nickel alloy layer immediately below the nickel-seal or microcracked chromium layer; this is found to cause an unexpectedly great increase in resistance to corrosion.

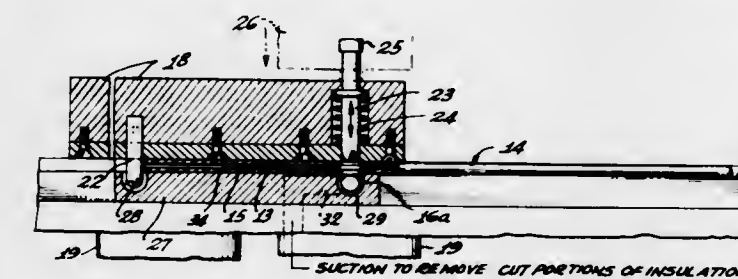
3,615,282
HIGH-STRENGTH FUSION WELDS IN BETA COPPER-ALUMINUM ALLOYS
George H. Ekkelman, Jr., Cheshire, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Olin Corporation
Filed Feb. 5, 1969, Ser. No. 796,921
Int. Cl. B23p 3/00

U.S. Cl. 29—199
A process for providing a high strength weldment by welding together two alloy members which contain 9.0 to 11.8 percent aluminum and a substituent selected from the group consisting of 2.0 to 5.0 percent iron, 0.4 to 2.0 percent chromium, 0.05 to 0.2 percent zirconium, 0.5 to 1.2 percent cobalt, 0.2 to 2.0 percent manganese, welding together the alloy members with a welding filler alloy of like composition, cooling the welding surface at a rate greater than 300° F. per minute, and the article produced thereby.
7 Claims

3,615,283
METHOD OF FORMING CONDUCTOR WITH SPACED TERMINAL LOOPS
Donald D. Lang, Garden Grove, Calif., assignor to Spectra-Strip Corporation, Garden Grove, Calif.
Filed Sept. 19, 1969, Ser. No. 859,258
Int. Cl. H01b 7/08, 13/00

U.S. Cl. 29—624

7 Claims



A conductor with a loose-fitting insulating jacket and having terminal loops pressed therefrom through its insulation by a punch operating from the side opposite the protrusion. The wire is pulled bodily relative to its own insulation as the loop is formed to avoid wire drawing and reduction in cross section of the wire. The insulating jackets of a plurality of wires may be joined in flat, edge relation to form a multiple-wire flat ribbon cable and the loops formed in groups repeated longitudinally of the cable, with the loops in each group extending upwardly at right angles to the plane of the cable and longitudinally and transversely spaced in a staggered pattern. The immediately preceding loop in a wire or cable is used as an anchoring point in the pressing out of a new spaced loop so that the wire is bodily slid within its insulating jacket from the direction in which the newly formed loop is offset from the previously formed loop.

3,615,284
FUEL COMPOSITION
Richard D. Cassar, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed July 9, 1969, Ser. No. 840,532
Int. Cl. C10I

U.S. Cl. 44—1 R
An improved solid fuel composition comprises 65 to 98.8 weight percent paraffin wax, 1.1 to 25 weight percent of ultrahigh molecular weight polyethylene, and 0.1 to 10 weight percent of polygorskite particles, the latter two uniformly distributed throughout the wax, is useful for supplying heat to protect living plants susceptible to injury low ambient air temperature. The ultrahigh molecular weight polyethylene refers to a polyethylene with a weight average molecular weight in the range of 500,000 to 6,000,000. The clay particles in this composition have the function of keeping the polyethylene uniformly distributed throughout the composition. In addition the particles reduce dripping in

during combustion and reduce the amount of unburnt hydrocarbon residue.

3,615,285
HYDROCARBONS GELLED WITH ALKOXY COMPOUNDS CONTAINING TWO DIFFERENT METALS
Thomas Allen Whitney, Linden, and William Joseph Mykytko, Jersey City, both of N.J., assignors to Esso Research and Engineering Company
Filed Jan. 30, 1970, Ser. No. 7,247
Int. Cl. C10I 7/02

U.S. Cl. 44—7
Liquid hydrocarbons may be increased in viscosity to a desired degree by combining the liquid with a gelling composition of the general formula MOR and M'(OR')₂, where M is a Group I metal and M' is a group III metal. R and R' are independently selected from C₁ to C₂₅ hydrocarbyl radicals.
18 Claims

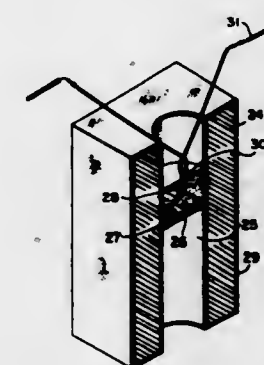
3,615,286
SOLID FIRE LIGHTING FUEL AND PROCESS OF PREPARATION
Ronald C. Vander Linden, Sarala, Ontario, Canada, assignor to Esso Research and Engineering Company
Filed Apr. 10, 1968, Ser. No. 720,373
Int. Cl. C10I 7/02

U.S. Cl. 44—7 D
A solid fuel briquet, useful for igniting wood in a fireplace or for igniting charcoal or charcoal briquets in outdoor barbecue apparatus and the like comprises a major proportion of a liquid hydrocarbon fuel such as a petroleum distillate fuel, and a minor solidifying proportion of a urea-formaldehyde resin. To prepare the fuel composition, a mixture of a urea-formaldehyde resin syrup and an aqueous emulsion of hydrocarbon fuel is first prepared; and the resin syrup is caused to gel with an acidic gelling agent. By causing gelation while the mixture is in a suitable mold a briquet of desired size and shape can be produced.
11 Claims

3,615,287
IGNITER
Favian M. Adair, P.O. Box 4206, Tyler, Tex.
Filed Oct. 31, 1969, Ser. No. 872,985
Int. Cl. A01g 13/06; F23q 21/00

U.S. Cl. 44—36

3 Claims



An igniter has an electric filament and lead wires connected to the filament which are insulated but in intimate contact, the insulation being flammable and on burning of the insulation the wires short circuit, and a block of combustible material surrounding the filament and in contact with the insulation so as to ignite the insulation when the filament is energized.

3,615,288
THERMALLY STABLE JET FUEL COMPOSITION
William M. Sweeney, Wappingers Falls; Kenneth L. Dille, Wappingers Falls, and Jerzy J. Bialy, Lagrangeville, all of N.Y., assignors to Texaco Inc., New York, N.Y.
Filed Mar. 17, 1969, Ser. No. 807,942
Int. Cl. C10I 1/16, 1/18, 1/22

U.S. Cl. 44—62
Thermally stable turbine or jet fuel composition containing in combination an ethylene-propylene-diene
10 Claims

comprises:

- contacting subdivided carbonaceous matter with steam and oxygen in a reaction zone at temperatures between about 800° F. and 1,350° F. to form H_2 and CO_2 ;
- maintaining the temperatures in the reaction zone within 100° F. of the average temperature for the reaction zone;
- withdrawing the hydrogen-rich gas mixture from the reaction zone; and
- feeding sufficient steam to the reaction zone so that the hydrogen-rich gas mixture which is withdrawn from the reaction zone contains at least 60 volume percent steam.

3,615,301 GRINDING FLUID FOR GRINDING TITANIUM METAL AND TITANIUM METAL ALLOYS

Roscoe A. Pike, Simsbury, Conn., and Harold O. Strandberg, Holden, Mass., assignors to Norton Company, Worcester, Mass.

Filed Nov. 22, 1968, Ser. No. 778,296
Int. Cl. B24b 1/00; B24d 3/02

U.S. Cl. 51—281

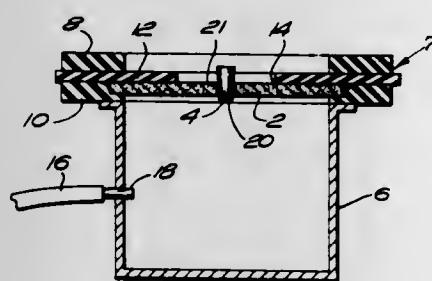
The invention is a novel grinding fluid or coolant which improves the efficiency and economics of grinding titanium metal and titanium metal alloys when using grinding wheels made up of aluminum oxide or aluminum oxide containing abrasives. The grinding fluid is composed of salts of nitrous acid and formic acid dissolved in water thereby providing nitrite and formate ions. The use of the grinding fluid of this invention when grinding titanium and its alloys, in such precision grinding applications as surface grinding results in higher metal removal to wheel wear ratios and also results in more rapid removal of metal by permitting the use of higher infeeds than have been permissible with prior art grinding fluids.

3,615,302 THERMOSET-RESIN IMPREGNATED HIGH-SPEED VITREOUS GRINDING WHEEL

Robert A. Rowe, Shrewsbury, and Roy S. Nelson, Sterling, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of application Ser. No. 634,622, Apr. 28, 1967, now abandoned. This application June 18, 1970, Ser. No. 47,581

Int. Cl. B24d 5/02; C08g 17/14
U.S. Cl. 51—295



A porous vitreous bonded high-speed abrasive grinding wheel in which between about 95 percent and 100 percent of the pore volume of either the annular portion of the wheel adjacent to the wheel hole or the entire wheel is impregnated with either a thermoset epoxy resin which is a copolymer of a liquid epoxy prepolymer and an amine or organic acid anhydride, or, a thermoset unsaturated polyester resin which is a copolymer of a polyester prepolymer containing ethylenic unsaturation and an ethylenically unsaturated reactive diluent like styrene, vinyl acetate, methyl methacrylate, and the like.

The wheel is preferably impregnated by applying the mixture of liquid prepolymer and hardener (cross-linking agent) to one side of the wheel over the area to be impregnated, preferably with a vacuum applied to one side of the wheel to draw the liquid prepolymer-hardener mixture into the pores of the wheel. Copolymerization (cross-linking) of the prepolymer-hardener mixture occurs in situ in the pores.

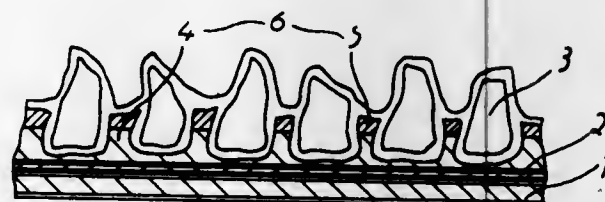
The cross-linked epoxy or unsaturated polyester resin may form an internal bushing of solid resin with substantial radial impregnation into the wheel. In such cases, the prepolymer-hardener mixture is introduced into the wheel hole around an arbor with a mold plate over both sides of the hole and extending radially along the wheel surfaces to the extent of desired penetration.

3,615,303 COATED ABRASIVE ARTICLE

Hermann Singer, Hamburg; Johann Kuhr, Harksheide; Hermann Delius, Ahrensburg, and Dietmar Wunderlich, Hamburg, all of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed Oct. 18, 1968, Ser. No. 768,828
Claims priority, application Switzerland, May 31, 1968, 8411/68; Germany Oct. 25, 1967, R36214; R36215; R36217; R47216; R47217; R47218

Int. Cl. B24b 1/00; C08g 51/12
U.S. Cl. 51—295



An improvement in coated abrasive articles for wet or dry grinding comprising a finished fabric support, an elastic impermeable intermediate layer, a layer of abrasive particles and a resin binder for the abrasive particles, wherein the intermediate layer is a cured mixture comprising:

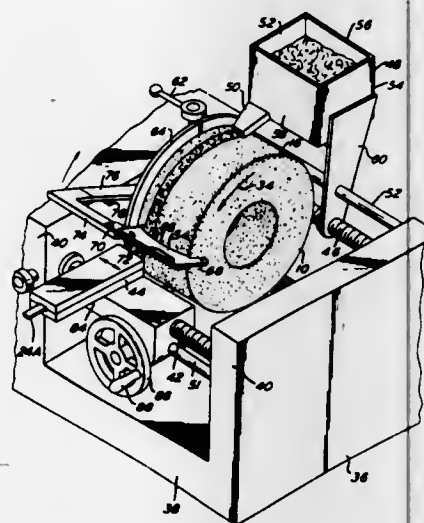
- epoxide resin based on 4,4'-dihydroxy-diphenyl-2,2-propane, subsequently called Bisphenol A;
- an epoxide resin based on Bisphenol A internally plasticized by reaction with castor oil;
- carbamic acid alkyl esters; and
- curing agents.

3,615,304 METHOD OF MANUFACTURING A FIBROUS REINFORCED GRINDING WHEEL

Richard T. Caserta, Lansdale, Pa., and James C. Rine, North Tonawanda, N.Y., assignors to Red Hill Grinding Wheel Corporation

Continuation-in-part of application Ser. No. 806,642, Mar. 12, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,175

Int. Cl. C08g 51/12; C08h 17/12
U.S. Cl. 51—298



A grinding wheel and method of manufacture wherein the circumferential surface of a grinding wheel having a satisfactory thickness is reinforced by the application of one

or more turns of a continuous, untwisted, reinforcing filament, preferably glass fiber. The circumferential surface is first pre-coated with a resin, and then the reinforcing filament is applied under a predetermined degree of tension. A final coat of resin is then applied to the reinforcing filaments, with a squeegee being used to insure thorough resin penetration.

3,615,305 DENTAL AMALGAM POLISHING COMPOSITION COMPRISING STANNOUS SILICATE $SnSiO_3$

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jan. 12, 1970, Ser. No. 2,359

Int. Cl. B24d 3/02; B24b 1/00

U.S. Cl. 51—308
Polishing compositions comprising stannous silicate, $SnSiO_3$, having particles laying in the range of up to about 90 microns as an essential active ingredient are useful in polishing amalgam restorations, especially silver amalgam restorations.

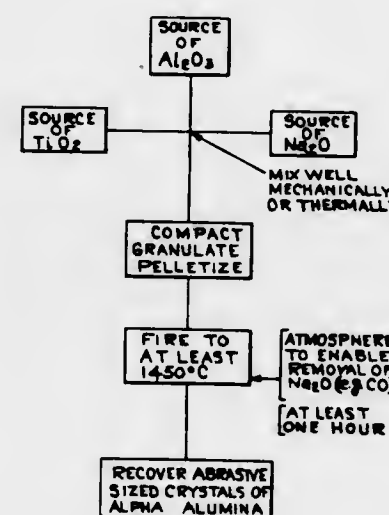
3,615,306 A METHOD FOR PRODUCING ALPHA-ALUMINA CRYSTALS FROM ALUMINUM OXIDE

Cecil M. Jones, II, Worcester, and John J. Amero, Shrewsbury, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Oct. 12, 1976, Ser. No. 674,935

Int. Cl. C09c 1/68; B24d 3/02

U.S. Cl. 51—309
11 Claims



Abrasive sized crystalline alpha alumina crystals are produced from Al_2O_3 containing powder by heating alumina source with source of soda and Titania to 1475° to 1700° C., with crystallization taking place above 1475° C. in presence of atmosphere which is reducing with respect to soda.

3,615,307 METHOD FOR PRODUCING ALPHA-ALUMINA CRYSTALS FROM ALUMINUM OXIDE CONTAINING CALCIUM OXIDE

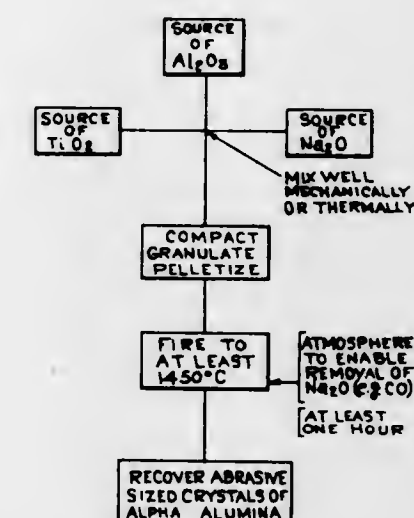
Cecil M. Jones, II, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Oct. 19, 1967, Ser. No. 676,552

Int. Cl. C09c 1/68; B24d 3/02

U.S. Cl. 51—309
Abrasive sized crystalline alpha alumina crystals are produced from Al_2O_3 containing powder by heating alumina source with source of soda and Titania to 1475 to 1700° C., with crystallization taking place above 1475° C. in presence

of atmosphere which is reducing with respect to soda. The addition of combined calcium to the mix, in the amount of at



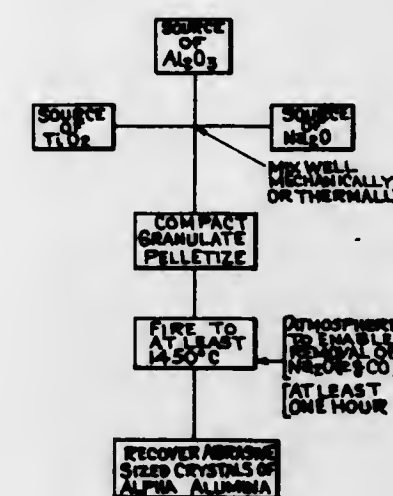
least 0.5 percent by weight calculated as CaO, produces larger sized crystals.

3,615,308 CRYSTALLINE ABRASIVE ALUMINA

John J. Amero, Shrewsbury, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of application Ser. No. 541,115, Apr. 8, 1966, now abandoned. This application Feb. 9, 1968, Ser. No. 704,304

Int. Cl. C04b 31/16
U.S. Cl. 51—309
1 Claim



Alpha-alumina abrasive crystals in the form of polygonal plates having a diameter to thickness ratio (a axis to c axis) of at least 2 to 1, having a total porosity, excluding pores larger than 50 microns, of at least 8 percent, having a hardness on the face perpendicular to the crystallographic c axis of about 1,600 on the Knoop (K_{100}) scale, and having particular utility for precision grinding and coated abrasive applications.

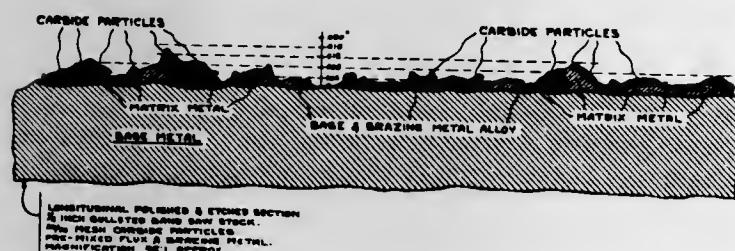
3,615,309

ARMORED METAL TOOLS

Chester H. Dawson, Danbury, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Continuation-in-part of application Ser. No. 638,998, May 16, 1967, now Patent No. 3,449,146, which is a continuation-in-part of application Ser. No. 177,558, Mar. 5, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 546,779, Nov. 14, 1955, now Patent No. 3,024,128, which is a continuation-in-part of application Ser. No. 379,100, Oct. 8, 1953, now abandoned, which is a continuation of application Ser. No. 41,180, July 28, 1948, now abandoned, and 548,915, Nov. 25, 1955, now Patent No. 3,023,490, which is a continuation-in-part of application Ser. No. 367,543, July 13, 1953, now abandoned; said 177,558, Mar. 5, 1962, now abandoned; said 367,543, July 13, 1953, now abandoned, which is a continuation-in-part of application Ser. No. 41,180, July 28, 1948, now abandoned.
This application Feb. 8, 1968, Ser. No. 704,170
Int. Cl. B24d 3/02; C04b 31/16

U.S. Cl. 51—309

18 Claims



Armored metal tools having a hard wearing, ductile, abrasive coating produced in situ from powdered matrix metal particles and abrasive particles of hard, high melting material, said tools comprising a structural base composed of a base metal, at least a portion of the surface of which is covered with a relatively thin, adherent and homogeneous layer of substantially uniform thickness, of said metal powders fusion bonded to each other and to said base metal and alloyed with said base metal throughout an interlayer between said base metal and coating layer, said coating layer of said fusion bonded metal powders having embedded therein and projecting from the surface thereof, a multiplicity of said abrasive particles forming projecting cutting edges and being composed of material selected from the group consisting of diamond substitute materials, such as metal carbides, borides, nitrides or silicides or mixtures thereof, said base metal being optionally composed of a heat treatable ferritic steel or alloy steel.

3,615,310

METHOD FOR DRYING GLASS FIBER FORMING PACKAGES

David M. Long, Mt. Lebanon, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 749,847, Aug. 2, 1968, now abandoned. This application June 2, 1969, Ser. No. 829,289
Int. Cl. C03b 37/00

U.S. Cl. 65—2

12 Claims

Glass fiber strand forming packages are dried in a heated chamber at subatmospheric pressure in order to condition the strand for subsequent fabrication into roving and yarn. The temperature employed is above freezing temperature but below the temperature at which harmful changes to the forming size on the strand occurs. The time for conditioning is substantially reduced and the tendency for the size to migrate is substantially reduced. The moisture content on the strand in a plurality of forming packages is reduced to a uniform low percentage from package to package as well as throughout each package.

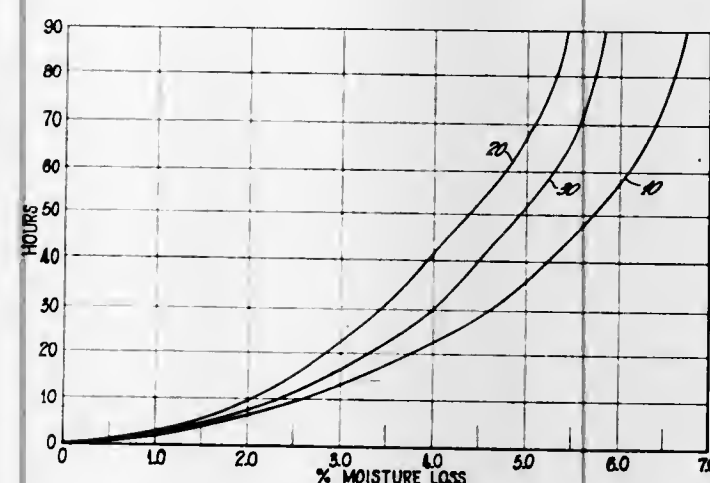
3,615,311

STARCH COATED FIBERS HAVING IMPROVED DRYING CHARACTERISTICS

Richard H. Ignatius, Aiken, S.C., assignor to Owens-Corning Fiberglass Corporation
Continuation-in-part of application Ser. No. 610,488, Jan. 20, 1967, now abandoned. This application Nov. 12, 1969, Ser. No. 875,842
Int. Cl. C03c 25/02; C08b 25/02

U.S. Cl. 65—3

9 Claims



A starch size composition for coating glass fibers at forming which has greatly improved drying properties. The composition includes a relatively narrow range of a noncrosslinked cationic starch and an underivatized starch that is preferably high in amylose and a portion of the granules of which are incompletely burst.

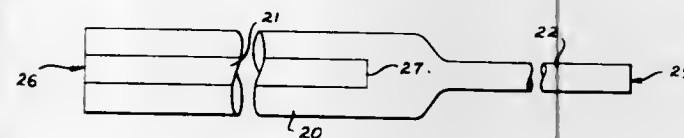
3,615,312

END FUSION OF GLASS LASER RODS OF DISSIMILAR CHEMISTRY

Robert J. Landry, Sturbridge, and Amadee D. Marino, Southbridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Apr. 21, 1969, Ser. No. 817,832
Int. Cl. C03c 23/20; H01s 3/00; C02b 5/14

U.S. Cl. 65—4

9 Claims



Method of operatively end fusing dissimilar rare earth oxide doped laser glass into an operatively unitary laser device, and product of the method.

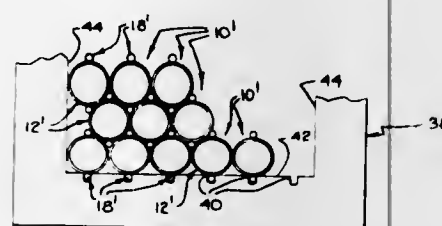
3,615,313

METHOD OF MAKING OPTICAL FIBERS, IMAGE-TRANSFER DEVICES

Roland A. Phaneuf, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 9, 1969, Ser. No. 831,523
Int. Cl. C03b 23/20

U.S. Cl. 65—4

3 Claims



Optical fibers each having a light-conducting main body section of circular cross-sectional configuration and a pair of

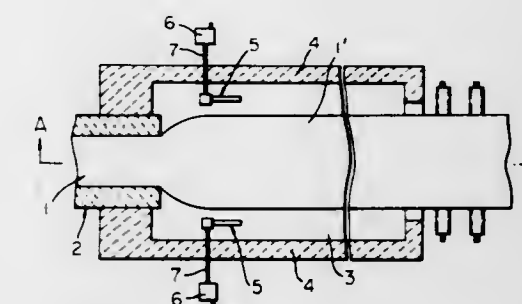
3,615,316

FLOAT GLASS METHOD AND APPARATUS WITH GAS EXTRACTION MEANS

Hideo Kita, Matsuru-shi, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed June 12, 1968, Ser. No. 736,337
Claims priority, application Japan, June 17, 1967, 42/38980
Int. Cl. C03b 18/02

U.S. Cl. 65—27

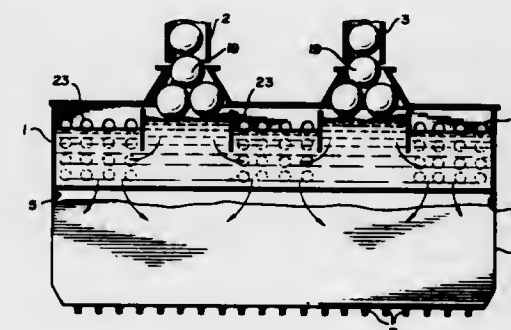
7 Claims



3,615,314
APPARATUS FOR PRODUCING FILAMENTS OF GLASS
William P. Cunningham, Mt. Juliet, Tenn., and Tack J. Whang, Berea, Ohio, assignors to Ferro Corporation, Cleveland, Ohio
Filed Apr. 17, 1969, Ser. No. 817,038
Int. Cl. C03b 37/02

U.S. Cl. 65—11 W

8 Claims



Glass ribbon is continuously manufactured on a bath of molten metal while preventing the formation of gaseous bubbles in the bath by applying a negative pressure or vacuum to the bath through a gas-permeable, porous material which is nonwetttable with the molten metal.

3,615,317

GLASS AND GLASS-CERAMIC TREATING PROCESS

Robert F. Jagodzinski, Maumee, and Fred E. Mansur, Toledo, both of Ohio, assignors to Owens-Illinois, Inc.
Filed Aug. 1, 1967, Ser. No. 657,487
Int. Cl. C03c 15/00, 29/00

U.S. Cl. 65—30

6 Claims

A process for producing opaque surface crystallized glass bodies, for crystallizing glass to glass-ceramics, and for further crystallizing surface portions of transparent glass-ceramics to opaque glass-ceramics by use of high-intensity infrared radiation.

The invention also includes glass or glass-ceramic bodies wherein the surface of a transparent glass-ceramic is crystallized to a different degree than interior portions by use of high-intensity infrared radiation.

3,615,318

DECORATING PROCESS

Robert F. Jagodzinski, Maumee, and Louis Spanoudis, Toledo, both of Ohio, assignors to Owens-Illinois, Inc.
Filed Aug. 1, 1967, Ser. No. 657,488
Int. Cl. C03c 15/00, 29/00

U.S. Cl. 65—30

17 Claims

A process for selectively decorating a transparent, glass-ceramic body or a thermally crystallizable glass body by the steps of coating selected surface areas with a compound or composition which is capable of selectively absorbing electromagnetic radiation, exposing the coated area to a source of electromagnetic radiation for a period of time so as to cause the glass-ceramic or glass body immediately under the coated areas to be heated to effect formation of opaque glass-ceramic surface areas on said body.

3,615,319

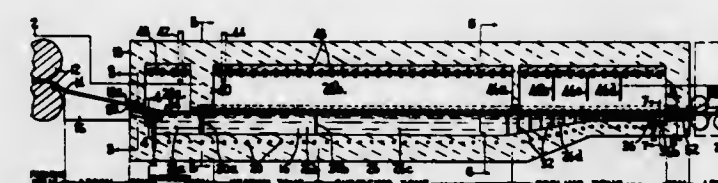
ION EXCHANGE STRENGTHENING OF GLASSES WITH LITHIUM VAPOR

Francis J. Shonebarger, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Dec. 11, 1967, Ser. No. 689,438
Int. Cl. C03c 21/00

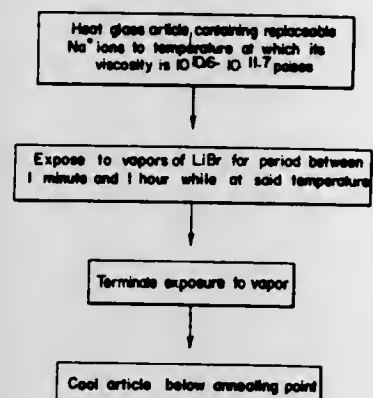
U.S. Cl. 65—30

11 Claims

Soda-lime glass articles are strengthened by exposure to vapors of certain lithium compounds while heated to or above the annealing point. Exposure at temperatures below the annealing point is avoided, to prevent etching the glass surface. Lithium ions migrate into a zone of the glassy



network underlying the exposed surface and partially replace alkali metal ions therein. Upon cooling, the lithium-enriched

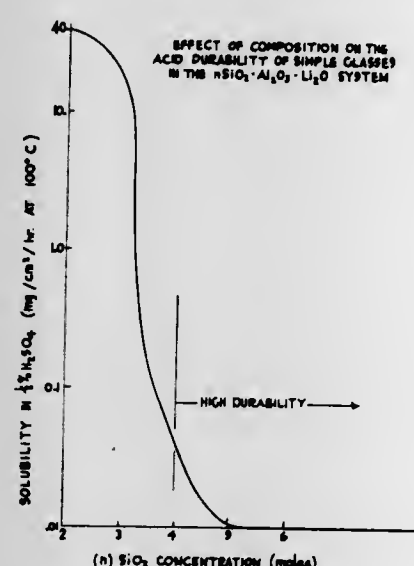


shell is placed in compression about the glass article. Strength improvements are achieved in short periods of time.

3,615,320 STRENGTHENED GLASS ARTICLE AND PROCESS FOR MAKING

Albert E. Junge, New Kensington; Arnold J. Thimons, Natrona Heights, and Donald R. Wenkhous, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Feb. 13, 1968, Ser. No. 705,186
Int. Cl. C03c 21/00

U.S. Cl. 65-30



The invention relates to a novel glass composition and methods of strengthening glass articles thereof by ion exchange techniques. More particularly, this invention relates to lithia-alumina-silica glasses containing soda and boric oxide which can be melted and formed by conventional techniques, then strengthened by ion exchange of relatively large alkali metal ions from an external source for smaller alkali metal ions of the glass while maintaining the temperature of said glass below its strain point.

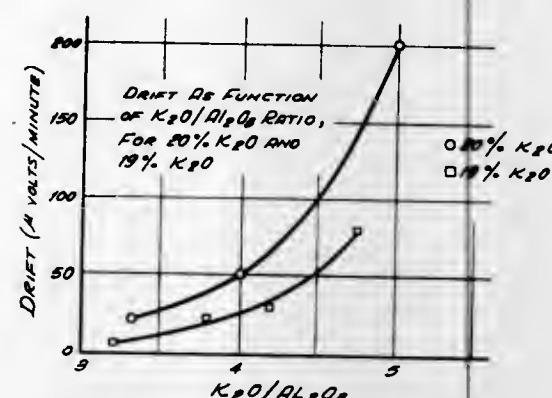
3,615,321 METHOD OF FORMING A POTASSIUM ION SENSITIVE GLASS ELECTRODE

Willis L. Carruth, Glendale, and Robert W. Negus, Arcadia, both of Calif., assignors to Cary Instruments, Monrovia, Calif.
Filed Apr. 15, 1968, Ser. No. 721,473
Int. Cl. C03c 21/00

U.S. Cl. 65-30

The method of making a glass electrode more sensitive to K^+ than to Na^+ in electrolytic solution includes the steps of forming a glass melt to have an initial composition of K_2O , Al_2O_3 , and SiO_2 , where the mol percents of K_2O and Al_2O_3 are chosen to optimize sensitivity ratio (K^+ sensitivity to Na^+

sensitivity) with low electrode output drift; digesting the melt for an extended period to substantially reduce the electrode



output drift rate; and forming the electrode from the digest melt.

3,615,322 CHEMICAL STRENGTHENING OF GLASS ARTICLES PRODUCED WITH FLAME TREATMENT

Burton S. Bogart, and Paul D. Dillard, both of Lancaster, Ohio, assignors to Anchor Hocking Glass Corporation, Lancaster, Ohio
Filed Sept. 30, 1968, Ser. No. 763,958
Int. Cl. C03c 21/00

U.S. Cl. 65-30

8 Claims

In the production of glass articles formed by a process including a flame treating step, and which are to be strengthened by ion exchange, much greater strength improvements can be obtained if alkali ions in the article are first exchanged with ions from an external source, and the article is thereafter subjected to the flame treatment rather than completing the flame treating step before ion exchange. The process has especially useful application in the production of blown soda-lime tumblers and similarly formed articles wherein a moil is cracked off leaving an edge requiring fire polishing and which is to be strengthened by an ion exchange technique.

3,615,323 METHOD OF INCREASING THE MECHANICAL STRENGTH OF GLASS ARTICLES

Johannes Cornelissen, and Arnoldus Martinus Marie DeRijk, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 3, 1969, Ser. No. 803,930
Claims priority, application Netherlands, Mar. 7, 1968, 6803210
Int. Cl. C03c 21/00

U.S. Cl. 65-30

2 Claims

A method of strengthening glass articles consisting essentially of an alkali-aluminosilicate glass by contacting the glass article while above the annealing point but below the softening point of the glass with a melt containing lithium ions and about 0.005 to 0.1 gram-ion per bath of silver ions to exchange Na^+ ions against Li^+ ions.

3,615,324 PROCESS FOR FORMING HERMETIC SEAL FOR SHEATHED ELECTRICAL CONDUCTORS

William D. Gordon, Lynn, and Robert S. Norman, Marblehead, both of Mass., assignors to General Electric Company
Division of Ser. No. 618,168, Feb. 23, 1967, Pat. No. 3,451,861.
Filed July 2, 1968, Ser. No. 741,935
Int. Cl. C03c 27/02, 17/00

U.S. Cl. 65-36

5 Claims

A process for forming a hermetic seal from a finely pulverized mixture of glass and 30-40 percent by weight of magnesium oxide. A finely pulverized mixture of a lead-potash-soda glass with 30-40 percent by weight of magnesium oxide is loaded into the area around the electrical conductors to be sealed. The powdered mixture is "pressed" to reduce porosity and compact the particles. Thereafter, the

mixture is heated to a temperature which drives off moisture and purges air from the mixture. Thereafter, the temperature is elevated at a rate to induce crystallization in the material



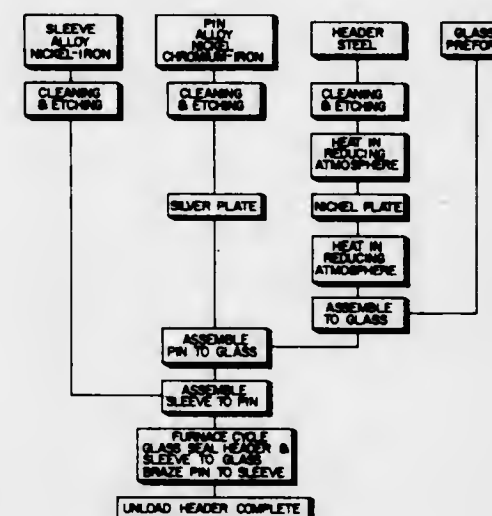
without causing stratification while raising the temperature to the working point of the glass in the seal mixture. Thereafter, the composition is cooled until it becomes rigid.

3,615,325 METHOD OF MAKING A SLEEVE-TYPE METAL TO GLASS TO METAL SEAL

Robert C. Failing, Wilmington, N.C., assignor to General Electric Company
Filed June 2, 1967, Ser. No. 829,584
Int. Cl. C03c 27/02

U.S. Cl. 65-43

6 Claims



A method of making a hermetic metal to glass to metal to metal seal of the sleeve type, wherein the component parts are formed into an integral structure by a simplified method and a one-step heating cycle.

3,615,326 METHOD OF ASSEMBLING ELECTRON DISCHARGE DEVICES HAVING SENSITIVE COMPONENTS HOUSED WITHIN A GLASS ENVELOPE

Nathan D. Levin, Los Altos Hills, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 14, 1969, Ser. No. 791,032
Int. Cl. C03b 33/00

U.S. Cl. 65-56

1 Claim

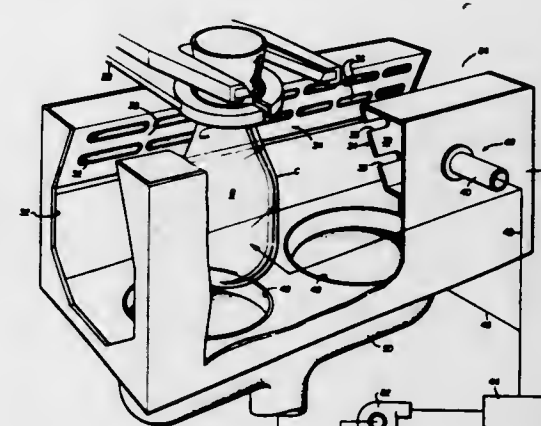
A method of assembling an electron discharge device having sensitive components housed within a glass envelope. The method comprises the steps of forming a glass envelope, breaking the glass envelope into two separable sections, housing sensitive components within at least one of the two envelope sections, and fusing the two separable sections back together with the sensitive components housed therewithin.

3,615,327 METHODS AND APPARATUS FOR APPLYING OXIDE COATING TO GLASS CONTAINERS

Steve M. McLary, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.
Filed Aug. 20, 1969, Ser. No. 851,649
Int. Cl. C03c 17/00

U.S. Cl. 65-60

4 Claims



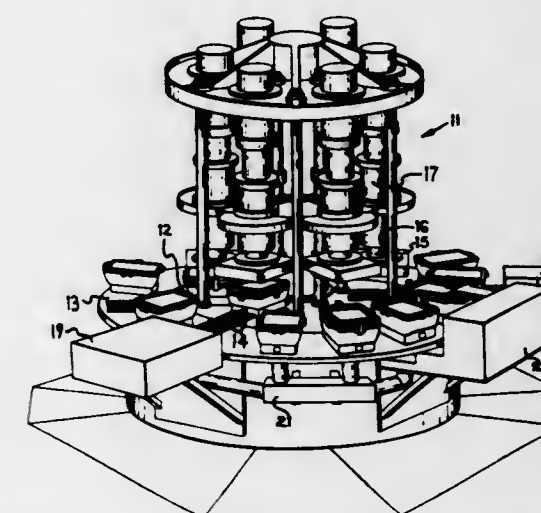
Methods and apparatus for applying a metallic oxide film to the outer surface of a glass container. A glass container is formed with an integral moil portion projecting upwardly from the container finish and is suspended from a support mechanism which engages only the moil portion at a location above the container finish. In the application of coatings with which the present invention is concerned, it is necessary that the container be at an elevated temperature, in the order of 1,000° F., and the coating is applied preferably while the container is still at this elevated temperature from the forming operation. The container is carried by the support mechanism through a spray tunnel which is open at its top so that the moil and support mechanism pass above, rather than through the tunnel. During passage of the container through the tunnel, it is conveyed in a vapor atmosphere having suspended particles of a metallic vapor compound the treating atmosphere being controlled and slightly above atmospheric pressure. Exhaust ducts opening in the bottom of the tunnel continuously exhaust the tunnel interior to prevent vapors from escaping from the interior of the tunnel.

3,615,328 ROTARY MOLDING METHOD OF PRESS SHAPING GLASS

James C. Coleman, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Jan. 23, 1969, Ser. No. 793,257
Int. Cl. C03b 11/02

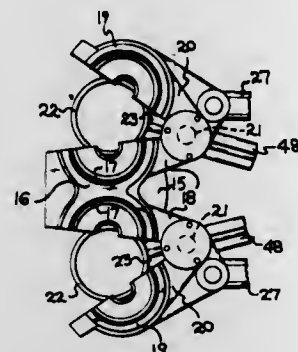
U.S. Cl. 65-72

9 Claims



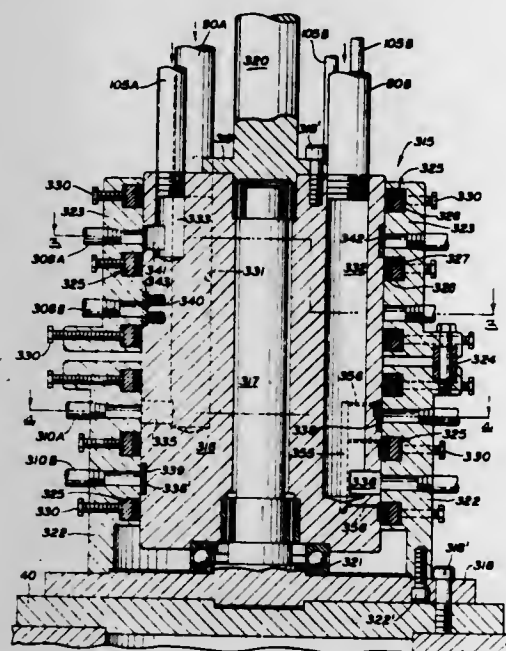
This application discloses alternative embodiments of a method for press-molding glass articles, e.g. television picture tube faceplates or other glass items of similar shape. The

horizontally separable second sections mounted in movable relation on the sides of said first section, each section having member. The resilient mounting insures that the entire area of the shaping rail will contact the sheet regardless of minor



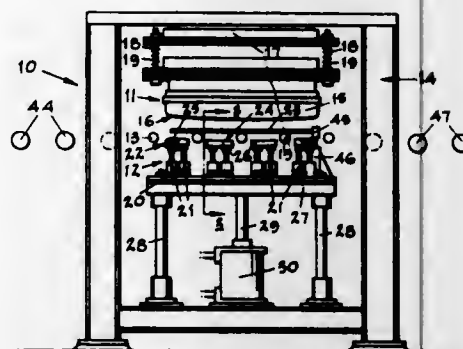
a mold cavity complementary to and facing the juxtaposed cavity of the first section.

3,615,337
SYSTEM MEANS FOR CONTROLLING THE FUEL SUPPLY TO BURNERS OF A GLASSWARE BURN-OFF MACHINE
James B. Legg, Columbus, Ohio, assignor to The Eldred Company, Columbus, Ohio
Filed Sept. 10, 1969, Ser. No. 856,560
Int. Cl. C03b 23/00
U.S. Cl. 65—272



A system for controlling the supply of fuel to the burners of a glassware burn-off machine which burns off the moils from hollow glass articles. It includes means for separately controlling the supply of combustible gas and oxygen to separate superimposed cavities of double-duty burners of such a machine in which the one cavity produces a melting flame for the moil connection and the other cavity produces a more intense flame for completely severing that connection.

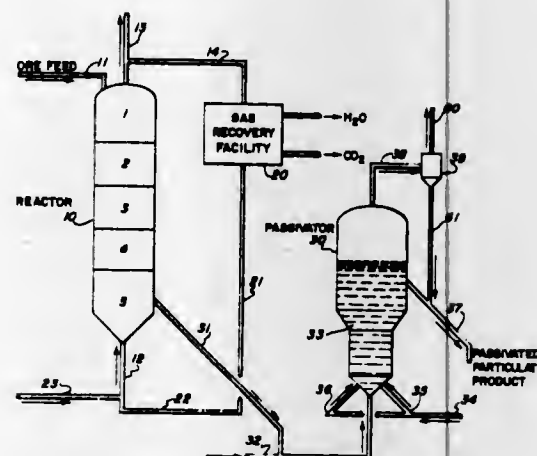
3,615,338
APPARATUS FOR PRESS BENDING GLASS SHEETS
Bobby J. Boyles, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Mar. 7, 1969, Ser. No. 805,244
Int. Cl. C03b 23/02
U.S. Cl. 65—291
In apparatus for bending glass sheets in which at least one of the mold members comprises a relatively narrow shaping rail which contacts only a portion of the sheet, a plurality of yieldable resilient members mounting the rail on its base



variations in the contour of the shaping surface due to heat distortion and/or extended use.

3,615,339
PROCESS FOR PRODUCING IRON POWDER FROM HEMATITE ORES
W. J. Dennis Stone, 253 Westcroft Ave., and David Stewart Hay, 355 Penn St., both of Beaconsfield, Quebec, Canada
Filed Oct. 17, 1968, Ser. No. 768,543
Claims priority, application Great Britain, Oct. 19, 1967, 47738/67
Int. Cl. B22f 9/00
U.S. Cl. 75—0.5 AA
A process for producing iron powder in which a hematite ore concentrate is ground and passed through a high-intensity wet magnetic separator to remove silica and other acid insoluble impurities, after which the purified hematite is reduced in the presence of hydrogen to form iron powder.

3,615,340
QUENCHING AND PASSIVATION OF PARTICULATE METALS
Beverly B. Fuqua; William J. Mettraller; Marnell A. Segura, and Earl E. Turner, all of Baton Rouge, La., assignors to Esso Research and Engineering Company
Filed Nov. 18, 1968, Ser. No. 776,628
Int. Cl. B22f 9/00; C21b 13/00
U.S. Cl. 75—0.5 BA
10 Claims



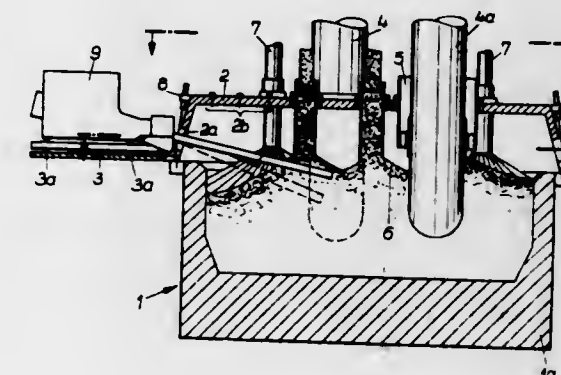
A process is disclosed for rendering active particles of reduced iron ores resistant to oxidation by treating the particles in a fluidized bed at elevated temperatures with mildly oxidizing gases.

3,615,341
NONLEAFING METALLIC FLAKE PIGMENT
Rolf Rolles, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 4, 1968, Ser. No. 781,265
Int. Cl. B22f 9/00; C09c 1/64
U.S. Cl. 75—0.5 A
Use of acetylacetone to remove undesirable parent metal and iron fines from nonleafing metallic flake pigments.

3,615,342
PROCESS FOR PRODUCING IRON ORE PELLETS OF LOW ALKALI CONTENT AND CONTAINING FLUX MATERIAL
Conrad B. Bare, Coopersburg, Pa., assignor to Bethlehem Steel Corporation
Filed Aug. 27, 1969, Ser. No. 854,357
Int. Cl. C22b 1/08, 3/00

U.S. Cl. 75—1
A process for treating iron ore pellets containing objectionably high contents of alkali, for example, about 0.25 percent to about 1.50 percent of sodium and/or potassium oxides. The process includes soaking the pellets in an aqueous solution of calcium chloride, drying the pellets and heating the pellets to reduce the alkali content to below about 0.15 percent. The pellets produced thereby are also described.

3,615,346
PROCESS FOR PRODUCTION OF METALS IN AN ELECTRIC FURNACE
Johannes A. Reth, and Winfried H. Fettweis, both of Duisburg, Germany, assignors to Demag Elektrometallurgie G.m.b.H., Duisburg, Germany
Filed Aug. 23, 1968, Ser. No. 754,892
Claims priority, application Germany, Mar. 19, 1968, D 55615
Int. Cl. C22d 7/00; C21c 5/52
U.S. Cl. 75—10
9 Claims



3,615,343
PROCESS FOR DECOMPOSING INTERMETALLIC COMPOUNDS IN METALS
Alex R. Valdo, and Freeman M. Sanderford, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
Filed July 12, 1968, Ser. No. 744,307
Int. Cl. B22d 23/08; B22f 9/00

U.S. Cl. 75—0.5 B
This invention relates to the purification of alloys and more particularly, to the decomposition of undesirable intermetallic compounds present in aluminum alloys. The invention is characterized by heating the impure alloy to a temperature above the melting temperature of the intermetallic compound, maintaining this temperature for a time sufficient to allow the intermetallic compound to dissociate, and subsequently cooling the alloy under conditions which minimize reformation of the dissociated compound. In the cooling phase of the invention, good results have been realized by utilizing an ice water quench.

In the production of metals and metal alloys from a charge of material containing at least one of manganese, silicon, and chromium, the charge of material is disposed within a closed combustion chamber and combustion air is directed into the closed space in a volume based on the conditions existing therein. A sufficient amount of combustion air is supplied to completely burn all of the CO in the reduction gases to form CO₂. The amount of combustion air supplied to the closed combustion space is in excess of the amount required to effect the complete combustion of the CO₂. Further, during the reduction operation, the charge is worked by stirring means or the like to assure the permeability of its surface for the release of the reduction gases.

3,615,344
METHODS OF CONTROLLING THE PROCESS OF AGGLOMERATION
Henry Gilbert Meunier, and Johannes Joseph Luckers, both of Liege, Belgium, assignors to Centre National de Recherches Metallurgiques, Brussels, Belgium
Filed Nov. 29, 1968, Ser. No. 780,091
Claims priority, application Belgium, Dec. 1, 1967, 707459; 707460; 707461
Int. Cl. C21b 1/10

U.S. Cl. 75—5
A method of agglomerating mineral materials by mixing them with fuel and then water and sintering, including the steps of continuously monitoring the process of agglomeration by measuring the permeability of the mixture before sintering and regulating the supply of water to ensure an appropriate permeability of the mixture to be sintered for the highest speed of sintering and for the desired quality of the agglomerate, said regulation of water supply process as a whole and of foreseeable disturbances in the process.

3,615,347
METHOD OF MAXIMIZING POWER UTILIZATION IN THE ELECTRIC ARC PRODUCTION OF ALUMINUM-SILICON ALLOYS
Walther Schmidt, and Hubert Martin, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Jan. 21, 1969, Ser. No. 792,769
Int. Cl. H05b 7/18

U.S. Cl. 75—10
This application discloses a novel method for preparing alloys of 3 and silicon in an electric furnace from a feedstock containing oxides of the relevant metals, carbon, and a metallic component. In this method, to the feedstock, which contains an oxidic component and sufficient carbon to reduce the oxidic component, the oxidic component containing alumina and silica in a ratio to about 2.0 to 6.0 parts of Al₂O₃/1 part SiO₂, there is added a metallic silicon compound and the arc furnace is operated with at least one electrode having an arc voltage E and an amperage I, determined for the current flowing in the individual electrode, having a ratio of E²/I of about 2 to 10.

3,615,345
METHOD FOR PRODUCING ULTRA-HIGH PURITY METAL
George W. King, East Orange, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 28, 1968, Ser. No. 755,924
Int. Cl. C22d 7/00; C22b 51/00, 51/20

U.S. Cl. 75—10
For electron-beam zone-refining of metal, at least one zone-refining pass is conducted in a hydrogen atmosphere at a system pressure sufficiently low to prevent formation of a hydrogen arc-discharge. This is followed by at least one zone refining pass in a high vacuum. The resulting metal is extremely pure.

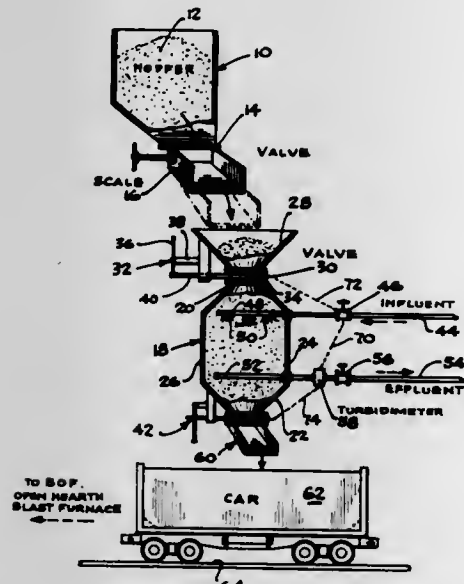
3,615,348
STAINLESS STEEL MELTING PRACTICE
Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio
Filed July 31, 1968, Ser. No. 748,969
Int. Cl. C21c 5/52, 7/00, 39/11

U.S. Cl. 75—11
Melting a charge comprising alloys of iron and chromium in an electric arc furnace to achieve metal of maximum cleanliness with minimum oxide inclusions but of high-carbon content, and then ridding the metal of carbon in a vacuum furnace by way of readily reducible oxides and low pressure.

3,615,349
PRODUCTION OF ALLOYS OF IRON
 William Bleloch, 17 Rockridge Road, Parktown,
 Johannesburg, South Africa
 Filed Jan. 3, 1969, Ser. No. 788,788
 Claims priority, application South Africa, Jan. 10, 1968,
 68/0176

Int. Cl. C21c 5/52, B23b 9/00
 U.S. Cl. 75-12 20 Claims
 The invention is concerned with the extraction of carbon from ferroalloys, iron and alloy steels by the use of a high-velocity high-temperature plasma jet of a gas having an affinity to form stable volatile carbon compounds but a passivity towards ferrous metals at such high temperatures. The jet is directed into a molten and superheated bath of the metal to enable the volatile carbon compounds to separate from the metal leaving the metal bath with an extra low carbon content. The plasma jet will preferably include water vapor.

3,615,350
PROCESS FOR TREATING AQUEOUS SUSPENSIONS OF IRON OXIDE WASTES
 Robert W. Evers, 532 West Grant Pl., Chicago, Ill.
 Filed July 2, 1968, Ser. No. 742,001
 Int. Cl. C21b 3/00, 1/30
 U.S. Cl. 75-25 5 Claims

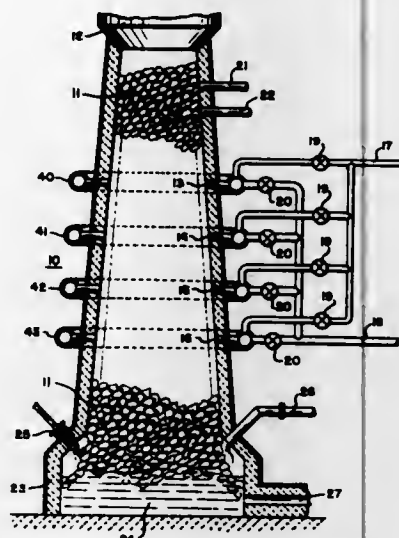


A process for treating aqueous suspensions of the type resulting from the manufacture and processing of steel and iron whereby the suspended matter is recovered and utilized in the iron and steel manufacturing processes.

3,615,351
DIRECT GASEOUS REDUCTION OF IRON OXIDE
 John Happel, Hastings-on-Hudson, and Joachim Hillard
 Blanck, Glen Oaks, both of N.Y., assignors to Northfield
 Mines, Inc., New York, N.Y.
 Continuation-in-part of application Ser. No. 468,864, July 1,
 1965, now abandoned. This application Aug. 29, 1969, Ser.
 No. 854,213
 Int. Cl. C21b 13/02 13 Claims

U.S. Cl. 75-38 13 Claims
 Molten iron is produced directly from high grade iron oxide ore by the direct reduction in a vertical shaft furnace of preheated ore with hydrogen and carbon monoxide gaseous mixtures. The mixtures of hydrogen and carbon monoxide are adjusted to maintain a continuously increasing

H_2/CO ratio in the direction the charge passes through the vertical reduction zone while maintaining about the same



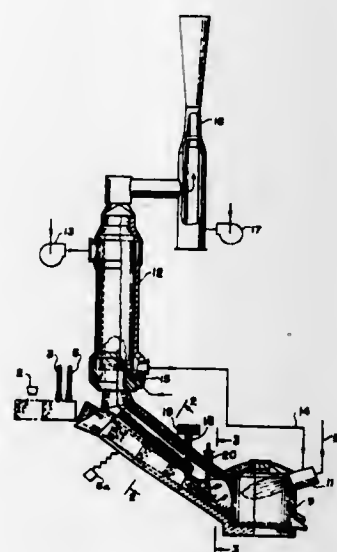
temperature, below about 1,100° C., throughout the entire reduction zone.

3,615,352
PROCESS FOR REDUCTION OF IRON ORE IN STAGED BEDS WITHOUT BOGGING
 Francis X. Mayer, Baton Rouge, La., assignor to Esso
 Research and Engineering Company
 Continuation-in-part of application Ser. No. 398,073, Sept.
 21, 1964, now abandoned, Continuation-in-part of
 application Ser. No. 422,559, Dec. 31, 1964, now Patent No.
 3,393,066. This application Apr. 24, 1968, Ser. No. 723,874
 Int. Cl. C21b 1/02, 15/00 11 Claims

U.S. Cl. 75-26 11 Claims
 A multistage, high temperature fluidized iron ore reduction process is described wherein bogging or defluidization is prevented by adding specified particulate agents to ferrous reduction zones.

3,615,353
APPARATUS AND PROCESS OF SMELTING SCRAP
 Harold A. Mahoney, 24 Wellsford St., Pittsburgh, Pa.
 Continuation-in-part of application Ser. No. 501,516, Oct. 22,
 1965, now abandoned. This application Mar. 15, 1968, Ser.
 No. 713,346
 Int. Cl. C21b 13/00 17 Claims

U.S. Cl. 75-43



A water-cooled inclined smelter for loose or baled scrap metal coated with finely divided or beneficiated iron ore and sprayed with coke and a slag forming material. When baled, the flux and slag are applied to the top edge portions and partly overlie the sides of the bales. At a substantial distance

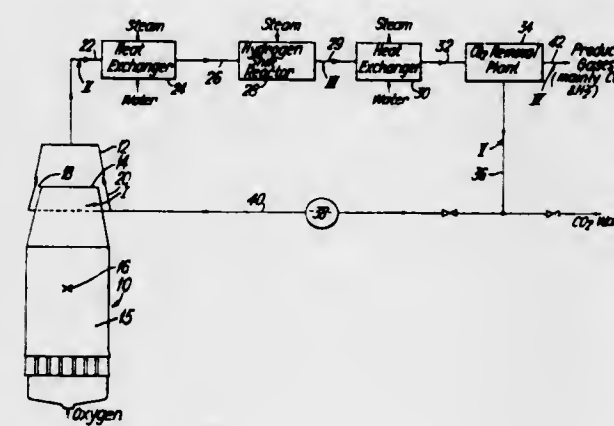
below the entrance of the smelter, a pipe extends through the top wall of the smelter through which molten pig iron is passed onto the scrap between the edges of the flux and slag forming material. A lance extends through the top of the smelter below the pig iron pipe and has a central chamber through which a hydrocarbon and a separate water-cooled chamber through which oxygen are applied to the scrap metal. The hydrocarbon passing into contact with the hot metal scrap is cracked and the nascent carbon reacts with oxygen from the lance and in the ore and slag to form carbon monoxide and the oxygen, carbon, and carbon monoxide react in the presence of the hot metal scrap and the refractory lining of the furnace which act as catalysts to provide a temperature of iron approximately 5800 to 6000° F. The portion of the smelter below the lance is flared outwardly and is connected to a hearth which has one or more burners directed onto the molten metal and slag flowing through the shallow refinery to keep the metal and slag hot. The carbon monoxide generated in the smelter and the shallow refinery passes above the metal flowing downwardly through the inclined smelter to partially reduce the iron ore and is burned in a recuperator in heat exchange relation with air which air is passed to the burner or burners in the hearth to support combustion. The smelter is substantially closed to extraneous air and as the carbon monoxide is burned in the recuperator, a slight vacuum is formed in the smelter lessens the amount of oxygen that is required. Phosphorus and sulfur pass into the slag in the shallow refinery and at the high temperature, molten copper and other heavy nonferrous metal settle below the steel and may be removed separately from the hearth.

3,615,354
METHOD OF REMOVING CONTAMINANTS FROM STEEL MELTS
 Sundaresan Ramachandran, Natrona Heights, Pa., assignor to
 Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
 Filed Apr. 30, 1968, Ser. No. 725,510
 Int. Cl. C21c 7/02, 7/06 7 Claims

U.S. Cl. 75-58 7 Claims
 Described herein is a method of removing contaminants such as oxygen and sulfur from steel which includes the step of adding to a molten steel melt a mixture of a reactive alkali or alkaline earth metal and a halide of the metal adjusted so that the proportion of metal does not exceed its solubility in the halide.

3,615,355
METHOD OF COLLECTING AND TREATING EXHAUST GASES CONTAINING CARBON MONOXIDE
 Geoffrey Frederick Skinner, Pinkneys Green, England,
 assignor to Foster Wheeler Corporation, Livingston, N.J.
 Filed Sept. 9, 1968, Ser. No. 758,359
 Claims priority, application Great Britain, Sept. 8, 1967,
 41169/67
 Int. Cl. C21c 5/38; C07c 29/16 3 Claims

U.S. Cl. 75-60



This invention relates to the use of the blow gases containing carbon monoxide which are derived from steelmaking processes. A joint must be provided between the steel converter apparatus and a collection pipe through

which the blow gases are conveyed for use and, in view of very high temperature of the gases, it is difficult to provide a secure sealed joint. Therefore according to the invention the joint is sealed by a blast of carbon dioxide which prevents the egress of the blow gases past the joint to the atmosphere.

3,615,356
BASIC STEELMAKING PROCESS
 Hugh W. Grenfell, Glamorgan, South Wales, England,
 assignor to British Steel Corporation, London, England
 Filed Nov. 18, 1968, Ser. No. 776,417
 Claims priority, application Great Britain, Sept. 26, 1968,
 45809/68
 Int. Cl. C21c 5/28 13 Claims

U.S. Cl. 75-60 13 Claims
 A basic steelmaking process for refining a charge of steel scrap, molten pig iron and basic slag-making material in a converter-type vessel employing hot refining gases comprising products of combustion and uncombined oxygen directed downwardly toward the charge at high velocity from a burner-type lance comprising the successive stages: (I) a fuel-fired slag-making, bath-conditioning and preliminary-refining stage employing a stream of hot refining gas relatively rich in combustion products and a relatively poor in uncombined oxygen; (II) a fuel-fired decarburization-refining stage employing a stream of hot refining gas relatively poor in combustion products and relatively rich in uncombined oxygen; and (III) a fuel-fired terminal-refining and regulating stage employing a stream of hot refining gas relatively rich in combustion products and relatively poor in uncombined oxygen.

3,615,357
REMOVAL OF TIN FROM COPPER SCRAP
 Eugene Wainer, Shaker Hts., Ohio, assignor to Horizons
 Research Incorporated
 Filed Feb. 20, 1970, Ser. No. 13,212
 Int. Cl. C22b 25/06; C01g 19/06, 19/08 8 Claims

U.S. Cl. 75-64 8 Claims
 Removal of metallic tin from copper scrap on which the tin is present as a coating by heating in a controlled atmosphere whereby the tin is removed as a volatile chloride.

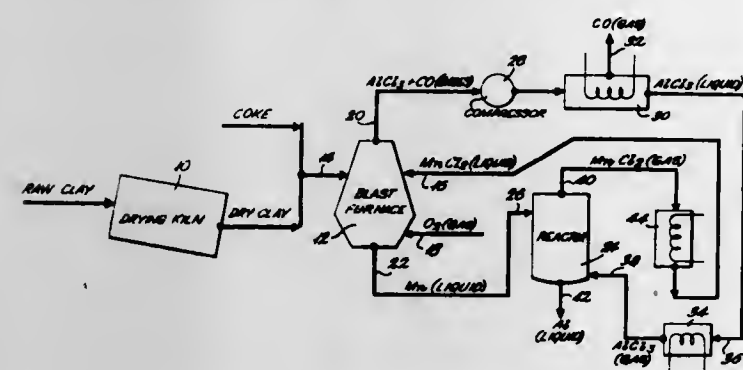
3,615,358
PROCESS FOR THE PREPARATION OF POTASSIUM METAL
 Marcel Delassus, Mazingarbe, and Christian Vaniscotte,
 Vermelles, both of France, assignors to Houilleres du Bassin
 du Nord & du Pas-de-Calais, Douai (Nord), France
 Continuation-in-part of application Ser. No. 603,110, Dec. 20,
 1966, now abandoned. This application Aug. 21, 1969, Ser.
 No. 852,117
 Int. Cl. C22b 27/00 3 Claims

U.S. Cl. 75-66 3 Claims
 Metallic potassium is prepared from potassium hydroxide or potassium carbonate by reduction with silicon at 1100° to 1200° C. under an inert atmosphere, the potassium hydroxide or potassium carbonate and silicon being in the form of a finely divided mixture with silica and lime in amounts sufficient to convert the potassium hydroxide or carbonate into a silicate and for conversion of all of the silica into calcium silicate, respectively.

3,615,359
PROCESS FOR PRODUCING ALUMINUM
 Charles Toth, Westwego, La., assignor to Applied Aluminum
 Research Corporation, Westwego, La.
 Filed Dec. 20, 1967, Ser. No. 692,036
 Int. Cl. C22b 21/02, 47/00; C019 45/06 15 Claims

U.S. Cl. 75-68 R 15 Claims
 A process for producing aluminum involving reacting alumina under reducing conditions in the presence of carbon with manganese chloride to form aluminum trichloride and

manganese and reacting the latter at a temperature sufficient to reduce said aluminum trichloride to aluminum. A process

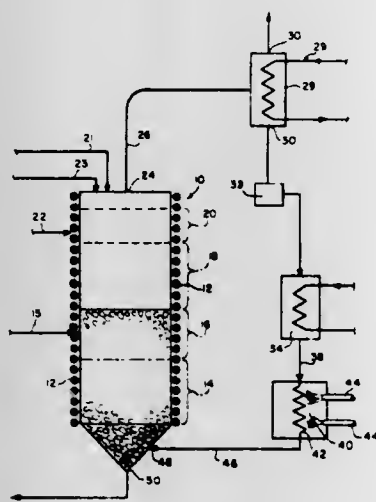


for producing aluminum from aluminum trichloride involving the use of manganese as a reducing agent.

3,615,360 PROCESS FOR THE CONTINUOUS PRODUCTION OF ALUMINUM

Harry Gordon Harris, Jr., Metairie; Raymond V. Bailey, New Orleans, and Charles Toth, Westwego, all of La., assignors to Applied Aluminum Research Corporation, Westwego, La.

Filed Oct. 6, 1969, Ser. No. 863,924
Int. Cl. C22b 21/02; C01f 7/60; C01g 45/06
U.S. Cl. 75-68 R 7 Claims



Process for the continuous production of aluminum from the reaction of aluminum trichloride and manganese. Four principal zones connected to permit the necessary reactant flows are provided within a single column of a reactor furnace, an upper chlorination zone for forming aluminum trichloride, a manganese oxide reduction zone for forming manganese, an aluminum trichloride reduction zone for forming aluminum from aluminum trichloride and manganese and a lower rectification zone for continuous withdrawal of high-purity aluminum.

3,615,361 FIRE REFINING OF COPPER

Paul E. Queneau, Fairfield, Conn., and Charles E. O'Neill, Oakville, Ontario, Canada, assignors to The International Nickel Company Inc., New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,769
Claims priority, application Canada, May 2, 1968, 018,994
Int. Cl. C22b 15/06, 23/06 24 Claims

A process is disclosed for fire-refining copper sulfide having a copper to nickel ratio of more than about 7:3, which process comprises maintaining a molten bath of copper sulfide in a turbulent state to volatilize at least about 50 percent of at least one impurity from the group consisting of bismuth, lead, tin and zinc, then surface blowing the turbulent bath of copper sulfide with a free-oxygen-

containing gas to convert a minor portion of the copper sulfide to an immiscible metal phase in which at least one element from the group consisting of antimony, arsenic, bismuth, lead, tin and the precious metals is concentrated. After removing the immiscible metal phase the turbulent supernatant bath of copper sulfide is converted to liquid copper which is substantially saturated with oxygen by surface blowing with free oxygen-containing gas. At least one impurity from the group consisting of lead, selenium, sulfur, tellurium and tin are volatilized from the molten copper and the molten copper is thereafter treated with a reducing gas to lower the oxygen content to at least about 0.1 percent.

3,615,362 SLAGGING IN TOP BLOWN CONVERTERS

John Stuart Warner, Oakville, Ontario, Canada, and Paul Etienne Queneau, Fairfield, Conn., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 14, 1969, Ser. No. 799,318
Int. Cl. C22b 7/00, 15/14, 23/06 28 Claims
Nonferrous mattes containing iron are treated to slag iron therefrom. A bath of the matte is established and the iron content thereof is lowered to about 10 percent. When the iron content of the matte has been lowered to about 10 percent, a turbulent bath of the matte is treated with an oxygen-transfer slag containing about 25% to 35% SiO₂ and 5% to 35% Fe₂O₃ while surface blowing the slag with a free-oxygen-containing gas to lower the iron content of the matte to less than about 1 percent. Advantageously, the final stages of iron removal are conducted at temperatures in excess of about 1,250° C.

3,615,363 PROCESS AND APPARATUS FOR RECOVERY OF MERCURY FROM ORES CONTAINING IT

Leopoldo Ruiz Montes de Oca, San Francisco 15, Mexico City 12, Mexico

Filed Nov. 8, 1968, Ser. No. 774,327
Int. Cl. C22b 43/00 8 Claims

A process and apparatus for the recovery of mercury from mercury ores comprises heating a body of the ore in a closed chamber to decompose it into mercury and other vapors, transferring the vapors by means of a jet of injected air to a condensing system formed by at least one generally spirally disposed horizontal conduit having its lower portion open and immersed in a body of cooling water and its upper surface cooled by a water spray, and collecting the condensed liquid mercury in a trough containing the water located under the conduit, and having a sloping bottom to facilitate collection.

3,615,364 REDUCTION OF CUPROUS CYANIDE WITH HYDROGEN IN A LIQUID MEDIUM

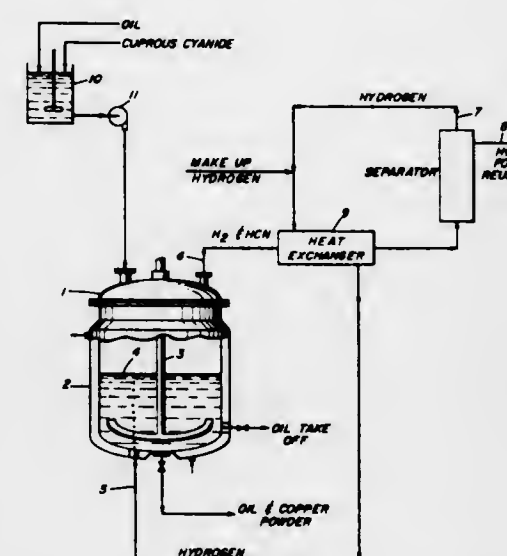
Irving Rubak, Bronx, N.Y., assignor to Treadwell Corporation, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,805
Int. Cl. C22b 15/08, 15/12 10 Claims

Cuprous cyanide is dispersed in a high boiling hydrocarbon oil nonreactive with hydrogen, copper or HCN, such as a paraffin mineral oil, and hydrogen is passed through at temperatures from 190° C. to temperatures at or a little below the boiling point of the oil. With an oil boiling above 325° C., suitable temperatures are from a little below 300° C. to approximately 325° C. Hydrogen is passed through at a rate and for a time to produce a substantial excess, for example at least 50 percent excess, and the cuprous cyanide is reduced almost quantitatively to a very pure copper powder. After reduction is complete, the copper powder is separated

from the oil, the last traces of oil being removed by known means, such as solvent washing, or removed when the copper

least 0.07% for the maximum values of carbon, manganese and nickel, and a chromium content of about 19%, and remainder iron.

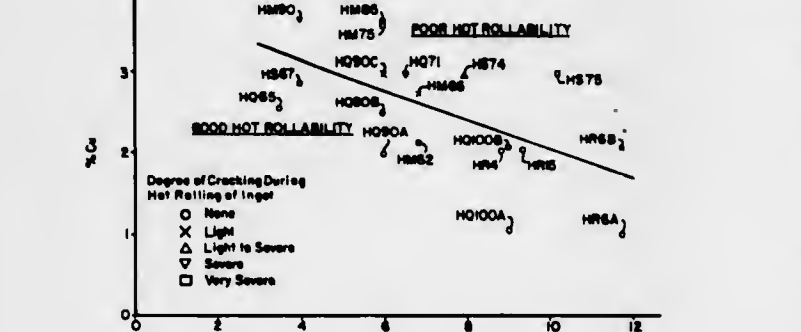


is melted. The excess hydrogen carries with it HCN formed in the reduction, and the two are separated and reused.

3,615,365 AUSTENITIC STAINLESS STEEL

Thomas H. McCunn, Lower Burrell, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Continuation-in-part of application Ser. No. 315,957, Oct. 14, 1963, now abandoned. This application Apr. 18, 1968, Ser. No. 738,363
Int. Cl. C22c 39/54 4 Claims



This invention concerns an austenitic stainless steel composed principally of manganese, chromium and nickel and which contains small, but in some cases significant, amounts of carbon, silicon, copper and nitrogen. The materials are combined in critical proportions insuring that the amounts of martensite and delta ferrite present are within controlled maximums and insuring that good hot workability is maintained.

3,615,366 STAINLESS STEEL

Paul M. Allen, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of application Ser. No. 305,533, Aug. 29, 1963, now abandoned. This application Sept. 20, 1968, Ser. No. 761,346
Int. Cl. C22c 39/20 13 Claims
Stainless steel characterized by a combination of ductility and low work-hardening rate, and containing carbon up to 0.15%, manganese 3% to 10%, phosphorus not exceeding 0.06% sulfur not exceeding 0.03% silicon 0.15% to 1%, chromium 15% to 19%, nickel 3.5% to 6%, copper 0.5% to 4%, nitrogen 0.04% to 0.4% with a nitrogen content of at

3,615,367 LOW-LOSS MAGNETIC CORE OF FERRITIC STRUCTURE CONTAINING CHROMIUM

Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed July 31, 1968, Ser. No. 748,927
Int. Cl. C22c 39/14 5 Claims
Corrosion-resistant magnetic core of low hysteresis loss and low eddy-current loss and alloy containing about 9% to 20% chromium, about 0.01% to 3% silicon and/or aluminum, manganese up to about 4%, carbon up to about 0.15%, about 0.15% to 1% sulfur and/or selenium, about 0.02% to 1% titanium and/or zirconium, and remainder substantially iron.

3,615,368 NICKEL-CHROMIUM STEEL HAVING INCREASED RESISTANCE TO CORROSION

Anton Baumel, Kapfenberg, Austria, assignor to Gebr. Bohler & Co., Aktiengesellschaft, Vienna, Austria

Filed June 14, 1968, Ser. No. 736,988
Claims priority, application Austria, June 19, 1967, AS678/67
Int. Cl. C22c 39/20 3 Claims

A nitric acid resistant nickel-chromium steel which, when welded, effectively prevents the formation of intermetallic deposits at the grain boundaries in the weld area. The composition of this steel consists essentially of up to 0.15% carbon, 2-6% silicon, 0-6% manganese, 16-25% chromium, 10-25% nickel, 0.08-2% nitrogen, and the remainder being iron and unavoidable impurities.

3,615,369 AUSTENITIC STAINLESS STEELS

John Michael Francis, Thornbury, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 8, 1968, Ser. No. 696,381
Claims priority, application Great Britain, Jan. 19, 1967, 2954/67
Int. Cl. C22c 39/20, 39/26, 39/54 6 Claims

An austenitic stainless steel alloy consisting of essentially less than 0.07% carbon, less than 0.05% manganese, 0.25-0.75% silicon, 24-26% nickel, 19-21% chromium, up to 0.75% niobium remainder iron and incidental impurities, the percentage being by weight. Optionally the steel may include yttrium or gadolinium within the range 0.025-1 weight percent.

3,615,370 HEAT-RESISTING CHROMIUM-MOLYBDENUM-VANADIUM STEEL

Kenneth Arnold Ridal, and John McCann, both of Yorkshire, England, assignors to English Steel Corporation Limited, Yorkshire, England

Filed June 19, 1968, Ser. No. 738,103
Claims priority, application Great Britain, June 29, 1967, 30,157/67
Int. Cl. C22c 39/20 6 Claims

A heat-resisting alloy steel which is basically a 1 percent chromium-molybdenum-vanadium steel, with the addition of at least one element selected from the group comprising titanium, tantalum and niobium in the range from 0.03 to 0.15 total percentage by weight, from 0.002 to 0.010 percent by weight boron and from 0.5 to 3.0 percent by weight cobalt. High-creep strength, rupture ductility and tensile strength properties are developed by austenitizing the steel in the range 950° C. to 1,060° C., hardening by cooling, and tempering in the range 600° C. to 700° C. for from 3 to 60 hours.

3,615,371

ALUMINUM ALLOY FOR ELECTRIC CONDUCTOR

Katsuhisa Nakajima; Yasuo Maeda, and Sadao Inoue, all of Kiyotaki, Nikko, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Mar. 12, 1968, Ser. No. 712,357

Claims priority, application Japan, Apr. 8, 1967, 42/22380 Int. Cl. C22c 21/00

U.S. Cl. 75—147

1 Claim

This aluminum alloy for electric conductor consists of a ternary Al-Mg-RE alloy containing less than 0.6 weight percent of one or more of rare earth metals and has improved castability, weldability, fatigue strength and antisoftering characteristics on heating at a high temperature and is applicable to the continuous casting and rolling method and the rolling method using large ingots for the purpose of easily manufacturing aluminum alloy conductor having excellent characteristics.

3,615,372

METHOD OF PREPARING ALUMINUM-MAGNESIUM ALLOYS

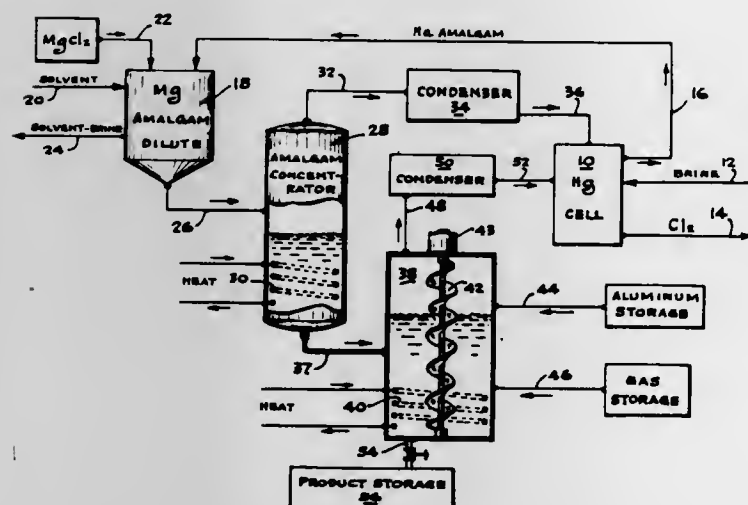
David G. Braithwaite, Chicago, Ill., assignor to Naico Chemical Company, Chicago, Ill.

Filed Jan. 5, 1970, Ser. No. 617

Int. Cl. C22c 21/00

U.S. Cl. 75—147

10 Claims



Aluminum-magnesium alloys which contain from 50 to 98.6 percent by weight of aluminum may be prepared by adding oxide-free aluminum to a magnesium amalgam to form a binary amalgam which is then heated to a temperature sufficient to distill the mercury therefrom. This leaves as a distillation residue the alloys of the invention. The distillation is conducted under conditions of agitation and in the presence of an oxygen-free gas which is incapable of reacting with either aluminum, magnesium, mercury or combinations thereof. The aluminum-magnesium alloys produced by the process of the invention which contain from 50 to 70 percent by weight of aluminum are particularly useful in producing well-known commercial aluminum alloys which contain 1.4 to 5 percent magnesium.

3,615,373

ALLOY FOR PAPERMAKING WIRE

Lothar Bangert, Reutlingen, Germany, assignor to Hermann Wagner, Reutlingen, Germany

Filed June 10, 1969, Ser. No. 831,989

Claims priority, application Germany, June 14, 1968, P 17 58 501.2

Int. Cl. C22c 9/02; B21f 27/00

U.S. Cl. 75—154

3 Claims

Wire cloth for papermaking machines of improved abrasion and corrosion resistance is formed by using warp wires of an alloy comprising tin, phosphorus, nickel, copper, either manganese or iron or both, and, optionally, silicon.

3,615,374

ALLOYED COPPER

Herbert Greenwald, Jr., Upper Arlington, Ohio, assignor to Berry Metal Company, Harmony, Pa.

Filed Nov. 18, 1969, Ser. No. 877,879

Int. Cl. C22c 9/00

U.S. Cl. 75—162

6 Claims

Deoxidized copper having near-trace amounts of iron and possibly also chromium is alloyed with zirconium and aluminum. The resulting alloyed metal experiences a significantly delayed onset of embrittlement when stressed at elevated temperatures.

3,615,375

HIGH-TEMPERATURE OXIDATION AND CORROSION-RESISTANT COBALT-BASE ALLOYS

Adrian M. Beltran; Chester T. Sims, Ballston Lake, N.Y., and Donald E. McGarrigan, Blackwood, N.J., assignors to General Electric Company

Filed Jan. 9, 1970, Ser. No. 1,884

Int. Cl. C22c 19/00

U.S. Cl. 75—171

4 Claims

Cobalt-base alloys having improved high-temperature strength and ductility characteristics and corrosion resistance consist essentially of, in percent by weight, carbon 0.1 to 0.7, chromium 24 to 35, tungsten 6 to 9, nickel 8.5 to 11.5, boron in an effective amount of about 0.005 up to 0.05, iron up to 2, zirconium 0.1 to 1.7, yttrium 0.03 to 1, with the remainder essentially cobalt except for impurities.

3,615,376

CAST NICKEL BASE ALLOY

Earl W. Ross, Cincinnati, Ohio, assignor to General Electric Company

Filed Nov. 1, 1968, Ser. No. 772,796

Int. Cl. C22c 19/00

U.S. Cl. 75—171

3 Claims

An improved cast nickel base alloy has a combination of stability, high-temperature stress rupture strength and hot corrosion resistance primarily through control of such phases as sigma, eta, and the carbides. Control is achieved through the balance of the elements Al, Ti, Mo, W, Co, Cr and C in the proper relationships with a Ni base in the substantial absence of Fe.

3,615,377

SUPERALLOY HAVING IMPROVED SULFIDATION RESISTANCE

Richard J. Quigg, and Scott T. Scheirer, both of Euclid, Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 5, 1966, Ser. No. 570,395

Int. Cl. C22c 19/00

U.S. Cl. 75—171

2 Claims

An alloy being resistant to sulfidation attack having a nickel base and chromium in an amount not more than about 13 percent, the sulfidation resistance being supplied by the addition of up to 1 percent of vanadium, or tantalum, or both.

3,615,378

METASTABLE BETA TITANIUM-BASE ALLOY

Howard B. Bomberger, Jr., Canfield; Stanley R. Seagle, Warren, and Ronald R. Seeley, Canfield, all of Ohio, assignors to Reactive Metals, Inc.

Filed Oct. 2, 1968, Ser. No. 764,585

Int. Cl. C22c 15/00

U.S. Cl. 75—175.5

8 Claims

A metastable beta titanium-base alloy in which beta stability is achieved by optimum addition of beta-eutectoid element (iron, manganese, chromium and/or cobalt). Also included are beta-isomorphous elements (vanadium and/or molybdenum), aluminum, and optionally one or both the neutral elements (tin and zirconium). Alloy is readily formable at room temperatures and can be heat-treated to high tensile strength.

3,615,379

HIGH-GRADE ZINC ALLOYS

Erich Pelzel, Stolberg, Germany, assignor to Stolberger Zink Aktiengesellschaft für Bergbau und Huttenbetrieb, Aachen, Germany

Filed June 11, 1969, Ser. No. 832,508

Claims priority, application Germany, June 12, 1968, P 17 58 489.3

Int. Cl. C22c 17/00

U.S. Cl. 75—178 AC

4 Claims

High-grade zinc alloys consisting of 0.05% to 0.25% titanium, 0.02% to 0.20% copper, 0.005% to 0.05% aluminum, the remainder high-grade zinc having a degree of purity of 99.9% to 99.995% and the use thereof as a creep resistant and ductile alloy in cold rolling applications.

3,615,380

SINTERED, NITROGEN-CONTAINING KEY STEEL REFINING ALLOY

Rudolf Fichte, Nurnberg; Hans Franke, Dusseldorf, and Hans-Joachim Retelsdorf, Katzwang, all of Germany, assignors to Gesellschaft für Elektrometallurgie mbH, Dusseldorf, Germany

Filed May 14, 1968, Ser. No. 728,873

Claims priority, application Germany, May 19, 1967, P 15 58 500.9

Int. Cl. B22f 1/00

U.S. Cl. 75—213

9 Claims

A useful method of making key alloys for refining steel by addition to the steel melt whereby alloying elements and nitrogen may be incorporated in the steel, consists of nitriding a nitridable metal or metal alloy, which alloy may be an alloy of two nitridable alloys or a ferroalloy of a nitridable metal, by exposing the metal or alloy to a nitriding atmosphere at an elevated temperature.

3,615,381

PROCESS FOR PRODUCING DISPERSION-HARDENED SUPERALLOYS BY INTERNAL OXIDATION

Joseph P. Hammond, Knoxville, and Ji Young Chang, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 13, 1968, Ser. No. 775,475

Int. Cl. B22f 1/00

U.S. Cl. 75—213

3 Claims

Iron-, nickel-, and cobalt-base alloys containing chromium in an amount sufficient to provide excellent scaling resistance to high temperature are made previous to controlled quantities of oxygen by alloying with an appropriate amount of a metal selected from thorium, yttrium, or one of the rare earth (4f) metals to form a lamellar eutectic structure. Powders of these alloys are roasted in air to pick up oxygen, then cold compacted and sintered to consolidate the mass while at the same time allowing diffusion of oxygen to form a uniform and ultrafine dispersion of stable oxide particles. Subsequent hot mechanical working shapes and further consolidates the alloy while improving the distribution of metal oxide particles.

3,615,382

PRODUCTION OF TUBULAR PRODUCTS FROM METALLIC POWDERS

Charles E. Manilla, Huntington, W. Va.; Franklin C. Kelly, Chesapeake, Ohio, and Richard H. Hanewald, Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Aug. 29, 1968, Ser. No. 756,222

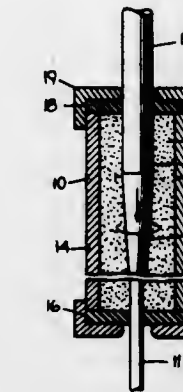
Int. Cl. B22f 3/12

U.S. Cl. 75—214

13 Claims

Tubular-shaped powder metallurgical compacts are made by process comprising subjecting a mass of metallic powder

confined in a tubular cavity to pressure directed outwardly



from the interior of the cavity and progressing continuously from one end of the mass to the other.

3,615,383

CHARGELESS ELECTROPHOTOGRAPHIC PRINTING PROCESS

Eiichi Inoue; Ichiro Endo, Tokyo, and Kunihiro Fukushima, Kawasaki-shi, all of Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

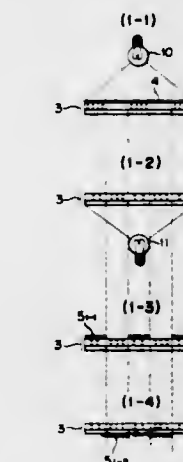
Filed May 19, 1967, Ser. No. 639,889

Claims priority, application Japan, May 26, 1966, 41/33985, 41/33986, 41/33987

Int. Cl. G03g 13/22

U.S. Cl. 96—1

17 Claims



The present invention provides an electrophotographic printing process comprising the steps of forming a first radiation energy pattern on an electrophotosensitive material without previously imparting a charge thereon, to form a latent electrical image on the electrophotosensitive material, forming a second radiation energy pattern to control the latent image, and thereafter causing the latent image to become visible by developing it with a charged, fine particle developer.

3,615,384

ELECTROPHOTOGRAPHIC PROCESS EMPLOYING VINYL BITHIOPHENE POLYMERIC PHOTOCONDUCTORS

Edward Gipestein, and William A. Hewett, both of Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1970, Ser. No. 50,970

Int. Cl. G03g 5/00; H01l 13/00; C08f 15/00

U.S. Cl. 96—1 R

4 Claims

Photoconductors comprising vinyl bithiophene polymers and their use in electrophotographic processes.

3,615,385

PREPARATION OF PRINTING PLATES EMPLOYING ORGANIC POLYMERIZABLE PHOTOCONDUCTOR
Erwin Lind, Auringen, ueber Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed May 11, 1967, Ser. No. 637,639
Claims priority, application Germany, May 13, 1966, K 59245

Int. Cl. G03g 5/00; B41n 1/00, 5/00

U.S. Cl. 96—1

6 Claims
A process for the preparation of printing plates from electrophotographic reproduction material, having a support suitable for printing purposes and a photoconductive layer thereon, by charging, imagewise exposure to light, developing the latent electrostatic image on the layer with a finely divided toner, subsequent heating, and removal of the photoconductive layer in the nonimage areas. The latent electrostatic image is produced on a layer which contains at least one known polymerizable organic photoconductor containing or forming during heating olefinic double bonds, and the image is made visible by means of a developer which, at least partially, consists of one or more finely divided solid substances forming radicals when heated. The reproduction material with the developed image thereon is heated to a temperature between 50° and 300° C., preferably to a temperature between 100° and 200° C., and finally the organic photoconductive layer is removed, in known manner, in the nonimage areas by dissolving it away.

3,615,386

ELECTROCONDUCTIVE ETHYLENE POLYMERS FOR USE IN ELECTROGRAPHIC RECORDING MEDIA
Bert H. Clappitt, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 25, 1969, Ser. No. 836,657
Int. Cl. G03g 5/10

U.S. Cl. 96—1 R

4 Claims
Ethylene polymers containing pendant alkali metal carboxylate units are employed as a medium for the conductance of electrical charges. Papers coated with such ethylene polymers have particular application in electrographic printing processes.

3,615,387

STRIPPABLE LAYER RELIEF IMAGING PROCESS
Lester Corrsin, Penfield, and Joan R. Ewing, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed May 8, 1962, Ser. No. 193,129
Int. Cl. B41m 5/20

U.S. Cl. 96—1.1

6 Claims
Thermoplastic deformation images are produced by xerographically deforming softenable films temporarily overcoated on conventional xerographic sensitive members. By the use of appropriate support layers for the softenable films, the deformed films can be readily separated from the sensitive member while preserving the image.

3,615,388

DEFORMATION IMAGING PROCESS AND ELEMENT
Robert W. Gundlach, 2434 Turk Hill Road, Victor, N.Y.
Filed May 8, 1962, Ser. No. 193,276
Int. Cl. B41m 5/18, 5/20; G03g 13/22

U.S. Cl. 96—1.1

24 Claims
Overcoated layer relief electrostatic printing in which a latent electrostatic image is made visible by the deformation of a compliant layer. The relief deformation occurs on a thermoplastic overcoating on conventional xerographic materials such as a conductive substrate which has been coated with a photoconductive insulating layer, said thermoplastic material overcoating said photoconductive layer. Methods and apparatus are disclosed for separable and permanent thermoplastic overcoatings on said xerographic plate. An interlayer between the thermoplastic overcoating and the photoconductive layer is included which serves as a nondeformable support and to protect the photoconductive

layer from any interaction between the particular thermoplastic used and the solvent or heat used to initiate the thermoplastic action.

3,615,389

DIRECT IMAGE TRANSFER TO THERMOPLASTIC TAPE

Sterling P. Newberry, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 28, 1959, Ser. No. 862,249

Int. Cl. B41m 5/18, 5/20; G03n 15/22

U.S. Cl. 96—1.1

17 Claims
A method and system for thermoplastic recording involves the transfer of an electrostatic charge pattern from a photoconductive member to a deformable thermoplastic storage medium. Upon softening, the thermoplastic medium deforms in accordance with the electrostatic charge pattern. The information can be permanently retained by cooling the deformed thermoplastic. The retrieval of the information may be accomplished by the use of a Schlieren optical readout system.

3,615,390

METHOD OF PRODUCING A DIRECT POSITIVE PHOTOGRAPHIC RELIEF IMAGE EMPLOYING A PHOTOCONDUCTIVE-BINDER ELEMENT

Robert Hicks Sprague, Chelmsford, Mass., assignor to Ittek Corporation, Lexington, Mass.

Filed Mar. 14, 1968, Ser. No. 713,022

Int. Cl. G03g 13/00

U.S. Cl. 96—1.2

8 Claims
Methods are disclosed for making a direct positive photographic relief image and dye transfer prints therefrom by imagewise exposing an imaging medium comprising a photoconductor dispersed in a binder therefor, developing the medium with a developer depositing free metal in radiation-exposed areas, reoxidizing the free metal to metal ions in the presence of metal ion-activated softening agent for said binder, removing softened portions of the to produce said positive relief image, and, for preparing prints, taking up dye in remaining portions of the binder and transferring dye therefrom to a receptor sheet.

3,615,391

ELECTROPHOTOGRAPHIC COLOR DEVELOPING METHOD

Satoru Honjo; Seiji Matsumoto, and Yasuo Tamai, all of Asaka-cho, Kita-Adachigun, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

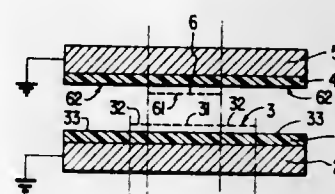
Filed May 3, 1968, Ser. No. 726,380

Claims priority, application Japan, May 30, 1967, 45723/67

Int. Cl. G03g 13/22

U.S. Cl. 96—1.2

8 Claims



An electrophotographic developing method for compensating an unwanted spectroabsorption in coloring agent wherein an electrostatic latent image in a color spectrum, and a second electrostatic latent image in another color spectrum corresponding to the unwanted absorption of the first electrostatic latent image are in opposition with a narrow gap in between. A coloring agent corresponding to the first latent image is fed into the gap and the amount of color agent selectively attached to the first electrostatic latent image is controlled by the second electrostatic latent image.

3,615,392

ELECTROPHOTOGRAPHIC REPRODUCTION OF ORIGINALS CONTAINING BOTH MULTICOLOR AND LINE AREAS

Satoru Honjo, Saltama, Japan, assignor to Xerox Corporation, Rochester, N.Y.

Filed Apr. 28, 1969, Ser. No. 820,019

Claims priority, application Japan, May 2, 1968, 43/29434

Int. Cl. G03g 13/22

U.S. Cl. 96—1.2

3 Claims

A multicolor imaging process is disclosed whereby an original document comprising both multicolor areas and monochrome or black and white line areas may be reliably reproduced.

3,615,393

MANIFOLD IMAGING PROCESS EMPLOYING STATIC CHARGE FIELD APPLICATION

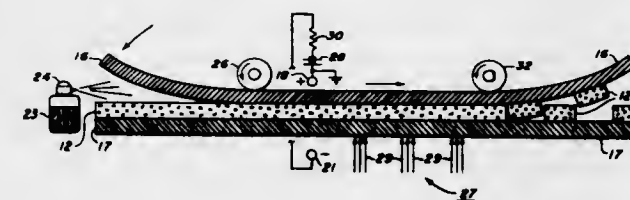
Ivar T. Krohn; Geoffrey A. Page, and Gedeminas J. Reinis, all of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 609,057, Jan. 13, 1967, now abandoned. This application Feb. 28, 1969, Ser. No. 803,386

Int. Cl. G03g 13/22

U.S. Cl. 96—1.3

20 Claims



An imaging process wherein a cohesively weak electrically photosensitive imaging layer sandwiched between a donor sheet and a receiver sheet. The sandwich is subjected to an electric field which field is supplied by a static charge in at least one of the donor and receiver sheets. The imaging layer is exposed to imagewise electromagnetic radiation to which it is sensitive and upon separation of the donor and receiver sheet, the imaging layer fractures in imagewise configuration providing a negative image on one of the sheets and a positive image on the other.

3,615,394

METHOD OF FORMING A PIGMENT IMAGE FROM A PIGMENT-RESIN TONER IMAGE

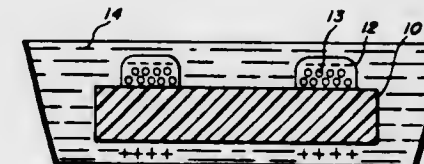
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 570,924, Aug. 8, 1966, now abandoned. This application Apr. 28, 1970, Ser. No. 32,596

Int. Cl. G03g 13/22, 13/08, 13/16

U.S. Cl. 96—1.4

15 Claims



A method of forming a pigment image from a pigment-resin toner image by exposing the pigment-resin toner image to a solvent for the toner resin resulting in the resinous portion of the toner being dissolved away leaving a pigment image on the substrate.

3,615,395

ELECTROSTATIC AND ELECTROPHOTOGRAPHIC VARIABLE CONTRAST IMAGE-FORMING METHODS
Keizo Yamaji, and Masayoshi Ishihara, both of Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1967, Ser. No. 670,271

Claims priority, application Japan, Sept. 28, 1966, 41/64273

Int. Cl. G03g 13/14, 13/00

U.S. Cl. 96—1.4

15 Claims

A process for forming an electrostatic image in a plate having a photoconductive layer with an insulative overlayer wherein the insulative layer is charged in a first polarity, is then subjected to AC corona discharge while the photoconductive layer is exposed to a pattern of image radiation, and is then further charged with polarity opposite to said first polarity. The contrast of the formed electrostatic image may be adjusted by time-intensity characteristics of said further charging and exposure of the photoconductive layer to blanket radiation.

3,615,396

METHOD FOR THE PREPARATION OF MULTIPHASE HETEROGENEOUS PHOTOCONDUCTIVE COMPOSITIONS CONTAINING AT LEAST ONE PYRYLIUM DYE AND AN ELECTRICALLY INSULATING POLYMER

Eugene P. Gramza, and James M. Owens, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1969, Ser. No. 816,831

Int. Cl. G03g 5/00, 7/00

U.S. Cl. 96—1.6

14 Claims

Multiphase heterogeneous compositions useful in electrophotography are formed from a combination in solution of at least one organic dye and an electrically insulating polymer. The dye is first dissolved in a solvent prior to addition of the polymer. The polymer is then stirred into the dye solution and the combined solution is coated on a support to form an electrophotographic layer. These heterogeneous compositions are useful as photoconductors or electrophotosensitizers and are characterized by a radiation absorption maximum that is substantially shifted from the absorption maximum of the dye and polymer when dissolved together to form a homogeneous composition.

3,615,397

METHOD OF CLEANING ELECTROSTATIC COPYING MACHINES

John A. Dimond, Pittsford, and Armistead Wharton, Henrietta, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 647,411, June 20, 1967, Pat. No. 3,526,457.

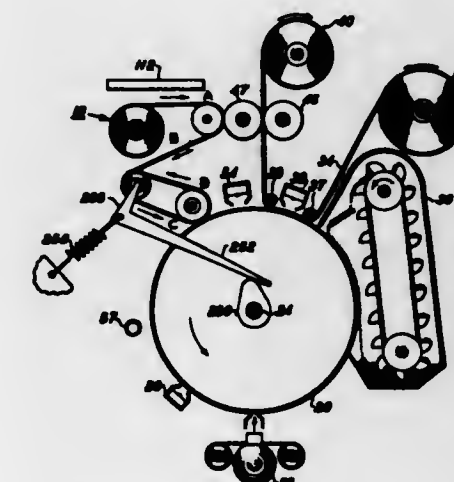
Filed Nov. 5, 1969, Ser. No. 871,250

1969, Ser. No. 871,250

Int. Cl. G03g 13/14

U.S. Cl. 96—1.4

1 Claim



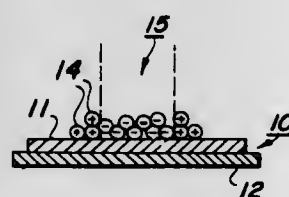
Method for cleaning the surface on which electrostatic latent images are formed and developed. A web of fibrous

material is advanced in constant linear increments into rubbing contact with the surface to be cleaned. A combination of loops in the web path enables cleaning two surfaces simultaneously utilizing both sides of the web.

3,615,398
METHOD FOR ELECTROSTATIC COPYING INCLUDING AN IMPROVED PROCESS OF CLEANING THE PHOTOCONDUCTIVE SURFACE
John P. Caldwell, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 11, 1969, Ser. No. 884,099
Int. Cl. G03g 13/14
U.S. Cl. 96—1.4 R

3 Claims



An improved method of producing xerographic copies which includes the steps of charging a photoconductive surface with an electrostatic charge, exposing the charged photoconductive surface to discharge portions of the charge in a configuration if image and nonimage areas corresponding to the copy to be reproduced, developing the photoconductive surface with electroscopic toner particles and transferring the toner particles from the photoconductive surface to a backing material. The improvement comprises simultaneously cleaning residual toner images from the drum surface and reuse of these residual toner images during development, then charging the developed photoconductive surface with a high-level corona having a polarity opposite from the charge on the toner particles overlying the image areas, contacting the image area toner particles with a backing material, then charging the backing material with a corona having a polarity opposite to the charge on the image toner particles to transfer the toner particles in image areas thereto and prepare the photoconductive surface for cleaning by development in the development zone.

3,615,399
ELECTROPHOTOGRAPHIC ELEMENTS CONTAINING DITHIOLIUM SALTS

George A. Reynolds; Bernard C. Cossar, Rochester, and Charles V. Wilson, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 681,928, Nov. 9, 1967, now abandoned. This application June 22, 1970, Ser. No. 48,467

Int. Cl. G03g 5/04, 5/06
U.S. Cl. 96—1.5

24 Claims

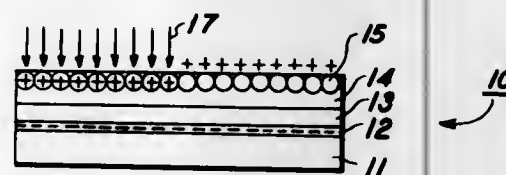
The electrophotographic elements contain sensitizer compounds having a dithiolium nucleus comprised of a five-membered, generally aromatic, heterocyclic ring containing two sulfur atoms. The sulfur atoms can be in either a 1,2- or a 1,3-relationship to one another, and all carbon atoms in the nucleus can be substituted with such groups as hydrogen, alkyl radicals, amino radicals, mono- or polycyclic aryl radicals and oxygen- or sulfur-containing heterocyclic radicals. Additionally, the dithiolium nucleus can form part of a fused ring aromatic structure with any or all of the rings being substituted with any of the above substituents.

3,615,400
MIGRATION IMAGING SYSTEM EMPLOYING A CARBON LAYER BETWEEN THE SOLVENT SOLUBLE LAYER AND THE CONDUCTIVE LAYER

Peter P. Augustini, Webster, and Mortimer Levy, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1968, Ser. No. 694,906
Int. Cl. G03g 13/22, 5/06
U.S. Cl. 96—1.5

48 Claims



An imaging system wherein an imaging member comprising a supporting substrate, a layer of electrically conductive material, a layer comprising carbon, a softenable layer comprising solvent soluble softenable material contacting said layer comprising carbon, and a layer of particulate material comprising electrically photosensitive material embedded at the surface of said softenable material, is imaged in a migration imaging system wherein said member has an electrical latent image formed thereon and is first developed by contacting said member with a first solvent, and further developed by contacting with a second solvent to form an optically negative or optically positive image comprising carbon on the supporting substrate.

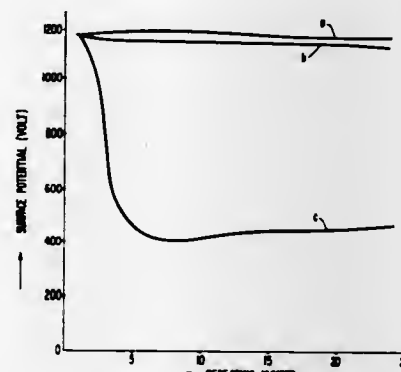
3,615,401
PROCESS FOR THE PREPARATION OF PHOTOCONDUCTIVE LIGHT-SENSITIVE MATERIALS COMPRISING CDS OR CDS/NCDCO

Katsuo Makino; Iwao Sawato; Yoshihiko Yamada, and Jun Onozaki, all of Odawara-shi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1969, Ser. No. 795,806
Claims priority, application Japan, Feb. 2, 1968, 6475/68
Int. Cl. G03g 5/08

U.S. Cl. 96—1.5

13 Claims



Improved process for preparing photoconductive light-sensitive material wherein cadmium sulfide or cadmium sulfide/cadmium carbonate particles are dispersed in a resin binder, applied to a conductive support, and dried, the improvement comprising irradiating the dried photoconductive layer for a significant period of time.

3,615,402
TETRA-SUBSTITUTED METHANES AS ORGANIC PHOTOCONDUCTORS

Norman Geoffrey Rule, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,960
Int. Cl. G03g 13/22, 5/06

U.S. Cl. 96—1.5

13 Claims

Certain bis(N,N-dialkylaminoaryl)dialkylmethanes and gem-bis(N,N-dialkylaminoaryl)cycloalkanes are useful as photoconductors in electrophotographic elements.

3,615,403
INORGANIC SALT-RESIN CONDUCTIVE COATINGS FOR ELECTROPHOTOGRAPHIC PAPER

James K. J. Cheng, Vestal, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Mar. 26, 1968, Ser. No. 715,995
Int. Cl. G03g 5/00, 7/00

U.S. Cl. 96—1.5

5 Claims

Electrophotographic paper, having thereon conductive coatings applied from an aqueous coating composition containing an N-vinylpyrrolidone polymer, polyvinyl acetate emulsion and an inorganic salt—polyhydric alcohol system.

3,615,404
1,3-PHENYLENEDIAMINE CONTAINING PHOTOCONDUCTIVE MATERIALS

Lawrence Price, Old Orchard Beach, and John Alan Mattor, Hollis, both of Maine, assignors to The Scott Paper Company, Delaware County, Pa.

Filed Apr. 25, 1968, Ser. No. 724,224
Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

10 Claims

A new group of N,N,N',N'-substituted-1,3-phenylenediamines and an electrophotographic material comprised of a slightly conductive support and an insulating coating thereon comprised of an insulating resin, and a N,N,N',N'-substituted-1,3-phenylenediamine photoconductor. An electron-acceptor sensitizing agent can also be added to the insulating coating.

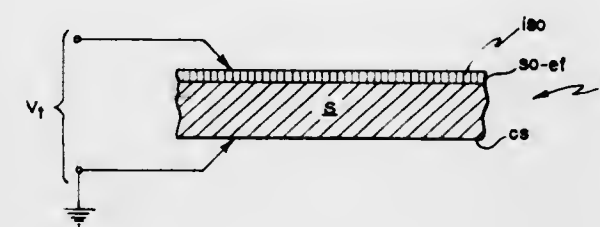
3,615,405
COMPOSITE IMAGE PLATE

Michael S. Shebanow, Medfield, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 10, 1968, Ser. No. 728,224
Int. Cl. G03g 5/00

U.S. Cl. 96—1.5

5 Claims



An electrophotographic recording surface is provided by forming a porous metal oxide coating on a conductive substrate and then completely impregnating the oxide coating with an electrophotographic imaging material such that the imaging material is in contact with the conductive substrate.

3,615,406
PHOTOCONDUCTIVE ELEMENTS CONTAINING POLYMERIC BINDERS

Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1968, Ser. No. 772,362
Int. Cl. G03g 5/00; C08g 19/00; H01c 13/00

U.S. Cl. 96—1.5

17 Claims

Photoconductive elements containing a photoconductor and a binder for the photoconductor comprising a poly(alkyldenebisaryloxyalkyl-co-alkylene terephthalate) are described. The described elements can be sensitized and charged either negatively or positively and used to prepare images electrophotographically.

3,615,407
METHOD OF TREATING A SINTERED PHOTOCONDUCTOR

Harvey A. Hodes, and Michael C. Zerner, both of Easton, N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 21, 1968, Ser. No. 777,918
Int. Cl. G03g 5/00; H01c 13/00

U.S. Cl. 96—1.5

4 Claims

A sintered photoconductor having increased photoconductivity is obtained by saturating a sintered photoconductor with a liquid dielectric.

3,615,408
POLYMERIC QUATERNARY DERIVATIVES OF 4-VINYL PYRIDINE IN ELECTRICALLY CONDUCTIVE PAPER

Charles M. Taubman, Cook County, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

Filed Dec. 13, 1968, Ser. No. 783,742
Int. Cl. G03g 5/00; D21h 1/10; C09d 5/24

U.S. Cl. 96—1.5

7 Claims

Quaternary polymers of 4-vinyl pyridine are used to render paper electrically conductive and therefore useful to receive photoconductive coatings to produce electrostatic copy paper.

3,615,409
ELECTROPHOTOGRAPHIC PLATE AND PROCESS EMPLOYING A PHOTOCONDUCTIVE PIGMENT OF GENERAL FORMULA R₂N₂S₂

Bernard Grushkin, Pittsford, N.Y., assignor to Zerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1969, Ser. No. 789,062
Int. Cl. G03g 5/00

U.S. Cl. 96—1.5 R

19 Claims

An electrophotographic plate including a photoconductive layer comprising a compound having the formula R₂N₂S₂, wherein R is a substituted or unsubstituted fluorenyl, anthryl, dibenzocycloheptyl, or indenyl group is disclosed.

3,615,410
ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A PROTEASE ENZYME

Satoru Honjo, Asaka-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 28, 1969, Ser. No. 811,628
Claims priority, application Japan, Mar. 28, 1968, 43/20259
Int. Cl. G03g 5/00; H01l 13/00; C03c 1/00

U.S. Cl. 96—1.5

6 Claims

An electrophotographic light-sensitive material wherein a photoconductive insulating layer comprises a finely powdered inorganic photoconductive compound and an insulating resinous binder, the surface of said insulating layer containing a protease enzyme in a state capable of being dissolved from said layer when a solvent for the enzyme is brought into contact with the surface of the layer.

3,615,411
BIANTHRONE COMPOUNDS AS SENSITIZERS FOR ORGANIC PHOTOCONDUCTIVE SYSTEMS

William J. Hessel, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Apr. 30, 1969, Ser. No. 820,634
Int. Cl. G03g 13/22, 5/06

U.S. Cl. 96—1.5

7 Claims

Bianthrone compounds including those having halogen, lower alkyl and hydrogen substituents in the ring structure, are used to sensitize organic photoconductive systems so that they will respond to electromagnetic radiation in the visible portion of the spectrum. Typical of the sensitizers that can be used are 2,2'-dibromobianthrone and bianthrone.

3,615,412

FLUORENE TYPE COMPOUNDS AS ORGANIC PHOTOCONDUCTORS

William J. Hessel, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Apr. 30, 1969, Ser. No. 820,666
Int. Cl. G03g 13/22, 5/06

U.S. Cl. 96—1.5 10 Claims
An organic photoconductor which is the compound fluorene and derivatives in which fluorene is fused with benzo and naphtho ring structures. The dibenzofluorenes and fluorenes are dispersed in suitable resin binders over the range of 1-100 parts by weight to 10 parts binder and applied to a conductive substrate.

**3,615,413
INDIUM DOPING OF SELENIUM-ARSENIC PHOTOCONDUCTIVE ALLOYS**

Carl B. Fisher, Mendon, and Lloyd A. Relyea, Webster, assignors to Xerox Corporation, Rochester, Ill., N.Y.

Filed June 23, 1969, Ser. No. 835,699
Int. Cl. G03g 13/22, 5/02

U.S. Cl. 96—1.5 16 Claims



A xerographic plate having a novel photoconductive layer comprising a vitreous selenium-arsenic alloy containing indium in an amount sufficient to enhance the electrical characteristics of the plate.

**3,615,414
PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS AND METHOD OF PREPARATION**

William A. Light, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 586,820, Oct. 14, 1966, now abandoned, Continuation-in-part of application Ser. No. 674,005, Oct. 9, 1967, now abandoned. This application Mar. 4, 1969, Ser. No. 804,266
Int. Cl. G03g 7/00; H01 13/00; C08g 51/04

U.S. Cl. 96—1.6 26 Claims
Multiphase heterogeneous compositions are formed from an organic dye and electrically insulating polymeric material. A solution of dye and polymer is prepared and subsequently treated, for example, by exposure of a coating thereof to a solvent to form the heterogeneous compositions. These compositions which are useful as photoconductors or electrophotosensitizers are characterized by a radiation absorption maximum that is substantially shifted from the absorption maximum of the dye dissolved in the polymer to form a homogeneous composition. Particularly useful dyes are the pyrylium dyes.

**3,615,415
METHOD FOR THE PREPARATION OF PHOTOCONDUCTIVE COMPOSITIONS**

Eugene P. Gramza, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 586,648, Oct. 14, 1966, now abandoned, and a continuation-in-part of 674,006, Oct. 9, 1967, now abandoned. This application May 2, 1969, Ser. No. 821,513
Int. Cl. G03c 5/06

U.S. Cl. 96—1.6 12 Claims
Multiphase heterogeneous compositions are formed from an organic dye and electrically insulating polymeric material. A solution of dye and polymer is prepared and subsequently subjected to high speed shearing. Electrophotographic layers can be prepared by coating the sheared solution to form the multiphase heterogeneous compositions. Such compositions which are useful as photoconductors or

electrophotosensitizers are characterized by a radiation absorption maximum that is substantially shifted from the absorption maximum of a simple, untreated solution of dye dissolved in polymer.

3,615,416

9,10-SUBSTITUTED ACRIDINES AS SENSITIZERS IN ELECTROPHOTOGRAPHIC SYSTEMS

Charles J. Fox, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 5, 1969, Ser. No. 830,862
Int. Cl. G03g 5/06, 5/08

U.S. Cl. 96—1.6 14 Claims
9,10-substituted acridine compounds are useful as sensitizers for photoconductive compositions in electrophotographic systems.

3,615,417

SPECTRAL SENSITIZATION OF LIGHT-SENSITIVE ELEMENTS USING CYANINE DYES

Guy Alfred Rillaers, Kontich, and Henri Depoorter, Mortsel, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed June 17, 1969, Ser. No. 834,169
Claims priority, application Great Britain, July 5, 1968, 32,351/68
Int. Cl. G03g 5/00

U.S. Cl. 96—1.6 8 Claims
A silver halide or inorganic photoconductor is spectrally sensitized with a cyanine dye comprising two hetero-cyclic nitrogen-containing ring systems linked by a conjugated methine group.

3,615,418

HETEROGENEOUS DYE-BINDER PHOTOCONDUCTIVE COMPOSITIONS

William J. Staudenmayer, Pittsford, and James C. Fleming, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 20, 1969, Ser. No. 835,223
Int. Cl. G03g 5/06

U.S. Cl. 96—1.6 13 Claims
Heterogeneous compositions useful in electrophotography are formed from an electrically insulating polymeric material and pyrylium selenapyrylium or thiapyrylium dye salts having an inorganic anion the anionic radius of which is at least as large as the radius of hexafluorophosphate. The use of these dye salts results in extended stability of the coating dopes which stability facilitates coating procedures and results in more uniform coatings.

3,615,419

PHOTOCONDUCTIVE COATING SYSTEMS

Stanley Field, Piscataway, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

Filed June 13, 1968, Ser. No. 736,591
Int. Cl. G03g 5/08

U.S. Cl. 96—1.8 7 Claims
A photoconductive coating for application to a solid substrate which is to be utilized in electrophotographic operations, said coating comprising a layer of zinc oxide pigment bonded with a blend of a vinyl acetate polymer and a styrene-maleic anhydride copolymer.

3,615,420

ELECTROPHOTOGRAPHIC PROCESS AND ELEMENT EMPLOYING A CONDUCTIVE LAYER OF ETHERIFIED STARCH OR CELLULOSE

Albert S. Deutsch, New York, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 12, 1968, Ser. No. 785,050
Int. Cl. G03g 5/00; B44c 1/04

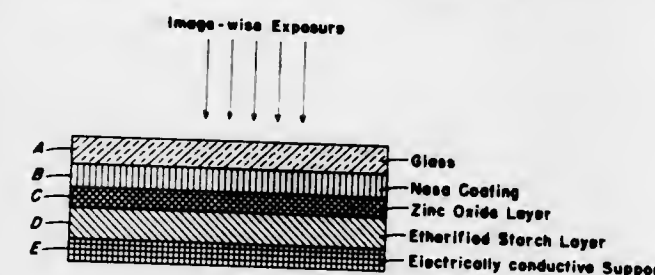
U.S. Cl. 96—1.8 7 Claims
A process of visible image formation which comprises exposing a photoconductor layer having a high dark

3,615,422

PHOTOGRAPHIC PRODUCTS AND PROCESSES

Richard J. Haberman, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 486,862, Sept. 13, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 450,305, Apr. 23, 1965, now abandoned. This application Sept. 2, 1969, Ser. No. 854,491
Int. Cl. G03c 7/00, 5/54, 1/40

U.S. Cl. 96—3 32 Claims



or cellulose, as for example, hydroxyalkyl starch or alkoxy-cellulose, or unsymmetrical ethers of the form R-O-R', wherein R and R' are alkyl or aryl groups having at least one substituent which is of electron-withdrawing character.

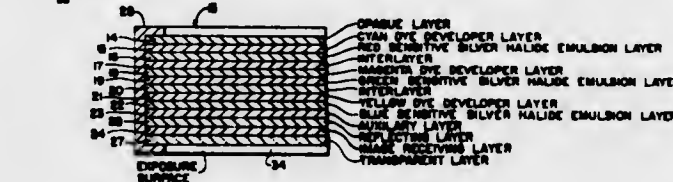
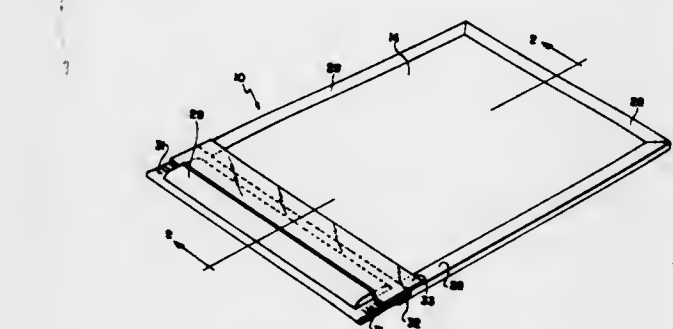
3,615,421

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

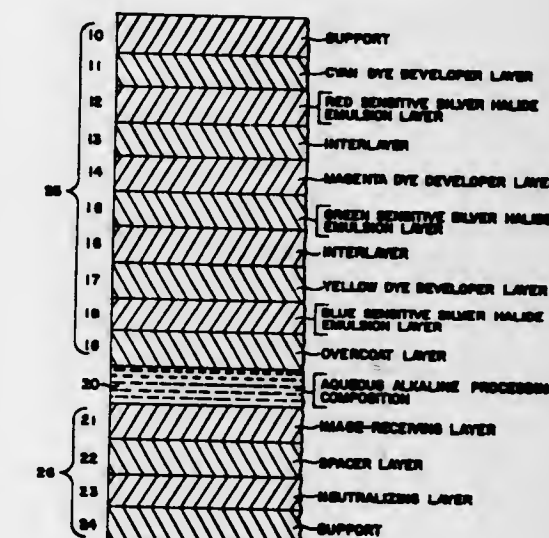
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 31, 1969, Ser. No. 846,441
Int. Cl. G03c 7/00, 1/40, 5/54

U.S. Cl. 96—3 42 Claims



The application is directed, in general, to an integral negative/positive color diffusion transfer process film unit which includes, in order, an opaque layer, a photosensitive silver halide emulsion layer having associated dye transfer image-forming material, a layer comprising a visible light-reflecting agent in a concentration insufficient to prevent exposure of the silver halide emulsion by radiation incident on the layer, a polymeric layer dyeable by the dye transfer image-forming material, a transparent layer, and a rupturable container adapted to distribute retained processing composition between the dyeable layer and the silver halide emulsion layer, and to specified diffusion transfer color process employing such a film unit.



Diffusion transfer photographic products comprising a support carrying at least two selectively sensitized silver halide emulsion layers, each having a dye which is a silver halide developing agent of predetermined color associated therewith, and a layer intermediate the emulsion layers comprising a processing solution permeable and hydratable metal-free synthetic polymer which is permeable to dye image-forming materials substantially only in the hydrated state.

3,615,423

THERMOCOPIING

Marcel Nicolas Vrancken, Hove, Belgium, assignor to Gevaert-Agfa, N.V., Mortsel, Belgium

Filed Oct. 24, 1967, Ser. No. 677,764
Claims priority, application Great Britain, Oct. 24, 1966, 47627/66
Int. Cl. G03c 7/16, 5/04

U.S. Cl. 96—13 17 Claims

A dispersion of solid hydrophobic thermoplastic polymer particles in a continuous phase of a hydrophilic binder on a support is imaged by exposure to heat. An aqueous solution of a colorant is diffused through the hydrophilic areas of the dispersion layer which were not exposed to heat and the support is imaged by color.

3,615,424

COLOR OSCILLOGRAPH RECORDING PAPER

Carl E. Johnson, and Dewey M. Dumers, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 25, 1966, Ser. No. 544,812
Int. Cl. G03c 7/16, 1/76, 3/00

U.S. Cl. 96—22 6 Claims

Light-sensitive multicolor recording paper for oscillograph traces, having on a support, an undercoat of green-sensitive gelatin-silver bromide emulsion in which the iodine amounts to 0.2-2.0 mol percent of the silver and containing a magenta color former, a gelatin interlayer, an overlying blue-sensitive gelatin-silver bromide emulsion in which the iodine is 4-12 mol percent of the silver content and containing cyan color former, and a gelatin surface coating.

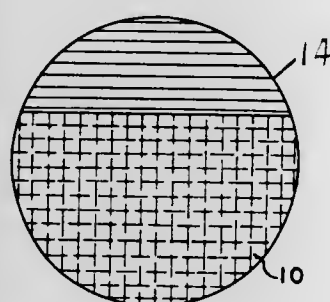
By using yellow and magenta filters of different density for the exposing light and subjecting the material to color development, at least three different color traces can be produced.

3,615,425
METHOD OF MAKING A COLOR PHOTOGRAPHIC PRINT FROM A COLOR TRANSPARENCY, OR THE LIKE

Keith Aston, Cheam, England, assignor to The Pavele Corporation, New York, N.Y.

Filed Nov. 21, 1968, Ser. No. 777,828
Claims priority, application Great Britain, Nov. 22, 1967, 53224/67

Int. Cl. G03c 7/16
U.S. Cl. 96-23 4 Claims



The present invention involves a system for balancing the colors used in making colored photographic prints where the speed of the printing material is substantially greater for one color than for another. According to the invention a portion of the beam for printing the most rapid color components is reduced by suitable masking or filtering and exposure of the beam of that color component is automatically terminated. The color components of the entire illuminating beam are mixed so that exposure is made from the single mixed beam.

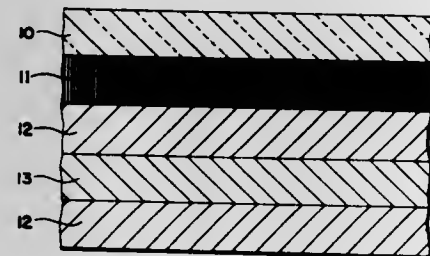
3,615,426
ADDITIVE DIFFUSION TRANSFER COLOR PHOTOGRAPHIC PROCESSES AND FILM UNITS FOR USE THEREWITH

Frank E. Debruyne, Jr., Whitman, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,636

Int. Cl. G03c 7/00, 7/04, 5/54

U.S. Cl. 96-25 44 Claims



The present invention relates, in general, to a photographic film unit comprising a permanent laminate which includes a color screen carrying, in order, a first layer comprising silver precipitating nuclei and photosensitive silver halide crystals, a second layer comprising silver precipitating nuclei, and a third layer comprising silver precipitating nuclei and photosensitive silver halide crystals, and to processes employing such film unit for photographic color reproduction.

3,615,427
ADDITIVE DIFFUSION TRANSFER COLOR PHOTOGRAPHIC PROCESSES AND FILM UNITS FOR USE THEREWITH

Frank E. Debruyne, Jr., Whitman, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,656

Int. Cl. G03c 7/00, 7/04, 5/54

U.S. Cl. 96-25 47 Claims



The present invention relates, in general, to a photographic film unit comprising a permanent laminate which includes a color screen carrying a photosensitive silver halide layer comprising photosensitive silver halide crystals and silver precipitating nuclei and a layer comprising silver precipitating nuclei, and to processes employing such film unit for photographic color reproduction.

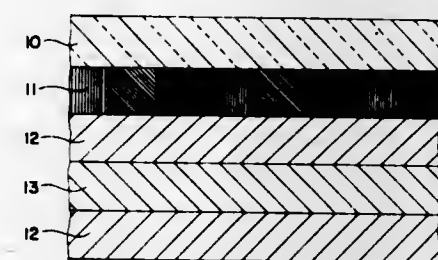
3,615,428
ADDITIVE DIFFUSION TRANSFER COLOR PHOTOGRAPHIC PROCESSES AND FILM UNITS FOR USE THEREWITH

Lucretia J. Weed, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1969, Ser. No. 889,657

Int. Cl. G03c 7/00, 7/04, 5/54

U.S. Cl. 96-25 44 Claims



The present invention relates, in general, to a photographic film unit comprising a permanent laminate which includes a color screen carrying, in order, a layer comprising silver-precipitating nuclei, a layer comprising photosensitive silver halide crystals, and a layer comprising silver-precipitating nuclei, and to process employing such film unit for photographic color reproduction.

3,615,429
ADDITIVE DIFFUSION-TRANSFER COLOR PHOTOGRAPHIC PROCESSES AND FILM UNITS FOR USE THEREWITH

Lucretia J. Weed, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

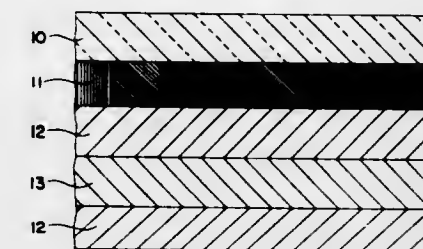
Filed Dec. 31, 1969, Ser. No. 889,660

Int. Cl. G03c 7/00, 7/04, 5/54

U.S. Cl. 96-25 44 Claims

The present invention relates, in general, to a photographic film unit comprising a permanent laminate which includes a

color screen carrying, in order, a layer comprising photosensitive silver halide crystals, a layer comprising silver



precipitating nuclei, and a layer comprising photosensitive silver halide crystals, and to processes employing such film unit for photographic color reproduction.

3,615,430
IMAGE INTENSIFICATION FOR SENSITIZED FILMS

Peter Bruck, Encino, and Nancy Gershman Adin, San Gabriel, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 17, 1967, Ser. No. 631,141

Int. Cl. G03c 5/04, 5/24

U.S. Cl. 96-27 6 Claims

In a process in which a spectral sensitizer is incorporated in a photosensitive composition to increase its sensitivity to light levels lower than ordinarily useful for inducing a light intensifiable latent image, the improvement wherein the sensitizer has a conjugated system including at least one ring and as a substituent on the ring a group which influences the electron density of the sensitizer to enhance the intensification propensity of the composition.

3,615,431
SILVER IMAGES IN LIGHT SENSITIVE PRINT FORMING LAYERS

Paul B. Gilman, Jr., Rochester, and Charles A. Goffe, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 244,456, Dec. 13, 1962, now abandoned. This application July 15, 1968, Ser. No. 744,733

Int. Cl. G03c 5/04, 5/24

U.S. Cl. 96-27 16 Claims

Photographic elements and processes feature photoconductive, substantially silver halide free, inorganic particles and a photoreactive sulfur compound which will react with the inorganic particles upon exposure to light to form sulfur containing sites for physical development. Subsequent to exposure, the element is physically developed to produce a negative of the original.

3,615,432
ENERGY-SENSITIVE SYSTEMS

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 9, 1968, Ser. No. 766,307

Int. Cl. G03c 1/12, 1/12, 1/24

U.S. Cl. 96-27 46 Claims

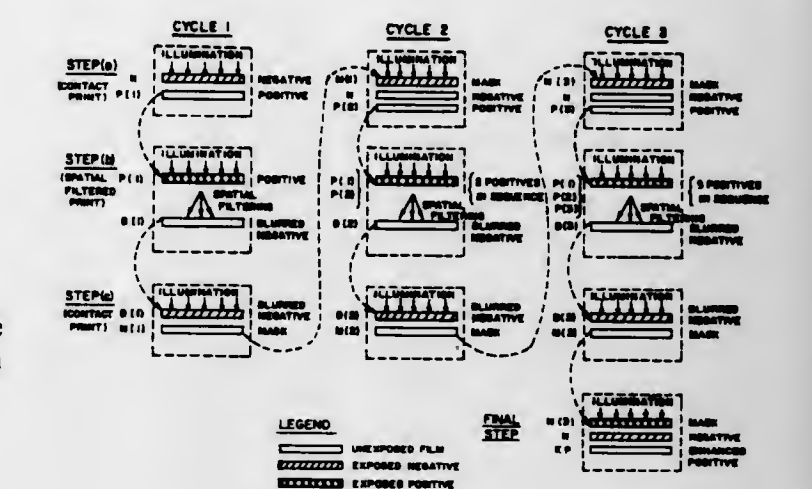
A class of energy-sensitive compounds containing heterocyclic nitrogen atoms substituted with an-OR group fragment under the influence of various forms of energy to form a dye base, a proton and an aldehyde, these materials being useful in image reproduction.

3,615,433
FEEDBACK IMAGE ENHANCEMENT PROCESS

George A. Blernson, Concord; Raymond Euling, Sudbury, and Paul W. Jones, Franklin, all of Mass., assignors to Sylvania Electric Products Inc.

Filed Oct. 29, 1968, Ser. No. 771,585

Int. Cl. G03c 5/04 16 Claims



A reiterative feedback image enhancement process for enhancing the details of photographic images. In accordance with a preferred embodiment of the invention, the feedback image enhancement process comprises three successive cycles of three successive steps (a), (b), and (c), followed by a final operation. In step (a) of the first cycle, a positive image is derived from an original negative image of a scene, in step (b) a blurred negative image is produced from the positive image, and in step (c) a mask image is produced from the blurred negative image. In each of the second and third cycles, a positive image is produced in step (a) from the original negative image and the mask image produced in the previous cycle, a blurred negative image is produced in step (b), and a mask image is produced in step (c). In the final operation, an enhanced positive image is produced from the original negative image and the mask image produced in the third cycle.

3,615,434
PHOTOSENSITIVE ELEMENT AND PROCESS EMPLOYING A LIGHT-SENSITIVE MUCONIC ACID POLYESTER

Robert C. McConkey; Thomas M. Laakso, and Cornelius C. Unruh, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1968, Ser. No. 773,322

Int. Cl. G03c 1/12; G03f 7/10

U.S. Cl. 96-28 13 Claims

Polyesters prepared from a muconic acid and a diol are photosensitive and are useful in photographic processes including photothermographic transfer processes.

3,615,435
PHOTOHARDENABLE IMAGE REPRODUCTION ELEMENT WITH INTEGRAL PIGMENTED LAYER AND PROCESS FOR USE

Victor Fu-Hua Chu, Wilmington, Del., and Abraham Bernard Cohen, Springfield, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 12, 1968, Ser. No. 775,123

Int. Cl. G03c 1/68, 1/112

U.S. Cl. 96-28 13 Claims

A photohardenable image reproduction element comprising, in order, a support, a layer of clear photohardenable material, and a layer of colored photohardenable material. On imagewise exposure, a latent image is produced comprising selectively photohardened material in both layers. This image is developed by

transferring the underexposed areas to a separate image receptive surface.

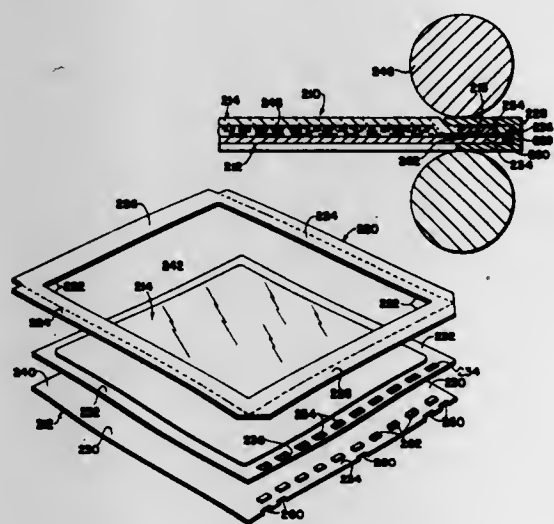
The element may have additionally an integral receptor sheet of a material selected according to end use considerations. This element is developed by stripping apart the support and receptor sheets. Cohesive failure occurs in the underexposed areas of the clear photohardenable layer and adhesive failure at the image receptor-photohardened interface of the exposed areas. Sharply defined positive and negative images with low stain are simultaneously produced on the receptor sheet and support respectively.

3,615,436 SELF-DEVELOPING PHOTOGRAPHIC PROCESS WITH LIQUID TRAP

John E. Campbell, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 288,011, June 14, 1963, now abandoned, Continuation-in-part of application Ser. No. 309,968, Sept. 19, 1963, now abandoned. This application June 2, 1967, Ser. No. 643,273

U.S. Cl. 96—29 Int. Cl. G03c 5/54 8 Claims



A photographic film assembly comprising a pair of sheetlike elements, one of which includes a photosensitive area adapted to be exposed and processed by an alkaline processing liquid distributed in a layer between the two elements to form a visible transfer image. The film assembly includes means defining a liquid trapping and retaining space near one edge of the area adapted to be exposed, for collecting and retaining excess processing liquid, and liquid permeable means impregnated with an acid located in the trapping and retaining space for neutralizing the excess processing liquid collected therein. In a preferred film structure and method, the two sheets are retained together during and subsequent to processing, one of the sheets is transparent to provide for viewing an image formed between the sheets and the liquid trapping and retaining space is located between the sheets very close to the area containing the visible image.

3,615,437 LITHOGRAPHIC PRINTING PLATES

Peter Charles Richardson, and Peter John Hillson, both of Wealdstone, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.

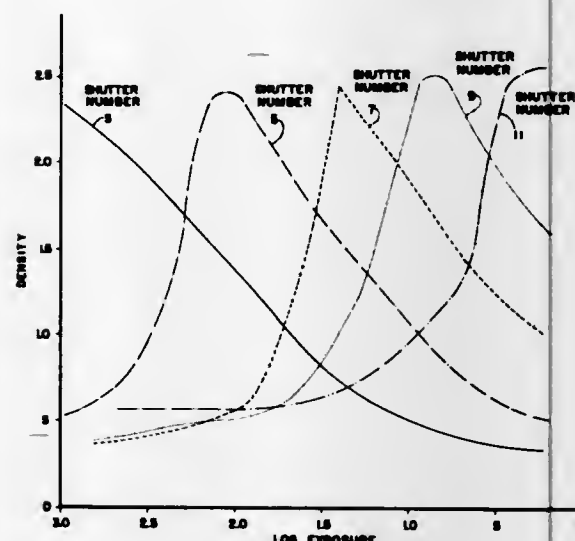
Filed Jan. 2, 1968, Ser. No. 694,847
Claims priority, application Great Britain, Jan. 5, 1967, 740/67

U.S. Cl. 96—29 L Int. Cl. G03c 5/54; G03f 7/02 13 Claims
Lithographic printing plates and methods for the preparation thereof wherein an oleophilic metal, e.g. copper, overlayer is selectively electrodeposited on image areas formed by silver salt diffusion transfer on a hydrophilic metal, e.g. aluminum, base. Press life of the metal baseplates is significantly increased by the deposition of the overlayer.

3,615,438 PHOTOGRAPHIC PROCESSES, COMPOSITIONS AND PRODUCTS

Edwin H. Land, Cambridge; Meroe M. Morse, Boston, and Leonard C. Farney, Melrose, all of Mass.

Filed June 13, 1968, Ser. No. 736,821
U.S. Cl. 96—29 Int. Cl. G03c 5/54 43 Claims



Development solubilization photographic processes are disclosed wherein silver halide is preferentially dissolved from developing silver halide grains. Processing compositions employed in such processes include at least one silver halide complexing agent capable of forming a soluble silver complex, and preferably contains a second silver halide complexing agent capable of forming a less soluble silver complex. The dissolved silver halide may be transferred to another stratum to provide a visible image, preferably a silver transfer image which is a negative image of the photographed subject matter.

3,615,439 PHOTOGRAPHIC COMPOSITIONS AND PROCESSES-B

Edwin N. Oftedahl, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,301
U.S. Cl. 96—29 Int. Cl. G03c 5/30 13 Claims

Photographic developing agents which are lactone derivatives, such as coumarin derivatives, and especially 6-hydroxy coumarin and/or 6-amino coumarin derivatives, and which have the property of forming a lactone developing agent precursor under neutral, slightly alkaline and acid conditions, provide less stain without loss of desired sensitometric properties in diffusion transfer systems. These are especially suitable in combination with other photographic developing agents. Corresponding developing agent precursors are also suitable in diffusion transfer systems. Stabilization processing systems can also employ these developing agents and/or developing agent precursors.

3,615,440 NOVEL PHOTOGRAPHIC COMPOSITIONS AND PROCESSES

Stanley M. Bloom, Waban, and Richard D. Cramer, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 25, 1968, Ser. No. 770,822
U.S. Cl. 96—29 Int. Cl. G03c 5/30, 5/54 9 Claims

Substituted reductive acid compounds and preferably, tetrasubstituted reductive acid compounds are used as developing agents for silver halide emulsions in photographic processes, particularly diffusion transfer processes.

3,615,441 COLOR CORRECTION BY MASKING FOR A FOUR-COLOR PRINTING PROCESS

Alan L. Deneau, 317 Moran, Grosse Pointe Farms, Mich.

Filed Mar. 30, 1970, Ser. No. 23,891
U.S. Cl. 96—30 Int. Cl. G03f 3/00 5 Claims



For use in the four-color printing process, individual masks are made for preparation of the cyan, magenta and yellow halftones. Each mask achieves both undercolor removal and all of the required color correction. A dual purpose shadow mask and cyan undercolor removal mask is prepared by exposure through the premask, black separation and cyan separation. The magenta undercolor removal mask is made by two separate exposures: a color correction exposure through the cyan and yellow separations and shadow mask; and an undercolor removal exposure through the black separation and premask. The yellow undercolor removal mask is also made by two separate exposures: a color correction exposure through the magenta separation, premask and shadow mask; and an undercolor removal exposure through the black separation and premask.

3,615,442 METAL PRINTING PLATE AND METHOD FOR PREPARATION OF SAME

Frank T. Geris, Naperville, Ill., and John W. Krueger, Cottage Grove, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

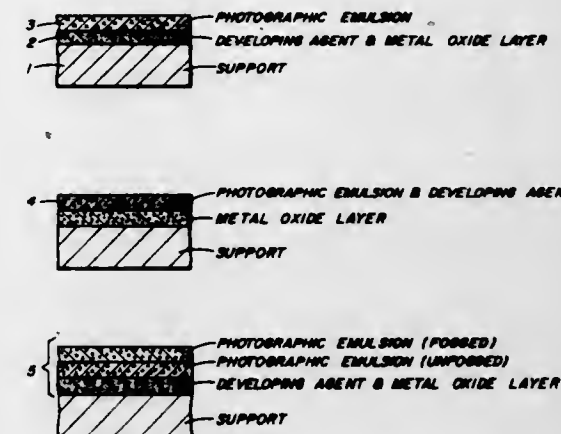
Continuation-in-part of application Ser. No. 372,715, June 4, 1964, now abandoned, Continuation-in-part of application Ser. No. 421,070, Dec. 24, 1964, now abandoned. This application Mar. 21, 1968, Ser. No. 715,094
U.S. Cl. 96—33 Int. Cl. G03f 7/02; G03c 5/00, 1/71 37 Claims

A metal printing plate and method for preparation of same wherein the metal is selected from the group consisting of copper, zinc, aluminum, iron, brass, silver, tin, lead, magnesium, stainless steel, chromium, manganese, nickel and alloys thereof and in which the metal is presensitized with a light sensitive diazo material which is applied to the metal surface of the plate in a manner to provide for direct contact with the metal for reaction to form a stabilized light sensitive diazotized coating which permits imaging by photo techniques to produce an imaged plate and which preferably is etched by an electrical or chemical etch after exposure to produce a deep etched lithographic plate or gravure plate from which many copies can be produced and in which stabilization is achieved by mechanically working, abrading or immersing the plate surface with the light sensitive diazo resin solution and which includes treatment for controlling the degree of polymerization of the light sensitive diazo resin in the coating for control of subsequent image development.

3,615,443 PRESENSITIZED PLANOGRAPHIC PRINTING PLATE

James G. Smith, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1967, Ser. No. 635,757
U.S. Cl. 96—33 Int. Cl. G03f 7/02 22 Claims

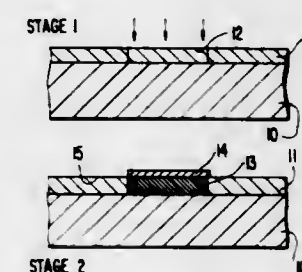


A presensitized printing plate comprising a support, a hardened gelatin photographic silver halide emulsion layer, a developer-containing layer and a reflecting layer between the emulsion and the support which contains a metal oxide and has certain Reflectance characteristics. The emulsion can be a direct-positive one and can optionally contain a halogen-accepting compound and a sulfonated compound to increase sensitivity.

3,615,444 COLOR COUPLER AS OLEOPHILIC FORMING AGENT IN LITHOGRAPHIC PROCESS

Kinji Ohkubo, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Company Ltd., Kanagawa, Japan

Filed July 10, 1967, Ser. No. 652,303
Claims priority, application Japan, July 11, 1966, 41/45258
U.S. Cl. 96—33 Int. Cl. G03f 7/02 30 Claims



A process for preparing a lithographic printing master by exposing a lithographic printing plate having a silver halide light-sensitive layer containing a nontanning agent and an oleophilic image-forming agent, and processing the layer to provide an oleophilic property to the exposed areas.

One or both of the additives may be incorporated in the processing bath.

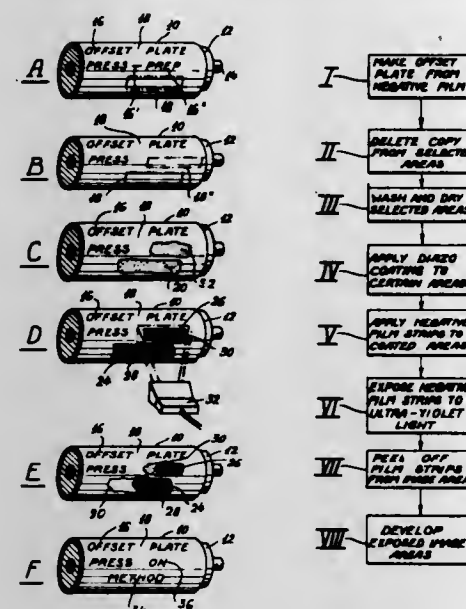
3,615,445 METHOD OF CORRECTING OFFSET PRINTING PLATES

Alice Elizabeth Powell, 445 W. 49th St. Apt. 2A, New York, N.Y.

Filed July 27, 1967, Ser. No. 656,468
U.S. Cl. 96—33 Int. Cl. G03c 7/02; C11d 7/08 1 Claim

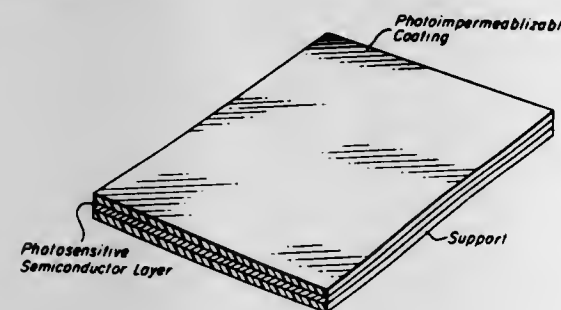
The disclosure describes a method of correcting an offset

printing plate after it is completed and mounted on a printing photographically developable printing plate, printing cylinder, or any other printing means, or a material intended for making such a printing means. Alternatively, it may be



press. The plate can be corrected by adding or removing copy impressions in selected areas.

3,615,446
PHOTOGRAPHIC COPY MEDIUM COMPRISING A SEMICONDUCTOR LAYER WITH A PHOTOPOLYMERIZABLE LAYER THEREOVER
Hans K. Wong, Arlington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Jan. 15, 1968, Ser. No. 697,948
Int. Cl. G03f 7/02; G03c 5/00
U.S. Cl. 96—33



A photographic copy medium comprising a photosensitive semiconductor, e.g., ZnO or TiO₂, having a photopolymerizable coating thereover. Photographic images are produced by imagewise exposing such a medium to radiation which activates the semiconductor but does not polymerize the coating and then contacting the medium with image-forming materials reactive with the activated semiconductor areas; or by first removing the unexposed, unpolymerized portions of the coating, then uniformly exposing the medium to radiation capable of activating the semiconductor, and then contacting it with image-forming materials. A medium having a coating over the photopolymer coating comprising a heat-sensitive composition which forms oleophilic-hydrophilic images upon imagewise application of heat is also disclosed.

3,615,447
METHOD OF MAKING PRINTING PLATES
Poul H. Kongstad, Ljunggatan 39, Furulund, Sweden
Filed June 12, 1968, Ser. No. 736,431
Claims priority, application Sweden, June 12, 1967, 8254/67
Int. Cl. G03f 7/02; G03b 27/02
U.S. Cl. 96—33

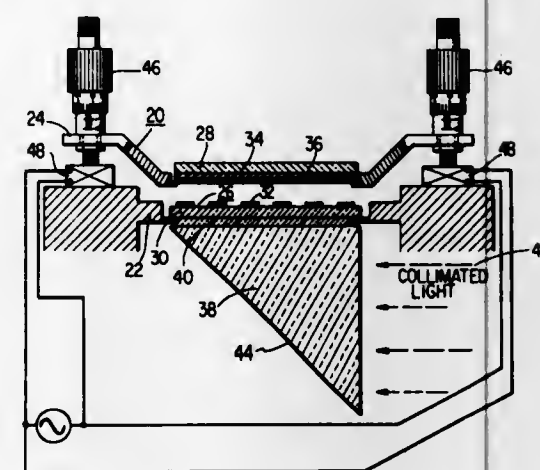
The present invention relates to a method of transferring a printing image from a relief printing form to a light sensitive

said that the present invention relates to a method of transferring a relief printing form to a printing form intended for a different method of printing, e.g., a planographic method of printing.

3,615,448
LITHOGRAPHIC PRINTING PLATE AND METHOD OF PREPARATION
Leon Yeshin, Montreal, Quebec, Canada, assignor to W. R. Grace & Co., New York, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,167
Int. Cl. G03f 7/02

A lithographic (planographic) printing plate is prepared from an element comprising a layer of a photocurable composition containing finely divided particles of a vinyl plastic. The layer is exposed imagewise to U.V. radiation, which photocures the photocurable composition, and then is uniformly heat fluxed, whereby the photocurable composition plasticizes the plastic vinyl in the nonexposed areas. The imagewise exposure is through a stencil, or a negative or positive transparency (halftone or line.) The exposed areas are either oleophilic or hydrophilic in relation to the nonexposed areas. The homopolymer of vinyl chloride is the preferred vinyl plastic.

3,615,449
METHOD OF GENERATING HIGH AREA-DENSITY PERIODIC ARRAYS BY DIFFRACTION IMAGING
David Leslie Greenaway, Bassersdorf, Switzerland, assignor to RCA Corporation
Filed Sept. 25, 1969, Ser. No. 860,865
Int. Cl. G03c 5/00; G02b 5/18
U.S. Cl. 96—35



High area-density arrays, such as diode array vidicon camera tube targets and electron tube electrode screens, are

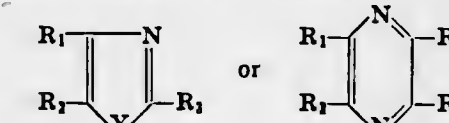
made by photolithographic printing utilizing a photomask diffraction image rather than a photomask shadow for exposing a photoresist masking layer. To form the masking layer, a relatively flat photoresist layer is exposed to a periodic array diffraction image from a photomask. The exposed portions of the layer are removed, leaving an array of unexposed portions. Alternatively, the unexposed portions of the layer may be removed, leaving an array of exposed portions. During the exposure, the layer is oscillated over a distance of essentially one-quarter the wavelength of the light and in a direction substantially perpendicular to the surface of the layer to avoid the appearance of interference fringe patterns after development.

3,615,450
METHOD OF PREPARING PRINTING PLATES
Frank X. Werber, Ridgewood, N.J.; Walter R. Wszolek, Sykesville, and Clifton L. Kehr, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 674,773, Oct. 12, 1967, now abandoned. This application Aug. 11, 1970, Ser. No. 63,312
Int. Cl. G03c 5/00

The invention disclosed is for a method of preparing a printing plate from a liquid polymer composition which includes a polyene defining a liquid polyfunctional component having molecules containing at least two reactive ethylenically or acetylenically unsaturated carbon-to-carbon bonds per molecule, and a liquid polythiol component having molecules containing at least two thiol groups per molecule, with the total functionality of the polyene and polythiol components being greater than four. Optionally, a photocuring rate accelerator is also included in the liquid polymer composition. The photocurable liquid polymer composition may be selectively insolubilized by actinic light to form a solid elastomeric or resinous printing plate.

3,615,451
PRINTING PLATE HAVING A PHOTOACTIVE LAYER
Ernst-August Hackmann, Wiesbaden-Dotzheim, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Bleibach, Germany
Filed Aug. 28, 1968, Ser. No. 755,828
Claims priority, application Germany, Aug. 31, 1967, P 15 97 785.2
Int. Cl. G03c 1/70

This invention relates to a light-sensitive material, particularly a printing plate having a photopolymerizable layer, which layer contains a photochemically initiatable organic halogen compound and a compound corresponding to one of the following general formulas:



wherein
R₁ and R₂ which may be identical or not, are aryl or heteroaryl groups which may be substituted, or form members of an aromatic or pyridine ring,
R₃ is —CH=CH₂ or —RCH=CH₂, with R being arylene, naphthalene, or heteroarylene,
R₄ is either identical with R₃, or is an aryl or heteroaryl group which may be substituted, and
Y is NH, S, Se, or O.

3,615,452
DYE-SENSITIZED PHOTOPOLYMERIZATION PROCESS
Edward J. Cerwonka, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Sept. 9, 1968, Ser. No. 758,632
Int. Cl. G03c 1/70

A dye-sensitized photopolymerization process for vinyl monomers wherein said vinyl monomers are polymerized by means of a diazonium compound and a dye by a photo-oxidation process.

3,615,453
CROSSLINKABLE POLYMER COMPOSITIONS
Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 9, 1968, Ser. No. 766,288
Int. Cl. G03c 1/68

Polymers having hardenable groups and incorporating an energy-sensitive compound containing a heterocyclic nitrogen atom substituted with an —OR group where R is alkyl, aralkyl or acyl are crosslinked by exposure, including imagewise exposure, to electromagnetic radiation.

3,615,454
PROCESS FOR IMAGING AND FIXING RADIATION-SENSITIVE COMPOSITIONS BY SEQUENTIAL IRRADIATION
Lawrence Anthony Cescon; Robert L. Cohen, and Rolf Dessauer, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 26, 1968, Ser. No. 740,103
Int. Cl. G03c 5/24

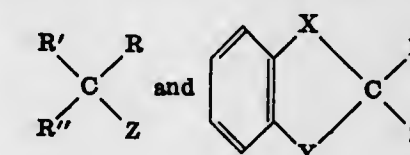
A multiple irradiation method which comprises providing a radiation-sensitive material comprising (1) a radiation-sensitive, multicomponent, intermolecularly reactive imageable composition whose imaging reaction is subject to diffusion control, mixed with (2) a radiation-sensitive polymerizable composition, imaging by irradiating with imaging radiation under imaging conditions, and deactivating the imageable composition in the unexposed areas by irradiating with the polymerizing radiation under nonimaging conditions, said polymerization being effective to rigidify the material so as to render the imaging reaction diffusion-controlled and thereby prevent the imaging components from diffusing together and reacting.

In the imaging step it is only necessary that the imaging reaction occur before the polymerization reaction can deactivate the system. In the deactivation (or fixing) step it is only necessary that the deactivating radiation be applied under conditions ineffective for imaging.

Imagewise exposing the composition first to the imaging radiation then to the deactivating radiation produces a negative image. On the other hand, imagewise exposing the composition first to the deactivating radiation creates a latent image, which is developed by exposing the unirradiated areas to the imaging radiation.

3,615,455
PHOTOPOLYMERIZATION OF ETHYLENICALLY UNSATURATED ORGANIC COMPOUNDS
Urban Leopold Laridon, Wilrijk, and Gerard Albert Delzenne, 'S-Gravenwezel, both of Belgium, assignors to Gevaert-Agfa N. V., Mortsel, Belgium
Filed Nov. 27, 1968, Ser. No. 779,625
Claims priority, application Great Britain, Jan. 12, 1968, 1952/68
Int. Cl. C08f 1/20

The photopolymerization of ethylenically unsaturated organic compounds in the presence of a diacylhalomethane photopolymerization initiator having the structural formulas:



wherein:
Z represents chlorine or bromine,
R represents hydrogen, chlorine, bromine or acetyloxy.

R' and R" represent benzoyl, nitrobenzoyl, dimethylamino-benzoyl, phenylsulfonyl, carboxyphenylsulfonyl, methyl-phenylsulfonyl, or naphthoyl.
X and Y represent carbonyl or sulfonyl

is described. Exposure times for the polymerization is substantially reduced permitting use of low-intensity radiation.

3,615,456

PROCESS FOR PHOTOIMAGING CERTAIN POLYMERIC SUBSTANCES CONTAINING PIGMENTS

Jennie Lee Touchette, and Arthur D. Ketley, both of Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,754

Int. Cl. G03c 5/00, 1/68

U.S. Cl. 96—35.1

17 Claims

A process for photoimaging polymeric layers of certain halogen-containing vinylous resins and halogen-free metallic components is disclosed. The process typically includes assembling a unit which is made up of a polymeric layer and a translucent layer. A liquid media is placed between the two layers and is most frequently sealed around the edges to prevent the escape of the liquid from between the two layers. The translucent layer can be either translucent or transparent. The translucent layer can typically be a thin layer of poly(ethylene terephthalate). An image-bearing layer is exposed to ultraviolet radiation. After a period of time of exposure, preferably of not greater than about 20 minutes, a complete image which corresponds to the ultraviolet radiation passing through the image-bearing layer is formed in the polymeric layer. The image-bearing layer can be an ordinary silver negative, etc. The liquid media is preferably a solution of 50 parts by weight ethanol and 50 parts by weight glycerine. The halogen-containing vinylous resin is capable of being readily dehydrohalogenated to a visibly different unsaturated polymer having at least 5 conjugate double bonds. The vinylous resin can be poly(vinyl chloride acetate). The metallic component, zinc oxide, is quite desirable because it, usually, serves as a good background contrast to the colored image which is formed upon the exposure of the polymeric layer.

3,615,457

PHOTOPOLYMERIZABLE COMPOSITIONS AND PROCESSES OF APPLYING THE SAME

Michael Seibert, Philadelphia, Pa., and Lawrence G. Vaughan, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1969, Ser. No. 822,793

Int. Cl. G03c 5/00, 1/68

U.S. Cl. 96—35.1

16 Claims

The photopolymerizable compositions contain organic noble metal compounds, photopolymerizable monomers, organic sensitizers, organosulfur compounds and, optionally, a flux. The process comprises applying these novel compositions to ceramic substrates and exposing the films to ultraviolet energy of the proper wavelength through negative masks. This causes the exposed portions of the film to harden, and thereafter, the unhardened portions of the films are removed with a suitable solvent. Then the entire ceramic assembly is fired to produce fine line noble metal patterns having high resolution.

3,615,458

PHOTOSENSITIVE HEXAVALENT CHROMIUM COMPOUND CONTAINING POLYVINYL ALCOHOL COMPOSITION AND METHOD OF USING

Risse Dykstra, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 12, 1968, Ser. No. 744,409 The portion of the term of the patent subsequent to June 29, 1988, has been disclaimed.

Int. Cl. G03c 1/66, 5/22

U.S. Cl. 96—36

5 Claims

Photosensitive lacquer having a pH of between 6.7 and 8.2 and containing polyvinyl alcohol, a light sensitive chromium compound for hardening the alcohol, a dipolar aprotic substance. The lacquer layers may be dried at temperatures up to about 100° C. without causing hardening of the polyvinyl alcohol.

The invention relates to a photosensitive lacquer which consists of a solution in water of polyvinyl alcohol (PVA) in which a hexavalent chromium compound is present, to a method of preparing such lacquers, and to their use in manufacturing patterns according to a photomechanical method.

The photosensitive lacquers which are known as such and which consist of a solution of polyvinyl alcohol in which a compound is present containing a hexavalent chromium, are used in various sectors of technology, for example, in manufacturing lithographic plates for offset printing, in which the photohardened layer serves as an ink-absorbing layer, in manufacturing printed circuits in which the photohardened layer serves as an etching resist and in manufacturing picture screens for cathode-ray tubes in which a pattern of substances luminescing upon excitation by electrons is provided on the screen with a photosensitive lacquer.

In all these methods the quality of the photosensitive lacquer is very important. The quality is determined inter alia by the shelf life of the photolacquer, the photosensitivity of layers obtained with the photolacquer, and the extent to which the so-called dark reaction in a layer obtained with the photolacquer can occur and which may give rise to hardening of the lacquer on nonexposed, thus undesired, places. The photosensitive lacquers commonly used in the art and consisting of a solution in water of polyvinyl alcohol usually contain ammonium bichromate or ammonium chromate, which latter compound, on drying the lacquer layer, is converted into ammonium dichromate, while ammonia (NH₃) volatilizes. Other bichromates which are sometimes used are potassium bichromate and sodium bichromate.

3,615,459

METHOD OF SCREENING A COLOR IMAGE REPRODUCER

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation

Filed Nov. 6, 1968, Ser. No. 773,833

Int. Cl. H01J 9/22

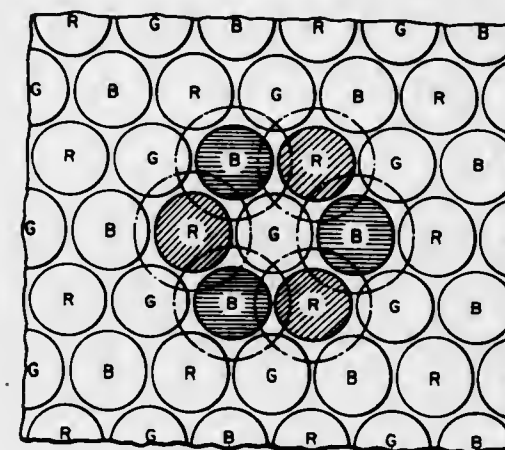
U.S. Cl. 96—36.1

6 Claims

The faceplate section of a tricolor cathode-ray tube of the shadow mask type is coated with a photosensitive layer and is exposed through the shadow mask from positions of the light source that represent two of the three colors. For example, in screening the green phosphor, the exposure is made with the light source positioned to simulate the red and the blue electron guns. The exposure interval is extended so that the unexposed elemental areas of the screen, the areas to receive the green phosphor, are made smaller in size than the apertures of the shadow mask, this control of size taking

advantage of the penumbra effect. Thereafter, the unexposed elemental areas of the screen are developed in green

opaque to actinic radiation. The screen next receives a second coating of a similar photosensitive material including a pigment having light-absorbing capabilities. Exposing the screen from the surface opposite that which has been coated



phosphor. In similar fashion, the screen is coated with red and blue phosphor materials.

3,615,460

METHOD OF FORMING A BLACK SURROUND SCREEN

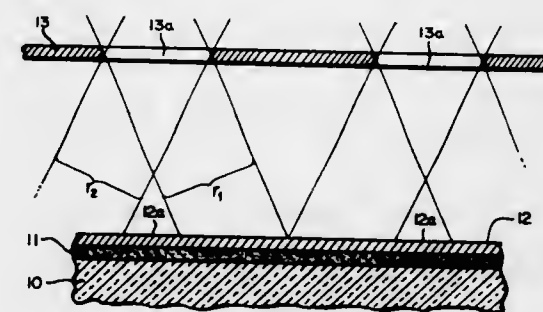
Howard G. Lange, Arlington Heights, Ill., assignor to Zenith Radio Corporation

Filed Nov. 6, 1968, Ser. No. 773,831

Int. Cl. H01J 1/54, 9/22

U.S. Cl. 96—36.1

7 Claims



The screen of a shadow mask type of tricolor picture tube is coated with a light-absorbing layer comprising a composition of a black inorganic pigment material, an acrylic binder and a solvent therefor, specifically toluene. After drying, this layer is overcoated with polyvinyl alcohol and dichromate in water as a solvent and the overcoat is exposed by ultraviolet light, leaving unexposed elemental areas of dot shape. The overcoat is treated with water which removes the unexposed portions and uncovers the corresponding portions of the light-absorbing coating and these portions of the last-mentioned coating are removed by treating with toluene. As a result, elemental dot areas of the screen, which are assigned to one of three phosphor materials, are now laid bare. The exposed elemental portions of the polyvinyl alcohol coating are stripped and all the process steps, except for forming the light-absorbing layer, are repeated two more times, preparing additional elemental screen areas to receive phosphor deposits. The three phosphor materials are then applied in conventional manner.

3,615,461

METHOD OF PROCESSING A BLACK SURROUND SCREEN

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation

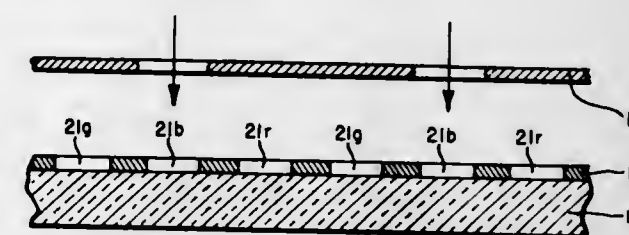
Filed Nov. 6, 1968, Ser. No. 773,830

Int. Cl. H01J 1/54, 9/22

U.S. Cl. 96—36.1

4 Claims

The faceplate of a color cathode-ray tube is covered with a layer of sensitized polyvinyl alcohol and is exposed through the shadow mask of the tube to establish images of the elemental areas of the screen that are to receive deposits of phosphor. These images are developed by treating the screen with water which removes the unexposed portions of the



and treating with the solvent of the second layer washes away the portions of that layer which overlie the opaque dot images. Thereafter, phosphor is deposited on assigned series of the dot images and a final baking step removes the polyvinyl alcohol, leaving on the screen phosphor dot deposits individually surrounded by light-absorbing pigment.

3,615,462

PROCESSING BLACK-SURROUND SCREENS

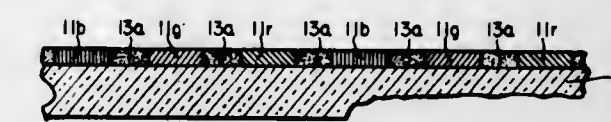
Constantin S. Szegho, and Sam H. Kaplan, both of Chicago, Ill., assignors to Zenith Radio Corporation

Filed Nov. 6, 1968, Ser. No. 773,832

Int. Cl. H01J 1/54, 9/22

U.S. Cl. 96—36.1

3 Claims



The faceplate of a color cathode-ray tube is covered with a sensitized aqueous solution of polyvinyl alcohol (PVA) and exposed through the shadow mask to establish dot images in the selected elemental areas of the screen that are to receive phosphor materials. These images are developed by washing the screen with water to remove the unexposed portions of PVA and then the screen is baked to render the dot images opaque to actinic radiation. Thereafter, the screen is coated with a similar photosensitive material including a light-absorbing pigment and is exposed from the side opposite that which has been coated. Washing with water removes all portions of the second layer which overlie the opaque PVA dot images, confining the pigment to the portions of the screen which surround the dot images. Thereafter, a thin film of a sensitized aqueous solution of PVA is applied to the faceplate and subjected to a flooding beam of ultraviolet light to render the film insoluble in water and form a surface hardened coating over the pigment to lock it securely against erosion. Following this, three sets of deposits of different color phosphors are applied over the developed dot images after which the faceplate is ultimately baked out.

3,615,463

PROCESS OF PRODUCING AN ARRAY OF INTEGRATED CIRCUITS ON SEMICONDUCTOR SUBSTRATE

William N. Kuschell, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1968, Ser. No. 777,012

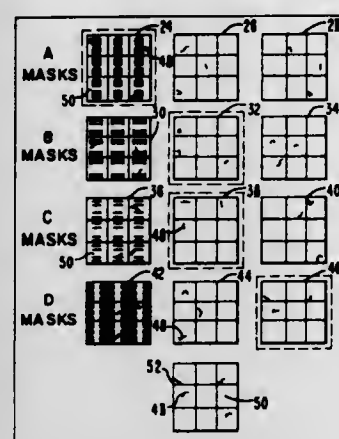
Int. Cl. G03c 5/04

U.S. Cl. 96—36.2

11 Claims

Mask matching in semiconductor manufacturing processes wherein a plurality of masks are used for different processing steps to expose photoresist in arrays of patterns for semiconductor circuits on a wafer may be accomplished very rapidly on a sequential step basis. This may be done by selecting a mask for one of the process steps, then selecting masks one step at a time for the remaining steps by comparing the defect pattern in masks for the step being

selected with the defect pattern of the masks previously selected, then selecting the mask for the step which will add

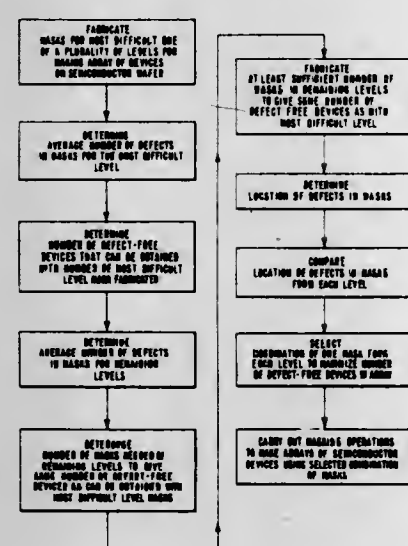


the fewest number of additional defective integrated circuits in the array.

3,615,464
PROCESS OF PRODUCING AN ARRAY OF INTEGRATED CIRCUITS ON SEMICONDUCTOR SUBSTRATE
Benjamin Agusta, Burlington, and Ravinder J. Sahni, Essex Junction, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,013
Int. Cl. G03c 5/04

U.S. Cl. 96—36.2

7 Claims



The relative number of masks required in different levels in a mask matching process used for different processing steps to expose photoresist in arrays of patterns for semiconductor circuits on a wafer may be determined on the basis of the average number of random defects in the mask levels. This provides a way to decrease the number of comparisons that need to be made in a mask matching process without lowering the increased yield of defect-free patterns on the substrate obtained through mask matching.

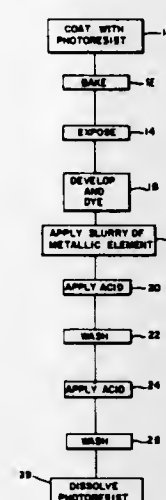
3,615,465
PHOTOETCHING OF METAL-OXIDE LAYERS
Hans B. Bullinger, Peabody, Mass., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 13, 1969, Ser. No. 833,049
Int. Cl. G03c 5/00

U.S. Cl. 96—36.2

5 Claims

Techniques for the selective removal of conductive coatings from nonconductive base materials are disclosed. The invention contemplates the use of conventional photofabrication techniques to expose precisely defined regions of a coating, typically a metal-oxide, which are to be

removed followed by the application of a metallic element and water and an acid. After the metal-oxide coating, the slurry of the metallic element and water and the acid are brought in contact with each other, a reaction occurs whereby the metal-oxide coating is reduced to elemental

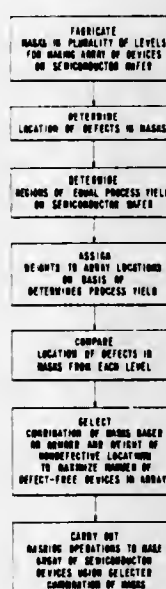


metal. The reaction is allowed to continue for a short time only whereby the elemental metal is but superficially attacked and is followed by an acid wash to remove the exposed elemental metal coating.

3,615,466
PROCESS OF PRODUCING AN ARRAY OF INTEGRATED CIRCUITS ON SEMICONDUCTOR SUBSTRATE
Ravinder J. Sahni, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 19, 1968, Ser. No. 777,014
Int. Cl. G03c 5/04

U.S. Cl. 96—36.2

6 Claims



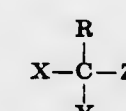
Defect-free integrated circuit patterns in masks which are overlaid by a mask matching process used for different processing steps to expose photoresist in arrays of patterns for semiconductor circuits on a wafer may be weighted prior to matching in accordance with different process yield regions of the array. Weighting the defect-free patterns in this manner provides a way of concentrating the defect-free locations in the masks in the high process yield regions of the wafer.

3,615,467
PHOTOLYSABLE COMPOUNDS AND THEIR USES IN PHOTOGRAPHIC PROCESSES
Albert Lucien Pool, Kontich; Robert Joseph Pollet, Berchem, and Gerard Albert Delzenne, Gravenwezel, all of Belgium, assignors to Gevaert-AGFA N. V., Mortsel, Belgium
Filed Dec. 18, 1967, Ser. No. 691,213
Claims priority, application Great Britain, Jan. 3, 1967, 361/67
Int. Cl. G03c 5/00

U.S. Cl. 96—36.3

10 Claims

Radiation-sensitive compositions and recording materials containing compositions which are light- and heat-sensitive and which include a photolysable compound having the formula:



wherein:

each of X, Y, and Z is an acyl radical, cyano, nitro, azido, a carbamyl group, a sulphamyl group, or wherein X and Y are joined to form a nucleus containing two strong electron-withdrawing groups, either of them attached to the carbon atom having the Z substituent, and R is hydrogen, azido, an alkyl radical, an aryl radical, or a heterocyclic radical, and a substance which, under the influence of radicals formed during exposure to light and heat, undergoes a chemical change are described. These compositions are useful in the production of a visible or developable latent image.

3,615,468
PHOTOPRINTING PROCESS AND ARTICLE
Lauri D. Tisla, Towanda, Pa., assignor to Sylvania Electric Products Inc.
Filed Nov. 6, 1968, Ser. No. 773,972
Int. Cl. G03f 7/00

U.S. Cl. 96—36.3

4 Claims

A photographic master is disclosed wherein the master comprises a base, a pattern, a protective coating and a plurality of protrusions that provide a gas escapement means when the master is used to provide a pattern upon a metallic sheet in a contact printing process. An improved process and a new composition for providing the protective coating and the protrusions are also disclosed.

3,615,469
POLYMERIC PRINTING PLATES
Floyd L. Ramp, West Richfield, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed June 2, 1969, Ser. No. 837,987
Int. Cl. G03c 5/00

U.S. Cl. 96—36.3

19 Claims

A method for producing etched rubber products for use in printing wherein cured rubber products formed from diolefin polymer compounds are treated with aromatic nitrocompounds, masked and exposed to light to selectively degrade the exposed areas. The degraded material is removed leaving the unexposed area as a raised surface.

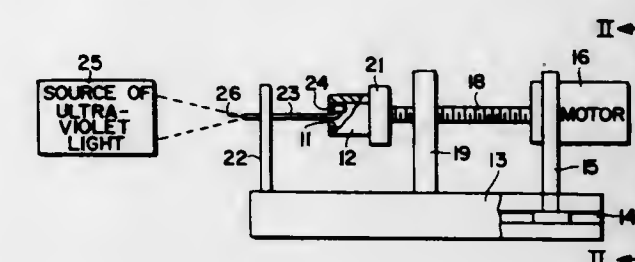
3,615,470
FABRICATION OF HELICAL PATTERNS ON CYLINDRICAL SURFACES
June Singletary, Jr., Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 20, 1967, Ser. No. 669,114
Int. Cl. G03c 5/00

U.S. Cl. 96—37

2 Claims

A method and apparatus are disclosed for forming a pattern by a photoresist technique on a surface which does

not readily lend itself to exposure by light from a photographic negative. This method is particularly useful for



the formation of patterns on nonplanar surfaces and surfaces which are not easily accessible, such as the inner surface of a hollow cylinder.

3,615,471
METHOD FOR MAKING OPTICAL MASKS
Jean Paul Lenoble, Paris; Bertrand Jacques Albert, Blanc Mesne; Francois G. Bochart, Fontainebleau; Jacques A. Coquard, Paris, and Roger A. Norture, Boissy Saint Leger, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 12, 1968, Ser. No. 751,908
Claims priority, application France, Aug. 16, 1967, 8645AM
Int. Cl. G03c 5/00, 11/00

U.S. Cl. 96—38.3

10 Claims

A method of producing optical masks by coating one surface of a transparent plate with a photoresist layer containing, as an additive, a catalyst for subsequent electroless deposition. The photoresist layer is exposed to a light pattern which activates the conventional sensitizer contained in the photoresist layer to harden the photoresist in the exposed areas. The photoresist is then treated with a developer which removes the unexposed, unhardened areas, leaving a pattern corresponding to the light pattern of photoresist containing a catalyst for electroless deposition. The substrate is then treated with a conventional electroless deposition bath which selectively deposits the metal in the areas coated with the photoresist pattern.

3,615,472
HIGH-SPEED PHOTOGRAPHIC EMULSION AND METHOD OF USING SAME
Robert Cone, 599 River Road, Piermont, N.Y.
Filed Feb. 10, 1969, Ser. No. 804,046
Int. Cl. G03c 5/00

U.S. Cl. 96—36.4

2 Claims

A projection-speed silver bromide emulsion of washed type and containing by weight of the silver nitrate used in making the emulsion of an organic antifoggant in excess of 1.5 percent, a retarder consisting of a crystalline quaternary ammonium salt such as di-isobutyl phenoxyl (or cresoxy) ethoxy ethyl dimethyl benzyl ammonium chloride monohydrate of approximately 0.1 percent (which also serves as a germicide), and a hardener ranging between 0.04 and 0.15 of the total weight of the gelatin in the emulsion.

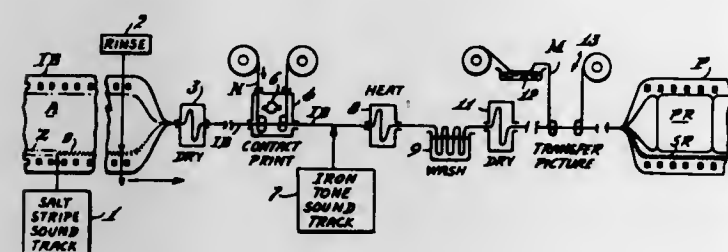
3,615,473
DIAZO PROCESS OF FORMING INFRARED ABSORBING RECORD
John M. Andreas, Pasadena, Calif., assignor to Technicolor, Inc., Hollywood, Calif.
Filed Nov. 4, 1969, Ser. No. 873,886
Int. Cl. G03c 5/14, 5/18, 5/34

U.S. Cl. 96—39

20 Claims

A nonsilver soundtrack is formed on a transparent blank motion picture imbibition film by striping the longitudinal soundtrack zone only with a photosensitive diazosalt. The sensitized track is then printed from a silver soundtrack to form a latent image. The soundtrack zone only is then developed with an iron blue forming toner to produce an iron blue soundtrack record which is absorptive of infrared light

universally used to excite the photocell of commercial motion picture projectors. The three-color aspects of a color



motion picture are then transferred by imbibition to the picture area beside the soundtrack.

3,615,474 METHOD OF MAKING A GRID LAYOUT FOR PRINTED CIRCUITRY

Rudy D. Rosenberger, 54 Franklin Ave., Souderton, Pa.
Filed Mar. 8, 1968, Ser. No. 711,693
Int. Cl. G03c 5/04

U.S. Cl. 96-41

4 Claims

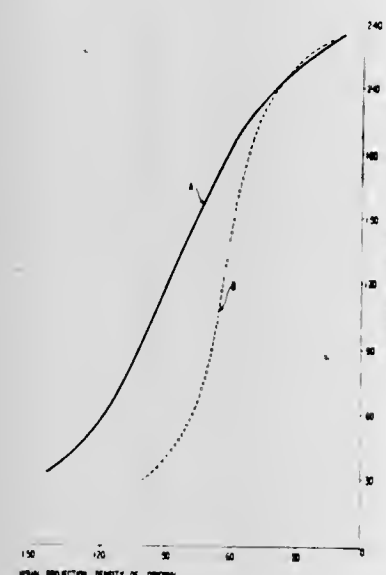
A method of making a dotted-line grid layout for printed circuitry is disclosed. A solid-line grid is photographically reproduced to obtain a positive which is then used to prepare a negative wherein the grid is of dotted lines. Thereafter, the dotted-line grid negative is combined with a layout negative. The combined negatives are then photographically reproduced and thereafter circuitry may be simulated by application of tape on the dotted-line grid.

3,615,475 PHOTOGRAPHIC ELEMENTS AND PROCESS FOR PRODUCING VESICULAR IMAGES

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 14, 1968, Ser. No. 713,002
Int. Cl. G03c 5/04, 5/18, 1/54

U.S. Cl. 96-41

16 Claims



A photographic element for producing vesicular images having extended latitudes and low gradations comprising two or more superimposed layers, each comprising a binder material and a photosensitive compound capable of decomposing upon exposure to light to form gas wherein each of said binder materials has a different permeability to gas.

A process for producing vesicular images having extended latitudes and low gradations comprising imagewise exposing the above-described photographic elements to light to decompose the photosensitive compounds and heating the element to develop the vesicular images.

3,615,476 METHOD FOR RECORDING AND REPRODUCING INFORMATION BY SURFACE DEFORMATION OF A POLYMERIC COMPOSITION

Paul Maria Cassiers, Mortsel-Antwerpen; Andre Jan Conlx, Antwerpen, and Gerard Albert Delzenne, Wilrijk-Antwerpen, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Continuation of application Ser. No. 553,716, May 31, 1966, now abandoned.

Int. Cl. G03c 1/70

U.S. Cl. 96-49

7 Claims

A process is described for recording and reproducing information comprising the steps of imagewise exposing a recording layer comprising a polymeric composition which is photochemically hardenable to actinic light and treating the exposed layer with heat and/or a vapor containing a solvent for said polymeric composition during which treatment the polymeric composition is softened but without removal of any substantial part of the treated element. Upon allowing the treated layer to cool and/or absorbed solvent to volatilize a direct visual image in the light exposed portion of the layer is obtained as a result of the light scattering property in the irradiated portions. The resultant recording layer can be used in a manner similar to conventional photoresists, printing plates and the like.

3,615,477 PHOTOSENSITIVE MATERIAL COMPRISING A FURFURYLIDENE, A LOWER HALOALKANE AND A 2,5-DIALKOXYANILINE

John A. Mattor, Bar Mills, Maine, assignor to Scott Paper Company, Delaware County, Pa.
Filed Jan. 5, 1970, Ser. No. 819

Int. Cl. G03c 5/24, 1/72

U.S. Cl. 96-48

10 Claims

A heat developable photographic plate which comprises, on a support, a layer of a binder containing dissolved therein: as a color former, a furfurylidene compound; as a sensitizer, a lower haloalkane; and as an enhancer, a 2,5-dialkoxyaniline; and which is capable of forming, after exposure to light, dense, black images at temperatures in excess of 150°C.

3,615,478 METHOD OF FIXING PHOTOGRAPHIC MATERIAL CONTAINING A FREE RADICAL PRODUCING COMPOUND

Schoichiro Hoshino; Akira Kato, and Kotaro Yabe, all of Tokyo, Japan, assignors to Keuffel & Esser Company, Hoboken, N.J.

Filed Mar. 15, 1967, Ser. No. 623,234

Claims priority, application Japan, Mar. 18, 1966, 41/16711
Int. Cl. G03c 5/24

U.S. Cl. 96-48

6 Claims

Light-sensitive photographic material comprising a light-sensitive generator of free radicals and a color modifier capable of showing a visible color change by the action of such free radical is fixed against photolytic color change by contact with a salt of hydrogen sulfide or a salt of a sulfur-containing oxygen acid.

3,615,479 AUTOMATIC FILM PROCESSING METHOD AND APPARATUS THEREFOR

Robert J. Kohler, Alexandria, Va., and Jerry G. Hughes, Waltham, Mass., assignors to Itek Corporation, Lexington, Mass.

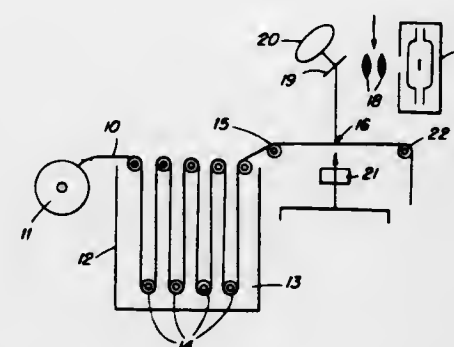
Filed May 27, 1968, Ser. No. 732,141
Int. Cl. G03c 5/24, 1/72

U.S. Cl. 96-48

18 Claims

Selective region development of photographic film is made

by relating density of the photographic emulsion with the intensity of an infrared beam directed onto the emulsion and



by controlling the intensity as a function of the density. Apparatus for carrying out the method is provided.

3,615,480 DEVELOPER SOLUTIONS FOR PHOTOPOLYMERIZED LAYERS

Frank Man-Kam Lam, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 24, 1969, Ser. No. 801,740

Int. Cl. G03c 5/24

U.S. Cl. 96-48

6 Claims

An aqueous developer comprising an alkali metal silicate having a silica to alkali metal oxide ratio greater than 1.5 and one or more water-miscible organic solvents having a pH of 10.0-13.0 and capable of removing all the unexposed areas of a photopolymerizable layer containing an ethylenically unsaturated monomer of a printing form.

3,615,481 LEUCO DYE/HEXAARYLBIMIDAZOLE THERMALLY ACTIVATED IMAGING PROCESS

Catharine E. Looney, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 19, 1969, Ser. No. 825,966

Int. Cl. G03c 5/24

U.S. Cl. 96-48

10 Claims

Process for imaging photosensitive color-forming compositions comprising selected leuco dyes, hexaarylbiimidazoles, and, optionally, a binder, which process comprises heating said composition to a temperature at which the composition becomes sufficiently fluid to permit fluid movement of the components of the composition, but below the decomposition temperature of the composition, and subjecting the composition to photoirradiation with activating light within the ultraviolet and visible regions. Preferably the binder is a thermoplastic polymer having a glass transition temperature above room temperature but below the decomposition temperature of the composition. In the alternative, the steps of the process may be reversed, i.e., the irradiation step may be carried out first, followed by heating as described above.

3,615,482 GELABLE PHOTOPROCESSING SOLUTIONS

Alvin Cronig, Shaker Heights, Ohio, assignor to Itek Corporation, Lexington, Mass.
Continuation-in-part of application Ser. No. 757,114, Sept. 3, 1968, now abandoned. This application Dec. 17, 1969, Ser. No. 885,991

Int. Cl. G03c 5/24, 5/38

U.S. Cl. 96-48

12 Claims

Gelable photoprocessing solutions are disclosed which comprise a photoprocessing solution and an amount of heat-reversible gel-forming carrageenan or furcellaran sufficient to cause gelation of the solution. These solutions are easily gelled, in which state they are useful in developing, fixing, washing, etc. exposed photographic films.

3,615,483 METHOD OF PHOTOGRAPHICALLY PRODUCING COPPER METAL IMAGES

Hendrik Jonker; Casper Johannes Gerardus Ferdinand Janssen, and Lambertus Postma, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 16, 1967, Ser. No. 623,568

Claims priority, application Netherlands, Mar. 19, 1966, 6,603,640

Int. Cl. G03c 5/34, 1/62, 1/56

U.S. Cl. 96-49

2 Claims

Selectively expose a diazosulfonate treated film, to obtain free sulfite, treat exposed layer with silver salt to form silver sulfite, reduce the silver sulfite to form a silver nuclei image and treat silver nuclei image with a solution of a copper metal such as nickel, cobalt or silver salt and a reducing agent therefore to form a metal image formed of said metal.

3,615,484 TWO-COMPONENT DIAZO-TYPE PHOTOPRINTING MATERIAL FOR USE IN WET DEVELOPMENT

Shigenaki Yoshida, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Dec. 6, 1967, Ser. No. 688,374

Claims priority, application Japan, Dec. 26, 1966, 41/85061

Int. Cl. G03c 1/58

U.S. Cl. 96-49

7 Claims

A two-component diazo-type photoprinting material which is developed with an alkaline aqueous solution containing no coupler, said photoprinting material comprising a supporting sheet and a light-sensitive layer provided on one face of said supporting sheet, said light-sensitive layer containing at least one aromatic diazo compounds and a coupler consisting of at least one aromatic compound adapted to couple to said diazo compound, said coupler being used with the ratio of 0.5-1.5 mols to 1 mol of said diazo compound.

3,615,485 DIAZO-TYPE DEVELOPERS

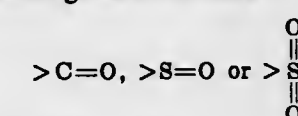
Rafiqul Islam, and Sidney G. Garnish, both of London, England, assignors to GAF Corporation, New York, N.Y.
Filed Aug. 21, 1968, Ser. No. 754,468

Int. Cl. G03c 5/34, 1/58

U.S. Cl. 96-49

12 Claims

Developer compositions and their use in the development of 1- or 2-component diazo-type materials, said compositions containing as a solvent medium, formamide, mono- or dialkyl formamides, 2-pyrrolidone, N-substituted derivatives of 2-pyrrolidone, sulfolane, dimethylsulphoxide, ethylene carbonate, gamma-butyrolactone, and other organic compounds containing the structures



from 0 to about 95 percent of water, and an alkaline reacting developing agent, with or without an azo coupler.

3,615,486 PHYSICO-CHEMICAL RECORDING METHOD

Gerard Albert Delzenne, Wilrijk-Antwerpen, Belgium, assignor to Gevaert-AGFA N.V., Mortsel, Belgium
Continuation of application Ser. No. 553,277, May 27, 1966, now abandoned. This application Nov. 3, 1969, Ser. No. 871,555

Int. Cl. G03c 1/70

U.S. Cl. 96-49

6 Claims

A process is described for recording and reproducing information comprising the steps of imagewise exposing a recording layer comprising a polymeric composition which is photochemically hardenable to actinic light and contacting the exposed layer to a fluid medium containing a solvent and a nonsolvent for the polymeric composition for a period sufficient to mat the unhardened area of the recording layer without removing any substantial part of the polymeric

composition. The resultant recording layer can be used in a manner similar to conventional photoresists, printing plates, and the like.

3,615,487

METHOD FOR THE PRODUCTION OF DIAZO-TYPE INTERMEDIATE ORIGINALS
Roland Moraw, Wiesbaden-Blebrich, and Renate Schulz, Wiesbaden, both of Germany, assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Dec. 8, 1969, Ser. No. 883,337
Claims priority, application Germany, Dec. 10, 1968, P 18 13 713.8

Int. Cl. G03c 5/34, 1/58, 1/54

U.S. Cl. 96—49

5 Claims

Light-sensitive diazo-type material useful in the preparation of intermediate original copies having effective light absorption over a broader wavelength range is prepared by combining P- or o-amino benzene diazonium compounds with azo dye couplers which are enol or phenol compounds having no amino nitrogen on the benzene nucleus, and further including in the light-sensitive composition benzene diazonium compounds having no amino nitrogen on the benzene nucleus or amino phenol azo dye coupler compounds. When diazo-type materials of such composition are exposed and developed in the ordinary manner and are subsequently exposed to strong acids, the resulting images exhibit strong absorption at substantially all of the significant wavelengths of light generated by diazo-type copy device light sources.

3,615,488

PHOTOGRAPHIC PROCESSING COMPOSITION AND PROCESS COMPRISING CYSTEINE AND AN ALDEHYDE BISULFITE

Frank J. Drago, and Clinton Van Grol, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1970, Ser. No. 20,791

Int. Cl. G03c 5/26, 5/30

U.S. Cl. 96—50

26 Claims

Photographic-processing composition for developing photographic elements in the presence of a developing agent such as hydroquinone, comprising cysteine, an aldehyde bisulfite such as sodium formaldehyde bisulfite and an organic antifoggant. The composition is advantageously employed in a continuous transport processing machine.

3,615,489

STABILIZATION OF PHOTOGRAPHIC PRINTS WITH THIOCYANATE

Henry J. Fassbender, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 27, 1968, Ser. No. 740,475

Int. Cl. G03c 5/26

U.S. Cl. 96—50

8 Claims

A process for the stabilization of photographic images includes subjecting a developed silver halide emulsion layer containing the silver images to thiocyanate stabilization and then laminating an organic colloid layer containing a heavy metal salt on a transparent support to the surface of the emulsion layer. Highly stable glossy prints are obtained.

3,615,490

PHOTOGRAPHIC OVERCOAT COMPRISING A BENZOTRIAZOLE TONING AGENT AND A SILVER SALT OF 5-MERCAPTO-1-SUBSTITUTED TETRAZOLE
Charles H. Gaffin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1968, Ser. No. 754,960

Int. Cl. G03c 5/26, 7/00, 1/72

U.S. Cl. 96—50 PL

11 Claims

A photographic element comprising a support, a photographic silver salt layer and a layer comprising a binder, and the combination of triazole cold toning agent and a silver salt of a mercaptoazole, especially in an overcoat

layer of such element, provides improved antiplumming and image tone. A combination of a benzotriazole and a silver salt of a 1-phenyl-5-mercaptotetrazole provides very cold tone images after hot glazing without loss of desired sensitometric properties.

3,615,491

PHOTOGRAPHIC IMAGES

Edith Weyde, Kuerten, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 12, 1968, Ser. No. 783,420

Claims priority, application Germany, Dec. 23, 1967, P 15 97 512.9

Int. Cl. G03c 5/26, 5/00

U.S. Cl. 96—50

5 Claims

The production of an improved image by first producing an imagewise metallic silver image in a photosensitive layer and then treating the layer with a substance which decomposes at the metallic silver to result in a superimposed vesicle image. The vesicle image increases the density of the original silver image to provide high sharpness. The process is carried out using a silver salt emulsion in a binding agent to provide the metallic silver upon photographic processing. The binding agent is a suitable resin.

3,615,492

PHOTOGRAPHIC DEVELOPER CONTAINING A PYRIDINE DERIVATIVE

Fritz-Walter Lange, and Jens E. Muller, both of Gauting, Germany, assignors to Hans Schwarzkopf G.m.b.H., Hamburg, Germany

Filed May 24, 1968, Ser. No. 731,730

Claims priority, application Germany, June 1, 1967, P 15 47 660.5

Int. Cl. G03c 7/00, 5/30

U.S. Cl. 96—52

3 Claims

The invention provides a developer solution for simultaneously developing and toning positive photographic prints, the solution containing hydroquinone as the developer and a specified pyridine derivative as toning agent to provide a brown-tinted (e.g. yellowish-brown, olive-brown, reddish-brown, or neutral-brown) print.

3,615,493

METHOD OF PROCESSING COLOR PHOTOGRAPHS BY A SILVER DYE-BLEACHING METHOD

Shigeru Watanabe; Kazunobu Kato, and Nobuo Tsuji, all of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1967, Ser. No. 677,726

Claims priority, application Japan, Oct. 25, 1966, 41/70369

Int. Cl. G03c 7/00

U.S. Cl. 96—53

3 Claims

Leucobases of dyes can be used as dyes for photographic light-sensitive color film in a silver dye-bleaching system, without accompanying formation of fog, by processing the film, after dye bleaching, in a cleaning bath containing a water-soluble N-vinylpyrrolidone polymer, a peregol, or a lissolamine.

3,615,494

METHOD OF PRODUCING COLOR PHOTOGRAPHIC IMAGES BY THE SILVER DYE BLEACH METHOD

Shigeru Watanabe; Reichi Ohl; Masatoshi Sugiyama, and Hideo Kondo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara-Machi, Ashigara-Kamigun Kanagawa, Japan

Filed July 16, 1969, Ser. No. 842,378

Claims priority, application Japan, July 16, 1968, 43/50098

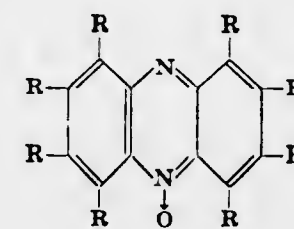
Int. Cl. G03c 7/00

U.S. Cl. 96—53

9 Claims

In a method of preparing a color photographic image by a silver dyestuff bleaching process, the improvement which comprises dyestuff bleaching a color photographic light-

sensitive element in the presence of a phenazine-N-oxide, as a bleaching catalyst, represented by the formula:



wherein R, which may be the same or different groups, represents a member selected from the group consisting of a hydrogen atom, an alkyl group having one to eight carbon atoms, a nitro group, a cyano group, a carboxy group, a sulfogroup, an acylamino group, a sulfonamino group, a halogen atom and a carbocyclic aromatic residue formed by the condensation of two of said R's bonded to adjacent carbon atoms.

3,615,495

COLOR DEVELOPER COMPOSITION FOR COLOR PHOTOGRAPHY

Shiro Kimura; Atsuki Arai; Kimio Kishimoto, and Isao Shimamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 10, 1968, Ser. No. 696,774

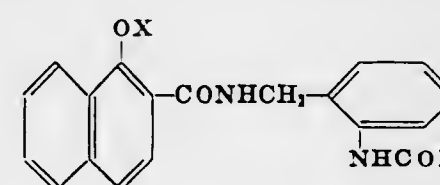
Claims priority, application Japan, Jan. 12, 1967, 42/2354

Int. Cl. G03c 7/00

U.S. Cl. 96—55

9 Claims

A color development composition for color photography containing an aromatic primary amine developing agent and a cyan coupler represented by the following general formula



wherein R represents a member selected from the group consisting of a hydrogen atom, a methyl group and an ethyl group and X represents a member selected from the group consisting of a hydrogen atom and an acyl group.

3,615,496

PHOTOGRAPHIC DEVELOPER COMPOSITIONS

Roy Jones Kanous, Hilton, and Henry Josef Fassbender, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1968, Ser. No. 702,205

Int. Cl. G03c 7/00

U.S. Cl. 96—55

3 Claims

Aqueous dispersions of benzyl alcohol can be formed with emulsifying agents such as hydroxyethyl cellulose. Such dispersions are highly effective in forming photographic processing solutions.

3,615,497

BENZYL ALCOHOL DISPERSIONS

Henry Josef Fassbender, Rochester, and Roy James Kanous, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 702,205, Feb. 1, 1968. This application July 11, 1968, Ser. No. 743,917

Int. Cl. G03c 7/00

U.S. Cl. 96—55

4 Claims

Aqueous dispersions of benzyl alcohol can be formed with emulsifying agents such as hydroxyethyl cellulose. Such dispersions are highly effective in forming photographic processing solutions.

3,615,498

COLOR DEVELOPERS CONTAINING SUBSTITUTED N-BENZYL-P-AMINOPHENOL COMPETING DEVELOPING AGENTS

Atsuki Arai; Mitsugu Tanaka, and Isao Shimamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan

Filed July 29, 1968, Ser. No. 748,205

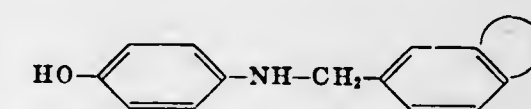
Claims priority, application Japan, July 29, 1967, 42/48760

Int. Cl. G03c 1/00

U.S. Cl. 96—55

11 Claims

Improved results are obtained upon using a color developing composition which contains an aromatic primary amino developing agent, a color coupler and an alkali if there is incorporated therein a water-soluble compensating developer represented by the general formula



X represents an atomic group necessary to form a heterocyclic ring, and is specifically defined in the specification. Typically, the compensating developer shown is incorporated into a cyan magenta or yellow developing composition.

3,615,499

PHOTOGRAPHIC PROCESSES

Nicholas H. Groot, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1968, Ser. No. 764,599

Int. Cl. G03c 7/00

U.S. Cl. 96—55

12 Claims

Exposed photographic silver halide emulsions containing development inhibitor releasing coupler are processed in the presence of primary aromatic color developing agent and a competing coupler which produces substantially no permanent dye in the emulsion.

3,615,500

SILVER HALIDE EMULSIONS WHICH CONTAIN COLOR COUPLERS

Harald Huckstadt, Cologne, Stammheim; Erwin Ranz, Leverkusen, and Herbert Grabhofer, Cologne, Flittard, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1969, Ser. No. 852,073

Claims priority, application Germany, Sept. 6, 1968, P 17 97 263.3

Int. Cl. G03c 7/00, 1/28

U.S. Cl. 96—55

10 Claims

The sensitivity of a light-sensitive photographic material containing in the silver halide emulsion layer a color coupler capable of forming a dye upon reaction with the oxidation product of a color-forming developer is increased by addition of a water-soluble quaternisation product of an α,ω -bis-(thiomorpholinyl)-alkane with a bifunctional polyalkylene oxide.

3,615,501

COLOR PHOTOGRAPHIC DEVELOPING PROCESS

Reichi Ohl; Isao Shimamura, and Tadao Shishido, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara-Machi, Ashigara-Kamigun, Kanagawa, Japan

Filed Oct. 22, 1969, Ser. No. 868,583

Claims priority, application Japan, Oct. 22, 1968, 43/76923

Int. Cl. G03c 5/30, 7/30

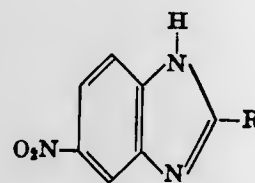
U.S. Cl. 96—55

6 Claims

A process for developing exposed multilayer color photographic silver halide light-sensitive elements which

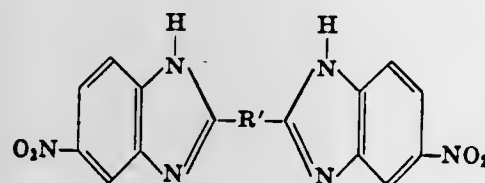
comprises processing said color photographic element in a processing composition containing a compound represented by the general formula:

(I)



wherein R represents an alkyl group having four to 7 carbon atoms or a compound represented by the general formula:

(II)



wherein R' represents an alkylene group having one to eight carbon atoms.

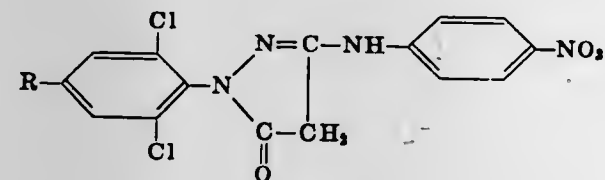
3,615,502 COLOR PHOTOGRAPHIC DEVELOPMENT UTILIZING PYRAZOLONE COUPLERS

Makoto Yoshida, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Nakanuma, Minami Ashigara-Machi, Ashigara-Kanigun, Kanagawa, Japan

Filed Mar. 31, 1970, Ser. No. 24,250

Claims priority, application Japan, Apr. 7, 1969, 44/26266
Int. Cl. G03c 7/00

U.S. Cl. 96-56.5 6 Claims
In a color photographic developing process, the use of a coupler of the formula



wherein R is methyl or methoxy.

3,615,503 COLOR-DEVELOPING COMPOSITION CONTAINING AN ANTIOXIDANT

Charles O. Edens, and Rowland G. Mowrey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1969, Ser. No. 803,097

Int. Cl. G03c 7/00, 5/30

U.S. Cl. 96-56 19 Claims

Color-developing compositions comprising a primary aromatic amine color-developing agent and as an antioxidant certain linear compounds that are capable of existing in equilibrium with an enol form of said compound and that are not capable of intramolecular cyclization are advantageously used for color development because substantially less color-developing agent is lost from aerial oxidation than is lost from color developer compositions containing prior art antioxidants without the undesirable reduction in pH produced in prior art developer compositions by prolonged exposure to air.

3,615,504 SILVER HALIDE COLOR PHOTOGRAPHY UTILIZING 2- PYRAZOLIN-5-ONE COLOR COUPLERS CONTAINING IN THE 3-POSITION A 2,4,6- TRIMETHYLPHENYLACYLAMINO GROUP

Marcel Jacob Monbailu, Mortsel, and Raphael Karel Van Poucke, Berchem, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed June 19, 1969, Ser. No. 834,873

Claims priority, application Great Britain, July 18, 1968, 34339/68
Int. Cl. G03c 7/00

U.S. Cl. 96-56.5 9 Claims
Silver halide photographic materials and processes utilizing 2-pyrazolin-5-one color couplers carrying in the 3-position a 2,4,6-trimethylphenylacetyl amino group.

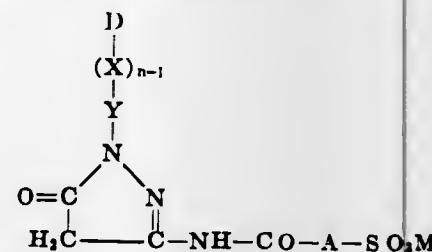
3,615,505 SILVER HALIDE EMULSION CONTAINING 2- PYRAZOLIN-5-ONE COLOR COUPLER

Raphael Karel Van Poucke, Berchem; Marcel Jacob Monbailu, Mortsel, and Gaston Jacob Benoy, Edegem, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

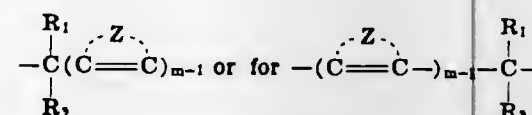
Filed Mar. 12, 1969, Ser. No. 806,715

Claims priority, application Great Britain, Apr. 10, 1968, 17222/68
Int. Cl. G03c 7/00

U.S. Cl. 96-56.5 10 Claims
Photographic materials comprising novel magenta forming 2-pyrazolin-5-one color couplers corresponding to the formula:



wherein:
Y stands for a bivalent aromatic group,
X stands for oxygen, sulfur sulphonyl, -SO₂N(R)-R being hydrogen or lower alkyl, -CONH- or -N(alkyl)-,
D represents a residue rendering the molecule fast to diffusion and comprising from five to 20 carbon atoms,
n stands for 1 or 2,
A stands for



wherein m=1 or 2 and each of R₁ and R₂ stands for hydrogen, alkyl or aryl, R₁ and R₂ both being hydrogen when m=2, and Z represent the atoms necessary to complete an aromatic nucleus, and
M stands for hydrogen, an alkali metal atom or an ammonium group, are described. The materials have good stability to light, heat, and humidity and have good spectral characteristics.

3,615,506 SILVER HALIDE EMULSIONS CONTAINING 3- CYCLICAMINO-5-PYRAZOLONE COLOR COUPLERS

John R. Abbott, and William F. Coffey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 812,853, Apr. 2, 1969, now abandoned. This application Feb. 9, 1970, Ser. No. 9,665

Int. Cl. G03c 7/00, 1/40

U.S. Cl. 96-56.5 7 Claims
Novel 3-(cyclicamino)-5-pyrazolones and other 3-(substituted amino)-5-pyrazolone couplers valuable for use

in color photography are advantageously prepared in good yields from the corresponding 3-alkoxy-5-pyrazolones by a novel single step synthesis in which a mixture of (1) the appropriate 3-alkoxy-5-pyrazolone, or a primary amine and (3) an acid catalyst having a pKa smaller than about 10.2 is heated.

3,615,507 PHOTOGRAPHIC BLEACH-FIX SOLUTIONS

Charleton C. Bard, and Julius C. Battaglini, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1968, Ser. No. 783,750

Int. Cl. G03c 5/38 6 Claims
Compositions which are effective as photographic bleach-fixes can be prepared from solutions containing substantial amounts of reduced oxidant, e.g., ferrocyanide, and dissolved silver by reaction with iodine which oxidizes the reduced oxidant and precipitates silver as silver iodide. This can be used for effective regeneration of photographic bleach-fix compositions.

3,615,508 PHOTOGRAPHIC BLIXES AND BLIXING

Keith H. Stephen, and John J. Surash, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,497

Int. Cl. G03c 5/32 22 Claims
Photographic blix compositions containing (a) an ammonium or amine salt of the Fe⁺⁺⁺, Co⁺⁺⁺, or Cu⁺⁺⁺ complex with a polyfunctional ligand as the silver bleaching agent, (b) an amine or an ammonium thiosulfate and (c) a salt having as a cation an ammonium ion or a water-soluble amine with an ionizable proton attached to a nitrogen atom in the amine and as an anion a sulfite ion, bisulfite ion or a metabisulfite ion either with or without (d) an amine or ammonium salt of unchelated polyfunctional ligand are advantageously prepared in concentrated stock solutions or as dry mixtures to make working blix solutions that clear silver even in high concentrations along with residual silver halides from developed silver halide emulsion layers with substantially shorter clearing times than blixes outside the invention.

3,615,509 PHOTOGRAPHIC FIXER-DEVELOPER CONTAINING COMPOUNDS WITH p-AMINOPHENOL AND DYE- FORMING NUCLEI

Dieter Klein, Gotzenhain; Gerhard Heilmann, Neu-Isenburg; Abele Werner, Neu-Isenburg, and Gerd. Joh. Oosterloo, Neu-Isenburg, all of Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1970, Ser. No. 10,616

Int. Cl. G03c 5/38, 5/30, 7/00 6 Claims

U.S. Cl. 96-61 M
Photographic fixer-developer for silver halide layers, characterized in that it contains an alkaline compound, a fixing agent, e.g., sodium, potassium or ammonium thiosulfate, and at least one developer-coupler compound having within the same molecule a p-aminophenol nucleus capable of developing a silver halide image and a separate dye-forming nucleus capable of forming a quinoneimine or azomethine dye. The p-aminophenol nucleus is linked to the dye nucleus through a

group, free bonds attached to C and to N are attached to cyclic carbons. The fixer-developers are superior to prior developers with regard to contrast and maximum image density.

3,615,510 SILVER HALIDE COMPLEXING AGENTS

Joseph S. Yudelzon, and Randall E. Mack, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1966, Ser. No. 575,548

Int. Cl. G03c 5/38, 1/34 16 Claims
U.S. Cl. 96-61
Photographic silver halide can be stabilized with certain organic sulfonium, organic sulfoxonium, organic ammonium, organic phosphonium, organic boronium, and/or organic siliconium halides of mixtures of these. These can be employed in a photographic element, processing solution or processing web. They are useful in combination with a nonaqueous, low-melting solvent, e.g. succinimide, sulfamide, urea, or acetamide.

3,615,511 SURFACE DEVELOPER WITH HETEROCYCLIC MERCAPTAN FOR USE ON INTERNAL IMAGE EMULSION

Roger M. Cole, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 22, 1968, Ser. No. 731,275

Int. Cl. G03c 5/38 13 Claims

U.S. Cl. 96-61
Processes and compositions for developing or stabilizing image records in photographic, internal image, silver halide compositions. In one aspect, the developing or stabilizing compositions of this invention contain low concentrations of a silver complexing agent. In another aspect, photographic compositions are stabilized or developed with a process comprising a bleach bath followed by a surface type developer. In a preferred embodiment direct-print materials containing either photodeveloped images or nonphotodeveloped latent images can be processed to provide permanent image records.

3,615,512 PHOTOGRAPHIC COMPOSITIONS AND PROCESS FOR STABILIZING IMAGE RECORDS WITH SAID COMPOSITIONS

Jacques Ducrocq, and Daniel Gallols, both of Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1968, Ser. No. 768,155

Int. Cl. G03c 5/38, 5/30 16 Claims

U.S. Cl. 96-61
Photographic compositions comprising (1) a silver halide developing agent, (2) a water-soluble silver halide solvent and (3) a weak silver halide complexing agent. In one embodiment the above composition can be used to rapidly develop or stabilize image records in silver halide emulsions which contain addenda which lower the rate of dissolution of silver halide in a potassium thiocyanate solution.

3,615,513 INHIBITION OF SILVERING IN PHOTOGRAPHIC PROCESSING SOLUTIONS

Grant Milford Haist, and David Alan Pupo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 505,967, Nov. 1, 1965, now abandoned. This application Dec. 29, 1969, Ser. No. 888,809

Int. Cl. G03c 5/38 11 Claims

U.S. Cl. 96-61 M
Orthomercaptobenzoic acid provides good antisulfidant action in photographic processing solutions. It is effective in

inhibiting silvering or sludging in monobaths, especially in monobaths having high silver halide solvent activity. These include so-called thiosulfate monobaths.

3,615,514

A THIOCYANATE STABILIZING BATH CONTAINING CYCLOHEXANONE BISULFITE

Werner Berthold, Kiel; Karl Frank, Leverkusen, and Anita Von Konig, Leverkusen, all of Germany, assignors to AFGA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 12, 1968, Ser. No. 712,358

Claims priority, application Germany, Mar. 25, 1967, A 55 261

Int. Cl. G03c 5/38

U.S. Cl. 96-61

1 Claim

Complexing bath for stabilizing silver image in silver halide emulsion which is not adequately fixed, is improved by addition of cyclic ketone bisulfite.

3,615,515

PHOTOGRAPHIC PROCESSING METHOD UTILIZING ELECTROPHORESIS AND ELECTROLYSIS OF THE DEVELOPER

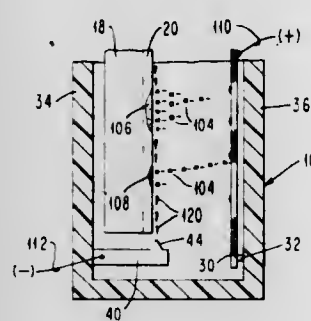
Daniel J. Lasky, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 12, 1968, Ser. No. 744,405

Int. Cl. G03c 5/24

U.S. Cl. 96-63

8 Claims



A method of developing photographic emulsion layers whereby fresh developer is supplied during development to different sized image areas in proportion to their size. Conventional development releases negatively charged waste particles that congregate adjacent the image areas. A positively charged electrode in the developer tank attracts the particles, permitting fresh developer to reach the image areas to continue development. Optionally, a negatively charged electrode electrolyzes the developer, releasing hydrogen bubbles which scrub the face of the developing layer, dislodging the waste particles.

3,615,516

DEVELOPMENT TECHNIQUE FOR SILVER HALIDE DIRECT POSITIVE WITH N-VINYL-2-PYRROLIDONE POLYMER

Joseph Louis De Munck, Kalmthout, and Raymond Leopold Florens, Edegem, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Sept. 18, 1967, Ser. No. 668,685

Claims priority, application England, Sept. 19, 1966, 41,638/66

Int. Cl. G03c 5/24

U.S. Cl. 96-64

15 Claims

A light-sensitive photographic material comprising a direct positive silver halide emulsion of the Herschel type containing an N-vinyl-2-pyrrolidone polymer and the development of this emulsion is described. These emulsions yield a marked increase in gradation.

3,615,517

DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING HALOGEN CONDUCTOR AND ELECTRON ACCEPTOR DEVELOPED WITH POLYHYDROXY BENZENE

Kirby M. Milton, Fishers, N.Y., and Bernard D. Illingsworth, deceased, late of Rochester, N.Y. (by Mary D. Illingsworth, executrix), assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 9, 1968, Ser. No. 759,819

Int. Cl. G03c 5/24

U.S. Cl. 96-64

23 Claims

Process for developing blue-sensitive-direct-positive silver halide photographic elements with a polyhydroxybenzene developing agent wherein the silver halide emulsion of the element comprises fogged silver halide grains and an organic compound which accepts electrons, wherein said halide is at least 50 mole percent chloride and novel blue-sensitive-direct-positive emulsions which can be used in this process.

3,615,518

CORED DIRECT POSITIVE EMULSION FOR PHOTOSOLUBILIZATION PROCESS

Erik Moisar, Cologne-Filtard, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

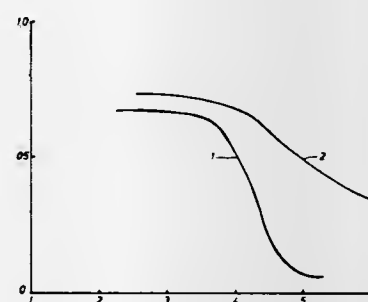
Filed Sept. 17, 1968, Ser. No. 760,216

Claims priority, application Germany, Oct. 4, 1967, P 15 97 484.2

Int. Cl. G03c 5/24

U.S. Cl. 96-64

4 Claims



This invention relates to a photosolubilization process for the production of images by means of exposing emulsions having a lowered rate of solution because of a silver salt which is less soluble than silver chloride, after which exposed elements are removed with a silver halide solvent to produce an image. The sensitivity of this emulsion is increased by internal sensitivity specks in the composite grain structure of the silver halide which specks are the core of the grains chemically ripened as by gold and sulfur sensitization. The processing of the exposed photographic material being carried out under otherwise usual conditions.

3,615,519

DIRECT-POSITIVE LITHOGRAPHIC ELEMENTS AND PROCESSES FOR DEVELOPING SAME

Kirby M. Milton, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 9, 1968, Ser. No. 758,582

Int. Cl. G03c 5/24

U.S. Cl. 96-64

34 Claims

Direct-positive-blue-sensitive, chemically fogged, silver halide photographic elements containing an alkylene oxide polymer and a process for developing direct-positive-blue-sensitive, silver halide photographic elements in the presence of a polyhydroxybenzene developer and an alkylene oxide polymer.

3,615,520

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 13, 1968, Ser. No. 736,810

Int. Cl. G03c 5/24, 1/06

U.S. Cl. 96-64

15 Claims



The present invention relates to a photographic film unit which comprises a support carrying on one surface a photosensitive silver halide emulsion comprising silver halide crystals which contain at least two halides selected from the group consisting of iodide, bromide and chloride, such as, for example, silver iodobromide, silver chloriodobromide, and silver precipitating nuclei; and to specified photographic processes employing such film units.

3,615,521

PHOTOGRAPHIC COMPOSITIONS AND PROCESSES-A

Edwin N. Oftedahl, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,358

Int. Cl. G03c 5/30

U.S. Cl. 96-66

16 Claims

Photographic developing agents, which are lactone derivatives, such as coumarin derivatives and especially 6-hydroxy coumarin and 6-amino coumarin derivatives, and which have the property of forming a lactone developing agent precursor under neutral, slightly alkaline and acid conditions provide less stain without loss of desired sensitometric properties in photographic developer compositions, elements and processes. They are suitable in combination with other photographic developing agents. Corresponding lactone developing agent precursors are also especially useful.

3,615,522

PROCESS FOR DEVELOPMENT OF MULTILAYER COLOR PHOTOGRAPHIC MATERIALS

Reiichi Ohi; Haruhiko Iwano; Tadao Shishido, and Isao Shimamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 15, 1969, Ser. No. 842,011

Claims priority, application Japan, July 15, 1968, 43/49818

Int. Cl. G03c 5/50, 5/52, 5/30

U.S. Cl. 96-66 R

17 Claims

Method of processing a silver halide multilayer color photographic material which comprises the incorporation of a mercaptotriazole compound into one of the processing solutions. Such incorporation causes selective inhibition of the development of the uppermost emulsion layer, resulting in a developed material possessing improved, balanced contrast.

3,615,523

PHOTOGRAPHIC DEVELOPER

John A. Ditley, Monrovia, and William C. Miller, Pasadena, both of Calif., assignors to Carnegie Institution of Washington, Washington, D.C.

Filed Aug. 12, 1969, Ser. No. 849,315

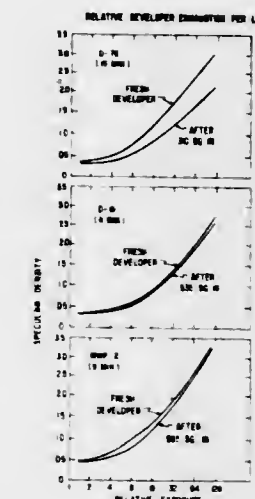
Int. Cl. G03c 5/30

U.S. Cl. 96-66

2 Claims

A photographic developer containing sodium or potassium sulfite, carbonate and bromide, hydroquinone, 1-phenyl-3-

pyrazolidone, and benzotriazole in aqueous solution yields



heretofore unattained photographic efficiency when applied to plates and films in general use for scientific photography.

3,615,524

METHOD FOR PROCESSING HIGH-CONTRAST PHOTOGRAPHIC ELEMENTS

Kirby M. Milton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 18, 1967, Ser. No. 661,533

Int. Cl. G03c 5/30, 5/26

U.S. Cl. 96-66.3

14 Claims

Processing high-contrast photographic elements, said elements comprising a silver halide emulsion layer in which the halide comprises at least about 50 mole percent chloride, in a continuous transport processing machine wherein the developer solution contains a carbonyl bisulfite-amine condensation product and said element contains a cadmium salt such as cadmium chloride.

3,615,525

DERIVATIVE OF 6-AMINO-1,2,3,4-TETRAHYDROQUINOLINE AS SUPERADDITIVE IN DEVELOPING COMPOSITION

Jozef Frans Willems, Wilrijk, and George Frans Van Veele, Mortsel, both of Belgium, assignors to Gevaert-AGFANV, Mortsel, Belgium

Filed May 7, 1968, Ser. No. 727,358

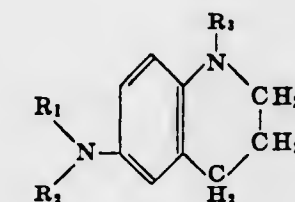
Claims priority, application Great Britain, May 24, 1967, 24,191/67

Int. Cl. G03c 5/30

U.S. Cl. 96-66.3

6 Claims

Photographic developing compositions comprising hydroquinone and a quinoline derivative having the formula



wherein R₁ is an alkyl group comprising from one to five carbons atoms, R₂ is an alkyl group comprising from one to five carbon atoms, and R₃ is hydrogen, or an alkyl group comprising from one to five carbon atoms, at most one of R₁, R₂ and R₃ being substituted alkyl are described. These compositions provide super-additive development in photographic processes.

3,615,526

TETRAALKYL-BIS-AMINOMETHYL DISILOXANE AS A SENSITIZER FOR SILVER HALIDE IN THE EMULSION OR DEVELOPER BATH

Harald Huckstadt, Koeln-Stammheim; Wolfgang Himmelmann, Koeln-Stammheim; Wilhelm Saleck, Schildgen; August Randolph, Leverkusen; Erwin Ranz, Leverkusen, and Walter Simmler, Koeln-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 9, 1969, Ser. No. 815,280

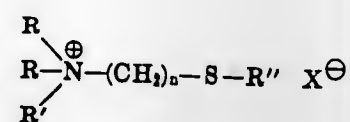
Claims priority, application Germany, Apr. 27, 1968, P 17 72 315.8

Int. Cl. G03c 1/28, 5/30

U.S. Cl. 96—66.3

In producing photographic images, increasing the sensitivity without increase of fog by using tetraalkyl-bis-aminomethyl disiloxane either in the silver halide emulsion or in the developing bath.

if the chemical ripening of that emulsions is performed in the presence of mercapto alkyl quaternary salts or acetothioalkyl quaternary salts of the following formula



wherein:

R represents alkyl with up to 6 carbon atoms; two R radicals of the same nitrogen can be combined to form a heterocyclic ring;

R' represents alkyl with up to 6 carbon atoms, which can be substituted, or an aralkyl group;

R'' represent H or —CO—CH₃;

n is 1 to 6; and

X[−] is any anion.

3,615,527

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND DEVELOPMENT PROCESS COMPRISING A DEVELOPMENT ACCELERATOR

Fumihiko Nishio, Kanagawa; Hideo Kawano, Kanagawa; Mitsunori Sugiyama, Kanagawa; Takeo Sakai, Kanagawa, and Osami Aki, Kawanishi-shi, Hyogo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

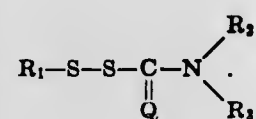
Filed June 30, 1969, Ser. No. 837,869

Claims priority, application Japan, June 29, 1968, 43/45390

Int. Cl. G03c 5/26, 1/06

U.S. Cl. 96—66.3

A photographic light-sensitive material wherein at least one silver halide emulsion layer and/or photographic layer adjacent thereto contains a compound represented by the formula:



R₁ can be a one-five carbon atom alkyl group, a one-five carbon atom hydroxyalkyl group, a tetrafuranyl group or a seven-12 carbon atom aralkyl group. R₂ and R₃ can be a hydrogen atom, a one-five carbon atom alkyl group or an atomic group capable of forming a ring via linkage with R₂ and R₃. Q can be a sulfur atom or an imino group.

Further described is a method of photographic reproduction which comprises exposing a photographic light-sensitive material as described above and developing said exposed material with an infectious developer containing hydroquinone.

3,615,528

PHOTOGRAPHIC SILVER HALIDE EMULSION HAVING AN INCREASED SENSITIVITY AND REDUCED FOGGING

Harald Huckstadt, Cologne; Wilhelm Saleck, Schildgen; August Randolph, Leverkusen; Franz Moll, Leverkusen, and Anita Von Koenig, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 9, 1969, Ser. No. 883,606

Claims priority, application Germany, Dec. 23, 1968, P 18 16 570.3

Int. Cl. G03c 5/24, 1/28, 1/34

U.S. Cl. 96—66.3

The sensitivity of light-sensitive photographic silver halide emulsions can be increased and the fogging can be decreased

3,615,529 RAPID DEVELOPING PHOTOGRAPHIC MATERIALS CONTAINING ARGININE

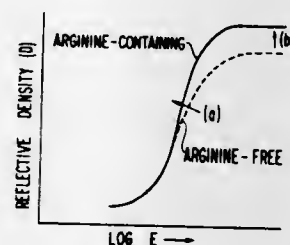
Tatsuya Tajima, and Katsumi Hayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of application Ser. No. 536,979, Mar. 24, 1966, now abandoned. This application Dec. 12, 1969, Ser. No. 884,436

Int. Cl. E03c 5/30, 1/06, 1/48

U.S. Cl. 96—66.3

10 Claims



Improved process for rapid development of photographic material, particularly a process for developing a latent image formed upon a photographic silver halide emulsion layer by treating the element with an alkaline activator solution in the presence of arginine.

3,615,530

PHOTOGRAPHIC PROCESS FOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENTS

Haruhiko Iwano, and Isao Shimamura, both of Ashigarakami-gun, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha

Filed Oct. 2, 1968, Ser. No. 764,591

Claims priority, application Japan, Oct. 2, 1967, 42/63359

Int. Cl. G03c 5/30, 5/38

U.S. Cl. 96—66.3

An improved developing process for photographic silver halide elements wherein the element is subjected to processing between a prehardening step and a development

3,615,534

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENTS USEFUL IN PREVENTING YELLOW FOG

Tatsuya Tajima, and Kunioki Ohmura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 23, 1968, Ser. No. 761,858

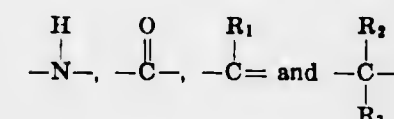
Claims priority, application Japan, Sept. 22, 1967, 42/60921

Int. Cl. G03c 1/76, 3/00, 1/34

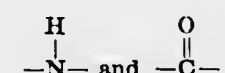
U.S. Cl. 96—67

A photographic silver halide light-sensitive element comprising a support having thereon at least one layer containing a silver halide, wherein one colloid containing layer of said element contains:

- a compound of the formula MIO₃ or MIO₄, wherein M is a hydrogen atom, an alkaline metal atom or ammonium group, and
- at least one of the following: unsubstituted benzenesulfinic acid, substituted benzenesulfinic acid and salts thereof. This element exhibits a marked reduction in the amount of yellow fog which is formed after storage and/or development.



at least one structural unit must be from the group consisting of



R₁, R₂ and R₃ may each be a hydrogen atom, a methyl group or an ethyl group.

3,615,531

ANTISTATIC LAYERS CONTAINING POLYMERS OF SULFO-SUBSTITUTED N-PHENYL MALEIC IMIDES

Karl-Otto Meyer, Leverkusen; Wulf Von Bonin, Leverkusen; Wolfgang Himmelmann, Cologne-Stammheim; Julius Geiger, Leverkusen, and Werner Wagenknecht, Cologne-Suelz, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 2, 1969, Ser. No. 881,599

Claims priority, application Germany, Dec. 20, 1968, P 18 15 944.9

Int. Cl. G03c 1/78

U.S. Cl. 96—67

A photographic material with improved antistatic properties. The material contains an outermost antistatic layer of a polymer containing N-phenyl maleic imides units.

3,615,532

PRINTING PLATE COMPOSITIONS

Julius L. Silver, Somerset, Franklin Township, N.J., assignor to Union Carbide Corporation

Continuation-in-part of application Ser. No. 109,015, May 10, 1961, now abandoned, Continuation-in-part of application Ser. No. 109,254, May 11, 1961, now abandoned. This application Dec. 9, 1963, Ser. No. 329,247

Int. Cl. G03f 7/02, 7/08; G03c 1/52

U.S. Cl. 96—67

A printing plate composition comprising (1) the association product of a normally solid water-soluble ethylene oxide polymer and a heat-fusible phenolic resin, (2) a nonoxidizing acidic compound, and (3) a photosensitizing agent.

3,615,533

HEAT AND LIGHT SENSITIVE LAYERS CONTAINING HYDRAZONES

Frederick J. Rauner, and Paul B. Gilman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 11, 1968, Ser. No. 711,868

Int. Cl. G03c 1/76

U.S. Cl. 96—67

Certain ketone and aldehyde organic hydrazones exhibit utility in radiation-sensitive layers and elements as a spectral sensitizer for silver halide and as a selective reducing agent in photographic, thermographic and photothermographic layers.

3,615,537

HEAT-DEVELOPABLE DIAZOTYPE MATERIAL

Leonardus Jacobus Antonius Giesen, and Hubertus Wilhelmus Henricus Maria Roncken, both of Venlo, Netherlands, assignors to Van Der Grinten N.V., Venlo, Netherlands

Filed Nov. 24, 1967, Ser. No. 685,287

Claims priority, application Netherlands, Dec. 2, 1966, 66.17031

Int. Cl. G03c 1/58

U.S. Cl. 96—75

Diazo-type material readily developable by heat, having good keeping quality, and producible economically by

aqueous coating techniques, comprises a light-sensitive layer containing, with a diazo compound, an acid-reacting stabilizer and a water-soluble hydrophilic organic binder, a substantially water insoluble acylacetamide as azo-coupling component and a substantially water insoluble developing agent, each dispersed as particles of .01-10 microns average size, the developing agent when heated above 100° C. creating a medium wherein coupling occurs, the acylacetamide melting above 50° C. and having solubility of less than 1×10^{13} mol/liter in water at 20° C. The acylacetamide is yellow-coupling. Its use with a blue-coupling compound provides material that develops a black image, as by the use of dispersed particles of a N,N'-bis(acetylacetyl)-enediamine with 2,3-dihydroxynaphthalene-6-sulfonic acid or a salt thereof.

3,615,538

PHOTOSENSITIVE PRINTING PLATES

John E. Peters, and Donald B. Johnson, both of Racine, Wis., assignors to Printing Developments, Inc., New York, N.Y.

Filed Aug. 2, 1968, Ser. No. 749,582

Int. Cl. G03c 1/68, 1/52, 1/94

U.S. Cl. 96-75

11 Claims

Photosensitive printing plates wherein the photosensitive resist coating is adhered to the metallic base layer by means of a silane compound to improve the physical properties of the photosensitive resist coating so it will withstand mechanical action during hand development and further wherein the photosensitive resist coating also contains a dye or a pigment to increase contrast after development, to improve reproduction characteristics and to increase mechanical resistance.

3,615,539

SELF-DEVELOPING PHOTOGRAPHIC FILM UNIT AND PROCESS HAVING SECURED FACE-TO-FACE SURFACE

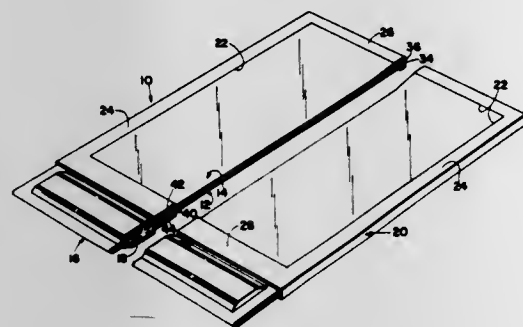
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 10, 1967, Ser. No. 622,287

Int. Cl. G03c 1/48

U.S. Cl. 96-76

4 Claims



A photographic film unit comprising all of the materials, including a liquid processing agent, required to produce a photographic print and a method of rapidly spreading a viscous liquid processing agent in a continuous uniform layer between a pair of superposed sheets without entraining air in the liquid. A film unit is disclosed comprising a photosensitive sheet and a transparent sheet secured in face-to-face relation at the edges of the sheets and a collapsible container of a viscous processing liquid secured at one edge of the sheets so as to discharge its fluid contents between the sheets when compressive pressure is applied to the container. A method is disclosed in which the sheets are held in face-to-face contact to exclude air from between the sheets during spreading of the processing liquid therebetween facilitate spreading and to preclude entrainment of air in the liquid.

3,615,540
PHOTOGRAPHIC FILM ASSEMBLY AND METHOD FOR RELEASE OF GAS IN DIFFUSION TRANSFER SYSTEM

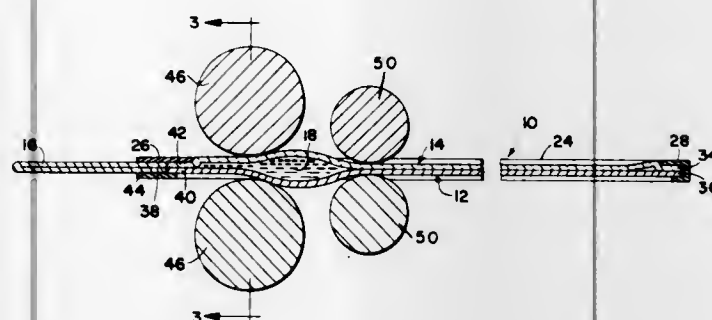
Edwin H. Land, Cambridge, and Albert J. Bachelder, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 31, 1967, Ser. No. 627,538

Int. Cl. G03c 1/48

U.S. Cl. 96-76

3 Claims



A photographic film unit comprising all of the materials required to produce a photographic print including a pair of sheets secured at their margins in face-to-face relation and a liquid processing agent; and a method of rapidly spreading a viscous liquid processing agent in a continuous uniform layer between the superposed sheets. A film unit is disclosed comprising a photosensitive sheet and a second sheet secured in face-to-face relation at the edges of the sheets by essentially fluidtight binding means adopted to release gas from between the sheets during spreading of the liquid carried in a collapsible container secured at one edge of the sheets so as to discharge its contents between the sheets when compressive pressure is applied to the container. A method is disclosed in which gas is discharged from between the sheets during spreading of the processing liquid therebetween and liquid is prevented from escaping by way of the means for releasing the gas.

3,615,541

SLIDE TRANSPARENCY UNIT FOR IN CAMERA PROCESSING

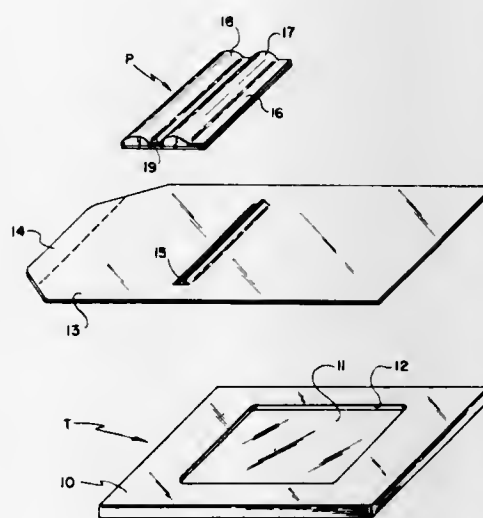
Nerwin Hubert, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1967, Ser. No. 675,608

Int. Cl. G03c 1/48, 3/00

U.S. Cl. 96-76 C

16 Claims



A slide transparency unit is provided with a pair of rupturable pods attached to a rectangular mount having a

central opening, across which a photosensitive transparency extends. The first pod is adapted to be ruptured so that a

development of the transparency image can take place. After a suitable development period, the second pod is ruptured and the developing agent therein also is injected into the space between the transparency and the strippable sheet and spread across the transparency so that the image is fixed on the transparency. Finally, the strippable sheet, the pods, and any unabsorbed developing agents are stripped from the unit so that the unit is ready for viewing.

3,615,542

LIGHT-SENSITIVE SILVER HALIDE COLOR-
PHOTOGRAPHIC MATERIAL

Masanobu Oguchi; Akira Horikoshi, and Kensaku Tanimura, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 29, 1968, Ser. No. 709,174

Claims priority, application Japan, Mar. 3, 1967, 42/13,111

Int. Cl. G03c 1/42

U.S. Cl. 96-77

5 Claims

Light-sensitive silver halide color-photographic material comprises a support and, coated thereon, a light-sensitive silver halide emulsion layer containing a color former, and a complex formed from (a) an alkali-soluble phenolic compound having a hydroxyl group on its benzene nucleus and capable of reducing silver halide and (b) a water-soluble polymeric vinyl compound capable of forming a complex with said phenolic compound, said complex being included in said emulsion and/or in a layer contiguous therewith.

3,615,543

MULTICOLOR PHOTOGRAPHIC ELEMENT
COMPRISING AN OXACYANINE SENSITIZING DYE

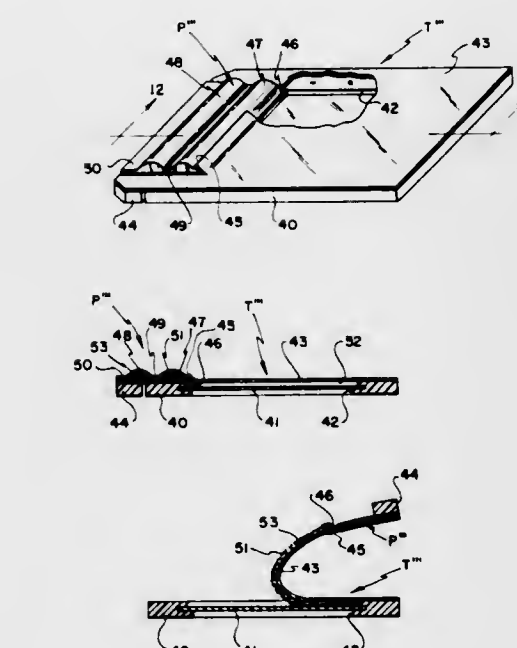
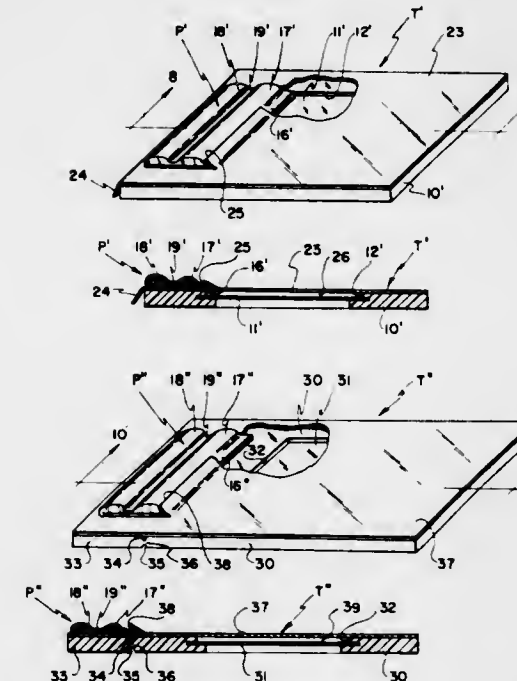
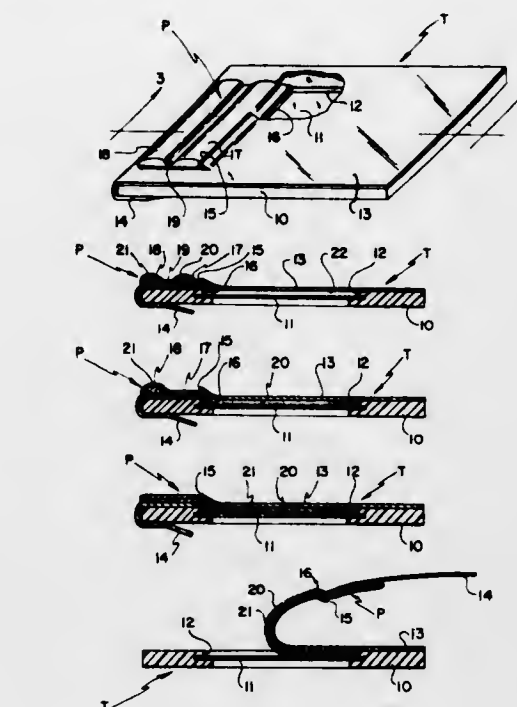
Alan E. Rosenoff, Waltham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 28, 1969, Ser. No. 880,684

Int. Cl. G03c 7/00, 1/40, 1/16

U.S. Cl. 96-77

9 Claims



developing agent contained therein is injected into a space between the transparency and a strippable sheet so that multicolor diffusion transfer photographic system may be



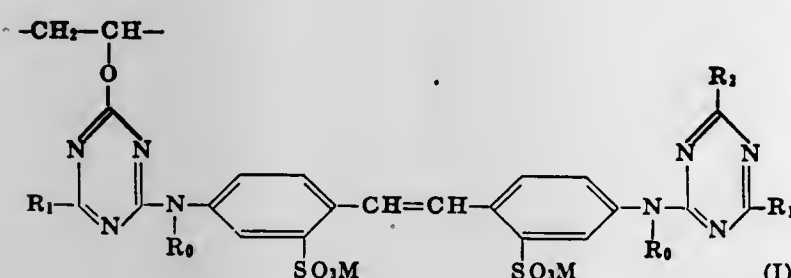
increased by sensitizing that emulsion with a member of a



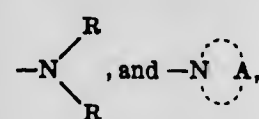
class of oxacyanine dyes.

3,615,544
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A POLYMERIC BRIGHTENING AGENT
Hiroyuki Amano; Nobuo Tsuji; Kazuo Shirasu, and Yoshinori Tutiya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed June 27, 1969, Ser. No. 837,326
Claims priority, application Japan, June 27, 1968, 43/44719
Int. Cl. G03c 1/92

U.S. Cl. 96-82
A photographic light-sensitive material containing, in at least one layer thereof, a polymer having the following recurring monomer units:



Where R_0 is hydrogen, alkyl, aryl, hydroxyalkyl, alkoxyalkyl or sulfoalkyl, R_1 and R_2 are halogen, ---OR , ---SR .



M is alkali metal or ammonium, R and R' are hydrogen, alkyl, hydroxyalkyl, sulfoalkyl, carboxyalkyl, aralkyl or cycloalkyl, and A is $\text{---(CH}_2\text{)}_4\text{---}$, $\text{---(CH}_2\text{)}_5\text{---}$, $\text{---(CH}_2\text{)}_6\text{---}$, $\text{O---(CH}_2\text{)}_2\text{---}$ or $\text{---(CH}_2\text{)}_2\text{---S---(CH}_2\text{)}_2\text{---}$ R_1 and R_2 , and R and R' may be the same or different.

3,615,545
NOVEL MORDANT COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 8, 1967, Ser. No. 666,473
Int. Cl. G03c 1/84

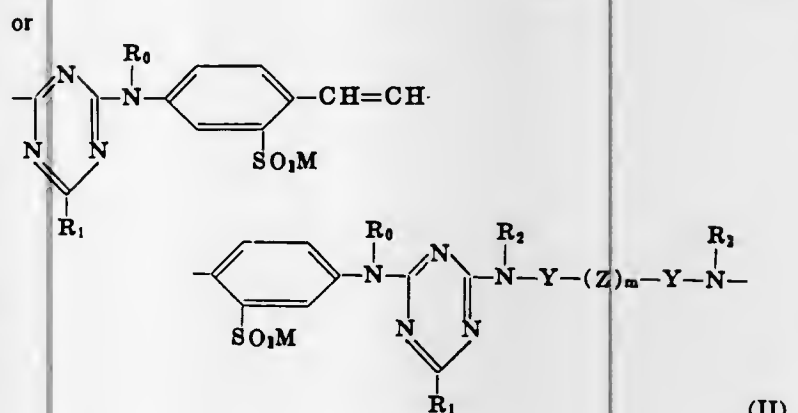
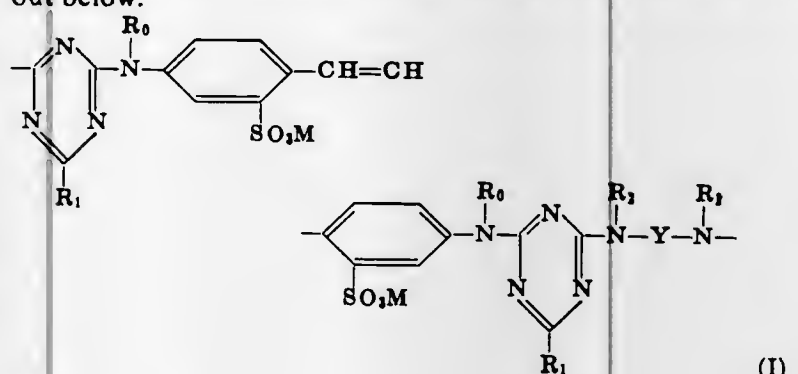
U.S. Cl. 96-84 A
A gelatin composition comprising a basic mordant and an acrylic interpolymers which comprises units of an alkyl acrylate and from about 5 to about 30 weight percent of an ethenic monomer containing a solubilizing group. In one aspect, this invention relates to relatively insoluble photographic elements having antihalation undercoats of said composition which provide strong adherence between film supports and photographic emulsion layers during developing processes.

3,615,546
PHOTOGRAPHIC ELEMENTS CONTAINING COLORED COLLOID LAYERS
Henri Depoorter; Marcel Jan Libeer, Mortsel, Belgium, and Guy Alfred Rillaers, Kontich, Germany, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed May 31, 1968, Ser. No. 733,359
Claims priority, application Great Britain, June 16, 1967, 27,910/67
Int. Cl. G03c 1/84

U.S. Cl. 96-84 R
A light-sensitive photographic material including a support and a light-sensitive layer and/or a water-permeable colloidal layer containing a dye obtained by condensation of para-aminobenzaldehydes or cinnamaldehydes with 1-phenyl-2-pyrazolin-5-ones which dyes are characterized by the presence in the 1-phenyl group of an arylsulfonyl substituent and by the presence in the dyestuff molecule of at least one carboxyl and/or sulfo group in acid or salt form are described. The photographic materials have improved light-screening properties.

3,615,547
PHOTOGRAPHIC LIGHT SENSITIVE ELEMENTS, CONTAINING ULTRAVIOLET MATERIALS
Hiroyuki Amano; Fumihiko Nishio; Nobuo Tsuji, and Kazuo Shirasu, all of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha (now Fuji Photo Film Co., Ltd.), Kamigun, Kanagawa, Japan
Filed Apr. 10, 1968, Ser. No. 720,344
Claims priority, application Japan, Apr. 10, 1967, 42/22756
Int. Cl. G03c 1/84

U.S. Cl. 96-84
A photographic light-sensitive element containing an ultraviolet absorbent material which has improved resistance to ultraviolet rays, staining and an improved whitening effect, contains a high molecular weight compound having a repeating unit represented by one of the general formulas set out below:



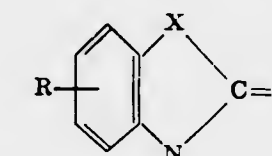
in at least one photographic emulsion layer, intermediate layer, protective layer, subbing layer, backing layer, or a baryta layer. The representative letters such as R_0 , M and the like are explicitly defined in the specification.

3,615,548
PHOTOGRAPHIC ELEMENTS BEARING LIGHT-ABSORBING LAYERS CONTAINING AN OXAZOLE STYRYL DYE AND A METAL CHELATE OF A FUCHSONE DYE
John Charles Firestone, South River, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 6, 1968, Ser. No. 758,099
Int. Cl. G03c 1/84

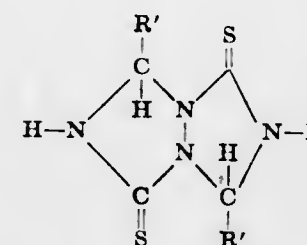
U.S. Cl. 96-84 R
A photographic element comprised of a support, a light-sensitive silver halide layer, and a filter layer or antihalation layer comprising an organic binder, an oxazoline styryl dye, and metal chelates of fuchsone-type dyes. The dye combinations are nonmigratory, stable, photographically inactive, and discharge completely in reversal processing.

3,615,549
SILVER HALIDE PHOTOGRAPHIC PAPER WHICH PRODUCES WARM-TONED IMAGE COLOR AND METHOD OF MAKING IT
Yasushi Ohyama, Takatsuki-shi; Kiyoshi Futaki, Kyoto; Senji Tosa, Kyoto, and Yaichi Ishida, Kyoto, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Chiyoda, Tokyo, Japan
Filed Oct. 10, 1969, Ser. No. 865,486
Claims priority, application Japan, Oct. 14, 1968, 43/74196
Int. Cl. G03c 1/10

U.S. Cl. 96-85
Process for the manufacture of a silver halide photographic paper which produces warm-toned image of from olive-brown to brown-black when developed and the tone of which is endurable against hot-drying of the finished print by employing two compounds having the following formulae:



and



3,615,550
WATER-RESISTANT OPAQUE PAPERS FOR PHOTOGRAPHIC PURPOSES
Gregor J. H. Kemme, Ruckert-Strasse, Germany, assignor to Felix Schoeller, Jr., Lustringen am Osnabruck, Germany
Filed Mar. 21, 1967, Ser. No. 624,736
Claims priority, application Germany, Mar. 31, 1966, Sch 38768
Int. Cl. G03c 1/86

U.S. Cl. 96-85
The invention relates to opaque water-resistant papers and methods of making such papers suitable for use as base

material for light-sensitive coatings for photographic purposes. According to the invention a sealing coat is applied to the paper base to prevent damage to the paper by application of the other coatings particularly aqueous or waterbound coatings.

3,615,551
PAPER BASE COATING CONTAINING CONDENSATION PRODUCT OF A POLYAMIDE AND EPICHLOROHYDRIN
Albert James Farnley, Watford, England, assignor to Camble Photographic Paper Co. Ltd., Watford, Hertfordshire, England
Filed Jan. 2, 1969, Ser. No. 788,603
Claims priority, application Great Britain, Jan. 15, 1968, 2079/68
Int. Cl. G03c 1/86

U.S. Cl. 96-85
The tendency for included optical brightening agent to wash out of photographic material consisting of paper base coated with a layer comprising baryta in a binder material, and with photographic emulsion, is reduced by including in the baryta layer a water-soluble condensation product of a polyamide and epichlorohydrin which will act to insolubilize the binder.

3,615,552
IMPROVED POLYETHYLENE-COATED PAPER PHOTOGRAPHIC MATERIAL
Justus Danhauser, Koeln-Stammheim; Peter Kruck, Koeln-Stammheim, and Werner Krafft, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 12, 1969, Ser. No. 876,106
Claims priority, application Germany, Nov. 19, 1968, P 18 09 606.5
Int. Cl. G03c 1/86

U.S. Cl. 96-85
The bonding between the hydrophobic surface of a polyethylene-coated paper and the hydrophilic colloids used as binders for light-sensitive photographic emulsions can be established by means of an intermediate layer combination which comprises a layer of polymeric carbonic acid esters immediately coated on the polyethylene surface of the paper and a bonding layer of mixed acetals of polyvinyl alcohol and aldehydes with and without water-solubilizing groups.

3,615,553
ALUMINUM PHOTOGRAPHIC SURFACES
Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated
Filed May 6, 1970, Ser. No. 35,262
Int. Cl. G03c 1/94

U.S. Cl. 96-86 R
The impregnation of an anodized layer on aluminum with silver salts is greatly improved and facilitated by supplying the soluble silver salt (used as the means for eventual formation of silver halide in the pores of the anodized aluminum) as a solution in which the solvent is a combination of a minor amount of water and a major amount of highly polar organic liquids in which alkali chlorides show low or very limited solubility. By use of this improved technique, a shelf stable photosensitive article is obtained which is capable of yielding deep, lustrous blacks on exposure and development without the need for gold toning to obtain such a result.

3,615,554
RETOUCHABLE PHOTOGRAPHIC FILMS FOR DUPLICATING
 Haruo Takenaka; Teppel Ikeda; Toshiaki Okiyama, and Sueo Miyazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
 Continuation-in-part of application Ser. No. 564,840, July 13, 1966, now abandoned. This application Mar. 20, 1970, Ser. No. 21,500
 Int. Cl. G03c 1/80

U.S. Cl. 96—87 R 9 Claims
 A retouchable photographic film for duplicating comprising a polyethylene terephthalate film, a mat layer strongly adhered to one or both surfaces of the polyester film, an undercoat formed by applying a gelatin-containing dispersion liquor onto the surface of a mat layer, and an emulsion layer containing a photosensitive silver salt or salts formed on the undercoat, said film being characterized by the use, in the formation thereof, of a swelling agent for the polyester film.

3,615,555
PHOTOGRAPHIC MATERIAL WITH NC-LAYER
 Herbert Grabhofer, Koeln-Flittard, and Gunter Kolb, Koeln-Stammheim, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
 Filed Jan. 19, 1970, Ser. No. 4,053
 Claims priority, application Germany, Jan. 30, 1969, P 19 04 527.3
 Int. Cl. G03c 1/88

U.S. Cl. 96—87 R 3 Claims
 A photographic material which has an NC-layer comprising an acrylamide copolymer.

3,615,556
HYDROPHOBIC FILM COATED WITH ACID-MODIFIED BUTADIENE COPOLYMER
 Margaret Loudon Clachan, Manningtree, and Gordon Edmund Alfred Pears, London, both of England, assignors to Imperial Chemical Industries Limited, London, England
 Filed June 2, 1969, Ser. No. 829,807
 Claims priority, application Great Britain, June 24, 1968, 30,029/68
 Int. Cl. G03c 1/78; B32b 27/08

U.S. Cl. 96—87 R 7 Claims
 A hydrophobic film is coated with an ethylenically unsaturated carboxylic acid-modified butadiene copolymer. The coated film is coated with gelatin and/or light-sensitive gelatine silver halide emulsion layer.

3,615,557
PHOTOGRAPHIC FILMS COMPRISING AN ADHESIVE-SUBBING LAYER FOR A PHOTOGRAPHIC EMULSION
 Alex Wasy D'Cruz, Somerset, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Continuation of application Ser. No. 547,154, May 3, 1966, now abandoned. This application Sept. 8, 1969, Ser. No. 856,194
 Int. Cl. G03c 1/80

U.S. Cl. 96—87 R 5 Claims
 Photographic films comprising a biaxially oriented polyester film support having on at least one surface a thin layer of a tri-component copolymer of:
 a. about 70 to 90 parts by weight of vinyl acetate,
 b. about 7 to 40 parts-by weight of a lower alkyl acrylate, and
 c. about 3 to 30 parts by weight of an unsaturated acid of the group comprising itaconic acid, fumaric acid, acrylic acid or methacrylic acid, and carried by said layer a water-permeable colloid, silver halide emulsion layer. The novel copolymers are useful for substrata for drafting films. The substrata can contain pigments or dyes.

ERRATUM

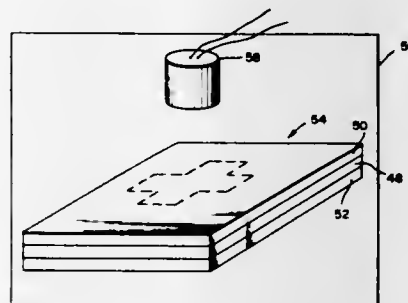
For Class 96—88 see:
 Patent No. 3,616,398

3,615,558
PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING A FINELY DIVIDED PHTHALOCYANINE PIGMENT
 Leonard M. Carreira, Webster, and Vsevolod Tulagin, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
 Continuation-in-part of application Ser. No. 384,737, July 23, 1964, now Patent No. 3,384,565, dated May 21, 1968. This application June 27, 1966, Ser. No. 560,603
 Int. Cl. G03c 7/00; B01k 5/00

U.S. Cl. 96—88 10 Claims
 Phthalocyanine pigments are used as electrically photosensitive particles in a photoelectrophoretic imaging system.

3,615,559
HYDROPHOBIC COMPOSITION RENDERED HYDROPHILIC BY PHOTON EXPOSURE
 Alfred F. Kaspaul, and Erika E. Kaspaul, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
 Filed Apr. 1, 1968, Ser. No. 717,503
 Int. Cl. G03c 1/00; 5/00

U.S. Cl. 96—88 3 Claims



A composition comprising a resinous film forming binder, a photoconductive or photoemissive material, e.g., ZnO, a metallic sensitization enhancing compound, e.g., CuCl, and a formaldehyde-water mixture, which composition is normally hydrophobic. An article, comprising the composition coated on a substrate, is exposed to suitable light where upon the exposed areas become hydrophilic. Treatment of the exposed article with a dye or pigment in water solution or suspension results in a usable pattern in accordance with the image areas. Selective etching of a metallic substrate by water soluble etchants is also disclosed.

3,615,560
METHODS OF MANUFACTURING PHOTOSENSITIVE MATERIALS
 Hendrik Jonker, and Theodorus Petrus Gerardus Wilhelm Thijssens, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
 Continuation of application Ser. No. 441,906, Mar. 22, 1965. This application Nov. 18, 1968, Ser. No. 781,688
 Int. Cl. G03c 1/78

U.S. Cl. 96—87 4 Claims
 Provide a noncrystalline photosensitive layer on a nonsaponifiable nonwater-impregnable base. Between the base and photosensitive film there is sandwiched an adhesive containing an elastomer.

3,615,561
AQUEOUS COATING COMPOSITIONS FOR ADHERING LIGHT-SENSITIVE EMULSION TO POLYESTER FILM
 Thomas J. Dolce, Scotch Plains, and Donald L. McCabe, Rahway, both of N.J., assignors to Celanese Corporation, New York, N.Y.
 Division of Ser. No. 637,348, May 10, 1967, Pat. No. 3,539,476. Filed May 6, 1970, Ser. No. 35,288
 Int. Cl. G03c 1/80

U.S. Cl. 96—87 R 5 Claims
 An aqueous coating composition for adhering various types of layers to polyester sheet or film surfaces, the aqueous coating composition comprising a vinylidene chloride terpolymer, gelatin, and a copolymer of ethylene and vinyl acetate.

3,615,562
CYANINE DYE PHOTOGRAPHIC FILM
 Sol E. Harrison, Huntington Valley, Pa., and Joel Goldmacher, Cranberry, N.J., assignors to RCA Corporation
 Filed Apr. 25, 1968, Ser. No. 724,233
 Int. Cl. G03c 1/72

U.S. Cl. 96—89 6 Claims
 A nonsilver direct printout photographic film comprises, in a plastic binder, a photobleachable merocyanine or cyanine dye and molecular oxygen with which the dye irreversibly reacts.

3,615,563
DYE CYANIDES PHOTOACTIVATED BY INORGANIC SALTS
 Lyman Chalkley, 6626 Tyrian St., La Jolla, Calif.
 Filed Jan. 21, 1969, Ser. No. 792,851
 Int. Cl. G03c 1/52

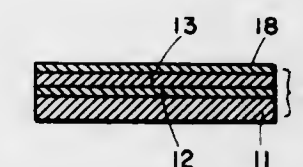
U.S. Cl. 96—90 12 Claims
 Dye cyanides are photoactivated by salts of metals of groups 1B and 2B of the periodic table of the elements. Systems are disclosed in which a solution of a dye cyanide in a nonphotoactivating solvent are made photoresponsive by the addition of a salt of a metal of group 1B or 2B. Also photographic sheet materials are described in which the incorporation of a salt of a metal of group 1B or 2B prevents the evolution of hydrogen cyanide during and after the photolysis of the dye cyanide sensitizer.

3,615,564
PHOTOGRAPHIC MEDIA CONTAINING AN IMPROVED AMINE ENHANCER SYSTEM
 John Alan Mattor, Hollis, and Lawrence Price, Old Orchard Beach, both of Maine, assignors to The Scott Paper Company, Delaware County, Pa.
 Continuation-in-part of application Ser. No. 641,720, Apr. 21, 1967, now abandoned, Continuation-in-part of application Ser. No. 626,720, Mar. 29, 1967, now abandoned, Continuation-in-part of application Ser. No. 351,316, Mar. 12, 1964, now abandoned. This application July 22, 1968, Ser. No. 746,254
 Int. Cl. G03c 1/52

U.S. Cl. 96—90 R 9 Claims
 In a photographic medium containing a furfurylidene, an aromatic amine enhancer system and a lower haloalkane sensitizer, the use of an improved amine enhancer system consisting of a mixture of at least one aromatic amine and a polyhalo-substituted phenylenediamine results in improved heat and light stability, and greater shelf life.

3,615,565
PHOTOSENSITIVE ARTICLE AND METHOD OF USING SAME INCORPORATING LEUCO DYE PRECURSORS AND QUINONE ACTIVATORS
 Joanne C. Gerlach, Watertown; Kenneth D. Jordan, Walpole, and Ian D. Robinson, Auburndale, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
 Filed May 8, 1969, Ser. No. 822,990
 Int. Cl. G03c 1/52

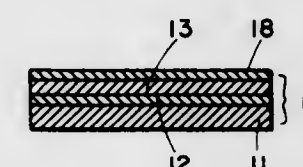
U.S. Cl. 96—90 27 Claims



A direct printout photographic system suitable for photocopy work, particularly for microfilm blowups. A leuco base of a di- or triarylmethane, xanthene, thioxanthene, selenaxanthene, anthracene or acridine dye and a quinone activator, supported in a binder or distributed within a portion of a substrate, form the photosensitive system which is activated when exposed to a range of electromagnetic radiation extending from the ultraviolet through the visible spectrum. The system is adaptable to making monochrome and black-and-white prints and transparencies.

3,615,566
PHOTOSENSITIVE ARTICLE AND METHOD OF USING SAME INCORPORATING LEUCO DYE PRECURSORS AND FLUORESCEN ACTIVATORS
 Ian D. Robinson, Auburndale; Joanne C. Gerlach, Watertown, and Richard P. Muse, Cambridge, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.
 Filed May 8, 1969, Ser. No. 832,540
 Int. Cl. G03c 1/52

U.S. Cl. 96—90 30 Claims



A direct printout photographic system suitable for photocopy work, particularly for microfilm blowups. A leuco base of a di- or triarylmethane, xanthene, thioxanthene, selenaxanthene, anthracene or acridine dye and a halogen-substituted fluorescein derivative activator, supported in a binder or distributed within a portion of a substrate, form the photosensitive system which is activated when exposed to a range of electromagnetic radiation extending from ultraviolet through the visible spectrum. The system is adaptable to making monochrome and black-and-white prints and transparencies.

3,615,567
PHOTOSENSITIVE ELEMENTS CONTAINING INORGANIC HALIDE IMAGE INTENSIFIERS
 Howard Ivan Wilson, Towanda, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed Aug. 20, 1969, Ser. No. 852,158
 Int. Cl. G03c 1/70

U.S. Cl. 96—90 R 8 Claims
 A light-hardenable element comprising a preformed, compatible, coherent, film-forming macromolecular organic polymer, a free radical-producing hydrogen donor agent, an imidazolyl dimer and, optionally, a macromolecular organic polymer protective layer; and in intimate association therewith, a halide selected from the group consisting of

ammonium, barium, calcium, magnesium aluminum, mercuric, zinc, cobaltous, cuprous, and ferric chlorides; magnesium bromide and aluminum iodide are capable of producing enhanced visible images upon photolysis.

3,615,568
PHOTOSENSITIVE ELEMENTS CONTAINING PHOTOOXIDANTS CONTAINING HETEROCYCLIC NITROGEN ATOM SUBSTITUTED BY AN ALKOXY OR AN ACYLOXY GROUP
Phillip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 18, 1969, Ser. No. 859,205
Int. Cl. G03c 1/40, 1/64

U.S. Cl. 96-90 20 Claims
Novel photosensitive elements and compositions are described. The compositions contain (a) a colorless oxidizable nitrogen-containing organic color generator and (b) a photooxidant containing a heterocyclic nitrogen atom which is substituted by an alkoxy or an acyloxy group. When the photooxidant is exposed to actinic radiation, it causes the oxidation of the color generator to a colored material.

3,615,569
IMAGE STABILIZATION IN DIAZOSULFONATE PHOTOREPRODUCTION
Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.
Filed Nov. 28, 1969, Ser. No. 880,900
Int. Cl. G03c 1/56, 1/60

U.S. Cl. 96-91 6 Claims
Inclusion of an amine salt of an aromatic carboxylic acid in a reversal diazosulfonate photosensitive composition prevents dye color-shift and background coloration.

3,615,570
DIAZO-3-TRIFLUOROMETHYL-4-TERTIARYAMINOBENZENE COMPOUNDS
Georg Werner, and Herbert Rauhut, both of Wiesbaden-Biebrich, Germany, assignors to Keuffel & Esser Company, Morristown, N.J.
Filed Feb. 24, 1966, Ser. No. 529,650
Claims priority, application Germany, Feb. 24, 1965, K 55375
Int. Cl. C07c 1/13/00; C07d 29/00; G03c 1/52

U.S. Cl. 96-91 R 7 Claims
Improved light sensitivity and dye forming coupling speed are obtained in one-component diazo-type copying material useful in preparing intermediate diazo-type reproducible copies through the use as the light-sensitive component a 1-diazo-3-trifluoromethyl-4-tertiary-amino-benzene compound.

3,615,571
METHOD OF CONTROLLING PHOSPHOR PH IN PROCESSING CRT
Douglas A. Griswold, Blossburg, Pa., and Robert A. Hotaling, Roanoke, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 25, 1969, Ser. No. 802,240
Int. Cl. G03c 1/66

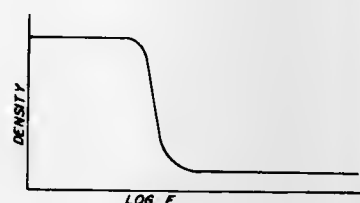
U.S. Cl. 96-93 1 Claim
The pH of a phosphor is established at a desired nominal value by utilizing a sodium chloride-magnesium chloride flux material which results in optimum phosphor screen exposure time and optimum phosphor pattern adherence.
The pH of a slurry containing a sodium chloride-magnesium chloride flux phosphor is maintained at a desired value by the addition of ammonium hydroxide to the slurry.

3,615,572
ACIDIC SOLUTION OF PHENYLENEDIAMINE COLOR DEVELOPER AND SULFITE
Robert L. Bimmler, and Roy J. Kanous, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 19, 1967, Ser. No. 676,623
Int. Cl. G03c 7/00, 5/30

U.S. Cl. 96-55 8 Claims
The stability of acidic solutions of phenylenediamine compounds and sulfite is enhanced by controlling the phenylenediamine:sulfite ratio.

3,615,573
DIRECT-POSITIVE COMPOSITION CONTAINING INDIVIDUALLY AND DIFFERENTLY FOGGED SILVER HALIDE EMULSIONS
Albert C. Smith, Jr., Rochester, N.Y., and Bernard D. Illingsworth, deceased, late of Rochester, N.Y. (by Mary D. Illingsworth, executrix), assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 9, 1968, Ser. No. 759,816
Int. Cl. G03c 1/02

U.S. Cl. 96-94 16 Claims



This invention relates to direct-positive, photographic compositions. In one aspect, this invention relates to direct-positive, chemically fogged silver halide compositions having extended exposure latitude. In another aspect, this invention relates to direct-positive, silver halide compositions having the ability to produce discrete, high-contrast steps over the exposure range of the photographic composition.

3,615,574
THERMOGRAPHIC DIAZO-TYPE COPYING PAPER
Takehiko Iwaoka, Tokyo, and Tomiaki Asami, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Ricoh, Osaka, Tokyo, Japan
Filed Mar. 8, 1968, Ser. No. 711,478
Int. Cl. G03c 1/60

U.S. Cl. 96-91 2 Claims
A thermographic diazo-type copying paper which is prepared by applying, onto a support, a mixed solution containing a diazo compound, a coupler, an acid stabilizer and a thermally decomposable salt which has an alkali-generating ability, and further containing thiourea or a derivative thereof and a metal sulfate, and then drying the same, is of a highly improved shelf life and also provides a clear copied image which is highly increased in color density.

3,615,575
TWO-COMPONENT BLACK-LINE DIAZO-TYPE MATERIAL
Herbert Rauhut, Wiesbaden-Biebrich, Germany, assignor to Keuffel & Esser Company, Hoboken, N.J.
Filed July 30, 1968, Ser. No. 748,650
Claims priority, application Germany, July 31, 1967, P 15 97 619.9
Int. Cl. G03c 1/58

U.S. Cl. 96-91 9 Claims
Diazo-type material useful in the preparation of neutral black copies and having improved storage stability includes, with a p-phenylene-diamine light-sensitive diazonium compound, a blue-coupler and a yellow-coupler which is a bis-cyanoacetic-amide.

3,615,576
CLEARING IN REVERSAL DIAZOSULFONATE PHOTOREPRODUCTION
Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.
Filed Nov. 28, 1969, Ser. No. 880,899
Int. Cl. G03c 1/56, 1/60

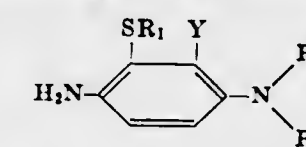
U.S. Cl. 96-91 R 6 Claims
Inclusion of an alkali metal iodide, fluoroborate, fluorophosphate, or thiocyanate in a reversal diazosulfonate photoimaging formulation improves clearing.

3,615,577
PREVENTION OF INACTIVATION OF COUPLING COMPONENTS IN REVERSAL DIAZOSULFONATE PHOTOREPRODUCTION MATERIAL
Robert Charles Desjarlais, South Hadley Falls, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.
Filed Nov. 28, 1969, Ser. No. 880,901
Int. Cl. G03c 1/56, 1/60

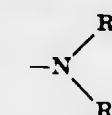
U.S. Cl. 96-91 R 6 Claims
A reversal diazosulfonate composition and photoreproduction material containing N,N' diaryl-substituted alkylene diamines and humectants to prevent inactivation of coupling components.

3,615,578
LIGHT-SENSITIVE DIAZO COMPOUNDS AND LIGHT-SENSITIVE MATERIAL CONTAINING THEM
Adrianus Marie Petrus Hectors, and Hubertus Johannes Wilhelmus Pecaase, both of Venlo, Netherlands, assignors to Van Der Grinten N.V., Venlo, Netherlands
Filed June 13, 1968, Ser. No. 736,576
Claims priority, application Netherlands, June 19, 1967, 6708503
Int. Cl. G03c 1/52; C07c 1/13/04, 1/13/00

U.S. Cl. 96-91 16 Claims
Light-sensitive diazo compounds of a new class are prepared by diazotizing aromatic amines of the formula



in which R₁ is an alkyl, aralkyl or aryl group, Y is a fluorine, chlorine or bromine atom, and



is a tertiary amino group that may be a saturated heterocyclic ring. Light-sensitive material (papers, planographic printing plates, etc.) sensitized with salts of these compounds, e.g., with a 4-dialkylamino-3-halo-2-alkylthiobenzene diazonium salt or a 4-dialkylamino-3-halo-2-(4'-methylphenylthio)-benzene diazonium salt, are developable by reaction with aromatic polyvalent phenols to form dark-colored azo dyestuff images having improved water-fastness and background contrast.

3,615,579
PROCESS FOR MAKING LIGHT-DEVELOPABLE DIRECT-WRITING SILVER HALIDE EMULSIONS CONTAINING RHODIUM OR IRIIDIUM
John Howard Bigelow, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 22, 1967, Ser. No. 647,909
Int. Cl. G03c 1/02, 1/28

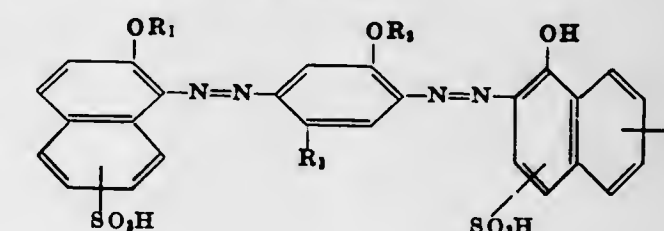
U.S. Cl. 96-94 7 Claims
Process for preparing light-developable, direct-writing silver halide emulsions, e.g., emulsions for oscillograph recording elements which comprises digesting such an emulsion in the presence of a rhodium or iridium salt at pH below 6.0 and then adding a halogen acceptor.

3,615,580
PHOTOGRAPHIC COMPOSITIONS AND PROCESSES FOR MAKING SAME
Richard W. Karlson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 9, 1968, Ser. No. 766,322
Int. Cl. G03c 1/06

U.S. Cl. 96-94 R 12 Claims
Photographic silver-halide emulsions comprising silver-halide grains which have been formed in the presence of a water-soluble nitrite. In one aspect, photographic silver-halide emulsions comprising said grains provide improved direct-print emulsions. In another aspect, this invention relates to a process for improving the photographic properties of a direct-print composition by adding water-soluble nitrites to the precipitation medium wherein the silver-halide grains are formed.

3,615,581
PHOTOGRAPHIC MATERIAL FOR THE SILVER DYE BLEACH PROCESS
Karlheinz Kabitzke, Cologne-Buchheim; Horst Nickel, Leverkusen; Justus Danhauser, Cologne-Buchheim, and Erich Bockly, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed May 14, 1968, Ser. No. 728,886
Claims priority, application Germany, May 22, 1967, A55771
Int. Cl. G03c 1/10

U.S. Cl. 96-99 11 Claims
Very effective cyan dyes for photographic silver dye bleach process have the formula



3,615,582
PHOTOGRAPHIC MATERIALS FOR THE SILVER DYE BLEACH PROCESS
Hans Vetter, Cologne, Stammheim; Karl-Helz Freytag, Leverkusen; Justus Danhauser, Cologne, Stammheim, and Erich Bockly, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 22, 1968, Ser. No. 778,294
Claims priority, application Germany, Dec. 13, 1967, P 15 97 504.9
Int. Cl. G03c 1/40

U.S. Cl. 96-99 12 Claims
The provision in a light-sensitive silver-dye-bleach silver halide emulsion of a bis-azo dye which is a light fast yellow dye compatible with photographic layers to provide uniform distribution and having brilliant spectral properties by resisting side absorption.

ERRATA

For Classes 99-108 thru 99-140 see:
Patent Nos. 3,615,583 thru 3,615,601

ERRATUM

For Class 96-109 see:
Patent No. 3,615,721

3,615,583
METHOD OF PREPARING A WHIPPED MEAT FOOD COMPOSITION AND PRODUCT PRODUCED THEREBY
John C. Bard, and Roman A. Carpenter, both of Madison, Wis., assignors to Oscar Mayer & Company, Inc., Chicago, Ill.
Filed May 19, 1969, Ser. No. 825,927
Int. Cl. A22c 18/00

U.S. Cl. 99-108 2 Claims
A whipped meat food product is prepared by intimately blending together in uniform distribution and admixture solid

and liquid ingredients including: (1) comminuted meat such as sausage emulsion or meat which constitutes the principal ingredient; (2) water, and animal and/or vegetable fat, which accounts for the major portion of the balance, and, (3) seasoning or flavoring ingredients including stabilizers constituting less than 10 percent by weight of the total formulation. The blended formulation is preferably pasteurized and homogenized and then chilled, after which sufficient edible gas is incorporated throughout the formulation to increase its volume by at least 15 percent and preferably by at least 20 percent.

3,615,584 METHOD OF PREPARING COMMINUTED POULTRY PRODUCT

Kermit F. Schlamb, and Eugene Bortsky, both of Pittsburgh, Pa., assignors to Calgon Corporation
Continuation-in-part of application Ser. No. 758,588, Sept. 9, 1968, now abandoned. This application Oct. 1, 1969, Ser. No. 862,933

Int. Cl. A22c 21/00

U.S. Cl. 99—108

A formed poultry product comprising residual deboned comminuted poultry meat about 0.25 to 1 percent by weight of molecularly dehydrated phosphate and about 0.5 to about 2 percent by weight sodium chloride and a method of preparing the same.

4 Claims

3,615,585 METHOD FOR HEAT PROCESSING SAUSAGE-TYPE FOOD ITEMS

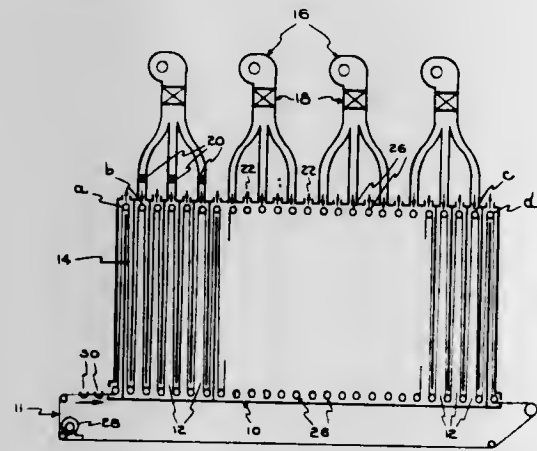
Ogden A. Clemens, Chicago, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Dec. 18, 1968, Ser. No. 784,737

Int. Cl. A22c 11/00

U.S. Cl. 99—109

9 Claims



A method for heat processing a plurality of items, such as sausages sequentially produced during a single batch or work shift, through a longer treatment involves transporting such items along a serpentine path through plural zones until the first item nearly reaches the end of the path and the last item has entered the path, whereupon the movements of the items are cyclically reversed and the conditions in the zones are sequentially equalized, whereafter the items are further transported and discharged from the end of the last zone.

3,615,586 PREPARING PROCESS CHEESE

Hans-Adolf Rohlf, Heidelberg; Wilhelm Koch, Ludwigshafen-Maudach, and Guenther Scheurer, Hassloch, Pfalz, all of Germany, assignors to Benckiser-Knapsack GmbH, Ludwigshafen (Rhine), Germany

Filed June 6, 1968, Ser. No. 734,879

Claims priority, application Germany, June 13, 1967, B 92974

Int. Cl. A23c 19/00

U.S. Cl. 99—115

Process cheese and pasteurized process cheese of superior texture, aroma, and keeping qualities are prepared by melting the starting cheese with a suitable melting salt and a

phosphate-modified starch as thickening agent. The amounts of phosphatesmodified starch in such process cheese products are between about 0.5 and 3.0 percent and preferably between 1.0 and 2.5 percent and the total amount of melting salt and phosphate-modified starch between about 2.0 and 5.0 percent and preferably between about 2.5 and 4.0 percent

3,615,587 METHOD OF PRODUCING CHEESE

Haas Koopmans, A. H. van de Venstraat 16, Bolsward, Netherlands

Filed Sept. 5, 1968, Ser. No. 757,633

Claims priority, application Netherlands, Sept. 5, 1967, 6712133

Int. Cl. A23c 19/02

U.S. Cl. 99—116

A method of making cheddar or similar cheese by a continuous process including the steps of cheddaring, flavoring, and homogenizing by precompressing the usual milled and salted curds under relatively high pressure for a short period of time, spraying them with hot water and subjecting them to a final compression at high pressure for a short period of time, before the process of curing.

11 Claims

3,615,588 GLYCERIDE MIXTURE AND PLASTIC EDIBLE FATS PREPARED THEREFROM

Christian Heine, Monheim, Rhineland, and Werner Stein, Erkrath-Unterbach, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed July 2, 1968, Ser. No. 741,879

Claims priority, application Germany, July 28, 1967, H 63430

Int. Cl. A23d 5/00

U.S. Cl. 99—118 R

This invention relates to a glyceride mixture suitable for transformation into a plastic edible fat having a wide plasticity range comprising a mixture of from 93 percent to 100 percent of triglycerides of fatty acids and from 0 to 7 percent of glycerides selected from the group consisting of monoglycerides of fatty acids and diglycerides of fatty acids wherein said glyceride mixture contains from 90 percent to 60 percent of oily glycerides and from 10 percent to 40 percent of hard glycerides where said hard glycerides contain from 10 percent to 75 percent of triglycerides which melt at from 30° C. to 45° C. and which have one unsaturated and two saturated fatty acid moieties per molecule, from 90 percent to 25 percent of glycerides which melt at from 48° C. and 60° C. and which have at least one myristic acid moiety per molecule, and from 0 to 12 percent of glycerides which melt above 60° C. The invention also relates to the process of transforming said glyceride mixture into a plastic edible fat having a wide plasticity range and to the plastic edible fat so produced.

11 Claims

3,615,589 METHOD OF SUBDIVIDING WATER THIN BULK FOOD MATERIAL

Paulus Jacob Spek, Didam, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation-in-part of application Ser. No. 629,412, Apr. 10, 1967, now abandoned. This application Feb. 27, 1970, Ser. No. 15,215

Int. Cl. A231 1/34, 1/40

U.S. Cl. 99—124

A method of subdividing bulk food material into portions, said bulk food material comprising a mixture of liquid and particulate solid components which would tend to separate on standing, wherein the homogeneity of said mixture is maintained during the subdividing step by employing a suitable thickening agent which is subsequently decomposed.

10 Claims

3,615,590 PROCESSES FOR MAKING ROASTED NUT PRODUCTS FROM RAW, BLANCHED NUTS

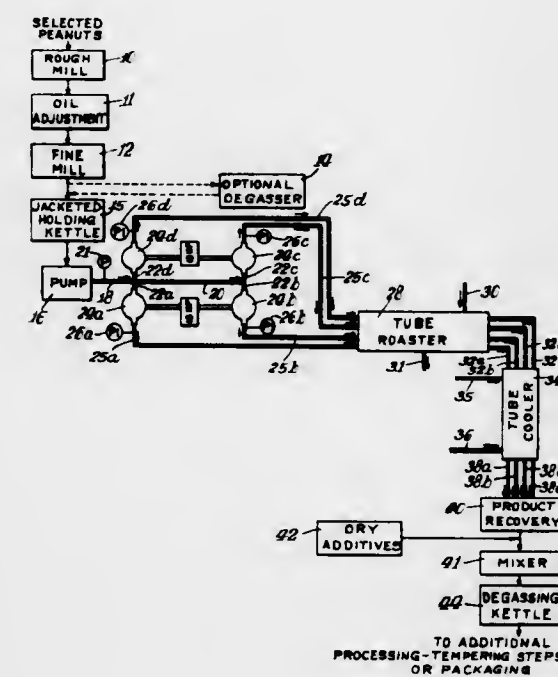
Fitzhugh L. Avera, Alameda; Frank G. Delfino, Castro Valley; George E. Johnson, Sausalito, and Roy L. Kelly, Tarzana, all of Calif., assignors to CPC International Inc.

Filed Oct. 24, 1967, Ser. No. 677,648

Int. Cl. A231 1/38

U.S. Cl. 99—128

17 Claims



This application covers a nut butter that is characterized by full-bodied roast flavor of enhanced intrinsic uniformity and that possesses enhanced flavor and aroma, and that is characterized by enhanced freedom from heat and oxidative deterioration. The process involves grinding shelled, raw, blanched nuts to form a slurry, passing the slurry through a confined zone such as a tubular heat exchanger, heating the slurry to roast it and then cooling it within the heat exchanger, and recovering the product. The moisture content of the slurry, and the pressure and temperature within the tubular heat exchanger, may be controlled so that the product that is recovered from the heat exchanger may be solid comprising a dispersion of oil in agglomerated particles of nut solids. This can be consumed as such, or coated with candy coatings such as chocolate, or it may be subjected to mixing or shearing to convert it to the butter product.

3,615,591 METHOD OF MAKING A PEANUT BUTTER—JELLY PRODUCT

Harrison E. Newlin, Prairie Village, Kans., and Marvin C. Keck, Greenville, Ill., assignors to Pet Incorporated, St. Louis, Mo.

Filed Oct. 21, 1968, Ser. No. 769,359

Int. Cl. A231 1/38

U.S. Cl. 99—128

A method of making a stable and compatible peanut butter—jelly product so that not only is there no whitening or dark color penetration in the peanut butter, but also there is no surface discoloration of the peanut butter at the peanut butter—jelly interface.

6 Claims

3,615,592 INCORPORATING FAT IN MARSHMALLOW

Marvin A. Peterson, Park Ridge, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Mar. 27, 1968, Ser. No. 716,317

Int. Cl. A23g 3/00

U.S. Cl. 99—134

Polyglycerol higher fatty acid partial esters, preferably polyglycerol partial stearates, are employed to emulsify a

13 Claims

marshmallow mixture. The use of such emulsifier permits the addition of fat. The polyglycerol partial stearates permit the aeration of the mixture in a warm system. The aerated marshmallow mixture can be blended or layered with peanut butter, e.g. by swirling or layering horizontally or vertically to produce a product having reduced migration of water from the marshmallow to peanut butter.

3,615,593 METHOD FOR PREPARING AERATED CONFECTIONARY

Arvind Shankar Patil, Silver Spring, Md., assignor to W. R. Grace Co.

Filed July 18, 1969, Ser. No. 843,102

Int. Cl. A23g 3/00

U.S. Cl. 99—134

An aerated confectionary product prepared by heating hard malted-milk taffy confectionary balls to a softening point without substantial deformation after which the softened malted-milk taffy confectionary balls are cooled to case harden the surfaces. Thereafter, the malted-milk taffy confectionary balls having hardened surfaces and softened centers are vacuum expanded.

4 Claims

3,615,594 VARIEGATING SAUCE BASE

Aubrey P. Stewart, Jr., 801 Grove Ave., and Jim C. Gregory, 17th & Grove, both of Corning, Iowa

Filed May 13, 1968, Ser. No. 728,828

Int. Cl. A23g 5/00; A231 1/04, 1/06

U.S. Cl. 99—136

Aqueous base consisting of 1.5–3 percent pectin, 0.6–1.2 percent food acidulant, 8–21 percent sugar and 15–25 percent flavoring agent gels at ambient temperature upon subsequent mixing with sugar syrup to provide a variegating sauce for food products with viscosity in the range 8×10^4 cps– 1×10^5 cps. The base can be sterilized and aseptically packaged for distributing and storing prior to use.

5 Claims

3,615,595 FLAVORED DRINKING STRAW

Alvin Gutttag, Bethesda, Md., assignor to National Patent Development Corporation, New York, N.Y.

Filed Apr. 8, 1969, Ser. No. 814,271

Int. Cl. A231 1/26

U.S. Cl. 99—138 R

11 Claims



3,615,596
WRITING ACCESSORY
 Albert F. Petti, 421 Lexington Ave., Cranford, N.J., and
 Louis J. Perrotti, 419 Morristown Road, Linden, N.J.
 Filed Dec. 4, 1969, Ser. No. 882,114
 Int. Cl. A23g 3/00
 U.S. Cl. 99—138



A writing accessory comprising an elongated holder member having a hard candy comestible affixed to one end. The other end of the holder member has a socket formation for reception of the free end of a writing implement.

3,615,597
SOLID FOOD CONDIMENT
 Jack R. Durst, Osseo, and Merlin J. Sletten, St. Paul, both of
 Minn., assignors to The Pillsbury Company, Minneapolis,
 Minn.

Filed Mar. 10, 1967, Ser. No. 622,036
 Int. Cl. A231 1/22

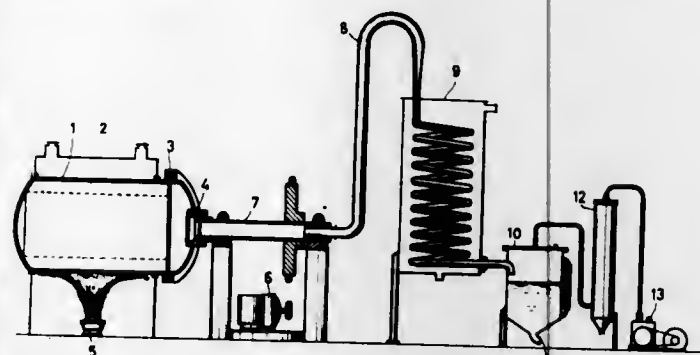
U.S. Cl. 99—140 R 14 Claims
 Compact, solid food condiment pieces which are resistant to physical, chemical and bacteriological degradation are provided by a unitary, solid condiment piece consisting essentially of a matrix comprised of a hydrophilic film former, water and an edible humectant and at least one edible condiment uniformly distributed within the matrix. The condiment is present in the matrix in an amount greater than incidental impurities but sufficient to impart a pronounced condimental taste to the condiment piece. Moisture level for the condiment pieces is less than 20 but more than about 7 weight percent.

3,615,598
METHOD FOR PRODUCING MIXED CONDIMENT PARTICLES
 Yoshiro Funakoshi, Kyoto; Hiromi Nakatani, Kyoto; Tatsuo Asogawa, Osaka, and Takehiko Kajlura, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 21, 1967, Ser. No. 632,601
 Claims priority, application Japan, Apr. 22, 1966, 41/25774
 Int. Cl. A231 1/22

U.S. Cl. 99—140 N 4 Claims
 Method for producing a powdery-flavor-coated powdery-condiment particle comprising (1) wetting the surface of a powdery condiment material with water or a hydrophilic solvent, (2) contacting the wetted particle with a second powdery condiment material (3) causing the second material to adhere to the wetted particle by drying the mixture with a hot gas of controlled temperature and humidity whereby a uniformly coated condiment particle is formed. Materials used as flavors or condiments include sodium chloride, 5-nucleotides and amino acids.

3,615,599
METHOD OF AND APPARATUS FOR PROCESSING GARLIC
 Yoshizo Sakamoto, and Kazuyasu Sakamoto, both of 1166 Oaza Shimootome, Yokkaichi-Machi, Usa-gun, Japan
 Filed May 1, 1967, Ser. No. 635,099
 Claims priority, application Japan, May 17, 1966, 41/31289
 Int. Cl. A231 1/22; A23b 7/02
 U.S. Cl. 99—140 R 5 Claims



A method and apparatus for processing garlic wherein the garlic is heated in a closed volume with agitation for uniform heating under nonoxidizing conditions to obtain its solid and volatile components. The volatile component is removed from the closed volume and is separated into its liquid and gaseous fractions. The liquid fraction is collected and at the same time dust is removed from the gaseous fraction and collected.

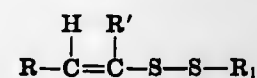
3,615,600
MEAT FLAVOR COMPOSITION CONTAINING SUCCINIC ACID
 Christiaan Herman Theodoor Tonsbeek, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 18, 1968, Ser. No. 698,718
 Claims priority, application Netherlands, Jan. 20, 1967, 6700991
 Int. Cl. A231 1/22

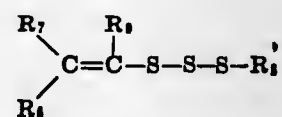
U.S. Cl. 99—140 N 11 Claims
 Artificial flavoring mixtures which can impart a meaty flavor to foods. The mixtures contain an amino acid including glutamic acid, a nucleotide and critical amounts of succinic acid and a hydroxycarboxylic acid including lactic acid.

3,615,601
ALKYL 1-ALKENYL DI- AND TRISULFIDE COMPOUNDS AND FLAVORING COMPOSITIONS CONTAINING THE SAME
 Michael Hugo Brodnitz, Matawan, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.
 Filed Apr. 26, 1968, Ser. No. 724,612
 Int. Cl. A231 1/22

U.S. Cl. 99—140 R 7 Claims
 Novel compounds have been discovered which impart cooked onion flavor and aroma to foods treated therewith. Said novel compounds are alkyl-alkenyl disulfides having the formula:



wherein R' is hydrogen or alkyl and R and R₁ are alkyl. Representative compounds are methyl propenyl disulfide, propyl propenyl disulfide, and ethyl propenyl disulfide. Compositions containing said compounds preferably at levels of from 0.01 to 20 percent by weight are also disclosed. Additionally, said compositions may contain other disulfides and trisulfides including novel alkenyl trisulfides having the formula:



wherein R₂ and R₃ are alkyl groups and R₄ and R₅ are hydrogen or alkyl.

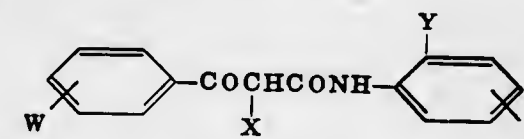
3,615,602
COLOR-PHOTOGRAPHIC SILVER HALIDE EMULSION, CONTAINING COLORED CYAN-FORMING COUPLERS
 Hans-Heinrich Credner, Munich, and Wolfgang Muller-Bardorff, Cologne, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
 Filed Jan. 9, 1968, Ser. No. 696,508
 Claims priority, application Germany, Jan. 18, 1967, A54648
 Int. Cl. G03c 1/40

U.S. Cl. 96—100 7 Claims
 This invention relates to a photographic silver halide emulsion providing improved cyan color reproduction. The emulsion contains colored cyan couplers for the production of integral masks, which couplers have an absorption maximum between 490 and 510 millimicrons. Color couplers which react upon photographic development with the oxidation product of aromatic amino developers to form colored images are well known. Generally these color-forming couplers are colorless or substantially colorless. This lack of color is desirable when the coupler is to be incorporated in the emulsion layer and the unused coupler remains in the layer after formation of the dye.

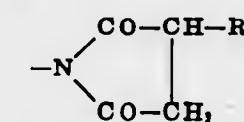
3,615,603
LIGHT-SENSITIVE COLOR-PHOTOGRAPHIC SILVER HALIDE MATERIAL
 Masakuni Iwama; Isaburo Inoue; Teruo Hanzawa; Kenro Sakamoto, and Takaya Endo, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed July 29, 1968, Ser. No. 748,236
 Claims priority, application Japan, July 27, 1967, 42/47871
 Int. Cl. G03c 1/40

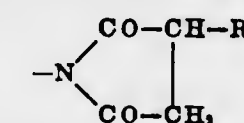
U.S. Cl. 96—100 8 Claims
 A yellow-forming component or color coupler for use in silver halide emulsions in light-sensitive color photography has the general formula



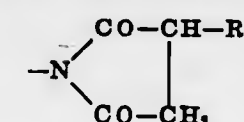
wherein X is a hydrogen atom or a halogen atom; Y is a hydrogen atom, a lower alkoxy group, an aryloxy group or a halogen atom; W is



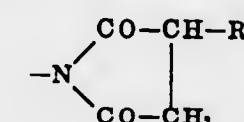
a hydrogen atom or a lower alkoxy group; and Z is



a hydrogen atom or a lower alkoxy carbonyl group, provided either one of z and w is always



and both of them cannot be



at the same time. R is an aliphatic hydrocarbon residue having eight to 20 carbon atoms.

3,615,604
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING CYAN-FORMING COLOR COUPLER
 Friedrich-Wilhelm Kunitz, Leverkusen; Willibald Pelz, Opladen; Erich Beckly, Leverkusen, all of Germany, and Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
 Filed Feb. 18, 1969, Ser. No. 800,245
 Claims priority, application Germany, Mar. 2, 1968, P 16 22 920.2
 Int. Cl. G03c 1/40

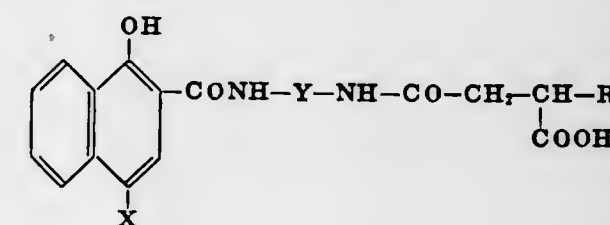
U.S. Cl. 96—100 4 Claims
 Color couplers of novel structure that form cyan images in photographic silver halide emulsions and are highly stable as well as produce more stable and more light-fast images.

3,615,605
LIGHT-SENSITIVE SILVER HALIDE COLOR-PHOTOGRAPHIC MATERIAL CONTAINING NAPHTHAL COLOR COUPLERS

Isaburo Inoue; Shui Sato, and Yutaka Takel, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1968, Ser. No. 714,336
 Claims priority, application Japan, Mar. 22, 1967, 42/17373
 Int. Cl. G03c 1/40

U.S. Cl. 96—100 6 Claims
 Light-sensitive silver halide color-photographic emulsions comprising cyan couplers of the formula:

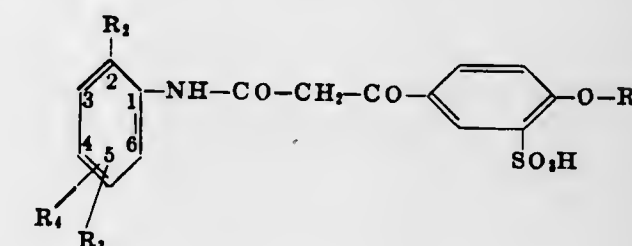


wherein X is hydrogen, halogen, sulfonic or sulfonate groups, Y is $-(\text{CH}_2)_2-$ or $-\text{CH}_2-\text{CH}(\text{CH}_3)-$ and R is an aliphatic hydrocarbon radical of eight to twenty carbon atoms.

3,615,606
COLORPHOTOGRAPHIC MATERIAL
 Walter Schulte, Opladen; Helmut Mader, Leverkusen; Willibald Pelz, Opladen; Fritz Nittel, Cologne, Stammheim, and Erich Reckziegel, Leverkusen, all of Germany, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 2, 1968, Ser. No. 741,880
 Claims priority, application Germany, July 10, 1968, A 56235
 Int. Cl. G03 1/40

U.S. Cl. 96—100 9 Claims
 A light-sensitive photographic material containing in a silver halide emulsion layer a yellow coupler of the following formula:



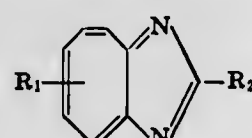
in which

R₁ represents an alkyl radical;
 R₂ represents an alkoxy radical, an alkylthio radical, a secondary or tertiary alkylamino group, a halogen, an alkyl radical, arylthio;
 R₃ represents a substituent in the 4- or 5-position, which is: sulfonamide, carbamoyl, acylamino, an alkylsulfonyl;
 R₄ represents hydrogen, an alkyl or alkoxy radical, halogen, sulfonamide or carbamoyl alkyl or alkylsulfonyl.

3,615,607
METHOD OF DESENSITIZING LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIALS WITH CYCLOHEPTIMIDAZOLE DERIVATIVES

Nobuo Soma, Tokyo; Mitsuo Watatani, deceased, late of Tokyo (by Takako Watatani, heir); Junichi Nakazawa, Tokyo; Yoshio Sato, Tokyo; Yoshimi Kuwabara, Tokyo, and Hidehiko Ishikawa, Kanagawa, all of Japan, assignors to Sankyo Co., Ltd. and Konishiroku Photo Industry Co., Tokyo, Japan
 Division of Ser. No. 622,475, Mar. 13, 1967. Filed Apr. 13, 1970, Ser. No. 28,084
 Int. Cl. G03c 1/36

U.S. Cl. 96—101 13 Claims
 Light-sensitive silver halide photographic materials are desensitized by treatment with a compound of the formula



wherein R₁ is hydrogen, lower alkyl, halogen, cyano or dialkyl amino and R₂ is aryl or pyridinium which may or may not be substituted.

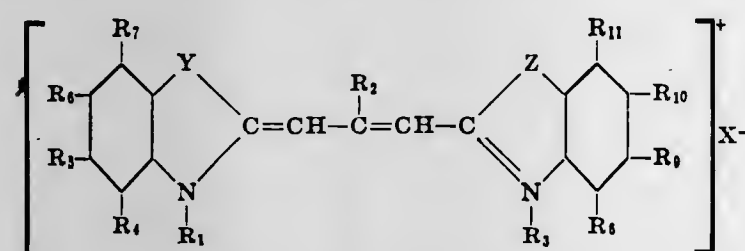
3,615,608
SILVER HALIDE EMULSIONS CONTAINING CYANINE AND MEROCYANINE DYES HAVING A 4-PYRAZOLE NUCLEUS

Earl J. Van Lare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
 Continuation-in-part of application Ser. No. 604,146, Dec. 23, 1966, now abandoned. This application Apr. 24, 1970, Ser. No. 31,780
 Int. Cl. G03c 1/36, 1/28; C09b 23/00

U.S. Cl. 96—101 41 Claims
 Silver halide emulsions are provided which feature certain cyanine and merocyanine dyes containing a 4-pyrazole nucleus.

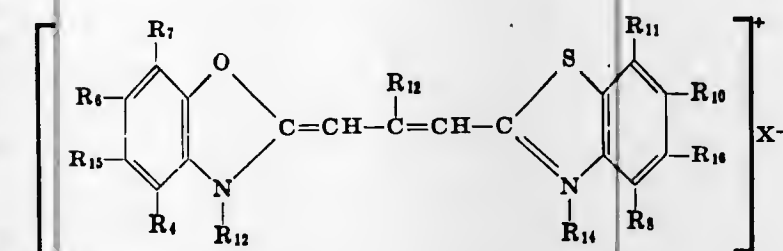
3,615,609
SUPERSENSITIZING DYES
 Douglas James Fry; Geoffrey Ernest Ficken; Ronald William Burrows, and Simon Lindsay Scrutton, all of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England
 Filed Sept. 12, 1966, Ser. No. 578,481
 Claims priority, application Great Britain, Sept. 23, 1965, 40620/65

Int. Cl. G03c 1/28, 1/18
 U.S. Cl. 96—104 12 Claims
 Photographic silver halide emulsions containing a supersensitizing combination comprising a dye of the formula:



where Y and Z are selected from the class consisting of sulfur and selenium, at least one of the groups R₁ and R₃ are alkyl, the other groups being selected from the class consisting of alkyl, carboxyalkyl, carbamoylalkyl and sulfoalkyl, R₂ is selected from the class consisting of hydrogen and alkyl, at least one of the groups R₅ and R₉ is a thienyl group, the other groups R₃ and R₉ being selected from the class consisting of hydrogen, halogen, alkyl, aryl, hydroxy and alkoxy groups and together with either R₄ or R₈, depending on whether R₅ or R₉ carries the thienyl substituent group form part of a benzene ring, R₄ and R₈ taken separately each represent a hydroxy atom, R₆ and R₁₀ taken separately each selected from the class consisting of a hydrogen atom, a halogen atom, an alkyl, aryl, hydroxy and alkoxy groups, R₇ and R₁₁,

taken separately each represent a hydrogen atom, R₈ and R₇ taken together form part of a benzene ring, R₁₀ and R₁₁ taken together form part of a benzene ring and X⁻ is an anion, together with a dye of the formula:



where R₄, R₆, R₇, R₈, R₁₀, R₁₁ and X have the meanings assigned to them above, R₁₂ is an alkyl group, R₁₃ is selected from the same class consisting of hydrogen and alkyl, R₁₄ is selected from the class consisting of an alkyl group and a group A-Q where A is selected from the class consisting of straight and branched alkylene chains containing 1 to 6 carbon atoms and Q is selected from the class consisting of an amide, a carbonyl, and a sulfonic acid group, R₁₅ and R₁₆ are each selected from hydrogen, halogen, alkyl, aryl, alkoxy and hydroxy groups. A third dye may also be used in the combination.

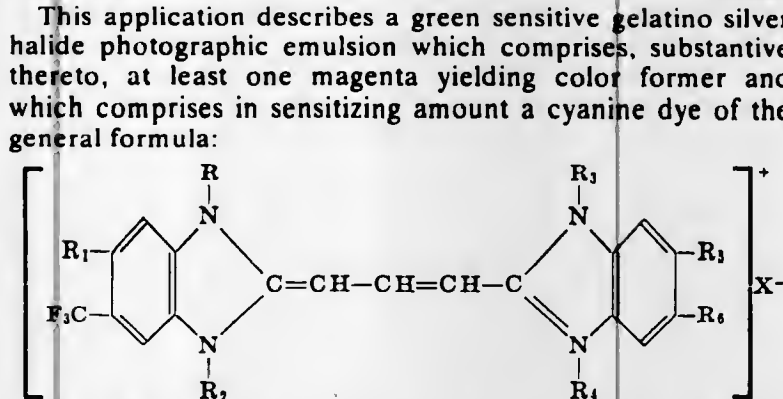
3,615,610
SILVER HALIDE DIRECT POSITIVE EMULSIONS SPECTRALLY SENSITIZED WITH A COMBINATION OF A DESENSITIZING DYE WITH A 2-PHENYLINDOLE METHINE DYE

Raymond Leopold Florens; Edegem, Belgium; Johannes Gotze, Bergisch-Neukirchen; August Randolph, Leverkusen, Germany, and Theofil Hubert Ghys, Kontich, Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium
 Filed May 2, 1967, Ser. No. 635,358
 Claims priority, application Great Britain, May 9, 1966, 20,343/66

Int. Cl. G03c 1/28 6 Claims
 U.S. Cl. 96—104
 A direct-positive photographic silver halide emulsion for use in a solarization technique comprising a light-sensitive silver halide which has been fogged by light or chemical means and includes a spectrally sensitizing methine dye of the 2-phenylindole type in combination with a desensitizing nitrotyrill or nitrobenzylidene dye is described. In contrast to a direct-positive photographic silver halide emulsion containing only the 2-phenylindole type dye or nitrotyrill or nitrobenzylidene dye, the combination provides improved stability on storage, lower minimum densities, and increased total speed.

3,615,611
PHOTOGRAPHIC EMULSIONS
 Konrad Jerzy Bannert, and Douglas James Fry, both of Ilford, Essex, England, assignors to Ilford Limited, Essex, England
 Filed July 2, 1968, Ser. No. 741,854
 Claims priority, application Great Britain, July 4, 1967, 30,778/67

Int. Cl. G03c 1/10 3 Claims
 U.S. Cl. 96—106
 This application describes a green sensitive gelatino silver halide photographic emulsion which comprises, substantive thereto, at least one magenta yielding color former and which comprises in sensitizing amount a cyanine dye of the general formula:



wherein R₁ represents a halogen atom or a lower alkyl or amino group, R and R₃ are the same or different and

represent lower alkyl groups containing at least two carbon atoms, one of R₂ and R₄ is a sulfoalkyl group of the formula -(CH₂)_nSO₃H where n is an integer from 1 to 6, and the other of R₂ and R₄ is the same or different said sulfoalkyl group or is an alkyl, hydroxyalkyl, aralkyl, carboxy-substituted aralkyl, or carboxy-substituted alkyl group, an acylsulphamoyl alkyl group of the formula -(CH₂)_nSO₂NHCOR₅, or an alkyl or aralkyl sulfamoyl alkyl group of the formula -(CH₂)_nSO₂NHR₆, where n in the last two formulas is an integer from 1 to 6, R₅ is an alkyl group and R₆ is an alkyl or an aralkyl or amino group, R₃ represents a hydrogen or halogen atom or an alkyl or amino group, R₈ represents a hydrogen or halogen atom or a trifluoromethyl, cyano or alkoxy carbonyl group, and X is an anion.

3,615,612
PHOTOGRAPHIC ELEMENT CONTAINING A PHOSPHORIC ACID ESTER OF A BUTYNE-1,3-DIOL-ALKYLENE OXIDE CONDENSATE

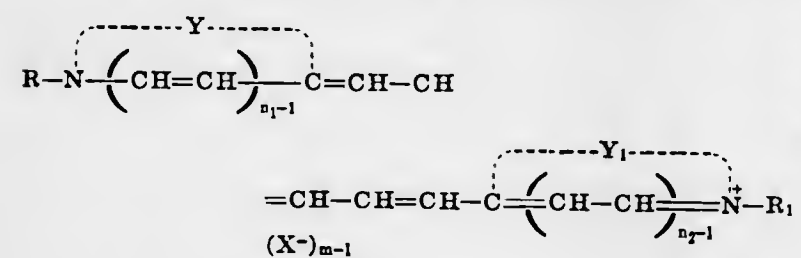
E. Scudder Mackey, Binghamton, N.Y.; Fritz Dersch, Binghamton, N.Y., and Fred S. Elsemann, Maplewood, N.J., assignors to GAF Corporation, New York, N.Y.
 Filed Jan. 12, 1968, Ser. No. 697,323
 Int. Cl. G03c 1/28, 1/34

U.S. Cl. 96—107 9 Claims
 A photographic element having incorporated in the light-sensitive silver halide emulsion layer or in a colloid layer contiguous therewith a phosphoric acid ester of a condensation product of an alkylene oxide with a butynediol.

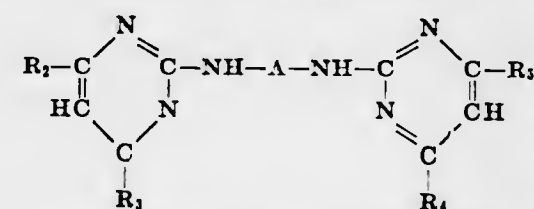
3,615,613
SPECTRALLY SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSION

Keisuke Shiba; Masanao Hinata; Hiroshi Misu, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
 Filed Feb. 19, 1968, Ser. No. 707,025
 Claims priority, application Japan, Feb. 18, 1968, 42/10285
 Int. Cl. G03c 1/28

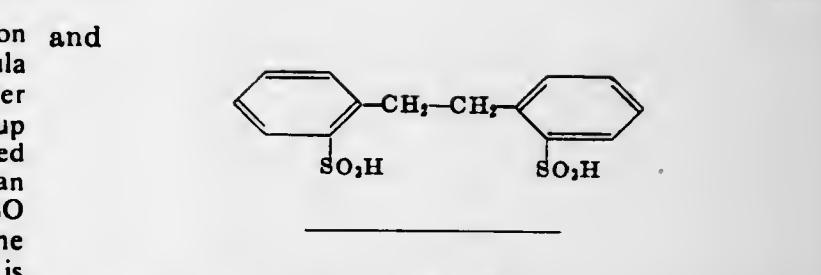
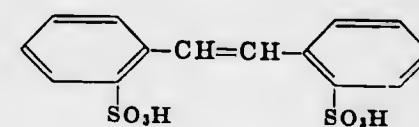
U.S. Cl. 96—126 6 Claims
 A photographic silver halide emulsion containing a sensitizing dye represented by the general formula (I)



wherein Y and Y₁ each represents a member selected from the group consisting of a benzothiazole, benzoselenazole, and a quinoline; R and R₁ represents a member selected from the group consisting of an alkyl group, a substituted alkyl group, an aryl group, an allyl group, an aralkyl group, and a substituted aralkyl group; X¹ represents an anion; n₁ and n₂ each represents 1 or 2; and m represents 1 or 2, and a compound represented by the general formula (II)



wherein R₁, R₃, R₄ and R₅ each represents a member selected from the group consisting of a halogen atom, a hydroxyl group, an aryloxy group, an arylthio group, and arylamino group and A represents a member selected from the group consisting of



3,615,614
LIGHT-DEVELOPABLE DIRECT PRINT SILVER HALIDE EMULSION SENSITIZED WITH A COMBINATION OF COPPER, LEAD BROMIDE AND THIOUREA

Ivar T. Krohn; Geoffrey A. Page, and Thomas L. Mahalek, all of Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
 Continuation-in-part of application Ser. No. 514,450, Dec. 17, 1965, now abandoned. Continuation-in-part of application Ser. No. 533,853, Mar. 14, 1966, now abandoned. This application Aug. 2, 1968, Ser. No. 749,684
 Int. Cl. G03c 1/28

U.S. Cl. 96—108 11 Claims
 A direct print light-developable photosensitive silver halide emulsion sensitized by copper, lead, bromide and thiourea. The sensitizer may be mixed with the silver halide layer forming a single-layer emulsion or may comprise a separate layer overcoating the silver halide layer forming a two-layer emulsion.

3,615,615
PHOTOGRAPHIC EMULSIONS INCLUDING REACTIVE QUATERNARY SALTS

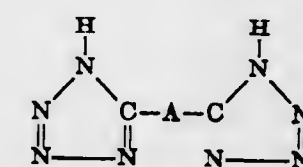
Lewis L. Lincoln, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
 Continuation-in-part of application Ser. No. 828,064, Apr. 28, 1969. This application Apr. 13, 1970, Ser. No. 28,041
 Int. Cl. G03c 1/34, 5/24, 1/28

U.S. Cl. 96—109 31 Claims
 Reactive N-substituted, cyclammonium quaternary salts, wherein the N-substituent includes alkyl radicals whose terminal carbon atom is additionally substituted with a radical such as a formyl radical, an acetal or thioacetal radical including cyclic acetals and cyclic thioacetals, or a hydrazono radical which is itself optionally substituted, are useful photographic emulsion addenda such as antifoggants and nucleating agents in silver halide reversal emulsions, as well as being useful dye intermediates.

3,615,616
PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE MATERIAL

Jozef Frans Willems, Wilrijk, and Frans Clement Heugebaert, Kontich, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium
 Filed Oct. 2, 1968, Ser. No. 764,621
 Claims priority, application Great Britain, Oct. 9, 1967, 46105/67
 Int. Cl. G03c 1/34

U.S. Cl. 96—109 9 Claims
 Photographic materials comprising a light-sensitive silver halide emulsion layer having in the emulsion layer or in an adjacent water-permeable layer a bisterazole compound having the formula:



wherein A stands for a chemical bond or a bivalent organic radical are described. These photographic materials have decreased fogging even under conditions of high temperature and humidity.

3,615,617

STABILIZED PHOTOGRAPHIC MATERIAL WITH TETRAZOLE THIOCARBONIC ACID ESTER
Wolfgang Müller-Bardorff, Cologne; Wilhelm Saleck, Schildgen, Bergisch-Gladbach, and Franz Moll, Cologne, Stammheim, all of Germany, assignors to AGFA-Gevaert, Leverkusen, Germany

Filed Dec. 3, 1968, Ser. No. 780,885

Claims priority, application Germany, Dec. 12, 1968, P 15 97 503.8
Int. Cl. G03c 1/34

U.S. Cl. 96—109

5 Claims

This invention relates to a photographic silver halide emulsion the stability of which is improved by addition of substituted 5-mercapto-tetrazole derivatives.

3,615,618

PHOTOGRAPHIC SILVER HALIDE COMPOSITIONS COMPRISING THIOURAZOLE ADDUCTS
Albert W. Wise; John W. Gates, Jr., and Dorothy J. Beavers, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1969, Ser. No. 816,867

Int. Cl. G03c 1/28, 1/34, 5/30

U.S. Cl. 96—109

19 Claims

This invention relates to photographic compositions comprising adducts of thiourazoles, including dithiourazoles, with $\alpha\beta$ -unsaturated compounds. Typical useful adducts are made with $\alpha\beta$ -unsaturated acids, aldehydes, amides, ketones and esters and include monoadducts and diadducts of the thiourazoles.

3,615,619

PHENANTHROLINE ANTIFOGGANTS FOR SILVER HALIDE EMULSIONS
Toshihiko Yamamoto, Tokyo; Kazuo Matui, Tokyo, and Sadao Sugita, Hanno, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,998

Claims priority, application Japan, Mar. 25, 1969, 44/22051

Int. Cl. G03c 1/34

U.S. Cl. 96—109

4 Claims

A photographic material comprising phenanthroline antifogging agents for silver halide emulsions.

3,615,620

LIGHT-SENSITIVE MATERIAL
Jozef Frans Willems, Wilrijk; Robrecht Julius Thiers, Brasschaat, and Bernard Hippolet Tavernier, Edegem, all of Belgium, assignors to Gevaert-AGFA, N.V., Mortsel, Belgium

Filed Dec. 7, 1967, Ser. No. 688,705

Claims priority, application Great Britain, Mar. 6, 1967, 10,371/67
Int. Cl. G03c 1/34

U.S. Cl. 96—110

9 Claims

A light-sensitive material comprising a silver halide emulsion layer containing a mercury (II) oxide is described. The mercury (II) oxide stabilizes the emulsion against any increase in fog without substantial desensitization of the emulsion.

3,615,621

4-PYRIMIDINETHIONE COMPOUNDS AS FOG INHIBITORS
Robert W. Lamon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,745

Int. Cl. G03c 1/34; C07d 5/18

U.S. Cl. 96—109

19 Claims

4-Pyrimidinethione compounds are prepared by reaction of acyl isothiocyanate-tertiary enamine adducts with primary amines or ammonia. They are useful photographic fog inhibitors.

3,615,622

HARDENING GELATIN WITH POLYMERIC-BISULFITE ADDITION PRODUCT

Fumihiko Nishio, and Nobuo Yamamoto, both of Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 16, 1966, Ser. No. 572,696

Claims priority, application Japan, Aug. 16, 1965, 40/49824

Int. Cl. G03c 1/30

U.S. Cl. 96—111

8 Claims

A process for hardening gelatin by treating gelatin with a homopolymer of bisulfite addition product of vinyl isocyanate, a copolymer of bisulfite addition product of vinyl isocyanate and vinyl compound, a homopolymer of bisulfite addition product of isopropenyl isocyanate or a copolymer of bisulfite addition product of isopropenyl isocyanate and vinyl compound.

3,615,623

HARDENED GELATIN COMPOSITIONS AND A METHOD OF HARDENING SAME

Nathan D. Field, Allentown; David I. Randall, Easton, Pa., and Jimmie D. Fitzpatrick, Lafayette, La., assignors to GAF Corporation, New York, N.Y.

Filed Feb. 13, 1969, Ser. No. 799,089

Int. Cl. G03c 1/30; C08h 1/06

U.S. Cl. 96—111

5 Claims

A hardened gelatin composition and a method of hardening said gelatin composition wherein the gelatin is hardened by the addition of a pyrrolidonyl polyacrolein-bisulfite addition compound.

3,615,624

PEPTIZERS FOR SILVER HALIDE EMULSIONS USEFUL IN PHOTOGRAPHY

Donald A. Smith; Ernest J. Perry, and Kenneth R. Hollister, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1968, Ser. No. 701,084

Int. Cl. G03c 1/04

U.S. Cl. 96—114

41 Claims

In making photographic emulsions, silver halide is precipitated and emulsified in aqueous solution of a peptizer which is a water-soluble linear addition copolymer comprising recurring units of an amide or ester of maleic, acrylic, or methacrylic acid. The amine or alcohol condensation residue moiety of the amide or ester unit contains at least one sulfide sulfur atom connecting two alkyl carbon atoms. Presence of this sulfide sulfur atom is critical to efficient peptizing action. Emulsions made with these peptizers have various uses. Specific examples describe emulsions specially suited for physical development processes, very fine grain emulsions, negative speed emulsions, etc.

3,615,625

LIGHT-SENSITIVE SILVER SALTS OF THIOSEMICARBAZONES AND THIOCARBOHYDRAZONES

Grant M. Haist, and Wilbert J. Humphlett, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

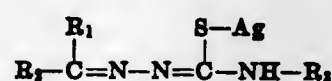
Filed Aug. 26, 1968, Ser. No. 755,384

Int. Cl. G03c 1/02, 1/72

U.S. Cl. 96—114.6

8 Claims

This invention comprises a novel class of light-sensitive silver compounds, and photographic systems and methods employing such compounds. These compounds are characterized by being nonsilver halides and can be represented by the formula



3,615,626

NEW PHOTOGRAPHIC EMULSION WITH A HIGH DEGREE OF COVERING POWER
Claude Guy Doste; Jean Clement Collange, and Guy Henri Leverrier, all of Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 19, 1967, Ser. No. 668,940

Claims priority, application France, Sept. 20, 1966, 76,942

Int. Cl. G03c 1/02

U.S. Cl. 96—114.8

20 Claims

Photographic silver halide gelatin emulsions are improved in covering power by pretreatment of a portion of the gelatin colloid binder with an enzyme that hydrolyzes the gelatin. Further improvement is obtained by treating the same portion with organic diacid anhydride, either before or after enzymatic action. Examples describe treatments with trypsin and phthalic anhydride.

3,615,627

PHOTOPOLYMERIZABLE COMPOSITIONS AND PROCESS OF MAKING SAME

John B. Rust, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 22, 1968, Ser. No. 699,368

Int. Cl. G03c 1/68

U.S. Cl. 96—115

9 Claims

The embodiment of this disclosure provides for the method of preparing improved photopolymerizable noncrystallizing resinous film material and particularly of polyvalent metal salts of acrylic and methacrylic acids, and the products thereof.

3,615,628

PHOTOGRAPHIC ELEMENT AND COMPOSITION

John W. Mench; Brazelton Fulkerson, and William J. DuImage, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1967, Ser. No. 693,710

Int. Cl. G03c 1/68

U.S. Cl. 96—115

7 Claims

Sensitized polyesters containing unsaturated alicyclic rings are coated upon a support material to provide negative-working photographic elements useful in the photomechanical arts for preparing not only lithographic and relief printing plates but also resist stencils for etching and other operations.

3,615,629

PHOTOSENSITIVE COMPOSITIONS FOR PRODUCTION OF RELIEF-BEARING PLATES, SHEETS OR FILMS

Hans Wilhelm, Ludwigshafen/Rhine; Josef Georg Floss, Ludwigshafen/Rhine, and Herbert Henkler, Darmstadt, all of Germany, assignors to Badisch Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Mar. 7, 1968, Ser. No. 711,185

Claims priority, application Germany, Mar. 10, 1967, P 15 22 444.9

Int. Cl. G03c 1/70

U.S. Cl. 96—115 R

8 Claims

Crosslinkable photosensitive sheets, plates or film of soluble highly polymerized substances, compounds having at least two photopolymerizable double bonds, a photoinitiator and N-nitrosohydroxylamine derivatives as polymerization inhibitors.

3,615,630

LIGHT-SENSITIVE COATING AND RECORDING MATERIAL CONTAINING PHOTOPOLYMERIZABLE COMPOUNDS

Roland Dietrich, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Nov. 6, 1968, Ser. No. 773,971

Claims priority, application Germany, Nov. 9, 1967, P 15 97 626.8; Swedish, June 28, 1968, 8877/68

Int. Cl. G03c 1/68

U.S. Cl. 96—115 P

18 Claims

This invention relates to a light-sensitive mixture comprising one or more photopolymerizable compounds and,

if desired, a binder, conventional sensitizers, dyestuffs and polymerization inhibitors, and to a recording material prepared by coating a support with the mixture, the mixture including, in addition to other ethylenically unsaturated photopolymerizable compounds which may be present, at least one ethinyl quinole.

3,615,631

PHOTOGRAPHIC SILVER HALIDE EMULSION WITH INCREASED SENSITIVITY

Harald Huckstadt, Cologne-Stammheim; Wolfgang Himmelmann, Cologne-Stammheim; Wilhelm Saleck, Schildgen, Bergisch-Gladbach; August Randolph, Leverkusen; Erwin Ranz, Leverkusen; Walter Simmler, Odenthal, and Hans-Dietrich Götz, Cologne-Stammheim, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 18, 1968, Ser. No. 784,909

Claims priority, application Germany, Dec. 22, 1967, P 15 97 511.8

Int. Cl. G03c 1/10

U.S. Cl. 96—120

7 Claims

A photographic silver halide emulsion chemically sensitized by a cyclic amino compound containing at least one dialkylsilyl group added to the silver halide emulsion.

3,615,632

SUPERSENSITIZED PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE ELEMENTS

Keisuke Shiba; Masano Hinata; Akira Sato, and Hiroshi Misu, all of Kanagawa, Japan, assignors to Fuji Photo Films Co., Ltd., Kanagawa, Japan

Filed July 26, 1968, Ser. No. 747,815

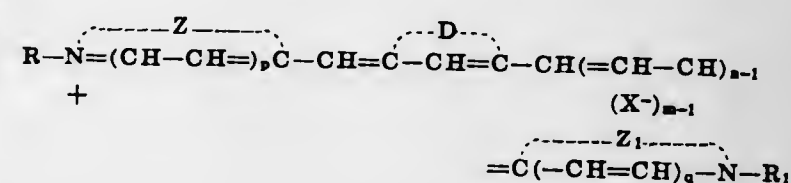
Claims priority, application Japan, July 29, 1967, 42/48761

Int. Cl. G03c 1/28

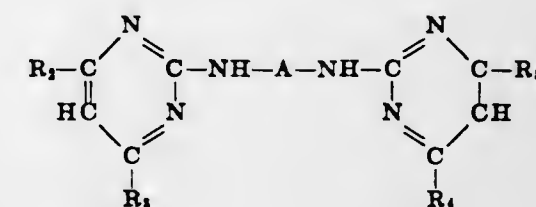
U.S. Cl. 96—122

6 Claims

A photographic silver halide light-sensitive element containing a support bearing thereon, a silver halide emulsion containing at least one sensitizing dye having the structure,



and at least one compound of the structure



3,615,633

SILVER HALIDE PHOTOGRAPHIC EMULSIONS SUPERSENSITIZED WITH AN OXADIAZOLE AND A METHINE DYE

Dugald A. Brooks, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 757,148, Sept. 3, 1968, now abandoned. This application Aug. 18, 1969, Ser. No. 851,074

Int. Cl. G03c 1/28

U.S. Cl. 96—123

9 Claims

Photographic silver halide emulsions are supersensitized with the combination of a photographic spectral sensitizing

methine dye and an oxazole, an oxadiazole, a thiozole or a thiadiazole.

3,615,634 OPTICALLY SENSITIZED LIGHT-SENSITIVE SILVER HALIDE MATERIAL

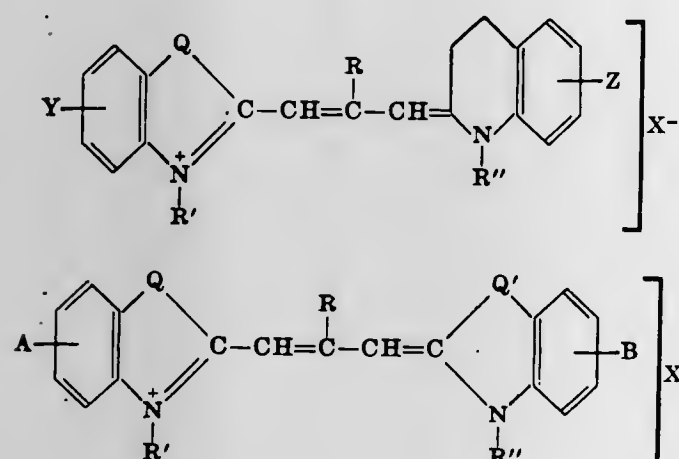
Johannes Gotze, Bergisch-Neukirchen; Oskar Riester, Leverkusen, Germany; Herman Adelbert Philippaerts, Mortsel; Theofiel Hubert Ghys, Kontich, Belgium; Marie Hase, Schildgenbergisch-Gladbach, and Karl Kuffner, Unterhaching b. near Muenchen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 2, 1968, Ser. No. 718,127

Claims priority, application Germany, Apr. 10, 1967,
A 55 409; Aug. 24, 1967, A 56 590
Int. Cl. G03c 1/28

U.S. Cl. 96-124

Silver halide emulsions are very effectively sensitized to red with combination of two dyes

8 Claims



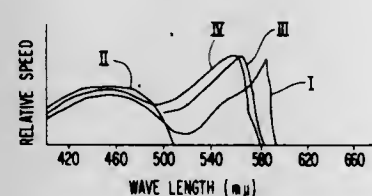
3,615,635 SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba, and Akira Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 26, 1968, Ser. No. 779,022

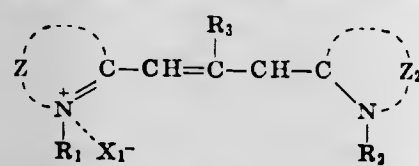
Claims priority, application Japan, Nov. 27, 1967, 42/76071

U.S. Cl. 96-126

4 Claims

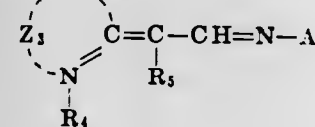


Silver halide photographic emulsion comprising at least one sensitizing dye represented by general formula I:



and at least one organic heterocyclic compound selected from the formulas represented by the general formulas II and III, wherein

general Formula II is:



The substituent moieties shown in the above groups are described in the specification.

3,615,636 SPECTRALLY SENSITIZED DIRECT POSITIVE EMULSION

Oskar Riester, Leverkusen, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 3, 1968, Ser. No. 780,651

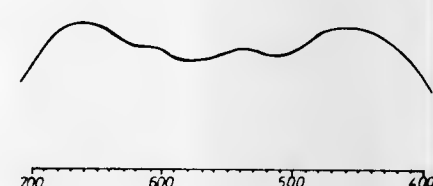
Claims priority, application Germany, Dec. 12, 1967, P 15 97

502.7

Int. Cl. G03c 1/10, 1/28

U.S. Cl. 96-126

6 Claims



The invention relates to photographic direct positive emulsions which are spectrally sensitized by a combination of triphenyl methane dyes and indocyanine dyes.

3,615,637 SPECTRALLY SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Keisuke Shiba; Masanao Hinata; Nobuo Tsuji, and Masao Sawahara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 4, 1969, Ser. No. 882,271

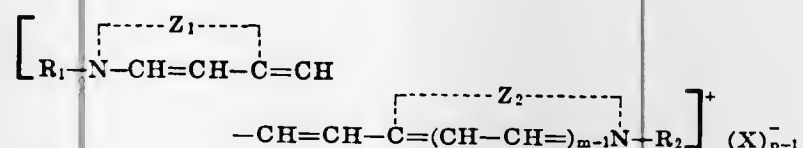
Claims priority, application Japan, Dec. 4, 1968, 43/88768

Int. Cl. G03c 1/28

U.S. Cl. 96-126

7 Claims

A supersensitized photographic silver halide emulsion containing a sensitizing dye represented by the following general formula:



and a condensate of formaldehyde and a polyhydroxybenzene, which may be substituted or unsubstituted. The emulsion is supersensitized. The sensitizing dye must contain at least one quinoline nucleus.

3,615,638 SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Shiro Kimura; Yoshlyuki Nakazawa; Akira Sato, and Yasuharu Nakamura, all of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
Filed Sept. 28, 1967, Ser. No. 671,232

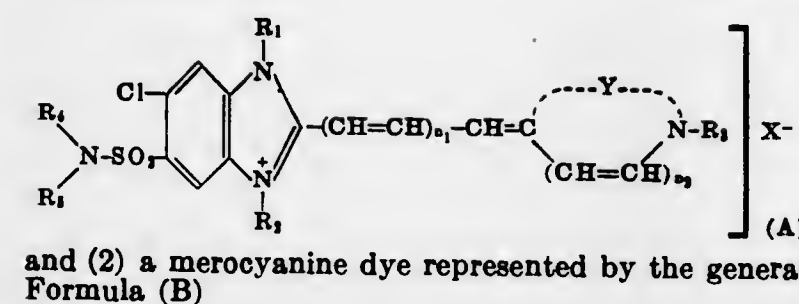
Claims priority, application Japan, Sept. 28, 1966, 41/63936

Int. Cl. G03c 1/10

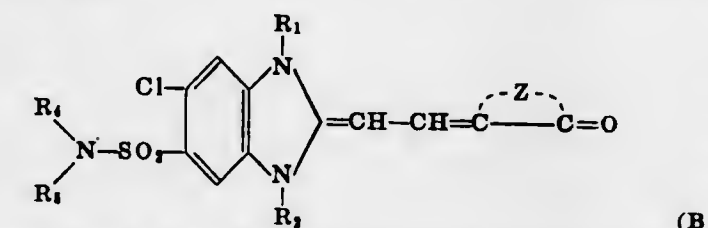
U.S. Cl. 96-128

4 Claims

A silver halide photographic emulsion containing at least one of the following: 1. a cyanine sensitizing dye represented by the general formula (A)



and (2) a merocyanine dye represented by the general Formula (B)



The dyes have at least one benzimidazole nucleus in which one hydrogen atom of the benzene ring forming the nucleus is substituted by a chlorine atom, and another hydrogen atom of the ring is substituted by a sulfonyl derivative group as shown in the general formulas.

3,615,639 DIRECT POSITIVE SILVER HALIDE EMULSIONS CONTAINING DYES AS ELECTRON ACCEPTORS AND SPECTRAL SENSITIZERS

James W. Carpenter; John D. Mee, and Donald W. Heseltine, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1967, Ser. No. 677,058

Int. Cl. G03c 1/10

U.S. Cl. 96-130

29 Claims

Novel polymethine dyes are provided which feature an imidazole ring joined at the carbon atom in the 5-position of the imidazole ring to a dimethine linkage, the imidazole ring having fused to the [a] side thereof the nonmetallic atoms required to complete at least one fused ring, and a second sensitizing nucleus joined at a carbon thereof to the dimethine linkage. The invention also provides novel photographic silver halide emulsions, including direct positive emulsions containing the dyes of the invention.

3,615,640 PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING BENZOTHAZOLE CYANINE SENSITIZERS

Yoshiyuki Nakazawa; Masao Sawahara; Akira Sato, and Masanao Hinata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 27, 1968, Ser. No. 732,062

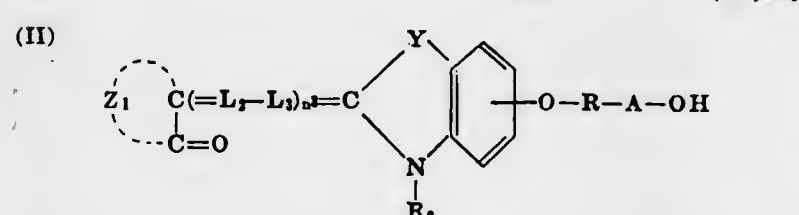
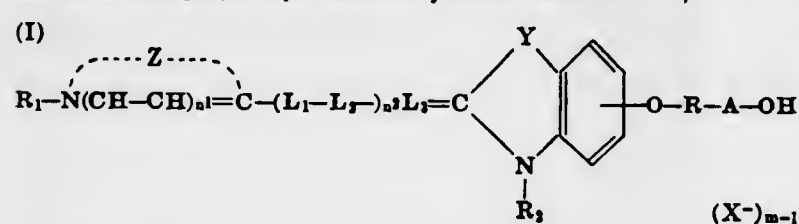
Claims priority, application Japan, May 26, 1967, 42/33473

Int. Cl. G03c 1/08, 1/10

U.S. Cl. 96-133

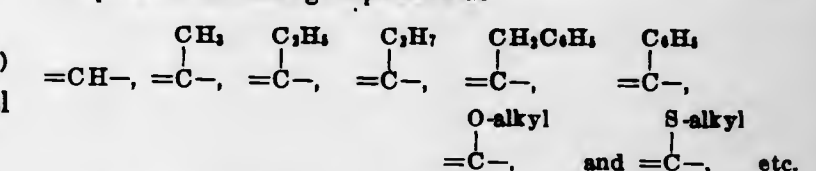
3 Claims

A photographic silver halide emulsion containing at least one sensitizing dye represented by the formula I or II;



wherein R represents a divalent hydrocarbon group having one-four carbon atoms, R1 and R2 each represents an alkyl group having one to four carbon atoms, a substituted alkyl group such as 2-hydroxyethyl group, a 2-acetoxyethyl group, a 3-hydroxypropyl group, a carboxymethyl group, a 2-carboxyethyl group, a 3-carboxypropyl group, a 2-sulfoethyl

group, a 3-sulfopropyl group, a 4-sulfobutyl group, an allyl group (i.e., a vinyl methyl group), a benzyl group (i.e., a phenyl methyl group), a phenylethyl group, or a phenoxyethyl group. A represents SO2 or CO, L1 and L2 and L3 represent methine groups such as



n1 represents 0 or 1, n2 represents 0, 1 or 2, n3 represents 1 or 2, m represents 1 when the intramolecular salt is formed, or 2 when the intramolecular salt is not formed, X1 represents an anion such as chloride ion, bromide ion, iodide ion, perchlorate ion, p-toluene-sulfonate ion, benzene sulfonate ion, ethyl sulfate ion, Y represents S or Se, Z represents nonmetallic atoms necessary to complete a heterocyclic ring used in cyanine dyes such as thiazoles, thiadiazoles, benzothiazoles, naphthothiazoles, oxazoles, benzoxazoles, naphthoxazoles, selenazoles, benzoselenazoles, naphthoselenazoles, thiazolines, oxazolines, selenazolines, indolenines, pyridines, 2-quinolines, 4-quinolines, benzimidazoles, Z1 represents nonmetallic atoms necessary to complete a heterocyclic ring usually used in merocyanine dyes, selected from rhodanines, pyrazolones, 2-thioindantoines, isoxazolones, oxyindoles, 2-thiobarbaolones, 2-thio-2,4-oxazolidinediones.

3,615,641 PHOTOGRAPHIC SILVER HALIDE EMULSION

Keisuke Shiba; Masanao Hinata; Reichi Ohi, and Hiroshi Mitsu, all of Kanagawa, Japan, assignors to Fuji Photo-Film Co., Ltd., Kanagawa, Japan
Filed Nov. 2, 1967, Ser. No. 680,024

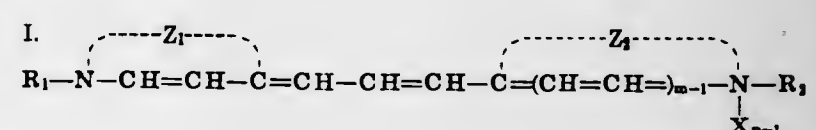
Claims priority, application Japan, Nov. 2, 1966, 41/72263

Int. Cl. G03c 1/10

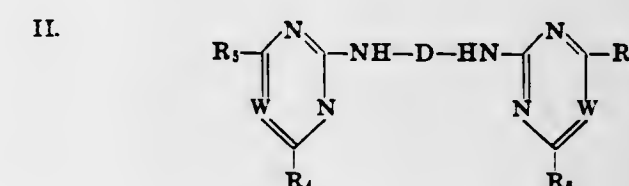
U.S. Cl. 96-130

9 Claims

A photographic silver halide emulsion having incorporated therein the sensitizing dye represented by the following general formula I:



wherein Z1 represents the nonmetallic atoms necessary for forming 4-quinoline nucleus, Z2 represents the nonmetallic atoms necessary for forming a 5- or 6-membered ring, R1 and R2 represent substituted or unsubstituted alkyl groups, X is an acid anion group, m is 1 or 2, and p is 1 or 2, said dye forming an intramolecular salt when p is 1, and together with a compound having triazine nuclei or pyrimidine nuclei represented by the following general formula II:



wherein D represents a divalent aromatic group combining with each other the pyrimidinylamino groups or triazinylamino groups shown in the above formula,

R3, R4, R5 and R6 each represents a hydrogen atom, a hydroxyl group, an alkoxy group, a halogen atom, an amino group, an alkyl amino group or a substituted alkylamino group, such as, a hydroxyalkylamino group, a sulfoalkylamino group, a cycloalkylamino group, an

arylamino group and a heterocyclic amino residual group, and
W represents CH- or N-.

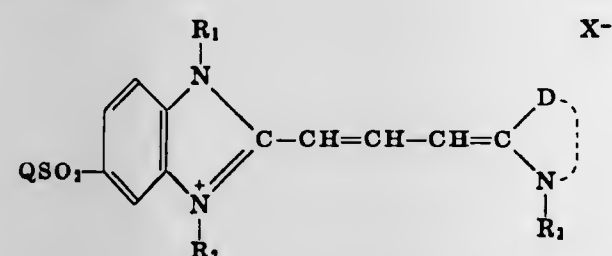
3,615,642 DYE-SENSITIZED PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Geoffrey Ernest Ficken, and Konrad Jerzy Bannert, both of Ilford, England, assignors to Ilford Limited, Ilford, England
Filed Nov. 17, 1967, Ser. No. 683,830

Claims priority, application Great Britain, Nov. 28, 1966, 53172/66; Dec. 19, 1966, 56607/66
Int. Cl. G03c 1/18

U.S. Cl. 96-130

This application describes a trimethincyanine dye of the general formula:



wherein either one of R₁ and R₂ is an alkyl group and R₃ and the other of R₁ and R₂ is an alkyl, aryl, sulphaalkyl, hydroxyalkyl, alkoxyalkyl, carboxyalkyl, aralkyl or carboxybenzyl group, or an acylsulphamoyl alkyl group of the formula —(CH₂)_nSO₂NHCOR₃, where n is an integer from one to six and R₃ is an alkyl group, or an alkyl or aralkyl sulphamoylalkyl group of the formula —(CH₂)_nSO₂NHR, where n is an integer from one to six and R₁ is an alkyl or aralkyl group, Q is phenyl or phenyl substituted with at least one halogen, alkyl or alkoxy substituent, and D represents the atoms necessary to complete a benzimidazole, benzoxazole, benzothiazole, benzoselenazole or 3H-indole ring, the benzene nucleus in all cases being optionally substituted, and X is an anion.

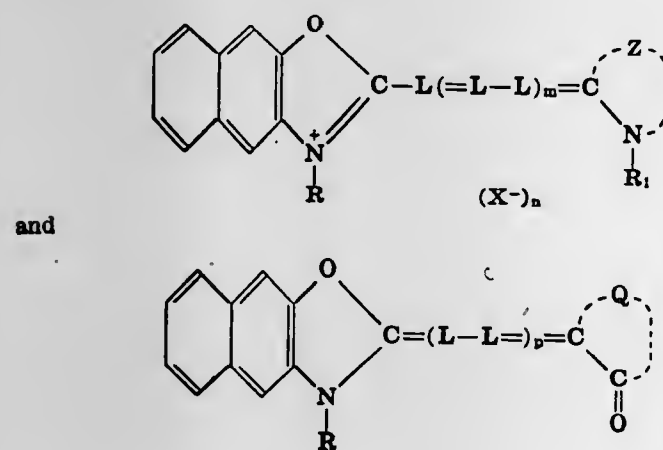
3,615,643 DIRECT POSITIVE SILVER HALIDE EMULSION CONTAINING A DYE WITH AT LEAST ONE NAPHTH(2,3) OXAZOLE NUCLEUS

Keisuke Shiba; Masanao Hinata; Akira Sato, and Masao Sawahara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1970, Ser. No. 1,488
Claims priority, application Japan, Jan. 8, 1969, 44/1555
Int. Cl. G03c 1/08, 1/10

U.S. Cl. 96-137

A fogged direct positive silver halide photographic emulsion containing a dye selected from the group represented by the following formulae:



wherein R and R₁, which may be the same or different, each represents an alkyl group, an alkoxyalkyl group, a hydroxyalkyl group, a carboxyalkyl group, a sulphaalkyl

group, an allyl group, an aralkyl group, or a substituted aralkyl group, L is a methine chain or a methine chain substituted by alkyl or aryl groups; Z is an atomic group necessary to complete a five- or six-membered nitrogen containing heterocyclic nucleus; Q is an atomic group necessary to complete a five- or six-membered heterocyclic nucleus; m and p are individually 0, 1 or 2; X is an anion and n is 0 or 1.

3,615,644 OPTICALLY SENSITIZED SILVER HALIDE EMULSIONS

Johannes Gotze, Bergisch-Neukirchen, and Oskar Rlester, Leverkusen, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

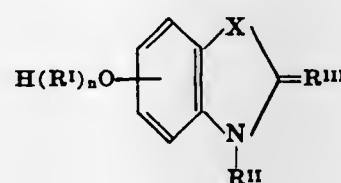
Filed Feb. 17, 1969, Ser. No. 799,566

Claims priority, application Germany, Nov. 24, 1968, P 16 70 029.1

Int. Cl. G03c 1/10, 1/08

U.S. Cl. 96-138

In a photographic silver halide emulsion spectrally sensitizing the emulsion with a sensitizer of the general formula



in which:

X is a sulfur, selenium or oxygen atom, or a group —CH=

CH—;

n is 1-5;

R' is an ethyleneoxy or a 1,2-propyleneoxy unit;

R'' is a saturated or unsaturated aliphatic group having up to five carbon atoms, suitably substituted;

R''' is a monomethylene group substituted with a five- or six-membered heterocyclic ring containing nitrogen as ring member; or a trimethylene, pentamethylene or heptamethylene chain carrying in the terminal position an oxazole, benzoxazole, naphthoxazole, thiazoline, thiazole, benzothiazole, naphthothiazole, selenazole, benzoselenazole, naphthoselenazole, thiadiazole, imidazole, benzimidazole or 2- or 4-quinoline ring, or a dimethylene or tetramethylene which carries in the terminal position a rhodanine, thiohydantoin, thioarbuturic acid or pyrazolone radical, or a rhodanine, thiohydantoin, thioarbuturic acid or pyrazolone radical.

3,615,645 METHOD OF MAKING FOOD PRODUCT CONTAINING GEL PARTICLES

John H. Forkner, 6037 North Van Ness Blvd., Fresno, Calif.
Filed July 31, 1968, Ser. No. 749,035

Int. Cl. A23l 1/06, 1/10, 1/00

U.S. Cl. 99-1

A food composition consisting of a food material (e.g., cereal flour, starch, dough, etc.) together with discrete composite food particles dispersed therein is prepared by forming a mixture containing gel-forming matrix material together with separate additive fragments, chilling this mixture to brittize the same, comminuting the chilled material with comminution of the nongel materials, and then dispersing the resulting composite chilled particles in another food material (e.g., pulverulent material or moist dough).

3,615,646 FOOD PACKAGE AND PROCESS

William H. Neely, Indianapolis; John C. Calhoun, Indianapolis; George C. Kolb, Indianapolis, and Edward S. Lindley, Beech Grove, all of Ind., assignors to Stokely Van Camp, Inc., Indianapolis, Ind.

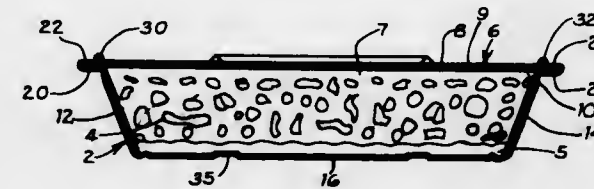
Filed Feb. 17, 1969, Ser. No. 799,586

Int. Cl. B65d 81/34

U.S. Cl. 99-1

This invention is concerned with a frozen food package which generally comprises a sheet metal tray and a paper

composite sheet top which is crimped to the tray. The bottom of the tray is covered with a carefully controlled amount of cooking liquid. The overall package has a critical moisture content. Over this cooking liquid is positioned a



controlled amount of individually frozen or chopped vegetable in discrete particles. When the composite package is placed over a heat source, the contents are quickly heated to a palatable temperature without burning or charring.

3,615,647 EXPANDED FAT-COATED ANIMAL FOOD HAVING A COHERENT COATING

Clyde P. Kassens, Liberty, Ind., assignor to Perk Foods Co.
Filed Mar. 27, 1968, Ser. No. 716,309

Int. Cl. A23k 1/10

U.S. Cl. 99-2 R

A porous, expanded animal food is provided comprising chunks having starch-containing and protein-containing constituents. The chunks are covered with a coating of fat, which coating is overlaid with a coherent coating containing dextrinized starch to prevent the migration of volatile ingredients and nutrients away from the food product and to provide a hard, nongreasy coating which also prevents fat loss or leakage from the surface of the chunks and protects the fat against oxidative rancidity. The coherent coating is applied by wetting the surface of the chunks with an aqueous solution of the dextrinized starch and thereafter drying off the aqueous solvent.

3,615,648 PROCESS FOR THE EXTRACTION OF TOXIC SUBSTANCES FROM A PRESSCAKE OF BRASSICA NAPUS

Fernando Monckeberg Barros, Santiago, Chile, assignor to University of Chile as represented by Ruy Barbosa Popolizio, Rector, Santiago, Chile

Filed Oct. 29, 1968, Ser. No. 771,647

Int. Cl. A23l 1/20; A23k 1/00

U.S. Cl. 99-2 R

A process for improving the biological value of proteins in Brassica napus is shown. A presscake remaining after the plant is pressed and extracted to remove oils is subjected to the following steps. The presscake is first macerated in a quantity of water at room temperature for a period of 15 hours, the ratio of presscake to water being 1:5 by weight. The macerated presscake is then filtered from the water and agitated in a second quantity of water for a period of 3 hours. The extracted presscake is filtered from the second quantity of water and dried at a temperature not above 60° C. The dried presscake is then finely ground.

3,615,649 METHOD AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYHALOHEMIACETAL DERIVATIVES OF SACCHARIDES

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, both of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Dec. 3, 1969, Ser. No. 881,915

Int. Cl. A23k 1/16

U.S. Cl. 99-2 R

Polysaccharide derivatives of saccharides and especially polysaccharides improve the feed efficiency of commercial ruminant animals by inhibiting methanogenesis in the rumen. The derivatives are inexpensive to prepare and have no unpleasant taste, odor or stability problems. A preferred compound is the chloral-starch condensation

product which may be added to whole feed, used as a premix or in salt blocks.

3,615,650 FEED RATION AND FEEDING PROCEDURE FOR THE ELIMINATION OF PESTICIDE RESIDUES IN POULTRY

Stanley B. Smith, Springville, N.Y., assignor to Agway, Inc., Syracuse, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,306

Int. Cl. A23k 1/00

U.S. Cl. 99-4

This invention concerns an improved feed ration and feeding procedure for the removal of chlorinated hydrocarbon pesticide residues, and other fat-soluble pesticide residues, from poultry meat and eggs, where the fowls have been exposed to, or have ingested, chlorinated hydrocarbon or other fat-soluble pesticide residues.

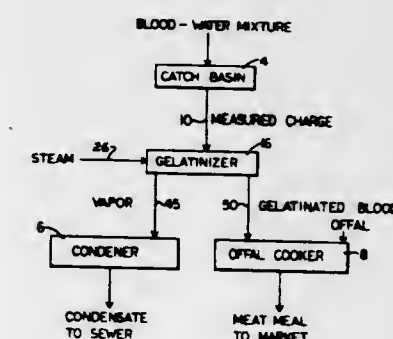
3,615,651 GELATINIZING BLOOD FOR FEED

George W. Parks, Jr., 314 6th St., Snyder, Tex.
Filed Feb. 4, 1969, Ser. No. 796,450

Int. Cl. A23k 1/04; A23j 1/06

U.S. Cl. 99-7

11 Claims



A mixture of blood and water is collected in catch basins on the slaughter floor of a slaughterhouse. A charge of blood and water is transferred from the catch basin to a closed container or gelatinizer where about 50 or 60 percent of the water content is vaporized through the injection of live steam into the gelatinizer and also by adding heat through steam coils in the gelatinizer. The live steam also agitates the charge. Thereafter the gelatinizer is closed and the gelatinized blood thus formed is removed by increasing the pressure in the vessel, forcing the gelatinized blood out a drain.

3,615,652 METHOD OF MAKING ANIMAL FOOD

Hovey M. Burgess, Greenwich, and Robert W. Meilentin, Westport, both of Conn., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of application Ser. No. 486,586, Aug. 23, 1965, now Patent No. 3,982,985, Continuation-in-part of

application Ser. No. 295,604, July 15, 1963, now Patent No. 3,202,514, Continuation-in-part of application Ser. No. 216,723, Aug. 14, 1962, now pending, Continuation-in-part of

application Ser. No. 829,510, July 27, 1959, now pending. This application Dec. 5, 1969, Ser. No. 882,694

Int. Cl. A23k 1/00, 1/10

U.S. Cl. 99-7

Nutritionally balanced animal food is pasteurized into a stable intermediate moisture product by employing an antimicrobial and sugar in amounts sufficient to increase osmotic pressure and thereby stabilize the pasteurized matrix, the matrix being thereafter cooled and shaped into the desired form.

3,615,653

TREATING GRAINS AND THE LIKE WITH ACIDIC SOLUTION OF LIGNOSULFONATE

Elmer H. Fults, 219 Woodward Ave., and George E. Sanko, 3734 W. Feemster Ave., both of Visalia, Calif.
Continuation-in-part of application Ser. No. 588,329, Oct. 21, 1966, now abandoned. This application Sept. 24, 1969, Ser. No. 860,799

Int. Cl. A23k 1/00, 3/00; A23l 1/10

U.S. Cl. 99—8

21 Claims

A method of treating grains, seeds, and the like to improve the chemical and physical characteristics thereof by applying thereto acidic aqueous solutions containing lignosulfonate and a wetting agent for breaking down the relatively hard waxy coating from the grains which provides accelerated penetration of the solution into the endosperm thereof for improved starch gelatinization and nutrient utilization which permits feeding of such treated grains to animals without further chemical or mechanical processing. The method of the present invention is further employed as a pretreatment for whole grains which are further processed for consumption by either humans or animals whereby the above treated grains are rendered more ductile and malleable to facilitate such subsequent mechanical processes including rolling, cracking, grinding, popping and the like.

3,615,654

METHOD OF TREATING MICROBIAL CELLS

Yaichi Ayukawa, Tokyo; Seishi Shinya, Chiba, and Masaki Tamura, Tokyo, all of Japan, assignors to CPC International Inc.

Filed May 17, 1968, Ser. No. 729,922

Int. Cl. A23k 1/00

U.S. Cl. 99—9

23 Claims

Covers a method for upgrading microbial cells. Particularly covers a method of treating microbial cells found in microorganisms such as yeast, bacteria, fungi, algae, etc. by contacting the cells with anhydrous liquid ammonia. The thus treated cells are improved with respect to such characteristics such as odor, color, taste, etc. and have increased protein content. Microbial cells such as yeast which have a substantial ribonucleic acid content when thus treated are found to have a decreased ribonucleic acid content.

3,615,655

METHOD FOR PREPARING HIGH PROTEIN CEREAL GRAIN PRODUCT

Jere E. Freeman, Hinsdale, and Richard M. Olson, North Riverside, both of Ill., assignors to CPC International Inc., New York, N.Y.

Filed July 19, 1967, Ser. No. 654,360

Int. Cl. A23j 1/12; A23l 1/10

U.S. Cl. 99—17

9 Claims

A protein rich product which is particularly useful for human consumption is prepared from a cereal grain by rupturing the cells of the cereal grain germ, abrading the ruptured germ to free adherent protein particles from the remainder of the germ cell fragments, and separating out a protein rich fraction low in fiber content from a protein lean germ residue fraction, relatively high in fibrous type materials.

3,615,656

PROCESS FOR THE PRODUCTION OF FLAVORED PROTEIN FOODS

Don Edward Alden, Park Forest, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Mar. 8, 1968, Ser. No. 711,538

Int. Cl. A23j 1/26

U.S. Cl. 99—17

4 Claims

Simulated and artificially flavored proteinaceous food products are prepared using an expanded protein material, by a critical sequence of steps wherein a solution of flavoring material is applied to the expanded material and thereby

absorbed throughout the interstices thereof and a melted fat is also applied and dispersed throughout the protein structure whereafter the treated material is heated so as to combine the artificial flavoring and fat materials and to reduce the moisture content to a shelf stable level.

3,615,657

PROCESS FOR PRODUCING COTTONSEED PROTEIN CONCENTRATE

Edward A. Gastrock, Metairie; Esler L. D'Aquin, New Orleans, and Paul H. Eaves, Metairie, all of La.

Filed Sept. 13, 1968, Ser. No. 759,647

Int. Cl. A23j 1/14

U.S. Cl. 99—17

4 Claims

A process for producing a high protein cottonseed concentrate from cottonseed meats which process is characterized by an integrated sequence of drying, flaking, disintegrating, screen separating and gravity separating steps. The process accomplishes the substantially complete removal of intact cottonseed pigment glands and as a consequence thereof, the isolation of gland-free material, which material can be exalted to exhibit a protein content as high as 73 percent by weight on an oil and moisture free basis.

3,615,658

PREPARATION OF BREAD-LIKE BAKERY PRODUCTS

Elmer F. Glabe, Chicago, Ill., assignor to Food Technology, Inc., Chicago, Ill.

Filed Jan. 29, 1969, Ser. No. 795,067

Int. Cl. A21d 13/04, 13/06

U.S. Cl. 99—17

10 Claims

Honeycomblake bakery products, for example, crustless bread, are prepared by mixing a starch and oil seed protein and water to form a dough mixture, heating said dough mixture with live steam, with agitation, in a closed vessel until a baked honeycomblake product is formed, and recovering said product.

3,615,659

PREPARING A CHOCOLATE-FLAVORED BEVERAGE

Meyer Michael Weber, Milwaukee, Wis., assignor to Wisconsin Research Associates

Filed Aug. 28, 1968, Ser. No. 755,832

Int. Cl. A23g 1/00

U.S. Cl. 99—26

10 Claims

A sediment-free chocolate-flavored beverage is prepared by mixing a fat-free cocoa extract with water or milk and heating to 110–130° C., cooling to 5–20° C. to form a precipitate, separating the precipitate, packaging the beverage and sterilizing the packaged beverage.

3,615,660

HOP EXTRACT EMULSION, AND PREPARATION AND USE THEREOF

Vincent S. Bavisotto, Mahtomedi, Minn., and Gavin L. Hansen, Grafton, Wis., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 491,391, Sept. 29, 1971, now abandoned. This application June 11, 1969,

Ser. No. 832,445

Int. Cl. C12c 9/02

U.S. Cl. 99—50.5

7 Claims

Preisomerized and reduced hop extracts are stabilized by mixing with emulsifying agent, gum arabic, and preferably sorbitol in an aqueous medium. The products are cold water dispersible, and when added to the wort or beer after kettle boiling result in light-stable beer or ale.

3,615,661

REPLACEMENT OF SODIUM CASEINATE

Rudolph H. Ellinger, New Canaan, Conn., and Mark G. Schwartz, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed July 15, 1968, Ser. No. 744,680

Int. Cl. A23c 13/12, 19/12

U.S. Cl. 99—54

15 Claims

Compositions of dry whey solids and lactalbum phosphate are provided which exhibit functional properties in food compositions as well as nutrient value. The lactalbum phosphate is present in an amount of at least one percent based on the percent of whey solids. These compositions are preferably used as replacement, total or partial for sodium caseinate in nonbutterfat dairy products.

3,615,662

REPLACEMENT OF SODIUM CASEINATE

Rudolph H. Ellinger, New Canaan, Conn., and Mark G. Schwartz, Yonkers, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed July 15, 1968, Ser. No. 744,679

Int. Cl. A23c 13/12, 19/12

U.S. Cl. 99—54

21 Claims

Compositions of demineralized dry whey solids and either monosodium phosphate or insoluble metaphosphate are provided which exhibit functional properties in food compositions as well as nutrient value. The phosphate is present in an amount of at least one percent based on protein. The demineralized dry whey solids contain no more than 5.0 percent by weight of whey minerals. These compositions are preferably used as replacement, total or partial, for sodium caseinate in nonbutterfat dairy products.

3,615,663

PRODUCTION OF NONHYGROSCOPIC ACID WHEY POWDER

James Joseph Becker, River Falls, Wis., assignor to The DeLaval Separator Company, Poughkeepsie, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,622

Int. Cl. A23c 21/00

U.S. Cl. 99—57

4 Claims

After pasteurizing the acid whey and condensing it in an evaporator, it is flash-cooled and passed to a cold-wall storage tank of the type having an agitator which sweeps the exposed surface of the cold wall. The whey is thus stored until small crystals of the lactose are formed and the whey acquires a smooth texture in which the lactose crystals are invisible to the naked eye, and thereafter the conditioned whey is spray dried to form a powder.

3,615,664

TREATMENT OF WHEY

Leo H. Francis, Burlingame, Calif., assignor to Foremost-McKesson, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 480,068, Aug. 16, 1965, now abandoned, Continuation-in-part of application Ser. No. 521,116, Jan. 17, 1966, now abandoned, Continuation-in-part of application Ser. No. 624,306, Mar. 20, 1968, now abandoned, Continuation of application Ser. No. 733,965, May 31, 1968, now abandoned. This application Dec. 5, 1969, Ser. No. 878,972

Int. Cl. A23c 21/00

U.S. Cl. 99—57

3 Claims

Liquid whey is subjected to concentration, crystallization of lactose and removal of lactose crystals. The resulting whey is clarified and electrodialyzed. It can be sold or used in liquid form, or may be further concentrated and dried to make a demineralized dry product with a reduction in ash content of at least 15 percent.

891 O.G.—57

3,615,665

CONFINED VOLUME COFFEE AROMA

William V. White, deceased, late of Spring Valley, N.Y. (by Grace H. White, heir and executrix); Claudia L. White and Roger E. White, heirs, Spring Valley, N.Y.; James P. Mahlmann, Wayne, and Robert P. Stolz, Dumont, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 571,382, Aug. 10, 1966, Pat. No. 3,476,566. Filed Aug. 12, 1969, Ser. No. 849,531

Int. Cl. A23f 1/04

U.S. Cl. 99—65

11 Claims

A new method of stripping desirable volatiles from roasted coffee has been discovered which does not significantly degrade the quality of the roasted coffee. Roasted coffee is contacted with dry steam in a confined volume at above atmospheric pressures. The pressure is then relieved and the vapors which escape due to the reduction of pressure in the column are condensed to recover aromatic and flavor constituents.

3,615,666

HEAT TREATMENT OF STEAM DISTILLATE

Stephen L. Schlichter, Green Township, Hamilton County, and Frederick M. Joffe, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 31, 1969, Ser. No. 873,102

Int. Cl. A23f 1/04

U.S. Cl. 99—65

6 Claims

Disclosed is a controlled heat treatment of steam distillate obtained from steam distillation of roast and ground coffee. The heat-treated distillate is added back to an instant coffee processing stream to provide a unique flavored product.

3,615,667

FLAKED COFFEE AND PRODUCTS PRODUCED THEREFROM

Frederick M. Joffe, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 823,954, May 12, 1969, now abandoned. This application Apr. 20, 1970, Ser. No. 30,246

Int. Cl. A23f 1/02, 1/06, 1/10

U.S. Cl. 99—68

46 Claims

Flaking of roast and ground coffee can be used advantageously to control or regulate the flavor and aroma of coffee as well as the extractability. Utilizing the varying effect of flaking on high, low, and intermediate grade coffees, an improved roast coffee product comprising as a major portion low and/or intermediate grade flaked coffees, and as a minor portion high-grade roasted and ground coffee, is prepared. Also disclosed are flakes having particularly desirable physical properties.

3,615,668

METHOD FOR PROCESSING PARTICULATE SOLIDS

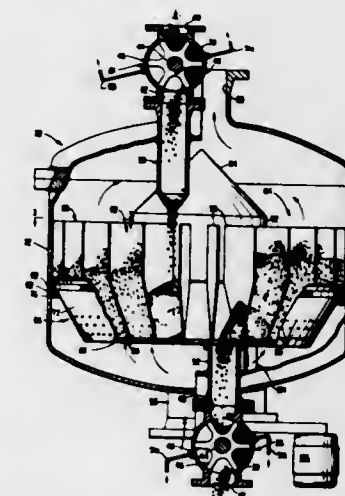
Horace L. Smith, Jr., Richmond, Va., assignors to Smitherm Industries, Inc., Richmond, Va.

Filed June 8, 1970, Ser. No. 44,464

Int. Cl. A23f 1/02

U.S. Cl. 99—68

11 Claims



Method for processing particulate solids in a continuous operation, which includes a reactor, a system for heating and

circulating a fluid through the reactor, and arrangements for continuously supplying material to be processed to and discharging it from the reactor, the processing being accomplished by convective heating of the solids.

3,615,669

PROCESS FOR AGGLOMERATING INSTANT COFFEE
Eddy R. Hair, Colerain Township; Robert A. Cody, Forest Park, and Aubrey R. McLain, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 26, 1967, Ser. No. 649,020
Int. Cl. A23f 1/08

U.S. Cl. 99-71

Instant coffee particles can be agglomerated efficiently by spraying onto a gently agitated bed of the particles a small amount of a highly concentrated solution of coffee solubles in water.

3,615,670

HEATED SURFACE AGGLOMERATION
Boleslaw Sienkiewicz, Pearl River, and William J. Meyer, Orangeburg, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 27, 1969, Ser. No. 811,209
Int. Cl. A23f 1/04

U.S. Cl. 99-71

A process for agglomeration wherein particles to be agglomerated are wetted and spread onto a solid surface carrier. The carrier is passed over a heated zone in order to raise the temperature of the particles to their fusion point and dry the fused agglomerates. The particles are then carried over a second zone where the temperature of the particles is reduced rapidly to about room temperature. The agglomeration process of this invention eliminates the need for large drying towers and avoids the necessity of costly product pretreatment required in many conventional agglomeration processes.

3,615,671

DRY FOOD PRODUCTS IN SPUN FILAMENTS AND METHOD OF MAKING SAME
Myron D. Shoaf, Battle Creek; Charles W. Groesbeck, Marshall, Mich., and David G. Cowart, Chicago, Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 19, 1968, Ser. No. 722,560
Int. Cl. A23f 1/00

U.S. Cl. 99-78

A sugar mix containing at least 60 percent sucrose and a humectant is spun under controlled humidity. The spun sugar filaments are then compressed around dry, particulate food pieces such as a cereal or a beverage mix without affecting the solubility of the filaments. The products is packaged within a moistureproof package.

3,615,672

METHOD OF PREPARING A COLORED, ARTIFICIALLY SWEETENED BEVERAGE MIX
La Monte D. Pischke, Newburgh, Ind., assignor to General Foods Corporation, White Plains, N.J.

Filed May 31, 1968, Ser. No. 733,257
Int. Cl. A23f 1/26

U.S. Cl. 99-78

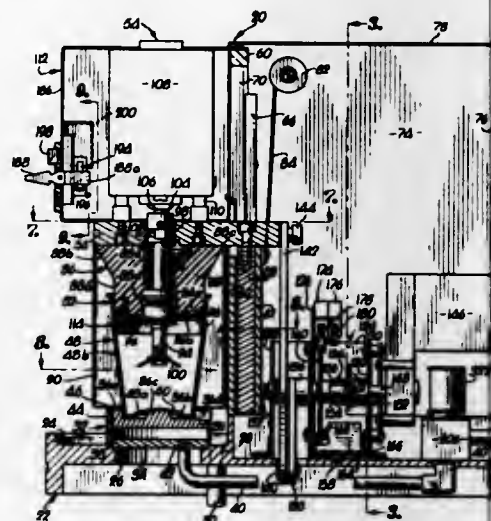
Corn syrup solids, an artificial sweetener, and a coloring agent are blended and mixed with water to form a bulking agent solution. The solution is dried to density of 0.05 to 0.3 g./cc. At least 50 percent by weight of the bulking agent is blended with flavoring and opacity agents to form a beverage mix. The bulking agent comprises at least 80 percent by volume of the beverage mix.

3,615,673

METHOD AND APPARATUS FOR PREPARING CARBONATED BEVERAGES WITHIN A CUP
Stewart L. Black, Lee's Summit, and John C. Littlefield, Kansas City, both of Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 20, 1968, Ser. No. 792,196
Int. Cl. A23l 1/00; F25c 7/00

U.S. Cl. 99-79



16 Claims

A disposable cup containing beverage ingredients including ice is placed within a rigid receptacle. A closure is moved into the open top of the cup sealing its interior from the ambient atmosphere. A cutter carried by the closure is rotated within the cup to agitate the ingredients while carbon dioxide is forced into the cup through the closure at a pressure which would normally deform the cup walls. Following the agitation, the closure lifts out of the cup under the influence of the pressurized carbon dioxide. Means are disclosed to cleanse the closure and cutter.

3,615,674

PROCESS FOR BLENDING SELECTED FRACTIONS OF CEREAL GRAIN AND USE THEREOF
Edwin J. Bass, St. Paul, and William R. Johnston, Wayzata, both of Minn., assignors to International Multifoods Corporation, Minneapolis, Minn.

Filed Aug. 19, 1968, Ser. No. 753,407
Int. Cl. A23l 1/10, 1/14, 1/16

U.S. Cl. 99-80

A process of blending selected fractions of a given cereal grain, to obtain a better balance of nutrient properties than obtained from the whole grain flour from said cereal grain. One blend is obtained through combining wheat fractions: second clear, wheat germ and millfeed. The blend is further processed by heating and increasing its moisture content to form pellets and then ground to provide a processed blend that is selectively converted into a base for soup, pudding, beverage, etc. through adding flavoring and/or coloring materials; or ground and then through the addition of other materials and further processing, converted into a pasta-like product.

3,615,675

METHOD FOR MAKING CENTER-FILLED PUFFED FOOD PRODUCT
Lawrence Wisdom, Dallas; David P. Fowler, Fort Worth, Tex., and Robert E. Zinn, Lexington, Mass., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed July 31, 1967, Ser. No. 657,251
Int. Cl. A23l 1/10, 1/18

U.S. Cl. 99-83

A light puffed or expanded food product which has a core filled with an edible pastelike or creamy material. The

3,615,680

HOME BAKING PROCESS
Richard Grant Henika, Alamo; John C. Colmey, Diablo, and Marlene R. Henselman, Pleasanton, all of Calif., assignors to Foremost-McKesson, Inc., San Francisco, Calif.

Filed Nov. 19, 1968, Ser. No. 776,884
Int. Cl. A21d 2/28, 2/04, 8/02

U.S. Cl. 99-90 R

14 Claims

A home process for making leavened bread, rolls, buns, sweet goods, in a relatively short period of time, with minimal requirements for working and kneading of the dough, and with a high degree of tolerance to processing errors. Baked products can be satisfactorily produced in less than 90 minutes, and kneaded and leavened dough is ready for proofing and baking in less than 30 minutes. The processing involves mixing of essential dough ingredients with gluten activating and maturing agents, with the activating agent being present at levels sufficient to react with substantially all of the protein in the dough to achieve desired dough viscosities in a very short mixing period, as determined by dough development and extensibility. Starch modifying agents are also used for improvement of flavor and dough properties. Slow acting oxidants or maturing agents are also advantageously employed.

3,615,676

PROCESS FOR SUGAR COATING READY-TO-EAT CEREAL

William L. McKown, St. Louis Park, and Philip K. Zietlow, Wayzata, both of Minn., assignors to General Mills, Inc.

Filed Dec. 18, 1967, Ser. No. 692,630
Int. Cl. A23l 1/10

U.S. Cl. 99-83

10 Claims

A sweetened, nonsticky, ready-to-eat cereal product and process for forming it. Crystalline sugar is applied to the surface of cereal pieces, and caused to adhere thereto by moistening the cereal pieces with a solution formed of water and an edible binding agent.

3,615,677

HIGH PROTEIN ALIMENTARY PASTE PRODUCTS
Rudolph Karl Scharschmidt, Battle Creek, Mich.; Lee F. Aubel, Santa Ana, Calif., and Morton Kaplan, Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 6, 1970, Ser. No. 9,433
Int. Cl. A23l 1/16

U.S. Cl. 99-85

15 Claims

Alimentary paste products, high in protein but low in cost, are prepared from corn flour, soy flour of NSI of greater than 50 and wheat flour by shaping a dough made from the blended flours and drying the shaped dough. Either conventional paste drying of the shaped dough can be employed or the shaped dough pieces can be rapidly dried at elevated temperatures, provided the starch in the dough is at least partially gelatinized at some point during the process.

3,615,678

PROCESS FOR MAKING COVERED PIZZA
Frank P. Tangel, Oakland, and Argillo Musetti, Fairlawn, both of N.J., assignors to Buitoni Foods Corporation

Filed Oct. 31, 1968, Ser. No. 772,078
Int. Cl. A21d 8/06

U.S. Cl. 99-86

7 Claims

A process for producing pizza having two dough layers with a tomato base sauce in a pocket between them; the dough is made of durum flour and leavening, is formed into sheets, a quantity of sauce is placed between the sheets, the raw pizza being then proofed, and cooked between plates having a predetermined spacing.

3,615,679

FROZEN PIZZA AND DOUGH
Frank P. Tangel, Oakland, and Argillo Musetti, Fairlawn, both of N.J., assignors to Buitoni Foods Corporation

Filed Oct. 31, 1968, Ser. No. 772,389
Int. Cl. A21d 13/08

U.S. Cl. 99-86

21 Claims

The present invention relates to a frozen food product in the nature of a pizza which may be baked to completion in an ordinary toaster. This food product has two layers of leavened dough sealed at the edges and forming a pocket therebetween in which is a filling of tomato sauce and cheese. A dough is provided of Durum wheat, leavening and other ingredients.

3,615,683

USE OF MICROWAVES FOR BAKING
Peter Xenophon Hoynak, Fort Lee, N.J., assignor to CPC International Inc.

Filed May 2, 1968, Ser. No. 726,238
Int. Cl. A21d 13/08

U.S. Cl. 99-92

1 Claim

The present invention relates to the baking of cakes by the use of microwaves. More particularly, the present invention relates to the use of dextrose in a cake formulation which is subsequently baked in a microwave oven. It has been discovered that dextrose may be freely used in cake formulations without development of color when the cake formulation is baked in a microwave oven.

3,615,684

PASTRY SHELL MIX

Robert Workin, Valley Stream, N.Y., assignor to International Multifoods Corporation, Minneapolis, Minn.
Continuation-in-part of application Ser. No. 782,415, Dec. 8, 1968, now abandoned. This application Feb. 19, 1969, Ser. No. 800,755
Int. Cl. A21d 13/08

U.S. Cl. 99-94

3 Claims

A pastry shell mix for producing a product by the addition of water and baking consisting essentially of gelatinized wheat flour, gelatinized corn flour, gelatinized wheat starch and/or gelatinized corn starch; gelatinized tapioca starch, fat, salt and as optional ingredients leavening and sodium caseinate.

3,615,685

PREPARATION OF ACTIVE DRY YEAST

Eric Fantozzi, Alloa, Scotland, and William E. Trevelyan, Surrey, England, assignors to The Distillers Company (Yeast) Limited, Surrey, England
Filed Nov. 19, 1968, Ser. No. 777,160
Claims priority, application Great Britain, Nov. 23, 1967, 53280/67
Int. Cl. A23j 1/18

U.S. Cl. 99-96

5 Claims

An aqueous suspension of yeast is sprayed into a drying atmosphere. The conditions are selected so that the average particle size of the product is between about 15 and about 500 microns, preferably 20 and 200 microns and its dry matter content is between about 27 percent and about 50 percent, preferably 40 to 45 percent by weight. Further drying can be effected under mild conditions avoiding mechanical agitation or pressure to give an active dried yeast product containing up to about 97 percent, by weight, of dry matter.

3,615,686

SHAPING OF FOODSTUFFS

Robert Swinburn Marshall, Lowestoft, England, assignor to Lever Brothers Company, New York, N.Y.
Filed July 30, 1969, Ser. No. 845,970
Claims priority, application Great Britain, Aug. 5, 1968, 37343
Int. Cl. A23p 1/00

U.S. Cl. 99-100 P

7 Claims

A method of forming unit portions of foodstuffs such as reformed shrimp in which the food material is extruded through a nozzle which is of distorted or helical form while in a frozen state and is then subdivided and set in its distorted or helical form.

3,615,687

METHOD FOR PRODUCING CANDIED FRUITS

Kazuo Mochizuki, Takarazuka; Kazuko Isobe, Osaka, and Yoshio Sawada, Fukushima, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Aug. 29, 1967, Ser. No. 663,946
Claims priority, application Spain, Aug. 29, 1966, 330,686
Int. Cl. A231 1/06

U.S. Cl. 99-102

9 Claims

The time required for candying fruits such as cherries, apricots, plums, prunes and jujubes is remarkably shortened by preliminarily immersing the said fruits in an aqueous solution of the enzymatic composition produced by the cultivation of *Aspergillus niger* and thereafter carrying out the candying process.

3,615,688

METHOD OF MANUFACTURING A SHAPED WHOLE TISSUE HEAT-PROCESSED MEAT PRODUCT

Francis G. Connick, Downers Grove, and Warren R. Schack, Western Springs, both of Ill., assignors to Swift & Company, Chicago, Ill.
Filed Apr. 5, 1968, Ser. No. 719,225
Int. Cl. A22c 18/00; A23b 1/00

U.S. Cl. 99-107

3 Claims

Various innovations and improvements are applied to segments of whole meat which are reformed and molded under predetermined conditions, packed into containers and heat processed. The resulting meat product is bound together in a composite mass conforming substantially to that of the interior of the container and possessing a third phase adhesive boundary line between the meat chunks that is substantially undetectable to the naked eye.

3,615,689

POULTRY PROCESSING

Sidney Malinow, Hickory Hills; David R. Erickson, Downers Grove, and Charles A. Overley, Chicago, all of Ill., assignors to Swift & Company, Chicago, Ill.
Filed Apr. 8, 1968, Ser. No. 719,733
Int. Cl. A22c 21/00

U.S. Cl. 99-107

3 Claims

Certain eating qualities of meat items, particularly poultry, are improved by injecting therein quantities of an edible emulsion having a melting point between about 76°-110° F. and a relatively narrow plastic range, such as is obtained by emulsifying a minor amount of water with a major amount of vegetable oil product comprised preferably of a lauric acid oil or mixtures of lauric oil and other oils or fats and/or hydrogenated forms and mixtures thereof, using a small amount of a mixed hydrophilic-lipophilic emulsifier and ingredients such as salt, flavoring and coloring materials, etc.

3,615,690

PREPARATION OF MEAT AND CHEESE PRODUCT

Frank J. Pratt, Lisle, and Frank D. Schampel, Lombard, both of Ill., assignors to Armour and Company, Chicago, Ill.
Filed Nov. 12, 1968, Ser. No. 775,099
Int. Cl. A22c 18/00

U.S. Cl. 99-107

10 Claims

Lean and fat meat, water, seasoning and flavoring materials together with gelatin are cooked, cooled, and pizza cheese incorporated in the mixture to bring the cheese to a stringy state, the mixture being introduced into a mold and chilled to shape the mixture as a solid mass, the gelatin being in an amount whereby upon chilling the mixture, the mixture becomes solid and sliceable, but when heated above about 110° F. breaking up the mass into a flowable, spreadable body.

3,615,691

PRESERVATION OF MEAT COLOR

Adrianus Henricus Antonius Van Den Oord, Duiven, and De Vries, Bartholomeus, Arnhem, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.
Filed Jan. 27, 1969, Ser. No. 794,360
Claims priority, application Great Britain, Feb. 2, 1968, 5,328/68
Int. Cl. A23b 1/00; A231 3/34

U.S. Cl. 99-107

8 Claims

Meat products are given a stabilized color by means of tetrazole.

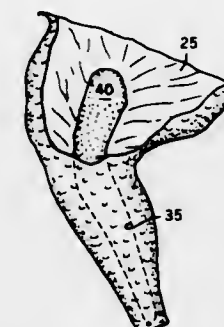
3,615,692

METHOD OF PREPARING A STUFFED POULTRY LEG

Kenneth O. Lovell, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed June 30, 1969, Ser. No. 837,662
Int. Cl. A22c 21/00; A23b 1/00

U.S. Cl. 99-107

4 Claims



A poultry product having a shape resembling the leg portion thereof is formed by removing the meat and skin from the femur and tibia portion of the leg in such a manner as to form a pocket in the tibia portion of the meat. The pocket may then be filled with a stuffing material and the meat portion which was around the femur bone folded over to form a stuffed poultry product resembling the leg thereof and which will retain the stuffing when subjected to cooking.

3,615,693

PROCESS FOR PREPARING READY-TO-EAT MEAT PRODUCTS

Fred W. Billerbeck, Jr., and Kerry S. Shoemaker, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.
Filed Sept. 7, 1967, Ser. No. 666,003
Int. Cl. A22c 18/00; B02c 18/00

U.S. Cl. 99-108

2 Claims

A meat-containing product including particulate meat portions produced through conversion of the raw animal flesh to an emulsified form by subjecting the raw meat to sufficient size reduction to destroy the tissue structure. The emulsified particles, of indiscernible size, are reformed (shaped) into portions of discernible size and heated, to at least the denaturation temperature of the raw meat, at a rate sufficient to maintain the reformed portions substantially intact. The resulting reformed meat portions have excellent mastication and digestion characteristics and are especially useful in the preparation of infant food.

3,615,694

PROTEINACEOUS FLAVORING AGENT AND METHOD OF MAKING SAME

William P. O'Donnell, Cherry Hill, N.J., assignor to Camden Food Specialties Co., Inc., Camden, N.J.
Filed June 3, 1968, Ser. No. 733,781
Int. Cl. A231 1/22

U.S. Cl. 99-140 R

1 Claim

The water soluble protein residue from a low temperature edible beef fat-rendering process is hydrolyzed with hydrochloric acid, filtered, and the solution condensed by steam distillation to a 45 to 55 weight percent solute level. This material is filtered, and the resulting solution forms a useful proteinaceous flavoring agent for soup bases.

3,615,695

SOURDOUGH FLAVORING COMPOSITION AND METHOD OF MAKING SAME

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed July 8, 1968, Ser. No. 743,049
Int. Cl. A231 1/22; A23c 9/12

U.S. Cl. 99-140

9 Claims

A casein containing material, preferably skim milk, is acidified with lactic acid or lactic acid forming bacteria, incubated with rennet until curd forms. The curd is separated, suspended in water or salt solution, inoculated

3,615,696

YEAST SENSORY STIMULATOR AND PROCESS OF MAKING SAME

Loren B. Sjostrom, Wakefield, and John H. Moriarty, Melrose, both of Mass., assignors to Ancheuser-Busch, Incorporated, St. Louis, Mo.
Filed July 22, 1968, Ser. No. 746,237
Int. Cl. A231 1/22; A23c 9/12

U.S. Cl. 99-140 R

9 Claims

Yeast sensory stimulator factor produced during the growth of *L. casei* on a suitable yeast sensory stimulator producing media. This factor, when added to food and beverage products, produces taste and salivating characteristics readily discernible to trained flavor panelists.

3,615,697

LACTIC FERMENTED MALT PRODUCT AND PROCESS OF PRODUCING SAME

Clifford M. Hollenbeck, Manitowoc, Wis., assignor to Red Arrow Products Company, Milwaukee, Wis.
Filed Oct. 29, 1968, Ser. No. 771,662
Int. Cl. A231 1/22; A21d 2/26

U.S. Cl. 99-140 R

17 Claims

A dry powdered additive for supplying malt flavor and lactic sourness to starch based foodstuffs is produced by anaerobically fermenting an aqueous dispersion of malt flour, advisably in whey, with a lactic acid producing micro-organism, removing the water, and grinding the product to a flour.

3,615,698

A METHOD FOR PREPARING SYNTHETIC HAM- AND BACON-FLAVORED COMPOSITIONS

Paul D. Thomas, Groton, Conn., assignor to Pfizer Inc.
Filed Dec. 31, 1968, Ser. No. 788,321
Int. Cl. A231 1/22

U.S. Cl. 99-140 N

8 Claims

A method for preparing synthetic ham- and bacon-flavored compositions comprising reacting, at elevated temperature, amino acids, sugars, vegetable protein hydrolysate, monosodium glutamate, and edible fat, and, after cooling, further adding 5'-ribonucleotides and hickory-smoke flavor.

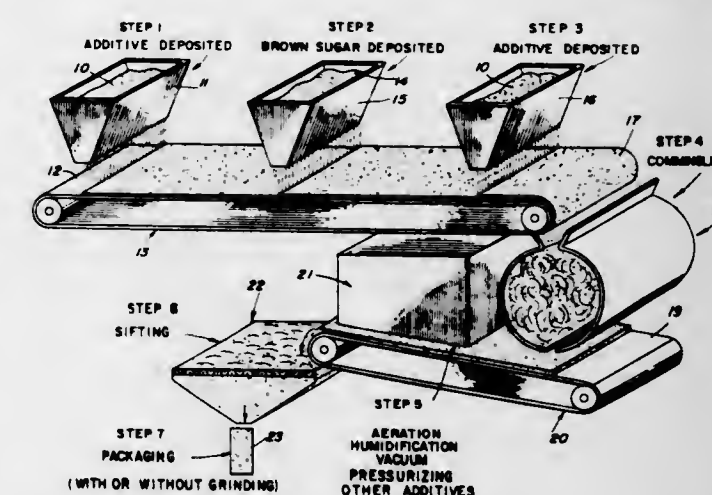
3,615,699

PREPARATION OF FREE-FLOWING BROWN SUGAR COMPOSITION

Justin Melvin Micevicz, Chicago, Ill., assignor to Pro-Col Corporation, Chicago, Ill.
Continuation-in-part of application Ser. No. 428,615, Jan. 28, 1965, now abandoned, Continuation-in-part of application Ser. No. 241,825, Dec. 3, 1962, now abandoned. This application Oct. 13, 1965, Ser. No. 495,389
Int. Cl. C13f 3/00

U.S. Cl. 99-141

2 Claims



Free-flowing brown sugar which retains its normal moisture content is prepared by (1) diffusing both (a) brown

sugar and (b) finely divided wood cellulose, microcrystalline cellulose or sugar cane cellulose and (2) commingling these materials in their diffused condition without subjecting the mixture to any substantial degree of pressure. Flavoring fats or oils may be incorporated in the previously formed mixture.

3,615,700

α -TETRAZOLYL-6-SUBSTITUTED-TRYPTAMINE AND α -TETRAZOLYL-5,6-DISUBSTITUTED-TRYPTAMINE SWEETENING COMPOSITIONS AND THEIR USE

Edmund C. Kornfeld, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 5, 1968, Ser. No. 742,490

Int. Cl. A61k 7/16, 27/00; A231 1/26

U.S. Cl. 99—141 A

11 Claims

α -Tetrazolyl-6-substituted-tryptamine and α -tetrazolyl-5,6-disubstituted-tryptamine compounds useful as nonnutritive sweetening agents, and intermediates for the preparation thereof.

3,615,701

MAPLE FLAVORING CONCENTRATE AND METHOD FOR MAKING SAME

Worth C. Goss, 4704 Lake Washington Blvd., Kirkland, Wash.

Filed Oct. 5, 1967, Ser. No. 673,006

Int. Cl. A231 1/26

U.S. Cl. 99—142

17 Claims

Maple flavoring concentrate product and method for making same wherein four, five and six carbon reducing sugars, principally five carbon, are subjected to controlled oxidation and dehydration steps, giving a controlled caramelization. Dehydration may be carried out separately or simultaneously with oxidation though oxidation is accomplished in an alkaline solution with the pH maintained by calcium or barium hydroxide. After dehydration and oxidation the calcium or barium ions are removed from the solution to give a relatively strong acid pH. Finally the solution is adjusted to a weak acid pH by the addition of food grade potassium, sodium or calcium hydroxides or carbonates to give the maple flavoring concentrate.

3,615,702

LIQUID SALAD DRESSING BASE

Horton E. Swisher, Upland, Calif., assignor to Sunkist Growers, Inc., Los Angeles, Calif.

Filed Dec. 18, 1968, Ser. No. 784,873

Int. Cl. A231 1/24

U.S. Cl. 99—144

6 Claims

Liquid salad dressing base of an edible oil carrying oil-insoluble particles of essential oil in emulsion form in a water-soluble matrix, whereby upon addition of an aqueous phase and shaking the water-soluble matrix dissolves forming a finished salad dressing containing all the necessary oil, flavor and aqueous materials.

3,615,703

RETAINING THE FRESHNESS OF FOODSTUFFS

Yujiro Harada; Yasushi Kanzaki; Hideyuki Furukawa; Kazuo Yamazaki, and Hideki Matsuo, all of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, (Kyowa Hakko Kogyo, Ltd.), Tokyo-to, Japan

Filed Oct. 22, 1968, Ser. No. 769,726

Claims priority, application Japan, Oct. 23, 1967, Oct. 23, 1967, June 23, 1969; 42/67838, 42/67837, 44/50121

Int. Cl. A23b 7/00; A231 3/00

U.S. Cl. 99—154

5 Claims

This invention relates to a process and composition for retaining the freshness of foodstuffs involving the addition of at least one member selected from the group consisting of lysine, ornithine, histidine, arginine and salts thereof to the foodstuff so as to thereby retain its freshness. This invention is useful for preserving foodstuffs for a long period of time without any deteriorative influence upon their qualities.

3,615,704

METHOD OF INJECTING PICKLING MEDIUM INTO FOODS

Knud George Pedersen, Birkerød, Denmark, assignor to Slagteriernes Forsknings-Institut, Roskilde, Denmark

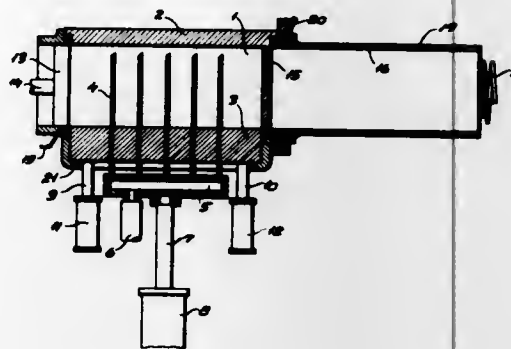
Filed Dec. 4, 1967, Ser. No. 687,661

Claims priority, application Denmark, Dec. 9, 1966, 6389

Int. Cl. A23b 1/01

U.S. Cl. 99—159

2 Claims



A method of an apparatus for injecting a preservative or pickle such as brine into foods through injection needles or nozzles and by which the food is compressed and the injection made under simultaneous expansion of the food, said process being carried out in an apparatus with a closed chamber from which the food after the injection is moved directly to a container without allowing any substance of nutritious value to escape from the food.

3,615,705

PROCESS FOR THE PASTEURIZATION OF EGG WHITES

Willibald F. Kohl, Nanuet; John C. Sourby, Mt. Kisco, N.Y., and Rudolph H. Ellinger, Chagrin Falls, Ohio, assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 694,850, Jan. 2, 1968. This application Apr. 28, 1970, Ser. No. 032,760

Int. Cl. A23b 5/00; A231 1/32

U.S. Cl. 99—161

6 Claims

A process for pasteurizing egg whites which comprises the steps of raising the pH of the egg whites about 0.5 to 1.5 units above the natural pH thereof. The egg whites are then heated to destroy the natural catalase. Then, a responsive amount of a peroxide material is added to the egg whites which are then reheated to a pasteurization temperature.

3,615,706

FOOD PACKAGE

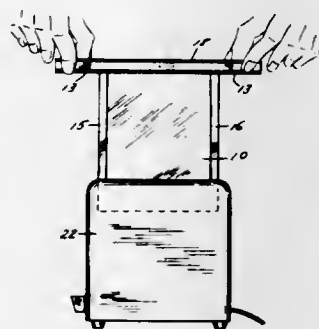
Radcliffe Franklin Robinson, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 14, 1964, Ser. No. 367,361

Int. Cl. B65b 25/06; B65d 5/46, 5/56, 5/62

U.S. Cl. 99—171 H

16 Claims



A sealed package for holding, transporting, and heating food comprising a container of a size to fit in the slot of a toaster and formed of an electrically conductive material with a heat stable, nonconductive coating disposed on its exterior so that no conductive material or raw edges are exteriorly exposed.

3,615,707

HERMETICALLY SEALED CONTAINER WITH READILY DETACHABLE PROTECTIVE COVER

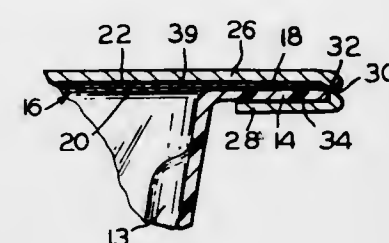
William F. Filz, Portland, Oreg., assignor to North Pacific Canners & Packers, Inc., Portland, Oreg.

Filed Mar. 18, 1970, Ser. No. 20,723

Int. Cl. B65b 25/00

U.S. Cl. 99—171 S

7 Claims



A hermetically sealed frozen food container includes a dishlike tray of high-density polyethylene, a lip extending from the upper peripheral surface of the tray, a laminated plastic hermetically sealed closure member comprising a lower layer of polyethylene and an upper layer of polyester resin, the lower layer of polyethylene being heat sealed to the upper surface of the lip on the tray, and a fiberboard cover disposed above the closure member and adapted to protect the same and serve as a surface for advertising and other printed matter. The fiberboard cover has two downwardly and inwardly bent flanges on opposed edges thereof, the flanges being adapted to fold under the lips on the tray on the sides thereof in register with the flanges. The flanges are adhered to the undersides of the lip along the sides of the tray with which they are in register. The unflanged edges of the cover are unattached to the lip along the sides in register with them. The cover is deeply scored along the lines of fold of the flanges, whereby the major portion of the cover may be readily detached from the container merely by tearing the same along such scored lines, the flanges thereafter remaining adhered to the undersides of the lip.

3,615,708

INDIVIDUAL FILTER FOR PRESERVING AND PREPARING BEVERAGES

Emile Jean Maurice Abille-Gal, 27 rue du General Fay, Paris, France

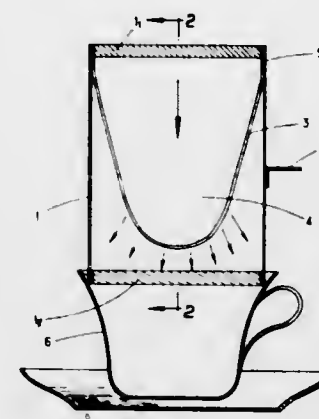
Filed July 18, 1968, Ser. No. 745,919

Claims priority, application France, Aug. 11, 1967, 117,803

Int. Cl. B65d 37/00

U.S. Cl. 99—171 P

6 Claims



Individual filter for preserving portions for making a beverage by contact with a fluid, this filter being made of a cylindrical external casing in which a filtering pouch is fixed containing a portion of substance, the ends of the casing being closed in a sealtight manner for tearing with a view to the passage of the fluid for making the beverage.

3,615,709

PLASTIC FILM PACKAGE CONTAINING CONTENTS UNDER SUPERATMOSPHERIC PRESSURE

Andrew George Ford, Hitchin, and Ronald Augustus Hudson, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

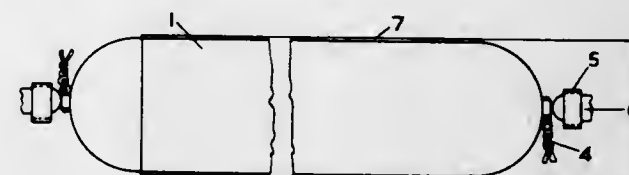
Filed Aug. 1, 1968, Ser. No. 749,430

Claims priority, application Great Britain, Aug. 1, 1967, 35335/67

Int. Cl. B65d 45/16, 81/20

U.S. Cl. 99—171 S

7 Claims



A package comprising a container formed of oriented film of polyethylene terephthalate, containing a gas under pressure, e.g. a carbonated drink.

3,615,710

PACKAGING MATERIALS FOR COMESTIBLES

Yoon Chai Lee, and Quirino A. Tremestozzi, both of Springfield, Mass., assignors to Monsanto Company

Filed Nov. 15, 1968, Ser. No. 776,250

Int. Cl. B65b 3/00

U.S. Cl. 99—171 LP

20 Claims

Disclosed herein are packaging materials having oxygen permeability of no more than 3.0 cc./100 sq. in./24 hr./atmos/mil at 73° F. and water permeability of no more than 3.0 gms./24 hr./100 sq. in./mil at 73° F. The materials are based upon interpolymers of methacrylonitrile with at least one monovinylidene aromatic compound wherein the methacrylonitrile constitutes 70-98 percent by weight of the interpolymers.

3,615,711

PACKAGE FOR STORING AND HEATING FOOD AND METHOD OF FORMING SAME

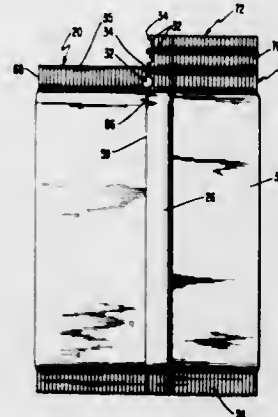
Joseph Markus, Hicksville, L.I.; James H. Rowe, New Hyde Park, L.I., N.Y., and John B. Sortor, Oakland, N.J., assignors to National Biscuit Company, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,307

Int. Cl. B65d 81/34

U.S. Cl. 99—171 H

8 Claims



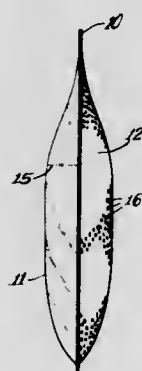
A package for containing and storing food and heating the contained food in a toaster including a top margin folded upon itself at least twice, a longitudinal margin folded upon itself and flattened to the package to form a longitudinal fold line, and a tear notch aligned with the longitudinal fold line whereby the package may be vented by tearing through the top margin on the longitudinal fold line from the tear notch and the food may be readily removed after tearing the

longitudinal fold line by pulling the longitudinal margin from the top to the bottom of the package. A method of forming the package including spacing food portions along a strip of sheet material, folding the sides of the sheet material over the food portions, forming the longitudinal margin by sealing the side edges of the strip and folding the longitudinal margin upon itself, sealing the strip at areas between food portions, severing the strip to form top and bottom margins, folding the top margin upon itself twice, and cutting a tear notch at the top margin.

3,615,712
PLASTIC FOOD POUCH FOR COOKING
Robert G. Keller, Waltham, Mass., assignor to CPC International Inc.
Filed Apr. 1, 1969, Ser. No. 811,872
Int. Cl. B65b 25/22

U.S. Cl. 99—171 H

4 Claims

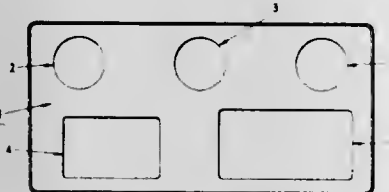


A "cooking pouch" for foodstuffs such as pasta (e.g. noodles, macaroni, spaghetti), rice, and the like is formed from two separate films, preferably made of heat-sealable plastic, which are sealed together at the edges. One of the films is perforated over a substantial portion of its area, while the other is substantially imperforate, except it may optionally contain a line of weakness such as a perforated line to facilitate opening, and is made of a clear, transparent material.

3,615,713
SELECTIVE COOKING APPARATUS
Peter N. Stevenson, Belmont, Mass., assignor to Teckton, Inc., Waltham, Mass.
Filed Sept. 12, 1969, Ser. No. 857,510
Int. Cl. A231 3/10

U.S. Cl. 99—171 H

3 Claims



Various foodstuffs that constitute a meal are each contained in separate containers for the purpose of cooking the foodstuffs in a microwave oven. The individual containers are constructed so that different degrees of radiation occur to the foodstuffs contained therein, thereby allowing the cooking of a complete meal at one time.

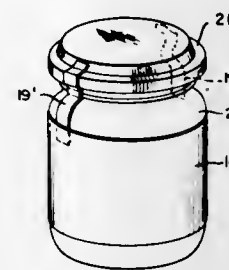
3,615,714
IMPROVED CONTAINER
Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.
Filed Sept. 17, 1969, Ser. No. 869,434
Int. Cl. B65d 55/02

U.S. Cl. 99—171 C

2 Claims

A resealable container including a body portion, a threaded cover disposed in sealing relation with the body

portion, at least one elongated segment of fractureable pressure sensitive adhesive tape having first and second ends



secured lengthwise across the cover and body portion, and a severable label at least partially surrounding the body portion and overlapping the tape at about the body portion.

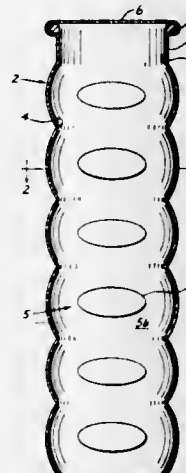
3,615,715
FILM FORMATION FROM NONHEAT COAGULABLE SIMPLE PROTEINS WITH FILLER AND RESULTING PRODUCT
Joseph D. Mullen, Golden Valley, Minn., assignor to General Mills, Inc.

Filed Mar. 16, 1970, Ser. No. 20,032
Int. Cl. A22c 13/00; B29d 23/06; C08h 1/00; D01f 9/04
U.S. Cl. 99—176 22 Claims
Films are formed by extruding plastic masses containing particulate silica or silicate and derived from nonheat coagulable simple proteins. The films find value as edible packaging materials and in the form of casings are useful in sausage making and the like.

3,615,716
APPARATUS FOR PACKAGING EGGS
James F. Poulos, Golden, Colo., assignor to Harry R. Combs, Denver, Colo., a part interest
Filed Dec. 30, 1969, Ser. No. 889,251
Int. Cl. A23b 5/00

U.S. Cl. 99—177

10 Claims



A method of packaging eggs including shelling the eggs and loading the shelled eggs in their natural state into a packaging apparatus has been disclosed. The packaging apparatus includes a container structure divided by restriction means into a plurality of interconnecting egg-receiving compartments. Several embodiments of the packaging apparatus are disclosed, and the restriction means operates to restrict the tendency of shelled eggs from flowing from one compartment to another so as to prevent the eggs from mixing during transport and to permit the extraction of one or more eggs at a time from the container structure. Closure means are also disclosed for tightly closing the container structure.

3,615,717
PROCESS OF INHIBITING STALING OF MILK PRIOR TO STERILIZATION
Dee Rich Morgan, Liverpool; Delmar Lloyd Andersen, Syracuse, and Cloyce L. Hankinson, Camillus, all of N.Y., assignors to The Borden Company, New York, N.Y.
Filed Oct. 16, 1967, Ser. No. 675,291
Int. Cl. A23c 9/08

U.S. Cl. 99—183

2 Claims

This invention relates to a new and improved process for inhibiting the development of stale flavors in milk products during the storage thereof, and to new and useful milk products obtained thereby which maintain their fresh flavors and display an increased resistance to staling upon being stored for long periods of time. More particularly, it relates to milk products containing a bioflavonoid in an amount sufficient to inhibit staling.

3,615,718
PROCESS FOR THE PREPARATION OF FROZEN CONFECTIONS, FOOD MIXES THEREFOR, AND AEROSOL PACKAGES CONTAINING SUCH MIXES
David Weinstein, Baltimore, Md., assignor to Arthur Ozner, Bellvale, N.Y.; Joseph Herman, Union; Elmer Schuman, Scotch Plains, N.J. and George Diamond, Glen Gardner, N.Y., part interest to each
Continuation-in-part of application Ser. No. 589,225, Oct. 25, 1966, which is a continuation-in-part of application Ser. No. 560,260, June 24, 1966, now abandoned. This application June 26, 1967, Ser. No. 648,967
Int. Cl. A23g 5/00; B65b 31/00

U.S. Cl. 99—189

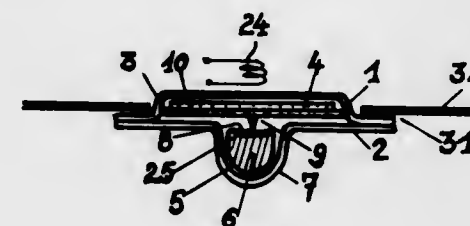
29 Claims

Ice cream, ice milk and sherbet mixes having specific compositions and solids contents contained in an aerosol dispenser under pressure and having dissolved therein a gaseous propellant to such a degree that on discharge from the dispenser in a chilled condition the ice cream and ice milk mixes are whipped to an overrun of at least 160 percent, while the sherbet mix is whipped to an overrun of at least 80 percent, all of such discharged mixes being capable of being frozen without separation of liquid.

3,615,719
APPARATUS FOR INDICATING THE THERMAL HISTORY OF DEEP-FREEZE PRODUCTS PARTICULARLY FOODS
Johann Michel, Ulmerstrasse 160a; Charlotte Keller, Blütenstrasse 4, and Hans-Joachim Keller, Blütenstrasse 4, all of Augsburg, Germany
Filed Dec. 14, 1967, Ser. No. 690,456
Claims priority, application Germany, Dec. 19, 1966, M 72071
Int. Cl. A23b 3/06; G01d 21/00

U.S. Cl. 99—192 TT

5 Claims



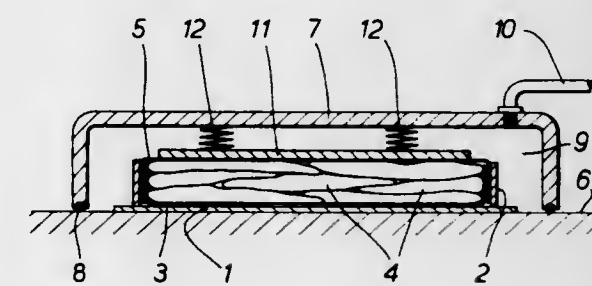
A system for indicating the conditions of storage and treatment of deep-frozen goods which consists of a sealed receptacle containing a pair of interactable components, one of which is flowable while the other is absorptive and capable of producing a visible indication of the degree of interaction. The liquid component is retained in a closed vessel within the receptacle and, also within the receptacle, means is provided for permitting escape of the liquid at a predetermined instant. The liquid is separated from its coating component also by a liquid-soluble barrier which may be omitted in limited regions to permit direct action immediately upon

openings of the liquid-storage vessel and thereby indicate directly the fact that the device is functioning.

3,615,720
METHOD FOR THE PRODUCTION OF DEEP-FROZEN FISH FILLET BLOCKS
Leif Brudal Knutrud, Oslo, Norway, assignor to Frionor Norsk Frossenfisk A/L, Oslo, Norway
Filed Dec. 12, 1968, Ser. No. 783,357
Claims priority, application Norway, Dec. 15, 1967, 171,000
Int. Cl. A23b 3/06

U.S. Cl. 99—195

3 Claims



After fish fillets have been packed in a surrounding, but not airtight packing and before the fillet mass is frozen to a block, said packing with the fillet mass therein is subjected to a separate process step involving the application of a nearly total vacuum and the subsequent abrupt removal thereof. The air in the voids between the individual fillets in the mass and between the fillets and the surrounding walls of the package is withdrawn from the voids when the vacuum is applied. When the vacuum is removed, all the enclosed voids will collapse, i.e. not only the voids within the block but also the voids opening onto the boundaries thereof, since the latter voids are closed by the walls of the packing.

3,615,721
METHOD FOR THE MANUFACTURE OF FOOD FROM PLANT MATERIAL
Henri C. Silberman, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Dec. 26, 1967, Ser. No. 693,180
Int. Cl. A23b 7/00; A23k 1/14

U.S. Cl. 99—199

1 Claim

The present invention refers to an edible product and a process for making same from food materials and food by-products by treating the same with a mixture of enzymes (i.e. an enzyme mixture which exhibits catalytic cellulase, hemicellulase and pectinase activity), mechanically treating the food material to convert it to a slurry or a paste and thereafter forming said food material by casting, spraying, extruding or the like into a mechanically strong, flexible, cohesive food product in the form of a sheet, ribbon, strand, band or the like suitable for storage and drying the same.

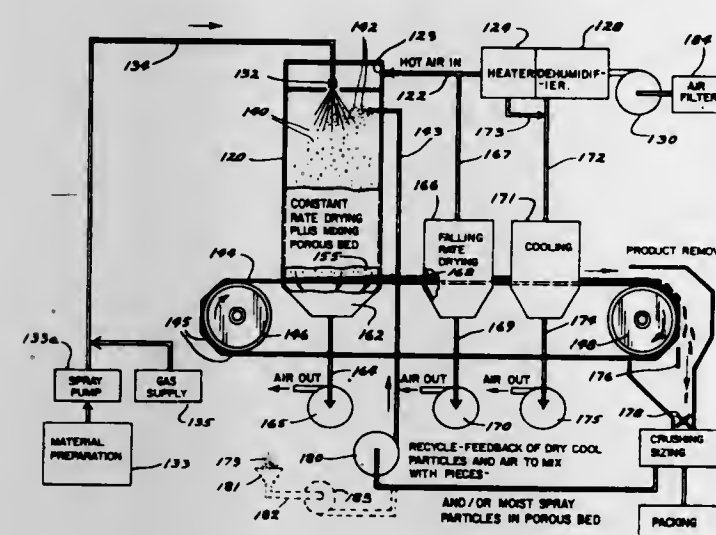
3,615,722
FILTERING AIR ENTERING A SPRAY-DRIER THROUGH ACTUATED CHARCOAL IN THE PREPARATION OF SPRAY DRIED WHOLE MILK
Floyd E. Kurtz, Bethesda, Md.; Arjen Tamsma, and Michael J. Pallansch, Arlington, Va., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Jan. 29, 1970, Ser. No. 6,921
Int. Cl. A23c 1/04

U.S. Cl. 99—203

4 Claims

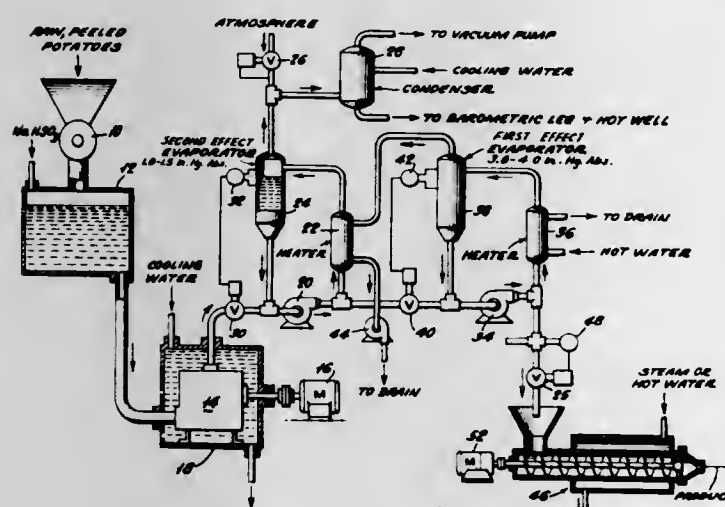
An improvement in the process producing spray-dried whole milk wherein the air entering the spray-drier is filtered through activated charcoal to remove the ozone therefrom. The flavor quality of the resulting product is preserved and prevented from deteriorating, and with ozone-free air the flavor quality of the spray-dried product is the same as the milk concentrate from which it is made.

3,615,723
SPRAY-DRYING APPARATUS
 Reginald E. Meade, Stillwater, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
 Continuation-in-part of application Ser. No. 553,101, May 26, 1966. This application Apr. 15, 1970, Ser. No. 28,780
 Int. Cl. A23b 7/02
 U.S. Cl. 99—206 15 Claims



Process for drying fluid and solid material in which a liquid spray is introduced into a drying chamber together with a source of dry desiccating gas such as heated air. A screen is positioned to receive the spray while the droplets are in a tacky condition to form a mat on the screen with a provision for drawing air from the heated enclosure through the mat and thence through the screen for the purpose of drying the mat. At least portions of the mat are subdivided into a particulate form and recirculated back to the inlet of the apparatus where they are mixed with fresh incoming product.

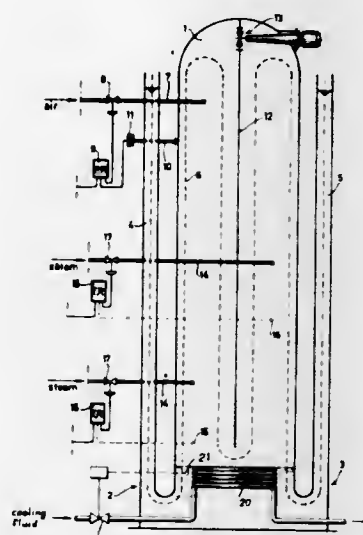
3,615,724
PROCESS FOR PREPARING A DEHYDRATED POTATO PRODUCT DIRECTLY FROM RAW POTATO
 Charles E. Sech, 5993 Winans Lake Road, Brighton, Mich.
 Continuation-in-part of application Ser. No. 526,525, Feb. 10, 1966, now abandoned. This application June 12, 1969, Ser. No. 832,569
 Int. Cl. A23b 7/03
 U.S. Cl. 99—207 4 Claims



A process for the manufacture of a dehydrated potato product directly from raw potato without requiring the addition of any binder which is suitable for hot oil cooking or frying wherein a slurry of ground raw potato is formed having a moisture content of about 80 percent, the water content of the slurry then being reduced to at least 50 percent by application of vacuum at a temperature below the temperature of gelatinization of the potato particles. The

mass is then heated or cooked at a temperature sufficiently high to gelatinize the product, the latter then being dried to a moisture content of about 6 percent to twelve percent. The critical step of dehydration by vacuum evaporation achieves proper plasticity of the mass while at the same time prevents browning of the product normally occurring due to enzymatic action, or oxidative influence or both.

3,615,725
METHOD AND APPARATUS FOR THE THERMAL TREATMENT UNDER PRESSURE OF COMMODITIES PACKED IN CONTAINERS
 Johannes Bernardus van der Winden, Amstelveen, Netherlands, assignor to Gebr. Stork & Co's Apparatenfabriek N.V., Amsterdam, Netherlands
 Continuation-in-part of application Ser. No. 570,896, Aug. 8, 1966, now abandoned. This application Mar. 2, 1970, Ser. No. 15,694
 Int. Cl. A231 3/04
 U.S. Cl. 99—214 3 Claims



Package commodities are transported into a treatment space which contains a mixture of steam and air maintained at 2 atm. gauge and 120° C. and a quantity of liquid at the bottom of the space. The liquid in the bottom of the space is cooled thereat to maintain its temperature below 100° C. The treatment space is isolated from the ambient atmosphere by inlet and outlet liquid locks which communicate with the liquid in the bottom of the space.

3,615,726
PROCESS FOR PASTEURIZING AND SEALING OYSTERS
 David C. McMillan, Shelton, Wash., assignor to Olympia Oyster Company, Shelton, Wash.
 Filed Apr. 14, 1969, Ser. No. 822,841
 Int. Cl. A231 1/33, 3/00
 U.S. Cl. 99—217 5 Claims

This invention concerns a method for preparing oysters and similar products, preparatory to holding them in refrigerated storage, by heating them by radiant energy in the so-called microwave spectrum without raising the temperature thereof about 170° F. so as not to destroy their firmness and taste as compared to (1) freshly shucked oysters (2) maintained for short periods of time at temperatures just above freezing.

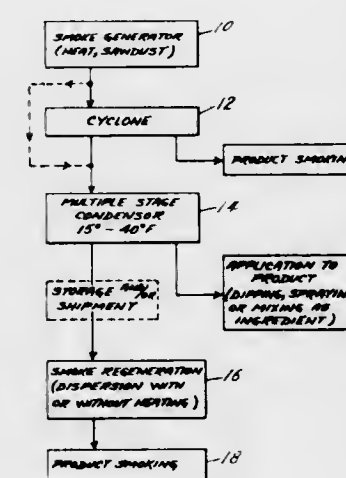
3,615,727
METHOD OF PRESERVING
 Armin Starke, Steiertwiete 15, 2000 Hamburg 11, Germany
 Filed Mar. 23, 1967, Ser. No. 625,371
 Int. Cl. A231 3/34
 U.S. Cl. 99—225 3 Claims

A method for stabilizing foodstuffs, other nutrients and pharmaceutical compositions comprising the features of providing the product with outwardly open capillary apertures and applying thereto under a vacuum substances in the form of gases or vapors.

3,615,728
METHOD FOR IMPARTING HICKORY SMOKE COLOR AND FLAVOR TO DRIED YEAST AND OTHER FOOD POWDERS
 Aaron E. Wasserman, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of Agriculture
 Filed Oct. 11, 1968, Ser. No. 766,952
 Int. Cl. A23b 1/04
 U.S. Cl. 99—229 1 Claim

Hickory smoke color and flavor are imparted to yeast powder by treating it with hickory smoke components dissolved in a volatile solvent such as diethyl ether or ethanol.

3,615,729
SMOKING OF FOOD PRODUCTS
 Harvey O. Baker, Fort Wayne, Ind., and Johan E. Hoff, West Lafayette, Ind., assignors to Peter Eckrich & Sons, Inc.
 Filed June 2, 1969, Ser. No. 829,285
 Int. Cl. A23b 1/04, 3/04
 U.S. Cl. 99—229 6 Claims



A method of providing a low carcinogen content smoke aerosol for use in the smoking of food products. The removal of carcinogens from natural hardwood smoke is effected by cycloning conventionally generated smoke to remove a substantial portion of the particulate phase thereof and/or by regenerating a condensed natural hardwood smoke in the presence of heat. Products may be smoked in the conventional manner or by application of a condensed liquid smoke to a product by dipping, spraying or mixing the condensed liquid smoke into the product as an ingredient thereof. The process also provides the advantages of increasing the cleanliness of a smoke generating operation, reducing the fire hazard thereof and providing a smoking process that can be closely controlled thereby enhancing reproducibility.

3,615,730
PROTECTIVE COATING
 Gabriel H. Law, Orange, and Paul D. Van Dorsten, Diamond Bar, both of Calif., assignors to Amercoat Corporation, Brea, Calif.
 Filed Feb. 5, 1970, Ser. No. 9,043
 Int. Cl. C09d 5/10
 U.S. Cl. 106—1 10 Claims

An inorganic zinc-rich coating for the protection of ferrous surfaces consisting of zinc dust in a vehicle comprising a substantially nonaqueous colloidal suspension of silica in ethylene glycol monoethyl ether or other polar solvent. Small amounts of zinc chloride and, optionally, magnesium oxide are added to the vehicle to promote film hardness. The coating may be prepared by fractional distillation of an aqueous, acid-stabilized colloidal silica sol premixed with a polar solvent, with subsequent addition of zinc chloride, magnesium oxide and zinc dust to the solvent dispersion.

3,615,731
METALIZING COMPOSITION
 Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Division of Ser. No. 731,604, May 23, 1968, Pat. No. 3,539,114.
 Filed Feb. 16, 1970, Ser. No. 11,868
 Int. Cl. C09d 5/24
 U.S. Cl. 106—1 2 Claims

Metalizing compositions containing gold alloy flakes for decorative and electronic applications.

3,615,732
ELECTROLESS COPPER PLATING
 Charles R. Shipley, Jr., Newton; Lucia H. Shipley, Newton; Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, all of Mass., assignors to Shipley Company, Inc., Newton, Mass.
 Filed Aug. 13, 1968, Ser. No. 752,165
 Int. Cl. C23c 3/02
 U.S. Cl. 106—1 16 Claims

An electroless copper plating solution comprising a source of cupric ions, hydroxyl radicals, formaldehyde or a formaldehyde precursor preferably paraformaldehyde, and a complexing agent for copper, said solution characterized by the addition of a hydrogen inclusion retarding agent and at least one member selected from the group consisting of a formaldehyde addition agent and a salt of a Group VIII metal of the Periodic Chart of the Elements. The electroless copper plating solution is capable of providing a rapid rate of copper deposition dependent upon the selection of the complexing agent without sacrifice in tensile properties of the copper deposit. The copper plate deposited from the electroless solution of this invention is distinguishable from prior art electroless copper deposits by substantially improved bending or ductility properties.

3,615,733
ELECTROLESS COPPER PLATING
 Charles R. Shipley, Jr., Newton; Lucia H. Shipley, Newton; Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, all of Mass., assignors to Shipley Company, Inc., Newton, Mass.
 Filed Aug. 13, 1968, Ser. No. 752,166
 Int. Cl. C23c 3/02
 U.S. Cl. 106—1 19 Claims

An electroless copper plating solution comprising a source of cupric ions, hydroxyl radicals, formaldehyde or a formaldehyde precursor, preferably paraformaldehyde, and a complexing agent for copper; said solution characterized by the addition of a combination of additives comprising an organic silicon compound and a hydrogen inclusion retarding agent and preferably, the combination of the two with at least one member selected from the group consisting of a formaldehyde addition agent and a Group VIII metal salt of the Periodic Chart of the Elements. Copper plate deposited from a solution of this invention is distinguishable from prior art copper deposits by substantially improved bending or tensile properties and a smoother, more highly reflecting appearance. The electroless copper plating solution is capable of providing a rapid rate of copper deposition dependent upon the selection of the complexing agent and the stability of its chelate with copper without sacrifice in tensile or bending properties of the copper deposit.

3,615,734
BRAZEABLE COMPOSITIONS
 George Rolland Cole, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed Nov. 1, 1968, Ser. No. 772,853
 Int. Cl. C09d 5/24
 U.S. Cl. 106—1 6 Claims

The brazeable compositions for metallizing ceramic bodies comprising noble metals and a low-alkali aluminosilicate glass, wherein said glass consists essentially of SiO₂, Al₂O₃, MgO, CaO and Na₂O. Optional amounts of BaO, B₂O₃, and K₂O may also be included in the glass compositions. Critical proportionate amounts of metal: glass and the various oxides are required. These brazeable metallizing compositions can

be fired in air, at temperatures of at least 900° C. and yet be brazeable without the need for electroplating; the fired brating compositions are able to withstand reducing atmospheres of a brazing furnace and also compatible with conventional brazing alloys (e.g., Ag-Cu).

3,615,735
ELECTROLESS COPPER PLATING
Charles R. Shipley, Jr., Newton; Lucia Shipley, Newton; Michael Gulla, Newton, and Oleh B. Dutkewych, Medfield, all of Mass., assignors to Shipley Company, Inc., Newton, Mass.

Filed Aug. 13, 1968, Ser. No. 752,250
Int. Cl. C23c 3/02
U.S. Cl. 106—1



An electroless copper-plating solution comprising a source of cupric ions, hydroxyl radicals, formaldehyde or a formaldehyde precursor preferably paraformaldehyde and a complexing agent for copper; said solution characterized by the addition of a member selected from the group consisting of a formaldehyde addition agent, a solution soluble salt of a Group VIII metal of the Periodic Chart of the elements, preferably a combination thereof and most preferably, the two in combination with an organic silicon compound. The copper plate deposited from the preferred solution is alloyed with the Group VIII metal cation and is distinguishable from prior art electroless copper deposits by substantially improved bending or tensile properties and a smoother, more highly reflecting surface appearance. The electroless copper-plating solution is capable of providing a rapid rate of copper deposition dependent upon the selection of the complexing agent and the stability of its chelate with copper without sacrifice in tensile or bending properties of the copper deposit.

3,615,736
ELECTROLESS COPPER PLATING BATH
Frank E. Stone, Trumbull, Conn., assignor to Enthone, Incorporated, New Haven, Conn.

Filed Jan. 6, 1969, Ser. No. 789,402
Int. Cl. B44d 1/092; C23c 3/02
U.S. Cl. 106—1

High stability electroless copper plating baths containing as a stabilizer a small amount of o-phenanthroline and of iodide ions.

3,615,737
ELECTROLESS COPPER DEPOSITION
Frederick W. Schneble, Jr., Oyster Bay, L.I.; John F. McCormack, Roslyn Heights; Rudolph J. Zeblicky, Hauppauge, and John D. Williamson, Miller Place, all of N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y., by said Schneble, McCormack and Zeblicky

Continuation-in-part of application Ser. No. 768,953, Sept. 23, 1968, Continuation of application Ser. No. 523,863, Feb. 1, 1966, now abandoned. This application Aug. 4, 1969, Ser. No. 847,422
Int. Cl. C23c 3/02
U.S. Cl. 106—1

An improved electroless metal deposition solution is provided which comprises, in combination: an ion of a metal

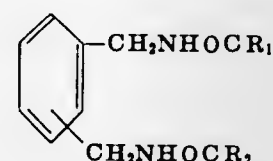
whose electroless metal deposition is desired; a complexing agent for said ion; a reducing agent for said ion; a pH regulator; and a small effective amount of an extraneous ion which has a potential dependent capacity for inner double layer absorption at a surface in contact with the solution on which said metal is electrolessly depositing. In addition, improved methods for electrolessly depositing metal, as well as enhancing the ductility of electroless metal deposits are provided.

3,615,738
WATER REPELLENT
Takashi Hirose; Yoshitsugu Sakai, and Minoru Takabayashi, all of Aichi, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo and Tokai Selyu Industrial Co., Ltd., Nagoya, Aichi, Japan

Filed June 5, 1968, Ser. No. 734,568
Claims priority, application Japan, June 5, 1967, 42/35436; Feb. 23, 1968, 43/11056
Int. Cl. C09k 3/18

U.S. Cl. 106—2

A water repellent containing as its active ingredient a compound represented by the general formula



wherein R₁ and R₂ are each selected from the group consisting of alkyl and alkenyl groups having from seven to 21 carbon atoms. One substituent is in either the meta or the para position with respect to each other. A process for imparting water repellent properties to a fiber is also disclosed which comprises applying the repellent material to the fiber, drying and heat treating the fiber.

3,615,739
FLOOR POLISHING COMPOSITION CONTAINING SUBSTITUTED -TRIAZINES
Denis Varsanyi, Arlesheim, Baselland, and Willy Roth, Strengelbach, Aargau, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Continuation-in-part of application Ser. No. 672,702, now abandoned, which is a continuation-in-part of application Ser. No. 421,693, Dec. 28, 1964, now Patent No. 3,374,235, and a continuation-in-part of 560,855, June 27, 1966, now abandoned, and a continuation of 645,467, June 12, 1967, now Patent No. 3,410,855. This application July 30, 1969, Ser. No. 846,272
Int. Cl. C08h 9/06; C09f; C09g 1/08

U.S. Cl. 106—10

Surface treating agents containing as waxy, gloss-imparting component a trisamino-s-triazine derivative in which one of the three amino groups is substituted by a radical -Q-Y in which Q is an alkylene or alkenylene radical and Y represents certain hydrophilic substituents.

3,615,740
CHROMATE CONVERSION COATING COMPOSITIONS CONTAINING PRUSSIDE ACCELERATOR
Kurt Goltz, Exton, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 2, 1970, Ser. No. 7,992
Int. Cl. C09d 5/08

U.S. Cl. 106—14

A composition for applying a chromate conversion coating on aluminum comprised of hexavalent chromium, fluoride, and a prusside as an accelerator selected from the group consisting of Na₂[Fe(CN)₅NH₂]; Na₂[Fe(CN)₅NH₂]; Na₂[Fe(CN)₅H₂O]; Na₂[Fe(CN)₅H₂O] and Na₃[Fe(CN)₅NO₂]

3,615,741
CHROMIUM-CONTAINING COMPONENT FOR SURFACE COATINGS, PROCESS FOR MAKING SAME AND SURFACE COATING COMPOSITIONS CONTAINING SAME
Allan Boy Earl Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 638,627, May 15, 1967, now abandoned. This application Apr. 9, 1969, Ser. No. 814,852

Int. Cl. C09d 5/08

U.S. Cl. 106—14

12 Claims

This patent application sets forth a chromium-containing component for surface coatings, the preformed reaction product of an oleophilic, hydrophobic organic acid of low volatility and hydrated chromic oxide in the proportion of about 2-50 grams of CrO₃ per each gram equivalent of acid group present in the organic acid, process for making same including the essential arresting of thickening of the reaction product short of a friable gel stage with a base, surface coating compositions incorporating the component, and concentrate compositions incorporating the component, which concentrate compositions are particularly useful in compounding water-dispersed surface coatings.

3,615,742
PROCESS FOR PREPARING FIRE RETARDANT COMPOSITION
Albert L. Smith, Middleport, Ohio, assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of application Ser. No. 679,542, Oct. 31, 1967, now abandoned. This application Apr. 13, 1970, Ser. No. 27,979

Int. Cl. C09d 5/18; C09k 3/28

U.S. Cl. 106—15

3 Claims

A process is disclosed for adjusting the viscosity of tris-dichloropropyl phosphate by admixing it with between about 5 and 30 percent, by weight, of a chlorinated naphthalene. The resulting formulation may then be conveniently employed as a fire-proofing composition, particularly for spinning baths for synthetic fibers.

3,615,743
SELF-EXTINGUISHING COMPOSITIONS
William John Theuer, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 10, 1968, Ser. No. 720,323

Int. Cl. C08b 21/04

U.S. Cl. 106—15

11 Claims

The self-extinguishing properties of cellulose esters are improved without causing an acceleration in light fading of dyes present in the cellulose ester by the incorporation of minor amounts of secondary alkyl phosphates having terminally positioned halogen groups.

3,615,744
ANTIFOULING PAINTS
Makoto Yokoo, Teyonaka; Junji Ogura, Minoo, and Hiroshi Ikeda, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed July 3, 1968, Ser. No. 742,187

Claims priority, application Japan, July 3, 1967, 42/42665

Int. Cl. C09d 5/14

U.S. Cl. 106—15

7 Claims

An antifouling paint, useful inter alia in preventing marine growth on ship bottoms, hulls, nets, piles, etc., contains a synergistic combination of 2-amino-3-chloro-1,4-naphthoquinone, a copper compound (e.g. a basic copper sulfate) and an organic tin compound (tributyl tin fumarate, tributyl tin fluoride) in a suitable vehicle.

3,615,745
ANTIMICROBIAL COATINGS AND METHOD USING DIODOMETHYL SULFONES
Aldo J. Crovetto, Lake Forest; Donald S. Kenney, Northbrook, Village, and Richard B. Hasbrouck, Lake Forest, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 10, 1969, Ser. No. 805,877

Int. Cl. A01n 9/12, 21/00; C07c 147/08; C08f 45/64

U.S. Cl. 106—15

24 Claims

Application of a coating composition comprising halomethyl sulfones protects agricultural and industrial substrates against fungicidal and bacterial attack. Use of diodomethyl sulfones is especially effective to protect latex paint films, textiles, seeds and growing crops.

3,615,746
FLAME-RETARDANT CELLULOSE TRIACETATE ARTICLES
Willard C. Brinegar, Charlotte, N.C., and Joseph Di Pietro, Alma, Mich., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 562,119, July 1, 1966, now abandoned. This application Dec. 10, 1969, Ser. No. 883,997

Int. Cl. C08b 21/04

U.S. Cl. 106—15

16 Claims

A composition and solution for forming shaped articles comprising cellulose acetate, from 1 to 20 percent of a bromo-aliphatic phosphate containing from 10 to 30 percent bromine and from 0.4 to 3 percent of a second compound selected from the group consisting of phenyl phosphates, cresyl phosphates, di(t-butyl) peroxide, dicumyl peroxide, and 2,5-dimethyl-2,5-di(t-butyl-5-peroxy) hexane.

3,615,747
COLD GUN BLUE IN SOLID OR SEMISOLID STATE
Harry Friedman, 41-16 Union St., Fairlawn, N.J.

Continuation-in-part of application Ser. No. 447,064, Apr. 9, 1965, now abandoned. This application June 21, 1968, Ser. No. 740,444

Int. Cl. C09d 11/00, 13/00

U.S. Cl. 106—19

7 Claims

A gun blue composition in the form of a gel suitable for use at room temperatures, and a method of blueing using the composition of the invention.

3,615,748
PROCESS FOR PREPARING QUICK DRYING, PLASTICIZED SULFUR ROAD COMPOSITIONS
Lawrence A. Smalheiser, Spring Valley, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,580

Int. Cl. C09d 11/00, 13/00

U.S. Cl. 106—19

12 Claims

Process for preparing sulfur marking compositions comprising from about 50 percent to about 95 percent elemental sulfur, from about 1 percent to about 20 percent sulfur containing plasticizer and from about 0 percent to about 30 percent filler, comprising reacting said ingredients in the presence of a basic catalyst, the improvement which comprises incorporating in said reaction mixture a minor amount of a nitrogen containing compound as drying agent selected from mercaptobenzothiazoles, mercaptoalkylthiazoles, dithiocarbamates, bis(thiocarbamoyl) sulfides, guanidines and aldehyde-amine reaction products.

3,615,749

PRINTING INK OF IMPROVED BLACKNESS

John Henry Cramer, and Walter Eldon Ness, both of Marietta, Ohio, assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 650,639, July 3, 1967, now Patent No. 3,523,811, dated Aug. 11, 1970. This application June 19, 1970, Ser. No. 047,874

Int. Cl. C09d 11/00, 11/02, 11/16

U.S. Cl. 106—20

Carbon black ink compositions of improved blackness result from treating a ferric ammonium ferrocyanide pigment, (iron blue) preferably while still in aqueous dispersion, with a cationic surfactant of the asphalt antistripping type, such as an alkylamidoalkylhydroxyalkyl quaternary ammonium compound, such as stearamidopropyl dimethyl-2-hydroxyethyl ammonium nitrate, and incorporating in the ink to prevent browning.

1 Claim

3,615,750

PLANOGRAPHIC PRINTING INKS AND PROCESS FOR MAKING AND USING SAME

Rush V. Blair, 103 W. 4th St., Peoria, Ill.

Filed June 16, 1970, Ser. No. 46,833

Int. Cl. C09d 11/06

U.S. Cl. 106—27

Planographic and lithographic printing inks comprising a substantially anhydrous polyhydric alcohol-in-oil emulsion are disclosed. These emulsoid inks may be used in planographic or lithographic printing processes and eliminate the necessity of separate and repeated dampening of the plate between copies.

17 Claims

3,615,751

PROCESS AND COMPOSITION FOR PREVENTING OFFSETTING OF DRYING PRINTING INK

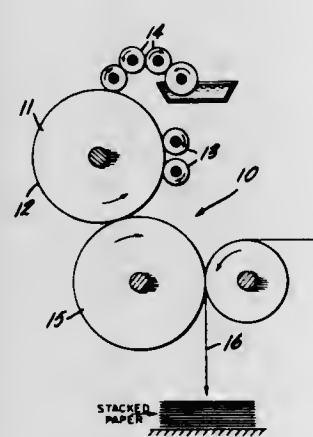
Manuel J. Lecha, and Jose S. Mascaro, both of Barcelona, Spain, assignors to Salvat Editores, S.A., Barcelona, Spain

Continuation-in-part of application Ser. No. 722,058, Apr. 17, 1968, now abandoned. This application Dec. 11, 1968, Ser. No. 782,997

Int. Cl. C09d 11/14

U.S. Cl. 106—25

10 Claims



A process and composition of matter for preventing undried ink on printed sheets of paper from offsetting or imprinting onto adjacent sheets, for example in a printing

process employing a high-speed offset press, including the steps of forming a printing ink additive containing starch particles uniformly dispersed in a nonaqueous medium compatible with the printing ink, mixing the ink additive with the printing ink, contacting the starch-containing printing ink with water, and printing the ink on sheets of paper which are then stacked.

3,615,752

PRINTING INK

Jake Walter Hoffman, Jr., Cincinnati, Ohio, and Gregory Joseph Huelsman, Wychoff, N.J., assignors to Borden, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 671,486, Sept. 28, 1967, now abandoned, which is a continuation of application Ser. No. 520,077, Jan. 12, 1966, now abandoned.

This application Sept. 10, 1969, Ser. No. 856,817

Int. Cl. C09d 11/06

U.S. Cl. 106—27

This invention relates to printing inks for use on coarse or other paper or liquid-permeable base material comprising a coloring agent and a varnish, said varnish having a PH below 7 consisting essentially of a solution in 20-100 parts by weight of a glycol solvent of (a) 100 parts by weight of acid resin plus up to 30 parts by weight of an adduct-forming acid for every 100 parts of base resin and having an acid number of at least 60 and (b) the water-soluble salt formed by reaction of the acidic resin with between about 1 to 6 parts by weight of a monomeric, water-soluble, volatile amine, the amount of amine used being equivalent to no more than 75 percent of the acidity of the resin, said solution in said solvent of said resin, amine and salt being substantially free from amide.

3 Claims

3,615,753

METHOD FOR MANUFACTURING FOUNDRY MOLDS

Freddy Jean Heinrichs, Embourg, and Roland Louis Pattyn, Liege, both of Belgium, assignors to Fonderies Magotteaux, societe anonyme, Vaux-sous-Chevremont, Belgium

Filed May 20, 1970, Ser. No. 39,144

Claims priority, application Belgium, May 21, 1969, 42,280

Int. Cl. B28b 7/34

U.S. Cl. 106—38.3

Foundry sand is produced with a binder of swellable clay and greatly increased cohesion, by mixing the binder with more than twice the desired amount of water and then reducing this amount of water to at least the level at the time of forming the sand mold. The water can also be reduced to substantial dryness. The initial proportion of water should be two to 20 times the working proportion. The clay can for example be bentonite.

6 Claims

3,615,754

PREPARATION OF NONBLEEDING INK COMPOSITIONS

William W. Gotshall, 3081 Walma Drive, Orchard Lake, Mich.

Filed Dec. 23, 1968, Ser. No. 786,386

Int. Cl. C09d 11/08, 11/00

U.S. Cl. 106—30

Nonbleeding ink compositions are prepared comprising a liquid vehicle in which 2 percent to about 10 percent by weight of a carbonaceous material having a benzene discoloration test of not less than about 98 percent is suspended. The carbonaceous particles are produced by coking a petroleum fraction, then calcining the petroleum coke to a volatile combustible hydrocarbon content of less than about 3 percent by weight based on the weight of the coke, then comminuting the resulting product to a particle size of 100 percent less than 2.5 microns and at least 50 percent less than 1.5 microns.

7 Claims

The carbon particles are dispersed in a liquid vehicle or varnish comprised of a highly paraffinic oil having a viscosity of from 5 to 10 centipoise at 60° F. in amounts of 2 percent to about 10 percent by weight based on the total weight of the coke and the vehicle. The ink pigment prepared in accordance with the invention preferably has a Cabot Nigrometer rating of from about 80 to about 100.

3,615,755

METHOD FOR MAKING A MOLD USING MANGANESE CARBONATE

Yashimitsu Uto; Daizo Yamasaki; Teisiro Watanabe, and Kouji Matsuoka, all of Hiroshima-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 673,306, Oct. 6, 1967, now abandoned. This application Jan. 14, 1970, Ser. No. 2,930

Int. Cl. B28b 7/34

U.S. Cl. 106—38.3

A method of making a mold or the like comprising the steps of mixing an alkali silicate as a binder with molding sand and adding manganese carbonate to the mixture of molding sand and alkali silicate as a self-hardener, and forming the mixture into a mold. Additionally, the mixture may be fluidized by adding a surface-active agent and also water may be added to assist in the fluidizing operation.

9 Claims

A composition of material for forming a mold is comprised of a mixture of molding sand, such as silica sand, olivine sand, zircon sand, and the like, an alkali silicate, such as sodium silicate, used as a binder, and powdered manganese carbonate is employed as a self-hardener. If a fluidized mixture is desired a surface-active agent, such as sodium salt of N-lauryl amino propionic acid and water may be added to the sand mixture.

3,615,756

TRANSPARENT THORIA-BASE CERAMICS AND METHOD FOR PRODUCING SAME

Paul J. Jorgensen, Scotia, N.Y., assignor to General Electric Company

Filed July 3, 1967, Ser. No. 650,793

Int. Cl. C04b 33/00

U.S. Cl. 106—39

The preparation of high-density thoria-base ceramic bodies containing up to 8 mole percent of CaO is disclosed. These bodies have high orders of in-line transmission of light between about 0.3 and 10.0 microns and are prepared by pressing the mixed powders and sintering in a hydrogen-water vapor atmosphere until theoretical density is achieved.

4 Claims

3,615,757

HIGH DIELECTRIC CONSTANT NIOBATE-TITANATE GLASS-CERAMIC ARTICLES

Andrew Herczog, Painted Post, and Margaret M. Layton, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 31, 1968, Ser. No. 733,293

Int. Cl. C04b 33/00

U.S. Cl. 106—39 DY

This invention relates to the manufacture of glass-ceramic materials which are especially well suited for the production of high-performance capacitors. These materials are transparent, are essentially free from Na₂O, and contain crystals preferably of alkaline earth niobates or titanates, varying in size between about 100-2,000 Å.

4 Claims

3,615,758

DEVITRIFIABLE GLASSES AND TO GLASS-CERAMICS

Peter William McMillan; Brian Purdam Hodgson, and Douglas Stanley Crozier, all of Stafford, England, assignors to The English Electric Company, Limited, London, England

Filed June 12, 1968, Ser. No. 736,291

Claims priority, application Great Britain, June 22, 1967, 28,788/67

Int. Cl. C03c 3/22, 3/00, 3/04

U.S. Cl. 106—39 DV

Devitrifiable glasses and refractory glass-ceramics, especially suitable for use as insulating coatings on thin wires,

10 Claims

3,615,759

SILICA-ALUMINA-LITHIA GLASSES, CERAMICS AND METHOD

Robert A. Busdiecker, Woodville, and James E. Rapp, Oregon, both of Ohio, assignors to Owens-Illinois, Inc.

Continuation of application Ser. No. 574,927, Aug. 25, 1966, now abandoned, Continuation-in-part of application Ser. No. 518,447, Jan. 13, 1966, now Patent No. 3,507,737,

Continuation-in-part of application Ser. No. 522,020, Jan. 21, 1966, now abandoned. This application June 2, 1969, Ser. No. 833,865

Int. Cl. C04b 33/00

U.S. Cl. 106—39 DV

Disclosed are new thermally crystallizable glasses in the silica-alumina-lithia system containing titanium oxide, zirconium oxide, and calcium oxide and being limited to very low percentages of ZnO, P₂O₅, and B₂O₃. Glass-ceramics of these same compositions and methods for making them by crystallizing such glasses are also disclosed, as are transparent glass-ceramic mirror blanks of low coefficients of expansion.

18 Claims

3,615,760

CALCIUM OXIDE-ALUMINUM OXIDE-SILICON DIOXIDE CERAMIC SUBSTRATE MATERIAL FOR THIN FILM CIRCUITS

John C. Williams, Whippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 14, 1969, Ser. No. 815,655

Int. Cl. C04b 33/00

U.S. Cl. 106—39 R

A ceramic body, having the nominal composition in percent by weight 31 CaO, 56 Al₂O₃ and 13 SiO₂, when fired to a dense, fine-grain structure, is useful as a substrate material for thin film resistors and capacitors.

3 Claims

3,615,761

PHOTOTROPIC ARTICLES CONTAINING THALLOUS HALIDE

Sumio Sakka, Troy, and John D. MacKenzie, Schenectady, both of N.Y., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 31, 1968, Ser. No. 701,974

Int. Cl. C03c 3/16, 3/26, 3/22

U.S. Cl. 106—17 R

This invention relates to phototropic articles containing thallos halides. It particularly relates to thallos halide containing glasses and glass-ceramics, particularly glasses and glass-ceramics containing thallos halides which have been doped with a metal such as copper or indium.

2 Claims

3,615,762

THORIUM-FREE, LANTHANUM BORATE OPTICAL GLASS

Richard John Parry, Southport; Reginald Dunning, Parbold; Albert Forber, Upholland, and George Albert Higham, Wigan, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed June 27, 1968, Ser. No. 740,462

Claims priority, application Great Britain, July 26, 1967, 34419/67

Int. Cl. C03c 3/00

U.S. Cl. 106—47 Q

Thorium-free optical glass having increased resistance to acids and improved devitrification characteristics, and containing by weight as essential ingredients from 37 to 45% B₂O₃, from 45 to 53% La₂O₃, and from 0.5 to 4.5% Al₂O₃.

3 Claims

3,615,763
HIGH-ALUMINA CERAMIC BODY AND METHOD OF MAKING SAME
 William M. Flock, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
 Filed June 4, 1969, Ser. No. 830,413
 Int. Cl. C04b 33/26

U.S. Cl. 106—46 6 Claims

This invention relates to sintered ceramic articles of the type usable as electrical insulators in an environment under which body is subjected to wide ranges of temperature variation while meeting high-strength requirements and of the type also usable in other applications requiring high-strength and a high resistance to thermal shock such as the turbine and nuclear reactor parts; such a body consisting essentially of a reaction product which, calculated as oxides, approximates 94-96.5 weight percent Al_2O_3 and a mixture of SiO_2 , CaO , and MgO which mixture falls within a parallelogram-shaped area on a weight percent triaxial diagram approximately bounded by the compositions represented as follows:

	A	B	C	D
SiO_2	60%	46%	46%	60%
CaO	32%	39%	44%	37%
MgO	8%	15%	10%	3%

3,615,764
ARSENIC PENTOXIDE GLASS COMPOSITIONS
 Georg Krolla, Mainz-Mombach, Germany, assignor to JENAer Glaswerk Schott S. Gen., Mainz, Germany
 Filed Mar. 24, 1969, Ser. No. 809,507
 Claims priority, application Germany, Mar. 30, 1968, P 17 71 080.4

Int. Cl. C03c 3/00, 3/12, 3/18
 U.S. Cl. 106—47 Q 25 Claims

Optical glass compositions comprising 8 to 60 percent by weight arsenic pentoxide and 40 to 92 percent by weight simple and/or complex inorganic fluorides.

3,615,765
GLAZE FOR CERAMIC PARTS AND ARTICLES
 Vera Ivanovna Bystrova, Petrosky pereulok, 3, kv. 60; Natalia Lavrentevna Polyakova, Stredne-Okhtinsky prospekt 12, kv. 15, and Galina Arkhipovna Mikhailova, Liteiny prospekt 46, kv. 13, all of Leningrad, U.S.S.R.
 Filed Oct. 3, 1968, Ser. No. 764,962

Int. Cl. C03c 3/04; C04b 33/00; C03c 5/02
 U.S. Cl. 106—48 2 Claims

A glaze is proposed which retains its strength and high dielectric properties during the process of metallization of ceramic parts and articles. The glaze contains by weight about 57-65 percent SiO_2 , 20-27 percent Al_2O_3 , 5-6.6 percent MgO , 9-12 percent K_2O+Na_2O , and 0.5-1.5 percent CaO .

3,615,766
LANTHANUM BORATE FIBER-OPTIC GLASS
 Gertraud Agnes Anna Piesslinger, and Hubertus Mathieu Johannes Josephus Kunnen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
 Filed June 18, 1969, Ser. No. 834,495

Claims priority, application Netherlands, June 29, 1968, 6809259, 6905000, Apr. 1, 1969
 Int. Cl. C03c 3/00, 13/00

U.S. Cl. 106—50 3 Claims

Glass having a high refractive index which is used as core glass of glass fibers present in a bundled form in a fiber-optic

element. This glass has a composition in percent by weight between the following limits:

B_2O_3	19-22
La_2O_3	34-38
Al_2O_3	2-5
ZrO_2	6-9
Nb_2O_5	8-15
Ta_2O_5	4-12
ThO_2	8-20
BaO	≧ 6
TiO_2	≧ 3

3,615,767
GLASS MANUFACTURE EMPLOYING SODIUM SULFITE
 Alfred R. Conroy, Jr., Denver; William C. Bauer, Boulder, and David D. Billings, Golden, all of Colo., assignors to FMC Corporation, New York, N.Y.
 Continuation of application Ser. No. 542,714, Apr. 13, 1966, now abandoned. This application Jan. 20, 1970, Ser. No. 4,440

Int. Cl. C03c 3/04
 U.S. Cl. 106—52 4 Claims

Process of melting a glass batch in order to reduce the number and size of seeds which are present in the final glass product by adding a minor but effective amount, on the order of 0.015 to 1.8 percent by weight, of sodium sulfite to the glass batch charged to a glass furnace.

3,615,768
DRY REDISPERSIBLE SATIN WHITE AND METHOD OF PREPARING
 Milton E. Winyall, Ellicott City, Md., Thomas E. McGoury, Severna Park, Md., and Julian H. Chaudet, Fairfax, Va., assignors to W. R. Grace & Co., New York, N.Y., a corporation of Connecticut
 Filed Apr. 14, 1969, Ser. No. 816,033

Int. Cl. C09c 1/02
 U.S. Cl. 106—306 8 Claims

Drying methods of producing a dried form of satin white which is easily redispersible in liquid carriers, are disclosed. In one aspect the methods are characterized by spray drying under specific temperature conditions. Satin white has utility as a pigment for both paints and paper coatings.

3,615,769
LANTHANUM BOROSILICATE OPTICAL GLASS
 Ernst Leitz, Wetzlar/Lahn; Heinz Bromer, Herrmannstein, am Hendsruck, and Norbert Meinert, Wetzlar/Lahn, all of Germany, assignors to Ernst Leitz, GmbH, Wetzlar/Lahn, Germany
 Continuation-in-part of application Ser. No. 829,033, May 29, 1969, now Patent No. 3,563,773, which is a continuation-in-part of application Ser. No. 563,867, July 8, 1966, now abandoned, which is a division of application Ser. No. 786,726, Jan. 14, 1959, now abandoned. This application Mar. 9, 1970, Ser. No. 17,424

Int. Cl. C03c 3/04
 U.S. Cl. 106—54 5 Claims

An optical glass is disclosed which consists essentially of (a) a glass base consisting of B_{23} , SiO_2 and La_2O_3 , (b) of ZrO_2

and Ta_2O_5 or Nb_2O_5 and (c) of at least one constituent selected from a group including the oxides of such metals as magnesium, calcium, zinc, cadmium, aluminum, and tungsten. The index of refraction of the invented glass ranges in dependence on the percentage of the individual components from 1.80 to 1.83 while the Abbe numbers are between 43 and 45.

3,615,770
GLASS HAVING A LOW ULTRASONIC PROPAGATION TIME TEMPERATURE COEFFICIENT
 Marga Faulstich, and Norbert Neuroth, both of Mainz, Mombach, Germany, assignors to JENAer Glaswerk, Mainz, Germany
 Filed Dec. 1, 1967, Ser. No. 687,099

Claims priority, application Germany, Dec. 7, 1966, J 32423
 Int. Cl. C03c 3/04

U.S. Cl. 106—53 9 Claims

A glass having a low ultrasonic wave propagation time temperature coefficient, preferably for transverse waves of about 4 MHz, is disclosed having the following composition in weight percent:

$SiO_2 + B_2O_3$	65-83
(B_2O_3)	0-3
Alkali oxides.....	9-20
TiO_2	2-6
$TiO_2 + PbO$	5-22
As_2O_3 and/or Sb_2O_3	0.3-1.5

The glass is particularly adapted for use as a delay line, i.e., a means to retard the propagation of signal between two points.

3,615,771
PHOTOCHROMIC GLASS
 Gerald S. Meiling, Medford, Mass., assignor to Corning Glass Works, New York, N.Y.
 Filed Sept. 23, 1968, Ser. No. 761,802

Int. Cl. C03c 3/04
 U.S. Cl. 106—54 3 Claims

This invention relates to the production of photochromic glasses having compositions within the $CdO-B_2O_3-SiO_2$ field.

3,615,772
FLUORINE-CONTAINING BORATE GLASS COMPOSITIONS
 Jaroslav Kohut, Parma Heights, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
 Filed Apr. 25, 1969, Ser. No. 819,473

Int. Cl. C03c 3/04
 U.S. Cl. 106—54 6 Claims

There is disclosed fluorine-containing glass compositions which are lead-free and which have utility as sealing glasses, especially for iron-sealing applications, and which are useful as a frit. The glasses generally have the following compositions in percent by weight: about 5-11 percent SiO_2 ; about 37-53 percent B_2O_3 ; about 5-12 percent ZnO ; about 2-5 percent Al_2O_3 ; about 4-18 percent Na_2O ; about 2-6 percent K_2O ; about 2-13 percent Li_2O ; about 3-6 percent CaO ; about 3-6 percent BaO ; and fluorine in an amount not to exceed about 3.5 percent.

3,615,773
GLASS FOR MANUFACTURE OF GLASS-COATED MICROWIRE
 Serafima Petrovna Obidina, Gogolevsky bulvar, 25, kv. 13, and Alexandra Nikolaevna Bush, Zelenograd, Korpus 352, kv. 51, both of Moscow, U.S.S.R.
 Filed Sept. 12, 1969, Ser. No. 857,578
 Int. Cl. C03c 3/08; C32b 3/08

U.S. Cl. 106—54 1 Claim
 Glass for manufacturing by the casting technique glass-coated, continuous filament microwire from metals and alloys having a melting point above 1,450° C., for example, from nickel, palladium, nichrome, etc., which contains, apart from SiO_2 , B_2O_3 , BaO , K_2O and Li_2O , also P_2O_5 present to the extent of 0.5-0.7 percent by weight of all the glass components.

3,615,774
PHOSPHATE-BONDED MONOLITHIC REFRACTORY BATCH
 George H. Criss, Bethel Park, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
 Filed Jan. 8, 1968, Ser. No. 696,157
 Int. Cl. C04b 35/04, 35/10, 35/48

U.S. Cl. 106—57 8 Claims
 A refractory monolithic refractory batch comprising refractory aggregates reactive with phosphoric acid and phosphoric acid absorbed in exfoliated vermiculite.

3,615,775
HIGH ALUMINA REFRACTORY COMPOSITION
 Frederick J. Teeter, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
 Filed June 10, 1970, Ser. No. 45,221
 Int. Cl. C04b 35/10

U.S. Cl. 106—59 5 Claims
 Ceramically bonded high alumina refractory comprising Al_2O_3 , MgO and Cr_2O_3 , the molar ratio of the MgO to Cr_2O_3 between 1:1 and 2.5:1, said refractory microscopically characterized by coarse alumina grains having Cr_2O_3 in solid solution, said alumina grains knitted together by a solid solution of $MgO \cdot Al_2O_3 \cdot Cr_2O_3$ spinel.

3,615,776
UNBURNED BASIC REFRACTORY BRICK AND METHOD OF MAKING SAME
 Grant M. Farrington, Marlton, N.J.; Walter S. Treffner, Linthicum Heights, and George D. MacKenzie, Timonium, Md., assignors to General Refractories Company, Philadelphia, Pa.
 Filed Apr. 1, 1968, Ser. No. 717,788
 Int. Cl. C04b 35/42

U.S. Cl. 106—59 12 Claims
 An unburned basic refractory brick composed of a mixture of relatively coarse magnesia particles, relatively coarse chrome-ore particles and from about 15 to about 40 percent of relatively fine aggregates consisting essentially of a prereacted mixture of periclase particles sintered directly to chrome-ore particles.

3,615,777
PHOSPHATE BONDED MAGNESITE-CHROME BRICK
 Ben Davies, and George F. Carini, both of Pittsburgh, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
 Filed June 3, 1968, Ser. No. 734,042
 Int. Cl. C04b 35/42

U.S. Cl. 106—59 7 Claims
 Magnesite-chrome ore brick having a sodium phosphate binder and extremely high tensile strength as a result of the

formation, in service or in burning in a kiln of a calcium sodium silicophosphate bond.

3,615,778 PROCESS FOR THE PREPARATION OF MULLITE BONDED REFRACTORY MATERIALS

Robert E. Albert, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 10, 1969, Ser. No. 805,838
Int. Cl. C04b 35/16

U.S. Cl. 106-65

4 Claims

A process for making (1) a mullite binder precursor powder, (2) mullite, and (3) mullite bonded refractory materials is disclosed. The contribution to the art lies in the discovery that mullite can be made by firing a dry mixture of silica and aluminum chlorhydroxide at temperatures ranging from 1,050° C. to 1,300° C.

3,615,779 PROCESS FOR THE PROMOTION OF FLOW OF AQUEOUS INORGANIC SOLIDS DISPERSIONS

Helmut Von Freyhold, Dusseldorf-Oberkassel, Germany, assignor to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
Continuation of application Ser. No. 612,098, Jan. 27, 1967, now abandoned. This application Apr. 16, 1970, Ser. No. 28,225

Int. Cl. B01f 17/20, 17/54

U.S. Cl. 106-74

6 Claims

A process for the promotion of the flow of aqueous inorganic solids dispersions using a mixture of at least one alkalisilicate and at least one water-soluble salt of an amino-polyphosphonic acid in proportions ranging from 20:1 to 2:1.

3,615,780 SILICATE-CATALYZED CHEMICAL GROUTING COMPOSITIONS

Young J. Kim, Lake Hiawatha; Charles F. Murphy, Morristown, and Reid L. Mitchell, Morristown, all of N.J., assignors to ITT Rayonier Incorporated, Shelton, Wash.
Filed May 28, 1969, Ser. No. 828,698
Int. Cl. C04b 19/02, 19/04

U.S. Cl. 106-74

8 Claims

A unique chemical grouting composition is provided for injection stabilization of earth, sand and other porous, particulate formations or agglomerates or solids. The composition produces grouted structures of excellent strength and durability and has a wide range of uses in a system comprising sequential formulation and subsequent injection of on-site-formed aqueous solutions of (a) base materials comprising vegetative polyphenolic material derived from coniferous bark or a tannin of the catechin or condensed type and of (b) catalyst mixtures comprising a water soluble alkali metal silicate, formaldehyde or paraformaldehyde, and sufficient acid to establish the catalyst solution pH at 0.5 to 6.0 and preferably 3-5. Optional modification materials such as asphalt, clay, or a hydraulic cement, or fibrous material such as asbestos, may be included.

3,615,781 TWO-POT SILICATE COATINGS COMPOSITIONS

Robert H. Schneider, 3639 Grennoch, Houston, Tex., and John B. Schutt, 2403 Peach Stone Ct. Silver Spring, Md.,
Filed Aug. 6, 1968, Ser. No. 750,457
Int. Cl. C09d 1/04

U.S. Cl. 106-84

21 Claims

High sheen, silicate coatings compositions which demonstrate water-resistance, fire-resistance, abrasion-resistance, and soil-resistance are prepared as a two-container system. An alkali metal silicate solution and a colloidal silica sol are admixed to provide a mixture having an $\text{SiO}_2 \cdot \text{M}_2\text{O}$ mole ratio of about 10:1 and which contains more than about 35 percent by weight of silicate and silica at a pH sufficiently high to promote hydration of the silica. The

coatings do not possess long shelf life and are applied soon after admixture of the ingredients. Various bulking agents and the like can be added to these coatings. For example, the addition of finely divided mica provides an excellent coating for fireproofing polyurethane foam.

3,615,782 HIGH-TEMPERATURE PAINT MATERIAL

Mohendra S. Bawa, Richardson, and Andrew J. Petty, Mesquite, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 1, 1969, Ser. No. 821,062
Int. Cl. C09d 1/02

U.S. Cl. 106-84

3 Claims

A paint base material capable of withstanding temperatures on the order of about 900° C. for protecting metals against chemical attack, having the following composition by weight:

Silica sand.....	30%
NaLiCO_3	45%
Cr_2O_3	7.5%
Fe_2O_3	5%
Graphite.....	12.5%

The base material can be mixed with alkali metal silicates, for example, sodium and potassium silicate, to provide a paint composition adaptable for easy application.

3,615,783 HYDRAULIC CEMENT COMPOSITIONS

John Wilfred Howard, 164 North Shore Boulevard East, Burlington, Ontario, Canada
Continuation-in-part of application Ser. No. 629,420, Apr. 10, 1967, now abandoned. This application June 24, 1970, Ser. No. 49,527

Int. Cl. C04b 5/00, 7/14

U.S. Cl. 106-89

10 Claims

A hydraulic cement composition comprising a uniform, finely divided mixture of a Portland cement and mineral wool shot slag, the proportion of slag being from about 10 to 90 percent by weight of the mixture.

3,615,784 COMPOSITIONS FOR PRODUCING IMPROVED CONCRETE

James R. Cattanach, Province of British Columbia, Canada, assignor to John Godfrey; Charles Hall; Alexander Bruce Robertson and Charles Reginald Tanner, all of Vancouver, BC, Canada, part interest to each
Continuation-in-part of application Ser. No. 583,959, Oct. 3, 1966, now abandoned. This application Aug. 4, 1969, Ser. No. 847,438
Int. Cl. C04b 7/02

U.S. Cl. 106-88

11 Claims

A composition for producing air-entrained concrete which includes hydrolyzed casein, water, and a polyethenoxy type surface active agent. Polyvinyl alcohol also can be added to mixture. These compositions in foamed or unfoamed form are mixed with hydraulic cement and water to produce air-entrained concrete or concrete with normal amounts of air.

3,615,785 CEMENT GRINDING AID AND PACK SET INHIBITOR

Howard H. Moorer, Charleston, and Charles M. Anderegg, Sullivan's Island, both of S.C., assignors to West Virginia Pulp and Paper Company, New York, N.Y.
Filed Feb. 2, 1968, Ser. No. 702,519
Int. Cl. C04b 13/26

U.S. Cl. 106-90

12 Claims

Additive compositions for use as grinding aids and pack set inhibitors in the manufacture of hydraulic cement composed

of a water-soluble polyol, particularly a glycol, and a water-soluble salt of an aliphatic acid having no more than three carbons, said additive compositions being used either alone or in combination with water-soluble salts of a sulfonated lignin, a water-soluble hydroxyalkyl amine and urea, the hydraulic cement product of this addition and the method for making the cement product.

3,615,786 SIMULTANEOUSLY OXIDIZING STARCH WITH A HYPOHALITE AND AIR

Jerry A. Moskaluk, Midlothian, Ill., assignor to CPC International Inc.
Continuation of application Ser. No. 705,638, Feb. 15, 1968. This application Feb. 16, 1970, Ser. No. 10,086
Int. Cl. C08b 25/02

U.S. Cl. 106-210

6 Claims

Covers a method of oxidizing starch. Particularly covers a method of oxidizing starch by first forming a basic aqueous slurry of starch, and then oxidizing said starch in slurry form by treatment with dual oxidants comprising an alkali metal hypohalite, such as sodium hypochlorite, and a source of oxygen. In a preferred embodiment the oxidation is carried out by addition of an alkali metal hypohalite, such as sodium hypochlorite to the starch slurry and by bubbling in air through the alkali metal hypohalite-treated starch slurry during the oxidation reaction. The oxidized granular starch product can be recovered in dry form and is particularly useful as a binder in a paper-coating composition.

3,615,787 METHOD OF THE PRODUCTION OF SUPERHIGH EARLY STRENGTH CEMENTS

Hideo Teramoto, and Tatsuo Kasakawa, both of Tokyo, Japan, assignors to Nihon Cement Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1969, Ser. No. 883,608
Claims priority, application Japan, Aug. 28, 1969, 44/67615
Int. Cl. C04b 7/48, 7/52

U.S. Cl. 106-102

1 Claim

Method of the production of superhigh early strength cements which comprises using, in addition to the materials such as limestone, clay and pyrite cinder generally used as the raw materials for portland cements, a raw material containing as the major or minor component a chromium compound such as chromite and a raw material containing as the major or minor component a fluoride such as fluorite, in the preparation of raw mixtures which are obtained either by mixing crushed or ground said raw materials or by further grinding the raw mixtures, mixing said raw materials in such a ratio as to provide contents of tricalcium silicate ($3\text{CaO} \cdot \text{SiO}_2$), tricalcium aluminate ($3\text{CaO} \cdot \text{Al}_2\text{O}_3$) chromium oxide (Cr_2O_3) and fluorine (F) in clinkers which are obtained by sintering said raw mixtures within the ranges set forth in the table

Compound or element	Scope of content (%)
Tricalcium silicate ($3\text{CaO} \cdot \text{SiO}_2$)	65 to 85
Tricalcium aluminate ($3\text{CaO} \cdot \text{Al}_2\text{O}_3$)	7 to 13
Chromium oxide (Cr_2O_3)	0.3 to 1.5
Fluorine (F)	0.2 to 1.0.

in the preparation of cements by crushing mixtures of said clinkers and gypsums, adding to said clinkers such amounts of gypsum that contents of sulfuric anhydride (SO_3) in said cements are within a range between 1.5 and 4.5 percent and grinding the resulting cements to produce specific surface areas of said cements with a range between 4,500 and 6,000 cm^2/g .

3,615,788 BATTERY PASTE EXPANDER MATERIAL

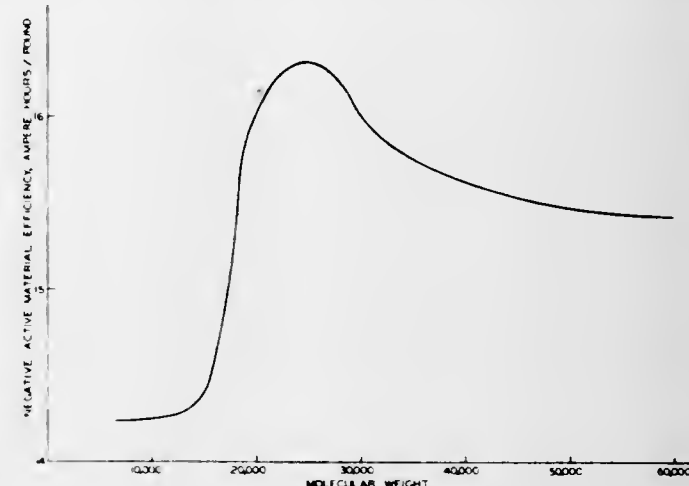
Jack L. Limbert, Daleville; Harry G. Proctor, Muncie, and David T. Poe, Gaston, all of Ind., assignors to General Motors Corporation, Detroit, Mich. Division of Ser. No. 780,067, Nov. 29, 1968, Pat. No. 3,523,041.
Filed Oct. 30, 1969, Ser. No. 871,341
Int. Cl. C08h 15/02

U.S. Cl. 106-123

2 Claims

A battery paste expander material for the negative plate of

a lead-acid storage battery including lignosulfonic acid in the molecular weight range of about 20,000 to 30,000 g/g-mol.



less than about 1 percent carbohydrates and about 3-8 percent combined sulfur.

3,615,789 PROCESS FOR THE MANUFACTURE OF ENRICHED COLLOIDAL SILVER

Heinrich Schaller, Fribourg, Switzerland, assignor to Ciba Limited, Basel, Switzerland
Continuation-in-part of application Ser. No. 649,217, June 27, 1967, now abandoned. This application Sept. 15, 1969, Ser. No. 864,932
Int. Cl. C08h 7/00

U.S. Cl. 106-135

5 Claims



Colloidal silver is prepared in enriched form, suitable for the manufacture of photographic antihalation and color filter layers, from an aqueous medium in which the silver is present as a dilute dispersion, by adding a flocculating agent and separating the flocculate at a pH from 3 to 8 and redispersing it in the presence of citrate ions.

3,615,790 GENERAL DYE-ASSIST FOR SYNTHETIC FIBERS

Marion R. Lytton, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Apr. 27, 1967, Ser. No. 634,091
Int. Cl. C08b 21/16, 21/20, 27/54

U.S. Cl. 106-165

6 Claims

Artificial, shaped articles of polymeric material having improved dyeability are provided by the incorporation therein of sulfones containing alpha-methylene groups.

The dye receptability of artificially prepared fibers, yarns, fabrics and other shaped articles in often in need of improvement, so that these materials can be deep dyed in various types of dyeing procedures. While methods for improving the dyeability of various artificial fibers, including,

3,615,806

KAOLIN PIGMENTS AND METHODS OF PRODUCING THE SAME

Andrew Terock, Morris Plains, and Thomas F. Walsh, Parsippany, both of N.J., assignors to Georgia Kaolin Company

Filed Dec. 10, 1968, Ser. No. 782,722

Int. Cl. C08h 17/06; C09c 1/28

U.S. Cl. 106—288 B

3 Claims

A new kaolin pigment and method of producing the same are provided in which the pigment is made up of thin, platelike particles having an equivalent spherical diameter by Stokesian methods greater than 2 microns, an average aspect ratio of thickness to diameter of about 1:20, and being substantially free of stacks and produced by delaminating a slurry having particles not less than 5 microns e.s.d. until substantially free of stacks, removing the particles of less than 2 microns e.s.d. and recovering the remainder as the product.

3,615,807

POSITIVELY CHARGED FIBROUS CERIUM PHOSPHATE

Paul Clifford Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 1, 1969, Ser. No. 812,443

Int. Cl. C09c 1/00, 1/14, 1/36

U.S. Cl. 106—288 B

7 Claims

The positively charged fibrous cerium phosphates of this invention comprise colloidal fibrous crystalline cerium phosphate which contains at least 5 mole percent based on the number of moles of phosphorous of at least one +3 or +4 valent metal ion from the group of titanium, zirconium, hafnium, chromium, molybdenum, tungsten, manganese, aluminum, iron, cobalt, cerium, the rare earths, thorium, tin and lead.

3,615,808

NONFLOCCULATING PIGMENT PREPARATIONS AND PROCESSES FOR THEIR MANUFACTURE

Peter Eckert, Magden, and Anton Elsener, Birsfelden, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed June 5, 1968, Ser. No. 734,524

Claims priority, application Switzerland, June 16, 1967, 8581

Int. Cl. C08h 17/02

U.S. Cl. 106—288 Q

3 Claims

The present invention concerns a nonflocculating pigment preparation which contains a pigment and 2 to 20 percent of cellulose nitrate and a process for its manufacture wherein a pigment and cellulose nitrate are mixed together. These preparations are useful for coloring plastic masses and lacquers.

3,615,809

COMPACTED PIGMENT COMPOSITIONS

Floyd B. Nagle, Midland; Kenneth R. Hock, Gladwin, and Winfield Scott Haynes, Jr., Freeland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 26, 1968, Ser. No. 763,009

Int. Cl. C08s 1/36; C09c 1/36

U.S. Cl. 106—300

4 Claims

The invention relates to pigmented or colored thermoplastic polymers and pertains especially to compacted pigment compositions that are readily dispersed in thermoplastic polymers to make uniformly colored or pigmented polymer articles.

3,615,810

PRODUCTION OF TEMPERATURE-STABLE IRON-MANGANESE OXIDE BLACK PIGMENT

Wilhelm Holznagel, Krefeld; Franz Hund, Krefeld-Bockum, and Gottfried Gerlach, Krefeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 13, 1969, Ser. No. 833,146

Claims priority, application Germany, June 26, 1968, P 17 67 868.1

Int. Cl. C09c 1/24

U.S. Cl. 106—304

18 Claims

Process for the production of a temperature-stable solid black pigment of high tinting strength consisting essentially of mixed oxides of iron and manganese, by calcining an intimate finely divided mixture of oxide or oxide-forming starting materials of iron and manganese, e.g., Fe_2O_3 , $\text{Fe}(\text{OH})_3$, FeOOH and active Fe_2O_3 and MnCO_3 , Mn_2O_3 , MnOOH and pyrolusite (i.e., MnO_2), in a ratio by weight corresponding to 25–90 parts of Mn_2O_3 to 75–10 parts of Fe_2O_3 , at a temperature of about $800^\circ\text{--}920^\circ\text{C}$. in an atmosphere having an oxygen content of about 7–20 percent by volume, optionally in the presence of an alkali metal salt, e.g., NaCl , or boron oxide, as mineralizer; and the corresponding pigment thereby produced.

3,615,811

CARBONATE COMPOSITIONS AND PROCESS

Robert C. Barrett, Cartersville, Ga., assignor to Chemical Products Corporation, Cartersville, Ga.

Filed Feb. 29, 1968, Ser. No. 709,441

Int. Cl. C09c 1/02, 3/02

U.S. Cl. 106—306

11 Claims

Alkaline earth carbonates, together with dispersants and binder additives are dried to provide products particularly suitable for bulk handling, storage and shipment. The product can be prepared in such manner as to have excellent dry flow characteristics, good pellicle strength and moderately high bulk density, while retaining the small particle size of the individual alkaline earth crystallites of which the dried pellicles are formed. The products may be particularly adapted for use in ceramic industries and/or may be adapted for use in aqueous suspensions, in which cases they are provided with ready dispersability and high reactivity.

3,615,812

RESIN COATED PIGMENTS AND PROCESS THEREFOR

Daniel Clark, and Edward H. Krumm, both of Holland, Mich., assignors to Chemetron Corporation, Chicago, Ill.

Continuation of application Ser. No. 395,045, Sept. 8, 1964, now abandoned. This application Feb. 19, 1969, Ser. No. 805,950

Int. Cl. C08j 1/10

U.S. Cl. 106—308 M

14 Claims

A resin coated pigment is produced by intermixing a pigment in the form of a water wet press cake into a resin while maintaining the resin in the form of a stiff, doughlike mass to effect a hot dry plastic pigment-resin dispersion. The process results in a resin coated pigment of high pigment concentration being grit-free and having high tinctorial strength.

3,615,813

ELECTROPHOTOGRAPHIC LAYER CLEANING PROCESS AND APPARATUS

Francis R. Clarke, and Clifford E. Herrick, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1969, Ser. No. 825,910

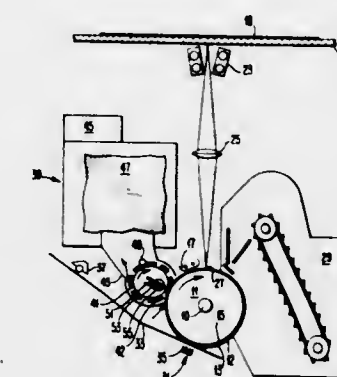
Int. Cl. G03g 13/00, 15/00

U.S. Cl. 134—1

8 Claims

An electrophotographic element is cleaned of residual toner by providing a cleaning means such as a rotating brush

in contact with the element or an airstream to remove residual toner particles from the element while also providing means



such as a fluorescent lamp to concurrently illuminate the portion of the element being cleaned.

3,615,814

METHOD OF AND APPARATUS FOR ULTRASONICALLY CLEANING A WEB OF FILM

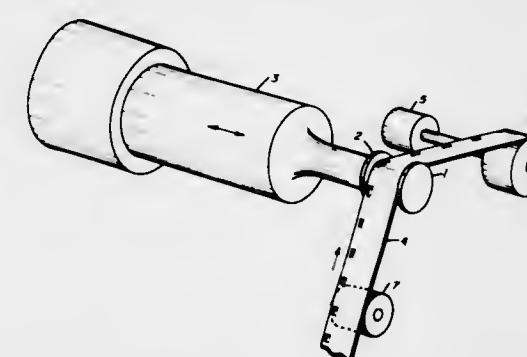
Howard F. Victor Ott, and Jerry Carmen, both of Spenceport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,680

Int. Cl. B08b 7/02

U.S. Cl. 134—1

5 Claims



Dirt particles are cleaned from a web of flexible material such as photographic film or paper by applying ultrasonic vibrations to the web in a direction transversely of the web. The cleaning apparatus comprises an ultrasonic horn having a pair of circular opposed shoulders spaced from one another lengthwise of the horn, defining a circular channel between the shoulders for confining the web, and mechanism for advancing the web through the channel in contact with the shoulders.

3,615,815

METAL CLEANING PROCESS

Eugene Wainer, Shaker Heights, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incorporated

Filed Mar. 3, 1969, Ser. No. 804,018

Int. Cl. C23g 1/28, 1/32

U.S. Cl. 134—2

12 Claims

This invention is an improvement on my U.S. Pat. No. 3,000,766 and is directed to the recovery of metal values in scrap materials by separating the metal values from any nonmetallic material associated therewith, such as insulation on wires or other electrical equipment. The improvement resides in carrying out the removal of unwanted nonmetallic materials in two separate stages, the second of which is similar to that described in U.S. Pat. No. 3,000,766, but is carried out much more efficiently because of the treatment which prepares the scrap for this step. In the first stage, a substantial amount of the nonmetallic material is removed by either burning or immersion in a nonoxidizing fused salt melt.

3,615,816

COMPOSITION AND USE THEREOF FOR REMOVAL OF DEPOSITS FROM A METAL SURFACE

Theodore E. Majewski, and Arthur J. Pastor, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 2, 1969, Ser. No. 788,654

Int. Cl. C23g 1/02

U.S. Cl. 134—3

8 Claims

Deposits are removed effectively from a metal surface to which they are adhering by contacting such solids with a composition comprising by weight of from about 1 to about 6 percent CrO_3 , from about 38 to about 60 percent H_2SO_4 , and balance substantially water, to solubilize the deposits and removing the so used composition containing solubilized deposits.

3,615,817

METHOD OF DECONTAMINATING RADIOACTIVE METAL SURFACES

William T. Jordan, Pittsburgh, Pa., and Cort A. Zimmerman, Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 4, 1969, Ser. No. 796,579

Int. Cl. C23g 1/08

U.S. Cl. 134—3

2 Claims

A method of decontaminating radioactive metal surfaces and particularly difficultly accessible radioactive surfaces such as the ceiling and walls of a reactor vessel. The decontamination is accomplished by carrying a decontaminating reagent to the surfaces in a foam. Consecutive applications of alkaline permanganate and oxalic acid in foam give particularly good results. A nonionic foaming agent should be employed when the foaming agent may come into contact with a solution containing aluminum ions.

3,615,818

PROCESS AND APPARATUS FOR A CONTINUOUS PICKLING OF WIRE

Othmar Ruthner, Vienna, Austria, assignor to Ruthner Industriplanungs-Aktiengesellschaft, Vienna, Austria

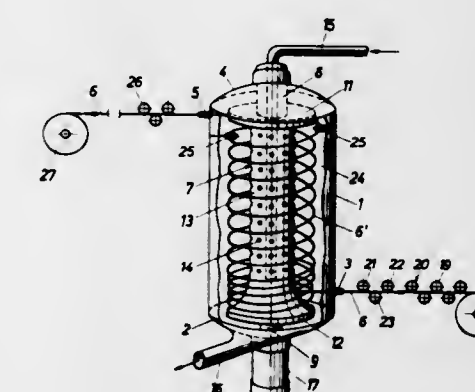
Filed Nov. 5, 1969, Ser. No. 874,215

Claims priority, application Austria, Nov. 25, 1968, A11411

Int. Cl. B08b 3/02; C23g 3/02

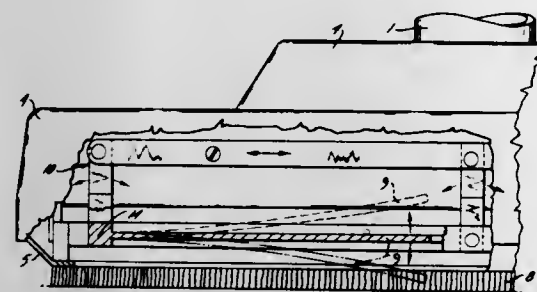
U.S. Cl. 134—3

5 Claims



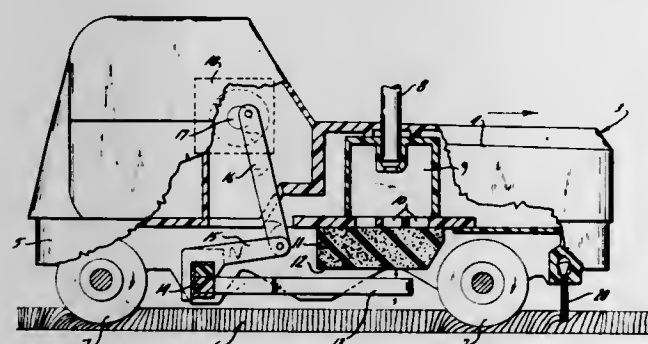
Process and apparatus for a continuous pickling of wire in a vertical processing container, through which the stock to be pickled is moved in a vertical direction in the form of a helix and without a backing at least on one side and is treated with pickling acid.

3,615,819
NAP-SURFACE CLEANING WITH TUNED FREQUENCY BEATERS
 Thomas K. Caukey, Fairlawn Village, Ohio, assignor to Bissell Inc., Grand Rapids, Mich.
 Filed Jan. 19, 1970, Ser. No. 3,692
 Int. Cl. A47I 11/00, 11/12
 U.S. Cl. 134-6 9 Claims



A nap-surface cleaning device includes a plurality of flexible rodlike beaters which oscillate to beat the surface and loosen dirt embedded therein. A motor drives the rods at a beating frequency. The rods are constructed so that their natural resonant frequency is closely correlated with the beating frequency.

3,615,820
SHAMPOOER WITH IMPROVED FOAM-GENERATING ACTION
 Wallace D. Herrick, Grand Rapids, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
 Filed Jan. 19, 1970, Ser. No. 3,693
 Int. Cl. A47I 11/00, 11/12
 U.S. Cl. 134-6 10 Claims

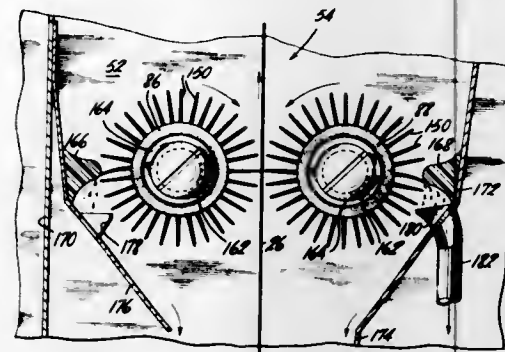


A shampooer for nap surfaces which supplies shampoo in liquid form to an elongated distributor. A spongelike pad is mounted beneath the distributor and is generally coextensive therewith. A plurality of flexible beater rods are disposed with their tips confined between the pad and the nap surface. Oscillation of the rods causes them to alternately beat the pad to form foam, and to beat the nap to drive the foam thereinto for cleaning.

3,615,821
STRIP MATERIAL SQUEEGEE AND METHOD
 Arthur J. Miller, Horizon Towers North, Fort Lee, N.J.
 Filed Nov. 21, 1969, Ser. No. 878,757
 Int. Cl. F26b 13/04; B08b 3/10
 U.S. Cl. 134-10 21 Claims

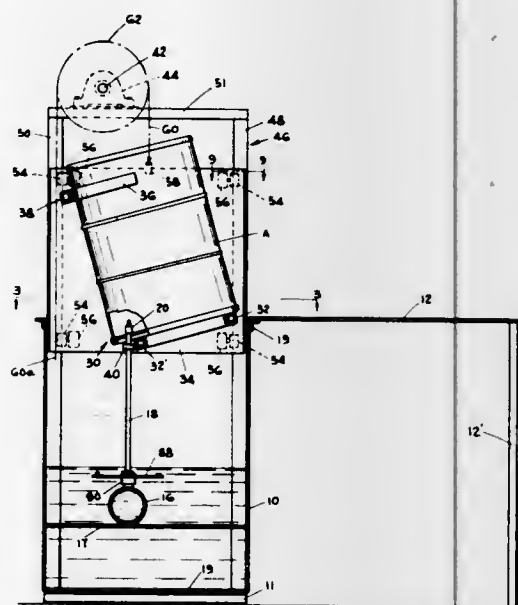
Squeegee and method for stripping solvent from the surfaces of perishable strip materials, such as motion picture film and the like. More specifically, the strip material is passed between, but does not engage, one or more sets of opposed, spaced-apart rollers that are rotated at high speed against the direction of movement of the material to pump at high velocity a fluid stream, such as air or some other suitable gas, through the spaces between the rollers and the adjacent material surfaces, thereby removing the solvent adhering to the material. Seal members may be provided to

prevent leakage around the rollers of the drying fluid stream and the solvent transferred to the rollers from the strip



material, while conduits associated with the seal members recover the solvent picked up by the rollers.

3,615,822
METHODS AND APPARATUS FOR CLEANING DRUMS
 Jerry J. Molinari, Newark, N.J., assignor to Kingsland Drum & Barrel Co. Inc., Newark, N.J.
 Filed Dec. 9, 1968, Ser. No. 782,342
 Int. Cl. B08b 9/12
 U.S. Cl. 134-23 16 Claims

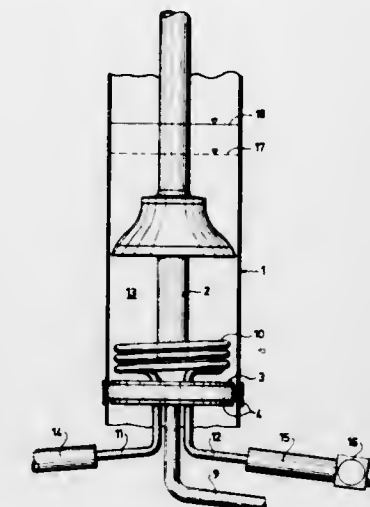


A method of and apparatus for cleaning drums of the type having a bung opening in the cover which employs a tank having a plurality of nozzle pipes positioned in the tank. The nozzle pipes are stationary or in a fixed position, one for each drum to be cleaned. The drums are supported so that their bung openings are facing and in alignment with the nozzle pipes. The drums are moved over the stationary nozzle pipes and retracted. During the reciprocable movement of the drums a cleaning solution is sprayed against the interior surfaces of the drums.

3,615,823
METHOD OF CLEANSING AND/OR STERILIZING THE FILLER TUBE IN PACKAGING MACHINES
 Alex Tuma, Loddekoping, and Jan Ingvar Hansson, Lomma, both of Sweden, assignors to AB Tetra Pak, Lund, Sweden
 Filed Feb. 17, 1969, Ser. No. 799,560
 Claims priority, application Sweden, Mar. 1, 1968, 2773/68
 Int. Cl. B08b 3/10; A61I 1/00
 U.S. Cl. 134-24 7 Claims

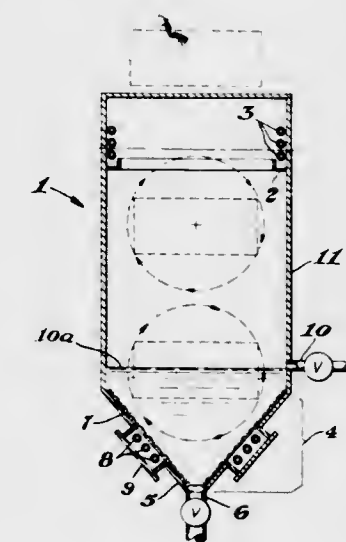
A method of washing, i.e. cleansing and/or sterilizing a

packaging machine filler tube by closing one end of the tubular packaging material to form a closed space around the



filler tube, introducing a liquid washing agent into the space thus formed and then heating the agent.

3,615,824
METHOD FOR CLEANING SMALL PARTS
 George T. Hittel, Midland, and Thomas F. Rozek, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
 Filed July 31, 1968, Ser. No. 749,123
 Int. Cl. B08b 3/06
 U.S. Cl. 134-25 R 1 Claim



A process and apparatus for cleaning metal parts comprising introducing the metal part into an enclosure which has sufficient volume to enable the part to alternately enter a vapor zone and a liquid zone each within the enclosure, while the part is freely moving within a confined area.

3,615,825
PAINT-STRIPPING COMPOSITION
 Robert E. Gansser, Riverview, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
 Filed Feb. 24, 1969, Ser. No. 801,788
 Int. Cl. C09d 9/00; C11d 7/06
 U.S. Cl. 134-38 5 Claims

Paint-stripping compositions are prepared by combining alkoxyalkyl amines with alkaline solutions. These compositions are effective for stripping paints, particularly enamel paints, from metals and surfaces of other materials.

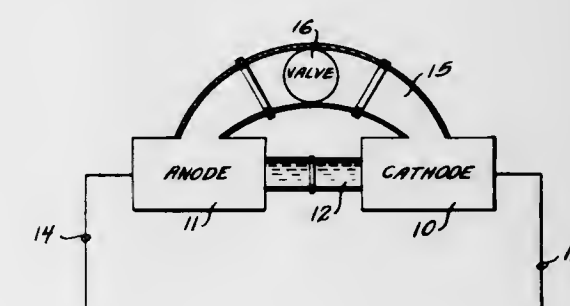
3,615,826
PROCESS FOR CLEANING OVENS AND LIKE DEVICES
 Alfred P. Brill, 5522 E. Tomahawk Drive, Greensboro, N.C., and Leroy H. Keiser, 4001 Moorland Drive, Midland, Mich.
 Filed Nov. 24, 1969, Ser. No. 879,530
 Int. Cl. B08b 17/02, 3/08; C09k 3/00
 U.S. Cl. 134-29 12 Claims

A process for cleaning food spills from ovens and the like devices which comprises the steps of applying a composition which consists essentially of from 1 to 35 percent by weight of a polydimethylsiloxane having a viscosity of at least 3000 cs. at 25° C., from 0.5 to 5.5 percent by weight of a siloxane resin composed of SiO_{4/2} units and (CH₃)₂SiO_{1/2} units in the ratio of 1:0.6-1.2, from 0.1 to 9 percent by weight of a metal oxide, and the balance solvent, to the clean and essentially dry surfaces of the oven or like device, and then, after the oven or device has been employed one or more times for heating food, cleaning the food spills therefrom, said cleaning being facilitated by said composition.

3,615,827
PAINT-STRIPPING COMPOSITION AND METHOD
 Donald P. Murphy, Roseville, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
 Continuation of application Ser. No. 459,903, May 28, 1965, now abandoned. This application Mar. 5, 1969, Ser. No. 806,034
 Int. Cl. B08b 7/00; C23g 1/14
 U.S. Cl. 134-38 10 Claims

A paint-stripping composition comprising an alkali metal hydroxide and an accelerator composition of a polyalkylene glycol and ethylene glycol monophenyl ether. Preferably, the activator composition is made up of tripropylene glycol and ethylene glycol monophenyl ether.

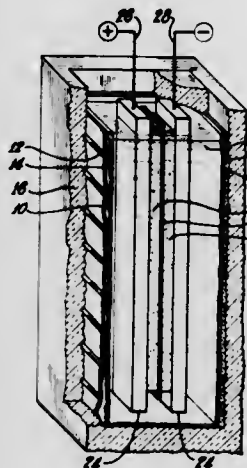
3,615,828
SECONDARY POWER-PRODUCING CELL
 Albert K. Fischer, Western Springs, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
 Filed Mar. 9, 1970, Ser. No. 17,404
 Int. Cl. H01m 35/02
 U.S. Cl. 136-6 4 Claims



A secondary power-producing cell consists of an anode and a cathode formed of binary compounds containing the same two elements in different stoichiometric proportions, the electrodes being separated by an electrolyte containing ions of the element that is to be transported therethrough. During operation ions of the electropositive component of the electrode compounds transfer through the electrolyte from the anode to the cathode until the concentration thereof in the cathode approaches that in the anode. At this time the cell voltage decreases and the cell must be regenerated. The electronegative component of the cathode compound is then distilled from the cathode to the anode. Polarity of the electrodes is thereby reversed and operation of the cell may be resumed. For example the anode may be Li₃P, the cathode Li₂P₃ and the electrolyte may be the LiF-LiCl-LiI eutectic.

3,615,829
NOVEL CARBON COMPOSITIONS, METHODS OF PRODUCTION, AND USE
 James W. Sprague, Streetsboro, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
 Filed July 12, 1965, Ser. No. 471,097
 Int. Cl. C14c 3/34; H01m 13/02, 35/00
 U.S. Cl. 136—6

15 Claims



An improved electrode material for electrical energy storage devices is provided by heating a carbonaceous material to provide a charred residue, then treating this charred residue in a fused salt bath under reducing and oxidizing (in the absence of oxygen) conditions. The resulting material contains occluded salts and these may, in a preferred embodiment, be removed.

3,615,830
ZINC ADDITIVE IN NICKEL CADMIUM CELLS
 Daniel Hiram Johnson, Parma Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
 Filed Aug. 13, 1969, Ser. No. 849,913
 Int. Cl. H01m 35/00, 43/04

U.S. Cl. 136—6
 Improvement in the operating characteristics of nickel cadmium cells is effected by presence of zinc in the positive electrode thereof in an amount exceeding the amount of zinc which would be required to saturate the electrolyte of the cell.

3,615,831
LEAD OXIDE-SULFURIC ACID BATTERY HAVING A POSITIVE ELECTRODE COMPRISING A TITANIUM-MOLYBDENUM-ZIRCONIUM ALLOY GRID
 Samuel Ruben, 52 Seacord Road, New Rochelle, N.Y.
 Filed July 1, 1970, Ser. No. 51,457
 Int. Cl. H01m 39/00

U.S. Cl. 136—26
 The invention is a lead-acid rechargeable cell in which the positive electrode comprises a base of a titanium-molybdenum-zirconium alloy having a surface film of a nonpolarizing element, such as gold, and an active lead oxide coating over said nonpolarizing surface.

3,615,832
METHOD OF EXTRUDING AN ELECTRODE
 James P. Malloy, Cheltenham, and Ronald R. Nilson, Philadelphia, both of Pa., assignors to ESB Incorporated
 Filed Oct. 11, 1968, Ser. No. 766,906
 Int. Cl. H01m 39/00

U.S. Cl. 136—27
 A method of extruding an electrode along the inner surfaces of a cylindrical cell container and a cell having such an electrode. A quantity of an electrode active material is placed in the bottom of the container and a rapidly spinning, cruciform-shaped tool is lowered into the container and

extrudes the active material along the container walls. The particular application of the method involves forming a gridless lead electrode in the cell container whereby the cell walls support the active material. A modified tool is used for a rectangular cell container wherein the tool is rectangular, having two surfaces recessed from the tool edges so as to form an open space between the container walls and the recessed surfaces. The tool is continually vibrated and when it is lowered into the container, paste is extruded up the open space and is spread along the inner walls of the container while the tool is vibrating.

3,615,833
BATTERY ELECTRODE AND METHOD OF MAKING THE SAME
 Ernest M. Jost, Plainville, Mass., assignor to Texas Instrument Incorporated, Dallas, Tex.
 Filed Apr. 12, 1967, Ser. No. 630,272
 Int. Cl. H01n 43/04

U.S. Cl. 136—28
 A nickel electrode for an alkaline electrolyte battery is shown to incorporate electrochemically active nickel material secured to an electrically conductive substrate and to have an electrochemically active substance such as silver oxide, manganese dioxide or ferric hydroxide of more positive electrochemical potential than the active nickel material dispersed in the active nickel material for retarding the evolution of oxygen at the electrode during charging of the battery.

The nickel electrode is made by mixing particles of the active nickel material in its charged state together with particles of a fusible binder and with particles of the material of more positive electrochemical potential, the latter material being in its discharged state. This particulate mixture is then spread upon an electrically conductive substrate and is heated to fuse the binder particles for securing the other mixture particles to each other and to the substrate to form a porous electrode structure.

3,615,834
METHOD OF MAKING A PLURAL PARALLEL ROD ELECTRODE COVER
 Erik Gustav Sundberg, Osbacken, Nol, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden
 Division of Ser. No. 653,379, July 14, 1967, Pat. No. 3,503,807
 Filed Oct. 7, 1969, Ser. No. 864,332
 Int. Cl. H01m 35/04

U.S. Cl. 136—43
 Methods for construction of a cover for a plural active element electrode which is produced as a single unit having plural parallel channels substantially square in cross section.

3,615,835
GENERATION OF DC VOLTAGE
 Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
 Continuation-in-part of application Ser. No. 575,675, Aug. 29, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 198,849, May 31, 1962, now abandoned.
 This application Jan. 16, 1969, Ser. No. 813,777
 Int. Cl. H01m 27/00

U.S. Cl. 136—83 R
 A room temperature DC voltage generating device comprising a solid body of lithium metal carrying on and in direct contact with at least a part of its surface a solid layer of a composition consisting essentially of at least one oxygen-containing lithium compound such as lithium nitrate or lithium sulfate, or lithium chloride or lithium bromide, said solid layer being effective to prevent direct contact of a water-moisture-containing gaseous environment with said body of lithium metal in the area of said solid layer, an electrical circuit including electrical contacts respectively connecting (i) said body of solid lithium metal, and (ii) said solid layer, and means providing a water-moisture-containing

gaseous environment whereby to moisten said layer, generation of DC voltage occurring on contact of said moisture with said layer.

3,615,836
FUEL CELL CONTAINING AND A PROCESS OF MAKING AN ACTIVATED FUEL CELL CATALYST
 John S. Batzold, Westfield, N.J., assignor to Esso Research and Engineering
 Continuation-in-part of application Ser. No. 394,622, Sept. 4, 1964, now abandoned. This application June 1, 1967, Ser. No. 642,722
 Int. Cl. H01m 27/10, 13/04

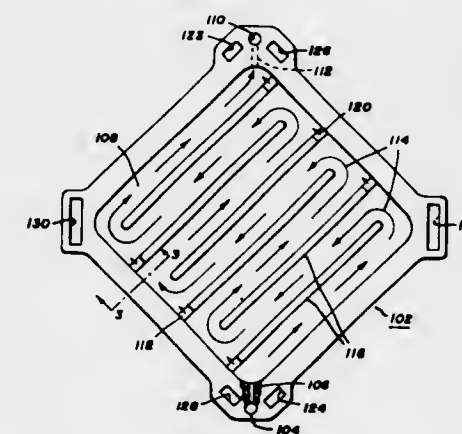
U.S. Cl. 136—86 D
 A catalyst selected from the group consisting of noble metals, transition metals, lanthanide series metals, mixtures and alloys thereof, which have limited activity because of absorbed halide ions, may be employed in electrodes of a fuel cell containing a halide ion free acid electrolyte provided that, prior to its operation in the fuel cell, the catalyst has been treated with a basic solution having a pH in the range of 8 to 14 for a period of time sufficient to desorb the halide ions.

3,615,837
ALKALI METAL DIHYDROGEN PHOSPHATE MELT ELECTROLYTES
 Morton Beltzer, New York, N.Y., assignor to Esso Research and Engineering Company
 Filed Apr. 1, 1968, Ser. No. 717,952
 Int. Cl. H01m 11/00, 27/00

U.S. Cl. 136—86
 Due to its scarcity and expense as compared with its activity, noble metals have become less desirable as fuel cell catalysts. As a result, nonnoble metals have found increasing use in fuel cell operations. Satisfactory performance of such cells, however, can only be obtained when they are operated at relatively high temperatures of 200° C. to 300° C. One problem encountered at these high temperatures is that art-known electrolytes become too corrosive, necessitating the use of other electrolyte systems. Satisfactory electrolytes can be made from several alkali metal dihydrogen phosphates as the initial components. A particularly desirable electrolyte consists of a melt of potassium dihydrogen phosphate and sodium dihydrogen phosphate.

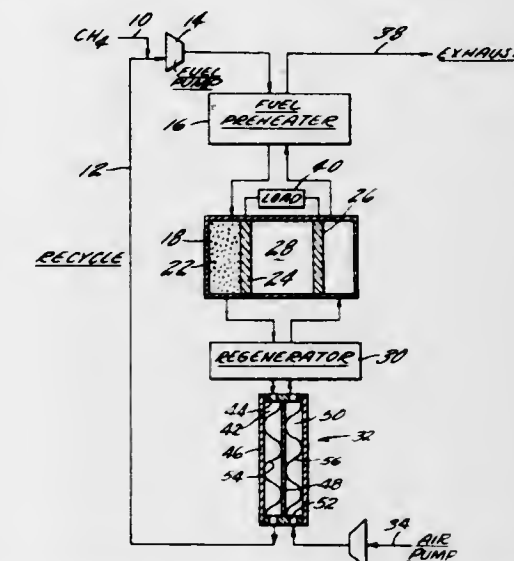
3,615,838
FUEL CELL UNIT WITH NOVEL FLUID DISTRIBUTION DRAIN, AND VENT FEATURES
 Albert C. Erickson, 28 Coolidge Park, Wakefield, Mass.
 Filed May 10, 1968, Ser. No. 728,164
 Int. Cl. H01m 27/02

U.S. Cl. 136—86
 11 Claims



A fuel cell is provided with reactant and electrolyte gaskets each defining a central area having a fluid distributor located therein. The electrolyte gasket is provided with notched or apertured fingers to uniformly distribute fluid while the reactant frames may be similarly constructed or provided with stacked screens having offset apertures.

3,615,839
FUEL CELL SYSTEM WITH RECYCLE STREAM
 Russell A. Thompson, Glastonbury; Alexander H. Levy, Bloomfield, Conn., and Eugene M. Hoyle, Santa Clara, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.
 Filed July 12, 1968, Ser. No. 744,396
 Int. Cl. H01m 27/14
 U.S. Cl. 136—86 C
 5 Claims



A high-temperature integrated fuel cell system with high overall thermal efficiency is achieved by utilizing fuel cell waste heat as the source of energy for the fuel-reforming process. A hydrocarbon fuel is mixed with a recycle stream containing water vapor and the mixture is introduced into the anode chamber of a high-temperature molten carbonate fuel cell. Within the anode chamber is a suitable catalyst which, with the addition of fuel cell waste heat, produces a hydrogen-rich stream. Hydrogen reacts electrochemically at the anode. The anode effluent essentially contains hydrogen, carbon dioxide, and steam. Carbon dioxide and a portion of the water is removed from the anode effluent and is transferred to the process air supply since a relatively high concentration of carbon dioxide is desirable at the cathode in the molten carbonate system. The remaining moist anode stream is recycled to be mixed with the fresh fuel.

3,615,840
FUEL CELL AND FUEL CELL ELECTRODE COMPRISING A SULFURATED COMPOUND OF TUNGSTEN AND OXYGEN
 William R. Wolfe, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed July 22, 1968, Ser. No. 746,325
 Int. Cl. H01m 27/04, 13/00

U.S. Cl. 136—86 D
 A relatively inexpensive catalyst for a fuel cell electrode, particularly useful with acid electrolytes, is an acid-insoluble solid material composed of at least one compound of tungsten and oxygen wherein the valence of tungsten ranges from four to six and at least one sulfurated compound of tungsten, wherein tungsten has a valence of four, e.g., tungsten disulfide, at least the exposed regions of said solid material containing said sulfurated compound of tungsten, the ratio of oxygen-to-sulfur in said solid material being 80:1-1:80.

3,615,841
ELECTROCHEMICAL CELL
 Stanley W. Smith, Talcottville; Edward I. Thiery, Winsted, Conn., and Jose D. Giner, Sudbury, Mass., assignors to Leasona Corporation, Warwick, R.I.
 Continuation-in-part of application Ser. No. 491,826, Sept. 30, 1965, now abandoned. This application July 31, 1968, Ser. No. 748,940
 Int. Cl. H01m 27/00, 13/00

U.S. Cl. 136—86
 A method of forming lightweight electrodes is described comprising forming an admixture of electrochemically active

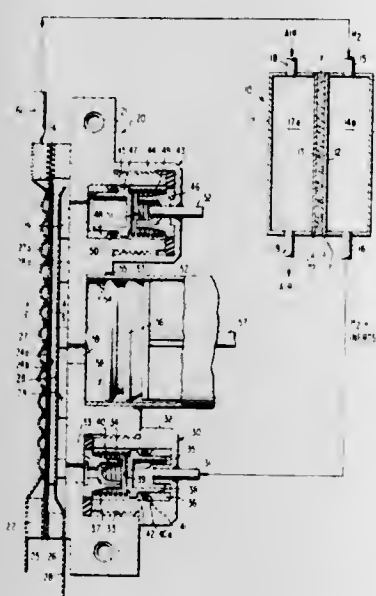
metal and hydrophobic polymer in a fluid medium, applying said admixture to a porous metal support, lightly pressing the admixture into and around the metal support and thereafter heating in the absence of applied pressure at a temperature sufficient to bond said polymer particles to each other and to said support.

3,615,842
METHOD AND APPARATUS COMPRISING AN ELECTROCHEMICAL ION EXCHANGE MEMBRANE PURGE PUMP IN COMBINATION AND FUEL CELL COMBINATION

Donald W. Craft, Melrose, and Francis J. Porter, Jr., Beverly, both of Mass., assignors to General Electric Company
Filed Aug. 29, 1968, Ser. No. 756,212
Int. Cl. H01m 27/00

U.S. Cl. 136—86

4 Claims



A purge pump is arranged for removing inert gases and impurities from the reactant gases in fuel cells or fuel cell systems. Normal operation of fuel cells results in the accumulation of inert gases in the reactant gases after a period of operation, ultimately tending to blanket an electrode, causing the performance of the fuel cell to deteriorate. The purge pump, which is arranged to remove such materials at intervals, includes a housing incorporating an ion exchange membrane with electrodes on opposite sides thereof. Current collectors engaging the electrodes are formed of corrugated shape, the corrugations of one collector being transverse to those of the other collector. A chamber is provided adjacent one electrode for accumulating inert gases received from the fuel cell system. The housing of the purge pump has incorporated therewith an inlet valve at one end of the chamber for conducting inert gases from the system to the chamber and a second valve at the other end of the chamber for effecting discharge of inert gases from the chamber at intervals. When the inert gases accumulate in the chamber to an extent affecting performance by a predetermined amount an associated electrical circuit causes reversal of current through the purge pump. This results in an increase in pressure in the chamber causing the inlet valve to close and the discharge valve to open, thereby effecting a purging of the inert gases from the chamber. The circuit is arranged to return the system to normal operation after a time which insures complete purging without excessive loss of reactant gases.

3,615,843
METHOD OF CHARGING A METAL-AIR CELL
Paul J. Moran, Ballston Lake, N.Y., assignor to General Electric Company
Filed Sept. 3, 1968, Ser. No. 756,795
Int. Cl. H01m 29/04

U.S. Cl. 136—86

1 Claim

A method of charging a secondary metal-air cell includes providing a composite laminar gas diffusion cathode which as

a porous, electrically conductive sheet in electrical contact with the substrate of the cathode, the sheet having a lower oxygen overvoltage than the cathode substrate, positioning the cathode with the sheet facing the anode, and applying a charging current across the electrodes whereby oxygen evolution during charging occurs substantially only at the porous sheet.

3,615,844
METHOD OF OPERATING A BATTERY HAVING CONSUMABLE ANODE MATERIAL

Harold H. Spengler, Waukesha, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 9, 1968, Ser. No. 766,130
Int. Cl. H01m 27/00, 33/00

U.S. Cl. 136—86 A

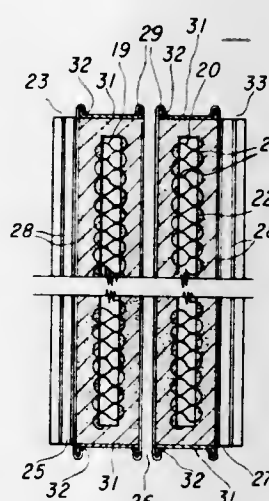
2 Claims

A method is disclosed for enhancing the energy capacity and extending the period of useful life of a battery or cell of a type, such as a zinc-air cell, wherein an anode comprises a stable substrate coated or plated with a deposit material which during discharge is at least partially soluble in an electrolyte contained in the cell. The method includes the step of completely discharging the cell to strip the deposit (e.g., the zinc, in a zinc-air cell) from its support structure after about five charge-discharge cycles, to provide clean support structure for accepting the deposit during charging with minimized formation of elongated dendritic forms of the deposit which if permitted to grow and regrow on unclean surfaces of the substrate, tend to span space between electrodes and short circuit such a cell.

3,615,845
FUEL CELL ELECTROLYTE CONTROL
Foster L. Gray, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 31, 1968, Ser. No. 788,211
Int. Cl. H01m 27/20

U.S. Cl. 136—86

2 Claims



An electrolyte control system for a fuel cell which has an anode and a cathode spaced by an electrolyte carrying matrix wherein porous capillary conduits communicate from an electrolyte reservoir to points uniformly along the matrix. For example, the porous capillary conduits can be positioned uniformly along the matrix adjacent the cathode and thereby supply electrolyte directly to the cathode, and to the anode and matrix at whatever rate the matrix will absorb the electrolyte.

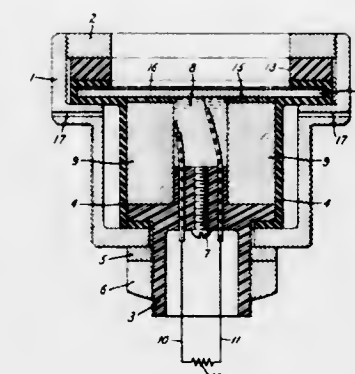
3,615,846
FLUID EXPANSION BLADDER
Robert E. Plank, Willow Grove, Pa., assignor to General Electric Company
Filed Jan. 2, 1969, Ser. No. 788,556
Int. Cl. H01m 29/02

U.S. Cl. 136—86 A

7 Claims

An expandable bladder for permitting expansion of a fluid within the bladder due to temperature, pressure or chemical changes without damage to fragile members adjacent the

fluid. The thin, flexible, fluidtight bladder is disposed about a pool of liquid having gas dissolved therein and a fragile member located adjacent thereto. When fluid expansion



occurs the bladder member is displaced by the gas or liquid to provide accommodation therefor, thus preventing any substantial fluid pressure force from acting on the fragile member.

3,615,847
MANUFACTURE OF ELECTRODES FOR FUEL CELLS
Claude Vanleugenhaghe, Avenue Lancenseert n°20, Brussels 15, Belgium
Filed Feb. 4, 1969, Ser. No. 796,504
Claims priority, application Great Britain, Feb. 5, 1968, 5623/68
Int. Cl. H01m 27/04, 13/04

U.S. Cl. 136—86 E

7 Claims



The electrochemical performance of a fuel cell electrode consisting of a laminated or compressed mixture of carbon, a catalyst and a fluorocarbon polymer as binder is improved by contacting the electrode with a metal reacting with the fluorocarbon polymer and selected from the class of the alkali metals and the alkaline earth metals at a temperature sufficient to cause reaction between the metal and the polymer, the reaction being confined to the surface without degrading the bulk of the polymer.

3,615,848
THERMAL CONTROL FOR FUEL CELL MODULE
Donald D. Sibenhorn, Menomonee Falls, Wis., assignor to Isotopes, Inc., Westwood, N.J.
Filed Feb. 27, 1969, Ser. No. 802,769
Int. Cl. H01m 27/02

U.S. Cl. 136—86 B

9 Claims

An assembly of fuel cells or like source of electrical power having mounted on an outer surface of the fuel cell module interleaved sets of high and low thermal emissivity surfaces, with one set of surfaces being stationary and the other set of surfaces being movable. Means are provided for sensing the

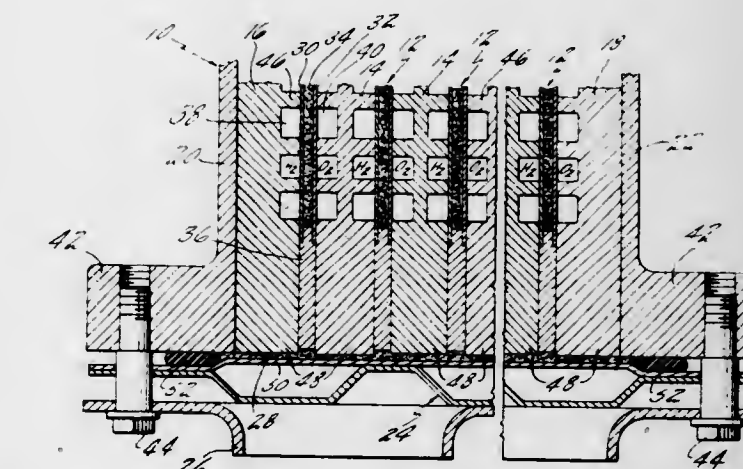


thermal radiation from the fuel cell module and thus to control the temperature of the fuel cell module.

3,615,849
FUEL CELL DIELECTRIC HEAT TRANSFER MEDIUM
Andrew Hall, Wapping, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed June 18, 1969, Ser. No. 834,423
Int. Cl. H01m 27/12

U.S. Cl. 136—86

5 Claims



A device is disclosed whereby a heat transfer medium is inserted between a fuel cell stack and an attached boiler to improve the heat transfer from the cell stack to the boiler. The medium consists essentially of a porous nonconductive matrix saturated with a dielectric grease.

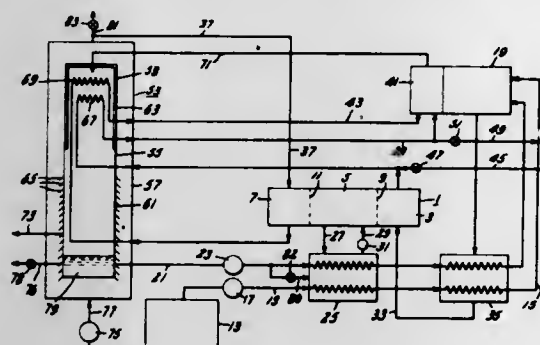
3,615,850
SYSTEM AND PROCESS EMPLOYING A REFORMABLE FUEL TO GENERATE ELECTRICAL ENERGY
Paul Chludzinski, Lynn, and John Ward Harrison, Manchester, both of Mass., assignors to General Electric Company
Continuation of application Ser. No. 546,326, Apr. 29, 1966, now abandoned. This application Mar. 10, 1969, Ser. No. 845,923
Int. Cl. H01m 27/14

U.S. Cl. 136—86

12 Claims

A system for generating electrical energy reacts fuel and water to form hydrogen which is delivered to a fuel cell in an

amount exceeding its requirements, the surplus hydrogen being burned to maintain the endothermic fuel-water reaction. Product water from the burning and fuel cell



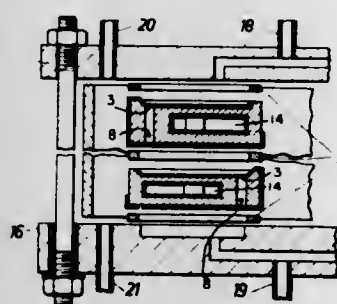
3,615,851 BATTERY WITH FUEL CELLS OF SOLID ELECTROLYTE

Hans Hermann Eysel, am Kirchwald, Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Kallstadter Str. 1, Germany

Filed Sept. 25, 1969, Ser. No. 860,900
Claims priority, application Germany, Nov. 20, 1968, P 18 09 878.7

Int. Cl. H01m 27/00
U.S. Cl. 136—86 R

5 Claims



A battery made up of fuel cells each having a solid electrolyte for direct conversion of chemical energy liberated in the oxidation of a combustible gas into electrical energy. The fuel cells are arranged in series each forming a subchamber and being combined into a chamber for the combustible gas. Each fuel cell has one electrode on an inner wall of the subchamber and its other electrode on an outer wall of the cell. The subchamber is formed by each of two successive cells with a temperature-resistant packing between cells so as to exert a sealing effect obtained by a force compressing the cells and packings. Each fuel cell is in the form of a portion of a cylinder made in one or two pieces having a cylindrical periphery and faces perpendicular to its axis, at least one face being recessed and the subchamber formed by putting two successive cells together.

3,615,852 FUEL CELL

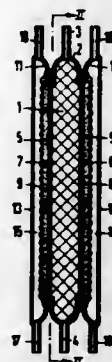
Johann Gehring, Erlangen, and Karl Strasser, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 30, 1969, Ser. No. 872,706
Claims priority, application Germany, Nov. 2, 1968, P 18 06 794.2

Int. Cl. H01m 27/02

U.S. Cl. 136—86 R
Fuel cell includes a pair of electrodes spaced from one another, a porous support skeleton having electron-nonconductive cover layers at opposite sides thereof disposed in the space between the electrodes and containing fluid electrolyte, a metal profile frame carrying the support

skeleton and provided with at least one supply duct and one discharge duct for electrolyte, and an elastic metal frame carrying each of the electrodes and located adjacent the



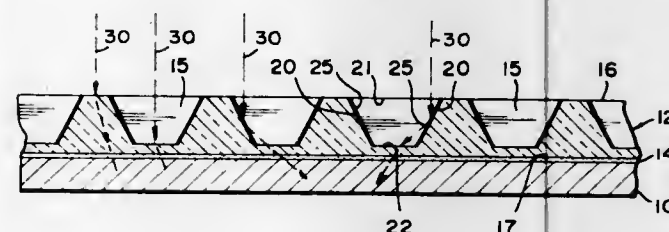
3,615,853 SOLAR CELL PANELS WITH LIGHT-TRANSMITTING PLATE

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; John V. Goldsmith, Montrose, Calif., and Geza P. Rolik, LaCanada, Calif.

Filed Jan. 28, 1970, Ser. No. 6,616
Int. Cl. H01l 15/02

U.S. Cl. 136—89

7 Claims



A solar cell panel with a cover plate which defines a plurality of apertures with light-reflective surfaces. The shapes of the apertures and the spacings between them are chosen to vary the illumination level of the cells as a function of the degree of inclination of the plate with respect to the normal light direction.

3,615,854 ELECTRODE SYSTEM EMPLOYING OPTICALLY ACTIVE GRAINS

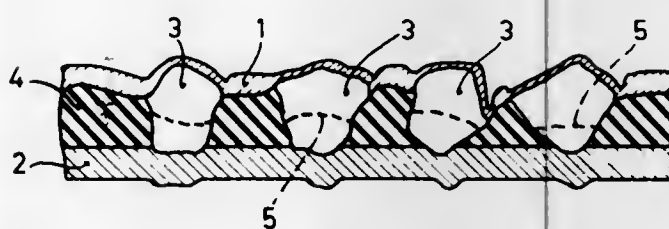
Albert Christiaan Aten, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed July 25, 1968, Ser. No. 747,634
Claims priority, application Netherlands, Aug. 10, 1967, 6711002

Int. Cl. H01l 15/02

U.S. Cl. 136—89

7 Claims



A radiation-responsive device, for example a radiation detector, photocell or photoresistor comprising a monolayer of electrically active grains embedded in a binder and a

radiation-permeable electrode covering one side of the grains. The grains are divided into two groups each of which has a different photosensitivity or characteristic. Grains of one group are doped with one dopant to produce a grain which has a given photocharacteristic or resistance as a function of incident radiation while grains of the other group are doped with a different dopant so as to have a different photocharacteristic of resistance as a function of the incident radiation.

3,615,855 RADIANT ENERGY PHOTOVOLTAIC DEVICE

Allen H. Smith, Danville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1969, Ser. No. 812,976
Int. Cl. H01l 7/44, 15/02

U.S. Cl. 136—89
A radiant energy conversion device which comprises a silicon slice, a silicon-to-germanium transitional region of a first conductivity type, a germanium layer of a second conductivity type and a pair of ohmic contacts. One form of the device includes an epitaxial deposition of a P-type transitional region onto a low resistivity P-type silicon slice. An N-type germanium layer is then epitaxially deposited on the transitional region. The transitional region contains an electrostatic drift field which improves the collection of charged particles. A current collecting grid is bonded to the silicon slice and a conductive support is bonded to the germanium layer.

3,615,856 GERMANIUM-TIN ALLOY INFRARED DETECTOR

Henry Stern Sommers, Jr., Princeton, N.J., assignor to RCA Corporation

Filed Apr. 14, 1969, Ser. No. 815,666
Int. Cl. H01l 15/02

U.S. Cl. 136—89
An infrared radiation detector useful at room temperature includes an epitaxial, germanium-tin alloy grown by liquid phase epitaxy with a concentration of tin greater than 2.5 atomic percent.

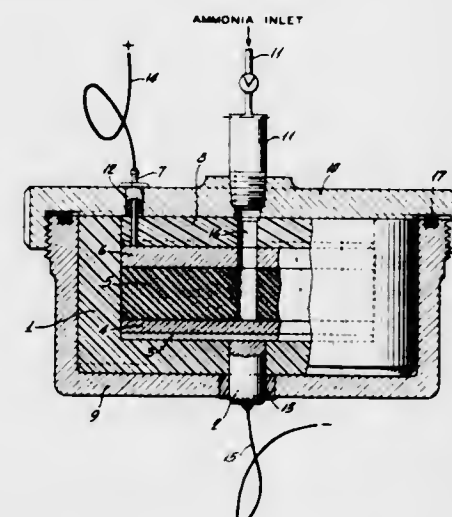
3,615,857 ELECTRIC CURRENT-PRODUCING CELL AND GENERATION OF CURRENT WITH SAME

George J. Methlie, II, Centre Square, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1967, Ser. No. 694,481
Int. Cl. H01m 17/04

U.S. Cl. 136—90

11 Claims



An electric current-producing cell system based on the use of anhydrous liquid ammonia as the electrolyte solvent employs, as depolarizing cathode, a mercurous salt which disproportionates, in the presence of ammonia, into the corresponding ammoniated mercuric salt and metallic mercury, the resulting intimate mixture of metallic mercury and ammoniated mercuric salt having very low internal resistance thereby permitting, in the generation of current, rapid drawing of current and high initial voltage.

3,615,858 BATTERY COMPRISING POSITIVE ELECTRODE COMPOSED OF PRINCIPAL AND SECONDARY ACTIVE MATERIAL WHEREIN SOLE ELECTRONIC PATH IS THROUGH THE SECONDARY ACTIVE MATERIAL

Luis Sofky Krebs, Santiago, Chile, assignor to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 6, 1965, Ser. No. 445,904
Int. Cl. H01m 21/00, 17/00

U.S. Cl. 136—107
A battery electrode composed of a principal active material and a secondary active material and a method of discharging the same so as to achieve the discharge potential characteristic of the secondary active material wherein the sole electronic path for discharge of the principal active material is through the secondary active material. The discharge product of the secondary active material must be readily oxidized by the principal active material.

3,615,859 LECLANCHE DRY CELL WITH THICK WALL PASTE SEPARATOR

Brooke Schumm, Jr., Bay Village, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed June 5, 1969, Ser. No. 830,657
Int. Cl. H01m 21/00

U.S. Cl. 136—107
A substantial reduction in the formation and movement of spew in a Leclanche dry cell is obtained by the provision of a thick wall gelatinous electrolyte past separator interposed between the consumable zinc anode and the cathode mix cake without seriously reducing the service life of the cell.

3,615,860 DRY CELL CONSTRUCTION HAVING A ONE PIECE PLASTIC CLOSURE

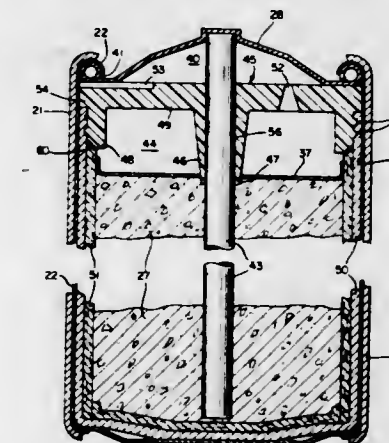
Mark J. Terlecke, Madison, Wis., assignor to ESB Incorporated

Continuation-in-part of application Ser. No. 772,774, Nov. 1, 1968. This application Dec. 9, 1969, Ser. No. 883,426

Int. Cl. H01m 21/06

U.S. Cl. 136—107

6 Claims



A dry cell construction having a one-piece plastic closure covering the open end of the negative electrode can which contains a depolarizer mix and a current collector centrally imbedded in the depolarizer mix. The plastic closure rests on the top edge of the negative electrode can and has a tubular projection extending from the bottom thereof through which the current collector passes. The tubular projection covers the current collector throughout an airspace located above the depolarizer mix. The plastic closure contains at least one venthole extending from its top surface into contact with the airspace above the depolarizer mix and at least one groove in the top surface of the closure extending from the outer edge of the closure into contact with the airspace between the terminal cap on top of the current collector and the plastic closure. It is preferred that the plastic closure have a plurality of ventholes and grooves which are offset from each other. The cell construction of this invention is particularly adapted for rechargeable dry cells which utilize a depolarizer mix containing an azodicarbonamide depolarizer material.

3,615,861 SEALING ARRANGEMENT FOR BUTTON-TYPE ELECTROCHEMICAL CELLS

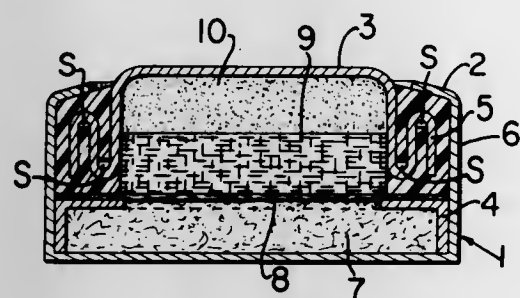
Michel Braem, Saint-Benoit, France, assignor to Societe Des Accumulateurs Fixes Et De Traction (Societe Anonyme), Romalville, France

Filed Mar. 19, 1970, Ser. No. 21,049

Claims priority, application France, Apr. 22, 1969, 69/12687
Int. Cl. H01m 21/00, 1/02

U.S. Cl. 136—111

6 Claims



Arrangement for effectively sealing electromechanical cells of the so-called button-type embodying a pair of interfitting metal cups electrically insulated from each other by an annular gasket of molded insulating material, one of the cups constituting the cover having its rim portion folded upon itself at least twice in zigzag fashion or spiralwise surrounding which the said gasket is preferably molded in situ so that the material thereof penetrates at least partially spaces between the folds of the rim, leaving some free spaces at bottoms of the folds that serve as retention chambers for electrolyte inside the cell to preclude its leakage from the cells. The folds provide tortuous engaging surfaces with the gasket that enhance leakage prevention. The rim of the other cup is bent over the outer surface of the gasket to compress it sufficiently to provide at least one effective zone of elastic compression between surfaces of the first cup and gasket.

3,615,862 FUEL CELL ELECTRODES

Hilton A. Roth, Cheshire, and William R. Lasko, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 20, 1967, Ser. No. 617,131
Int. Cl. C23b 5/24; H01m 13/04

U.S. Cl. 136—120 FC

14 Claims



7000x
Pd-Ag ELECTRODE ACTIVATED BY ELECTRODEPOSITION

Activated fuel cell electrodes are prepared by electrodeposition of a noble metal catalyst on a solid foil or porous electrode substrate. The electrodeposition is effected from an alkali metal hydroxide solution, preferably molten alkali metal hydroxide. The electrolysis is generally carried out at temperatures of about 300° to 500° F. at current densities of about 5 to 150 ma./cm.² by passing a direct electrical current to the electrode substrate through the alkali metal hydroxide electrolyte solution. Palladium-black

is a preferred noble metal catalyst, and palladium or palladium-silver alloy foils and porous sintered nickel structures are the preferred electrode substrates.

3,615,863 ELECTRIC DRY CELLS

Ching-Koon Pun, and Ching-Chau Poon, both of P.O. Box 5538, Kowloon, Hong Kong, Great Britain

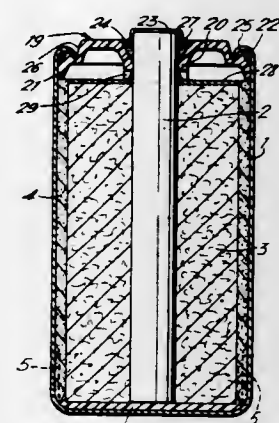
Filed July 16, 1969, Ser. No. 842,119

Claims priority, application Great Britain, July 24, 1968, 35368/68

Int. Cl. H01m 3/04

U.S. Cl. 136—131

14 Claims



An electric dry cell in which the depolarizing dolly is centralized in the cup electrode, and spaced from its wall, by spacing means incorporating one or more elongate moulded plastics spacing members shaped so as to make only line or point contact with the cup electrode wall so as to minimize obstruction of the passage of current between the electrolyte and the cup electrode.

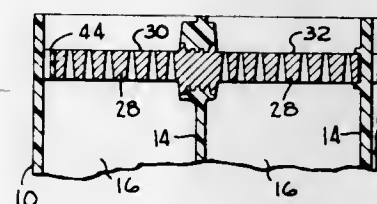
3,615,864 BATTERY HAVING JOINT FOR PREVENTING CONTAINER DISTORTION

James W. Consolloy, Pennington, N.J., assignor to ESB Incorporated

Filed Dec. 9, 1969, Ser. No. 883,552
Int. Cl. H01m 5/00, 1/00

U.S. Cl. 136—134

2 Claims



A multicell battery having intercell strap connectors around which the partitions are molded has joints integrally molded with and extending from the partitions and end walls of the container and also joined to the ends of the intercell strap connectors. The joints permit lateral movement of the ends of the intercell strap connectors with respect to the container, and thus prevent distortion of the container as the container and intercell strap connectors shrink or expand by unequal amounts.

3,615,865 BATTERY SEPARATOR

Thomas J. Wetherell, New York, N.Y., assignor to High Energy Processing Corporation, New Bedford, Mass.

Filed Jan. 24, 1969, Ser. No. 793,894

Int. Cl. H01m 3/00

U.S. Cl. 136—146

4 Claims

A battery separator for alkaline storage batteries of the nonwoven fiber mat type; the fiber mat being impregnated

3,615,868 BATTERY CAP ASSEMBLY

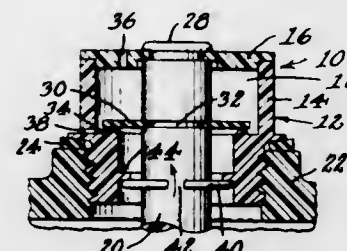
Robert Richard Melone, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 20, 1970, Ser. No. 13,010

Int. Cl. H01m 1/06

U.S. Cl. 136—178

10 Claims



The present invention relates generally to combined battery cap and liquid level indicators and more particularly to such assemblies wherein the liquid level indicator comprises an elongate or rodlike body of light transmitting material. The embodiment of the invention disclosed herein includes a centrally apertured cap member having an annular valve seat with the elongate indicator member supported by and extending through the cap member. The outer extremity of the rodlike member provides a light receiving surface and the lower extremity is adapted for immersion within a battery fluid. An axially deflectable annular valve member is secured to and radiates from the indicator periphery, the valve member being normally biased into sealing engagement with the annular seat and arranged to preclude leakage of liquid through the assembly into an associated battery.

3,615,869 RADIOISOTOPE THERMOELECTRIC GENERATOR

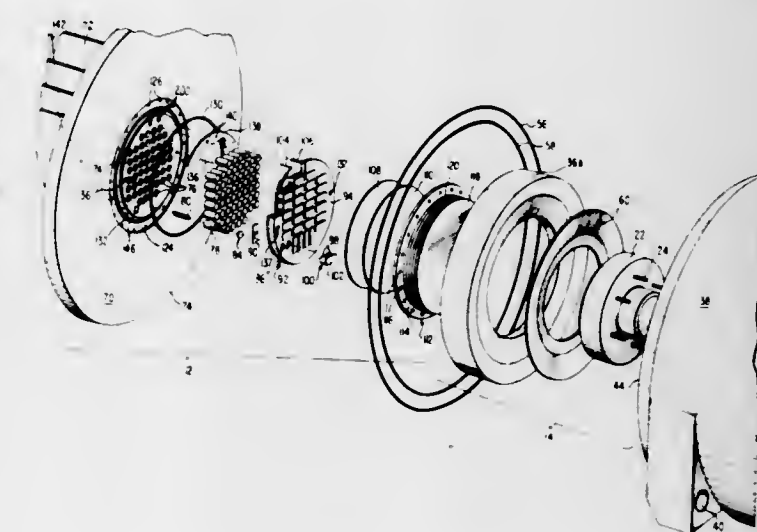
Theodore R. Barker, Pasadena; Wilfred L. Kershaw, Towson; George S. Stivers, Baltimore, and Jack L. Thomas, Baltimore, all of Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed July 26, 1965, Ser. No. 474,547

Int. Cl. H01v 1/30; G21h 1/06

U.S. Cl. 136—202

22 Claims



An improved thermoelectric generator assembly including a heat sink member adapted to dissipate heat directly to the environment and having a thermoelectric conversion system removably connected thereto utilizing a thin cover having bellows-type sidewalls. The thermoelectric elements are positioned within perforations formed in a platelike insulating disk. The heat sink member is removably connected to a cylindrical container, which may be cup shaped, and which is formed of a radiation shielding material. A shielded radioisotopic fuel capsule is positioned within the container and separated therefrom by thermal insulation in solid configuration retaining form.

with a polymeric binder and a monomeric wetting agent, the thus impregnated mat being subjected to irradiation to form a cross-linked unitary structure.

3,615,866 METHOD OF SEALING MAGNESIUM CELLS

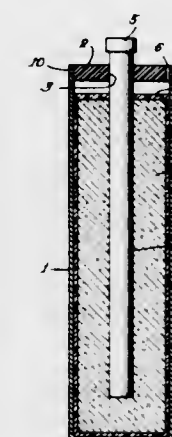
Milton E. Wilke, Freeport, Ill., and Howard J. Strauss, Beachwood, Ohio, assignors to Clevite Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 704,001, Feb. 8, 1968, now abandoned. This application Feb. 24, 1970, Ser. No. 13,301

Int. Cl. H01m 1/02

U.S. Cl. 136—175

1 Claim



In sealing a dry cell having an anode in the form of a cylindrical magnesium container and a sealing disk of a plastic material having its periphery in sealing engagement with the open top portion of the magnesium container, a restricted aperture is provided in the sealing disk of a size sufficient to permit gases formed in the cell immediately after assembly to escape, yet sufficiently small to prevent the venting of excessive moisture. The aperture is closed to seal the cell after the initial gas formation period by reducing the radius of the open top of the cell and the disk therein sufficiently to close the aperture and seal the cell.

3,615,867 METHOD OF ASSEMBLING A BATTERY WITH INTERCELL CONNECTORS

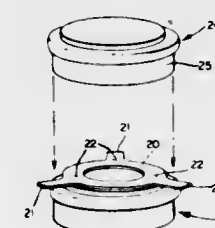
Everett R. Cich, and Robert C. Ivey, both of Madison, Wis., assignors to ESB Incorporated

Filed July 11, 1969, Ser. No. 841,016

Int. Cl. H01m 5/00, 13/10

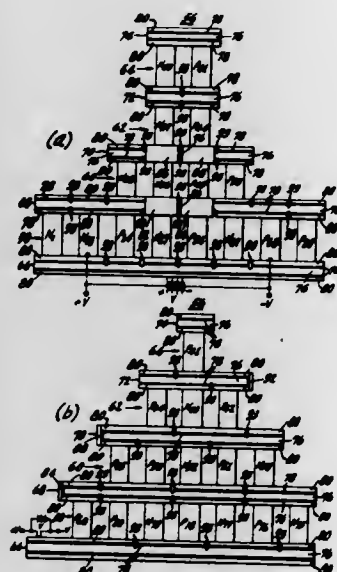
U.S. Cl. 136—175

2 Claims



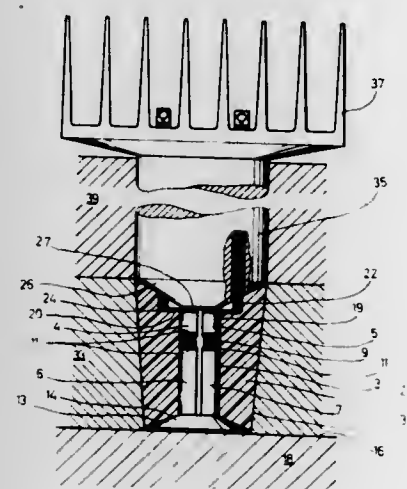
A battery comprising a series of cells stacked one upon the other is disclosed wherein the cells are connected by intercell connectors which assure good electrical contact between cells and proper alignment of each cell with respect to the next. The intercell connector comprises a flat section with a series of radial extensions or ears projecting beyond the edge of the flat section. In assembly the flat section is welded to one electrode of one cell and another cell is then stacked on top with the ears of the interconnector being bent upwards and welded to the other cell to interconnect the cells and accurately align them with respect to each other.

3,615,870
THERMOELEMENT ARRAY CONNECTING APPARATUS
 Marvin Snyder Crouthamel, Pennsauken, N.J., assignor to RCA Corporation
 Filed Sept. 4, 1968, Ser. No. 757,398
 Int. Cl. H01v 1/30
 U.S. Cl. 136—204 5 Claims



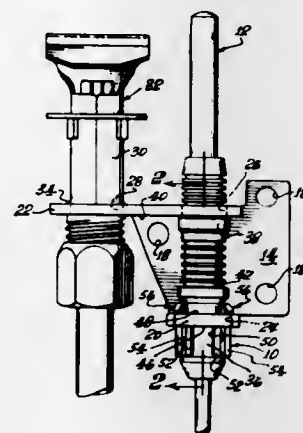
To construct a thermoelement array connecting apparatus in a thermoelectric cooling module, a soft copper layer is electroplated over a metallized wafer of beryllia. Narrow grooves are cut through the copper layer and metallized layer and into the beryllia to form small pads to which thermoelements are attached. Thereafter certain of the pads are recoupled together to form the proper array.

3,615,871
THERMOELECTRIC DEVICE
 Veit Merges, Munich, and Paul Zahn, Ottobrunn, both of Germany, assignors to Bolkow Gesellschaft mit beschränkter Haftung, Ottobrunn bei Munich, Germany
 Filed Jan. 9, 1968, Ser. No. 696,642
 Claims priority, application Germany, Jan. 12, 1967, B90707
 Int. Cl. H01v 1/32
 U.S. Cl. 136—205 11 Claims



A thermoelectric device including a semiconductor thermocouple element having p and n-conductive legs. Each of the thermoelement legs consists of at least two thermally and electrically series connected parts of different material. The electric and thermal connection between the parts of the legs comprises bodies of good thermoconductivity, preferably silver threads twisted to multistranded cable pieces, which are arranged in a slackened condition.

3,615,872
SUPPORTING AND RETAINING MEANS FOR TEMPERATURE SENSING MEANS
 Henry C. Braucksieck, Buena Park, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
 Filed May 9, 1969, Ser. No. 823,263
 Int. Cl. F23n 5/10
 U.S. Cl. 136—217 1 Claim



A supporting and retaining clip for placement upon the tubular extremity of a thermocouple or thermopile to mount such extremity within a pilot burner bracket opening, the clip including portions having resilient fingers which flex inwardly to enable the tubular extremity and clip to be inserted into the opening, which fingers thereafter flex outwardly to engage the margin of the opening and constrain the clip against accidental withdrawal from the opening, the clip being characterized by portions separate from said fingers for engagement of spaced abutments on the tubular extremity to thereby constrain the clip against movement relative to said tubular extremity.

3,615,873
METHOD OF STABILIZING MOS DEVICES
 James A. Sluss, Jr., Hopkinton, and Derek Cregeen, Concord, both of N.H., assignors to Sprague Electric Company, North Adams, Mass.
 Filed June 3, 1969, Ser. No. 830,156
 Int. Cl. H01l 7/34
 U.S. Cl. 148—1.5 5 Claims
 The electrical properties of an MOS device are improved by subjecting the device, after the oxidation procedure is completed, to an annealing operation in an inert gas ambient. The annealing process is terminated by rapidly removing the device from the annealing ambient and placing it within a lower temperature ambient.

3,615,874
METHOD FOR PRODUCING PASSIVATED PN JUNCTIONS BY ION BEAM IMPLANTATION
 Martin P. Lepselter, New Providence, N.J., and Herbert A. Waggener, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
 Filed Sept. 15, 1969, Ser. No. 857,936
 Int. Cl. H01l 7/54 7 Claims

A method for producing tucked-under, passivated PN junctions in semiconductor devices by ion implantation through a layered mask. The mask comprises a first relatively thin dielectric layer and a conductive layer thereover. An aperture is formed in the conductive layer, and the structure is subjected to a beam of dopant ions having energy sufficient to penetrate the dielectric layer but insufficient to penetrate the combined layers. In this fashion a PN junction is formed in the semiconductor body underneath the aperture in the conductive layer. Then the conductive layer is caused to become thicker, e.g., by electroplating, which also causes the aperture in the second layer to become smaller in lateral dimension. Then, using the conductive layer as a mask, the portion of the dielectric layer exposed through the aperture is selectively removed, e.g., by backspattering. In this manner there is exposed a portion of the surface which is smaller than the implanted zone.

3,615,875
METHOD FOR FABRICATING SEMICONDUCTOR DEVICES BY ION IMPLANTATION
 Todahisa Morita, Mitaka-shi; Takashi Tokuyama, Hoya-shi; Takashi Tsuchimoto, Kodaira-shi; Takao Miyazaki, Hachioji-shi; Shigeru Nishimatsu, Tokyo; Takahide Ikeda, Kokubunji-shi; Hisumi Sano, Tokyo, and Masatada Horiuchi, Koganei-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
 Filed Sept. 29, 1969, Ser. No. 861,823
 Claims priority, application Japan, Sept. 30, 1968, 40/70136
 Int. Cl. H01l 7/54 5 Claims

A semiconductor body acting as a collector is directed at a predetermined surface area by an inert ion beam from such a direction as not to produce a channeling effect in the body, whereby obtaining an amorphous surface region thereat, then directed at a larger surface area including said predetermined surface area by an active impurity ion beam of the conductivity type opposite to said body from a direction producing the channeling effect in the body, thereby obtaining a base region in the semiconductor body with a PN junction therebetween which has a partial projection in its bottom part, and further directed at said predetermined surface area by an active impurity ion beam of the same conductivity type as that of the body from the channeling-effect-providing direction, thereby obtaining an emitter region, and finally heat-treating, so that a transistor without defects due to the emitter dip effect is obtained.

3,615,876
SEMICONDUCTING FERROELECTRIC TRANSDUCERS
 Roger A. Cowley, Deep River, Ontario, Canada; Gerald Dolling, Oak Ridge National Laboratory, Oak Ridge, Tenn.; William W. Cochran; Godfrey S. Pawley, Edinburgh, Scotland, and Issai Lefkowitz, Princeton, N.J., assignors to The United States of America as represented by the Secretary of the Army
 Division of Ser. No. 665,208, Aug. 30, 1967, Pat. No. 3,514,677.
 Filed Sept. 16, 1969, Ser. No. 870,755
 Claims priority, application Canada, Sept. 14, 1966, 970,302
 Int. Cl. H01l 7/62 4 Claims

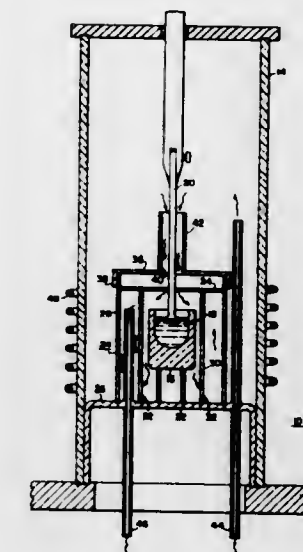
New ferroelectric semiconductor materials made of germanium-telluride or an alloy or solid solution of germanium-telluride and tin-telluride, for example, with means for doping said materials to provide regions of differing carrier density, one of said regions having an enhanced piezoelectricity, and methods for manufacturing said semiconductor materials.

3,615,877
PHOTOVOLTAIC CELL AND ITS METHOD OF MANUFACTURING
 Kazuo Yamashita, 12-3, Tachibana-cho-1-Chome, Toyonaka-shi, Japan
 Filed Dec. 30, 1969, Ser. No. 889,285
 Claims priority, application Japan, Dec. 2, 1965, Sept. 25, 1965, June 22, 1966 40/75452, 40/59,271, 41/41,147
 Int. Cl. H01l 7/62 4 Claims

A method of making a photovoltaic cell employing powdered polycrystalline photoelectric material, the method comprising, forming at least one electrode on a photoelectric layer and electroplating a P-type determining metal, such as copper, on said electrode at least partially through the photoelectric layer whereby the portion of said photoelectric layer subjected to said electroplating process is converted to P-type by the metal ions proceeding to the electrode, forming thereby a PN junction therearound, and a photovoltaic cell thus formed.

3,615,878
PROCESS FOR THE THERMAL TREATMENT OF A SEMICONDUCTOR MATERIAL HAVING A VOLATILE COMPONENT
 Hung Chi Chang, Monroeville, Pa., and Ting Li Chu, Dallas, Tex., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
 Division of Ser. No. 701,967, Jan. 31, 1968, Pat. No. 3,556,732.
 Filed Jan. 30, 1970, Ser. No. 7,186
 Int. Cl. B01j 17/02 6 Claims

A semiconductor material having a volatile component is thermally treated in an ambient formed by a gaseous mixture

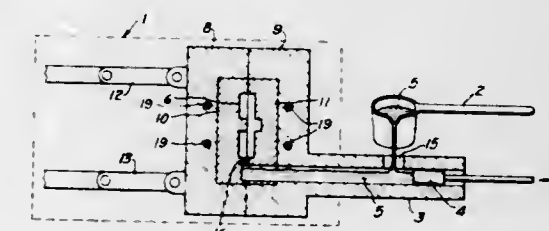


which constantly maintains the stoichiometry of the semiconductor material during the thermal treatment.

3,615,879
CENTRIFUGAL MOLD FOR THE CASTING OF LIQUID METAL AND THE PROCESS FOR PRODUCING SAID CENTRIFUGAL MOLD
 Eugene Herzog, Nancy, France, assignor to Centre De Recherches De Pont-A-Mousson, Pont-A-Mousson, France
 Filed Aug. 1, 1968, Ser. No. 749,411
 Claims priority, application France, Aug. 8, 1967, 117222
 Int. Cl. C21d 9/08; C22c 39/26 10 Claims

Centrifugal mold for casting liquid steel. The centrifugal mold is of low-alloy steel selected from the range of air-hardenable steels and having 0.15–0.30 percent of carbon and additions not exceeding 5 percent of the total. This steel has, throughout the thickness of the centrifugal mold, a regular and uniform structure in which at least 60 percent of the carbon is fixed in the form of chromium- and manganese-saturated cementite.

3,615,880
FERROUS METAL DIE CASTING PROCESS AND PRODUCTS
 Ronald L. Barto, Wickliffe, and Dallas T. Hurd, Gates Mills, both of Ohio, assignors to General Electric Company
 Continuation-in-part of application Ser. No. 637,814, May 11, 1967, now Patent No. 3,532,561. This application Apr. 3, 1968, Ser. No. 718,640
 Int. Cl. B22d 15/00, 17/00; C21d 5/00
 U.S. Cl. 148—3 16 Claims



A process for producing ferrous metal articles by pressure injection die casting at high temperature in molds lined with or having inserts of refractory metals of high thermal conductivity, particularly tungsten, molybdenum or their alloys, followed by short time heat treatments to produce desirable metallurgical structures. Due to the high rate of heat extraction and due to the turbulent stirring of the liquid metal by the injection process, even with the molds operating at temperatures elevated enough to prevent premature freezing and poor cast surfaces, the refractory metal of the mold produces a supercooling or quenching effect resulting

in uniform, extremely fine as-cast grain structures which are unusually susceptible to short and more economical heat treatment to beneficially modify the structures and properties of the articles. Specific improved types of products of the processes of the invention having unusually fine and uniform grain structure, and greater strength and ductility than available in the prior art are cast irons and include: gray cast iron encased in malleable iron, malleable iron produced by heat treating die cast white iron for an unusually short period of time, and nodular or ductile iron.

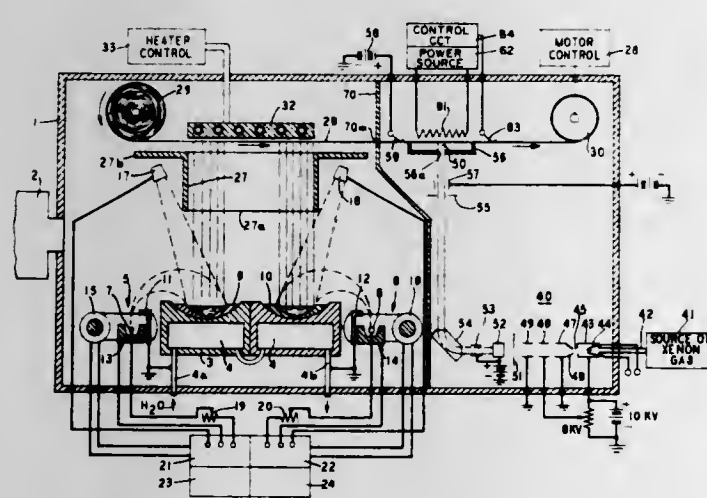
3,615,881

METHOD OF FORMING FLUX PINNING SITES IN A SUPERCONDUCTING MATERIAL BY BOMBARDMENT WITH AN ION BEAM, AND THE PRODUCTS THEREOF
William J. Greene, Bound Brook, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.
Filed Oct. 15, 1968, Ser. No. 767,765

Int. Cl. C23f 7/00

U.S. Cl. 148-4

9 Claims



This relates in general to superconductive materials, and more particularly to vacuum-deposited superconductive films having improved characteristics.

3,615,882

METHOD OF MAKING A MIRROR
Kentaro Nagano; Koji Nomaki; Yoshihito Saoyama, and Takashi Azeyanagi, all of Yokohama-shi, Japan, assignors to Asahi Glass Co., Ltd., Chiyoda-ku, Tokyo, Japan
Filed Dec. 23, 1968, Ser. No. 786,419

Claims priority, application Japan, Aug. 27, 1968, 43/60880

Int. Cl. C23f 7/26

U.S. Cl. 148-6.2

6 Claims

A mirror is made by depositing silver on a glass plate by chemical reduction of silver nitrate, covering the silver film with a protective copper layer deposited from a copper sulfate solution by means of a finely divided less noble metal, and by passivating the copper coating by contact with a solution of chromic acid, a chromate, or a dichromate.

3,615,883

PROTECTIVE COATING AND PROCESS FOR THE PREVENTION OF HALIDE-INDUCED STRESS CORROSION OF TITANIUM ALLOYS AND OTHER SPACE AGE METALS

Eugene L. Giachino, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation-in-part of application Ser. No. 638,764, May 16, 1967, now abandoned. This application Dec. 10, 1969, Ser. No. 884,044

Int. Cl. C23f 7/26, 9/00

U.S. Cl. 148-6.2

3 Claims

Addition of small amounts of the nitrate ions, particularly sodium nitrate, to water solutions affords protection against halide-induced stress corrosion cracking. The nitrate may be prepared in a stable base water solution or dispersed in a suitable resin. The solution may be applied by dipping, brushing, spraying, etc.

3,615,884
METHOD OF INCREASING THE LIFE OF CARBIDE CUTTING TOOLS

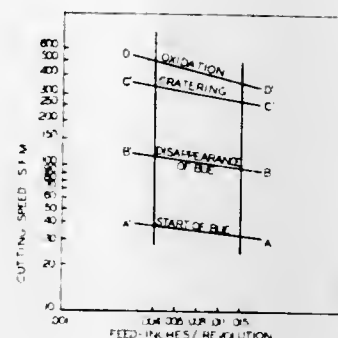
James D. Collins, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,602

Int. Cl. C23f 7/08

U.S. Cl. 148-6.3

3 Claims



A method of increasing the life and cutting characteristics of a carbide cutting tool is disclosed wherein the tool is heated in the range of 750° to 1600° F. in an oxidizing environment for a time sufficient to produce an oxide layer on the tool having a thickness of at least 0.0002 inch. The oxide layer prevents instantaneous edge buildup resulting in improved tool life at speed and feed ranges at which built-up edge is the failure mode.

3,615,885

FORMING UNIFORM THICK OXIDE LAYER OF MATERIAL

Robert Douglas Watson, 9 Cabot Pl. P.O. Box 86, Deep River, Ontario; Anton Sawatzky, Pinawa, Manitoba; Norman Hall Russell, Pine Point, Deep River, Ontario, and Raymond Orest Sochaski, Pinawa, Manitoba, all of Canada

Filed July 17, 1967, Ser. No. 653,721

Claims priority, application Canada, Sept. 19, 1966, 970,698

Int. Cl. C23c 11/00

U.S. Cl. 148-6.3

3 Claims

Several methods of producing a uniform beige oxide layer on Zircaloy-2 have been developed. The oxidized material has excellent wear resistance and should be useful for parts in rubbing contact in water-lubricated mechanisms operating at temperatures up to 500° F.

The oxidation rate of Zircaloy-2 in air is extremely dependent on the surface texture and the treatment given it. A rough surface produced by machining or grit blasting will assure the formation of a uniform beige post-transition oxide layer. A fine surface produced by grit blasting, polishing, machining or grinding will decrease the oxidation rate and will prevent the formation of a uniform beige post-transition oxide. Deep scratches will increase the oxidation rate, not because of contamination from the scratching surface but apparently because of the surface roughness produced.

3,615,886

CONTROLLED EMISSION COATINGS FOR PLATINUM-GROUP METALS

David F. Carroll, Hermosa Beach; Jack L. Blumenthal, Los Angeles, and John R. Ogren, La Palma, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 21, 1967, Ser. No. 669,561

Int. Cl. C23f 7/02

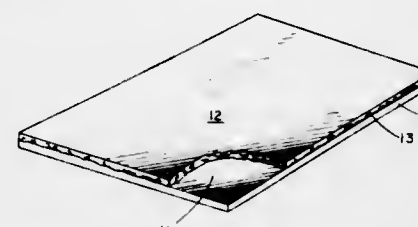
U.S. Cl. 148-6.3

9 Claims

A platinum-group metal or alloy thereof having a controlled emittance coating comprised of an oxide of a metal selected from the group including manganese, nickel, chromium, iron and cobalt, the oxide being diffusion bonded to the metal.

A method of applying a controlled emittance coating to the platinum-group metals and alloys thereof, the coating being applied as a metal, such as nickel, chromium, iron,

surface and containing alkali metal phosphate or phosphoric acid and chlorate, the ingredients being present in relative



manganese or cobalt, and then oxidized and diffusion bonding the oxide to the platinum-group metal or alloy thereof.

3,615,887

METHOD OF PRODUCING ALUMINUM FOIL HAVING A GOLDEN COLOR

Richard E. Ware, Trainer, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Mar. 26, 1968, Ser. No. 715,985

Int. Cl. C23f 7/24

U.S. Cl. 148-6.3

5 Claims

A process for forming a golden-colored aluminum-surfaced article in which an aluminum-surfaced article is contacted with gaseous hydrogen sulfide and thereby creating said golden-colored surface.

3,615,888

CHEMICAL TREATMENT OF METAL

Vernon Paul Wystrach, Wilton, and Francis Clyde Rauch, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 4, 1969, Ser. No. 855,398

Int. Cl. C23f 7/00

U.S. Cl. 148-6.14 R

8 Claims

A method for preparing metal surfaces for receipt of a coating such as a paint or adhesive (whereby increased coating adhesion and corrosion resistance is achieved) and the treated metal per se, are disclosed. The method comprises contacting the metal surface with various β -diketones.

3,615,889

CHEMICAL TREATMENT OF METAL

Francis Clyde Rauch, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 4, 1969, Ser. No. 855,400

Int. Cl. C23f 7/00

U.S. Cl. 148-6.14 R

10 Claims

A method for preparing metal surfaces for receipt of a coating such as a paint or adhesive (whereby increased coating adhesion and corrosion resistance is achieved) and the treated metal per se, are disclosed. The method comprises contacting the metal surface with various 8-hydroxy quinoline derivatives.

3,615,890

METHOD OF APPLYING PHOSPHATE CONVERSION COATING BY REVERSE ROLLER TECHNIQUE

Richard A. Montella, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

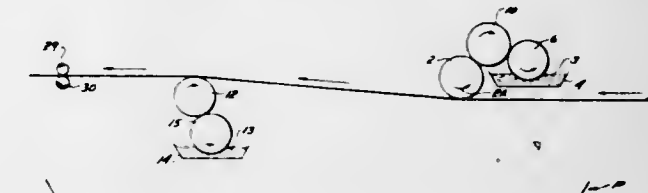
Filed Mar. 19, 1968, Ser. No. 714,217

Int. Cl. C23f 7/10

U.S. Cl. 148-6.15 R

10 Claims

An acidic aqueous coating solution particularly suited for application to ferrous surfaces by a reverse roller coating process, that is a process wherein the coating solution is applied to a moving metal surface by means of a feed roller which is rotating in a direction opposite to that in which the metal surface is moving, the solution being effective to produce a phosphate conversion coating on the ferrous



amounts which are dependent on the pH of the solution which is within the range of about one to about 3.5.

3,615,891

METHOD OF TREATING METAL

Gene P. Davis, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 1, 1968, Ser. No. 749,266

Int. Cl. C23f 7/10; B21d 7/06

U.S. Cl. 148-6.15

5 Claims

A method of treating metal parts comprising the steps of (1) casehardening the exterior surface of the part by carburizing (2) phosphatizing the surface of the carburized part and (3) cold working the exterior surface of the part by shotpeening or other appropriate method.

3,615,892

COMPOSITION AND METHOD FOR BLACK COATING ON METALS

Edward Heinzelman, Jr., Palisades, and Tunis S. Williamson, Ridgewood, both of N.J., assignors to Oakite Products, Inc., Berkeley Heights, N.J.

Filed Oct. 30, 1968, Ser. No. 772,040

Int. Cl. C23f 7/26

U.S. Cl. 148-6.15

27 Claims

This invention relates to the production of a black finish on the surfaces of metals that are electropositive to bismuth, for example, ferrous metals, manganese, and the white metals as aluminum, magnesium, cadmium and zinc. The invention more specifically is that of a method of producing a black finish on the surface of such metal electropositive to bismuth by immersing the metal surface in an acidic solution of a trivalent bismuth salt.

3,615,893

PROCESS OF SURFACE TREATMENT OF STEEL

Iwao Matsushima; Tadayuki Ueno, and Nobuyuki Muraoka, all of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Apr. 1, 1969, Ser. No. 812,429

Int. Cl. C23f 7/10

U.S. Cl. 148-6.15 Z

8 Claims

To assist the tendency of forming a natural anticorrosive protection rust layer on the surface of weather proof steel, the surface of steel is treated with a solution of phosphate containing from 0.05 to 1 mole of at least two members selected from the group consisting of zinc, calcium, lead, barium and nickel, and from 0.08 to 0.6 mole of an oxidizing acid to form a coating essentially consisting of phosphate.

3,615,894

CHEMICAL TREATMENT OF METAL

Francis Clyde Rauch, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 4, 1969, Ser. No. 855,399

Int. Cl. C23f 7/08

U.S. Cl. 148-6.15 R

10 Claims

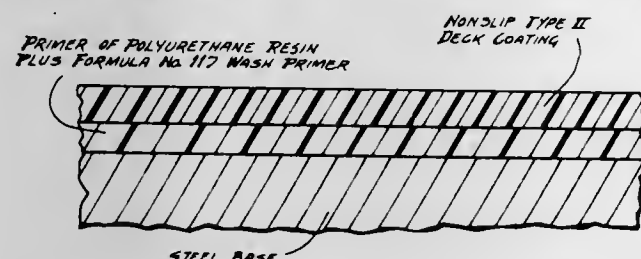
A method for preparing metal surfaces for receipt of a coating such as a paint or adhesive (whereby increased coating adhesion and corrosion resistance is achieved) and the treated metal per se, are disclosed. The method comprises contacting the metal surface with various phosphinyl derivatives.

3,615,895
POSTTREATMENT OF PHOSPHATIZED METAL SURFACES WITH SILICATES
 Helmut Von Freyhold, Dusseldorf-Oberkassel, and Volker Wehle, Hilden, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany
 Filed Sept. 8, 1969, Ser. No. 856,190
 Claims priority, application Austria, Sept. 16, 1968, 9013/68
 Int. Cl. C23f 7/10

U.S. Cl. 148—6.15 R 8 Claims
 A method of posttreatment of phosphatized metal surfaces which comprises applying to phosphate layers applied to metal surfaces, an aqueous alkali metal silicate solution having a mol proportion of SiO₂ to alkali metal oxide selected from the group consisting of Na₂O and K₂O of from 5 to 1 to 10 to 1 and a SiO₂ concentration of from 0.01 to 1 percent by weight, said alkali metal silicate solution containing a water-soluble quaternary nitrogen compound having at least one nonhydroxylated alkyl group on the quaternary nitrogen atom selected from the group consisting of mono- and polyquaternary nitrogen compounds, said quaternary nitrogen compound being present in a ratio of SiO₂ to quaternary nitrogen compound calculated as quaternary ammonium oxide of from about 35 to 1 to about 1000 to 1, and drying said posttreated phosphatized metal surfaces.

3,615,896
METAL SURFACE PRIMER
 Arthur J. Berger, Croton-on-Hudson; Albert W. Cizek, Jr., Valley Stream, and Raymond J. Simeon, Middleburg, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy
 Filed July 31, 1969, Ser. No. 846,418
 Int. Cl. C23f 7/10

U.S. Cl. 148—6.16 4 Claims



A deck primer for use with nonslip deck coatings of the chemically cured-resin type comprising a mixture of Formula No. 117 wash primer (as set forth in Military Specification MIL-D-23003(SHIPS) and its Amendment 2) and a specific, moisture-cured, polyurethane resin, in the ratio of 5:4 parts by volume, respectively.

3,615,897
BLACK FILMS FOR METAL SURFACES
 Russel S. Banush, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
 Filed Mar. 19, 1969, Ser. No. 808,687
 Int. Cl. B44d 5/00

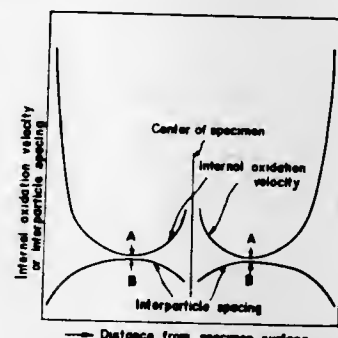
U.S. Cl. 148—6.24 7 Claims
 A black, smutlike film, resistant to rub off, and uniform in appearance and thickness, is deposited on a metal surface by contacting the surface with an aqueous acidic solution containing bismuth, hydrogen, nitrate, and sulfate ions. The blackened surface is rendered corrosion resistant by further treatment with a phosphating solution to deposit a phosphate conversion coating thereon.

3,615,898
TORCH CUTTING OF HIGH-TEMPERATURE ALLOYS
 Donald L. Coffman, Tarentum, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
 Filed Aug. 6, 1968, Ser. No. 750,484
 Int. Cl. B23k 7/08

U.S. Cl. 148—9 1 Claim
 A method of facilitating the torch cutting of heat-resistant alloys whereby additional flame heat is provided by interposing a sheet of titanium between the torch and the alloy.

3,615,899
METHOD OF PRODUCING MATERIALS HAVING A HIGH STRENGTH, A HIGH ELECTRICAL CONDUCTIVITY, AND A HIGH HEAT RESISTANCE
 Takao Kimura, Yokohama; Toyooki Ishibashi, Fujisawa, and Yasushi Watanabe, Nikko, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan
 Filed Nov. 8, 1968, Ser. No. 774,356
 Claims priority, application Japan, Jan. 27, 1968, 43/4576
 Aug. 3, 1968, 43/55152; Aug. 29, 1968, 43/61978
 Int. Cl. C22f 1/08

U.S. Cl. 148—11.5 9 Claims



Materials having a high strength, a high electrical conductivity and a high heat resistance are produced by directly internally oxidizing a wire or plate of dilute copper alloy consisting of less than 0.2% Be, less than 0.5% mg. less than 1.0% Ti, less than 0.2% Zr, either single-componentwise or multicomponentwise, or therewith less than 0.9% Al and/or less than 0.9% Si with the total addition amount not in excess of 1%, the remainder being copper, at a temperature above 600° C. and at an internal oxidation velocity no smaller than a critical value. Such a production is carried preferably out by coating the wire or plate, with a slurry composed of cuprous oxide, a heat-stable sinter inhibitor, and water or an organic solvent, completely drying said slurry-coated wire or plate and then embedding said slurry-coated wire or plate in a protective agent and then effecting the internal oxidation.

3,615,900
PROCESS FOR PRODUCING ARTICLES WITH APERTURES OR RECESSES OF SMALL CROSS SECTION AND PRODUCT PRODUCED THEREBY
 Daeyong Lee, Scotia, N.Y., assignor to General Electric Company
 Filed Dec. 30, 1968, Ser. No. 787,838
 Int. Cl. C22f 3/00; C23b 3/02
 U.S. Cl. 148—11.5 R 5 Claims



A process for preparing a body with apertures of small cross section useful as a filter. An alloy comprised of at least two phases in the solid state is treated to produce at least one phase in a fine form distributed in a matrix comprised of the second or other phases. The resulting treated structure is etched to remove the finely distributed phase to produce apertures or, if desired, recesses.

3,615,901
METHOD OF MAKING A PLASTICALLY SHAPEABLE CATHODE MATERIAL
 Gustav K. Medicus, 7521 W. Hyland, Dayton, Ohio
 Filed Dec. 1, 1969, Ser. No. 881,265
 Int. Cl. C22f 1/10; B44d 1/18; H01j 63/02

U.S. Cl. 148—11.5 R 7 Claims
 A plastically shapeable cathode material is prepared by depositing on a nickel substrate a layer of a mixture of nickel or nickel oxide powder and barium, strontium and calcium carbonates; sintering in a neutral or reducing atmosphere the nickel substrate with deposited layer; compressing the sintered material; cold rolling the sintered and compressed material; annealing the resulting cold-rolled material; and repeating the latter two steps until the nickel substrate with deposited layer has a desired thickness.

3,615,902
CORROSION-RESISTANT STEEL
 Andrew Lesney, Frazer Township, Allegheny County, Pa., assignor to United States Steel Corporation
 Filed Apr. 23, 1969, Ser. No. 818,813
 Int. Cl. B32b 15/18; C21d 7/02

U.S. Cl. 148—12 5 Claims
 A method of producing a ductile, corrosion resistant steel sheet or foil by depositing a coating of chromium, copper, nickel and/or titanium onto the surface of about an 0.080-inch thick hot rolled pickled steel strip prior to any cold rolling, and then cold rolling the coated steel strip to tinplate or foil gauge. The coated steel may then be annealed at a temperature below the A_{c1} temperature to completely recrystallize the steel without causing substantial alloying of the steel and coating metal.

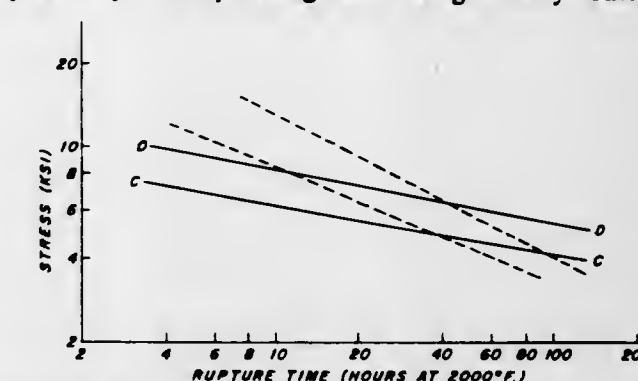
3,615,903
HIGH-PURITY FERROUS MATERIAL AND METHOD OF MAKING IT
 D. Cameron Perry, and Stephen W. Zeller, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
 Filed Oct. 3, 1968, Ser. No. 764,923
 Int. Cl. C21d 1/74

U.S. Cl. 148—12.1 11 Claims
 A high-purity ferrous material and method of making it, whereby the ferrous material is hot rolled to sheet or coil thicknesses. Thereafter, the ferrous material is descaled and may be further reduced in thickness by cold rolling when necessary. The hot rolled or hot and cold rolled ferrous material is then coated with any of the annealing separators described below and annealed at a temperature of from about 1,900° F. to about 2,500° F. in an atmosphere of 100 percent hydrogen or a hydrogen bearing atmosphere capable of removing impurities to the desired low levels. When the proper relationships are maintained with respect to initial manganese and sulfur contents, gauge, nature of the annealing separator, dew point of the annealing atmosphere, composition of the annealing atmosphere, annealing temperature and soak time, a product is produced having a composition comparing favorably to or surpassing that of typical electrolytic iron.

3,615,904
METHOD OF IMPROVING NITRIDE-STRENGTHENED STAINLESS STEEL PROPERTIES
 Lynn E. Kindlmann, Natrona Heights, and Alexander B. Greene, New Kensington, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.
 Filed Feb. 28, 1969, Ser. No. 803,214
 Int. Cl. C21d 1/74; C22C 39/20, 4/102

U.S. Cl. 148—12.1 17 Claims
 A method for improving the properties of nitride-strengthened, stainless steel containing as a dispersoid

therein particles of metal nitride which are present at an interparticle spacing of less than about 10 microns and which have a free energy of formation of greater than about -21,000 cal/mol. The method comprises the steps of heating the steel to a temperature which is generally in excess of 800° F. and subsequently compressing it. Pressure is conveniently applied by roll pressing and is generally sufficient to



compress the member by at least 5 percent.
 A compressed nitride-strengthened, stainless steel article substantially free of pores and containing as a dispersoid therein particles of metal nitride which are present at an interparticle spacing of less than about 10 microns and which have a free energy of formation of greater than about -21,000 cal/mol.

3,615,905
METHOD OF TREATING STEEL
 Arne Haraldsson Omsen, and Bertil Ring, both of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden
 Filed June 30, 1969, Ser. No. 837,766
 Int. Cl. C21d 7/14

U.S. Cl. 148—12.4 10 Claims
 The toughness of a martensitic, air-hardening steel is increased by a novel combination of steps practiced in the course of hot working a billet of the steel. After a partial reduction of the billet the billet is reheated to a temperature at which carbides are dissolved, whereupon the reheated billet is worked to final dimension under conditions to bring about a complete recrystallization in the workpiece, after which the reduced workpiece is cooled so rapidly that precipitation of carbides in the austenite grain boundaries is substantially avoided.

3,615,906
PROCESS FOR FABRICATING THREADED ELEMENTS FROM THE AGE-HARDENABLE ALLOYS
 Marvin C. Vanwonderham; John A. Harris, Jr., Palm Beach, Fla., and James J. Campbell, Cincinnati, Ohio, assignors to United Aircraft Corporation, East Hartford, Conn.
 Filed Mar. 27, 1969, Ser. No. 811,201
 Int. Cl. C21d 1/00, 1/10; C21d 9/00

U.S. Cl. 148—12.7 6 Claims
 Threaded elements having improved mechanical properties for high-temperature service are fabricated from the age-hardenable superalloys in a process comprising: solution heat treating the alloy and establishing a grain size corresponding to ASTM 2-6, or more preferably ASTM 4-5; forming the threads; stabilization heat treating the threaded alloy; and aging.

3,615,907
METHOD OF ANNEALING AND CLEANING COILED METAL FOIL
 Robert J. Perry, Sr., Havertown, Pa., and William L. Thome, Toledo, Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio
 Filed Oct. 25, 1968, Ser. No. 770,859
 Int. Cl. C21d 1/26; C22f 1/02

U.S. Cl. 148—13.1 2 Claims
 Placing a tightly wound coil of metal foil in a vacuum furnace as it is received from a rolling mill with a film of rolling oil on its surfaces, subjecting it to a partial vacuum so as to increase the rate of evaporation of the rolling oil, heating the coil to an annealing temperature in a protective atmosphere, and subsequently cooling the coil in a protective atmosphere under at least about atmospheric pressure.

3,615,908

HEATTREATMENT OF STEEL

Frederick David Waterfall, Birmingham, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 19, 1968, Ser. No. 722,573
Claims priority, application Great Britain, Apr. 28, 1967, 19,659/67
Int. Cl. C23c 9/16

U.S. Cl. 148—15.5

5 Claims

The present invention relates to the heat treatment of steel. More particularly it relates to the heat treatment of all types of iron and steel which are capable of hardening on heating to the austenitizing range and then quenching, without the need to introduce additional carbon during the heating step. For the sake of simplicity these types of iron and steel will be referred to hereinafter as "steel of the class which can be hardened by heating and quenching." This class of materials comprises the plain carbon steels and cast steel of the medium- and high-carbon varieties and the alloy steels containing at least 0.25 percent by weight carbon. The present invention provides a method of heat treating steel of this class whereby the steel is provided with a surface layer that is resistant to scuffing and wear when subjected to friction under a heavy load and the underlying core is hardened so as to be resistant to indentation.

3,615,909

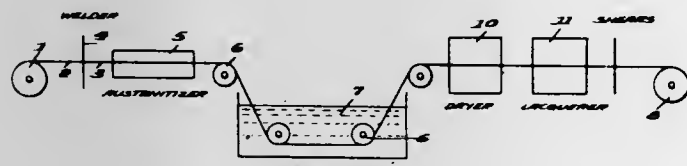
METHOD OF PRODUCING A STEEL PACKING STRIP

Hans-Wilhelm Grasshoff, Hagen, and Horst Turck, Hohenlimburg, both of Germany, assignors to Hoesch Aktiengesellschaft Hauptverwaltung, Dortmund, Germany
Filed Nov. 22, 1968, Ser. No. 778,074

Claims priority, application Germany, Nov. 23, 1967, P 16 08 164.4
Int. Cl. C21d 1/00, 9/46

U.S. Cl. 148—16.7

8 Claims



A steel packing strip with a tensile strength of around 95 to 125 kp./mm.², an elongation of 85 of 10 to 17 percent and a yield point ratio of 0.7 to 0.9 is produced from rolled steel strip with a thickness of 0.30 to 1.3 mm. and a composition of about 0.10 to 0.20% C, at most 0.50% Si, possibly as much as 0.060% of P and S, 0.3% to 1% Mn, and the balance substantially all iron which is subjected to a continuous austenitizing annealing at a temperature of more than 820° C. and thereafter quenched in water to produce a structure with discrete particles of stress-laden ferrite.

3,615,910

MAGNETIC ALLOY AND CORE

Sadami Tomita, and Hiroyuki Oouchi, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan
Filed Dec. 28, 1967, Ser. No. 694,217
Claims priority, application Japan, Dec. 28, 1966, 41/85381
Int. Cl. H01f 1/14, 3/02; C22c 19/00

U.S. Cl. 148—31.55

8 Claims

A magnetic alloy consisting essentially of less than 30 weight percent of cobalt, less than 30 weight percent of iron, less than 5 weight percent of a metal selected from the group consisting of copper and molybdenum, and the balance being essentially nickel and cores made therewith. The alloy has a Curie point greater than 620° C. and excellent rectangular hysteresis loop characteristics, such as, a Br/B₁₀ value greater than about 90 percent.

3,615,911

SPUTTERED MAGNETIC FILMS

Ethan A. Nesbitt, Berkeley Heights; Jack H. Scaff, Bernards Township, Somerset County, N.J., and Henry C. Theuerer, New York, N.Y., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed May 16, 1969, Ser. No. 825,261
Int. Cl. C22c 19/00; H01f 1/04

U.S. Cl. 148—31.57

5 Claims

Sputtered films containing compositions exemplified by Co₂Sm sometimes with nonmagnetic diluents such as Cu manifest magnetic properties similar to the best reported for the corresponding bulk compositions. Coercivities for the best films are generally superior to the bulk coercivities and, in some instances, may be as high as tens of thousands of oersteds.

3,615,912

METAL-TREATING PROCESS

Friedrich Dittel, Mainz-Kostheim; Peter Jorns, Frankfurt am Main, and Walter Stenger, Frankfurt am Main, all of Germany, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Feb. 16, 1970, Ser. No. 11,901

Claims priority, application Germany, Aug. 19, 1969, P 19 42 156.8
Int. Cl. C23f 7/08

U.S. Cl. 148—6.15 R

7 Claims

A process for forming a phosphate coating on metal surfaces wherein an alkali metal and/or ammonium orthophosphate solution, having a pH within the range of about 3.0 to 5.5 is sprayed on the metal surface at a pump pressure of from about 10 to 75 atmospheres. The process carried out in this manner is effective in both cleaning and coating the metal surfaces to which it is applied. In addition to the alkali metal and/or ammonium orthophosphate, the phosphating solution may also contain a benzoate, an hydroxyl amine, a molybdate, and a surface-active agent.

3,615,913

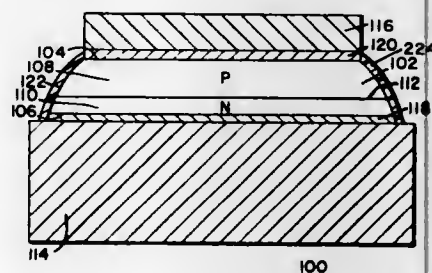
POLYIMIDE AND POLYAMIDE-POLYIMIDE AS A SEMICONDUCTOR SURFACE PASSIVATOR AND PROTECTANT COATING

Robert R. Shaw, Jeannette, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1968, Ser. No. 774,302
Int. Cl. H01f 7/00

U.S. Cl. 148—33.3

15 Claims



Exposed portions of PN junctions and exposed surfaces of bodies of semiconductor material are passivated and protected by a coating of a cured, material selected from the group consisting of aromatic polyimides and aromatic polyamide-polyimides.

3,615,914

METHOD OF STABILIZING PERMANENT MAGNETIC MATERIAL POWDERS

Joseph J. Becker, Schenectady, and Robert E. Cech, Scotia, both of N.Y., assignors to General Electric Company
Filed June 21, 1968, Ser. No. 738,809
Int. Cl. H01f 1/06

U.S. Cl. 148—101

10 Claims

Method of stabilizing cobalt-rare earth material having a superior coercive force by contacting the particles with zinc or arsenic in an inert atmosphere at a temperature about the melting point of metal.

3,615,915

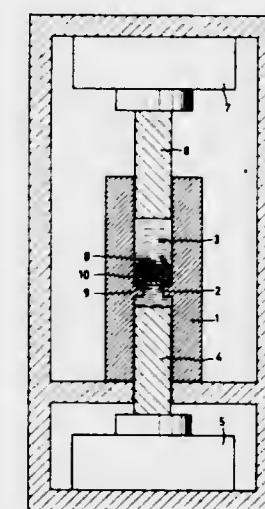
METHOD OF DENSIFYING MAGNETICALLY ANISOTROPIC POWDERS

Willem Luiten; Frans Frederik Westendorp, and Gijbertus Maria Arnoldus Josephus de Kort, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 28, 1969, Ser. No. 871,893

Claims priority, application Netherlands, Oct. 31, 1968, 6815510
Int. Cl. H01f 1/11, 1/08

U.S. Cl. 148—103

1 Claim



A method of densifying magnetically anisotropic powders under a magnetic field by the use of isostatic pressures of at least 10 kb.

3,615,916

MANUFACTURE OF PERMANENT MAGNETS

Stuart Walter Ker Shaw, Sutton Coldfield, and Derek Jim Palmer, Solihull, both of England, assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Jan. 27, 1969, Ser. No. 794,158

Claims priority, application Great Britain, Jan. 30, 1968, 4799/68
Int. Cl. H01f 1/04

U.S. Cl. 148—103

29 Claims

An improved process of forming ingots of iron-aluminum-nickel-cobalt-titanium alloys, with or without copper and columbium, with a columnar crystal structure, useful for making magnets, comprising introducing sulfur, aluminum and titanium into a carbon-containing deoxidized melt of the other alloy constituents.

3,615,917

PROCESS FOR DIFFUSING SILICON INTO SHEET STEEL

Paik W. Shin, Coopersburg, and Richard M. Willison, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation
Filed July 11, 1969, Ser. No. 841,086

Int. Cl. H01f 1/16; C21d 7/02; C23c 9/00

U.S. Cl. 148—111

10 Claims

A process for solid-state diffusion of silicon into sheet steel containing not more than 0.05 percent carbon, the process including preparing sheet steel by conventional methods of melting, pouring and rolling, coating the surfaces of the sheet steel with a layer of powder containing about 15 percent to about 95 percent silicon and the remainder substantially calcium, iron and incidental impurities, compacting the powder onto the sheet and heat treating the composite thus formed in a protective environment to cause a solid-state diffusion of the diffusible silicon into the sheet steel.

3,615,918

METHOD OF ANNEALING WITH A MAGNESIA SEPARATOR CONTAINING A DECOMPOSABLE PHOSPHATE

James D. Evans, and David W. Taylor, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Mar. 28, 1969, Ser. No. 811,658

Int. Cl. H01f 1/18; B22b 15/18

U.S. Cl. 148—113

8 Claims

An annealing separator for magnetic materials, such as oriented silicon steel and the like, consisting essentially of magnesium oxide and/or hydroxide with an addition of a decomposable phosphate compound. The phosphate addition, which may be in the form of an inorganic phosphate, may be added to the magnesium oxide and/or hydroxide in such amounts as to produce a P₂O₅ content on the order of 1-25 percent by weight of the total coating. Preferably, the P₂O₅ will be present in an amount of at least 1 percent, and up to about 15 percent. A magnetic material processed according to standard procedures and coated with said composition prior to a final high temperature anneal, will yield a product having an improved glass film.

3,615,919

REACTIVE ALUMINUM NITRATE EDGE COATINGS FOR ELECTRICAL STEELS

Norman Pavlik, and George W. Weiner, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 30, 1969, Ser. No. 862,524

Int. Cl. H01f 1/18; C23d 5/00

U.S. Cl. 148—113

5 Claims

A process is described for preventing the adherence of the bottom edge of adjacent convolutions of a coil of silicon steel during final box annealing to produce a cube-on-face texture. The steps include the formulation of a reactive solution of aluminum nitrate, the application of said solution to a predetermined area and drying the same prior to the application of a nonreactive insulation coating thereto.

3,615,920

HIGH TEMPERATURE BRAZE HEAT TREATMENT FOR PRECIPITATION HARDENING MARTENSITIC STAINLESS STEELS

John A. Talento, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 16, 1970, Ser. No. 29,261

Int. Cl. C21d 1/00; C22c 39/20

U.S. Cl. 148—125

7 Claims

A brazing and heat treating cycle is described as applied to semiaustenitic stainless steel sheet material. The steps include a brazing operation, solution annealing, trigger annealing, subzero cooling and tempering. The brazed assembly exhibits good mechanical properties and good corrosion resistance.

3,615,921

PROCESS FOR STRENGTHENING ALLOYS

Eugene J. Delgrosso, Wallingford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 20, 1968, Ser. No. 777,381

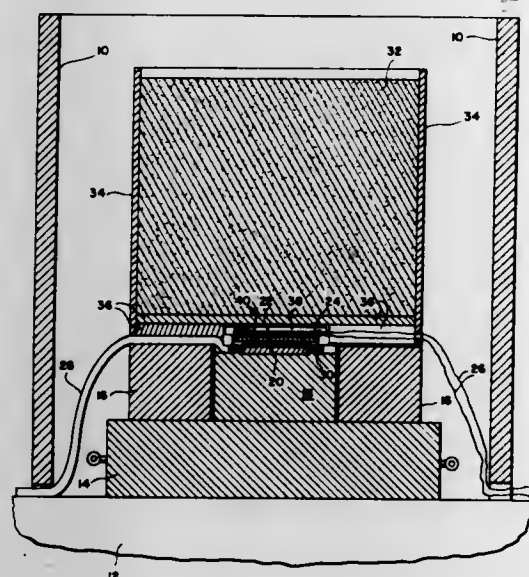
Int. Cl. C22f 3/00, 1/18; C21d 1/00

U.S. Cl. 148—125

18 Claims

A process is provided for strengthening stainless steel and titanium alloys by explosive shocking of the alloys at

cryogenic temperatures while substantially prohibiting macroscopic deformation. The alloys are preferably



subjected to shock wave pressures of 225 to 275 kb. at temperatures of -100° to -200° F.

3,615,922
INHIBITING GRAIN GROWTH IN METAL COMPOSITES
Jerrold M. Alyea, Alton, Ill., assignor to Olin Mathieson Chemical Corporation

Filed Sept. 19, 1968, Ser. No. 760,992
Int. Cl. C21d 1/32; B32b 15/00

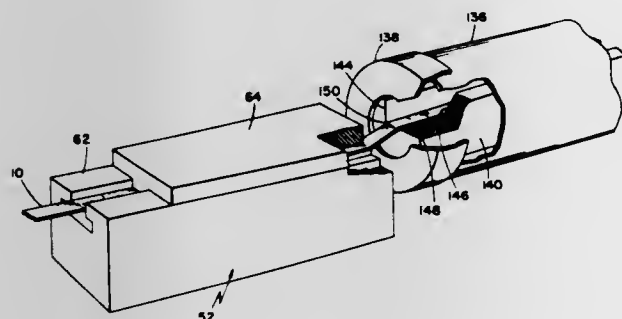
U.S. Cl. 148—127

6 Claims
A process for producing composite metal articles whereby a suitable grain size is obtained in the metal member having the lowest temperature of recrystallization suitable for mechanical deformation, and the article produced thereby.

3,615,923
METHOD FOR PROCESSING OF STRIP METAL IN A CONTINUOUS MANNER TO REMOVE UNDESIRABLE CURVATURE
Thomas J. Rum, South Boston, Mass., assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 586,880, Oct. 14, 1966, Pat. No. 3,466,022.
Filed Jan. 31, 1969, Ser. No. 833,211
Int. Cl. C21d 1/18

U.S. Cl. 148—131



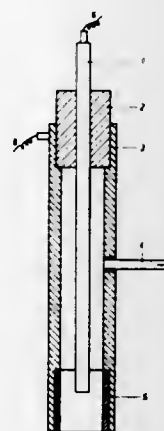
Razor blade strip steel 0.2 inch wide and 0.0015 inch thick is transferred at a 30 foot per minute rate sequentially through a hardening furnace, an air-cooled tubular transition zone, a quench unit, a freeze unit, a tempering furnace, and a continuous inspection station to a takeup reel. The vertical position of the quench unit relative to the transition zone is adjustable so that a differential stress may be applied to the steel strip to prevent or minimize a dish condition in the processed strip.

3,615,924
PROCESS AND APPARATUS FOR SURFACE HARDENING HARDENABLE STEELS
Karl Swoboda, Bechardgasse 17, Vienna III, and Maximilian Pater, Albert Bohlergasse 9, Kapfenberg, Styria, both of Austria

Continuation-in-part of application Ser. No. 486,053, Sept. 9, 1965, now abandoned. This application Jan. 26, 1968, Ser. No. 700,975
Int. Cl. C21d 1/06

U.S. Cl. 148—143

4 Claims



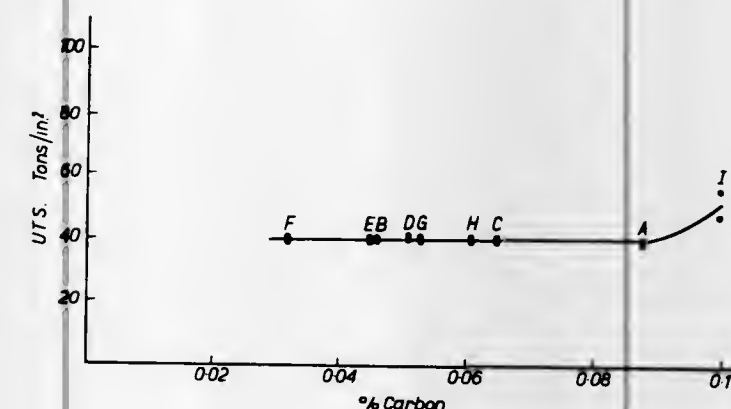
This invention relates to surface hardening hardenable steels with the plasma flame from a nozzleless plasma torch. The torch has an inner rod electrode and an outer electrode, which extends axially further than the rod electrode. A stream of ionizable gas passes through the torch and an electric arc discharge is sustained between the electrodes to create a plasma flame. The steel to be hardened is subjected to the flame to heat its surface at an extremely high rate to form metastable austenite. Then further energy is introduced, such as by mechanical shock, to transform the austenite into fine-grained martensite.

3,615,925
HEAT-TREATMENT OF STEELS
Sidney Garber, and Kenneth John Albutt, both of Birmingham, England, assignors to National Research Development Corporation, London, England

Filed Feb. 16, 1968, Ser. No. 705,996
Claims priority, application Great Britain, Feb. 21, 1967, 8088/67
Int. Cl. C21d 1/00

U.S. Cl. 148—143

5 Claims



A process for treating wrought steel containing up to 0.10 percent carbon, 0.0—0.5 percent Mn, 0.0—0.05 percent P, 0.0—0.05 percent S, 0.0—0.005 percent N₂, and 0.0—0.1 percent Al, comprises heating said wrought steel to a temperature above the austenitization point but below the melting point of the steel and quenching said heated wrought steel at a selected cooling rate ranging from 100° C./sec. to 500° C./sec. to below transformation temperature range, said selected cooling rate providing in the treated wrought steel a tensile strength having an essentially consistent value for any

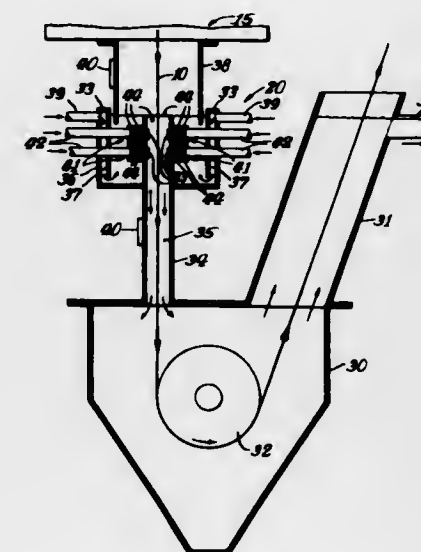
selected carbon content in said wrought steel up to about 0.10 percent carbon, and said essentially consistent tensile strength value being independent of the carbon content in said wrought steel up to about 0.10 percent carbon.

3,615,926
QUENCH SYSTEM
Harold L. Taylor, Hammond, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Apr. 28, 1969, Ser. No. 819,756
Int. Cl. C21d 1/18

U.S. Cl. 148—143

19 Claims



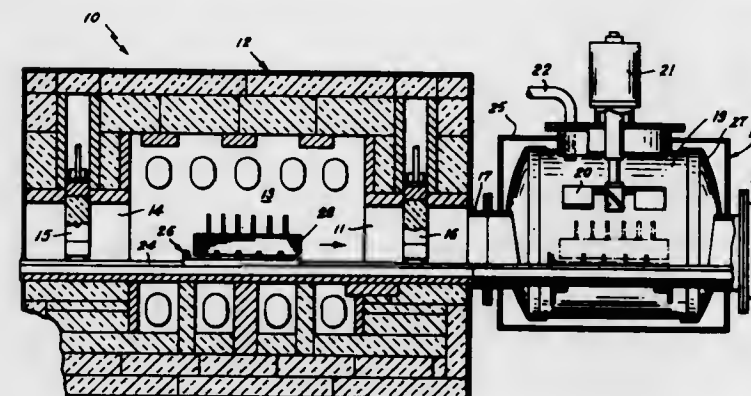
Low-carbon unalloyed steel strip is heated to a temperature at least above the A₁ point, preferably above the A₂ point, and is quenched to transform substantially all the austenite to martensite. Quenching is accomplished by passing the heated strip through an elongated restricted quench channel having high-velocity quench liquid flowing through the channel, either concurrently or countercurrently. The temperature and flow velocity of the quench liquid are regulated in the channel so as to provide an initial high rate of heat withdrawal from the strip and a subsequent lower rate of heat withdrawal during the time the strip is quenched through the temperature range of martensite formation, thereby effecting tempering of the martensite.

3,615,927
METHOD FOR HEAT TREATING METALLIC ARTICLES
Carl G. Paulson, West Kingston, R.I., assignor to C. I. Hayes Inc., Cranston, R.I.

Filed Oct. 16, 1967, Ser. No. 675,437
Int. Cl. C21d 1/70

U.S. Cl. 148—149

4 Claims



The method and apparatus for heat-treating metallic articles, wherein the articles are embedded in a ceramic fiber work holder such that the embedded portion is prevented from reaching a temperature during the heat-treating operation that produces a hardening action thereon, the nonhardened portion of the articles being easily stamped or

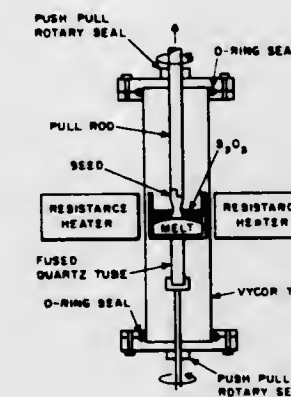
marked with identifying indicia thereon after the heat-treating operation.

3,615,928
GROWTH OF Pb_{1-x}Sn_xTe FROM NONSTOICHIOMETRIC MELTS
John W. Wagner, Diamond Bar, and Robert K. Willardson, Arcadia, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 8, 1969, Ser. No. 864,721
Int. Cl. H01l 7/40; B01j 17/00

U.S. Cl. 148—172

5 Claims



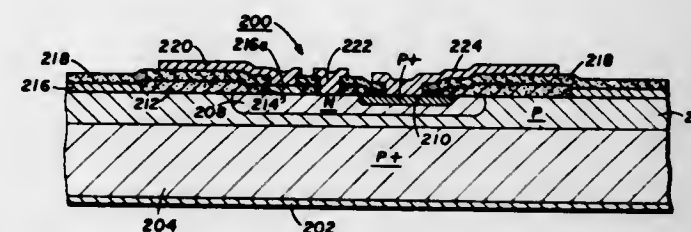
Single crystals of Pb_{1-x}Sn_xTe grown from nonstoichiometric, cation-rich melts; the as-grown, bulk material containing carrier concentrations ranging from 10¹⁶/cm.³ to 10¹⁹/cm.³.

3,615,929
METHOD OF FORMING EPITAXIAL REGION OF PREDETERMINED THICKNESS AND ARTICLE OF MANUFACTURE
William M. Portnoy, Richardson; Warren P. Waters, Dallas, and Emery C. Wisman, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 8, 1965, Ser. No. 470,456
Int. Cl. H01l 7/36; C23c 13/00; B02j 17/00

U.S. Cl. 148—175

10 Claims



A process is disclosed for fabricating semiconductor devices in which a patterned oxide film of a predetermined thickness is formed on a semiconductor substrate followed by epitaxially forming on exposed areas of the substrate a layer of semiconductor material having a preselected thickness relative to the thickness of the oxide layer.

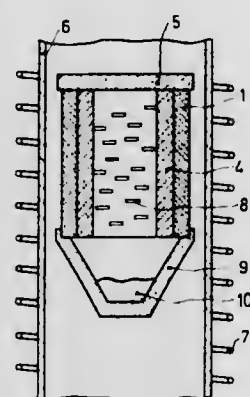
3,615,930
METHOD OF MANUFACTURING SILICON CARBIDE CRYSTALS
Wilhelmus Franciscus Knippenber, Emmasingel, Eindhoven, Netherlands, and Arthur William Moore, Parma, Ohio, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Oct. 25, 1967, Ser. No. 677,897
Claims priority, application Netherlands, Oct. 25, 1966, 6,615,060

Int. Cl. H01l 7/00; C01b 31/36; R01j 17/28
U.S. Cl. 148—175

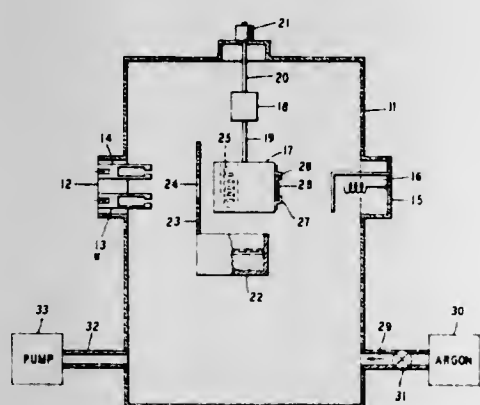
2 Claims
A method of manufacturing silicon carbide crystals with a narrow PN junction in which during growth of such crystals

by recrystallization and/or condensation in an inert gas atmosphere in a space bounded by silicon carbide, dopants which can result in different conductivities are successively supplied to the crystallization space. N-type crystals are formed at temperatures between 2,300° and 2,600° C. in



presence of a donor. Then the temperature is decreased to 2,000° C. and the space freed of the donor. Aluminum is then supplied to the space and the temperature raised to 200° to 300° C. lower than that at which the first part of the crystals were formed.

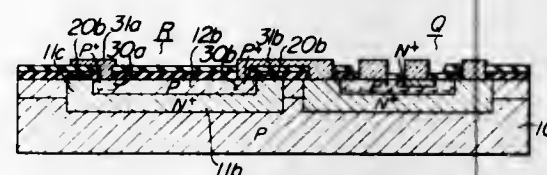
3,615,931
TECHNIQUE FOR GROWTH OF EPITAXIAL COMPOUND SEMICONDUCTOR FILMS
John R. Arthur, Jr., Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 27, 1968, Ser. No. 787,470
Int. Cl. H011 7/36; C01b 31/36; C23c 11/00
U.S. Cl. 148—175 12 Claims



Epitaxial growth of Group III(a)-V(a) semiconductor compound films is effected in an ultrahigh vacuum by directing collimated molecular beams at the surface of a suitable substrate member preheated to a temperature ranging from 450°-650° C. The described process is a nonequilibrium growth technique which permits the growth of epitaxial films less than 1 micron in thickness at temperatures appreciably below those commonly employed in epitaxy.

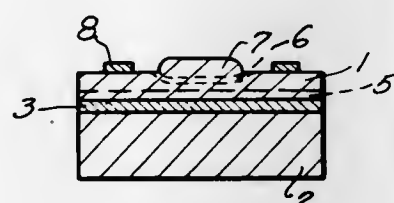
3,615,932
METHOD OF FABRICATING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE
Tsugio Makimoto, and Michiyoshi Maki, both of Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 16, 1969, Ser. No. 842,304
Claims priority, application Japan, July 17, 1968, 43/50298
Int. Cl. H011 7/36, 3/00; C23c 13/00
U.S. Cl. 148—175 6 Claims
A method of fabricating a semiconductor integrated circuit device in which a plurality of kinds of impurities for defining a collector wall region, a base region and an emitter region are simultaneously diffused by one heat treatment into an

epitaxial layer formed on one surface of a semiconductor body with at least one region having a conductivity type opposite to that of the semiconductor body formed in the



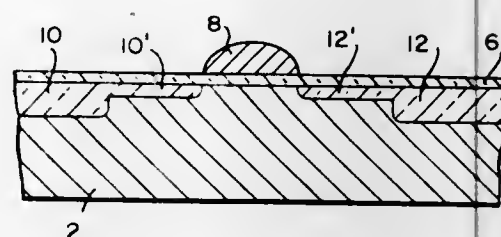
said one surface, the last named region becoming a part of a collector region, thereby largely reducing the rediffusion of an impurity in the last named region back into the base region to facilitate the control of the base width.

3,615,933
METHOD OF PRODUCING A GERMANIUM TRANSISTOR
Reinhard Dahlberg, Freiburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Division of Ser. No. 498,158, Oct. 19, 1965
abandoned, which is a continuation-in-part of application Ser. No. 4,541, Jan. 25, 1960, now abandoned.
Filed May 22, 1969, Ser. No. 840,888
Int. Cl. H011 7/46 5 Claims



The method of making transistors in which germanium and tantalum discs are joined by an adhesion metal such as aluminum such that the joined surfaces form an electrical contact and forms the collector. The emitter is formed on the second side of the germanium disc by alloying a pill of metal into the disc and the base is formed on the remaining portion of the second side. The adhesion metal dopes the germanium during the joining process.

3,615,934
INSULATED-GATE FIELD-EFFECT DEVICE HAVING SOURCE AND DRAIN REGIONS FORMED IN PART BY ION IMPLANTATION AND METHOD OF MAKING SAME
Robert W. Bower, Palos Verdes, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of application Ser. No. 590,033, Oct. 27, 1966, now Patent No. 3,472,712. This application Oct. 30, 1967, Ser. No. 678,809
Int. Cl. H011 7/44, 11/14
U.S. Cl. 148—186 3 Claims



Field effect device having diffused major source and drain regions spaced from each other on a common surface of a semiconductor body with insulated gate member disposed on same surface and spaced from and between the source and drain regions, and shallow regions formed by ion implantation using the gate member as a mask extending

from the periphery of the gate member to the source and drain regions.

3,615,935
FABRICATION OF SEMICONDUCTOR DEVICES UTILIZING BOMBARDMENT-ENHANCED ETCHING OF INSULATING LAYERS
Terence W. O'Keefe, Pittsburgh, and Melvyn W. Larkin, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 22, 1967, Ser. No. 640,164
Int. Cl. H011 7/54 6 Claims

A process for the fabrication of semiconductor devices is described utilizing an insulating layer such as silicon dioxide for diffusion masks and contact mask wherein openings in the insulating layer are produced by etching following selective bombardment with particles such as electrons without the use of conventional etch-resistant materials such as photoresists.

3,615,936
SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME
Monika Batz, Heilbronn, (Neckar), Germany, assignor to Telefunken Patentverwertungsgesellschaft mbH, Ulm am Danube, Germany
Filed May 24, 1968, Ser. No. 731,945
Claims priority, application Germany, June 1, 1967, T 34003
Int. Cl. H011 7/44 6 Claims

A semiconductor device and a method for making the same. The device includes a semiconductor body having at least one PN junction created by the diffusion of impurities into the body. The device further includes an intermediate layer arranged on the surface of the semiconductor body and made of a material having a higher diffusion constant for the diffused impurities than the semiconductor body. The method includes the steps of applying the intermediate layer to the semiconductor body, applying a masking layer, having a diffusion window opening, to the intermediate layer and diffusing the impurities into the semiconductor body, through the diffusion window and the intermediate layer.

3,615,937
PLASTICIZER ADDITIVE TO PHOTORESIST FOR THE REDUCTION OF PIN HOLES
Robert H. Collins, Poughkeepsie, and Frank T. Deverse, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 17, 1968, Ser. No. 737,355
Int. Cl. H011 7/00, 7/34 9 Claims

A method of providing high output monolithic semiconductor devices wherein a silicon dioxide layer is coated with a photoresist material containing a highly volatile, low molecular weight, ester-type plasticizer.

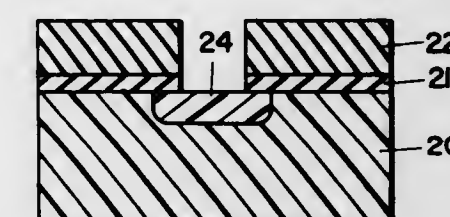
3,615,938
METHOD FOR DIFFUSION OF ACCEPTOR IMPURITIES INTO SEMICONDUCTORS
Joseph C. Tsai, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 553,222, May 26, 1966.
Filed Jan. 28, 1969, Ser. No. 794,550
Int. Cl. H011 7/44 1 Claim

A diffusion process for acceptor impurities is provided wherein, after deposition of the impurity on the semiconductor surface, the surface is covered by a deposited insulating layer to avoid out diffusion during the heating to drive in the deposited impurity.

3,615,939
METHOD OF MAKING A LATERAL TRANSISTOR
William C. Schneider, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass. Continuation of Ser. No. 550,698, May 17, 1966, abandoned.
Filed Jan. 15, 1969, Ser. No. 799,541
Int. Cl. H011 7/00 3 Claims

The emitter is restricted to the lateral wall of a recess adjacent the collector. Undesirable flow of emitter current into the bulk of the base region is prevented by providing a nonconducting plug in the bottom of the recess. A common emitter DC current gain which is substantially larger than one is obtained by this construction.

3,615,940
METHOD OF FORMING A SILICON NITRIDE DIFFUSION MASK
Ki Dong Kang, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Del.
Filed Mar. 24, 1969, Ser. No. 809,555
Int. Cl. H011 7/44 2 Claims



A method of forming a silicon nitride diffusion mask on the surface of a semiconductor wafer is described. The method utilizes the steps of depositing a relatively low-density silicon nitride film at temperatures in the range of 450° to 750° C. and etching the low-density film with a low-temperature hydrogen fluoride etch. The density of the silicon nitride mask is increased by heating it to a temperature of about 900° to 1,000° C. The densification takes place during the diffusion of impurities into the wafer since a diffusion step normally utilizes temperatures in the range of 800° to 1,300° C.

3,615,941
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE WITH PASSIVATION FILM
Eiichi Yamada, and Masayuki Yamamoto, both of Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 30, 1969, Ser. No. 820,433
Claims priority, application Japan, May 7, 1968, 43/30465; 43/30466
Int. Cl. H011 7/34 12 Claims

A method for manufacturing a semiconductor device whose surface is passivated by a silicon oxide film, forming a pyrolytic silicon oxide film on the surface of a semiconductor substrate at a temperature no higher than 900° C., depositing phosphorus oxide from a vapor phase containing phosphorus at a temperature no higher than 900° C. on the surface of said silicon oxide film, and causing a reaction between the surface layer of silicon oxide and phosphorus oxide at a temperature no higher than 900° C., thereby forming in the surface of said deposited film a glass layer mixed with phosphorus oxide and silicon oxide.

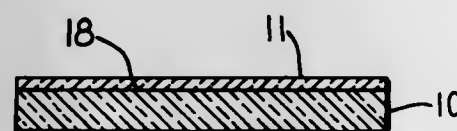
3,615,942
METHOD OF MAKING A PHOSPHORUS GLASS PASSIVATED TRANSISTOR
Martin Albert Blumenfeld, Somerville, and Kurt Jaques Sonneborn, Bound Brook, both of N.J., assignors to RCA Corporation
Filed June 5, 1969, Ser. No. 830,822
Int. Cl. H011 7/44 6 Claims

Phosphosilicate glass is incorporated in the passivating oxide on the surface of a diffused planar bipolar transistor by

the steps of (1) forming a masking coating over a diffused base region in a body of semiconductive material; (2) depositing phosphosilicate glass on the surface of the device to form a shallow, highly doped emitter region in said base region; (3) depositing a protective silicon dioxide coating by the pyrolysis of silane (SiH_4) on the phosphosilicate glass, and (4) coating the silicon dioxide coating with photoresist and photolithographically removing a portion of all of the coatings down to the silicon surface adjacent to the emitter.

3,615,943
DEPOSITION OF DOPED AND UNDOPED SILICA FILMS ON SEMICONDUCTOR SURFACES
Milton Genser, 10 Lancer Drive, Short Hills, N.J.
Filed Nov. 25, 1969, Ser. No. 879,691
Int. Cl. H01L 7/34; C03C 17/30
U.S. Cl. 148—188

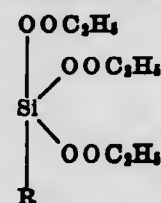
9 Claims



Deposition of a silica film on a semiconductor surface is effected by applying, on the surface, a thin film of a solution of silicon acetate in an inert solvent, and heating the coated surface at a temperature and for a period of time adequate to decompose the acetate to a glassy silica film.

Such a silicon acetate solution may contain a soluble dopant which, upon evaporation of the solvent and heating to diffusion temperature, will enable the dopant to diffuse into any exposed semiconductor surfaces.

The silicon acetate used in this invention may be one of the compounds having the following general formula:



in which R is a substituent of the class consisting of an acetate or a vinyl group.

3,615,944
METHOD FOR THE CONTINUOUS DOPING OF SEMICONDUCTOR MATERIALS
Henry P. Sheng, Narman, Okla., and F. Thomas Wooten, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.
Division of Ser. No. 529,288, Feb. 23, 1966, Pat. No. 3,473,510.
Filed Dec. 13, 1968, Ser. No. 798,240
Int. Cl. H01L 7/44

U.S. Cl. 148—189
A method for continuously doping semiconductor materials whereby the materials are placed in separate chambers which are sequentially exposed to preheating, doping and cooling.

13 Claims

3,615,945
METHOD OF MAKING SEMICONDUCTOR DEVICES
Masami Yokozawa, Osaka, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan
Filed June 11, 1969, Ser. No. 832,281
Claims priority, application Japan, June 21, 1968, 43/53043
Int. Cl. H01L 7/44

U.S. Cl. 148—190
A deep aluminum-diffused P-type layer and a shallow-diffused layer of a preselected conductivity type are simultaneously diffused into a semiconductor substrate by a double diffusion process which employs a composite impurity source. The composite impurity source consists of an aluminum receptacle having a predetermined amount of at least one shallow diffusing, conductivity type determining impurity enclosed therein. The receptacle may be fabricated from a uniformly thick aluminum foil and the shallow

diffusing impurity may consist of, for example, boron, phosphorus, indium and/or antimony.

3,615,946
METHOD OF EMBEDDING SEMICONDUCTOR CHIP WITHIN A DIELECTRIC LAYER FLUSH WITH SURFACE
Gerald G. Palmer, Liverpool, N.Y., assignor to General Electric Company
Filed Dec. 1, 1967, Ser. No. 687,195
Int. Cl. B32b 31/14; C23F 1/00
U.S. Cl. 156—3

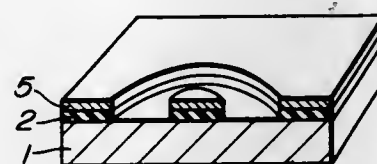
3 Claims



A method of embedding a semiconductor chip within a dielectric bonding layer, normally employed to bond said chip to a dielectric supporting substrate, so that the metallized face of said chip is flush with an extremely smooth surface of the dielectric layer. The present method permits readily made coplanar connections between the chip's contact electrodes and conductive patterns that may be formed contiguous with the dielectric layer surface. In performing the process, a chip is set upon the layer of dielectric material. A thin sheet of metal is placed over the chip and the surface of the dielectric layer. A platen, the face of which is ground flat to a high degree of smoothness, is pressed down upon the metal sheet in the presence of heat applied to said dielectric layer until the face of the chip becomes flush with the surface of said layer. The platen is removed and the metal sheet etched away.

3,615,947
METHOD OF SELECTIVE ETCHING
Eiichi Yamada, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 12, 1967, Ser. No. 689,941
Claims priority, application Japan, Dec. 16, 1966, 41/82092
Int. Cl. B32b 31/26; C23F 1/02
U.S. Cl. 156—3

6 Claims



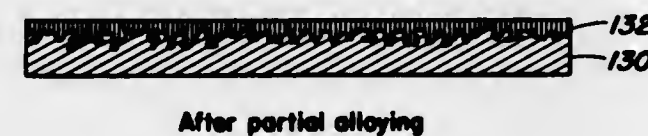
A method of selective removal of a silicon nitride film covering the surface of a semiconductor substrate. A thin layer of aluminum, titanium or chromium is partially formed on the silicon nitride film in accordance with a geometrical pattern. The thin layer is oxidized to become etching-proof. Thereafter the film is dipped in a hydrofluoric acid solution, whereby the exposed portion of the nitride film is selectively removed using the oxidized thin layer as a mask.

3,615,948
CONCENTRATION FUEL CELL
Wolfgang P. Krostewitz, Rock Road West, Green Brook, N.J.
Filed Dec. 27, 1967, Ser. No. 693,949
Int. Cl. B44c 1/22; B32b 33/00; H01m 27/04
U.S. Cl. 156—3

1 Claim

The present invention provides a fuel cell comprising a fuel chamber and oxidizer chamber, an electrolyte chamber having electrolyte therein, the electrolyte chamber being hermetically sealed from the first two chambers by a first

closed electrode separating the electrolyte chamber from the oxidizer chamber, and by a second closed electrode separating the fuel chamber from the electrolyte chamber. Each of the electrodes are composed of a material selectively



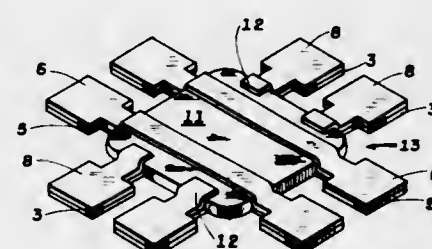
After partial etching



permeable to only one of the cell reactants and substantially impermeable to the others, their impurities, and reaction products. Said electrodes are formed by vapor deposition on a porous metal base of an easily removable metal coating which is selectively etched away.

3,615,949
CROSSOVER FOR LARGE SCALE ARRAYS
Robert E. Hicks, Baltimore, Md.
Filed Nov. 5, 1968, Ser. No. 773,452
Int. Cl. H05k 1/00, 3/06
U.S. Cl. 156—3

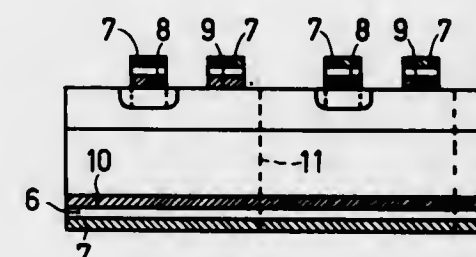
6 Claims



The subject invention relates to a method for providing crossovers in microelectronic circuitry. More particularly, the subject invention contemplates the fabrication of crossovers by deposition of insulative material on a conductor at the point of crossover and subsequent deposition of a crossing conductor over the insulative "bridge." Additional advantages other than the elimination of point-to-point wiring methods include improved circuit reliability; room temperature circuit assembly; decreased manufacturing time; increased unit density; "flip-chip" utilization; and reduction of stray capacitance.

3,615,950
METHOD OF ETCHING SILVER-TIN-LEAD CONTACTS ON A NICKEL COATED BASE
Rodolphe Lacal, Monza, Italy, assignor to U.S. Phillips Corporation, New York, N.Y.
Filed Apr. 15, 1969, Ser. No. 816,301
Claims priority, application France, Apr. 19, 1968, 148719
Int. Cl. H01L 7/00, 7/50; C23F 1/00
U.S. Cl. 156—3

4 Claims

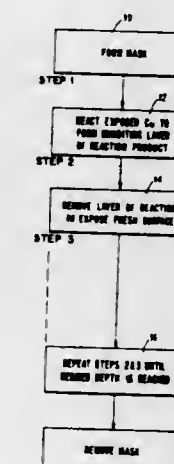


A method of chemically etching away lead-tin-silver alloy layers from a base in which the body is dipped in a solution

of ammonia and an ammonium salt and then etched in a solution of hydrogen peroxide and an acid.

3,615,951
METHOD FOR ETCHING COPPER
Jack R. Franco, Poughkeepsie; Paul A. Totta, Poughkeepsie, and James F. White, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 20, 1969, Ser. No. 835,009
Int. Cl. H05k 3/06; C23F 1/02
U.S. Cl. 156—3

13 Claims



A method for subtractive etching copper adapted to form very fine line patterns. In the method a mask is deposited on the copper surface, the copper surface exposed to an environment containing an oxidizing agent which causes the formation of an adherent self thickness limiting coating of a copper compound on the exposed surface, the resultant adherent coating removed in a second environment, and the steps of forming the coating and removing repeated until the desired amount of copper has been removed.

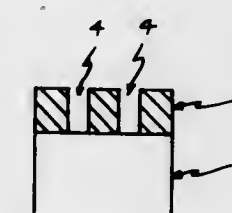
3,615,952
PHOTORESIST COMPOSITION AND METHOD OF FORMING AND USING THE SAME
Edmund Benjamin Davidson, Yardley, Pa., assignor to RCA Corporation
Filed Oct. 20, 1969, Ser. No. 867,907
Int. Cl. C23F 1/02; G03C 1/00
U.S. Cl. 156—13
0000

12 Claims

A resist composition comprising an alkyd resin made by reacting together phthalic anhydride, pentaerythritol, trimethyl propane, tall oil fatty acid, and benzoic acid and then removing about 15-40 percent of the low molecular weight ends. The resist may be made photosensitive by adding a sensitizer.

3,615,953
ETCH-RETARDING OXIDE FILMS AS A MASK FOR ETCHING
Bryan H. Hill, Dayton, Ohio
Filed Dec. 17, 1968, Ser. No. 784,344
Int. Cl. H01L 7/50; H05k 3/06
U.S. Cl. 156—17

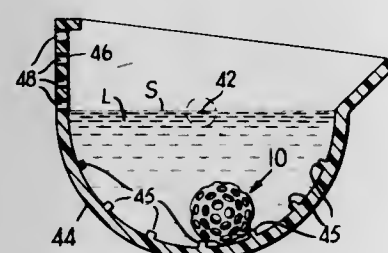
3 Claims



A technique for making certain oxides resistant to etching compositions. Anodized and evaporated films of Al_2O_3 and

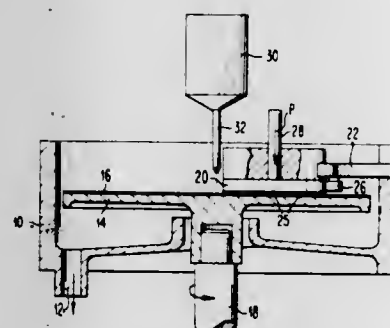
anodized films of Ta_2O_5 have been found to become etch-retarding when subjected to an electron beam supplied, for example, by an electron microscope. Scanning of selected areas enables one to carry out etching processes used in the preparation of integrated circuits without resorting to lengthy conventional masking techniques.

3,615,954
TREATMENT OF SMALL SEMICONDUCTOR WAFERS WITH ETCHANT
Max C. Kennison, Cleveland, Ohio, assignor to Ortec, Incorporated, Oak Ridge, Tenn.
Filed Oct. 5, 1967, Ser. No. 673,070
Int. Cl. H011 7/50; C23g 1/02
U.S. Cl. 156—17



A hollow, rigid sphere having a multiplicity of holes therein is formed in two separable hemispheres. A disk-shaped semiconductor wafer is enclosed within the sphere, and the sphere is inserted in a vessel containing an etching liquid. The sphere prevents the wafer from floating on the surface of the liquid or adhering to the walls or bottom of the vessel. The flat faces of the wafer are maintained out of contact with the sphere and are subjected to uniform treatment by the liquid.

3,615,955
METHOD FOR POLISHING A SILICON SURFACE
Joseph Regh, Wappingers Falls, N.Y., and Gene A. Silvey, deceased, late of Poughkeepsie, N.Y. (by Harriett E. Silvey, executrix), assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 28, 1969, Ser. No. 804,739
Int. Cl. H011 7/50
U.S. Cl. 156—17

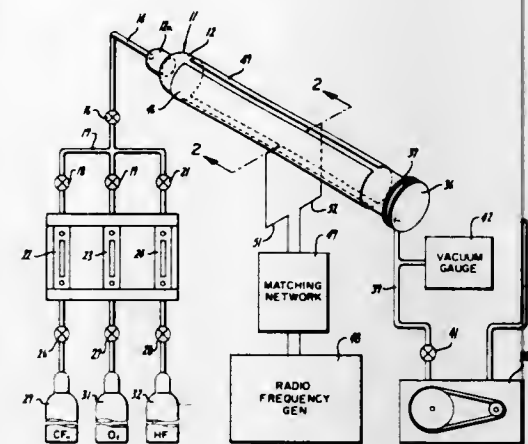


A silicon surface is polished by a simultaneous application of mechanical and chemical polishing procedures. The silicon surface to be polished is maintained continuously wetted with an excess quantity of a displacement plating solution containing a mercury cation and a fluoride anion. Mercury is deposited on the surface by the displacement of silicon and a simultaneous and continuous wiping of the surface removes the mercury from the high areas on the silicon surface.

3,615,956
GAS PLASMA VAPOR ETCHING PROCESS
Stephen M. Irving, Cupertino; Kyle Eugene Lemons, San Jose, and George E. Bobos, Santa Clara, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.
Filed Mar. 27, 1969, Ser. No. 810,997
Int. Cl. H011 7/44, 7/50; H05k 3/06
U.S. Cl. 156—17

Gas plasma vapor etching process utilized for removing portions of material from a semiconductor structure for a

number of purposes including polishing and cleaning of the silicon wafers, finding pin-holes in an insulating layer

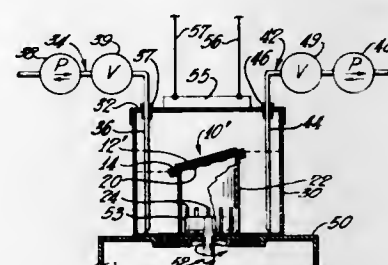


covering the semiconductor wafer and forming scribe lines in the wafer to thereafter permit the wafer to be mechanically broken into dice without any substantial damage to the dice.

3,615,957
METHOD FOR ETCHING METALLIC COPPER WITH CHROMOSULFURIC ACID AND REGENERATING THE ETCHING SOLUTIONS AS WELL AS RECOVERING THE CORRODED COPPER
Eftimios Konstantouros, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 3, 1967, Ser. No. 627,942
Claims priority, application Germany, Apr. 4, 1966, S 103016
Int. Cl. C01g 37/02; C22d 1/16; C231 1/00
U.S. Cl. 156—19

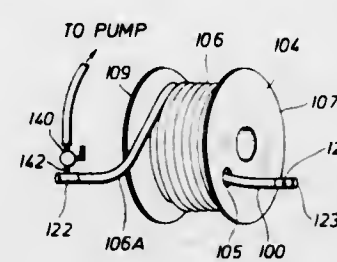
Process for the etching of metallic copper with chromosulfuric etching solution, in which the etching and regenerating of the solution are simultaneously effected but spatially separated from each other, the etching solution being circulated between the etching vessel and the anode space of an electrolytic cell provided with a diaphragm, in the anode space of which chromium-III-ions produced in the etching operation are oxidized anodically and half of the sulfuric acid consumed in the etching is reformed, and when copper-II-ions in the circulated etching solution reaches a specified concentration, crystallizing out the copper sulfate and utilizing a solution thereof in the cathode space of the electrolytic cell to separate out metallic copper at the cathode and reproduce the second half of the sulfuric acid consumed in the etching process.

3,615,958
LEACHING GLASS FILMS FOR FILTER MAKING
Charles I. Cohen, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation
Filed May 3, 1968, Ser. No. 726,305
Int. Cl. C03c 15/00, 25/06
U.S. Cl. 156—24



Apparatus and method for leaching films including a container having within it means for supporting the film in inclined disposition during introduction and removal of heated fluids.

3,615,959
VACUUM FILLING PROCESS FOR LIQUID FILLED MARINE SEISMIC CABLES
Larry J. Nance, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,451
Int. Cl. H01b 13/00, 17/34
U.S. Cl. 156—48

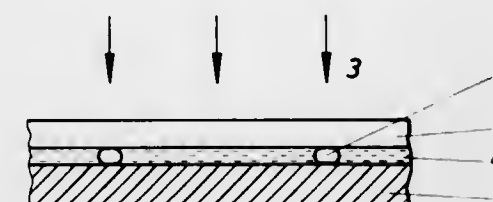


A technique for completely filling a stoppered hollow marine seismic cable with a compatible filling liquid such as kerosene, wherein the air in a hollow cable on a spool is first evacuated with a vacuum pump, and wherein the liquid is thereafter pumped into the cable until it is full. Improved evacuation and filling means are also provided which prevent loss of vacuum during the filling process.

3,615,960
BONDING USING EPOXY RESIN COMPOSITION AND NONACTIVATED BLOWING AGENT
Kiyoshi Hoshii, Ichikawa-shi; Hisao Ishikawa, Tokyo, and Keishi Tado, Ichikawa-shi, all of Japan, assignors to The Fujikura Cable Works Limited, Tokyo, Japan
Filed Feb. 26, 1968, Ser. No. 708,317
Int. Cl. H02g 1/14
U.S. Cl. 156—49

Epoxy resin composition consisting essentially of an epoxy resin component, curing agent, thermally decomposable blowing agent and optionally thermoplastic polymer, said composition, after curing, being capable of being broken up by expanding with the application of heat. It is used, for example, in joining cables by connecting core wires, slipping sleeve over portion where core wires have been connected, sealing said sleeve and sheath by said epoxy composition and thereafter curing said epoxy composition to form sealed portion, said sealed portion being capable of subsequent dismantlement.

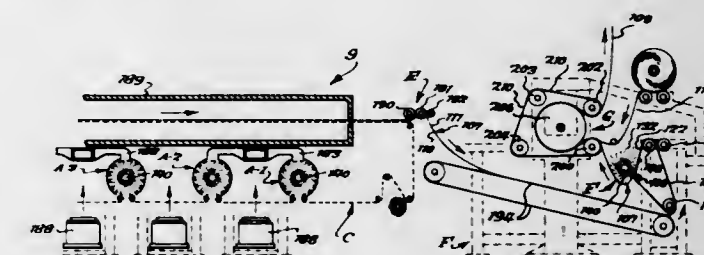
3,615,961
SOUND ABSORBER AND METHOD OF MAKING THE SAME
Erwin Meyer, and Klaus Diether Brendel, both of Goettingen, Germany, assignors to Gruenzweig & Hartmann AG, Ludwigshafen, Germany
Filed Feb. 8, 1965, Ser. No. 430,850
Claims priority, application Germany, Feb. 7, 1964, Sept. 10, 1964, M 59837 and M 59837
Int. Cl. B32b 27/04, 27/14, 27/40
U.S. Cl. 156—62.2



A sound absorber is formed of an oscillatable material having a surface exposed to the sound waves which move in a given direction, a material which will cause oscillation of the oscillatable material which occurs upon the impact of sound waves thereon to take place in a direction transverse to the given direction, and a material causing dampening of oscillations which is in engagement with the oscillatable

material or the material causing change in the direction of the oscillations and capable of dampening the transverse oscillations.

3,615,962
METHOD OF AND APPARATUS FOR FORMING FORMATIONS MATERIAL AND COMPOSITE MATERIAL
Peter D. Kaspar, Dover, Del., assignor to International Playtex Corporation, Dover, Del.
Filed Feb. 13, 1968, Ser. No. 705,210
Int. Cl. B29d 27/02; B32b 31/22
U.S. Cl. 156—62.2

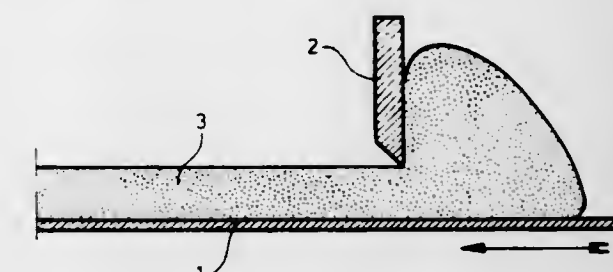


A continuous method and apparatus for forming foraminous sheet film having elastomeric properties and for composite materials including such film is disclosed. The method generally includes the steps of driving successive portions of a continuous foraminous conveyor in a substantially cylindrical path depositing a material in particularized form which material in dry form possesses elastomeric properties onto and about the inner surface of such cylindrical path; drying such material into a foraminous sheet film and removing said film from said conveyor. The process also may include the adherence of either one or two plies of material to the film.

The apparatus includes a deposition arrangement including means to deliver a flowable material which in dry form possesses elastomeric properties to a foraminous conveyor to provide a continuous foraminous film having elastomeric properties.

The preferable deposition apparatus includes a centrifugal dish-like member adapted to deliver the flowable material in particularized form onto the foraminous forming surface.

3,615,963
PANELS FROM SETTLED PARTICLES LIQUID BINDER AND ABSORBENT LAYER
Karl L. B. Johansson, and Karl Oskar Wikholm, both of Huskvarna, Sweden, assignors to Cebem Aktiebolag, Jonkoping, Sweden
Filed Jan. 3, 1969, Ser. No. 788,804
Claims priority, application Sweden, Jan. 19, 1968, 765/68
Int. Cl. B29j 5/04



The invention is concerned with wall panels and other construction units comprising a mixture of solid particles and liquid resinous bonding agent, said mixture being distributed on a base in such a manner that the volume of bonding agent exceeds the volume of the spaces between said solid particles. The solid particles are now allowed to settle and the excess bonding agent is allowed to rise to the top of said

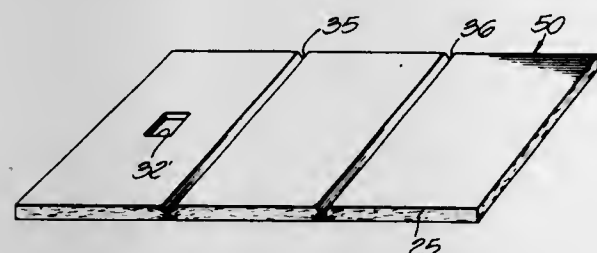
solid particles so as to form an outer layer, into which one side of an absorbent layer is applied to absorb the bonding agent, which finally is cured. In this manner there will be obtained a strong composite construction unit having a smooth surface.

3,615,964 METHOD OF FORMING CREASED FIBER GLASS BLANKET

Joseph G. Malone, San Marino, Calif., assignor to Industrial Insulations, Inc., San Gabriel, Calif.
Filed Sept. 20, 1968, Ser. No. 761,090
Int. Cl. B32b 17/04

U.S. Cl. 156-62.6

14 Claims



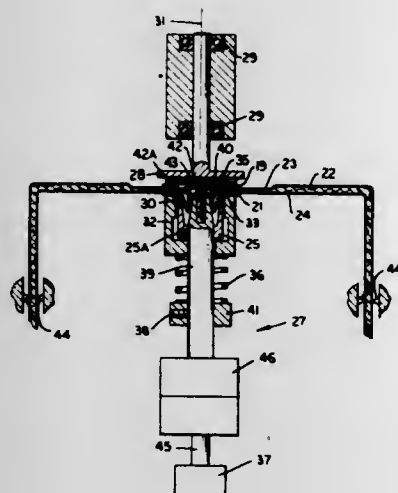
An apparatus and method of processing fiber glass to form a blanket of desired density and featuring areas of greater density to provide pockets and/or hinged sections of a desired size and shape. The fibers carry a sparse film of heat-cured binder material holding the fibers in desired relative positions at their points of crossover. The blanket is preferably prepared in a continuous process and, if desired, is laminated to flexible sheet material as, for example, heat-reflecting foil. The hinges formed by the invention technique are resilient and possess a pronounced memory for return to the position in which held while the binder takes a set. The resulting product has many uses including one-piece ducts and liners for a wide variety of chambers, refrigerators, furnaces, and many others.

3,615,965 METHOD OF MAKING A CONTAINER CLOSURE

Rulo Wayne Smith, Auburn, and Kenneth Lyle Summers, Hudson, both of Ind., assignors to Rieke Corporation, Auburn, Ind.
Filed Jan. 23, 1969, Ser. No. 793,260
Int. Cl. B29c 27/02; B65b 7/18; F16l 37/08

U.S. Cl. 156-69

5 Claims



A flexible retractable and extensible closure of plastic is secured to a corrugated fiberboard container coated with plastic or a material fusible to the closure, by providing upper, lower, or both upper and lower flanges on a portion of the spout member, the flanges being fused to facing surfaces

of the container top around an opening in the top, by spin welding, or other heating means to provide single or double liquid and vaportight seals around the opening.

3,615,966 METHOD OF FORMING A CEILING COVER STRUCTURE OF SWELLABLE PLASTIC SHEETING

Sven Olof Birger Ljungbo, Eneby, Balsta, Sweden
Filed Oct. 24, 1968, Ser. No. 770,404
Claims priority, application Sweden, Oct. 27, 1967, 14766/1967
Int. Cl. E04f 13/08

U.S. Cl. 156-71

5 Claims

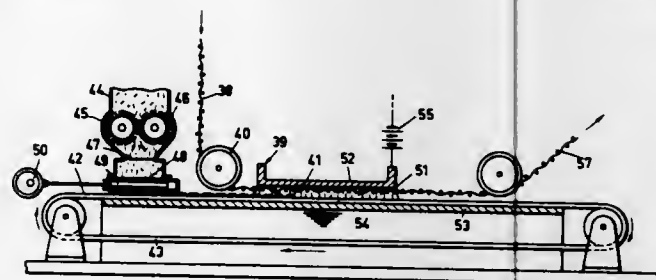
For covering a ceiling of a room there is used an integral cover composed of sheets, bound together at their edges, of swellable plastic or rubber sheeting. Prior to being erected in position the plastic sheeting is treated with a swelling agent; the excess is drained off subsequent to the material swelling, whereafter the sheeting after being swollen to an increase in size of at least 2 percent, is erected by means of conventional mechanical attachment means as a ceiling cover structure and the swelling agent caused to evaporate totally, whereupon the sheeting contracts and obtains a flat, stretched surface.

3,615,967 METHOD OF MANUFACTURING A FIBROUS FABRIC

Plus Stebler, Grillingerstr., Nunningen, Switzerland
Filed Aug. 2, 1968, Ser. No. 749,782
Int. Cl. B31c 13/00; B65h 81/00; D05e 15/00

U.S. Cl. 156-72

9 Claims



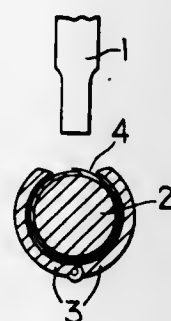
A method of manufacturing a fibrous fabric in which fibers are injected into a web of fibrous material in a direction substantially normal to a major surface of the web. The web is then impregnated with a binding agent to bond the fibers of the web and the injected fibers. The injected fibers strengthen the web in the direction normal to the web major surfaces and, in the case where the web is constituted from two or more fibrous layers, interlinks the layers. The fibers can be injected by means of a compressed air blower or by electrostatic action between spaced electrodes.

3,615,968 METAL-METAL BONDING

Raymond John Ceresa, and Kenneth Martin Sinnott, both of London, England, assignors to W. R. Grace & Co., New York, N.Y.
Filed Nov. 24, 1967, Ser. No. 685,476
Int. Cl. B32b 1/08

U.S. Cl. 156-73

4 Claims



Metal to metal bonding using a heat-sensitive adhesive is effected by application of ultrasonic energy to a metal-

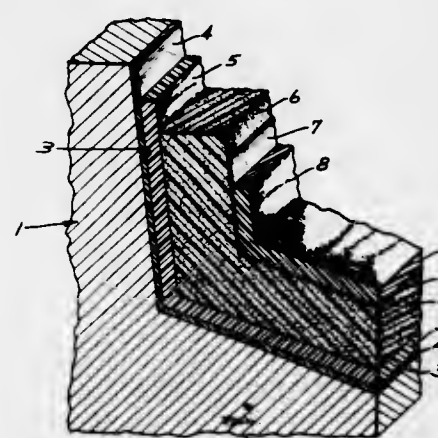
adhesive-metal assembly. The metals bonded may be, for example, sheets, strips, or the ends of a can blank, thus producing a side-seam.

3,615,969 FOAMED-CORE LAMINATES

Allan B. Hegg, Richmond, Va., assignor to Larson Industries Inc., St. Paul, Minn.
Filed May 20, 1968, Ser. No. 730,418
Int. Cl. B32b 5/18

U.S. Cl. 156-78

7 Claims



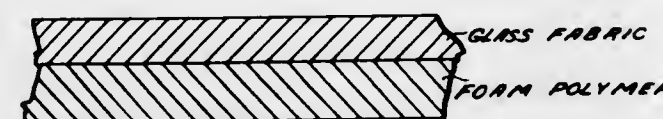
Foamed-core laminates or sandwiches useful in the construction of pleasure boats comprise one or more layers of plastic foam sandwiched between layers of reinforced polyester. The laminates can be prepared by spraying a liquid, foam-producing substance on one side of a reinforced polyester skin or shell and thereafter spraying a thin coating of polyester over the previously applied foam while the foam is hardening and still tacky. This polyester coating forms an adherent skin on the foam and acts to firmly bond the final layer of reinforced polyester (when such is applied) to the foam core.

3,615,970 GLASS FIBER FABRIC FOR DRAPERY

Robert E. May, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed Jan. 10, 1969, Ser. No. 790,448
Int. Cl. B32b 5/18

U.S. Cl. 156-78

8 Claims



A foam-laminated glass fabric is produced by forming a layer of foam vinyl chloride polymer on one side of a glass fabric, the layer being in the form of foam latex containing plasticizer for the polymer comprising flame retardant phosphate ester and polyethylene glycol bis 2-ethyl-hexate. The latex is dried to below its normal equilibrium water content, and then the laminate is compressed and heated briefly to set the foam in its compressed configuration. The fabric is useful in the manufacture of drapery.

3,615,971 METHOD OF MAKING A SYNTHETIC SUEDE COVERED COMPOSITE ARTICLE

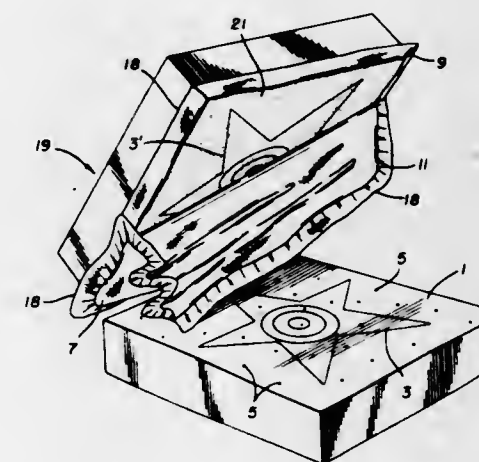
Glen D. Perry, Akron, Ohio, assignor to The General Tire & Rubber Company
Filed Aug. 21, 1969, Ser. No. 852,011
Int. Cl. B32b 5/18

U.S. Cl. 156-78

13 Claims

This invention concerns a process of producing a synthetic suede covered composite article which comprises the steps of fabricating a flexible laminate comprising a layer of

nonexpandable vinyl polymer and a layer of expanded vinyl polymer, forming the flexible laminate against a surface wherein the nonexpandable layer is adjacent the surface, applying a backing material to the formed laminate adjacent



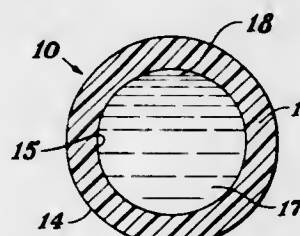
the expanded layer to make a composite article, removing the composite article from the surface and stripping the nonexpandable layer from the expanded layer to produce a suede surface on the composite article.

3,615,972 EXPANSIBLE THERMOPLASTIC POLYMER PARTICLES CONTAINING VOLATILE FLUID FOAMING AGENT AND METHOD OF FOAMING THE SAME

Donald S. Morehouse, Jr., Midland, Mich., and Roland J. Tetreault, Springfield, Mass., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 306,050, Sept. 3, 1963, now abandoned, Continuation-in-part of application Ser. No. 246,529, Dec. 21, 1962, now abandoned. This application Apr. 28, 1967, Ser. No. 634,691
Int. Cl. C08j 1/14, 1/26; B01j 13/02

U.S. Cl. 156-79

48 Claims



Thermoplastic microspheres are prepared which encapsulate a liquid blowing agent. Heating of the microspheres causes expansion. The microspheres are useful for coatings, moldings, plastic smoke, etc. Unlike hollow microspheres are also shown. The expandable microspheres are prepared by a suspension-type polymerization of droplets of a mixture of monomer and blowing agent.

3,615,973 METHOD AND APPARATUS OF PRODUCING POLYURETHANE RESIN ON A SUBSTRATE

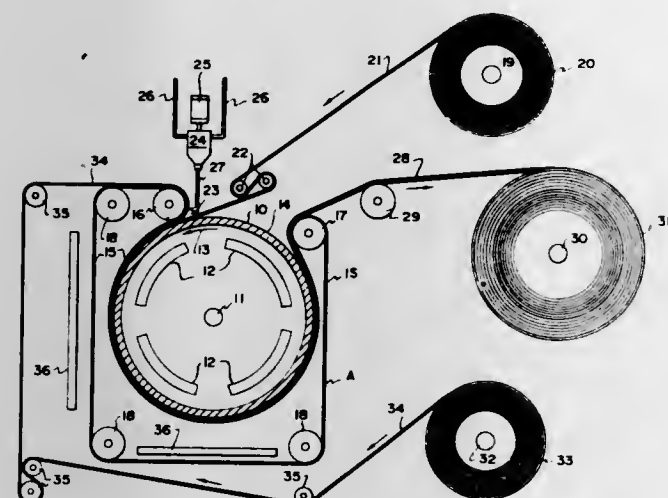
Ernest P. Meeder, c/o J. W. Johnson Co. 3100 W. Randolph, Bellwood, Ill.
Filed June 3, 1968, Ser. No. 733,910
Int. Cl. B32b 5/18

U.S. Cl. 156-79

8 Claims

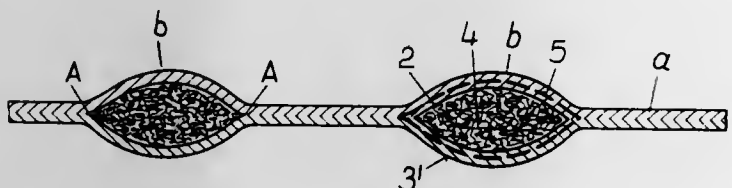
A method and apparatus of producing polyurethane resin on a substrate in a continuous manner in which the flowable at least partially unreacted resin is deposited in a thin stream in a back-and-forth movement between the substrate and a pressure web operating in conjunction with a rotating heated drum to set the resin to a solid after which the set resin and

substrate in the form of a flexible sheet are removed from the heated drum. The resin may be either foamed or unfoamed



and the substrate may be either permanently attached to the resin or may be stripable therefrom.

3,615,974
PLATE-SHAPED STRUCTURAL ELEMENTS FILLED WITH EXPANDED MATERIAL
Roderich W. Graff, Kollwitzweg 19, Darmstadt-Arheilgen, Germany
Filed July 8, 1968, Ser. No. 743,204
Claims priority, application Australia, July 6, 1967, 6289/67
Int. Cl. B32b 5/18; B31d 3/02
U.S. Cl. 156-79

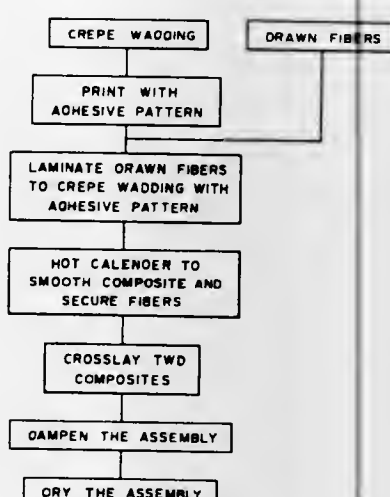


A structural element and a method of making the same. A plate member consists of a material having inherently low bending resistance and is provided with a plurality of spaced reinforcing ribs which project from at least one major surface of the plate member. The ribs are hollow and define internal passages. Bodies of solidified flowable material are introduced into and fill these passages for the purpose of reinforcing the ribs and thereby the plate member.

3,615,975
BONDING MATERIALS USING AMINE-MODIFIED ALDEHYDE CONDENSATION POLYMER, MIXTURE OF EPOXY RESIN AND METHYLENE DONOR, AND A FOAMING AGENT
Maurice F. Gillern, and Harlan G. Freeman, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed May 5, 1969, Ser. No. 821,567
Int. Cl. C09j 3/16

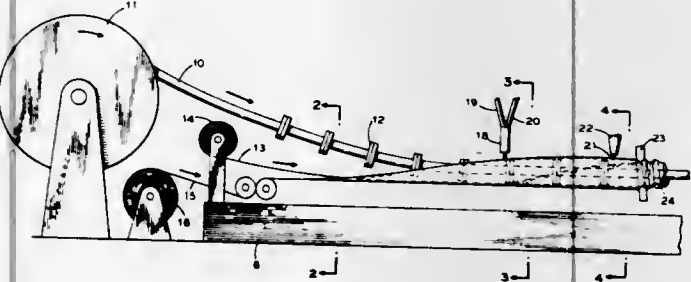
A method of bonding materials, particularly wood, using foamed gap-filling adhesives is disclosed. The adhesives are prepared using amine-modified aldehyde condensation polymers in which a foaming agent or agents have been incorporated. The resins cure rapidly at ambient temperature and make excellent construction adhesives.

3,615,976
METHOD OF PRODUCING A HIGH BULK MACRO-CREPE PRODUCT
Dan D. Endres, and Frank M. Lewis, Jr., both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 26, 1968, Ser. No. 708,097
Int. Cl. B32b 31/00
U.S. Cl. 156-83



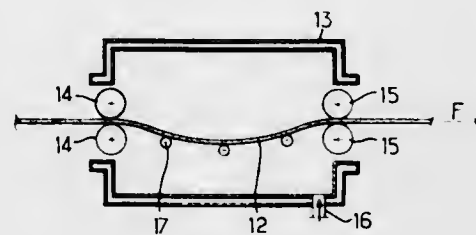
The production of a high bulk cellulosic wadding product which involves the dampening, preferably to a well wet stage, of creped padding secured by adhesive in well spaced zones to a drawn synthetic fiber web. The drawn fiber is substantially unaffected by the dampening while release of crepe distends the tissue between adhesive zones providing a macrocrepe structure on the creped tissue, the bulked nature of the tissue being retained upon subsequent drying. The process most suitably is carried out on an assembly of cross-laid composites of the tissue and fiber. The product is characterized particularly by bulk, strength and softness and has utility in applications such as that of facecloths.

3,615,977
METHOD OF INSULATING COAXIAL TUBING SYSTEMS
Gunter Lehnert, Hannover-Bothfeld; Gerhard Karl Ziemekm, Hannover; Fritz Otto Glander, Isernhagen, and Bern Otto Ellhardt, Vinnhorst, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnung-shutte Aktien-gesellschaft, Hannover, Germany
Filed Aug. 1, 1969, Ser. No. 846,858
Claims priority, application Germany, Aug. 8, 1968, P 17 79 406.8
Int. Cl. B32b 5/20



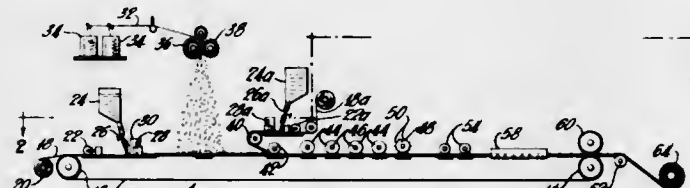
A method of insulating coaxial tubing systems for conveying heated or cooled gaseous or liquid materials by forming in situ a foamed insulating body disposed between the coaxial tubing members as they are formed.

3,615,978
PROCESSES FOR THE PRODUCTION OF FIBROUS STRUCTURES
Henri Robert Lissalde, Rouen, France, assignor to Papeteries Navarre, Paris, France
Filed Mar. 22, 1968, Ser. No. 715,324
Claims priority, application France, Apr. 4, 1967, 101,444
Int. Cl. B32b 31/24, 31/26
U.S. Cl. 156-85



Process of and apparatus for the production of fibrous and/or like structures, the process comprising subjecting to a softening treatment and a shrinking treatment a fibrous base formed of at least two kinds of fibers one of the said kinds of fibers being retractile with respect to the other of said kind or kinds of fibers.

3,615,979
PROCESS OF MAKING SHEET MOLDING COMPOUND AND MATERIALS THEREOF
Carlton J. Davis, Sr., Newark; Richard P. Wood, Granville, and Everett R. Miller, Granville, all of Ohio, assignors to Owens-Corning Fiberglass Corporation
Filed July 1, 1968, Ser. No. 741,677
Int. Cl. B32b 31/00
U.S. Cl. 156-87

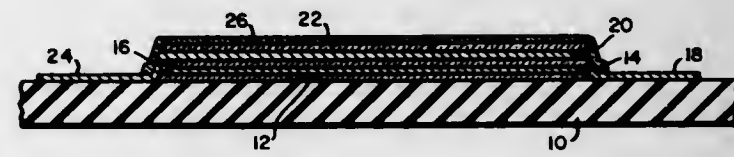


The specification describes a process for making a sheet molding compound wherein a layer of resin-filler paste that includes a thickening agent and a hardening catalyst is put down upon a first layer of sheet material; a layer of glass fibers that are sized with a material which induces wet out is placed thereon; following which another layer of the resin-filler paste containing the catalyst is placed thereon and covered by a second layer of sheet material. The sandwich thus formed is fed into the bite of rollers which squeeze out air and compress the resin-filler paste around the sized fibers, following which the composite is placed under further compaction that includes a perforating means which forces needlelike members through at least one layer of the sheet material, through the resin-filled paste, and into the layer of fibers for the removal of remaining entrapped air. The glass fibers which are used are sized with a material that includes both a hardening resin, and a nonhardening resin. Specifically, the fibers are coated with an unsaturated polyester resin and a saturated polyester resin which are preferably deposited on the glass fibers as emulsified particles.

3,615,980
DECAL METALLIZATION OF CERAMIC SUBSTRATES
John F. Schuck, 12625 La Cresta Drive, Los Altos Hills, Calif.; Daniel J. Rose, 425 Poppy Drive, Mountain View, Calif., and Chan Huan Wang, 19685 Via Escuela, Saratoga, Calif.
Continuation-in-part of Ser. No. 679,972, Nov. 2, 1967, abandoned
Filed Feb. 12, 1970, Ser. No. 11,021
Int. Cl. C04b 37/00

A process for applying a metal pattern to a ceramic substrate by applying to the substrate a decal having a metal pattern admixed with a removable binder. The substrate and decal are then heated in a two step heating cycle, first to remove the binder from the metal pattern and second to bond the metal pattern to the substrate.

3,615,981
METHOD OF MANUFACTURING ELECTRICAL CAPACITORS
Charles R. Pratt, Jr.; Stewart G. Stalneck, Jr., Raleigh, N.C., and Walter H. Tarcza, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 18, 1965, Ser. No. 456,616
Int. Cl. C04b 33/34



A method of making electrical capacitors fused to a substrate and suitable for integration with a microcircuit comprising applying to the substrate in the order named a first buffer layer and a capacitor unit including a first capacitor plate, dielectric layer, and second capacitor plate. The assembly so formed is then fired to volatilize any organic constituents, fuse adjoining layers and plates to each other and to the adjoining portions of the substrate, and at least partially crystallize the buffer and dielectric layers. Thereafter, a second buffer layer and a layer of vitreous glazing material is applied over the capacitor unit and the assembly is fired again to volatilize any organic constituents, complete crystallization of the first buffer and dielectric layers, crystallize the second buffer layer, and fuse the newly applied layers to adjoining layers, to the adjoining exposed surface of the outer capacitor plate, and to the adjoining portions of the substrate.

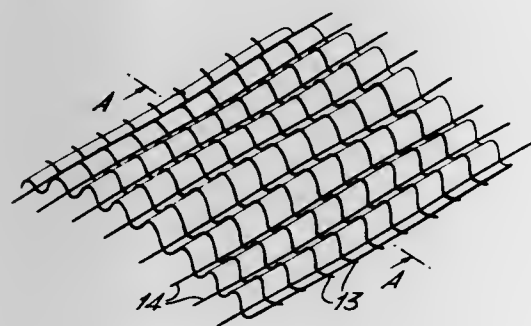
3,615,982
CORE FOR USE IN THE MANUFACTURE OF FURNITURE AND METHOD OF MANUFACTURE OF CORE
Henry Bandremer, 1435 Hagys Ford Road, Narberth, Pa., and Irving L. Bandremer, 1214 Sandringham Road, Bala Cynwyd, Pa.
Filed Oct. 30, 1969, Ser. No. 872,601
Int. Cl. B32b 33/00

A core for use in the manufacture of furniture which comprises a plurality of superimposed thin, flexible sheets which have been adhesively secured together, and then formed into a U-shaped core, with the core being used in the manufacture of furniture, for instance, as the backing portion of a chair. The core is manufactured by superimposing a plurality of thin, flexible sheets, one upon the other, by high speed equipment, and simultaneously applying adhesive to the sheets as the superimposition process proceeds to form a stack.

The stack is then positioned in matched pressure dies and with the action of pressure the core of the present invention is formed into a U-shape, although many other shapes are contemplated.

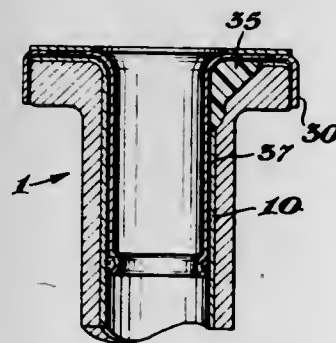
3,615,983
METHOD OF PRODUCING A FIBROUS ARTICLE
Jack Palfreyman, and Henry Edward Middleton, both of Derby, England, assignors to Rolls Royce Limited, Derby, England

Filed Mar. 27, 1970, Ser. No. 23,174
Claims priority, application Great Britain, Apr. 2, 1969, 17,238/69
Int. Cl. B65h 81/02, 57/04; D04h 3/08
U.S. Cl. 156-93 11 Claims



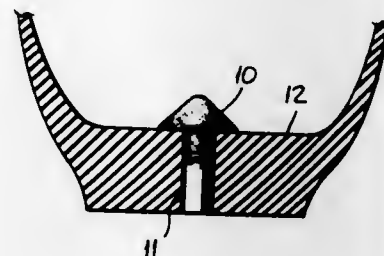
The invention concerns a method of producing a fibrous article comprising employing at least one former at least one of whose surfaces is provided with substantially parallel recesses, laying a plurality of transverse lengths of fibrous material over the former so that the said transverse lengths extend transversely of the recesses and are spaced from each other longitudinally of the recesses, laying a longitudinal length of fibrous material in each said recess so that the said longitudinal lengths extend over the said transverse lengths and force respective portions of the latter into the recesses, forming at least one fibrous assembly having the shape of the respective said surface by bonding the transverse and longitudinal lengths together while the latter are on the former, and effecting relative separation between the said assembly and the former.

3,615,984
METHOD OF REPAIRING A DAMAGED VITREOUS COATED NOZZLE
Raymond Burt Chase, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Apr. 26, 1968, Ser. No. 724,564
Int. Cl. F16l 9/14
U.S. Cl. 156-94 1 Claim



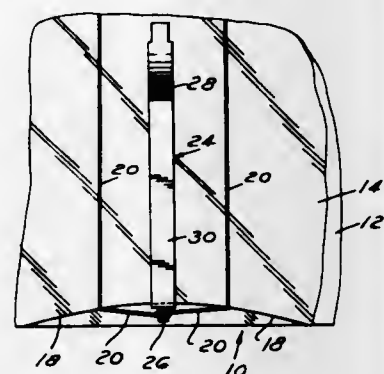
A method of repairing a damaged nozzle and a shield conforming to undamaged profile and made of corrosion resistant metal preferably tantalum, characterized by a returning exterior flange and a crimped interior flange and adapted to be formed of sheet tantalum: used to restore conformation and repair damage to a nozzle of a glass-lined chemical reaction vessel; in conjunction with filler and cementitious resins.

3,615,985
TUBELESS TIRE REPAIR PLUG INSERTION TECHNIQUE
Franklin G. Reick, 228 W. Place, Westwood, N.J., and Robert S. Hanser, P.O. Box 338, Saddle River, N.J.
Filed Feb. 5, 1969, Ser. No. 796,712
Int. Cl. B60c 21/06
U.S. Cl. 156-95 5 Claims



A repair plug insertable by a pneumatic gun or other tool into a puncture formed in the casing of a tubeless tire, thereby to seal the puncture. The plug is constituted by a core of cured rubber coated with a tacky layer of vulcanizable rubber which, when subjected to the heat produced by a running tire, vulcanizes in place and bonds to the tire casing. Before being inserted in the puncture, the plug is coated with a temporary detackifying compound which lubricates the passage of the plug through the inserting tool. The compound is dissolvable in rubber when subjected to the heat of the running tire so that it disappears in the plug and the bonding action of the tacky coating thereon is permitted to proceed.

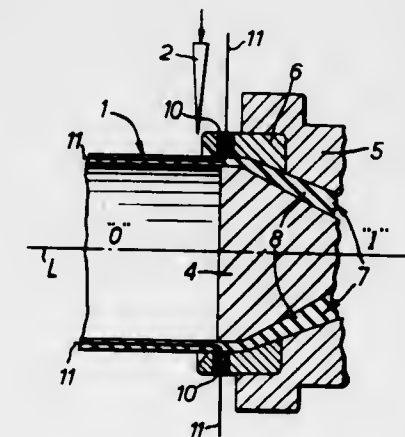
3,615,986
METHOD OF MAKING AN IMPROVED WINDSHIELD ANTENNA SYSTEM
Richard T. Dickason, Birmingham, and John A. Richardson, Harper Woods, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 9, 1970, Ser. No. 9,814
Int. Cl. C03c 27/12
U.S. Cl. 156-105 5 Claims



A windshield antenna system includes a first sheet of glass, a second sheet of glass and an interlayer of resinous material bonding the two glass sheets together. A pair of antenna wires are adhered to the interlayer for most of their length. However, the antenna wires do have free ends projecting outwardly from between the bonded glass sheets at a cutout portion of the second glass sheet. A terminal having a first end portion defining a projecting neck, a main body portion and a second end portion defining a connector tip is formed from a conductive material. At least the body portion of the terminal is bonded to the exposed surface of the second glass sheet with the portion of the terminal defining the projecting neck extending to a position which is located over the cutout portion of the second glass sheet. The free ends of the antenna wires are wrapped around the projecting neck of the terminal. The wrapped wires and the projecting neck of the terminal are deformed into the space provided by the cutout portion of the second glass sheet. An electrical junction of high quality is formed between the wrapped antenna wires and the terminal by applying solder thereto. Any extraneous

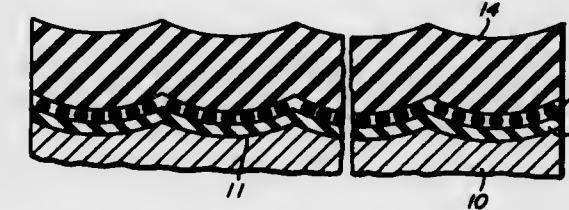
antenna wire is cut off. The space into which the projecting neck of the terminal and the wrapped antenna wires are deformed is sealed by a sealing material. The main body portion of the terminal is also sealed by a sealing material.

3,615,987
METHOD FOR MANUFACTURING ANNULAR SEAMLESS RUBBER OR RUBBERLIKE COMPONENTS FOR USE IN THE MANUFACTURE OF PNEUMATIC TIRES
Karl Blatz, Steinheim am Main, and Otto Schmitt, Niedergrundau, both of Germany, assignors to Dunlop Holdings Limited, London, England
Filed June 20, 1968, Ser. No. 738,480
Claims priority, application Germany, June 23, 1967, D 53 418
Int. Cl. B29h 17/20
U.S. Cl. 156-133 6 Claims



A method of manufacturing an annular seamless component of rubber or plastics material for use in for example pneumatic tires comprising extruding a tube of said material, cutting the extruded tube in the length, and positioning the said lengths onto a building former of which the following is a specification.

3,615,988
METHOD FOR MANUFACTURING TRANSMISSION BELTS
Kenneth D. Richmond, Nixa, and James R. Thomas, Springfield, both of Mo., assignors to Dayco Corporation, Dayton, Ohio
Filed Feb. 25, 1969, Ser. No. 802,059
Int. Cl. B29h 7/22
U.S. Cl. 156-141 4 Claims

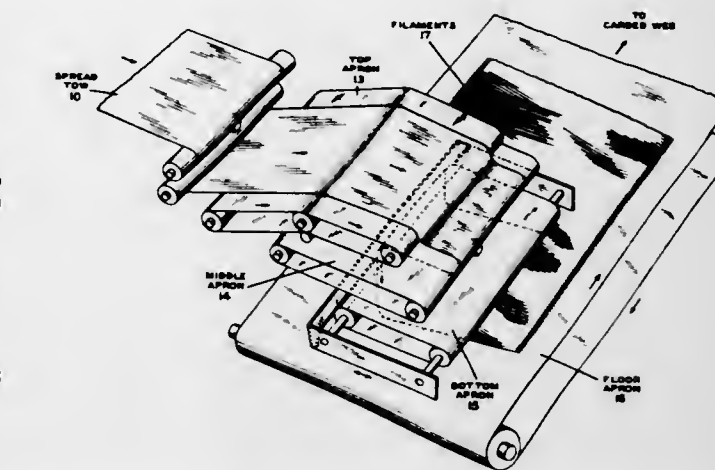


A V-belt having an arched outer surface and arched neutral axis strength cords, and the method of manufacturing the same in sleeve form. The belt sleeve is built in an inverted manner on a drum having arched grooves on the surface and cut after curing along cut lines spaced in accordance with the groove spacing.

3,615,989
NONWOVEN FABRIC STRUCTURE
Ronald L. Depoe, Parsippany, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed May 9, 1967, Ser. No. 637,121
Int. Cl. B32b 31/14
U.S. Cl. 156-148 5 Claims

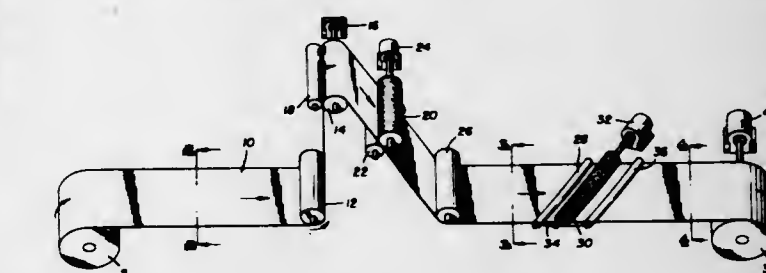
A process for producing a novel nonwoven fabric structure by cross-lapping a deregistered tow of continuous

multifilament synthetic fibers to form a plurality of layers wherein the filaments in each layer are disposed in substantially parallel relation with respect to each other and



are angularly disposed with respect to filaments of adjoining layers, adding thereto a web of lower-melt thermoplastic fibers, and thereafter heating the entire structure to bond the fibers.

3,615,990
SURFACE CHARACTERISTICS OF COMPOSITE FABRICS
Eugene B. Butler, Kent; Walter T. Reilly, Cuyahoga Falls, and Gerald E. Whorley, Ashtabula, all of Ohio, assignors to The General Tire & Rubber Company
Filed July 23, 1969, Ser. No. 844,010
Int. Cl. D04h 1/46
U.S. Cl. 156-148 4 Claims

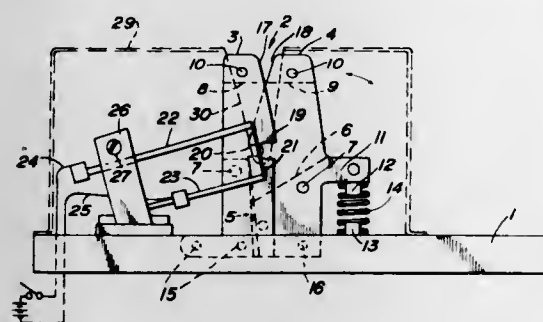


In the production of a substitute leather material, a laminate of a nonwoven batt needled to the backside of a knit or woven fabric is often used as a substrate or support. During needling, loops and strands of the batt are drawn through the fabric by the needles, resulting in a large number of fiber ends and loops projecting from the surface and forming a visible linear pattern. The surface of the fabric is brushed at an acute angle to the pattern of the projections to mask the pattern and level the projections thereby producing a smoother, more uniform surface finish. Buffing of the surface prior to brushing serves to break the projecting loops thereby facilitating the brushing operation.

3,615,991
METHOD FOR UNITING THREAD ENDS
Richard Munzner, Obernburg am Main, Germany, assignor to Glanzstoff AG, Wuppertal, Germany
Filed Feb. 18, 1969, Ser. No. 800,049
Claims priority, application Germany, Feb. 24, 1968, P 17 10 460.8
Int. Cl. D04d 1/02
U.S. Cl. 156-148 6 Claims

Method of uniting the ends of thermoplastic threads or yarns by twisting the ends over a short length with the twisted length being clamped and held under tension and applying heat to a relatively small area of the twisted length so as to melt and bond the threads together as they are simultaneously caused to untwist under the release of

tension. The method essentially includes two clamping means adapted to receive and hold the twisted length of threads,



and a heating element preferably positioned immediately adjacent one of the clamping means and adapted to melt and bond the ends of the thread.

3,615,992

METHOD OF PRODUCING ADHESIVE PRODUCTS

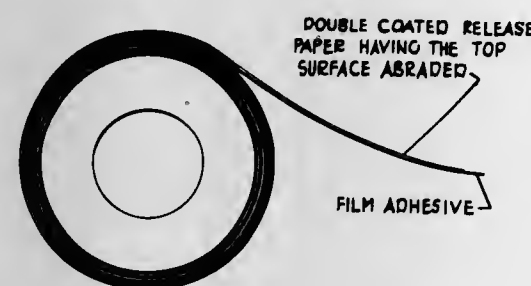
Robert Jeffries, East Hanover, and Martin M. Grover, Upper Montclair, both of N.J., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 12, 1968, Ser. No. 720,868

Int. Cl. C09j 7/02

U.S. Cl. 156-154

7 Claims



Method of forming a composite adhesive products in roll form are provided by coating a film adhesive onto one side of double-coated release paper, abrading the other surface of the release paper and partially removing the release coating therefrom, and winding the product in roll form. These products are useful in a process in which a pressure-sensitive adhesive tape is applied to the abraded surface of the release paper, thereby making separation of the release paper from the adhesive easily accomplished during use.

3,615,993

MAGNETIC BALL PRODUCTION METHOD

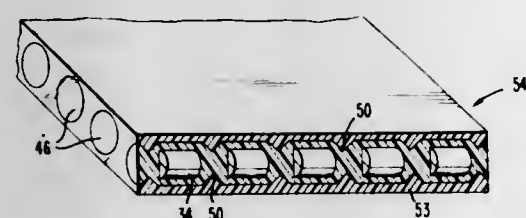
Walter K. French, Montrose, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 14, 1967, Ser. No. 653,397

Int. Cl. B431 1/12

U.S. Cl. 156-155

7 Claims



Method of making a sheeting material which is capable of having graphic subject matter produced thereon and erased therefrom by a magnetic stylus and wherein one sheet of the material can have reproduced thereon graphic subject matter present on another sheet.

3,615,994 METHOD OF JOINING THE EDGES OF CUSHIONED VINYL SHEET MATERIAL

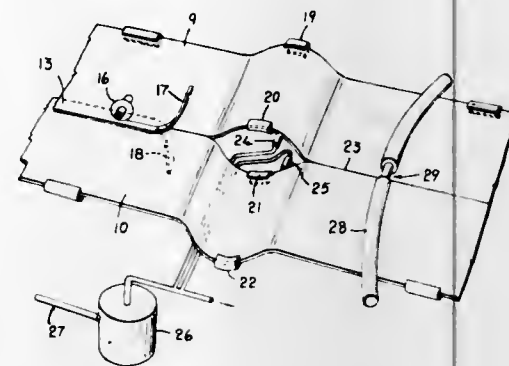
Ian A. MacLaine, Lachine, Quebec, and Peter G. Montgomery, Montreal, Quebec, both of Canada, assignors to Domco Industries Limited, Montreal, Quebec, Canada

Filed June 12, 1969, Ser. No. 832,797

Int. Cl. B31f 5/06

U.S. Cl. 156-159

17 Claims



Composite sheet vinyl strips are joined together by applying an adhesive to the edges to be joined, and maintaining the edges in contact under pressure until the adhesive is cured. The adhesive, which may be an elastomeric urethane or an epoxy resin, is applied as a continuous bead, without solvent; its viscosity is between 5,000 and 80,000 centipoises at 73° F. In a particular embodiment of the invention the vinyl wear layers of the strips are first bonded by solvent welding.

3,615,995

METHOD FOR PRODUCING A MELT BLOWN ROVING

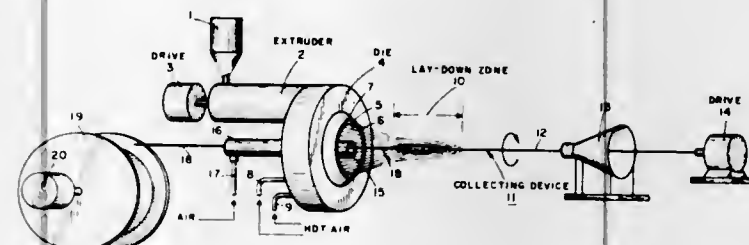
Robert R. Buntin; John W. Harding; James P. Keller, and Volle L. Murdock, all of Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Aug. 14, 1968, Ser. No. 752,592

Int. Cl. B65h 51/00

U.S. Cl. 156-161

13 Claims



A roving of entangled and self-bonded fine fibers of thermoplastic resins may be formed by a melt blown roving technique which comprises extruding the thermoplastic resin through a die having the die openings in a circle into a hot gas stream to attenuate the extruded polymer into fibers in the form of a cone of fibers in space and collecting the fibers as a tow. The process yields many unique products which vary in characteristics depending on the specific collection of the fibers.

3,615,996

SEALING METHOD OF POLYETHYLENE FILMS

Kazumasa Hasegawa, and Yasuzi Hosono, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1969, Ser. No. 866,795

Claims priority, application Japan, Oct. 12, 1968,

Nov. 7, 1968, 43/73913 and 43/81079

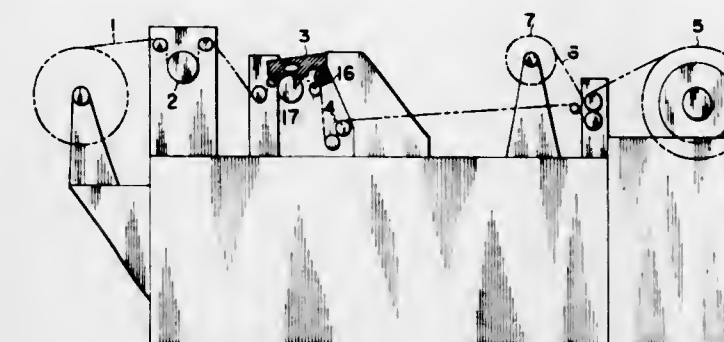
Int. Cl. B32b 31/18, 31/16

U.S. Cl. 156-164

9 Claims

A method of sealing polyethylene films which comprises feeding to a sealing slit section piled polyethylene films,

prepared by an inflation molding method and having a blow ratio of greater than 2, in the tensioned state at a stress higher than the heat shrinking stress of the polyethylene film



in the sealing direction and lower than the stress required to stretch said film 3 percent, and slitting and welding said films while maintaining them in the tensioned state.

3,615,997

METHOD OF MAKING A RECONSTITUTED CIGARETTE FILTER

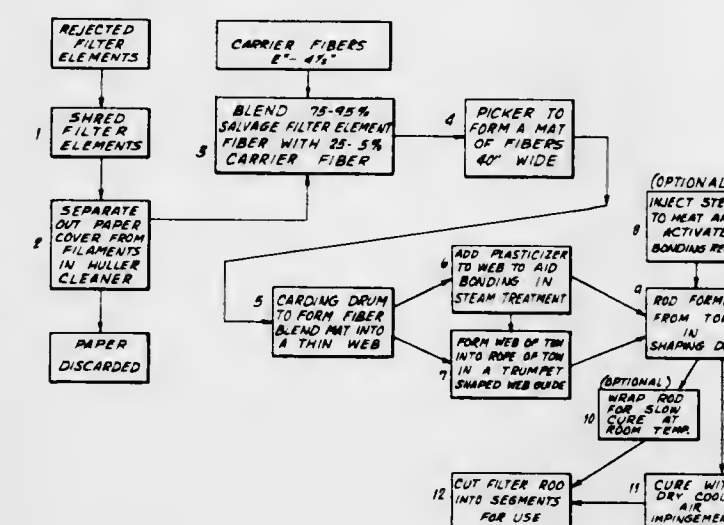
Colin Shaw McArthur, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed June 19, 1968, Ser. No. 738,139

Int. Cl. B32b 31/00

U.S. Cl. 156-166

3 Claims



Method of manufacture of cigarette filter elements which permits the utilization of short cuts or staples of the same filamentary tow which is conventionally employed in a continuous fiber form in the manufacture of filter elements. More specifically, these short cuts or staples comprise in total or in part recovered cut fibers derived from salvage bundles of such fibers bound together in the form of porous rod-shaped filter elements. In part longer segments of cut filamentary staple tow which presently accumulate as waste in the manufacture of filamentary bundles are also employed. The method essentially comprises: (1) shredding reject rod-shaped fibrous cigarette filter elements to fracture the bonding therein and separate the short fiber contents into individual filaments which are generally about 20 mm. long; (2) blending a major proportion of the order of 75 percent-95 percent cut fibers from filter element rejects with a minor proportion of the order of 25 percent or less cut staple fibers resulting from waste or random cut fibers accumulated in the manufacture of the filter elements. These latter fibers are normally about twice the length from about 40 to 100 mm.; (3) forming this blend of fibers into a mat of random directional fibers characterized in that the two groups of staple fibers in the blend are physically interlocked with the longer fibers acting as a carrier fiber for the shorter fibers derived from the shredded filter elements; (4) rolling the mat of commingled fibers on a mandrel to shape a lap

which is fine picked on a carding machine to reduce the thickness of the mat to a web of fibers which is about 1/16 inch in thickness; (5) adding plasticizer if needed and drawing this web of fibrous material through a rod-forming means capable of transforming it into a continuous circular fiber rod suitable for segmentation into reconstituted cigarette filter elements. In step (5) of the process, the filamentary material may be bonded together more securely by heating, usually with steam, to reactivate or remelt the plasticizer remaining on the reused filter fibers. It is then cured by drying (6) and cooling. If desired, additional plasticizer may be introduced with the steam to further bond the filamentary materials together.

3,615,998

METHOD OF BIAXIALLY ORIENTED NONWOVEN TUBULAR MATERIAL

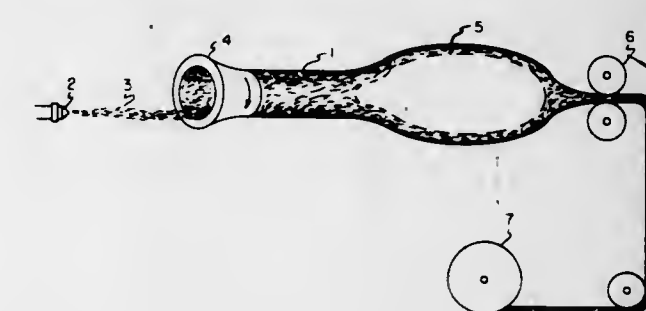
Charles J. Kolb, Colonia, and Dale Kelley Canfield, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed July 10, 1968, Ser. No. 743,862

Int. Cl. D04h 3/07

U.S. Cl. 156-167

7 Claims



The physical properties of spray-spun nonwoven fibrous tubular structures are improved by biaxially drawing over a heated expanding mandrel. The spray-spun tube is simultaneously enlarged and elongated to produce a structure exhibiting high tensile strength.

3,615,999

METHOD OF CONSTRUCTING COMPARTMENTED TANKERS

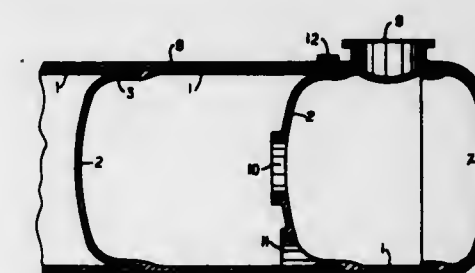
Robert Basier, Saudemont, and Clovis Parisot, Douai, both of France, assignors to Societe Anonyme de Recherches et de Commercialisation de Produits de Resines de Synthese R.C.P. and Houilleres du Bassin du Nord et du Pas de Calais, Douai (Nord), France

Continuation-in-part of application Ser. No. 471,171, July 19, 1965, now abandoned. This application Apr. 3, 1969, Ser. No. 837,970

Int. Cl. B65h 81/06

U.S. Cl. 156-172

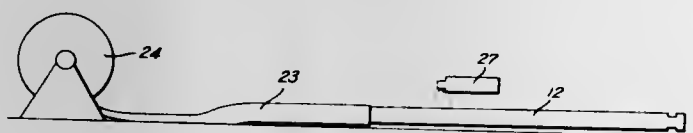
1 Claim



A method of producing compartmented tankers from laminated resins, in which the tankers include tubular elements of substantially identical cross section and of cylindrical shape with one end open, which comprises the steps of assembling the tubular elements to fit hermetically into each other in the same direction over a limited depth, to form separate compartments. The compartments are first molded of polyester resin and covered with glass fiber. The

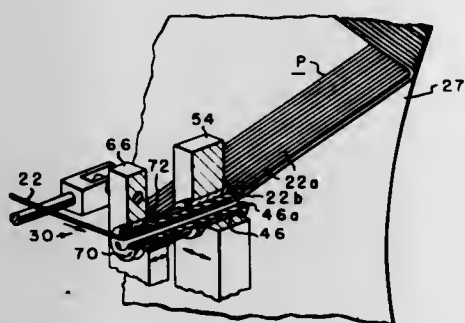
glass is present at the order of about 50 percent. The polyester is non-saturated and has catalyzers and accelerators added thereto. The polymerization is performed at first at an ambient temperature and terminates then by heating to about 80° C. in order to obtain a total reticulation. The assembly step is performed by moistening that part of the tubular elements in contact with each other with glue of the same polyester resin catalyzed and accelerated as applied before. The last one of the elements is hermetically closed towards the outside by an end member.

3,616,000
SEAMLESS FABRIC-LINED BEARING OF MULTIPLE-LENGTH CONSTRUCTION
Neil William Butzow, Greendale, and Bernard Harris, Milwaukee, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed May 20, 1968, Ser. No. 730,399
Int. Cl. B65h 54/10
U.S. Cl. 156-176 7 Claims



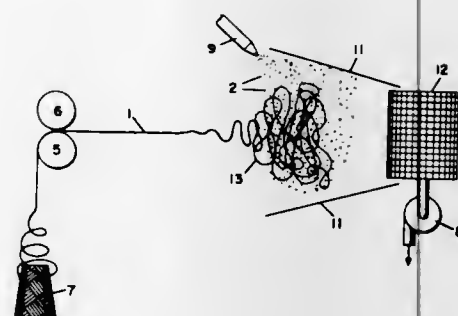
A fabric sleeve having lengthwise yarns of a low-friction material and circumferential threads of a bondable but unshrunk material is secured on a mandrel utilizing the shrinkage of the circumferential threads. The sleeve is impregnated with a liquid resin and wrapped with glass filaments and additional resin. The resin is cured to form a rigid tube. When the mandrel has been withdrawn the tube has an internal bearing surface a predetermined size larger than the mandrel and may be cut to selected lengths to comprise the desired bearings.

3,616,001
VIBRATORY METHOD FOR SECURING A CONTINUOUS THREAD ON A SUPPORT SURFACE
Kenneth J. Addis, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 20, 1968, Ser. No. 730,301
Int. Cl. B32b 5/12; B29h 17/28
U.S. Cl. 156-177 9 Claims



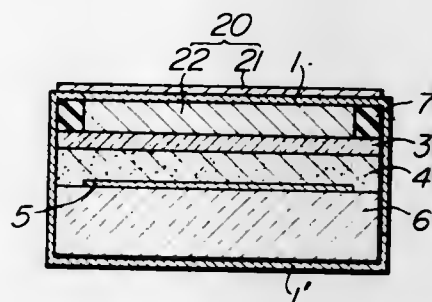
A method and apparatus for securing at least one continuous length of thread on a support surface in a desired pattern, wherein the thread and support surface have a pressure sensitive adhesive affinity for each other, and wherein the thread is longitudinally laid on the support surface from a thread guide mechanism moving relative to the support surface while a pressure is intermittently applied against the thread closely adjacent its lay point to minimize movement of the thread on the surface due to tension forces acting on the thread and to minimize damage or dislocation of the thread due to frictional engagement with the thread guide mechanism.

3,616,002
METHOD OF MAKING NONWOVEN ARTICLES FROM CONTINUOUS FILAMENTS
Elmer Gordon Paquette, Madison, and Karl Russell Guenther, Middleton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Madison, Wis.
Filed Nov. 12, 1969, Ser. No. 876,005
Int. Cl. B32b 5/02, 5/04; D04h 3/03
U.S. Cl. 156-180 11 Claims



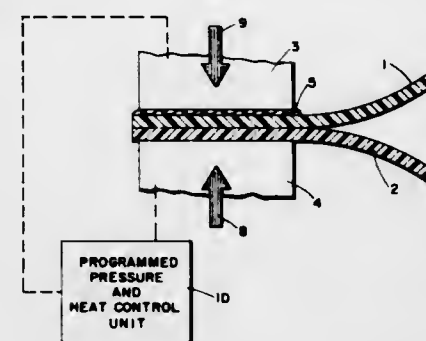
This invention deals with nonwoven articles made from continuous filaments, including garments and porous sheet materials. In the past, nonwoven products have suffered the handicap of a stiff and "boardy" feel. We eject continuous yarn or filaments in an air space and contact them with binder droplets while still suspended in air, so that the droplets dry sufficiently to become nonmigrating before they are deposited on the screen or mold on which the fibers are brought into contact with each other and bonding takes place. This method is particularly suitable for making garments of elastomeric fibers, not easily handled in ordinary production machinery. Another generally applicable advantage is that the resultant products are exceptionally flexible and that the articles produced do not split into stratified binder-rich and -poor areas, but are uniformly bonded throughout.

3,616,003
METHOD FOR MAKING PHOTOELECTRIC DEVICE
Kohashi, Tadao, Yokohama; Tadao Nakamura, Kawasaki-shi, and Shigeaki Nakamura, Kawasaki-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Japan
Filed Jan. 28, 1969, Ser. No. 794,677
Int. Cl. B32b 31/00
U.S. Cl. 156-182 3 Claims



A method for manufacturing a photoelectric device having a plurality of photoconductive layers comprising the steps of forming on a surface of a semimanufactured article a layer of mixed suspension material consisting of powdery photoconductive material, binder material and volatile diluent, volatilizing said volatile diluent, repeating these steps to laminate the desired number of layers, and subjecting the laminated layers to a single heat treatment, thereby to set the photoconductive layers simultaneously.
A photoelectric device including a spacer frame between the electrodes, said frame encircling at least one photoconductive layer.

3,616,004
METHOD FOR SEALING MULTILAYER THERMOPLASTIC FILMS
Sigbert Samson, Rozendaal, Gelderland, Netherlands, assignor to American Enka Corporation, Enka, N.C.
Filed Apr. 2, 1969, Ser. No. 812,601
Claims priority, application Netherlands, Apr. 2, 1968, 6,804,634
Int. Cl. B32b 31/00
U.S. Cl. 156-182 12 Claims

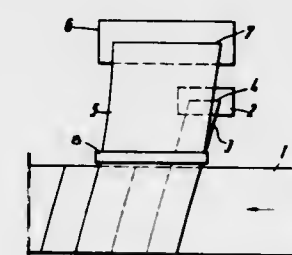


A method for sealing at least two multilayer polymeric films each being built up of two or more alternating layers of different thermoplastic component polymers, e.g., polyethylene and polyamide, which includes the steps of applying pressure to at least two of the multilayer films arranged to be sealed together in a sealing area, simultaneously heating the films in the area to a first temperature which is at least equal to the softening point of the polyethylene component, but lower than the softening point of the polyamide component, e.g., about 140° C., and then heating the films in the sealing area to a second temperature which is at least equal to the softening point of the polyamide component, e.g., about 220° C., whereby the layers of the polyamide are fused together to provide a seal between the films. An apparatus for carrying out this method is also disclosed.

3,616,005
METHOD OF PRODUCING LAMINATED DECORATIVE OBJECTS
Janet M. Wetstone, 1041 Crane Road N.E., Atlanta, Ga.
Filed Mar. 24, 1967, Ser. No. 625,789
Int. Cl. B31f 1/12
U.S. Cl. 156-183 16 Claims

This is a method of mounting engravings, etchings, or other types of prints on any surface, laminating them to the base, and providing them with an oil painting appearance by means of a synthetic resin emulsion latex, and the product produced thereby. The method is an improvement over the old French art form "decoupage."

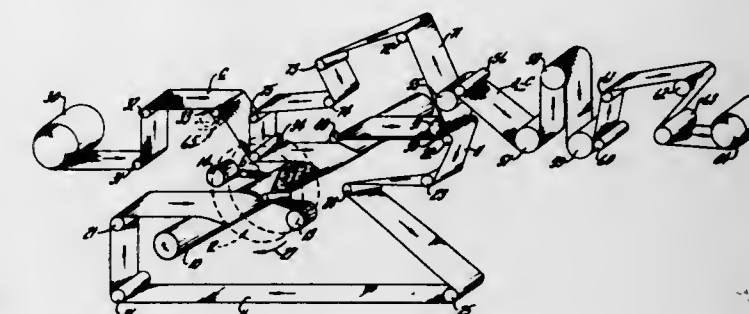
3,616,006
METHOD OF ENVELOPING A STEEL PIPE
Helmut Landgraf, Rumeln Kreis, Moers, and Walter Quittmann, Angermund, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed July 7, 1969, Ser. No. 839,518
Claims priority, application Germany, July 5, 1968, P 17 71 764.5
Int. Cl. B65h 81/02
U.S. Cl. 156-188 3 Claims



A method of enveloping a steel pipe includes the simultaneous winding of the heated pipe with a twin layer of

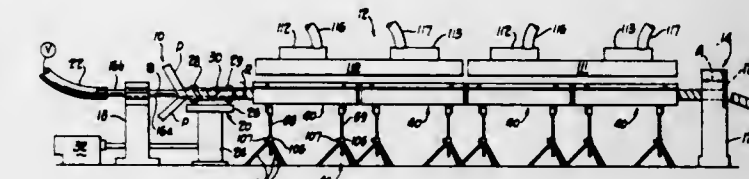
two materials in screw thread fashion. The outer material is a thermoplastic synthetic sheet, and the inner material an adhesive strip.

3,616,007
METHOD FOR CONTROLLING AND TRANSFERRING CROSSLAID SHEETS
Dean K. Anderson, Neeenah, Wis., assignor to Kimberly-Clark Corporation, Neeenah, Wis.
Filed Feb. 28, 1969, Ser. No. 803,245
Int. Cl. B65h 81/04
U.S. Cl. 156-190 10 Claims



A method and apparatus for making multiply, crosslaid material is disclosed. The ply of material to be crosslaid is deposited by a rotatable carrier disposed about a mandrel on which a continuous carrier belt is helically wound. Another ply of material is helically wound on top of the crosslaid ply in advance of a slitter and, after slitting, the plies are separated from the carrier belt with the aid of a vacuum roll and directed into the nip of a pair of combining rolls. In its preferred embodiment, an upper holddown belt is also helically wound on the last turn of the mandrel.

3,616,008
METHOD AND APPARATUS FOR MAKING A HELICALLY WOUND TUBE
Paul W. Stump, North Olmstead; James A. Huber, Strongsville, and John M. Lipinski, Cleveland, all of Ohio, assignors to Clevepak Corporation, Cleveland, Ohio
Filed Apr. 30, 1969, Ser. No. 820,462
Int. Cl. B65h 81/03
U.S. Cl. 156-190 6 Claims

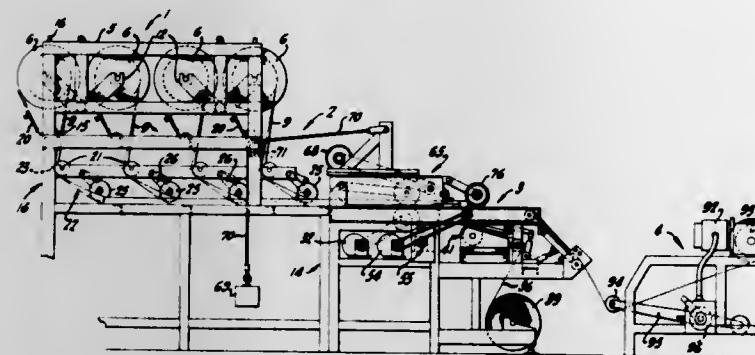


Fibrous strip material impregnated with a hardening material is wound on a hollow open-ended mandrel, continuously advanced through and cured in an in-line infrared heating apparatus and cut into separate lengths after curing. A vacuum applied to the mandrel withdraws gases and vapors from within the tube, enhancing the curing.

3,616,009
DECORATIVE SHEETING FABRICATING METHOD
Lee F. Rost, and William H. Taylor, both of Covina, Calif., assignors to Koningsplein, N. V.
Division of Ser. No. 715,677, Mar. 25, 1968. Filed June 8, 1970, Ser. No. 44,346
Int. Cl. B31f 1/28
U.S. Cl. 156-210 4 Claims

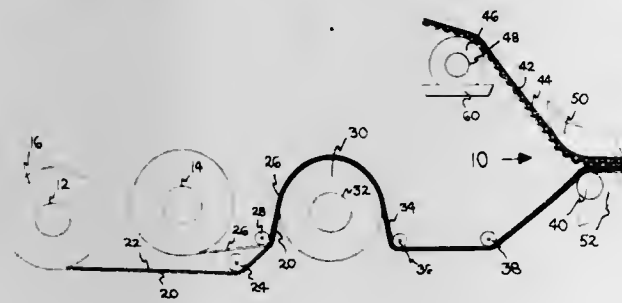
A method for forming decorative sheeting which include means for bringing two independent sources of thin, flexible material to a single point for continuously forming such sheeting. The process of forming such sheeting includes the use of two separate bonding materials, one of which is quick acting but forms only a temporary bond and the other of

which is slow acting, but forms a permanent bond between the materials from the two separate sources. The process also reduces the size of the material from one source to



approximate the size of the material from the other source and also ruffling or producing a random appearance of the material from said one source when it is mated with and bonded to the material from said other source.

3,616,010
MOISTURE-BARRIER CORRUGATED PAPERBOARD AND ITS METHOD OF MANUFACTURE
Harry E. Dunholter, and James C. Jones, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Dec. 31, 1968, Ser. No. 788,253
Int. Cl. B31f 1/20
U.S. Cl. 156—210
2 Claims



A method of manufacturing a sheet of moisture-barrier, thermoplastic, laminated, corrugated paperboard which includes the lamination of a layer of thermoplastic-coated bag stock to either a linerboard or a medium layer prior to the medium layer being corrugated and affixed to the linerboard.

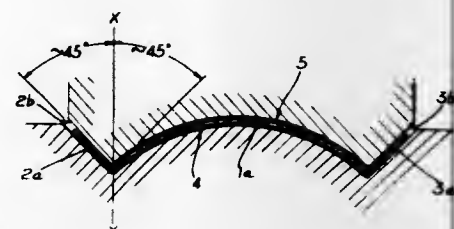
3,616,011
PROCESS OF MAKING TEXTURED MOLDING CAULS
Gilbert D. Endrizzi, Wisconsin Rapids, Wis., assignor to Consoweld Corporation, Wisconsin Rapids, Wis.
Filed Dec. 4, 1968, Ser. No. 781,010
Int. Cl. B31f 7/00
U.S. Cl. 156—219
4 Claims

Process of making textured molding cauls from normally consumable textured originals comprising the steps of sandwiching a consumable textured original between a pair of thin flexible resin impregnated sheets, forcing said sheets intimately into the surface recesses of said original, setting the resin in said sheets, and using the resin-set sandwich of said original and said sheets as a master molding caul.

3,616,012
PLASTIC LAMINATES BENDING METHOD
Antonio Salvarani, Baganzola, Parma, Italy, assignor to Salvarani Società in nome Collettivo, Parma, Italy
Filed Feb. 14, 1968, Ser. No. 705,336
Claims priority, application Italy, Feb. 20, 1967, 12837
Int. Cl. B31f 1/00
U.S. Cl. 156—222
2 Claims

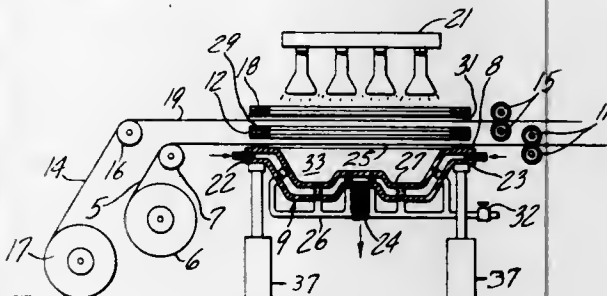
This invention refers to a method and machine for producing plastic laminate elements having a plurality of flat

faces at substantially right angles to each other and with



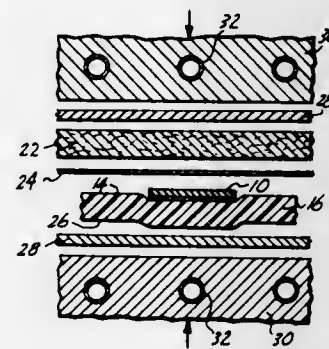
sharp corners, said method consisting in forming said flat faces on wide radius arcuate moulding surfaces.

3,616,013
PROCESS FOR MAKING SHAPED ARTICLES FROM CLOTH AND THERMOPLASTIC MATERIAL
Luigi Bocchi, Via. priv. Rep. S. Marino, Milan, 6, Italy
Filed Sept. 25, 1968, Ser. No. 762,572
Claims priority, application Italy, Sept. 25, 1967, 20866A/67
Int. Cl. B31j 1/00
U.S. Cl. 156—224
1 Claim



A process for forming composite plastic and fabric articles to a desired shape wherein a sheet of thermoplastic material and a stretchable fabric are separately supported in spaced generally parallel planes over a forming surface with the fabric closer than the sheet to the forming surface. The sheet is heated to a pliable state and forced toward the molding surface to carry the fabric as well as the sheet into conforming relation with the mold surface. The resulting shaped object is chilled in the mold into a rigid condition under which it may be removed and trimmed or vice versa.

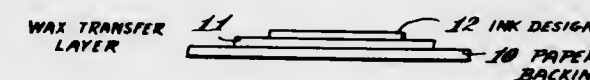
3,616,014
MANUFACTURE OF PRINTED CIRCUIT BOARD
Walter Weglin, 10758 22nd Ave. S.W., Seattle, Wash.
Filed May 15, 1968, Ser. No. 729,346
Int. Cl. B32b 31/04
U.S. Cl. 156—228
9 Claims



A composite structure such as a printed circuit board is stacked back-to-back with a relatively yieldable backing in a press, and the stack is heated and compressed by applying a heated platen to the face of the structure on the opposite side thereof from the backing, so as to flatten the latter face while imparting a smooth unbroken contour to the strip-bearing face of the structure. Under the conditions of compression

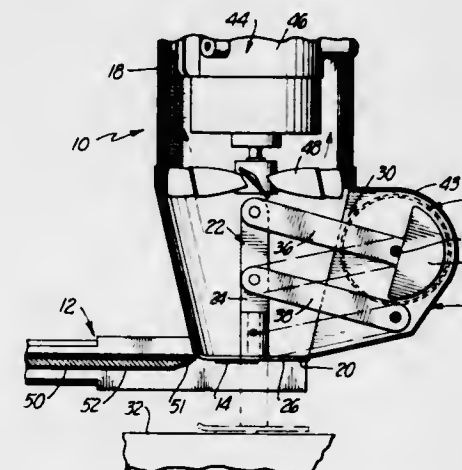
the backing is nonlaminable with the structure and after the compression step is relatively removed from the same.

3,616,015
CLEAR HEAT TRANSFER AND METHOD OF APPLYING THE SAME
Katherine A. Kingston, c/o Dennison Manufacturing Co., Framingham, Mass.
Continuation-in-part of application Ser. No. 602,758, now abandoned. This application Aug. 11, 1969, Ser. No. 857,268
Int. Cl. B32b 9/02; B41m 3/12; B44c 1/16
U.S. Cl. 156—230
10 Claims



A heat transfer is described for labelling clear plastics which uses as the transfer layer a coating comprising at least 30 percent by weight of an oxidized, esterified, partially saponified montan wax. An ink image is printed over the wax and, after transfer by application of heat and pressure, is smoothed, clarified and glossed by exposure to a jet of hot gas or other heating means to remelt the transferred wax, followed by solidification in the clear state.

3,616,016
LABELING METHOD AND LABEL APPLICATOR
Herbert Dinter, 1300 S. Shadydale, West Covina, Calif.
Filed Feb. 17, 1969, Ser. No. 799,690
Int. Cl. B44c 1/00; B32b 31/10
U.S. Cl. 156—238
4 Claims



A labeling method and label applicator are provided for applying pressure sensitive labels to articles such as cartons and the like. Each label is located in an initial position directly in front of an applicator plunger to which the label is caused to adhere by suction when the plunger occupies its normal retracted position. The label is applied to an article positioned in the path of the plunger by extending the plunger into contact with the article at a high velocity such that the air drag and inertial forces active on the label cause the label to adhere to the plunger to the end of its extension stroke, where the label is pressed firmly into adhesive bonding contact with the article.

3,616,017
METHOD OF BONDING A LAYER OF INORGANIC MATERIAL TO A THERMOSETTING SILICONE LAYER
Austin L. Tyler, Whitehall Township, Lehigh County, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 1, 1968, Ser. No. 725,778
Int. Cl. B29c 19/00
U.S. Cl. 156—242
9 Claims

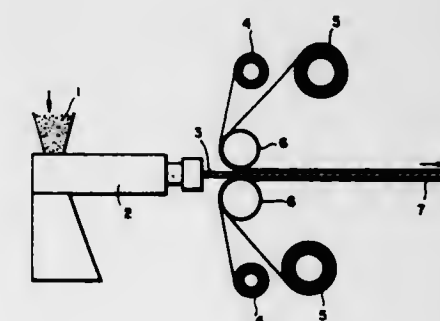
Joints between inorganic materials and thermosetting silicone plastics sufficient to withstand thermal cycling are achieved by inserting a layer of two-part room temperature

vulcanizing silicone rubber between the materials, thereby allowing the relieving of strains at the joint caused by their differing thermal expansivities.

3,616,018
METHOD OF MAKING A STRUT EXTRUDED SHEET
Thomas John Komoly, London, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 19, 1967, Ser. No. 632,016
Claims priority, application Great Britain, May 25, 1966, 23405/66
Int. Cl. B29c 19/00
U.S. Cl. 156—244
10 Claims

A process and apparatus for producing sheet which comprises two facing sheets joined by continuous struts which are corrugated in two dimensions of the plane of the sheet, in which longitudinally extending mandrels positioned within a rectangular die are transversely oscillated with respect to and within the limits of the die.

3,616,019
PRODUCTION OF LAMINATED PLANE BUILDING COMPONENTS COMPRISING A THERMOPLASTIC INNER LAYER AND METAL OUTER PLIES
Heinz Mueller-Tamm, Ludwigshafen; Dieter Mahling, Neuleiningen; Hans Friedlingsdorf, Bad Durkheim, and Alfred Hofmann, Boxheim, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany
Filed Nov. 13, 1968, Ser. No. 775,384
Claims priority, application Germany, Nov. 16, 1967, P 17 04 505.5
Int. Cl. B29c 9/00
U.S. Cl. 156—244
5 Claims



A process for the production of plane building components, comprising relatively thick inner ply of a thermoplastic and relatively thin outer plies of metal. In the process a board is prepared continuously from a polyethylene by means of an extruder at elevated temperature, the board thus obtained is continuously covered on each side first with a film of an ethylene polymer containing carboxyl groups by means of at least one pair of rollers and then with metal sheeting, the whole being made into a sandwich assembly under roller pressure and the plane building component formed being cooled to ambient temperature.

3,616,020
EXTRUSION COATING OF A HEAT FUSIBLE FOAM SHEET
Mark W. Whelan, and Arthur J. Sedani, both of Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed Jan. 15, 1969, Ser. No. 791,394
Int. Cl. B29c 19/00
U.S. Cl. 156—244
20 Claims

A process for continuously coating two sides of a heat fusible foam sheet with a resinous polymeric material, having the steps of: (1) melting the resinous polymeric material; (2) extruding the resinous polymeric material through a flat film die; (3) continuously passing the heat fusible foam sheet past the flat film die; (4) contacting the heat fusible foam sheet and the resinous polymeric material; (5) compressing the contacted heat fusible foam sheet and resinous polymeric material; (6) limiting the amount of reverse wrap of the heat

fusible foam sheet and; (7) controlling the linear tension on the heat fusible foam sheet.

3,616,021
PROCESS FOR PREPARING A DECORATIVE LAMINATE SURFACED WITH A TRANSPARENT THERMOPLASTIC FILM

Paul Nicholas Valerius, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio
Filed Oct. 29, 1969, Ser. No. 872,356
Int. Cl. B32b 31/04, 35/00

U.S. Cl. 156—247 10 Claims
A process for preparing a decorative laminate surfaced with a transparent thermoplastic film in which a thermoplastic layer is positioned above the removable release sheet so as to absorb thermal shock stress in high-pressure laminate manufacture.

3,616,022
METHOD OF MAKING HEAT EXCHANGE COMPONENTS

Michael Somerville Withers, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 657,380, July 31, 1967,
Pat. No. 3,435,893
Filed Aug. 6, 1968, Ser. No. 750,558
Int. Cl. B32b 31/00

U.S. Cl. 156—250 5 Claims
A method of fabricating assembly components for heat exchangers comprising: forming a single layer warp of a plurality of side-by-side continuous flexible hollow tubes made of an organic polymeric composition, constraining the warp laterally at a given portion along its length so that the tubes engage in each other laterally, applying a clamping force to the tubes at such portion across the width of the warp to move the engaged portions of the tubes into further engagement with each other; while maintaining such pressure, heating the tubes at such pressure to above the softening point of the polymeric material and concurrently applying sufficient pressure differential across the tube walls to expand the tubes into engagement with each other to form an integral molded structure extending transversely across the warp having passageways therethrough communicating with the interior of the tubes at each end of the molded structure; removing said clamping force; and removing the molded structure from such position.

3,616,023
PROCESS FOR MANUFACTURING SUEDELIKE SHEET MATERIAL

Osamu Fukushima, Kurashiki; Kazuo Nagoshi, Kurashiki, and Tamon Kishida, Itami, all of Japan, assignors to Kurashiki Rayon Co., Ltd., Kurashiki, Japan
Filed Oct. 23, 1968, Ser. No. 770,076
Claims priority, application Japan, Nov. 4, 1967, 44/71,070
Int. Cl. B32b 31/18

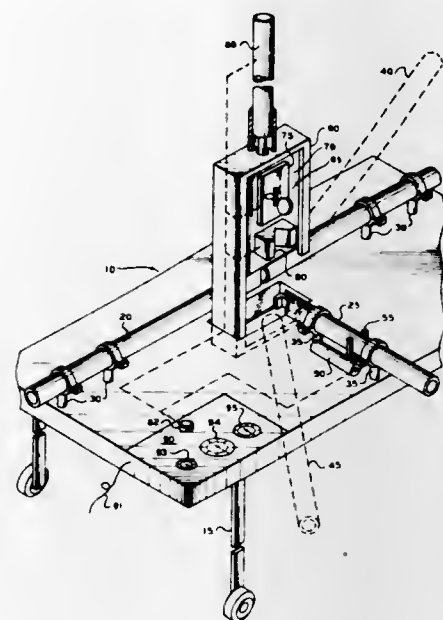
U.S. Cl. 156—254 11 Claims
Suede-like sheet is manufactured by forming a coagulated polymer layer containing relatively large spongy spaces inside between two base materials and tearing the coagulated polymer layer into two layers at the center of the polymer layer by pulling both the base materials mutually in an opposite direction.

3,616,024
METHOD AND APPARATUS FOR WELDING HEAT SEALABLE PIPES

Tommy J. Windle, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed July 14, 1969, Ser. No. 841,428
Int. Cl. B32b 31/00

U.S. Cl. 156—257 9 Claims
T- and Y-joints are formed by welding the butt end of a first pipe of heat sealable material, such as polyethylene, to a continuous second pipe of heat sealable material, such as polyethylene, by aligning the axis of both pipes in a common plane, removing a shaped section of pipe wall from the continuous pipe and removing a portion of the butt end of the first pipe so as to form the butt end into a complementary

shape to that of the removed shaped section of the continuous pipe, heating, preferably simultaneously, the

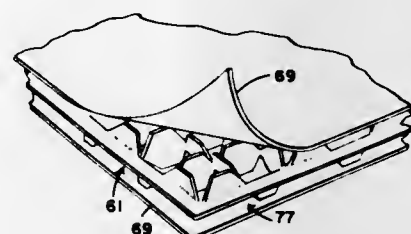


shaped sections and pressing the pipes together to form a joint that will provide for fluid communication between the pipes.

3,616,025
METHOD FOR MAKING CELLULAR STRUCTURES

Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Filed Mar. 19, 1968, Ser. No. 714,231
Int. Cl. B32b 31/10

U.S. Cl. 156—257 5 Claims

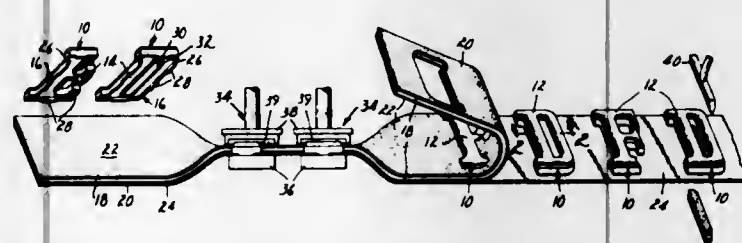


A method for making a cellular structure having a plurality of walls extending along intersecting planes and together providing abutting cells, such walls being connected at their locations of intersection by cruciform sections and formed by flexing portions of a slit web material into planes disposed at angles to the plane of the original web material.

3,616,026
METHOD OF APPLYING AN ADHESIVE MOUNTING MATERIAL

Walter C. Larsen, Edina, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 8, 1968, Ser. No. 765,831
Int. Cl. B32b 31/00; B44c 1/18

U.S. Cl. 156—261 9 Claims



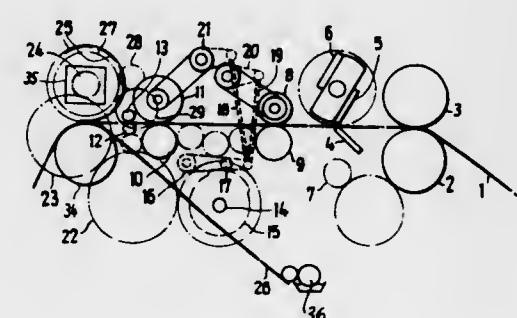
A method of applying a mounting material having pressure-sensitive adhesive on two opposed faces to a

preformed emblem having a mounting surface and at least one rib which protrudes from the border of the mounting surface. The method comprises the steps of placing a preformed emblem formed with ribs on one of the pressure-sensitive adhesive-coated faces of a strip of mounting material and applying pressure to the emblem sufficient to force the ribs through the mounting material and adhere the coated face of the severed mounting material on which the ribs of the article are placed to the mounting surface of the emblem.

3,616,027
METHOD FOR APPLYING CARDBOARD REINFORCEMENTS ONTO A PAPER WEB OR THE LIKE

Karl-Heinz Honsel, Amwaldwinkel 10, Bielefeld, Germany
Filed Dec. 26, 1967, Ser. No. 693,328
Claims priority, application Germany, Dec. 23, 1966, M 72 149

U.S. Cl. 156—265 Int. Cl. B32b 31/18 1 Claim



Method for gluing reinforcing strips, such as cardboard, onto a web of paper in order to form reinforced handle portions in shopping bags, where a roll of cardboard pulled in by rollers is perforated transversely of the web at predetermined desired distances from one another to form a blank unit with a plurality of blanks which are fed to a segment roller that applies the blanks in spaced relation to glue-bearing areas on a continuously moving web of paper which operates at the same velocity as the segment roller and where any desired number of blanks may be cut and transferred to the web.

3,616,028
PROCESS OF BONDING RESIN-IMPREGNATED OVERLAY MATERIAL TO A COATED SUBSTRATE MATERIAL UTILIZING HIGH-ENERGY RADIATION

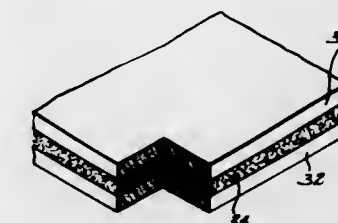
Lewis S. Miller, Bellevue, Wash., and Frankoun Shafizadeh, Missoula, Mont., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Apr. 4, 1967, Ser. No. 628,297
Int. Cl. B29c 19/02

U.S. Cl. 156—272 7 Claims
A method of simultaneously bonding and curing an impregnated overlay material of, particularly wood veneer, to a substrate material by thoroughly impregnating the overlay material with a polymerizable monomer or polymer dissolved in monomer, bringing the overlay into contact with the substrate material previously coated on the surface to be contacted with a bonding material, and exposing the resulting product to high-energy radiation.

3,616,029
METHOD FOR FORMING A RESILIENT PAD FROM A PLURALITY OF PLASTIC FOAM SHEET MEMBERS

Samuel Lerman, St. Louis, Mo., assignor to Milbern Company, St. Louis, Mo.
Filed Aug. 21, 1968, Ser. No. 754,264
Int. Cl. B32b 31/06, 31/12

U.S. Cl. 156—276 7 Claims
The method for forming a resilient pad from a plurality of plastic foam sheet members comprises stacking a plurality of such sheet members above one another within a press with their adjacent surfaces touching, compressing the sheet



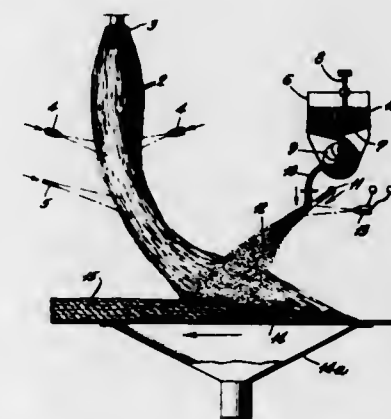
members together under an initial pressure of from 5 pounds to 20 pounds per square inch, applying heat to the sheet members until they reach a uniform temperature throughout their thicknesses of from 250°–300° F., increasing the pressure exerted by the press on the sheet members to between 30 and 100 pounds per square inch to cause the sheet members to fuse together into a pad of unitary

construction. A second embodiment of the invention includes sandwiching a layer of shredded foam materials between the sheet members before the application of heat and pressure. Fibrous materials selected from the group consisting of glass fibers, acrylic fibers, cotton, jute, wool, and sisal may be mixed with a catalyzed resin and sandwiched between plastic foam sheet members before the application of heat and pressure.

3,616,030
MANUFACTURE OF PLATES OR SHAPED SHEETS HAVING A BASE OF MINERAL FIBERS, PARTICULARLY GLASS FIBERS

Claude Jumentier, La Celle Saint Cloud, (Yvelines), and Alain Bonnet, Clermont (Oise), both of France, assignors to Compagnie de Saint-Gobain, Neuilly-sur-Seine (Seine), France
Filed May 6, 1968, Ser. No. 726,706
Claims priority, application France, May 11, 1967, 106046

U.S. Cl. 156—285 Int. Cl. B32b 31/06 18 Claims



The invention contemplates the homogeneous distribution of hard granules or particles throughout a mass of resin-coated mineral fibers to produce structural units in the form of sheets or slabs composed of the mass of mineral fibers in lattice-work form, particularly glass fibers, agglomerated with the dried and cured resin binder and having interspersed in the meshes of the mass, the separate hard and indeformable particles, either in solid form, such as sand, or in porous form, such as perlite or vermiculite, which render the structural units strongly resistant to physical deformation while enhancing the heat-insulating characteristics thereof.

3,616,031
PROCESS FOR BONDING FELTS AND NEEDLED FELTS

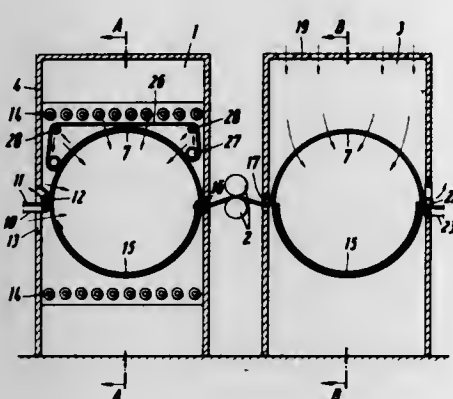
Heinz Fleissner, Egelsbach Bei Frankfurt, Germany, assignor to Vepa AG
Continuation-in-part of application Ser. No. 642,496, May 31, 1969. This application Feb. 14, 1969, Ser. No. 799,479

Int. Cl. B65h 75/06 18 Claims

U.S. Cl. 156—285 18 Claims
The present disclosure relates to a process and apparatus for bonding felts or feltlike materials which comprises adding

to the materials to be bonded a synthetic bonding fiber thereby forming a fiber blend and fuse-bonding the fiber blend by heat-treating said blend to the sticking or melting point of the bonding fibers and setting the fiber blend by cooling down the bonded fibers, said heat-treatment and

or pleated to fit the container snugly and is heat sealed thereto. Suitable covers or lids are provided so that the final



container is most suitable as to cost, weight, impermeability and finally as to customer appeal.

3,616,034

METHOD OF FASTENING ARTICLES USING A LIQUID ADHESIVE COLUMN

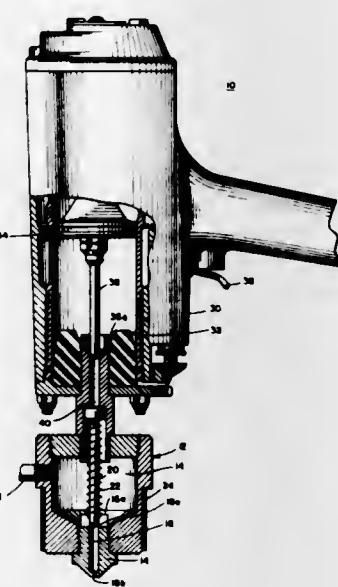
Allen R. Obergfell, Park Ridge, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed Nov. 18, 1968, Ser. No. 776,712

Int. Cl. B32b 31/00

U.S. Cl. 156-295

16 Claims



An improved fastening device is provided for driving adhesive through a solid workpiece to the interface thereof with a base member. The fastening device includes a chamber for adhesive, with a nozzle communicating from the chamber. Means are provided for propelling adhesive from the nozzle at high speed to drive the adhesive through a workpiece. The adhesive will spread between the interfaces of the workpiece and base member.

An improved method of fastening a solid workpiece to a base member is also provided. The improved method comprises driving a liquid adhesive through the workpiece with sufficient force and velocity to penetrate to the workpiece, and provide spreading of the adhesive at the interface of the workpiece and base member.

3,616,035

METHOD OF PRODUCING A PACKAGING CONTAINER COMPRISING A CONTAINER BODY OF THERMOPLASTIC MATERIAL

Anders Ruben Rausing, Blentarp, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland

Filed Sept. 9, 1968, Ser. No. 758,433

Claims priority, application Sweden, Sept. 25, 1967, 13129/67

Int. Cl. B29c 17/06

U.S. Cl. 156-287

A thermoplastic container is provided with a lining of metal foil coated with thermoplastic material which is folded

METHOD OF CONTINUOUSLY MAKING A UNIFORM NONWOVEN FABRIC

Ralph J. Baskerville, Jr., Springfield Township, Hamilton; Mario S. Marsan, Springfield Township, Hamilton, and Joseph S. Baker, Green Township, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

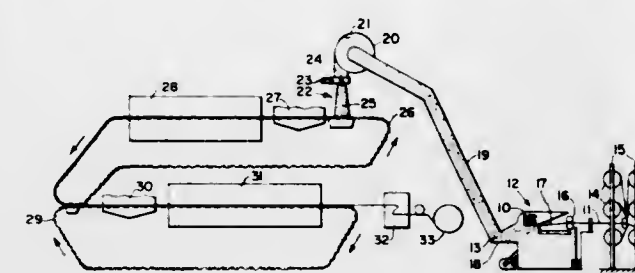
Filed Dec. 26, 1968, Ser. No. 787,018

Int. Cl. B32b 17/04

U.S. Cl. 156-296

A method of making nonwoven fabrics from one or more strands of rayon tow wherein at least one strand is

continuously fed to a cutter which severs the strand into short bundles, preferably from about 0.2 to about 0.4 inch in length. The bundles of fibers are partially separated and dispersed as they are moved to an enclosed chamber by a blower. An air knife directs air jets transversely to the



direction of fiber flow in the enclosed chamber in order to completely separate the individual fibers whereupon they are uniformly deposited in random fashion on a wire. The nonwoven fabric is completed by the conventional steps of spraying a binder composition on the fibers followed by drying.

3,616,036

METHOD AND APPARATUS FOR DEPOSITING HIGHLY DRAFTED FIBER WEBS IN A SINUSOIDAL PATTERN

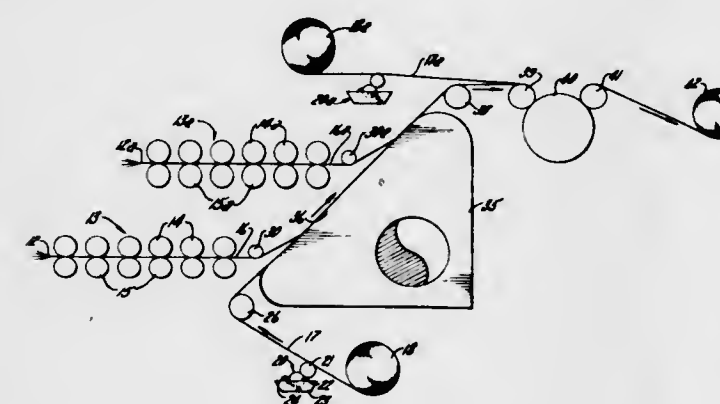
Richard D. Anderson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 17, 1969, Ser. No. 816,943

Int. Cl. B32b 31/00; B65h 54/06

U.S. Cl. 156-298

10 Claims



An improved method and apparatus for depositing a tenuous web of highly drafted fibers in a sinusoidal pattern on the adhesively printed surface of a carrier sheet are disclosed. The apparatus includes a rotating wave roll with axially spaced peripheral grooves which laterally oscillate the drafted web in a sinusoidal pattern as the roll rotates.

3,616,037

METHOD AND APPARATUS FOR CROSSLAYING WEB MATERIALS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 8, 1969, Ser. No. 848,657

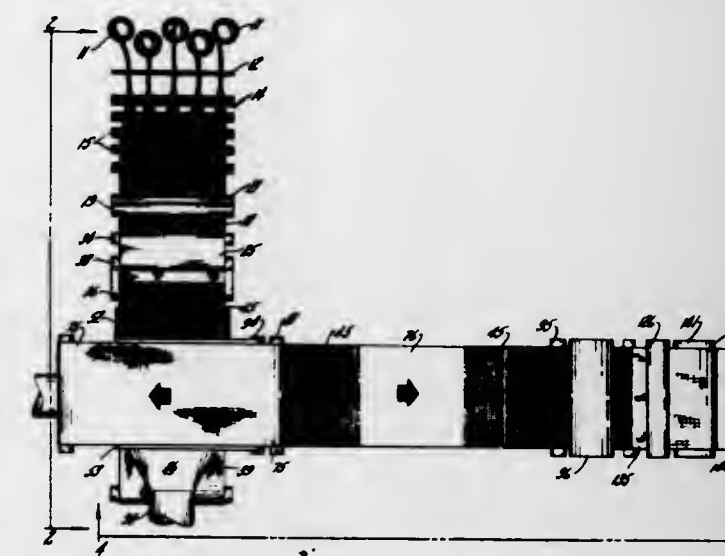
Int. Cl. B32b 31/00, 31/08

U.S. Cl. 156-303

13 Claims

A method and apparatus for efficiently handling and crosslaying webs of substantially aligned lightweight fibers in the production of nonwoven materials incorporating such crosslaid fibers for two-dimensional strength. Webs of substantially aligned fibers are conveyed along a first permeable carrier with their fibers oriented in the direction of travel and are transferred to a second moving permeable carrier crossing in closely spaced parallel relation by directing an airflow through said permeable carriers when each web length reaches the position between the crossing carriers. The airflow causes the lightweight web length to be removed from the first carrier and to be positioned and held against the other moving carrier with the web fibers oriented thereon transversely to the direction of travel. The illustrated

apparatus includes two such carrier systems for changing the orientation of web lengths with respect to their direction of travel, and these systems alternately present web lengths to a



continuous moving fiber web to form an uninterrupted ply of crosslaid fibers thereon. Two adhesively coated cover sheets are then applied to contain the crosslaid fibers and form a composite nonwoven material.

3,616,038

FIBER BONDING PROCESS

John C. Moseley, Woking, and Rupert E. Schaffer, Camberly, both of England, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,238

Claims priority, application Great Britain, Dec. 9, 1968, May 21, 1969, 58,286/68; 25,848/69

Int. Cl. C09j 5/02

U.S. Cl. 156-307

9 Claims

Bonded fiber fabrics are produced by a process which comprises applying normally liquid sulfolanyl ether to a web of fibers selected from the group consisting of modified polyacrylonitrile fibers, cellulose ester fibers and chlorofibers, and heating the web and the sulfolanyl ether to effect bonding of the fibers.

3,616,039

METHOD OF MAKING A LAMINATED CAPACITOR

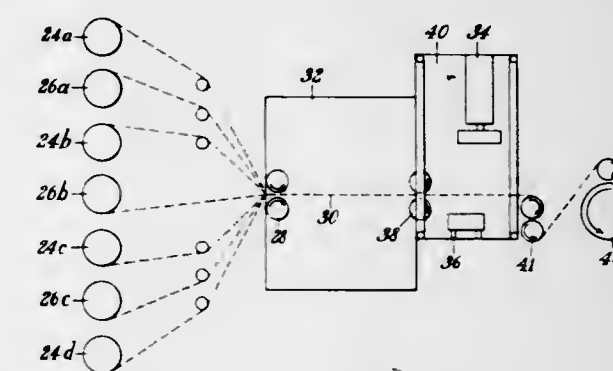
John R. Hutzler, Greenville, S.C., and David J. Valley, San Diego, Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,907

Int. Cl. C09j 7/00

U.S. Cl. 156-309

12 Claims



A method of making a low value, high quality laminated capacitor which includes inserting at least one sheet of a solid organic dielectric film, having adhesive properties when heated, between electrically conductive metal sheets heating the organic dielectric film to a softening temperature substantially below its melting point, and pressing the organic dielectric sheet and the metal sheets together to bond the

dielectric to the metal sheets so as to form a laminate. The laminate is formed without a separate bonding agent.

3,616,040
PROCESS FOR BONDING WITH ACRYLATE
POLYMERIZED BY A PEROXY AND A CONDENSATION
PRODUCT OF ALDEHYDE AND A PRIMAR OR
SECONDARY AMINE

Alex S. Toback, West Hartford, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Aug. 14, 1968, Ser. No. 752,506

Int. Cl. B32b 7/10, 15/08, 27/26

U.S. Cl. 156—310 12 Claims

The speed of cure of a peroxy initiated acrylate based adhesive or sealant composition is markedly increased by treating one or more of the surfaces to be bonded with a bonding accelerator containing the condensation product of an aldehyde and a primary or secondary amine.

3,616,041
PROCESS FOR ADHERING TWO SUBSTRATES WITH A
LIQUID CURABLE COMPOSITION

Clifton L. Kehr, Silver Spring, and James L. Guthrie, Ashton, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 23, 1969, Ser. No. 793,534

Int. Cl. B32b 27/32

U.S. Cl. 156—310 2 Claims

This invention relates to curing of coatings, sealants and laminates under ambient conditions without effecting the pot life of a curable liquid composition comprising a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than four which comprises having present at least a minor amount of an iron-containing material either as a portion of the substrate, as a primer coat for the substrate or as a top coat for the curable composition. In the case where oxygen is excluded from the reaction, a minor amount of an oxime ester is added to the system to assure curing to a solidified product.

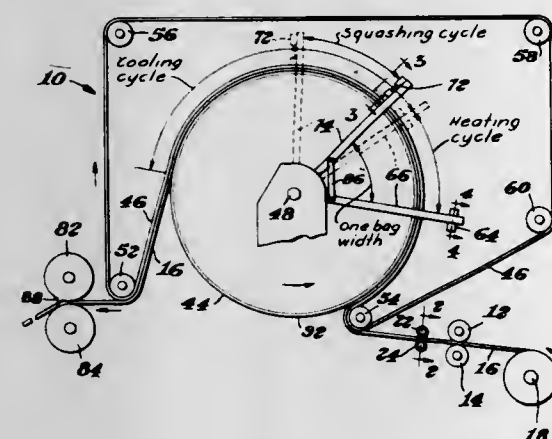
3,616,042
BAG-MAKING APPARATUS AND METHOD

Carlton E. Beyer, and Raymond D. Behr, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 29, 1968, Ser. No. 733,141

Int. Cl. C09j 5/00

U.S. Cl. 156—311 8 Claims



Apparatus and method for forming bags from flattened tubular or longitudinally folded web stock wherein the stock can include opposed beadlike closure members located on the inner surface thereof. The flattened stock is initially sandwiched between two layers of release material, and then directed to between cooperating sealing elements, one of which is heated. The sealing elements laterally seal the stock

at regularly spaced intervals to form a plurality of connected compartments or bags. Assisting the sealing elements is a stomperlike member which flattens the closure members in the region of each seal, thereby rendering the seal at the closure substantially liquid and gastight. Thereafter, the release is removed from each side of the sealed stock, and the stock parted into individual bags.

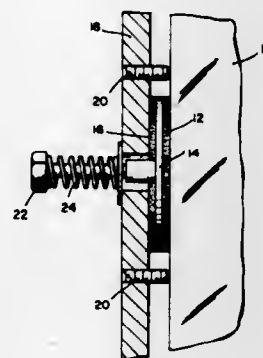
3,616,043
METHOD OF BONDING A GLASS PRISM TO A METAL

Ronald C. Anderson, and Donald J. Strittmatter, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 19, 1969, Ser. No. 828,085

Int. Cl. C09j 5/04

U.S. Cl. 156—311 6 Claims



The method of bonding an optical element to a base includes as a first step the bonding of the optical element to a metal support having substantially the same coefficient of expansion as the optical element. The metal support is then bonded to the metal base with an adhesive which cures at low ambient temperatures for allowing alignment of the optical element with respect to the metal base during the curing time of the adhesive between the metal support and the metal base.

3,616,044
PRECROSS-LINKED ADHESIVE AND BONDING
PROCESS UTILIZING SAME

Clifton L. Kehr, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 5, 1968, Ser. No. 734,545

Int. Cl. C09j 5/10

U.S. Cl. 156—320 4 Claims

This invention relates to precross-linked adhesives having a gel content of at least 4 percent comprising prior to cross-linking a thermoplastic polymeric material in combination with a source for generating free radicals and a process for forming a bond between contiguous surfaces of metallic elements using the aforesaid precross-linked adhesive.

3,616,045
PROCESS FOR INCREASING THE STRENGTH AND
ELECTRICAL CONDUCTIVITY OF GRAPHITE OR
CARBON ARTICLES AND/OR FOR BONDING SUCH
ARTICLES TO EACH OTHER, TO CERAMIC ARTICLES
OR TO METALS

Laszlo Kozar, Tatabanya; Mihaly Toth; Jozsef Uveges, Budapest; Endre Pataki, Biske, and Sandor Kota, Tatabanya, all of Hungary, assignors to Tatabanyai Aluminiunko, Tatabanya, Hungary

Filed Feb. 17, 1969, Ser. No. 799,997

Int. Cl. C23c 17/00; B01k 5/00; C23k 13/00

U.S. Cl. 156—326 7 Claims

An impregnating composition for increasing the strength and electrical conduction of graphite and carbon articles, comprises 60-90 percent by volume furfural or furfuryl alcohol, 5-20 percent by volume anthracene oil, and as a catalyst either 2 to 25 percent by volume phosphoric acid or 5 to 35 percent by volume titanium ethyl ester. A bonding composition for impregnating and bonding graphite and carbon articles to each other and to ceramic articles and

metals, comprises this impregnating composition in an amount 20 to 80 percent by weight, 1 to 15 percent by weight of boric acid or boric oxide, and the rest a filler, which can be TiC, TiB₂, SiC, B₄C, BN, CaO, Al₂O₃, powdered coke, graphite or a mixture thereof. To impregnate or bond, the impregnating composition or bonding composition is applied and the articles are heated at 80 to 250° C. for 2 to 10 hours, and then carbonized at 300° to 1,500° C.

3,616,046
METHOD OF LAMINATING WITH ANILINE-PHENOLIC
RESOLE

James R. Benzinger, Orchard Park, and Harold D. Marshall, Tonawanda, both of N.Y., assignors to Spaulding Fibre Company, Inc., Tonawanda, N.Y.

Filed June 10, 1968, Ser. No. 735,562

Int. Cl. C09j 3/16

U.S. Cl. 156—331 1 Claim

A laminated product possessing good physical and electrical properties made with an impregnating resin which is a reaction product of aniline, phenol and formaldehyde. These resins impart unusually good electrical and physical properties to the laminated product and are sufficiently water soluble as to allow their water content to be adjusted for direct, one stage impregnation of cellulose fiber materials such as paper.

3,616,047
BONDING PROPYLENE POLYMERS TO METAL
SURFACES

Alfred W. Kehe, Berkeley, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,878

Int. Cl. C09j 3/14

U.S. Cl. 156—334 7 Claims

This disclosure relates to bonding a propylene polymer article, such as a removable closure member for a container, to a metal surface, such as the metal end portion of the container, which contains an opening for removal of the contents of the container. The metal surface is first coated with a thermosetting enamel coating composition. Next there is applied to the enamel coated surface a heat activatable adhesion promoting layer containing a carboxyl modified polypropylene resin having a particle size of less than 5 microns. The propylene polymer article is heat sealed to the carboxyl modified polypropylene containing coated surface and the resultant assembly is then immediately cooled to ambient temperature.

3,616,048
APPARATUS FOR ETCHING A FACE OF A LARGE SIZE
GLASS PLATE PREFERABLY ACCORDING TO
PREDETERMINED PATTERNS

Luigi Bresciani, Via Novembre 69, Mariano Comense, and Antonio Bresciani, Via Cadorna, Carugo Como, both of Italy

Filed Dec. 9, 1968, Ser. No. 782,041

Claims priority, application Italy, Dec. 11, 1967, 23734 A/67

Int. Cl. C23f 1/02

U.S. Cl. 156—345 6 Claims



Large sheets of glass are etched on a work table that rotates about a horizontal axis. The table provides an up-

wardly open shallow frame for an upwardly open shallow vessel for etching acid such as hydrofluoric acid. The glass plate itself closes the acid vessel, and a retaining frame clamps the glass plate in sealed relation on the acid vessel. The parts are manipulated when the table is in a vertical position; while the introduction of the acid, the etching, the removal of the acid, and the introduction and removal of wash water are performed while the table is horizontal.

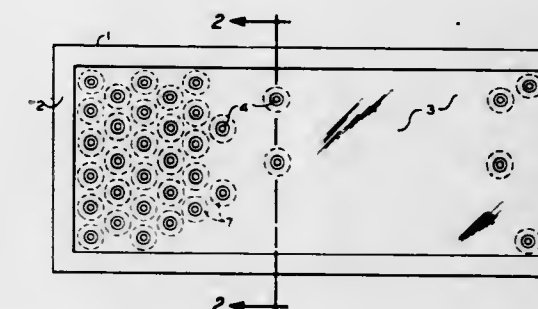
3,616,049
ETCHING APPARATUS

Vernon L. Moore, and Vado M. Hart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Oct. 22, 1969, Ser. No. 868,327

Int. Cl. C23f 1/02

U.S. Cl. 156—345 7 Claims



An apparatus which emits etching solution as discrete drops upon an etchable surface including a tray having a channel position circumferential to an aperture extending through the floor of said tray.

3,616,050
APPARATUS FOR ATTACHING ADHESIVE LABELS

Kurt Schrotz, Brentanostrasse 29b, Hirschhorn (Neckar), Germany

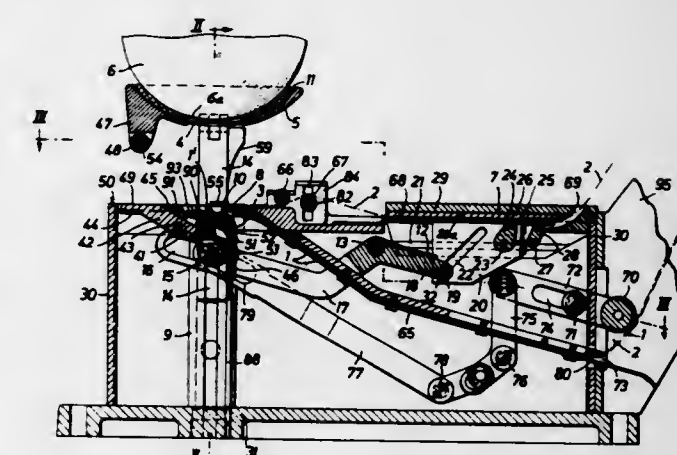
Filed Aug. 28, 1969, Ser. No. 854,362

Claims priority, application Germany, Sept. 3, 1968, P 17 86

222.5

Int. Cl. G05g 15/08

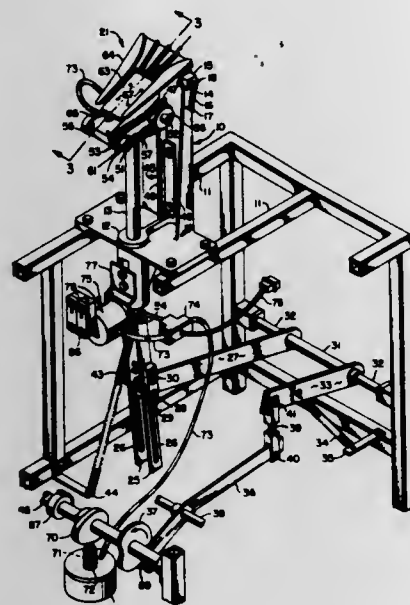
U.S. Cl. 156—358 19 Claims



A label-attaching means has a supporting portion opposite an opening in a dish holding means for an object, such as a fruit. Transporting means successively place adhesive labels on the supporting portion, and when the holding means is displaced by the fruit or by manual pressure, the label-attaching means moves to a position in which the supporting portion thereof is located in the opening of the holding means, and presses the adhesive label against the surface portion of the object covering the opening.

3,616,051
LABEL APPLICATOR
 Dennis W. Clem, Toledo, Ohio, assignor to The Reliance Electric and Engineering Company, Toledo, Ohio
 Filed Jan. 27, 1969, Ser. No. 793,980
 Int. Cl. B32b 31/08
 U.S. Cl. 156—363

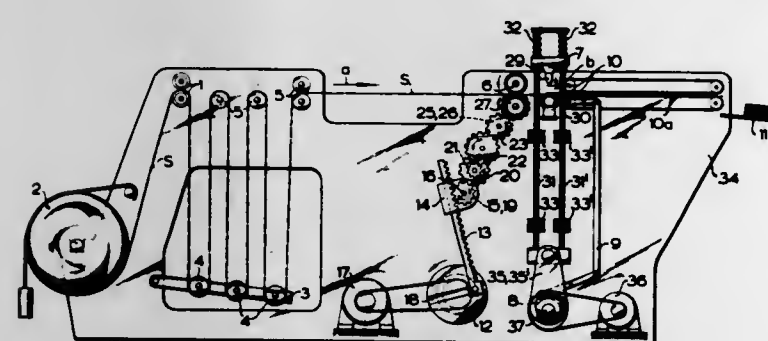
8 Claims



A label applicator having an operating cycle including a label-applying head, a heater carried by the head for heating the head, and current supplying and regulating circuit means for energizing the heater and for controlling the temperature of the head including variable resistance means and switch means for automatically bypassing the resistance means during a portion of the operating cycle.

3,616,052
APPARATUS FOR PROGRESSIVELY TRANSPORTING AND WELDING A WEB OF PLASTICS FOIL
 August Schwarzkopf, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany
 Filed Aug. 5, 1969, Ser. No. 847,547
 Claims priority, application Germany, Aug. 8, 1968, P 17 79 408.0
 Int. Cl. G05g 21/00; B32b 31/20
 U.S. Cl. 156—366

5 Claims

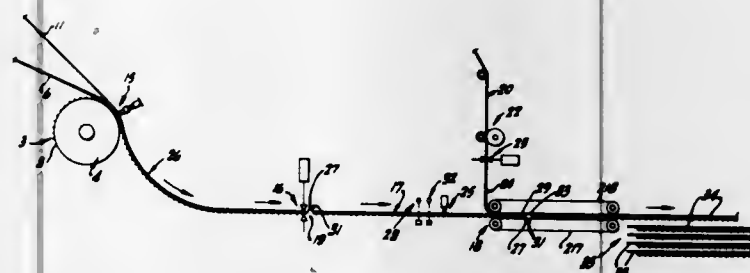


An apparatus for progressively transporting and heat sealing a web of plastic film comprising means for intermittently feeding the web to a heat-sealing tool and means for reciprocating the heat-sealing tool from an inoperative position spaced from the web to an operative position adjacent the web. The intermittent feed means comprises rotatable conveying means for the web and a first thrust crank drive which incorporates a continuously rotatable first drive shaft and a free wheel clutch. The reciprocating means comprises a second thrust crank drive operatively connected to the heat-sealing tool with the drive incorporating a second drive shaft and means to stop and

rotate the second drive shaft. A first switching means is connected to the continuously rotatable first drive shaft and is adapted to act upon the stopping and rotating means to rotate the second drive shaft when the heat-sealing tool is in an inoperative position. A second switching means is connected to the second drive shaft and is adapted to act on the stopping and rotating means to stop the second drive shaft when the heat-sealing tool is in an operative position. Time switch means is provided for temporarily halting the second drive shaft when the heat-sealing tool is in an operative position and is adapted to act on the stopping and rotating means to rotate the second drive shaft again with a third switching means on the second drive shaft being adapted to act on the stopping and rotating means to stop the second drive shaft when the heat-sealing tool is in an inoperative position.

3,616,053
PAPER BACK LATH MAKING MACHINE
 Wolfgang B. Fahrenbach, Oakland, Calif., assignor to Stryco Manufacturing Co., San Francisco, Calif.
 Division of Ser. No. 761,242, Sept. 20, 1968,
 Pat. No. 3,546,771
 Filed Mar. 5, 1970, Ser. No. 16,650
 Int. Cl. B32b 51/20; B23k 9/02; B23p 19/00
 U.S. Cl. 156—380

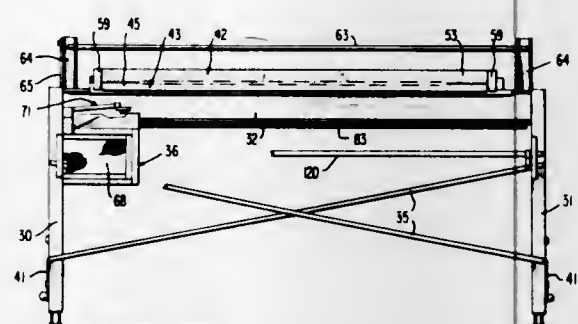
12 Claims



A machine for making paperbacked wire lath sheets from continuous paper strips and continuous wires, the latter being in crossing relation at opposite sides of said strip and welded together at their crossing points through slots in said strip. The paper and wires are brought together on the outer periphery of a revolvable drum that includes welding electrodes, and aligning and positioning means in cooperative relation to the slots in the paper and wires for insuring the desired positioning of the wires at their crossing points for welding together through said slots.

3,616,054
APPARATUS FOR SPLICING MULTIPLE THERMOPLASTIC YARNS UTILIZING TRACK-MOUNTED MOBILE HEAT SPLICING UNIT AND COATING YARN GAGING AND HOLDING MEANS
 Willie V. Williams, 701 S. Green St., Dalton, Ga.
 Filed Nov. 6, 1968, Ser. No. 773,773
 Int. Cl. B29c 27/06; B65h 69/08
 U.S. Cl. 156—380

12 Claims

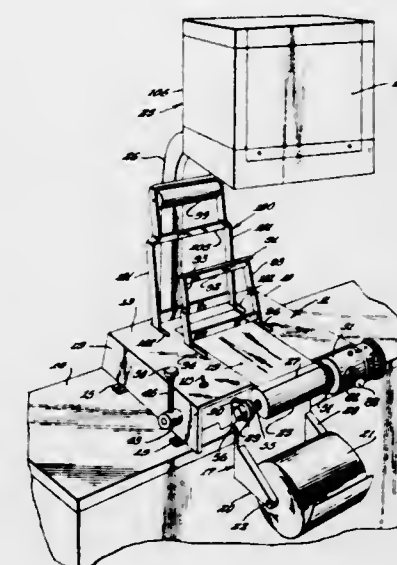


Yarn ends from substantially spent plural beams of carpet yarns are prepared for splicing with similar yarn ends of new full beams by a series of orderly preparation steps. Following this, each set of trailing yarn ends from a previous single exhausted beam is spliced quickly by the operation of the

invention splicing apparatus with the yarn ends of a single new beam, and the identical splicing operation is repeated for a required number of new beams utilized in producing carpet of a given width.

3,616,055
OPTICAL PLATE MOUNTER
 David H. Mages, 1246 Swainwood Drive, Glenview, Ill.
 Filed May 16, 1969, Ser. No. 825,278
 Int. Cl. B41m 1/16
 U.S. Cl. 156—384

8 Claims

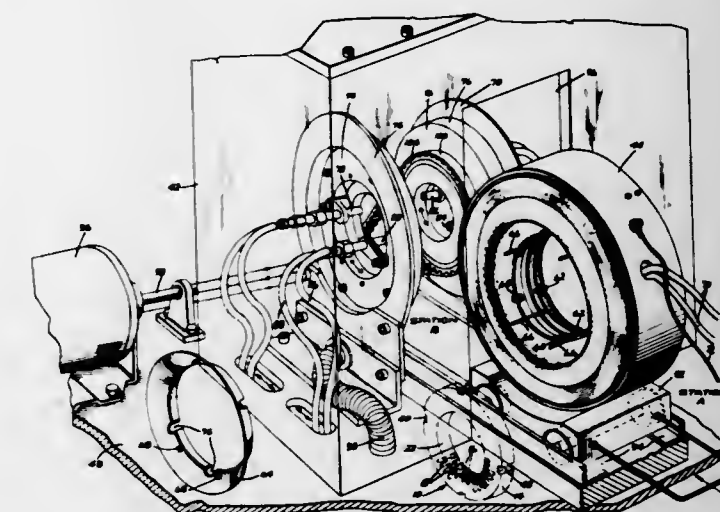


Optical plate mouter enabling the conventional flexible printing plate to be accurately aligned with the printing cylinder and mounted thereon by the use of adhesive tape having adhesive on each of its sides. Adjustable printing cylinder mounting fixtures are provided in advance of a horizontal plate mounting surface to align the peripheral surface of the printing cylinder with the plane of the plate mounting surface. A projector is disposed above the plate mounting surface and projects an optically correct grid on the plate mounting surface and printing plate and printing cylinder to insure accuracy in mounting the printing plate on the printing cylinder. The printing cylinder is indexed to enable a selected number of printing plates to be placed on the printing cylinder, and print in a predetermined sequence. A roll of adhesive tape commonly called sticky-back is mounted beneath and parallel to the printing cylinder. A parallel bar is mounted to be lowered directly onto the printing cylinder and serve as a guide for a cutting knife to accurately cut the sticky-back and attain a butt joint of the sticky-back when placed on the cylinder. A pressure roller is provided which can be lowered directly onto the printing cylinder to then press the printing plate to the sticky-back.

3,616,056
APPARATUS FOR COMPRESSING A LAMINATED ARTICLE AND FOR FORMING A PROTECTIVE COATING OF INSULATING MATERIAL ON AN ARTICLE
 Marion W. Sims, Fort Wayne, Ind., assignor to General Electric Company
 Filed Feb. 27, 1969, Ser. No. 802,934
 Int. Cl. B29c 6/04; B44d 1/09
 U.S. Cl. 156—380

15 Claims

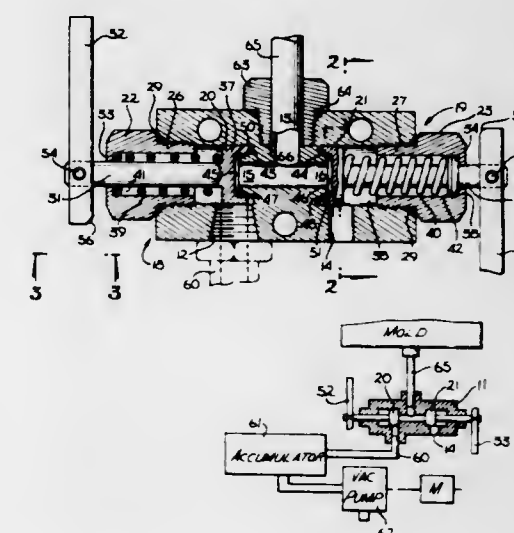
Apparatus for magnetically clamping together the laminations of a laminated article during at least part of its manufacture, for instance as protective coating material is being applied to selected surfaces of the article. A magnetic field is applied to the article or established in such a way that laminations which tend to flare apart are magnetically clamped. When the coating material contains magnetic particles, the magnetic field is also used to magnetically draw the material to selected portions of the article to form an increased thickness of coating on those portions. A varying magnetic field may also be used prior to the application of protective coating material to inductively preheat selected



coating material to inductively heat such surfaces to set or cure the coating.

3,616,057
PRESSURE-APPLYING DEVICE
 Carrol C. Sachs, 9938 Cybourn Ave., Sunland, Calif.
 Filed Mar. 10, 1969, Ser. No. 805,906
 Int. Cl. B32b 31/20
 U.S. Cl. 156—382

7 Claims

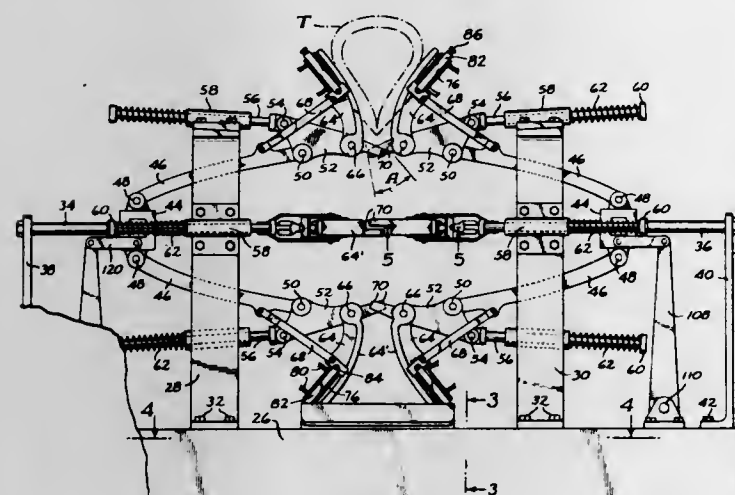


This device disclosed includes an airtight container of flexible material having a valved conduit communicating therewith. Another conduit is connected to the valve and to a source of vacuum. The valve has an inlet from ambient atmosphere. Independent control means are included in the valve for selectively interconnecting the conduits and the inlet.

3,616,058
APPARATUS FOR VENTING PNEUMATIC TIRES
 John C. Fuller, 5221 S.E. Naef Road, Milwaukie, Ore.; Gordon W. Fuller, 7320 S.W. Landau St., Portland, Ore.; Ralph A. Fuller, 12220 S.W. Grant, Tigard, Ore., and William I. Fuller, P.O. Box 123, Wilsonville, Ore.
 Filed Sept. 26, 1968, Ser. No. 762,843
 Int. Cl. B29h 17/24

9 Claims
 A plurality of opposed pairs of circumferentially spaced support assemblies retractably support a pneumatic tire between them with the opposed tire beads pressed together for mutual support. A power-driven piercing member on each support assembly then is driven into the tire angularly

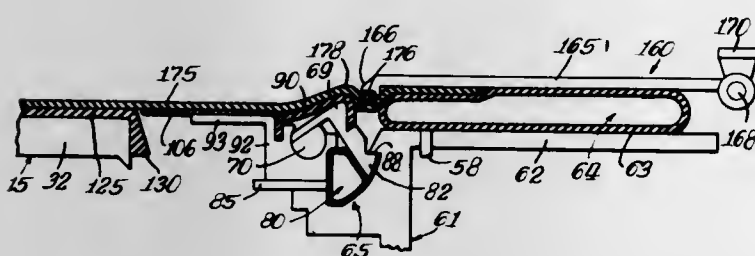
from a point on the surface outward of the wheel rim area to a point adjacent the bead. After retraction of the piercing



members the support assemblies are retracted to release the vented tire.

3,616,059
APPARATUS FOR ENCASING BEADS INTO A TIRE
Larry C. Frazier, Sun City, Ariz., assignor to National Standard Company, Niles, Mich.
Filed June 12, 1968, Ser. No. 736,363
Int. Cl. B29h 17/22, 17/26
U.S. Cl. 156-401

15 Claims

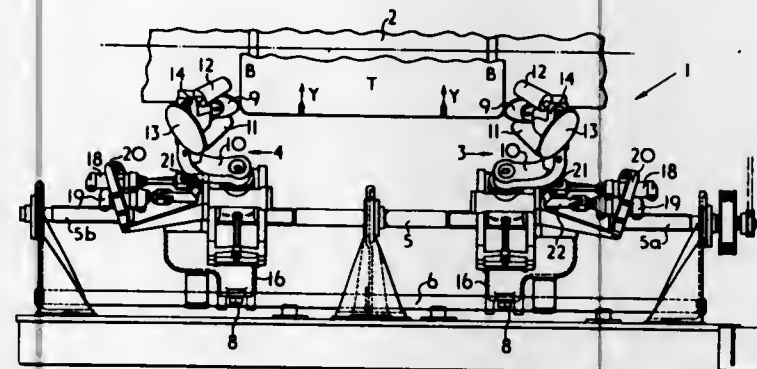


Apparatus for building pneumatic tires embodying an intermediate assembly and an end assembly at each end of the intermediate assembly for supporting tire carcass material initially in the form of a tubular cylinder, each of the end assemblies embodying bead shoulder forming means for displacing the tire carcass material radially outwardly to form bead shoulders against bead setter means position and hold tire beads against axial movement toward each other and in concentric outwardly spaced relation with respect to the carcass material, ply turnup means for encasing the tire beads at the bead shoulders, and in which the intermediate supporting members movable radially and circumferentially relative to each other to form the tire carcass material into substantially torus configuration upon releasing of the tire beads by the bead shoulder-forming means for axial movement of the tire beads axially toward each other.

Method of building pneumatic tires in which tire carcass material is initially formed into a tubular cylinder after which radially outwardly extending tire bead shoulders are then formed inwardly of the ends of the tubular cylinder, and against which tire beads are held against axial movement toward each other arm in fixed concentric outwardly spaced relation, followed by encasing major portions of the tire beads by displacing end portions of the tire carcass material while the tire beads are held concentrically against the bead shoulders, concentrically freeing the tire beads and fully encasing the same by turning up the remaining end portions of the tire carcass material while the tire beads are engaged with the tire bead shoulders, and then predeterminedately releasing the encased tire beads for axial movement toward each other in forming the tire carcass material into substantially torus configuration.

3,616,060
PLY TURNING APPARATUS
John F. Askam, Sutton Coldfield, and Charles Goodwin, Alrewas, both of England, assignors to The Dunlop Company Limited, London, England
Filed Nov. 26, 1968, Ser. No. 778,943
Claims priority, application Great Britain, Dec. 1, 1967, 54,827/67
Int. Cl. B29h 17/22
U.S. Cl. 156-402

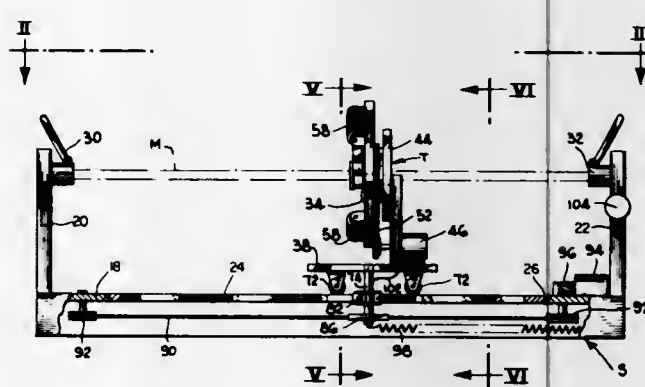
15 Claims



Apparatus for turning-up and consolidating the free ends of a carcass ply around bead portions of tire carcass being built on a building drum comprising two assemblies each disposed equal distances from the midcircumferential plain of the drum on opposite sides thereof and movable simultaneously axially of the drum. Each assembly comprises a first freely rotatable disc tool and two freely rotatable frustoconical rollers mounted one on each side of the tool and inclined towards it, the rollers supporting and manipulating the free ends during the turning-up and consolidating operation by the tool to substantially prevent distortion and ruckling of the ply. A second tool may also be provided on each assembly for consolidating an element such as a breaker cushion or fitter strip located between the bead portions of the tire carcass being built.

3,616,061
APPARATUS FOR MAKING CURVED WOUND ARTICLES
J. Warne Carter, Wichita Falls, Tex., assignor to Ciba-Geigy Corporation
Filed Feb. 5, 1970, Ser. No. 8,904
Int. Cl. B31c 1/00
U.S. Cl. 156-431

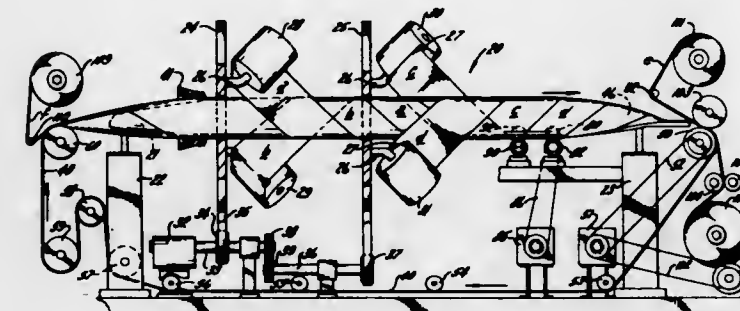
8 Claims



The apparatus employs a stationary supporting structure for mounting a curved mandrel, to provide a platform for a truck to ride thereon, and to provide a cam slot in the platform which corresponds to the curvature of the mandrel. The truck has a rotatable winding head on its upper side and a cam follower extending from its underside positioned in the cam slot. When movement is imparted to the truck, the cam follower traverses the cam slot and the winding head traverses the mandrel to wind material onto the mandrel.

3,616,062
BIAS-CROSSLAYING APPARATUS WITH MANDREL CONFORMING BELT
Dean K. Anderson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 28, 1969, Ser. No. 803,175
Int. Cl. B31c 3/00
U.S. Cl. 156-432

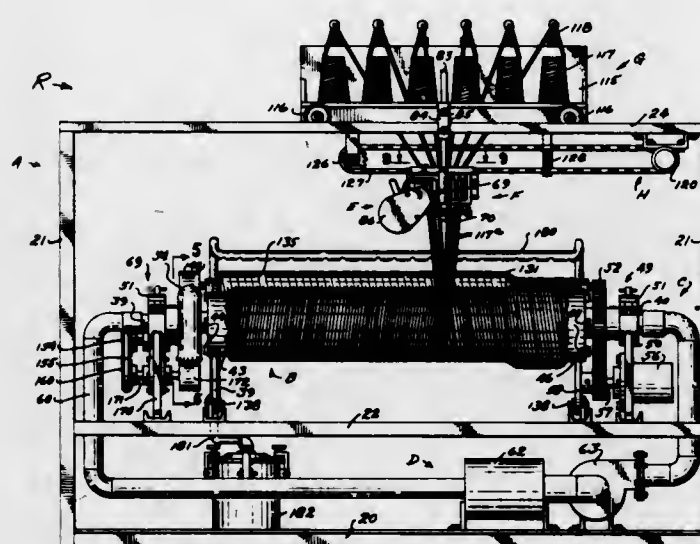
24 Claims



An apparatus for bias-crosslaying elongated web material is disclosed. The apparatus includes a stationary mandrel, an endless mandrel conforming belt, a plurality of planetating supply rolls and a slitter. Additional rolls for supplying longitudinally directed inner and outer webs of material are also provided. In the preferred embodiment the edges of the mandrel conforming belt include metallic elements and magnetic means within the mandrel help keep the belt in mandrel conforming configuration. Alternative means for sealing the edges of the material before slitting are also disclosed.

3,616,063
TUBULAR ARTICLES AND APPARATUS FOR FORMING THE SAME
Richard C. Bradley, c/o Plastic Engineering & Chemical Co., 3501 N.W. 9th Ave., Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 331,549, Dec. 18, 1963, now Patent No. 3,379,591, dated Apr. 23, 1968, which is a continuation-in-part of application Ser. No. 118,912, June 22, 1961, now abandoned. This application Apr. 22, 1968, Ser. No. 723,011
Int. Cl. B31c 13/00, 1/08, 3/00
U.S. Cl. 156-425

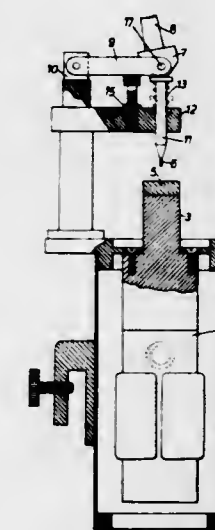
15 Claims



Apparatus for making pipe and the like of synthetic resins and which may include reinforcing materials comprising cut lengths of roving and filament strands by depositing the same on a mandrel of suitable size and shape, which apparatus may include mandrel drive means, heating and cooling means for the mandrel, means for depositing the material to be molded upon the mandrel, strand-tensioning means, strand carriage drive means, and means for compacting the material deposited upon the mandrel.

3,616,064
MANUFACTURE OF SYNTHETIC TEXTILE YARNS
Desmond Reginald Long, Chamberley, Surrey, and Alan Edgar Crawford, Basingstoke, both of England, assignors to Radyn Limited, Wokingham, England
Filed Apr. 25, 1968, Ser. No. 724,074
Claims priority, application Great Britain, Aug. 4, 1967, 35,873/67
Int. Cl. B65h 69/08
U.S. Cl. 156-433

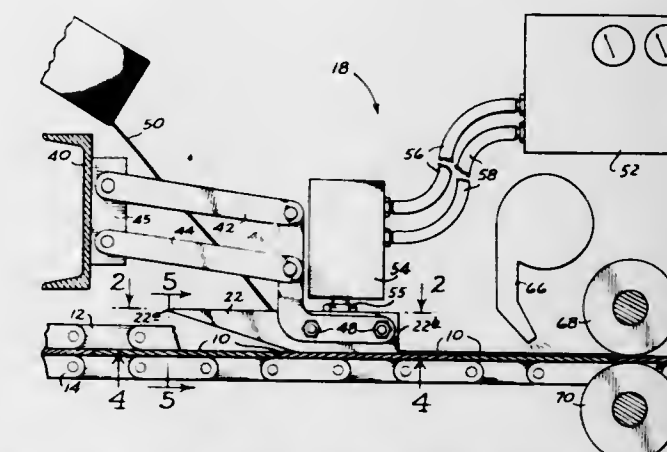
3 Claims



Apparatus for ultrasonically welding together two threadlines under a controlled pressure. The two ends of the threadlines are overlapped in a groove formed along an anvil and a resiliently biased plunger compresses the two ends into the groove. Vibrations transmitted through the anvil weld the two ends together. Pressure is controlled by tensioning springs which stiffen when the vibrations are applied and hence provide the equivalent of a heavy backing mass.

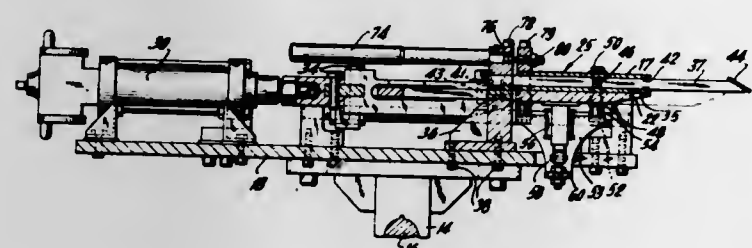
3,616,065
STRING AND GLUE APPLICATOR FOR VENEER
Charles L. Larson, Grants Pass, Oreg., assignor to Jeddloch Bros. Sweed Mills Inc., Gold Hill, Oreg.
Filed Sept. 25, 1968, Ser. No. 762,590
Int. Cl. B65h 57/04
U.S. Cl. 156-436

6 Claims



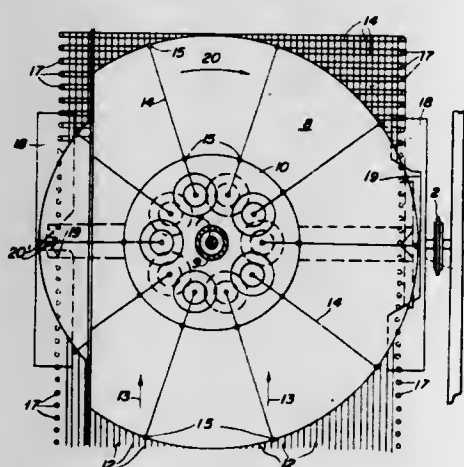
Apparatus for joining veneer strips which have been crowded into edge-to-edge abutting relationship and which are being conveyed in a direction substantially normal to their abutting edges. The apparatus includes a shoe pressed against the surface of the veneer strips for guiding uncoated string into contact with the veneer strips with the string extending across their abutting edges. Glue under pressure may be applied to the veneer prior to and after guiding the string into contact with the veneer or glue may simply be applied on top of the string. After the glue has been applied to the string the shoe presses the string, glue and veneer together to produce a bond therebetween.

3,616,066
APPARATUS FOR ADJUSTABLY POSITIONING
FILAMENTS DURING THE MANUFACTURE OF FLAT
MULTICONDUCTOR CABLE
 Walton Rainey, Ardmore, Pa., assignor to Thomas & Betts
 Corporation, Princeton, N.J.
 Filed June 12, 1969, Ser. No. 832,581
 Int. Cl. H01b 13/06
 U.S. Cl. 156-436 9 Claims



An apparatus for controllably altering, with time, the lateral spacing or pitch of a number of elongated flexible filaments, preparatory to affixing said filaments to a flexible base material. More specifically, an apparatus for adjustably positioning electrical conductor filaments, before laminating them between two strips of flexible material to form flat multiconductor cable having various lateral spacings or pitches between said conductor filaments. The machine comprises a base structure and a cam assembly which moves relative to the fixed base. A plurality of finger members terminating in filament guides, one such member and guide for each filament, are pivotally attached to the stationary part of the machine. The movable cam assembly serves to govern the positions of and degree of lateral separation between each of the filament guides. A great number of positions and degrees of spreading or separation of the guides, and consequently of the filaments, are possible without alteration or replacement of the cam means. This is accomplished by providing means for altering the velocity and end points of the stroke of the cam means.

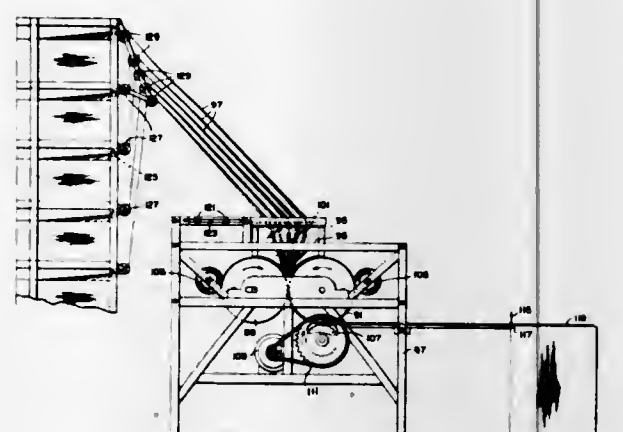
3,616,067
PROCESS AND APPARATUS FOR FORMING CROSS
MESH REINFORCED SHEETS OR FOILS
 Hans Treckmann, Wuppertal-Barmen, Germany, assignor to
 Glanzstoff AG, Wuppertal, Germany
 Filed July 11, 1967, Ser. No. 652,479
 Claims priority, application Germany, July 14, 1966, V
 31514, Dec. 17, 1966, G 48768
 Int. Cl. D04h 3/04, 3/02, 3/12
 U.S. Cl. 156-441 20 Claims



Apparatus for the manufacture of wide meshed textile layers of crossing threads or for the reinforcement of material sheets, especially plastic foils or sheets, where the textile layer is inserted between two sheets or into an unsolidified plastic sheet forming mass, characterized by rotating thread guides which are on one or several thread depositing devices, always in the same even number on each device, and which

deposit yarns or threads on two pin chains which are parallel to one another in the area of the deposit and have their pins in the plane of the rotating thread guides; the cross thread groups preferably are laid down at a right angle to the direction of travel of the pin chains and continuously brought together or otherwise combined with the longitudinal thread group; and the mesh enters into or between the two material sheets, preferably foils, at least one foil having an adhesive coating whereby the mesh is bonded together with the foils or solidified therein and whereupon the cross thread group lifts off of the pins of the pin chain or is separated therefrom in known fashion, and further characterized by a dependence of the pin chain velocity from the rate of rotation for all thread depositing devices and their thread guides according to the equation: $v_k = a \times N \times T \times F$ wherein v_k represents the pin chain velocity in meters/minute, a number of thread depositing devices, n the same number of revolutions of the thread guide for all thread depositing devices in r.p.m., T the pin chain pitch or distance between the chain pins in meter, and F the number of thread carriers per thread depositing device which is always the same for all thread depositing devices.

3,616,068
APPARATUS FOR MAKING A BUILDING ELEMENT
 John P. Glass, c/o Cava Industries, 79 La Grange Ave.,
 Essington, Pa., and Anton K. Simson, San Diego, Calif.
 Filed Sept. 9, 1968, Ser. No. 758,241
 Int. Cl. B29d 7/00
 U.S. Cl. 156-441 9 Claims



A building element useful in constructing plastic boat hulls and methods of making the element. The building element includes a plurality of glass fibers in the form of roving which are substantially parallel to each other, a resin binding the glass fibers together, and a plastic sheet covering one or both sides.

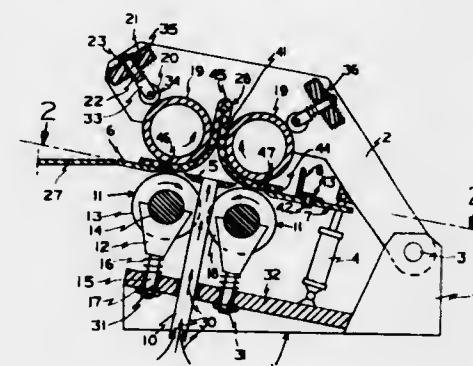
The building element may be continuously made by passing a plurality of strands of glass fiber roving through a perforated guide plate into a trough of resin formed by the bight of a pair of rollers, feeding a plastic sheet over each roller into said bight to protect the rollers from the resin and to form a sandwich structure with the resin impregnated strands of roving being enclosed within the plastic sheets, and cutting across the plastic sheets and resin impregnated glass strands at a desired angle to form a stamp element.

The building element may also be made by passing glass fiber roving through a resin pot and winding the roving around a drum which is covered by a polyethylene sheet. When the roving has reached the desired thickness, the building element is formed by cutting across the sheet and fibers and removing it from the drum.

3,616,069
FOLDING DEVICE FOR TIRE BELTS
 Josef Schwalbach, Roetgen by Aachen, Germany, assignor to
 Uniroyal Engelbert Deutschland A.G., Aachen, Germany
 Filed May 21, 1969, Ser. No. 826,333
 Claims priority, application Germany, May 25, 1968, P 17 78
 703.0
 Int. Cl. B29h 17/28
 U.S. Cl. 156-444 15 Claims

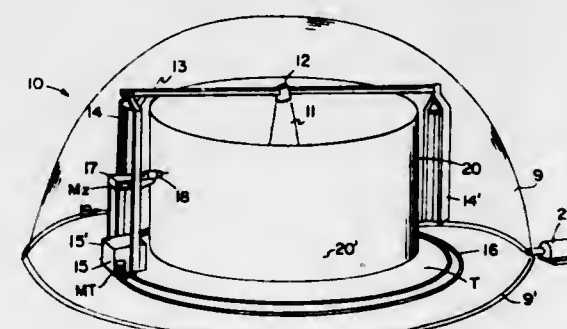
A device for folding strips of rubber-coated cord fabric so that the folded strips can be used as belt inserts in vehicle

tires. The unfolded strip is fed down an inclined table into a folding zone where it is pinched between upper and lower pairs of rollers, both motor driven. Pressurized jets of air impinge upon the underside of the fabric at spaced intervals, and force the central portion of it upwardly into a folding gap between the upper pair of rollers. The upper rollers are smooth surfaced so as to achieve more intimate contact with the tacky rubberized fabric, and therefore drag the fabric into the folding gap to complete the folding operation. The



lower rollers are grooved for less intimate contact, but temporary driving engagement with the fabric, and they can be driven at a different surface speed than the upper rollers to assist in conveying the fabric toward the entrance of the folding gap. Axially spaced bearings and rolling reinforcements for the lower and upper rollers respectively are yieldably and adjustably mounted. The upper rollers are mounted on a pivotable rack which is raised by an air cylinder to permit the insertion of the fabric, and then lowered by the cylinder to perform the folding operation.

3,616,070
LAYUP APPARATUS
 Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
 Continuation-in-part of application Ser. No. 703,287, Feb. 6,
 1968, now abandoned. This application June 25, 1968, Ser.
 No. 739,825
 Int. Cl. B65h 54/00
 U.S. Cl. 156-446 11 Claims

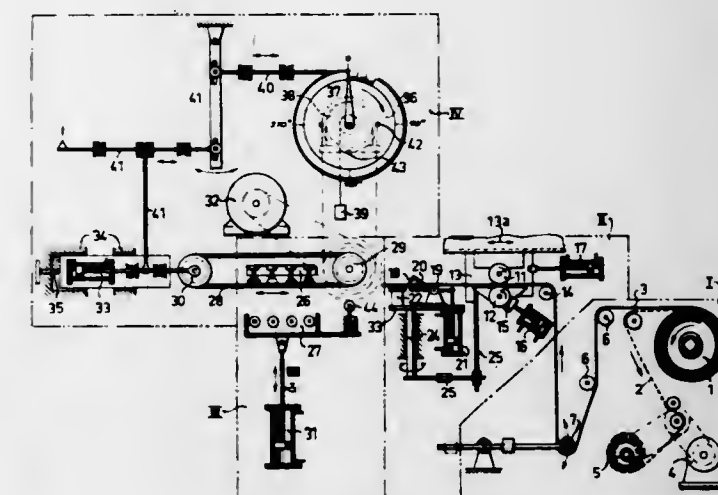


A method and apparatus are provided for forming large wall or shell-like structures such as tanks, vessels, containers and buildings on the site where they are to be used. In a first form, a filament-winding technique involves the use of a preform erected at the location of the shape to be formed, the preform and/or the filament-winding equipment being rotatable so as to dispose a plurality of filaments on the receiving surface in a circular arrangement to define strata of the wall being formed. The preform may comprise a thin sheetlike member erected at the site of use. The sheetlike wall may be self-supporting, supported by a skeletal frame or inflated and supported by air pressure.

The filament-winding apparatus may include a base for supporting the preform and the eventual housing to be formed thereof, said base being stationary such as a tarmac formed on the ground or rotatable on a tarmac to rotate the preform while the apparatus for directing material such as fluent material and/or filaments against the surface of the preform moves in a vertical direction to properly dispense same and buildup a suitable wall formation thereof. In

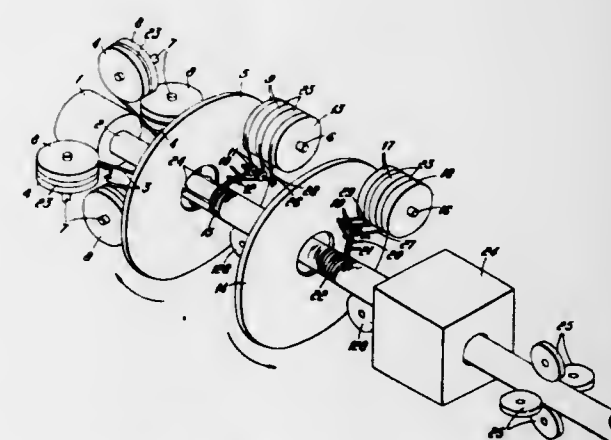
another form, the dispensing apparatus is also operative to rotate about the preform on a track or on an overhead conveyor such as a boom or overhead track erected at the site of location of the vessel or shell.

3,616,071
APPARATUS FOR APPLYING THE ENVELOPING
FABRIC TO RAW TRANSMISSION BELTS
 Martin Krause; Klaus Forsterling, and Walter Kase, all of
 Hannover, Germany, assignors to Continental Gummi-
 Werke Aktiengesellschaft, Hannover, Germany
 Filed Oct. 9, 1967, Ser. No. 673,845
 Claims priority, application Germany, Oct. 11, 1966, C
 40338
 Int. Cl. B29h 7/22; B32b 35/00
 U.S. Cl. 156-460 7 Claims



The present invention relates to an apparatus for applying the enveloping fabric to raw transmission belts, which apparatus is provided with spaced pulleys receiving the raw tire and with profiled rollers distributed over the cross-sectional circumference of the raw belt for folding and pressing the enveloping fabric against the raw belt. The invention is characterized primarily in that the drive of the pulleys is coupled to a control member which acts upon limit switches for releasing working operations while said control member is under the continuous load of a return force acting counter to the driving force.

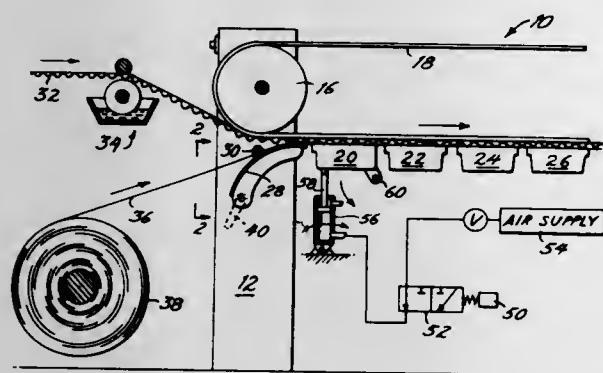
3,616,072
CONTINUOUS REINFORCED PLASTICS PIPEMAKING
MACHINE
 Raymond Oliver Bostrom, Rugby, England, assignor to
 Howker Siddeley Dynamics Limited, Hatfield,
 Hertfordshire, England
 Filed Jan. 6, 1969, Ser. No. 789,194
 Int. Cl. B65b 11/10
 U.S. Cl. 156-468 18 Claims



A machine for the continuous manufacture of reinforced plastic pipe by winding rovings soaked in uncured or partially cured resin about a tubular plastic extrusion that advances

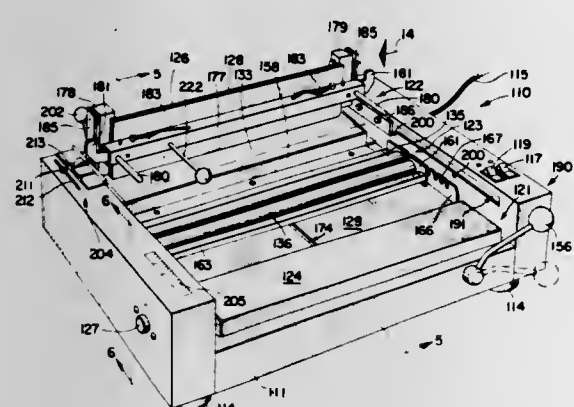
axially over a mandrel. The rovings are supplied from cakes each of which is automatically replaced when it runs out by a spare cake. Fresh cakes are also automatically supplied from a stock of cakes. Provision is also made for continuous curing and pressure testing of the pipe.

3,616,073
DOUBLE FACER WITH SAFETY MEANS
George W. McGirr, Delran, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Nov. 18, 1969, Ser. No. 870,474
Int. Cl. B31f 1/20
U.S. Cl. 156-470
9 Claims



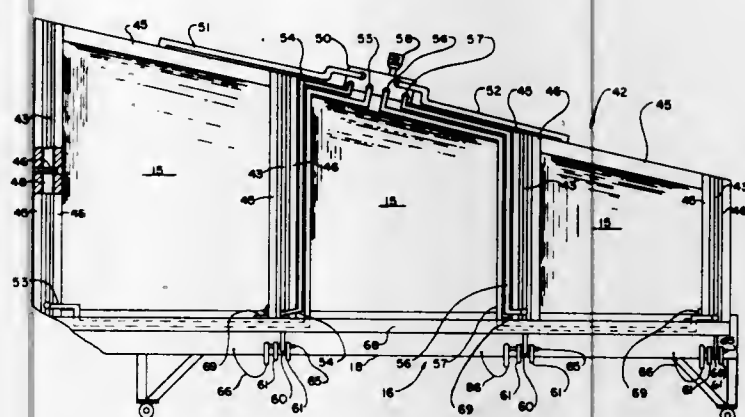
A double facer machine for making corrugated paperboard is disclosed with means adjacent the inlet end to prevent severe bodily injury to persons accidentally pulled into the machine during servicing. The means include an actuator for releasing a tilt plate and/or the first of a series of heated platens.

3,616,074
BINDING MACHINE
Wally Charles Hoff, 15 Anewen Drive, Toronto 16, and Charles Nicholas Hoff, 37 Marowyn Drive, Willowdale, Ontario, both of Canada
Filed Oct. 20, 1969, Ser. No. 867,700
Int. Cl. B42c 9/00
U.S. Cl. 156-477 B
19 Claims



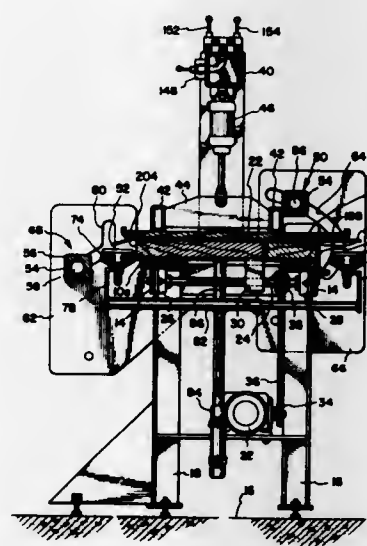
A binding machine has three operating stations and a paper clamp mounted on a transporting means for guidingly moving a clamped stack of sheets between these stations. At the first station, the sheets are supported on their spine edges on a supporting plate with a jogging motor for vibrating the plate in turn to urge the sheets into mutual spine edge alignment. At the second operating station, a heated platen is elevated to apply a strip of spine-binding material having a hot-melt adhesive coating under pressure against the spine surface of the stack of sheets. Finally, at the third operating station, the stack of sheets engages a second pressure means comprising a pair of spring-loaded rolls to press the outer marginal portions of the strip against the outermost sheets of the stack for adhesive bonding.

3,616,075
FUSELAGE JIG
Richard L. Jarvis, North Olmsted, and Walter Kully, Akron, both of Ohio, assignors to American Aviation Corporation, Cleveland, Ohio
Filed Nov. 20, 1968, Ser. No. 777,362
Int. Cl. B32b 3/04; B29c 17/04
U.S. Cl. 156-479
5 Claims



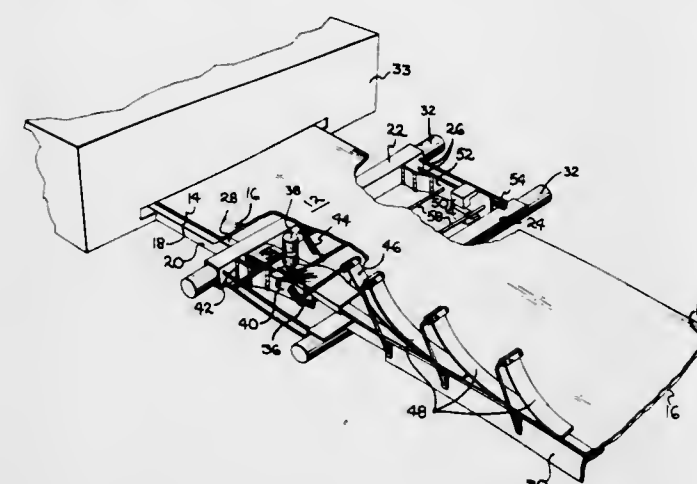
Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

3,616,076
FORMING APPARATUS
Johannes M. Gepkens, 5240 S. 9th East, Murray, Utah
Continuation-in-part of application Ser. No. 564,393, July 11, 1966. This application Mar. 10, 1969, Ser. No. 805,451
Int. Cl. B32b 3/04
U.S. Cl. 156-479
8 Claims



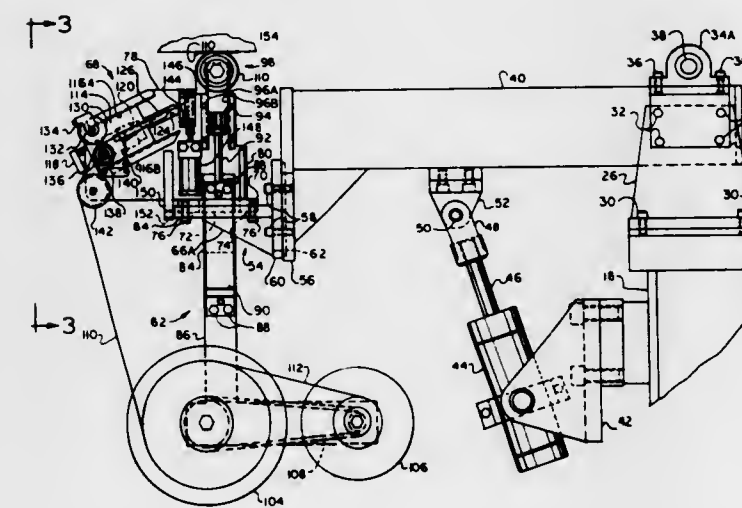
A device for fabricating laminated plastic surface objects which includes a support frame; a bed attached to the frame; a platen mounted above the bed for holding a sheet of laminated plastic material in a fixed position on the bed; an elongated die connected to the frame proximate to and along one side edge of the bed; and pressure means for bending the plastic material over the one side edge of the bed and urging said material into the die. Second pressure means can be connected to the frame for bending the opposite edge of the plastic material around a sculptured counter top blank and heaters can be connected to the frame for heating the plastic material to its softening temperature.

3,616,077
CORRUGATED PAPERBOARD EDGE SEALING AND SLITTING APPARATUS
James O. Jessee, Oaklawn, Ill., and Leonard J. Masulis, Perrysburg, Ohio, assignors to Owens-Illinois, Inc.
Filed June 20, 1969, Ser. No. 835,127
Int. Cl. B31f 1/22
U.S. Cl. 156-479
3 Claims



Apparatus for providing an improved sheet of corrugated paperboard wherein an extended edge portion of one of the liner layers is folded over the edge of the fluted medium and the other liner layer and adhesively sealed to the other liner layer while the opposite edge of the paperboard is being slit at a desired width. The apparatus is adapted to clamp to the support bars on a corrugator slitter to permit edge folding and sealing during a continuous corrugating process. This mechanism provides dimensional stability in that an edge folding plow and slitter are tied together and mounted by means of spring-loaded double hinges that apply the necessary pressure to the folding edge and permit the apparatus to follow the edge of the sheet when weave occurs.

3,616,078
APPARATUS AND METHOD FOR WRAPPING TAPE ON MULTISIDED ARTICLES
James S. Howard, Riverside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed Jan. 23, 1969, Ser. No. 793,416
Int. Cl. B65c 3/12, 9/02
U.S. Cl. 156-486
3 Claims

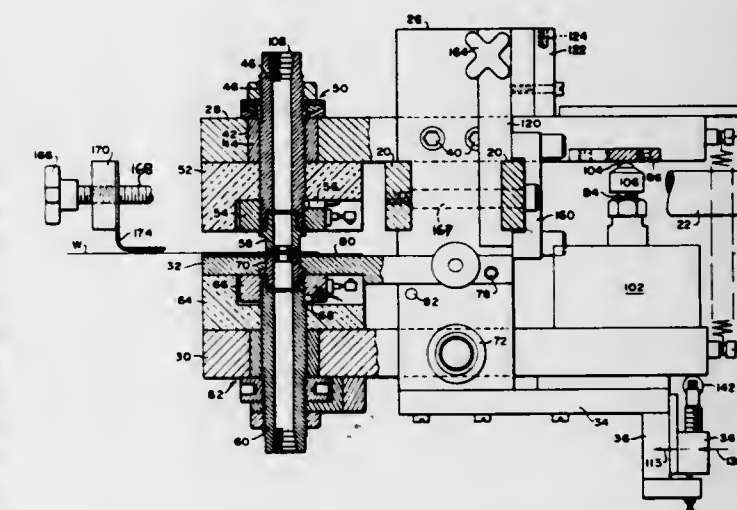


Apparatus for, and method of, wrapping tape around a multisided article, employing a yieldably supported roller and a mechanism which feeds said tape between the surfaces of the article and said roller as the latter is moved over said surfaces. After the roller has traveled diagonally across one side of the article and pressed tape thereon, the article is rotated to bring the next adjacent side into position for

taping, while the roller is held against the surface of the article by the yieldable action of the means provided for supporting the roller and by the programmed movement of the roller at a predetermined rate in the direction of rotation of said article. Through repetition of the aforesaid steps, tape is wrapped around the article at a selected angle relative to its longitudinal axis.

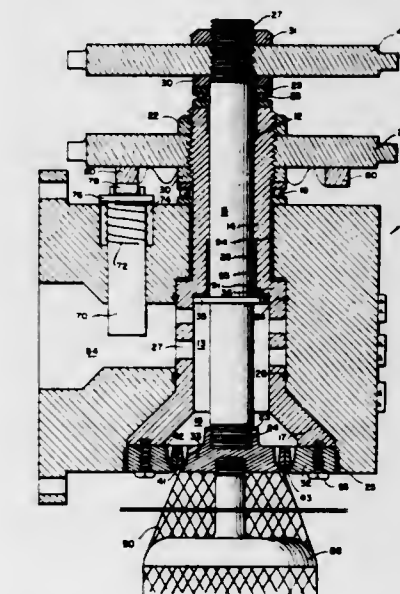
ERRATUM
For Class 156-497 see:
Patent No. 3,615,037

3,616,079
GROMMETING MACHINE
Rubin Goldman, 22 Park Drive, Newton Highlands, Mass.
Filed May 22, 1969, Ser. No. 826,838
Int. Cl. B32b 3/26
U.S. Cl. 156-497
8 Claims



A grommeting machine with sealing tips having teeth that seal film sheets of plastic material together and simultaneously directs superheated air at the sheets to melt a hole in them.

3,616,080
APPARATUS FOR EXTRUSION OF STRENGTHENED PLASTIC NETTING
George S. Nalle, Jr., 108 W. 2nd St., Austin, Tex.
Filed Dec. 27, 1963, Ser. No. 336,851
Int. Cl. B29b 5/04
U.S. Cl. 156-500
11 Claims



A method and apparatus for extruding strengthened plastic filaments of elongated cross section under increased

pressurization as die holes are aligned and so as to intersect the extruded strands in a substantially oxygen-free environment.

3,616,081
METHOD OF AND APPARATUS FOR HANDLING AND SPLICING STRIPS OF RUBBER, PLASTIC AND THE LIKE

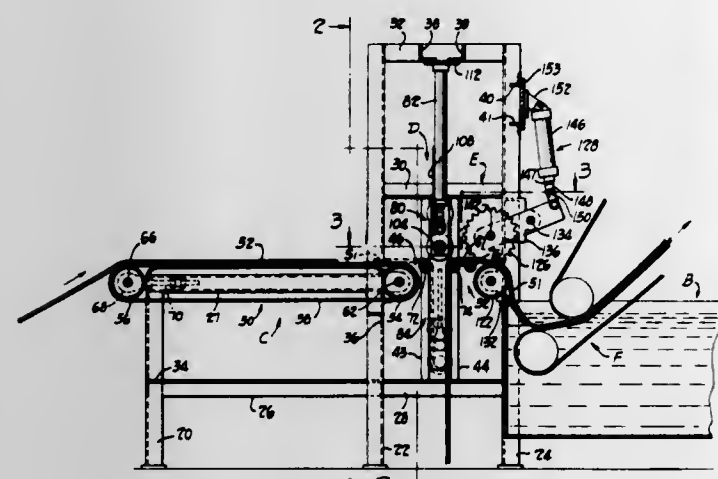
Armando Cantarutti, Akron, Ohio, assignor to Intercole Automation, Inc.

Filed Oct. 14, 1968, Ser. No. 767,166

Int. Cl. B65h 21/00

U.S. Cl. 156—502

6 Claims



Apparatus and method for joining ends of strips of rubber or plastic material or the like, such as, strips from a rubber mill, to facilitate further processing. A generally horizontally disposed trailing end of a strip is directed downward to depend from a path of strip movement in advance of a splicing mechanism, a leading end of a succeeding strip is advanced relative to the preceding strip, and subsequent concurrent and equal advance of both strips automatically overlaps the ends for splicing.

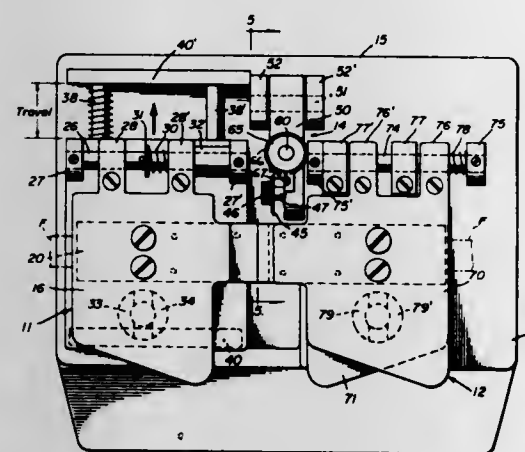
3,616,082
FILM SPLICER
Robert F. Menary, Northbrook, Ill., assignor to Paulmar, Inc., Northfield, Ill.

Filed May 3, 1968, Ser. No. 726,426

Int. Cl. G03d 15/04

U.S. Cl. 156—509

14 Claims



An apparatus for splicing motion-picture film which comprises a supporting frame or base on which two pairs of film-clamping plates are mounted in alignment on opposite sides of a filmcutting wheel and emulsion-scraping roller with the top plate of one pair and both plates of the other pair thereof being mounted for pivotal movement on axially aligned shafts so as to enable the plates of each pair thereof

to be opened for clamping the end section of a film between the same and with the one pair of plates adapted to be swung, while clamping a film section, in an upward path so as to avoid interference with movement of the other pair of plates which are mounted on a laterally movable carriage, said carriage being adapted to be reciprocated so as to pass the end of a film clamped between the plates beneath the cutting wheel and emulsion scraper to cut off the projecting end portion of the film and scrape off the emulsion in the margin thereof thereby providing a clean area for the application of an adhesive for forming the splice. Lowering the other pair of plates into alignment with the carriage mounted plates automatically trims the ends of both film sections which are clamped in the plates and effects the necessary overlap of the trimmed ends to form the splice.

3,616,083
APPARATUS FOR PRODUCING FASTENER STRIPS
Johannes Mohr, Oberboihingen, Germany, assignor to Karl M. Reich Maschinenfabrik, Nuerdingen, Germany

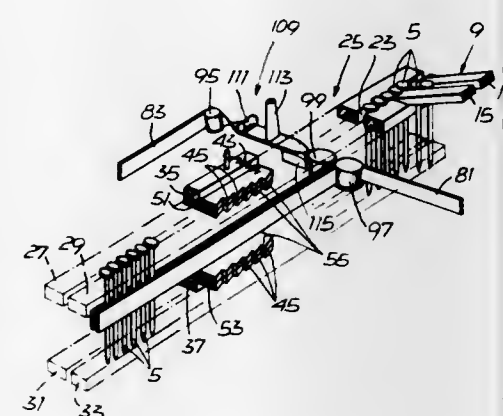
Filed Sept. 6, 1968, Ser. No. 757,866

Claims priority, application Germany, Sept. 9, 1967, P 15 86 253.0

Int. Cl. B32b 31/10; B65d 83/02

U.S. Cl. 156—513

15 Claims



A machine for mass-producing fastener strips and especially nail strips for mailing machines fully automatically and continuously. The machine consists of a combination of different means for aligning the fasteners to form a continuous row, for conveying them in a step-by-step movement at a fixed distance from each other, for heating them, for connecting them to each other by means of thin connecting strips which are coated with a thermoplastic adhesive, for pressing the connecting strips and the intermediate row of fasteners together and for thereafter cooling them, for perforating the connecting strips between the adjacent fasteners, and for cutting the continuously produced fastener strip into sections of a certain length.

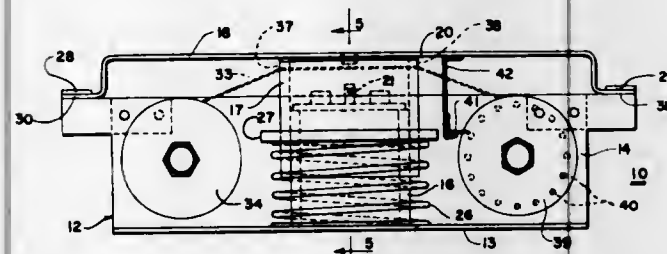
3,616,084
PATCH-APPLYING DEVICE FOR DATA CARDS
Lloyd K. Rogers, 273 Sunset Drive, Highland Heights, Ky.

Filed Aug. 14, 1969, Ser. No. 849,990

Int. Cl. B32b 31/18, 31/20

U.S. Cl. 156—514

2 Claims



A device for patching a data card to cover and close a perforation therein. A plate is mounted for movement toward and away from a base on which a male die is supported. An

opening in the plate overlies the male die. A hollow cutter die surrounding the opening cuts a patch from a strip of tape which is directed between the dies when the plate is advanced toward the male die with a card thereon having a perforation aligned with the opening and the patch is attached to the card overlying the perforation.

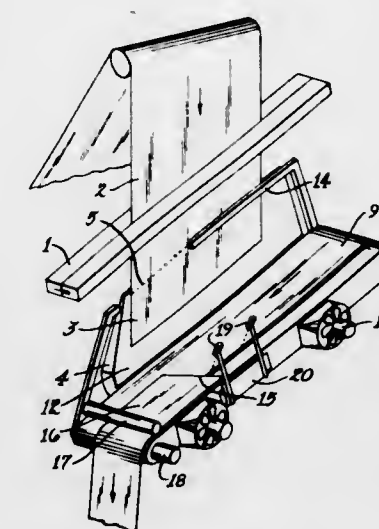
3,616,085
DEVICES FOR JOINING SINGLE FABRIC STRIPS
Gerhard Printz, Vienna, Austria, assignor to Semperit Österreichisch-Amerikanische Aktiengesellschaft, Vienna, Austria

Filed Jan. 30, 1969, Ser. No. 795,216

Int. Cl. B29h 17/02; B32b 31/04

U.S. Cl. 156—517

7 Claims



Apparatus for joining diagonally cut flanks of rubberized fabric with a small overlap including a pivotable suction device provided for lifting flanks, a conveyor belt upon which flanks are deposited and a roller pair near one end of the conveyor belt to press cut overlapping flanks together.

3,616,086
APPARATUS FOR MARKING TEXTILE ARTICLE
Nicolaas Nooder, Batavierenweg 120, Nijmegen, Netherlands

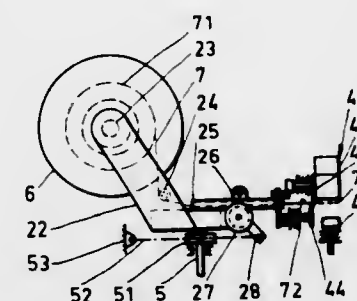
Filed Sept. 10, 1968, Ser. No. 758,719

Claims priority, application Netherlands, Sept. 13, 1967, 67/25/3

Int. Cl. B32b 31/20, 31/10

U.S. Cl. 156—518

8 Claims



An apparatus for marking textile articles having a carrier movable between two limiting positions, a roll of label tape and feeding means on the carrier, a stamping device operatively associated with the end of the tape while the carrier is in one of the two limiting positions, and a cutter for the tape and means for applying the marked and cutoff piece of tape to the article while the carrier is in the other of the two limiting positions.

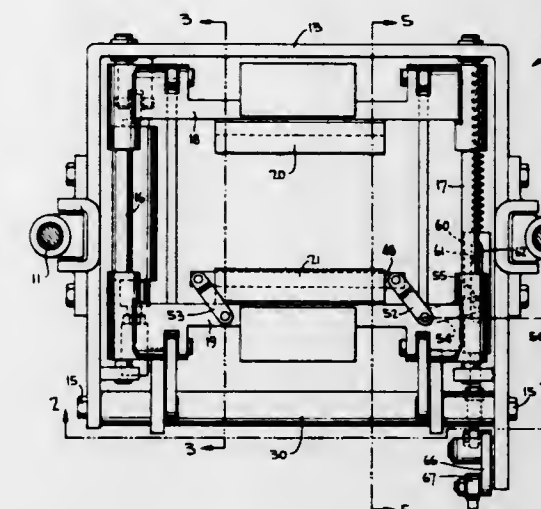
3,616,087
SEALING CARRIAGE
Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Filed Oct. 6, 1969, Ser. No. 863,834

Int. Cl. B32b 31/20

U.S. Cl. 156—518

13 Claims



A sealing carriage for packaging machines wherein transverse seals are formed across a tube of packaging film; the sealing jaws being actuated by a toggle linkage including at least a pair of links joined together for each slide. At least one of the links of a pair has sufficient resiliency to allow said linkage to travel slightly beyond the point where the sealing jaws come together to assure a high-pressure seal. The resilient link is substantially U-shaped and the two links of each pair are proportioned in length to give equal sealing jaw travel. The carriage is provided with a cutoff knife having an actuator bar with a closed slot in the direction of travel of the slide. Operation of the knife is effected by movement of the end of the actuator bar against an operating lever, and a tension spring supports the operating end of the actuator bar for floating action.

3,616,088
WAREHOUSE CARRIER WITH LABEL MEANS THEREON
Stanley M. Weir, Palo Alto, Calif., assignor to FMC Corporation, San Jose, Calif.

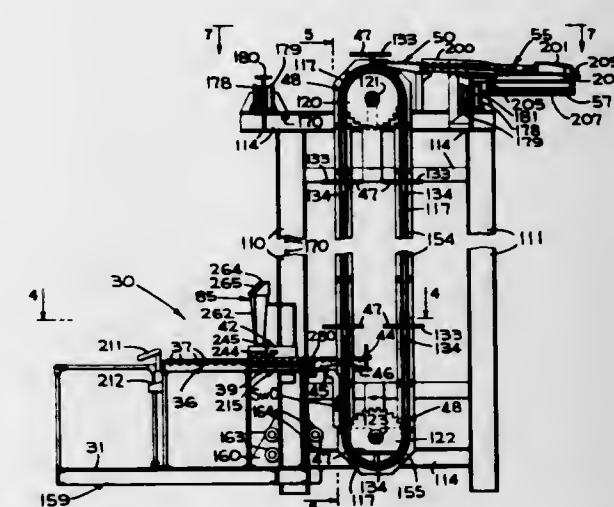
Division of Ser. No. 765,116, Oct. 4, 1968, Pat. No. 3,536,207

Filed Aug. 27, 1970, Ser. No. 67,437

Int. Cl. B44c 31/00

U.S. Cl. 156—542

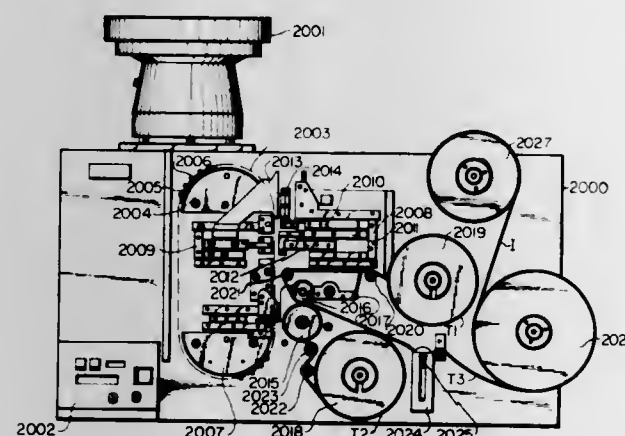
7 Claims



A warehouse comprises a carrier having means for supporting an order-picking operator, a plurality of labels,

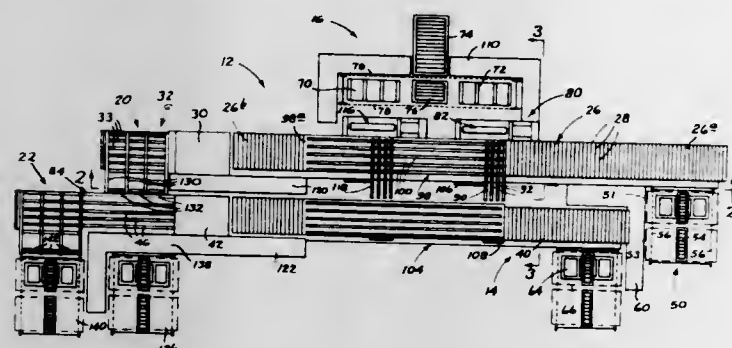
said labels containing indicia for at least indicating the location of the articles in the warehouse and the destination of the articles picked, and means on said carrier for placing each label on the picked article.

3,616,089
PREPPER-TAPER MACHINE FOR ELECTRICAL COMPONENTS
Albert W. Zemek, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,842
Int. Cl. B32b 31/10; B21f 1/02
U.S. Cl. 156—552 15 Claims



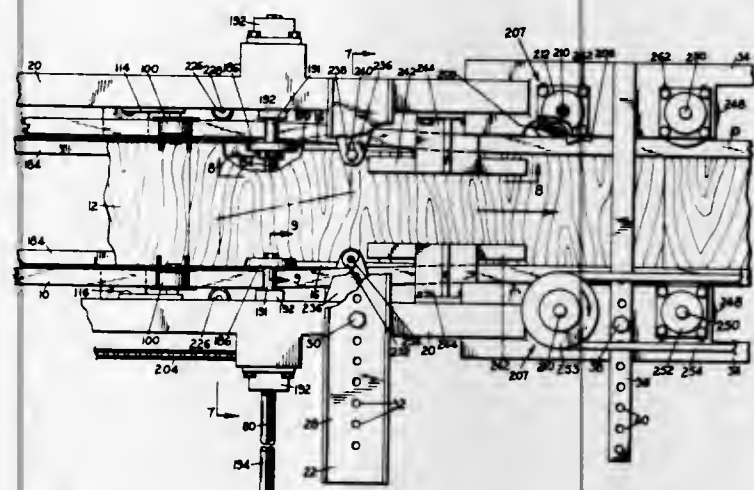
A machine for receiving unprocessed electrical components from a feed mechanism, straightening the leads, forming the leads of the components by bending them in opposite directions within the same plane, feeding the components with their formed leads onto the adhesive side of two tapes mounted on taping wheels, the oppositely bent leads contacting separate taping wheels, applying second covering tapes to seal the leads between the adhesive surfaces of the tapes and winding the taped components onto a drum.

3,616,090
APPARATUS FOR LAYING UP PLYWOOD PANELS
Charles L. Larson, Grants Pass, Ore., assignor to Jeddeloh Bros. Sweet Mills, Inc., Gold Hill, Ore.
Filed Mar. 4, 1968, Ser. No. 710,346
Int. Cl. B32b 31/04
U.S. Cl. 156—559 6 Claims



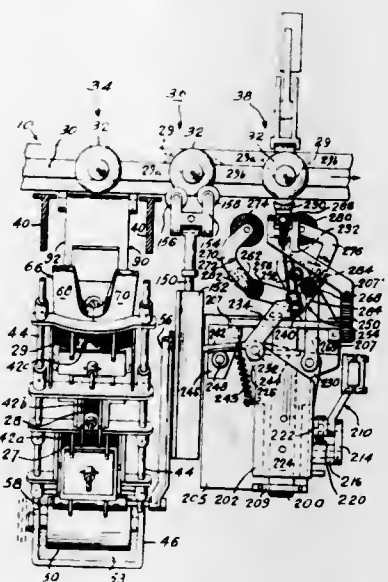
Apparatus for laying up plywood panels including a pair of parallel conveyor lines for moving two series of presized veneer sheets in a common direction, and core sheet conveyor means including an adhesive applicator for preparing core sheets with adhesive coatings on both faces and transferring such core sheets to positions on top of the presized sheets to form two-ply combinations on each conveyor line. Transfer means at a transfer station adjacent the downstream ends of the conveyor lines transfers two-ply combinations from one conveyor line to the other. At this transfer station presized veneer covering sheets are laid over the two-ply combinations, interspersed with transferred two-ply combinations to form three-ply, five-ply, etc., plywood panels, as desired.

3,616,091
FORMING APPARATUS FOR I-BEAM-TYPE TRUSS JOISTS
Arthur L. Troutner, Skyline Drive, Boise, Idaho
Filed July 31, 1969, Ser. No. 846,430
Int. Cl. B27d 1/10; B32b 31/10
U.S. Cl. 156—560 7 Claims



The apparatus forms a truss joist structure comprising a pair of longitudinal chords and a continuous length, interconnecting web. Feed and guide rollers move the pair of chords through the apparatus in spaced relation and employ cutters which provide tapered grooves in opposed faces of the chords. Air jet means and a glue applicator are mounted on the outfeed side of the cutters to clean the grooves and apply glue therein. The feed and guide rollers for the chords support the latter in a spaced relation greater than the width of the web, and immediately following the glue applicator are crimp wheels which shape side edge portions of the web and feed such web toward the outfeed end of the apparatus. The guide rollers on the discharge side of the crimp wheels move the two chords closer together to cause engagement of the shaped edges of the web with the grooves in the chords. The apparatus has lateral adjustment means for assembling joists of different widths and also has adjustable guide rollers on its outfeed end to vary the chamber of the formed joists.

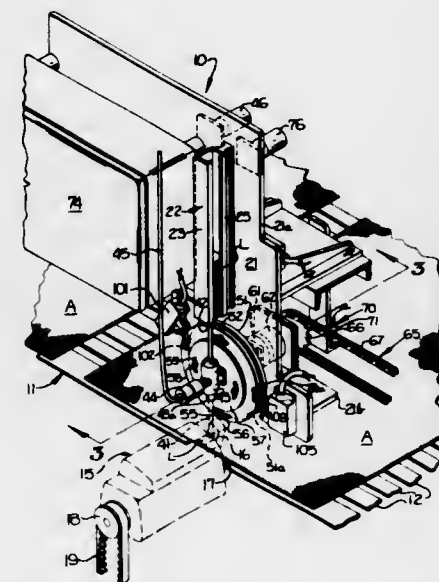
3,616,092
NECK WRAP APPARATUS
Michael Albert Lavigne, 400 Mount Pleasant, Apt. 4, Montreal, Quebec, Canada
Continuation-in-part of application Ser. No. 519,654, Jan. 10, 1966, now abandoned. This application Oct. 22, 1969, Ser. No. 871,411
Int. Cl. B65c 9/36, 3/18
U.S. Cl. 156—566 5 Claims



A label-applying machine which comprises three stations, the first station including an articulated label applicator having three individual pads for applying three different

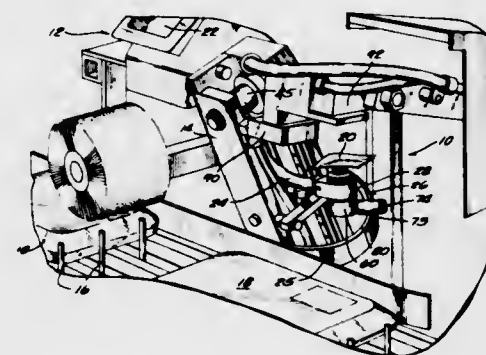
labels, and particularly a separate pad for applying a label to the neck portion of a bottle. The next station includes a former which initiates the wrapping of the neck label about the neck of a bottle and the third station includes a sliding carriage on which are mounted articulated arms which are adapted to sequentially wrap the label about the neck of the bottle.

3,616,093
LABEL APPLICATOR MECHANISM
Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Ware Schools, S.C.
Filed Aug. 29, 1969, Ser. No. 854,179
Int. Cl. B65c 9/14; B65h 3/08
U.S. Cl. 156—571 7 Claims



A label applicator mechanism, characterized by positioning labels in predetermined positions on spaced-apart successive articles being advanced along a predetermined longitudinal path of travel, comprising a magazine of labels mounted for reciprocating linear movement, a rotating transfer arm having alternatively actuable suction means on the outer end thereof for transferring the labels from the magazine to the advancing articles, a sensing means for sensing an article and causing the magazine to move toward the transfer arm whereupon the suction means is actuated to receive a label therefrom and initiating rotation of the transfer arm. After the transfer arm has rotated to place the outer end thereof adjacent to the advancing articles, the suction means is deactuated to release the label and rotation of the transfer arm is stopped when the outer end thereof is adjacent to and in alignment with the magazine.

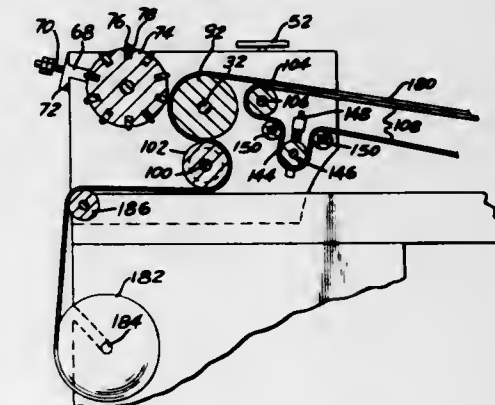
3,616,094
LABEL-TURNING DEVICE
James P. Navin, Racine, and Chester D. Matteucci, Sturtevant, both of Wis., assignors to Sturtevant Industries, Inc., Sturtevant, Wis.
Filed Nov. 28, 1969, Ser. No. 880,590
Int. Cl. B65c 1/02, 9/14, 9/28
U.S. Cl. 156—571 9 Claims



A label pickup assembly for removing labels from a label-printing machine and affixing the label on a prewrapped package at a different angular relation to the package than

when picked up from the label-printing machine, the assembly including a vacuum pickup tube rotatable through 180° to pick up a label from the printing machine and move the label to a transfer position, a vacuum nozzle rotatably supported on the pickup tube and having a cam follower positioned to engage a downwardly inclined cam on the downward motion of the pickup tube to the transfer position to rotate the label through a predetermined angle and a label pickup pad to remove the label from the vacuum nozzle at the transfer position and affix the label to the prewrapped package.

3,616,095
APPARATUS FOR FORMING A STRIP OF SEVERABLE BAGS FROM THERMOPLASTIC MATERIAL
Hercules Membrino, 1934 Arch St., Philadelphia, Pa.
Filed Nov. 6, 1969, Ser. No. 874,523
Int. Cl. B32b 31/18; B31b 1/14
U.S. Cl. 156—582 9 Claims

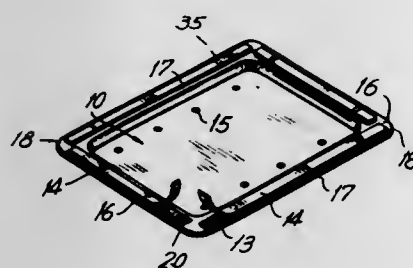


A bagmaking machine comprising a support structure upon which is mounted a rotatable heat sealing and cutting means in tangency with a rotatable impression roller, the heat sealing and cutting means being adapted to form lines of seal and severance with spaced interruptions in a double-ply thermoplastic strip as the strip moves between the heat sealing and cutting means and the impression roller from a supply roller or the like. The interruptions or "nips" form connecting means between the bags formed from the strip by the heat sealing and cutting means. These interruptions or "nips" comprise sealed portions but not severance. This type of sealing is obtained by indenting the thermoplastic material of the strip just sufficiently away from the heating means so that the heat will cause melting and sealing of the thermoplastic material, but such melting will not penetrate through the outermost layer, a sufficient distance to cause severance. The heat sealing and cutting means comprise a rotatable head having a plurality of heating wires or the like which are spaced from each other around the periphery of the head. These heating wires may be selectively made inoperative so that the distances between the operative heating wires may be varied. Means are also provided to vary the relative rotatable speeds of the heat sealing and cutting means and the impression roller so that the size of the resulting bags may also be varied in such manner.

3,616,096
AN ADHESIVE MOUNTING BOARD
Allen Roeder, New Hyde Park, N.Y., assignor to Roxter Metal Products Mfg., Long Island, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,929
Int. Cl. B32b 2 Claims

A mounting board apparatus for securement to the working surfaces of buildings, vehicles, furniture, and fixtures consisting of a traylike construction having a substantially rigid mounting surface elevated slightly above its flanged surface. The exposed face of the flange surface includes an adhesive which is covered by a backing strip so that the

surfaces can be prepared for adherence to any working surfaces. The mounting surface will accommodate electrical



switch gear equipment which can be secured against the board and held in place in a variety of different locations.

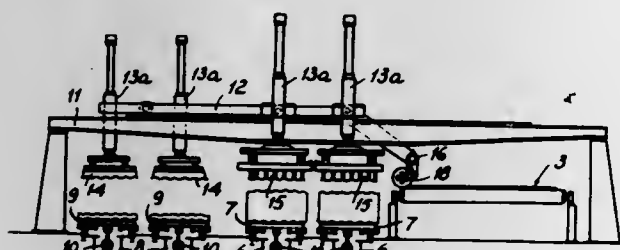
3,616,097
APPARATUS FOR THE MANUFACTURE OF SHEETS OF ASBESTOS CEMENT OR THE LIKE, AT A HIGH HOURLY PRODUCTION RATE

Dante Colliva, Bologna, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Filed Jan. 13, 1969, Ser. No. 790,549
Claims priority, application Italy, Jan. 22, 1968, 11855 A/68
Int. Cl. B31f 1/00

U.S. Cl. 156-585

6 Claims



Apparatus for the manufacture of sheets of asbestos cement, in which a large asbestos sheet is cut, in a first station, into standard size sheets, while the large sheet is conveyed by conveyor belts towards the first station. At one side of the first station four tracks for trollies are arranged parallel to the direction of advancement of the large asbestos sheet, two of the trollies carry patterns and the other trollies, nearer to the first station carry mixed packs of patterns and asbestos cement sheets. A bridge structure extends above the first station and the tracks in a direction transverse to the tracks. A truck is movable along the bridge structure. The truck carries suction units and boxes which take up and deposit, in preestablished intervals, the patterns and the asbestos cement sheet on the trollies.

3,616,098
METHOD OF PRODUCING GLARE-REDUCING GLASS SURFACE

Joseph W. Falls, Chicago, Ill., assignor to Dearborn Glass Company

Filed Mar. 18, 1968, Ser. No. 713,992
Int. Cl. C03c 25/06

U.S. Cl. 161-1

12 Claims

An improved glare-reducing glass surface is produced by including an undissolved inorganic salt of small crystal size, e.g., in the range of 10-50 microns in diameter and 2-10 micron in height, in the etching bath of an etching process. The etching process involves cleaning the glass surface, etching in a hydrofluoric acid bath or similar acid bath containing the undissolved salt by virtue of a saturated condition of the bath. Saturation of the bath is usually accomplished by ammonium bifluoride or other salt. After etching, the surface is properly polished and cleaned. The preferred, inorganic salt crystals are crystals of potassium bifluoride, sodium bifluoride, and calcium phosphate.

3,616,099
COMPOSITE STRIP OF METALLIC FOIL CORE ENCASED WITHIN IONOMER RESIN AND HAVING A CLEAR FACING STRIP

Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company
Filed Sept. 19, 1968, Ser. No. 760,919
Int. Cl. B32b 15/08; B44f 9/02

U.S. Cl. 161-5

5 Claims



An improved composite decorative strip comprising a core member encapsulated within a shell of transparent thermoplastic material which is extruded thereover, said core member further comprising a metal foil member, said thermoplastic further comprising an ionomer resin.

3,616,100
MULTICOLOR IRIDESCENT PLASTIC PRODUCT CONTAINING CRESCENT SHAPED NACREOUS PIGMENT LAYERS

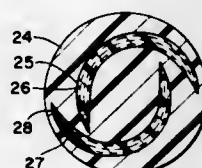
Yoshio Morita, c/o Koppers Company Inc., 440 College Park Drive, Monroeville, Pa.

Continuation-in-part of application Ser. No. 752,315, Aug. 13, 1968. This application Dec. 9, 1968, Ser. No. 782,406
Claims priority, application Japan, Dec. 29, 1967, 42/84378

Int. Cl. B44f 1/04, 1/14

U.S. Cl. 161-5

3 Claims



A light-transmitting plastic resin sheet capable of exhibiting intense multicolor effects is provided. The sheet has positioned therein individual layers of at least two optically colored nacreous pigments of different optical color. The pigment crystals within an individual layer are oriented in parallel spaced relationship with respect to each other. The individual layers are positioned at an angle to each other so that the color transmitted by one of the layers intensifies the purity of the color reflected by another of the layers.

3,616,101
BALL OR OTHER ARTICLE OF MANUFACTURE HAVING A LIQUID CENTER

Fred E. Satchell; David T. Retford, Cincinnati, Ohio, and Robert S. Barnes, Muskegon, Mich., assignors to Brunswick Corporation

Division of Ser. No. 647,667, June 21, 1967, Pat. No. 3,490,770

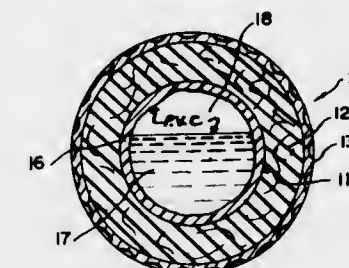
Filed Dec. 5, 1969, Ser. No. 880,448
Int. Cl. A63b 37/08

U.S. Cl. 161-7

16 Claims

A liquid center for an article and a method for making the same from a liquid reactive mass such as a polyvinyl chloride

plastisol by forming the plastisol to spherical shape, e.g., in a surface to produce a highly attractive simulated stone decorative sheet.

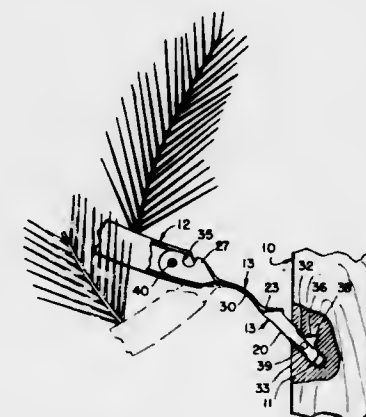


mold, and then reacting the outer portion of the mass to form a solidified skin while leaving the inner portion liquid.

3,616,102
ARTIFICIAL TREE CONSTRUCTION
Ammon A. Baus, Philadelphia; Frederick Keller, Cornwells Heights, Pa., and William B. Reukauf, Haddonfield, N.J., assignors to Carey-McFall Company, Philadelphia, Pa.
Filed Apr. 22, 1970, Ser. No. 30,747
Int. Cl. A47g 33/06

U.S. Cl. 161-14

6 Claims

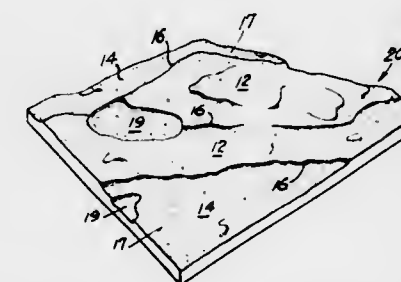


An artificial tree wherein a trunk is provided with holes and branches are provided with connectors for insertion in the holes, the connectors being automatically resistant to withdrawal from the holes. Additional features include pivotal mounting of the branches for collapsibility of the tree in its assembled condition, and flexural deformability of the connectors for adjusting the display positions of the branches.

3,616,103
TEXTURED CEMENTITIOUS SHEET
Norman Shirk Greiner, Somerville, and James Vincent Magee, South Orange, both of N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed May 5, 1969, Ser. No. 821,810
Int. Cl. B32b 3/00

U.S. Cl. 161-19

4 Claims

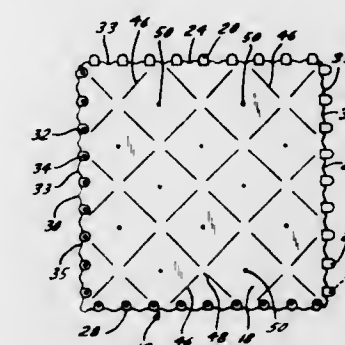


The textured surface of an asbestos-cement sheet covered with steam cure bloom or normal cure bloom is abraded in a particular manner to remove bloom from certain areas of the

3,616,104
ARTIFICIAL LAWN ELEMENT
Paul L. Kuzmick, 30 Oval Road, Essex Fells, N.J.
Filed Mar. 20, 1968, Ser. No. 714,559
Int. Cl. A41g 1/00

U.S. Cl. 161-21

5 Claims

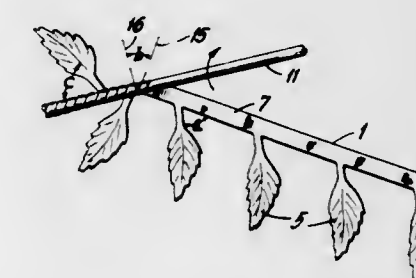


An artificial outdoor lawn is formed by interconnecting a plurality of lawn elements, each lawn element including a pin which is adapted to be received within a mating opening provided in an adjacent lawn element, thereby to produce said interconnection. Projections are provided on the underside of each element to provide a clearance area beneath the lawn element when it is supported on a surface, thereby to permit drainage of water from said element. The appearance and density of natural grass is effectively simulated by providing a plurality of tufts of artificial grass blades in different arrangements over the upper portion of the lawn and by appropriately configuring the upper surface of the base from which said tufts extend.

3,616,105
ARTIFICIAL TREE BRANCH OF FOLIAGE STAMPED FROM A RIBBON OF PLASTIC MATERIAL
Theodore Marks, Hartsdale, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.
Filed Apr. 24, 1969, Ser. No. 818,992
Int. Cl. A41g 1/00

U.S. Cl. 161-22

1 Claim



The invention is an artificial tree branch made of foliage which is cut or stamped from a broad ribbon of sheet plastic material. The leaves of the branch extend from a supporting strip of the plastic which is supported by a stem, such as a wire, to which the leaf supporting strip is attached.

3,616,106
LAMINATE MADE WITH RESIN AND WAX ADHESIVE MIXTURE
Hallard C. Moyer, Homewood, Ill., assignor to Sinclair Oil Corporation, New York, N.Y.
Filed Oct. 1, 1968, Ser. No. 764,340
Int. Cl. B32b 9/06; C08c 11/70

U.S. Cl. 161-235

12 Claims

A wax laminant composition comprising a major amount of high melting paraffinic wax, a minor amount of ethylene-vinyl acetate copolymer, a minor amount of an amorphous copolymer of alpha-methyl styrene and vinyl toluene, and a

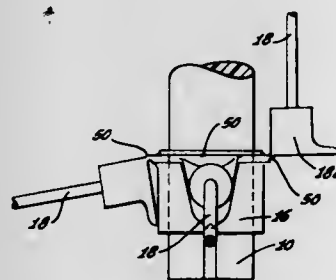
minor amount of oxidized polyethylene. This wax composition provides a laminant with improved high-temperature laminating strength, viscosity suitable for handling in conventional laminating machines, low oil content (i.e., low straining) and good wetting, flow, and vapor barrier properties.

3,616,107
SECTIONALIZED ARTIFICIAL TREE STRUCTURE WITH INTEGRAL BRANCH AND COLLAR COMBINATIONS
William A. Kershner, Azusa, Calif., assignor to HPE Inc., Colton, Calif.

Filed Mar. 20, 1969, Ser. No. 808,915
Int. Cl. A47g 33/04

U.S. Cl. 161-24

2 Claims



A sectionalized artificial tree structure is provided which is intended, for example, to simulate a Christmas tree, and which is constructed of an appropriate pliant plastic material so that its component parts may be fabricated on a mass production low-cost basis; and in which the individual component parts include integral branch and collar combinations which may be conveniently collapsed for shipping and storing purposes.

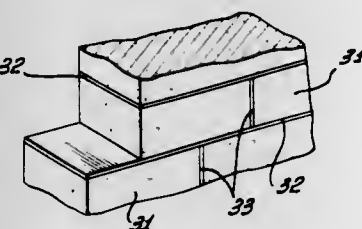
3,616,108
REFRACTORY CONSTRUCTION UNITS WITH HIGH-TEMPERATURE BONDING JOINT FILLERS AND METHOD OF MAKING SAID UNITS
William E. Whitehouse, La Crescenta, and Roger R. Riley, Glendale, both of Calif., assignors to Interpace Corporation, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 699,345, Jan. 22, 1968, now abandoned. This application Sept. 13, 1968, Ser. No. 759,739

Int. Cl. B32b 3/10

U.S. Cl. 161-36

13 Claims



Means for facilitating setting and construction of furnaces, kilns, ladles and similar equipment units subjected to high temperatures, comprising a resilient, compressible, elastomeric composition composed essentially of an organic plastic containing a finely divided heat-resistant inorganic filler dispersed therein. The composition acts as a sealant and bonding agent between refractory blocks and metallic elements of construction units and has utility as an expansion joint filler. The invention also relates to refractory construction units provided with adhering elastomeric composition surface layers having heat-resistant inorganic fillers adapted to act as bonding joint fillers under high temperatures of use, and method of making self-sealing refractory ceramic construction units.

3,616,109
SPLICE FOR PRESSURE-SENSITIVE ADHESIVE STOCK
Frank Miro, Huntington Station, N.Y.; Beverly M. Eagon, Scranton, and Seth Wheeler, Clark-Summit, Pa., assignors to Fitchburg Coated Products Inc., Moosic, Pa.

Filed June 18, 1969, Ser. No. 834,361

Int. Cl. B32b 3/10

U.S. Cl. 161-36

4 Claims



A slice for pressure-sensitive label stock including an insert member sandwiched between the adhesive and the release coat of the stocks to be joined. Splicing tapes are used to join the two sections of stock while the insert member prevents the tapes from fusing in the edge areas where the two stocks do not perfectly abut. The insert member includes at least two layers with at least one of the layers releasably adhered to the release coat thereby permitting ready removal of the matrix formed after diecutting labels from the stock.

3,616,110
PROGRESSIVE INJECTION MOLDED SHEET AND METHOD OF AND APPARATUS FOR MAKING THE SAME
Louis F. Kutik, 8720 S.W. 23rd Pl., Fort Lauderdale, Fla., and Erich W. Gronemeyer, 3430 Galt Ocean Drive, Fort Lauderdale, Fla.

Filed May 16, 1968, Ser. No. 729,694

Int. Cl. B32b 3/10; D03d 27/00; B29c 19/00

U.S. Cl. 161-37

8 Claims



A plastic sheet is disclosed which is made up of injection molded sections molded progressively and joined together at edges thereof during the molding process. The sheet may have integral bristles on one side thereof making it useful as a rug or carpet, but other uses of the invention are contemplated. The method includes the molding of plastic sections such that as each section after the first one is molded it welds to a previously molded section at an edge thereof, and the sections are advanced after each molding step so that a trailing edge of the last molded section seals the mold exit. The trailing edge may be provided with a thin flange which is softened by the molten material so that a weld is formed. Shrinkage of the plastic is controlled to prevent leakage of molten plastic from the mold around the last molded section and also to prevent buckling of the sheet. This is preferably done by providing keys in the mold which harness the plastic to the mold. Pins in the mold are used to form indentations in the sections to facilitate advancing the sections. Other pins slightly oversize in diameter and length serve as a lock for accurate alignment of the sections and also serve a sealing purpose.

3,616,111
PLASTIC LANDING PAD OF INTERCONNECTED PANELS
Harry Raech, Jr., San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 27, 1969, Ser. No. 802,827

Int. Cl. B32b 3/30

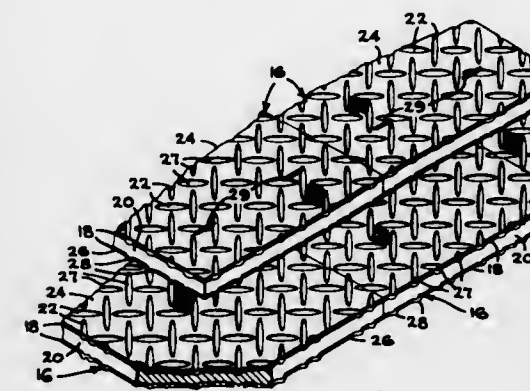
U.S. Cl. 161-37

8 Claims

A landing pad for helicopters is made of individual laminated panels having top and bottom laminae of woven

fiberglass and a relatively thick core lamina of a nonwoven organic fiber which is bonded to the said top and bottom laminae by a polyester resin extensively impregnated with a particulate filler. Upper and lower surfaces of the panels are textured with matching recesses and protuberances

is distributed over each nonadhering portion to prevent a concentration of stresses which would rupture the coating layer. The laminates of this invention are particularly useful



respectively which give the panels an interlocking characteristic that is effective when the panels are laid upon one another in separate layers. In final form the layers of laminated panels are stapled together to give a cohesive landing pad of high durability.

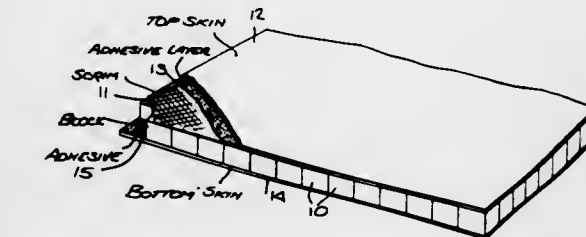
3,616,112
BALSA WOOD CORE IN A LAMINATED STRUCTURAL SANDWICH
Ramesh R. Desai, New Providence, N.J., assignor to Balsa Development Corporation, New York, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,076

Int. Cl. B32b 3/18

U.S. Cl. 161-37

6 Claims



A tessellated contour core blanket for use in structural laminates, the blanket being constituted by an array of blocks, preferably of end-grain balsa, adhesively secured to an open mesh scrim, the exposed ends of the blocks being sealed to prevent the admission therein of moisture or resin, whereby the blanket may be stored for prolonged periods without blanket warpage, and the blanket may thereafter be laminated to facing skins without printout effects.

3,616,113
POLYURETHANE LAMINATE AND METHOD OF FORMING SAID LAMINATE
John M. Sawyer, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 17, 1969, Ser. No. 834,021

Int. Cl. B32b 1/06, 3/26, 27/40

U.S. Cl. 161-39

6 Claims

A laminate of at least two layers including at least one flexible coating layer composed of a polyurethane composition for sealing separations in substrate layers, such as structural members, and the method of forming these laminates. The flexible coating layer covers adjacent surfaces of the substrate layer and the separation and is adhered to the substrate layer except in areas immediately adjacent to and directly over each separation, thus forming at least one nonadhering portion of the coating layer so that when the substrate layer moves due to thermal or mechanical forces substantially all of any stress associated with such movement

for sealing separation in the bulkhead compartment of ships, and the flexible coatings of such laminates are composed of polyurethane compositions having resistance to fuels and water hydrolysis.

3,616,114
REUSABLE COMPOSITE ADHESIVE SEALING TAPES
Tsuneji Hamaguchi, Osaka, and Hajimu Tanaka, Suita, both of Japan, assignors to Daiichi Shikogyo Kabushiki Kaisha, Hirakata; Tanaka-ya Shoji Kabushiki Kaisha and Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan, part interest to each

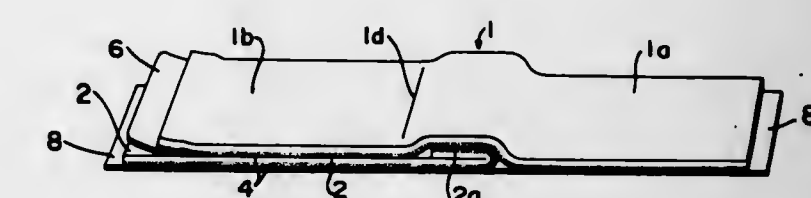
Filed Mar. 15, 1968, Ser. No. 713,347

Claims priority, application Japan, Mar. 15, 1967, 42/21607

Int. Cl. B32b 3/04

U.S. Cl. 161-39

11 Claims



Reusable, composite, adhesive sealing tapes for releasably interconnecting container parts and the like, such as corrugated boxes, paper bags, etc. The tapes, cut to a suitable length and width, include at least two tape portions or laminations, namely a main tape portion and a partly coplanar reinforcing tape portion; optionally, an auxiliary tape portion may also be provided.

The inner end of the reinforcing portion is firmly attached to the midportion of the main portion. The latter has a first area adapted to be attached to one side of a first container part, while a second area thereof, including its free end, is adapted to be attached to a second container part which should be releasably interconnected with said first container part; the reinforcing portion is at least partly attachable to the opposite side of the first container part. A turned-up section formed from the inner end of the reinforcing portion may constitute a hinge for said first area of the main portion when it is attached to the respective container part.

3,616,115
LIGHTWEIGHT BALLISTIC ARMOR
Norman Klimmek, Palos Verdes Estates, Calif., assignor to North American Rockwell Corporation

Filed Sept. 24, 1968, Ser. No. 762,044

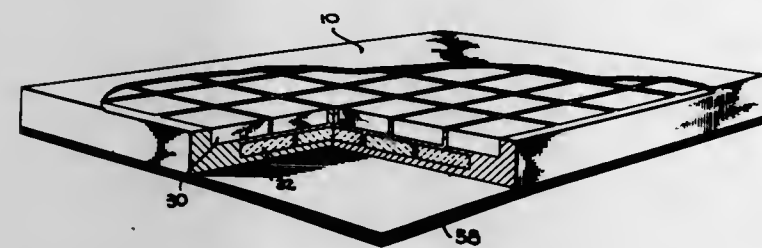
Int. Cl. F41h 5/04

U.S. Cl. 161-39

5 Claims

A lightweight composite armor plate is disclosed wherein successive layers of small discrete ceramic blocks are encapsulated within a metallic matrix by solid-state diffusion

bonding. Residual stress effects from the bonding step prestress the blocks in compression, whereby a greater

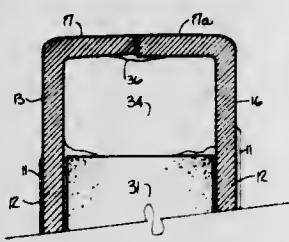


amount of energy from an impacting projectile is required to shatter the ceramic.

3,616,116
PANEL STRUCTURE OF METAL SHEETS ENCLOSING A LOW DENSITY CORE
Ronald J. McDonald, 10 Evergreen Ave., New Rochelle, N.Y.
Filed June 18, 1969, Ser. No. 834,273
Int. Cl. B37b 15/18

U.S. Cl. 161-39

6 Claims

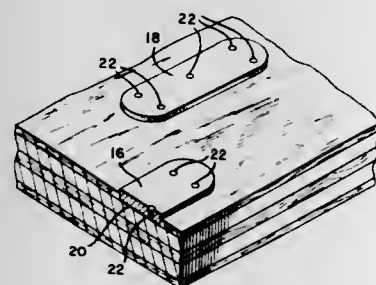


Tables and other articles of furniture having closely spaced-parallel substantially flat smooth stainless steel surfaces of substantial area joined by integral narrow transverse smooth stainless steel surfaces. They may be made by bending large thin stainless steel sheets at their margins to form flaps, cementing parallel sheets to a low-density core, welding the flaps together to form a raised weld bead between the bend lines and grinding down the bead and part of the surface of at least one flap.

3,616,117
METHOD OF PATCHING PLYWOOD PANELS AND THE PANEL PRODUCED THEREBY
Carol Dwight Anderson, Salem, Oreg.; Gerald Mack Wilson, Lyons, Oreg.; Robert Kenneth Molloy, Bayside, and Kenneth Floyd Durant, Arcata, Calif., assignors to Simpson Timber Company, Seattle, Wash.
Filed Mar. 29, 1967, Ser. No. 626,859
Int. Cl. B32b 7/08, 35/00

U.S. Cl. 161-41

3 Claims



Defects in the surfaces of plywood panels are routed and wood patches, with glue applied to their undersides, are seated in the routed-out sections of the panels. The patches are held in place in uniform contact with the routed-out panel sections by plastic tacks so that a cold-setting glue can be employed to bond the patches to the panels regardless of patch size.

3,616,118
PRESTRESSED FLOOR-COVERING PROTECTOR MAT
William Dwight Porter, 3002 Avenue L., Council Bluffs, Iowa
Filed July 12, 1968, Ser. No. 744,345
Int. Cl. B32b 1/04; B611 11/02

U.S. Cl. 161-44

2 Claims

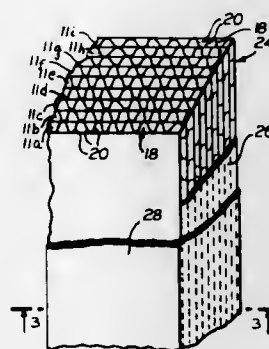


A mat for use beneath a desk chair for the protection of carpeting, and the like, therebeneath, which mat has a convex upper surface and a concave lower surface providing downwardly disposed peripheral edge portions for grippingly engaging the pile of the carpet upon which the mat rests while also facilitating the movement of a desk chair on an off the mat, as required, and further significantly reducing the possibility of a person catching their foot on the edge of the mat when stepping onto the mat. The underside of the mat is characterized by a multitude of downwardly projecting fibrous tentacles and intersecting scoring which materially assist the downwardly disposed peripheral edge portions in stabilizing the mat against sliding movement relative to the carpeting upon which it is utilized.

3,616,119
LIGHT CORE LAMINATED STRUCTURE
Edward Wukowitz, 29 Wells Ave., Congers, N.Y.
Filed Mar. 27, 1968, Ser. No. 716,371
Int. Cl. B32b 3/00, 3/28

U.S. Cl. 161-43

7 Claims

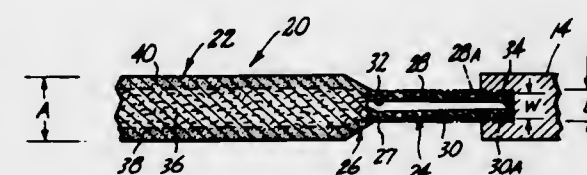


This specification discloses a laminate structure having a multi-ply corrugated board core to which coating is applied in such a way as to prevent delamination. The core is made of core unit sections that are cut from a block in a direction to have the flute passages exposed through the top and bottom faces of each core unit section. Some of the flute passages of the core slope in one direction and others slope in the opposite direction at acute angles to the face of the core to which the coating is applied. The coating extends into the flute passages for a part of their length and thus forms an undercut key structure that locks the coating to the core unit sections. There can be no delamination unless these keys break or the flutes tear, and because of the large number of keys and flutes (which may be up to 40 to 50 per square inch), a strong connection is obtained. The structure is used for curved laminates such as fiberglass boat hulls, and in the preferred construction the core is made of sections of substantially greater length than width and disposed so that the curvature is in the direction of the width of the sections. Units can be originally cut with lengthwise curvature so that no bending is required.

3,616,120
PANEL PRODUCT
Charles Herbert Warwick, Eugene, Oreg., assignor to Fibreboard Corporation, San Francisco, Calif.
Filed Apr. 24, 1968, Ser. No. 723,797
Int. Cl. B32b 1/04; E04c 1/10

U.S. Cl. 161-44

4 Claims



A decorative panel product formed through compressing and consolidating a mat of loosely organized, bondable wood particles. The panel includes a medial portion having one thickness and one density, and a marginal portion having a substantially lesser thickness and a greater density than the medial portion. The panel's marginal portion is slotted, whereby a pair of spaced substantially parallel flanges are defined which can be squeezed toward one another to facilitate fitting the extremities of the marginal portion into grooves in a supporting framework.

3,616,121
COMPOSITE IDENTIFICATION CARD
Jackson S. Freundlich, So. Orange, N.J., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 592,169, Nov. 4, 1966, Pat. No. 3,475,247
Filed July 23, 1969, Ser. No. 844,137
Int. Cl. G09f 3/02; B32b 3/02

U.S. Cl. 161-44

2 Claims



A pouch having at least one side transparent so as to visually expose material inserted in the pouch, and the pouch formed of two sheets united by bonding around the edges. The bonded edges are sufficiently stiff such that cutting away part of the edge leaves tab sections remaining which serve to identify the contents of the pouch for use in data machines.

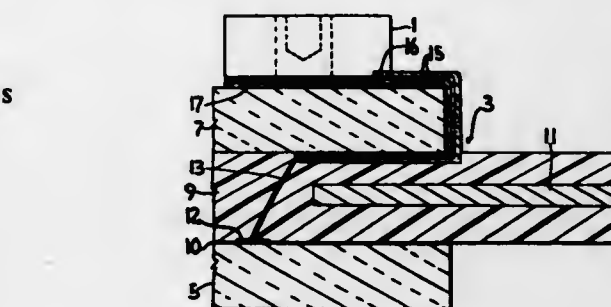
3,616,122
LAMINATED WINDOW PANELS
Dee R. Orcutt, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation of application Ser. No. 575,188, Aug. 25, 1966, now abandoned, which is a continuation of application Ser. No. 299,582, Aug. 2, 1963, now abandoned, which is a Continuation-in-part of Ser. No. 275,448, Apr. 24, 1963, abandoned, which is a Continuation-in-part of Ser. No. 261,996, abandoned
Filed June 30, 1969, Ser. No. 841,682
Int. Cl. B32b 3/02; D03d 11/00

U.S. Cl. 161-45

10 Claims

Laminated window panels comprised of an assembly of rigid, transparent sheets bonded together by plastic interlayer material and utilizing fiber glass reinforced thermosetting resinous material in marginal areas of the panels outside their viewing area (1) as protection for electrical terminal blocks and lead wire connections, (2) as interlayer inserts for the

prevention of delamination and/or cold chipping and for reinforcing the interlayer material, and (3) as edge frames or

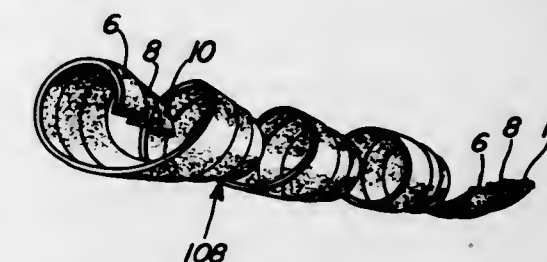


channeling disposed about the periphery of the panels for edge and interlayer protection.

3,616,123
HELICOID LAMINATE COMPRISING SEVERAL CONTINUOUS TIERED STRIPS
Harold J. Reynolds, Jr., Raritan; George P. Leistensneider, Somerville, and Angelo A. Forte, Raritan, all of N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed Jan. 29, 1968, Ser. No. 701,424
Int. Cl. F16l 9/14, 59/02

U.S. Cl. 161-47

10 Claims

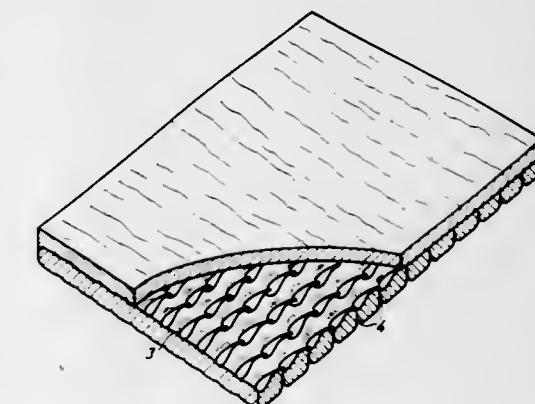


Helicoid products comprising several continuous tiered strips are made by superposing at least two continuous strips with their edges overlapped, incurvating the strips and durably adhering together the contacting faces of the strips. The resulting helicoid product may be conformed to a mandrel and cured, vulcanized or otherwise treated to acquire a durable tubular helicoid form. This technique is particularly useful in making helicoid coverings that may be repeatedly put on and removed from tubes, rods, wires and the like, as coverings, firesleeves, or insulation, for example.

3,616,124
COMPOSITE NONWOVEN FABRIC
Antonin Danhel, and Vaclav Mrstina, both of Brno, Czechoslovakia, assignors to Vyzkumny ustav pletarsky, Brno, Czechoslovakia
Filed May 27, 1969, Ser. No. 828,119
Claims priority, application Czechoslovakia, May 31, 1968, 40 06-68
Int. Cl. B32b 5/06

U.S. Cl. 161-50

8 Claims



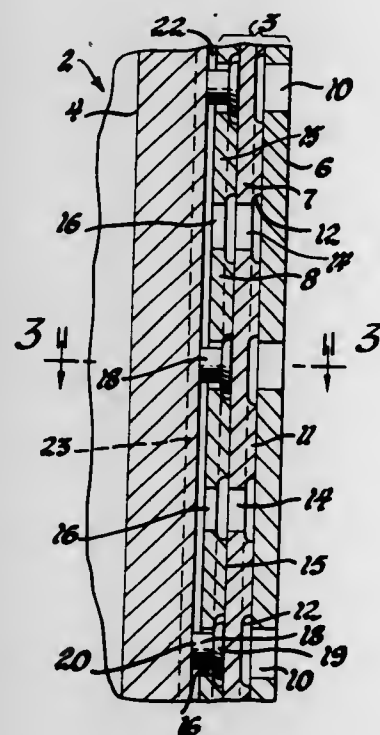
A composite nonwoven fabric composed of a plurality of superimposed nonwoven fibrous textile layers. This fabric

includes spaced-apart rows of chain-loops of threads consisting of the same type of fibers as the respective outer layer; these threads serving for reinforcing the respective outer layer. The fabric also includes a plurality of spaced needling connections passing through the fabric layers, securing the same to each other so as to form a coherent composite nonwoven fabric.

3,616,125
AIRFOIL STRUCTURES PROVIDED WITH COOLING MEANS FOR IMPROVED TRANSPIRATION
Charles E. Bowling, Speedway, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 4, 1970, Ser. No. 34,369
Int. Cl. B32b 3/06

U.S. Cl. 161-53

8 Claims

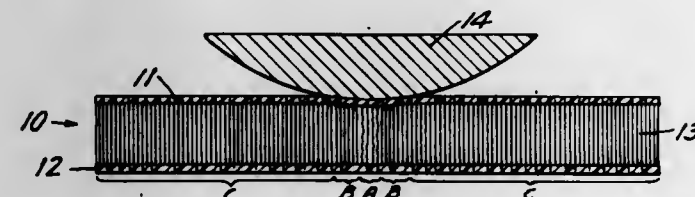


An airfoil has a structural core and a facing mounted on the core. The facing is in at least two layers with structure which defines cavities between these layers and holes through the layer nearest the core. Headed buttons trapped in the holes with stems extending through the holes are fixed to the core to retain the facing on the core. These buttons are mounted in the facing with some clearance so that relative expansion of the core and facing may occur. The facing may be porous. The core may include special provisions for bringing cooling air to the facing.

3,616,126
COMPRESSION ENERGY ABSORBING STRUCTURE
Barry F. Tungseth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Nov. 1, 1968, Ser. No. 772,669
Int. Cl. B32b 7/08

U.S. Cl. 161-53

11 Claims

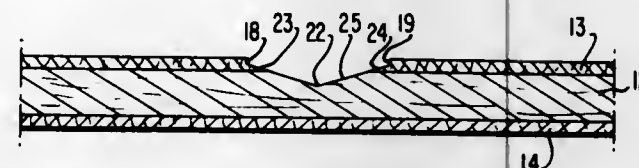


A padlike structure for absorbing compressive forces comprising two elastomeric sheets disposed in substantially parallel relationship and interconnected by closely spaced polymeric filament segments disposed normal to the plane of

the structure. The structure absorbs and stores energy imparted to it by means of a loading head, either the head or the structure having a convexly curved surface.

3,616,127
GROOVED PLYWOOD PANELING
Kenneth W. Guenther, Portland, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Jan. 14, 1970, Ser. No. 2,831
Int. Cl. B32b 3/30, 5/12, 2/13
U.S. Cl. 161-56

4 Claims

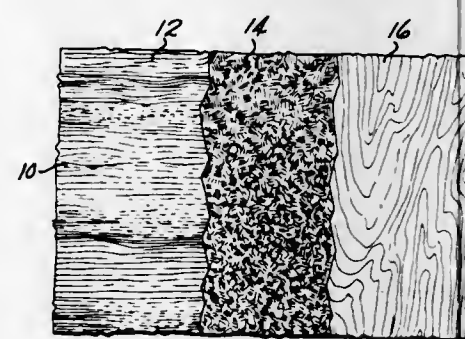


Prefinished plywood wall paneling having a face layer with a plurality of elongated and wide grooves which have a spacing and configuration giving the panel the feel and the appearance of a plurality of separate boards.

3,616,128
DIMENSIONALLY STABLE HARDWOOD PANEL AND A METHOD OF FORMING THE SAME
Norman E. Pacourek, Marshfield, Wis., assignor to Weyerhaeuser Company, Tacoma, Wash.
Continuation of application Ser. No. 667,683, Sept. 14, 1967, now abandoned. This application July 24, 1970, Ser. No. 64,060
Int. Cl. B32b 2/12

U.S. Cl. 161-56

7 Claims



A dimensionally stabilized plywood panel having an inner core of force-resistant material, face and back plies, the back ply having a grain direction perpendicular to the face ply.

3,616,129
LONGITUDINALLY STRETCHABLE NONWOVEN MATERIAL
Karl E. Sager, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 7, 1969, Ser. No. 813,982
Int. Cl. B32b 5/12

U.S. Cl. 161-57

7 Claims

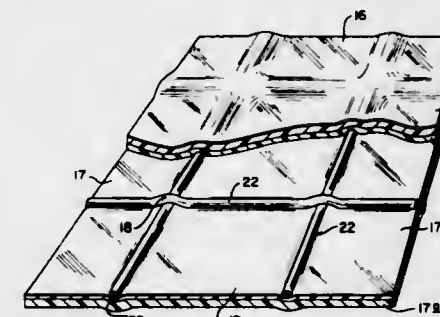


A longitudinally stretchable, nonwoven material and the method of making same are disclosed. A plurality of spaced-

apart, substantially parallel warp threads are drawn from their respective supply cans and over an adhesive applicator. The warp threads are laterally oscillated and deposited on the surface of a carrier sheet moving into a thread cross-laying apparatus to produce a generally sinusoidal pattern of threads on the carrier sheet. A plurality of spaced-apart, substantially parallel cross threads are then laid generally straight across the carrier sheet in a transverse direction as it moves through the cross layer and the cross threads are adhesively bonded to the warp threads where they cross one another. Provision is also made for introducing and laminating top and bottom layers of sheet material to the longitudinally stretchable, nonwoven material.

3,616,130
REINFORCED PLASTIC MATERIAL
John E. Rogosch, Baton Rouge, La., and Floyd B. Williams, Middletown, Ohio, assignors to Ethyl Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 634,560, Apr. 28, 1967, now abandoned. This application Sept. 27, 1967, Ser. No. 670,916
Int. Cl. B32b 5/12, 31/04; C09I 7/02
U.S. Cl. 161-57

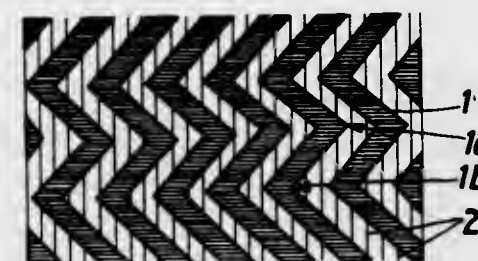
12 Claims



A flexible, reinforced laminated plastic sheet material made from two sheets of multilayer thermoplastic material having a web of reinforcing strands received therebetween. The two sheets of material are bonded to each other in the interstices provided in the web. The contacting side of each sheet of material is composed of a layer of a thermoplastic having a lower melting point or sealing temperature than the outer layer of the multilayer thermoplastic material. The inner layers are bonded to each other without the use of any adhesive by passing the two sheets and the enclosed web between rotating heated laminating rolls.

3,616,131
FABRICATED THERMOPLASTIC SHEET MATERIALS FOR THE INTERCONNECTION OF LAMELLAR BODIES
Frederik A. Hardick, Enschede, Netherlands, assignor to Luctem Etablissements, Vaduz, Liechtenstein
Filed Dec. 26, 1967, Ser. No. 693,331
Claims priority, application Germany, Dec. 29, 1966, L 55391
Int. Cl. B32b 5/12
U.S. Cl. 161-57

6 Claims



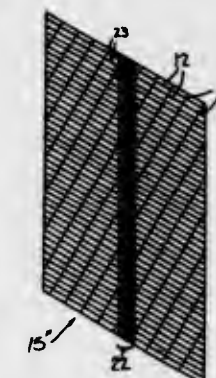
A fabricated thermoplastic sheet material is provided for the interconnection of two or more lamellar bodies such as textile sheet materials, paper or the like. The fabricated sheet material has strips of thermoplastic material interconnected by reinforcing threads which strips adhere and establish connection between the laminar bodies upon application of heat and pressure. An apparatus is also provided for

manufacturing the sheet material. The apparatus has a drum mounted for rotation about a horizontal axis and a thermoplastic dispensing device is arranged above the drum and is reciprocated back and forth to produce the thermoplastic strips on the surface of the drum. The strips of thermoplastic material are heated in a zone of the drum and thereafter reinforcing threads are pressed into the thermoplastic material to produce the sheet material in accordance with the invention.

3,616,132
TIRE CORD FABRIC HAVING EXTERNAL REINFORCING STRANDS
Werner W. Klingbell, Paterson, N.J., and Eugene H. Hartman, Venice, Fla., assignors to Uniroyal, Inc., New York, N.Y.
Filed Mar. 18, 1968, Ser. No. 713,935
Int. Cl. B32b 5/12, 5/28

U.S. Cl. 161-58

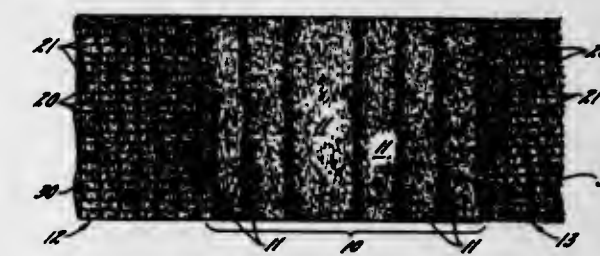
10 Claims



Distortion of tire cord fabric in tire-building operations is avoided by adhering to the pieces of cord fabric external strands arranged parallel to the lateral edges of the piece to reduce the stretch of the cord fabric, the strands taking longitudinal stresses as the pieces are pulled in the tire-building operation.

3,616,133
HEAVY-DUTY WIPE
Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 23, 1968, Ser. No. 788,987
Int. Cl. B32b 5/12
U.S. Cl. 161-57

6 Claims



An improved heavy-duty wipe made of nonwoven materials, and a method of producing the same. The wipe includes a central layer of multi-ply cellulosic tissue, a web or sheet of open mesh nonwoven crossed threads on each side of the central layer, and a thin applique of fine fibrous material bonded to the outer surface of each crossed-thread web. The central layer of multi-ply cellulosic tissue is bonded to both the warp threads and fill threads on the warp thread side of each of the two webs of nonwoven material, and the fibrous appliques are bonded to the fill thread sides of each web.

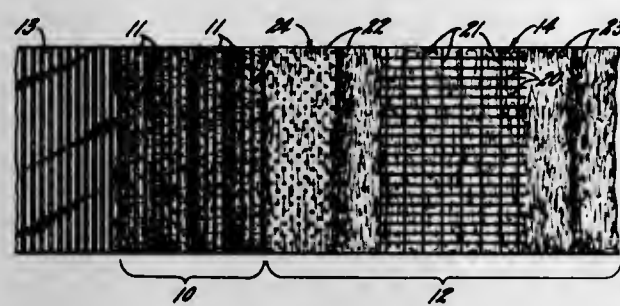
3,616,134
DISPOSABLE BATHMAT MATERIAL
Carlton L. Palenske, Kimberly-Clark Corp., Neenah, Wis.
Filed Apr. 1, 1969, Ser. No. 813,808
Int. Cl. B32b 5/12

U.S. Cl. 161-57

13 Claims

A disposable laminated bathmat having a central layer of absorbent cellulosic wadding, with a layer of plastic film

laminated to one side of the wadding as a water barrier, a layer of nonwoven fabric bonded to the other side of the central layer to provide strength and abrasion resistance, and



a layer to provide strength and abrasion resistance, and a layer of cellulosic tissue bonded to the other side of the nonwoven fabric.

3,616,135

CARPETLIKE MATERIAL

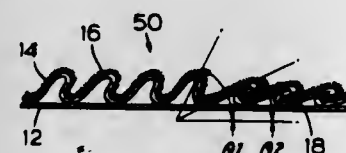
Silvano Tessiner, Grand Mere Inn, Grand'mere, Quebec, Canada, and Michael C. Wilkinson, 9216 Radom Drive, St. Louis, Mo.

Continuation-in-part of application Ser. No. 716,584, now abandoned. This application Mar. 21, 1969, Ser. No. 809,294

Int. Cl. B32b 3/28

U.S. Cl. 161-63

11 Claims



The present invention relates to an inexpensive carpetlike material and the preferred embodiments described in the disclosure are in the form of a corrugated paperboard base member to which a flock coating of fibrous material is adhesively secured to form a pilelike coating. The flock coating is applied by an electrostatic flocking process. The various types of base members described include: single-faced corrugated paperboard, double-faced corrugated paperboard having an embossed upper liner member and corrugated paperboard wherein the flutes of the corrugated medium are angularly inclined relative to the liner to provide increased resilience. The flock coating may be applied directly to the exposed corrugated surfaces or it may be applied directly to the exposed corrugated surfaces or it may be applied to an upper liner which may be in the form of a porous net.

3,616,136

FLOCKED FABRICS

Frank Endrenyi, Jr., Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 16, 1970, Ser. No. 20,035

Int. Cl. B32b 27/04, 27/14; C08f 29/56

U.S. Cl. 161-64

5 Claims

The disclosure described novel adhesive compositions having improved cold flex characteristics and solvent resistance. The adhesive composition comprises a combination of a particular type of water-insoluble, self-cross-linking acrylic polymer and an acid polymer. These adhesives are useful in the usual applications and, in particular, in preparing laminated fabrics and flocked pile fabric.

3,616,137

PILE WEATHERSTRIPPING WITH MONOFILAMENT THERMOPLASTIC BACKING

Robert C. Horton, Rochester, N.Y., assignor to Kessler Products Co., Inc., Youngstown, Ohio

Filed Nov. 3, 1969, Ser. No. 873,315

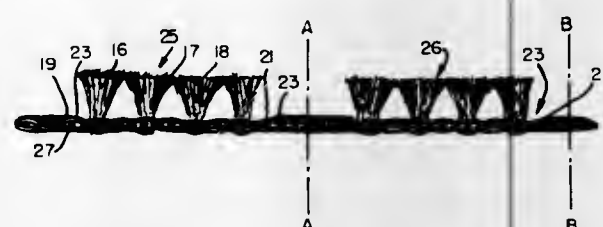
Int. Cl. D05c 17/02; E06b 7/16

U.S. Cl. 161-66

4 Claims

A pile weather stripping is provided having a tape fabric of monofilament thermoplastic yarn, heat-welded along the tape

edges to prevent ravelling. The weatherstrip is of the type having a central longitudinally extending woven pile area and two bare side areas for insertion into slots. The woven pile



may also be heat-welded to the fabric on the back side of the tape, and the bare side areas may be formed from originally all-pile material by heat-melting and crushing flat the pile along these side areas to fuse the pile and fabric together.

3,616,138

CARPET STRUCTURE WITH FOAMED SECONDARY BACKING

Victor Harold Wentworth, Uxbridge, England, assignor to Monsanto Chemicals Limited, London, England

Continuation of application Ser. No. 506,400, Nov. 4, 1965, now abandoned. This application Aug. 12, 1969, Ser. No.

871,757

Claims priority, application Great Britain,

Nov. 23, 1964, 47533/64

Int. Cl. D05c 17/02

U.S. Cl. 161-67

5 Claims

Carpets, particularly tufted carpets having a primary backing of hessian or jute, having a secondary backing which comprises an extruded foamed aliphatic thermoplastic resin having a glass transition temperature below ordinary room temperature. Preferably, the resin is an olefin polymer or copolymer, e.g., polyethylene, and the foamed resin has a predominantly closed cell structure, the majority of the cells having a diameter of 0.002-0.1 inch. The foamed resin can be up to 0.5-inch thick; can be in the form of a continuous sheet, a woven fabric or net, or a plurality of adjacent sheets; and, if desired, can be perforated, corrugated, or embossed. It can be fastened to the back of the carpet in any convenient manner, e.g., by sewing it in place or by adhering it by means of a suitable adhesive such as a pressure-sensitive adhesive, a latex adhesive, or a heat-sensitive adhesive.

3,616,139

MULTILAYERED THERMAL INSULATORS

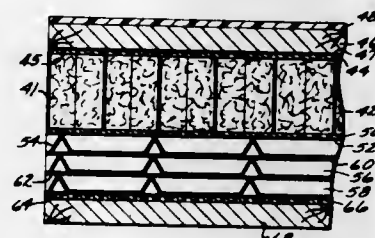
Peter Jones, 221 Verde Oak Drive, Hollywood, Calif.

Filed Jan. 21, 1969, Ser. No. 792,498

Int. Cl. B32b 3/12

U.S. Cl. 161-68

1 Claim



This invention relates to improvements in thermal insulators formed of multiple layers and which are arranged to take advantage of reflection while minimizing heat loss by conduction and affording high strength to oppose compressive and other forces. The embodiment illustrated comprises layers of material which form dead air cells separated, in the direction of thermal differential, by reflective coatings and layers. The walls that comprise the dead air cells of one layer are offset from the walls that comprise the dead air cells of another layer. In one embodiment the several layers are formed of honeycombed material. In another embodiment, the dead air cells of one layer are formed by honeycomb material and the dead air cells of other layers are formed by embossed reflective material.

3,616,140

RAIN EROSION RESISTANT MATERIAL FOR AIRBORNE VEHICLE

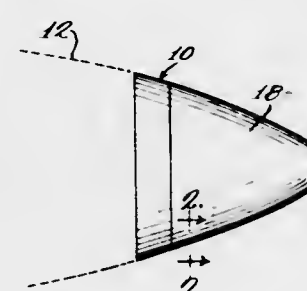
Robert L. Copeland, and Vance A. Chase, both of Marion, Va., assignors to Brunswick Corporation

Filed May 17, 1968, Ser. No. 730,027

Int. Cl. B32b 3/12; H01q 1/42

U.S. Cl. 161-68

6 Claims



A radome or other like structure defining a leading edge of an airborne vehicle, which is of light weight and formed to close tolerances, including a reinforced plastic shell which may be of glass fiber reinforced epoxy or polyester laminate, and a preformed rain erosion resistant coating or "boot" of thermoplastic material on the outer exposed surface. The thermoplastic material is a preformed coating having high electrical transparency or transmissibility and good abrasion and impact resistance. The coating can be secured to the shell by a suitable adhesive system.

3,616,141

FORMABLE HONEYCOMB CORE AND METHOD OF MAKING THE SAME

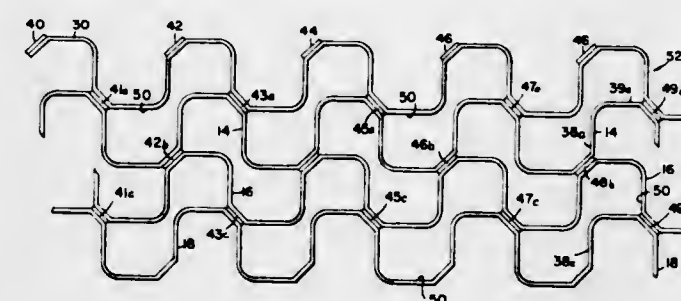
Donald C. Anderson, Lafayette, Calif., assignor to Hexcel Corporation, Dublin, Calif.

Filed Dec. 15, 1969, Ser. No. 884,862

Int. Cl. B32d 3/02; B32b 3/12

U.S. Cl. 161-68

10 Claims



A pack of honeycomb core material which is expandable to a nonplanar contour, the pack including a plurality of ribbons having undulating corrugations providing alternate zenith and nadir points, selected areas intermediate the zenith and nadir points being bonded to each other whereby the pack may be expanded to form a plurality of multiangular hollow cells.

3,616,142

STRUCTURAL LAMINATE FOR SEATING AND THE LIKE

Albert Schrottenboer, Grand Rapids, Mich., assignor to Sackner Products, Inc., Grand Rapids, Mich.

Filed Sept. 26, 1968, Ser. No. 762,813

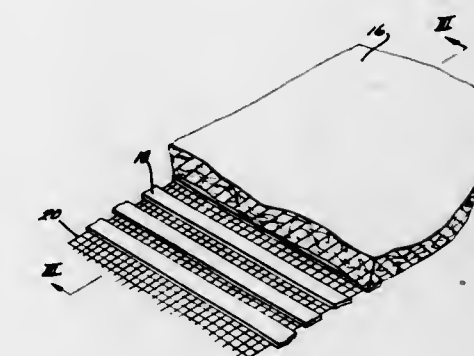
Int. Cl. D03d 3/00; B32b 5/02

U.S. Cl. 161-71

7 Claims

This disclosure relates to a structural laminate useful for constructing upholstered items such as furniture and seating for vehicles and the like. The laminate comprises a relatively thick layer of cushioning material and a bottom layer formed of a plurality of spaced, relatively stiff strips of material held together and to the side of the cushioning material by a loosely woven or knit web of starched woven material.

There is also disclosed a laminate-making process comprising the steps of applying glue to flat longitudinal strips, continuously feeding a plurality of the glued strips to the top of a web of padding to form a layer of glue strips on



3,616,143

BONDED MAT OF STRANDS OF CONTINUOUS GLASS FIBERS

Roland E. Langlois, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of application Ser. No. 585,710, Oct. 3, 1966, now abandoned, Division of Ser. No. 231,431, Oct. 18, 1962,

Pat. No. 3,318,746

Filed Mar. 24, 1969, Ser. No. 810,921

Int. Cl. B32b 17/02

U.S. Cl. 161-72

1 Claim

A bonded mat of strands of continuous glass fibers with a primary continuous coating preferably of binder material on the fibers, to hold the fibers in strand form, and on the outer surface of the strands and a secondary resinous binder material in particulate form positioned over and fused to the primary coating on the outer surface of the strands and uniformly distributed throughout the mat, the primary coating on the outer surface of the strands and the particulate secondary binder serving together to hold the strands together as a mat.

3,616,144

WALL-COVERING ELEMENTS

Michael J. Kenney, Sutton Coldfield, England, assignor to The Dunlop Company Limited, London County, England

Filed July 6, 1967, Ser. No. 651,552

Claims priority, application Great Britain, July 21, 1966,

32709/66

Int. Cl. B32b 5/02, 5/16

U.S. Cl. 161-83

15 Claims



A tile having a core portion of resin-bonded granular filler e.g. resin-bonded sand, and a resin-impregnated fibrous facing layer and backing layer. The facing layer provides the main strength of the tile and can carry high-quality designs. The core provides the bulk of the tile and as it is usually cellular it also provides insulating properties.

3,616,145
MAGNETIZED PRINTING BLANKET
 Edward A. Clifton, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio
 Filed Aug. 28, 1968, Ser. No. 755,952
 Int. Cl. B32b 25/02; B41n 9/00
 U.S. Cl. 161-87

12 Claims



A magnetized flexible printing blanket adapted to be self-attached to an associated unmagnetized support comprised of a ferrous material, wherein said blanket comprises an outer ink-receiving layer and an inner layer having a matrix of a rubberlike material and said matrix has a plurality of finely divided particles of magnet material embedded in it to provide optimum flexibility for said blanket.

3,616,146
PREGLUED WALL TEXTILES
 Jean A. Gabet, Croix, France, assignor to Societe Anonyme Dite: Etablissements Randon & Immain, Hem (Nord), France
 Filed Nov. 28, 1967, Ser. No. 686,098
 Claims priority, application France, Dec. 7, 1966, 86,559
 Int. Cl. C09j 7/04
 U.S. Cl. 161-88

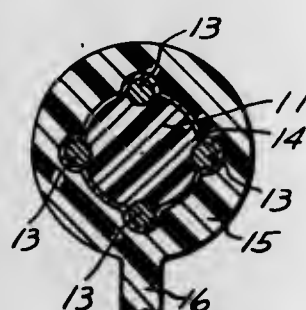
12 Claims



An adhesive sheet material comprising a dimensionally stabilized and water-resistant fibrous carrier, the back of which carries a continuous impermeable film adhering intimately to the carrier yet preserving its suppleness and conferring on it resistance to stretching and preventing it from fraying, a layer of dry adhesive on this film which is compatible therewith and adherent thereto to protect its suppleness against aging, insensitive to moisture, heat and cold, and adapted to be activated by a liquid medium prior to use.

3,616,147
WELT SEAMING LACE ASSEMBLY
 Jere B. Ambrose, Birmingham, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.
 Filed June 5, 1970, Ser. No. 43,755
 Int. Cl. B32b 5/28, 27/12
 U.S. Cl. 161-89

3 Claims

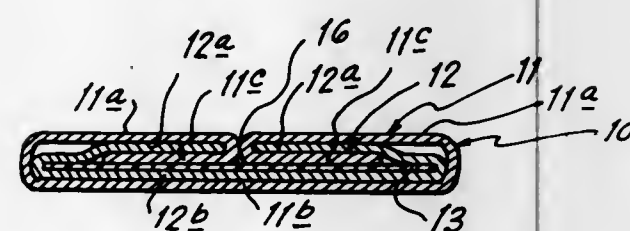


A welt seaming lace assembly, for forming welted seams for upholstered furniture, formed of a thin, flexible,

thermoplastic core covered with an open braided mesh formed of thread, and a heat reactable adhesive coating the thread and core, and a thin, thermoplastic, outer covering, including an integral sewing flange, hot extruded around the adhesive coated mesh covered core. The adhesive coating is applied hot to momentarily soften the core for both adhesively bonding to and partially embedding the thread in the surface of the core. Later, after cooling, the extrusion of the outer covering reactivates the adhesive for adhesively bonding the core and threads to and partially embedding the threads in the outer covering.

3,616,148
LAMINATED SHOULDER STRAP
 Irving Edelman, Franklin Square, N.Y., assignor to Maldrite Novelty Corp., Long Island City, N.Y.
 Filed June 22, 1970, Ser. No. 47,984
 Int. Cl. A41f 15/00; B32b 3/02
 U.S. Cl. 161-89

4 Claims



A shoulder strap material for articles of feminine wearing apparel has an outer shell or envelope of nylon tricot fabric enclosing a cotton fabric tape to which such shell or envelope is bonded by a hot melt or thermoplastic. In the apparatus for producing such strap material, folded side portions of a nylon tricot fabric tape which constitutes the shell or envelope are urged laterally toward each other to close a longitudinal medial seam of the strap material before the bonding is completed by passage through a set of nip or pressure rollers.

3,616,149
DIMENSIONALLY-STABLE FABRIC AND METHOD OF MANUFACTURE
 Robert C. Winckhofer, 4753 Stornoway Drive; Gene C. Weedon, 5431 Lingle Lane, Richmond, Va., and George H. Collingwood, 3202 Clay St., Hopewell, Va.
 Filed May 7, 1968, Ser. No. 727,327
 Int. Cl. D04h 1/04; D03d 15/02; D02g 3/36
 U.S. Cl. 161-89

36 Claims

Articles are manufactured from heat-treated fabric composed of filaments prepared from blended fiber-forming polymers having different chemical properties, at least one of the fiber-forming polymers being dispersed as fibrils in a lower melting point polymeric matrix. The article is produced by preforming the fabric, during production of the fabric itself or by subsequent operation, and heating the latter to a temperature above the melting point of the matrix forming material but below the melting temperature of the dispersed fibrils to set the fabric in its preformed shape. In general the treated fabric is characterized by high stiffness, moldability, dimensional stability, and resistance to mechanical abuse and wrinkling.

3,616,150
LAMINATED ARTICLE
 Robert Borge, Lynbrook, N.Y., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
 Filed Dec. 26, 1967, Ser. No. 693,184
 Int. Cl. B32b 7/14; D06m 17/00
 U.S. Cl. 161-89

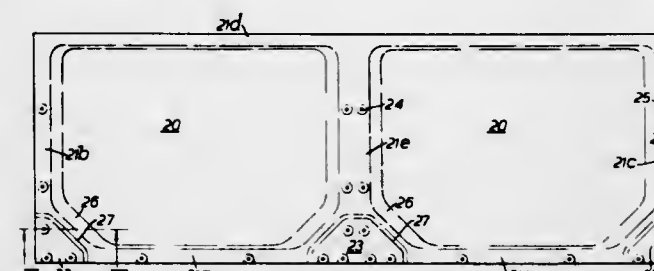
6 Claims

A laminated article comprising an outer layer of a textile fabric and an inner layer of a knitted fabric prepared from a

spun yarn, said layers being bonded together with an adhesive. These laminated articles exhibit improved thermal properties.

3,616,151
PLASTIC SHEET HAVING THICKENED MARGINS AND REINFORCED EYELETS IN MARGIN AREAS
 Gabriel Racopoulos, Athens, Greece, assignor to Elliniki Klomihania Plastikon II "Ebeby" Anonyms Eteria, St. John Rentis, Athens, Greece
 Filed Feb. 2, 1968, Ser. No. 702,608
 Int. Cl. B32b 3/02, 3/10
 U.S. Cl. 161-44

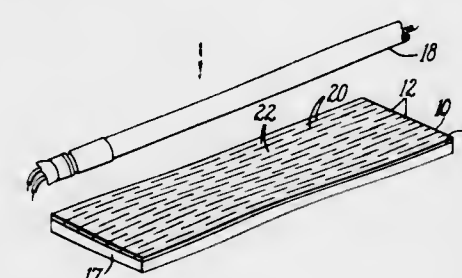
5 Claims



A reinforced plastics sheet having integral anchorage points around its periphery and a method of manufacturing such a sheet by passing plastics material between recessed rolls.

3,616,152
RESIN FILMS
 Edmond A. Chandler, Winchester, Mass., assignor to USM Corporation, Boston, Mass.
 Filed May 31, 1968, Ser. No. 733,576
 Int. Cl. B32b 3/10
 U.S. Cl. 161-109

7 Claims



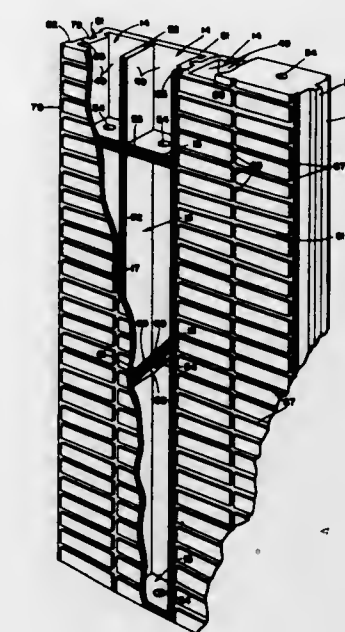
This invention is concerned with a thin film of thermoplastic resin adhesive with a special arrangement of slits or cuts and a method of adhesive deposition or bonding in which the film of adhesive is applied to one surface, heat is applied to bring the adhesive to active condition and cause the film to assume a pattern directly related to the arrangements of slits or cuts and particularly effective for bonding.

3,616,153
HOLLOW STRUCTURE OF STACKED SHEETS
 Martin L. Downs, Appleton, Wis., assignor to Thilmany Pulp and Paper Company, Kaukauna, Wis.
 Filed Mar. 10, 1969, Ser. No. 805,646
 Int. Cl. B32b 3/12; E04c 2/24
 U.S. Cl. 161-113

2 Claims

A hollow structure is formed of thin sheets of material such as, for example, paper, paperboard or Gypsum with preformed openings in the sheets. The sheets are stacked in a programmed sequence to define a cavity of a predetermined shape within the interior of the article. The exterior edges of the sheets are also programmed in sequence to define the desired exterior surface for the article such as, for example, a simulated brick wall surface. By appropriately programming the sheets with interiorly disposed portions, it is possible to form and shape internal elements within the hollow cavity.

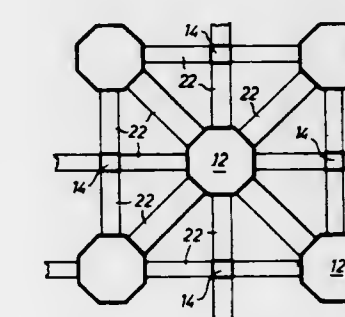
The method of forming the article includes the bonding of the sheets such as, for example, by flooding the hollow cavity



with the bonding agent and permitting penetration of the bonding agent into the stacked sheets.

3,616,154
NONWOVEN OPENWORK NET STRUCTURE OF THERMOPLASTIC MATERIAL
 James Dow, Thaxted, Essex; Albert George Patchell, Welwyn Garden City, and Ronald Lloyd, Sawbridgeworth, all of England, assignors to T. J. Smith & Nephew Limited, Hull, England
 Filed Mar. 17, 1969, Ser. No. 807,884
 Claims priority, application Great Britain, Mar. 20, 1968, 13411/68
 Int. Cl. B32b 3/10
 U.S. Cl. 161-113

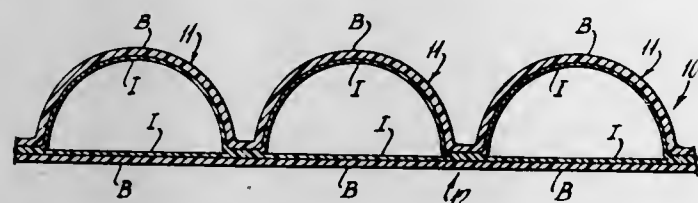
10 Claims



A nonwoven netlike openwork structure of thermoplastic material is provided, comprising a plurality of bosses arranged in a plurality of rows extending substantially uniformly throughout the structure, substantially all of which bosses are integrally joined to at least two other such bosses by bands of thermoplastic material, said bosses being of at least two different configurations, and the area of the structure between the bosses and the bands being substantially devoid of thermoplastic material. If desired the structure may also include portions in which all the bosses are of substantially the same configuration.

3,616,155
CELLULAR LAMINATE MADE FROM TWO THERMOPLASTIC SHEETS HAVING POLYVINYLIDENE CHLORIDE COATINGS ON FACING SIDES OF THE SHEETS

Marc A. Chavannes, New York, N.Y., assignor to Sealed Air Corporation
 Division of Ser. No. 336,097, Dec. 26, 1963,
 Pat. No. 3,405,020
 Filed June 26, 1968, Ser. No. 740,188
 Int. Cl. B32b 17/34, 27/32, 31/2
 U.S. Cl. 161-119 2 Claims



An improved cellular product formed of multiply laminates wherein at least one of the laminates is embossed and the other of the laminates seals the embossments, each of the laminates consisting of at least a plastic base material and a gas-imperious coating and wherein at least one of the coatings is protected by the base material.

3,616,156
TEMPORARY MOUNTING SHEET FOR ADHESIVE-SURFACED ARTICLES

Charles F. Scholl, Wilmette, Ill., assignor to The Scholl Mfg. Co., Inc., Chicago, Ill.
 Filed Feb. 25, 1969, Ser. No. 801,970
 Int. Cl. B32b 3/30
 U.S. Cl. 161-121 4 Claims



Temporary mounting or backing sheet to which articles having a pressure-sensitive adhesive surface are attached for the protection of the adhesive surface pending removal therefrom for use by the ultimate consumer, such articles being of the general nature of surgical pads such as corn and callous pads, finger bandages, moleskin sheets, and the like.

3,616,157
EMBOSSED NONWOVEN WIPING AND CLEANING MATERIALS

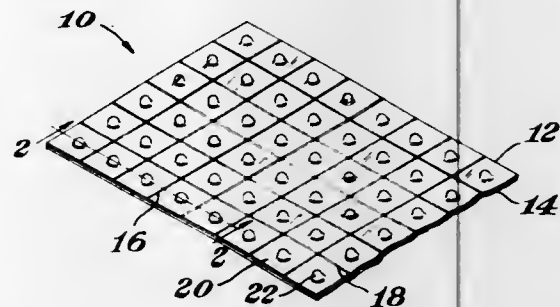
J. Harold Smith, Amherst, Mass., assignor to Johnson & Johnson
 Filed Aug. 8, 1969, Ser. No. 848,502
 Int. Cl. A471 25/00; B32b 3/00
 U.S. Cl. 161-124 15 Claims



An embossed nonwoven fabric having a textured character and fabriclike qualities of softness and hand and suitable for wiping surfaces having aqueous and/or oleaginous liquids and/or more viscous semisolids thereon comprising a web containing at least one layer of overlapping, intersecting fibers, a pattern of intermittently spaced, embossed, compacted or densified fibrous areas lying in the planes of both surfaces of said web of overlapping, intersection fibers, and a pattern of unembossed, uncompacted fibrous portions

lying between said planes and connecting said embossed, compacted fibrous areas.

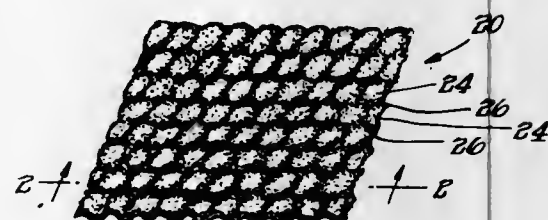
3,616,158
CUSHION-PACKAGING MATERIAL, assignor to Louis C. Rubens, Midland, Mich. and The Dow Chemical Company, Midland, Mich.
 Filed Sept. 9, 1968, Ser. No. 758,509
 Int. Cl. B32b 1/00, 3/26, 27/00
 U.S. Cl. 161-127 10 Claims



An effective flexible cushion-packaging material is obtained by sealing together upper and lower layers of film in a diamond, rectangular, circular or a like shaped pattern to form a plurality of individual compartments or packets, and encapsulating in each compartment particles of an expandable synthetic resinous thermoplastic material. The particles in their nonexpanded condition occupy a small volume and the composite material can be tightly rolled or packaged in a dense state for shipment or storage. When the material is to be used, it is passed into a heating zone, as for example, between the electrodes of a high-frequency dielectric heating unit to cause rapid expansion of the particles to a low density cellular state.

3,616,159
CONTROLLABLY ORIENTED FIBROUS PRODUCT

Ewald A. Kamp, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
 Filed Nov. 21, 1968, Ser. No. 777,698
 Int. Cl. B32b 3/00
 U.S. Cl. 161-128 8 Claims



A nonwoven fibrous pad comprises a three-dimensional network of individual fibers having a surface textured with a pattern of undulating elevations separated by a respective pattern of undulating depressions. Bonding means interconnect the fibers where they cross and contact each other, and each of the elevations comprises a structural dome in which the ratio of cap wall unit weight to average web unit weight is less than 1.0.

The method of making such a fibrous pad includes the step of subjecting an unbonded web of mechanically engaged fibers to successive forming operations between partly meshing, multiply clogged work members relocating fibers from the regions forming the peaks of the elevations to the regions forming the sidewalls thereof.

Apparatus for producing a fibrous pad of the type described comprises a pair of fiber-orienting arrangements, one of which includes means forming a traveling cog surface and the other of which includes a plurality of synchronized cog members meshing successively with the cog surface. One of the fiber-orienting arrangements includes a plurality of closely laterally spaced cog elements having channels

therebetween aligned generally with the direction of travel of the cog surface, and a conveyor belt arrangement is disposed partly in the channels and diverges from a meshed region of the fiber orienting arrangements for feeding a fibrous web into the orienting arrangements or stripping a processed web therefrom.

3,616,160
DIMENSIONALLY STABLE NONWOVEN WEB AND METHOD OF MANUFACTURING SAME

Robert C. Winckhofer, Richmond; Gene C. Weedon, Richmond, and George H. Collingwood, Hopewell, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.
 Continuation-in-part of application Ser. No. 727,327, May 7, 1968, and a continuation-in-part of 727,325, May 7, 1968.
 This application Dec. 20, 1968, Ser. No. 785,742
 Int. Cl. D04h 1/04, 3/14; D02g 3/36
 U.S. Cl. 161-150 16 Claims

Nonwoven web materials are formed from multiconstituent filaments having the ability to self-bond without substantial polymer flow, disfiguration, or cross-sectional flattening when heat-treated, said multiconstituent filaments being spun from at least two different polymeric materials such that, in a given filament, a first fiber-forming polymeric material defines a matrix and a second polymeric material is dispersed therein in the form of discontinuous fibrils, said matrix comprising at least 50 percent by weight of the filament and having a lower melting point than said dispersed fibrils. The multiconstituent filaments may be combined with other fibrous or additive materials in a variety of ways depending on the use intended for the web.

3,616,161
TEXTILE AND PAPER LIKE MATERIAL

Herbert Bartl, Cologne, Stammheim, and Frank Wingler, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
 Filed May 3, 1968, Ser. No. 726,600
 Claims priority, application Germany, June 30, 1967, F 52828
 Int. Cl. B32b 5/16 4 Claims

A sheet-form product having a thickness from 10 μ to 1 mm. comprising a matted together fused plurality of hollow beads, said hollow beads prior to matting and fusing having a diameter of from 10 μ to 3 mm. and comprising a copolymer of (a) 70 to 92 parts by weight of vinyl chloride and (b) 30 to 8 parts by weight of ethylene or 30 to 8 parts by weight of a mixture of ethylene and propylene containing 0.1 to 15 parts by weight of propylene. These products are useful as substitutes for paper, fleeces and nonwoven fabrics.

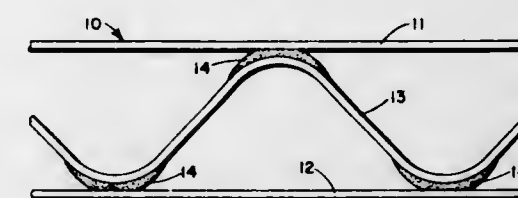
3,616,162
AUTOGENOUSLY INTERCONNECTED AND COMPRESSED POLYSTYRENE PEARLS

Jean H. Noziere, Clermont, France, assignor to Compagnie de Saint, Gobain, Neuilly sur Seine, France
 Filed Jan. 21, 1969, Ser. No. 792,402
 Int. Cl. B32b 5/08, 5/14, 5/32
 U.S. Cl. 161-133 10 Claims

Objects of expanded polystyrene pearls are made in sandwiches of which the layers differ in their constitution, the size of the pearls, their densities and the like. Such objects are stronger, more flexible, and provide better sound and heat insulation than objects of like thickness made from a single type of material. Sandwiches of cellular polystyrene and cellular polysulfone, and sandwiches of different kinds of cellular polystyrene, or different polysulfones exemplify the invention. Novel machinery is provided for making the new materials.

3,616,163
CORRUGATED FIBERBOARD

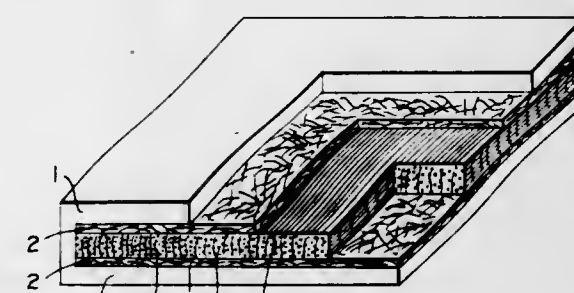
Abraham J. Reisman, Springfield, Mass., assignor to Atton Box Board Company, Alton, Ill.
 Filed July 18, 1969, Ser. No. 843,130
 Int. Cl. B32b 3/28, 27/42; C08g 37/16
 U.S. Cl. 161-133 4 Claims



Corrugated fiberboard which resists deterioration in strength when in the presence of moisture or water, and intermediate resin treated medium and liner sheet members useful in the manufacture thereof. Such board is made by treating medium and, optionally, liner members with a modified phenol aldehyde resole resin composition and thereafter bonding corrugated medium to liner members with a thermosetting urea-starch-formaldehyde adhesive system.

3,616,164
CONVEYOR BELT AND A PROCESS FOR THE MANUFACTURE THEREOF

Katsukiyo Tanimoto; Tamio Urakawa, and Sotaro Itadani, all of Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Sakazu, Kurashiki City, Okayama Prefecture, Japan
 Filed Jan. 27, 1969, Ser. No. 794,248
 Claims priority, application Japan, Jan. 30, 1968, 43/5568, June 27, 1968, 43/54547
 Int. Cl. B32b 3/18, 5/08
 U.S. Cl. 161-141 13 Claims



A conveyor belt in which the rubber cover is bonded with the core impregnated with an adhesive, characterized in that the core is a nonwoven sheet consisting of a filamentary layer of longitudinally paralleled synthetic filaments or chemical filaments and web layers of random or carded staple fibers which are superposed on the top and bottom of the filamentary layer, said filamentary layer being composed of substantially nontwisted and noncrimped filaments, and the web layers being composed of crimped staple fibers, that the filamentary layer and the web layers are superposed and integrated by needling, that the nonwoven sheet is sufficiently impregnated with an adhesive, that the weight ratio of the filamentary layer to the web layers ranges 5:1 to 1:1 and that the said adhesive is of rubber-type, and a process for the manufacture thereof.

3,616,165
SUPER-STRONG CORD AND TAPE COMPOSED OF POLYVINYL ALCOHOL FIBERS

Tetsuo Nishi, No. 24-10, 7-chome, Umeda, Adachi-ku, Tokyo, Japan
 Filed Apr. 28, 1967, Ser. No. 634,509
 Claims priority, application Japan, May 4, 1966, 41/27891, May 4, 1966, 41/27892
 Int. Cl. D02g 3/36, 3/40
 U.S. Cl. 161-143 6 Claims

Cord and tape composed of continuous polyvinyl alcohol fibers which were highly strengthened by repeatedly immersing in the same kind of polyvinyl alcohol solution.

3,616,166 ADHESIVE COMPOSITION AND BONDED NONWOVEN FABRICS

Louis E. Kelley, Wyncote, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 1, 1969, Ser. No. 812,416

Int. Cl. C08f 29/46, 29/50; C09j 3/14

U.S. Cl. 161-148

6 Claims

This invention is concerned with adhesive compositions having special use as a binder for nonwoven fabrics and comprises a "polyblend," that is an aqueous dispersion of two different polymers obtained by emulsion polymerization. The first component of the polyblend is a polymer of ethyl acrylate having relatively low molecular weight such as from about 150,000 up to 300,000 viscosity average. The other component is an addition polymer made by emulsion polymerization of ethylenically unsaturated monomers comprising one or more members which when homopolymerized tend to produce hard polymers so that the emulsion polymer is one having a minimum film forming temperature (MFT) of at least about 50° C.

3,616,167 STAPLE FIBRE FABRICS AND METHOD OF MAKING THE SAME

Raymond George Gosden, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 6, 1970, Ser. No. 17,222

Claims priority, application Great Britain, Mar. 12, 1969, 13,022/69

Int. Cl. D04h 1/04

U.S. Cl. 161-150

9 Claims

The invention provides for a yarn or fabric containing bicomponent staple fibers wherein the staple fibers comprise two components existing in a sheath/core relationship, the core component having a lower melting point than the sheath component. Upon heat treatment the core component softens and exudes from the cut end portions of the staple fibers and bonds to adjacent fibers on cooking.

3,616,168 NONWOVEN FABRIC FROM PLIES OF PLASTIC

Paul L. Johnstone, Greenville, Del., assignor to Hercules Incorporated, Wilmington, Del.

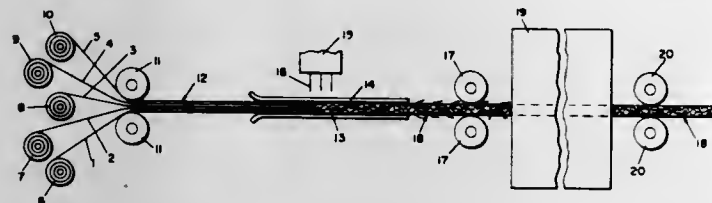
Division of Ser. No. 619,739, Mar. 1, 1967, Pat. No. 3,484,916

Filed Aug. 13, 1969, Ser. No. 862,130

Int. Cl. D04h 13/00, 5/02, 5/08

U.S. Cl. 161-154

1 Claim



This invention relates to a nonwoven fabric made from a plurality of layers of a uniaxially oriented plastic film which are needed by a group of barbed needles to split the film into filaments, with some of the filaments being broken and the ends thereof worked into the fabric, the present invention being characterized by the use of a composite two-ply film which, after needling, is subjected to heat whereby the free ends of the broken filaments will curl because of the uneven shrink characteristics of the two plies and thus cannot readily be pulled from the fabric.

3,616,169 WEBS AND NONWOVEN FABRICS OF CHROMED COLLAGEN FIBERS

Hiroshi Okamura, Tokyo, Japan, assignor to Kazunori Wakabayashi, Zushi; Hisao Sato, Tokyo and Fuji-Boseki, Kabushiki Kaisha, Tokyo, Japan, part interest to each

Continuation-in-part of application Ser. No. 645,827, June 13, 1967, now abandoned. This application May 28, 1970, Ser. No. 41,516

Int. Cl. B32b 9/02, 5/26; D04h 1/46

U.S. Cl. 161-156

6 Claims



Webs or nonwoven fabrics are produced from chromed collagen fiber having mean fiber length of about 1 to 5 cm. which are obtained by chemical or physical treatment of chromed leather. The webs and nonwoven fabrics so produced and articles manufactured therefrom exhibit excellent moisture absorption-release performance which is very similar to that of natural leather. Two or more of the thin sheets of the nonwoven fabric so obtained may be laminated to yield products having varying properties. The fabrics may be preferably used as a base for artificial leather particularly for use in making shoes.

3,616,170 FOAMED SHEET FOR MAKING STIFFENING ELEMENTS

Addison W. Closson, Jr., Proctor Laminar Corp., 32 Clavin Road, Watertown, Mass.

Continuation-in-part of application Ser. No. 847,724, Aug. 5, 1969. This application June 1, 1970, Ser. No. 42,483

Int. Cl. B32b 3/26, 7/00; A43b 13/42

U.S. Cl. 161-159

6 Claims

A novel sheet material particularly useful in formation of a stiffening structure for incorporation into shoe counters and the like, the structure comprising a foam sheet and a fabric sheet adherent thereon, the foamed sheet being formed of a thermoplastic elastomer and accounting for the major part of the thickness of the completed element.

3,616,171 METHOD OF MAKING A FOAMED ARTICLE AND SAID ARTICLE

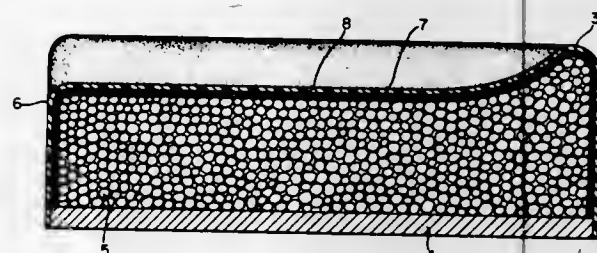
John Donald Hoskinson, Sr., Lancaster, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 3, 1968, Ser. No. 764,703

Int. Cl. B32b 7/04

U.S. Cl. 161-160

1 Claim



This invention relates to a foamed article having a foamed core and a vinyl resin skin wherein the inner layer of the skin adjacent the foam contains asbestos fibers.

3,616,172 FOAM COMPOSITES FOR FILLING ENCLOSED SPACES

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1969, Ser. No. 792,500

Int. Cl. B32b 5/16; B29d 27/00

U.S. Cl. 161-161

5 Claims

Composites of plastic materials for filling enclosed spaces are prepared by coating the surface of a shaped core material with a layer of expandable resin particles plus a binder such as asphalt. The composite is then placed within the cavity to be filled and heated whereby the rest of the enclosed space is filled with the core material and the expanded particles and binder. The core material may comprise thermostable expandable cellular material. Alternately, the layer of expandable resin particles with the binder can be placed in enclosed spaces in the absence of the shaped core material and expanded to fill the void.

3,616,173 FIRE RESISTANT WALLBOARD

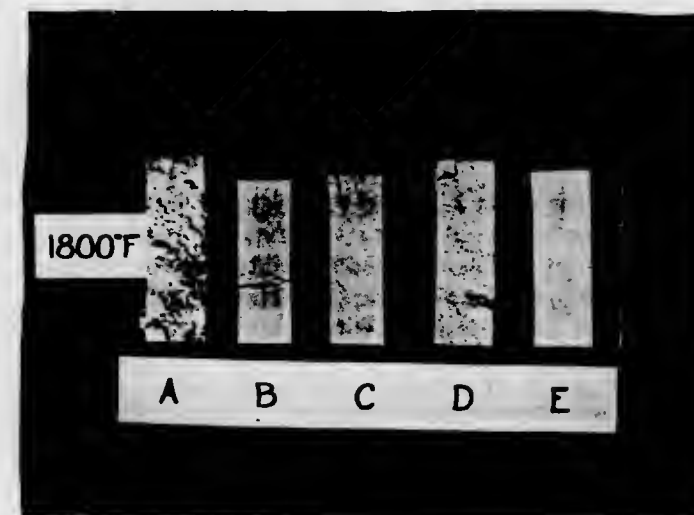
George W. Green, Portland, Oreg., and Donald G. Sundberg, Newark, Ohio, assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Aug. 29, 1967, Ser. No. 664,021

Int. Cl. B32b 13/02; C04b 11/00

U.S. Cl. 161-162

27 Claims



Fire resistant wallboard having a gypsum core of improved fire resistant properties in combination with relatively low density properties is described. Core compositions having such properties are described as comprising gypsum, glass fibers and either clay, colloidal silica, or colloidal alumina or mixtures thereof. To such core compositions there can also be added unexpanded vermiculite for the purpose of further improving the fire resistant properties of the core.

3,616,174 JOINTS FOR INSULATING ELECTRICALLY CONDUCTIVE SURFACES

John Stuart Atkins, Redditch, England, assignor to Alkaline Batteries Limited, Redditch, England

Filed Oct. 13, 1967, Ser. No. 675,047

Claims priority, application Great Britain, Oct. 17, 1966, 46323/66

Int. Cl. B32b 3/00

U.S. Cl. 161-162

2 Claims

An adhesive for mechanically securing together but electrically insulating two surfaces, which may be electrically conducting, comprising an epoxy resin mixed with small glass spheres.

3,616,175 CHAMOISLIKE NONWOVEN FABRIC

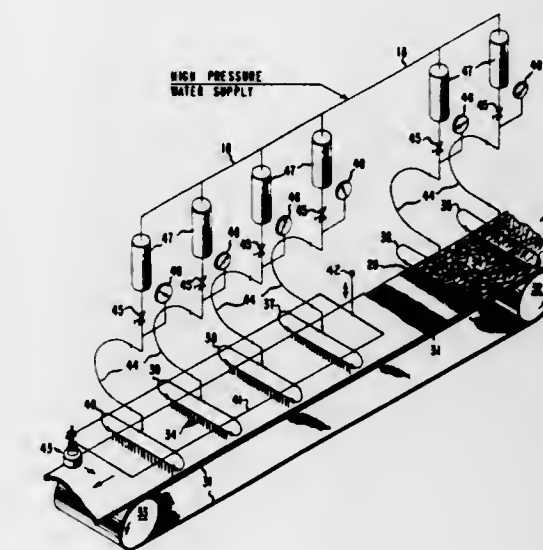
Shee Lup Jung, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed June 16, 1969, Ser. No. 833,823

Int. Cl. B32b 5/16

U.S. Cl. 161-164

5 Claims



Chamoislike nonwoven fabric weighing between 1 and 9 ounces per square yard is produced from a loose web of rayon fibers of up to 1.0 denier per filament maximum by traversing the web with high energy jet streams of water to entangle the fibers and form a strong, durable fabric characterized by a fiber entanglement completeness of at least 0.6 and a fiber entanglement frequency of at least 30 per inch. A substantially nonpatterned appearance is achieved by supporting the web on a fine mesh screen and oscillating the traversing streams. Properties of the fabric are disclosed to be comparable to chamois for wiping water from surfaces.

3,616,176 POLYAMIDE DECAL

George A. Jachimowicz, Kankakee, Ill., assignor to General Mills, Inc.

Filed Nov. 7, 1967, Ser. No. 681,231

Int. Cl. B44c 1/16; C09j 7/00

U.S. Cl. 161-165

7 Claims



There is disclosed a dry thermal transfer decal consisting of a single polyamide film having decoration thereon which film serves as a carrier for the decoration, a protective coating for the decoration and the adhesive layer. The polyamide is the thermal amidification product of essentially equivalent amounts of a polymeric fat acid having a dimeric fat acid content greater than 80 percent by weight and of a diprimary diamine.

3,616,177 LAMINAR STRUCTURES OF POLYIMIDES AND WIRE INSULATED THEREWITH

Carl Gumerman, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 17, 1969, Ser. No. 858,890

Int. Cl. H01b 3/44; B32b 27/30, 27/28

U.S. Cl. 161-165

4 Claims

A laminar article is provided of a layer of a polyimide and a layer of a fluorinated polymer, which structure is suitable in the form of narrow tapes for electrical insulation uses.

3,616,178
ANCHOR-COATED BIAXIALLY STRESS-ORIENTED PLASTIC SHEET LAMINATED TO RUBBER-COATED PAPER FOR USE AS LETTERPRESS AND OFFSET-PRINTING BLANKET

Emanuel Gurin, Guaynabo, and Antonio Vazquez, Carolina, both of P.R., assignors to David M. Company, Hato Rey, P.R.

Filed Apr. 11, 1969, Ser. No. 815,316
 Int. Cl. B32b 27/10; B41f 29/00; C09j 7/02
 U.S. Cl. 161-167 10 Claims



Slippage resistant, flexible packing blankets for letterpress and printing blankets for offset are made from a high tensile strength, biaxially stress-oriented plastic sheet which is adhesively laminated to a tough, dimensionally stable, high tensile strength, tear-resistant paper, such as Kraft paper, tympa paper or elastomer impregnated paper sheet. An extensible thermosetting adhesive consisting essentially of an aliphatic copolyester of terephthalic acid or an elastic ester-amide polymer, each reacted with a polyisocyanate curing agent, is used for laminating. The adhesive is cured at room temperature or at a temperature below that which relaxes the stress-oriented plastic sheet. Superior wear-resistance and high quality of printing have been demonstrated for the blankets of the invention. The blanket is useful as an inking member, for example in letterpress printing of the wraparound press-type, and can also be used for the packing material for the impression cylinder in gravure-type of printing.

3,616,179
GLASS FIBER PRODUCT BONDED WITH TERPOLYMER COMPRISING PHENOL FORMALDEHYDE-UREA FORMALDEHYDE CONDENSATION PRODUCT

Frank P. McCombs, Granville, and James C. Sullivan, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation

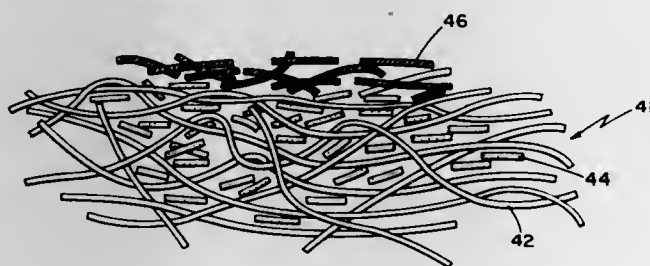
Filed Jan. 18, 1968, Ser. No. 698,724
 Int. Cl. B32b 17/10 12 Claims

A new and improved resinuous binder used in the formation of siliceous batts has been developed by a process comprising the steps of charging a base mix of formaldehyde and phenol into a reactor in the presence of a catalyst, reacting the mixture to a stage wherein some free formaldehyde remains, charging the reactor with raw urea, reacting the combined mixture in the presence of the catalyst, cooling the mixture, neutralizing with acid, and adding subsequently thereto, oil, silane, and water.

3,616,180
SHORT-FIBERED NONWOVEN FABRICS

Nicholas Newman, West Newton, Mass., assignor to The Kendall Company, Boston, Mass.

Filed Nov. 25, 1968, Ser. No. 779,318
 Int. Cl. D04h 5/00; B32b 5/16 8 Claims



A fluid dispersion of ultrashort fibers of from 50 to 300 microns in length is applied to a preformed fleece of textile-length fibers, to increase the opacity of the assembly when it is formed into a nonwoven fabric.

3,616,181
MOLDABLE ARTICLE OF GLASS FIBERS AND A MODIFIED PHENOLIC BINDER

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 783,432, Dec. 12, 1968, now abandoned. This application Nov. 5, 1969, Ser. No. 874,384

Int. Cl. D04h 3/12; C08g 5/00 14 Claims

A moldable article comprising a woollike mass of intermeshed glass fibers bonded to one another at points of contact by a phenolic binder. The binder is substantially dry and curable, and comprises from 40 percent to 91 percent of a curable phenol-formaldehyde condensate, from 4 percent to 40 percent of urea and from 5 percent to 45 percent of dicyandiamide. Preferably, the binder additionally contains a thickening agent, as well as a siloxane or other release agent and emulsified petroleum oil to minimize sticking and resin build-up during molding of the article.

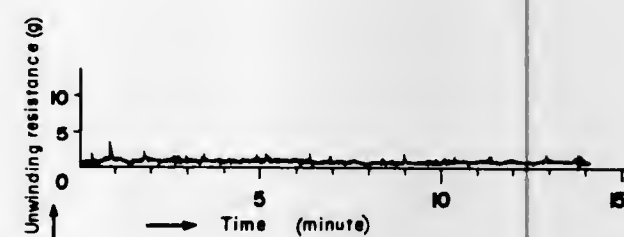
3,616,182
METHOD FOR PREVENTING FIBERS CONSISTING OF OR COMPRISING COPOLYAMIDE FROM STICKINESS

Satoshi Ando, Osaka; Yusaku Tanaka, Osaka; Minoru Kojima, Osaka-fu, and Kyoichi Fujimura, Ibaraki City, Osaka-fu, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Sna Viscosa Societe Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Division of Ser. No. 601,756, Dec. 14, 1966, abandoned
 Filed Aug. 30, 1968, Ser. No. 810,858

Int. Cl. B29f 3/10; D02g 3/00 3 Claims

U.S. Cl. 161-173 3 Claims



A method for producing nonsticky copolyamide-containing fibers wherein at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} , wherein n is an integer of at least 14, is dispersed homogeneously in a copolyamide melt. The so-melted copolyamide is then extruded through a spinning nozzle simultaneously with a homopolyamide melt.

3,616,183
POLYESTER SHEATH-CORE CONJUGATE FILAMENTS

John Raymond Brayford; Ian Stuart Fisher, and Michael Mundie Robertson, all of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 17, 1969, Ser. No. 807,919
 Claims priority, application Great Britain, Mar. 22, 1968, 13988/68

Int. Cl. D01d 5/28 20 Claims

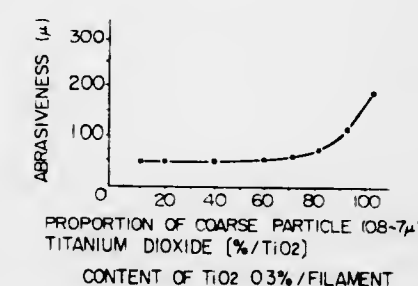
Sheath/core conjugate filaments which combine the tensile properties of poly(ethylene terephthalate) as core with the surface properties of a copolyester of ethylene terephthalate/polyoxyethylene terephthalate as sheath.

3,616,184
TITANIUM DIOXIDE-CONTAINING SYNTHETIC FILAMENT HAVING IMPROVED PROPERTIES, TEXTILE PRODUCTS MADE THEREFROM AND METHOD OF IMPARTING SAID IMPROVED PROPERTIES

Yasushi Katagiri, 1-55-2, Zenda-cho, Mizuho-ku; Teruo Obata, 2-33, Hasho-dori, Mizuho-ku; Masahiko Sugiura, 32, Tahakura-cho, Atsuta-ku, and Ryoichi Yasuda, 1-40, Shigo-cho, Minami-ku, all of Nagoya, Japan

Filed Mar. 12, 1968, Ser. No. 712,447
 Int. Cl. D02g 3/02 7 Claims

U.S. Cl. 161-174 7 Claims



Titanium dioxide-containing synthetic filament having an improved surface properties which contains dispersed throughout its structure in an amount of 0.01-1 percent by weight, based on said filament, titanium dioxide particles consisting essentially of particles not greater than 7 microns in particle diameter, of which 10-70 percent by weight is coarse particle titanium dioxide of 0.8-7 microns in particle diameter, textile products made therefrom and a method of imparting said improved properties.

3,616,185
GLASS FIBER ARTICLES WITH A PROTECTIVE LAYER OF POLYURETHANE AND METHOD OF PREPARATION

Samuel Goldberg, 4056 Nichols Ave. S.W., Washington, D.C.

Continuation-in-part of application Ser. No. 594,590, Nov. 15, 1966, now abandoned. This application June 17, 1970, Ser. No. 47,070

Int. Cl. B32b 17/10, 27/38, 27/40 2 Claims

U.S. Cl. 161-185 2 Claims



A coating to protect exposed glass fabric articles comprising polyurethane. The polyurethane is bonded to the glass fabric by applying a graduated premixture of polyurethane and epoxy resin between the polyurethane and glass fabric.

3,616,186
COPPER-POLY (ARYLENE SULFIDE) LAMINATES AND PROCESS FOR PREPARING SAME

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 29, 1969, Ser. No. 861,994
 Int. Cl. B32b 15/20, 15/08 9 Claims

U.S. Cl. 161-187 9 Claims

Laminate structures of a poly(arylene sulfide) coating composition on a copper substrate are formed by pretreating the copper substrate with a basic nitrogenous compound or salt thereof prior to the coating of the substrate with the poly(arylene sulfide) coating composition.

3,616,187
PACKAGING FOIL

Gerhard Ottmann, and Clemens Lillenbeck, both of Wuppertal-Barmen, Germany, assignors to Kurt Herberts & Co. Vorm. Otto Louis Herberts, Wuppertal-Barmen, Germany

Filed Oct. 4, 1968, Ser. No. 765,040
 Claims priority, application Germany, Feb. 29, 1968, H 065441

Int. Cl. B32b 27/30, 27/40 11 Claims

U.S. Cl. 161-189 11 Claims

Packaging foil comprising a flexible support foil, a top layer of a vinyl polymer and an adhesion promoter or primer between the support foil and top layer, wherein the primer is a mixture of a chlorine or fluorine-containing polymer and an organic compound with at least two isocyanate groups.

3,616,188
DRY FRICTION MEMBERS

Raymond Mancel, Paris, France, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 449,139, Apr. 19, 1965, Pat. No. 3,501,360. Filed Aug. 27, 1969, Ser. No. 870,914

Claims priority, application France, Apr. 17, 1964, 971248
 Int. Cl. B32b 3/00, 15/08, 27/04 4 Claims

U.S. Cl. 161-189 4 Claims



The dry friction member has a friction surface and consists of a metal support having a roughened surface, a graphite tissue impregnated with a copolymer of tetrafluoroethylene and hexafluoropropene which adheres to said roughened surface wherein the graphite tissue is in intimate contact with the roughened surface on one face of said impregnated graphite tissue and presents on the other face a plurality of noncoated areas interspersed with spots of the copolymer.

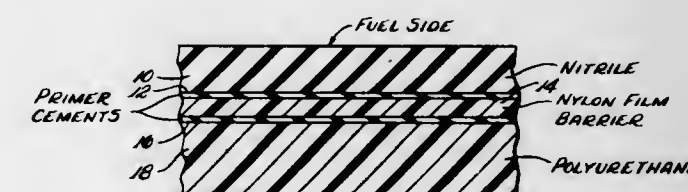
3,616,189
LIQUID CONTAINER CELLS WITH CURED NITRILE INNER LAYER AND CURED POLYETHER-POLYURETHANE ELASTOMER OUTSIDE LAYER

George B. Harr, Pasadena, Calif., assignor to Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of application Ser. No. 413,763, Nov. 25, 1964, now abandoned, which is a continuation of application Ser. No. 357,499, Apr. 6, 1964, now abandoned.

This application Dec. 17, 1968, Ser. No. 787,300
 Int. Cl. B32b 27/40, 27/40; A45c 1/00 7 Claims

U.S. Cl. 161-190 7 Claims

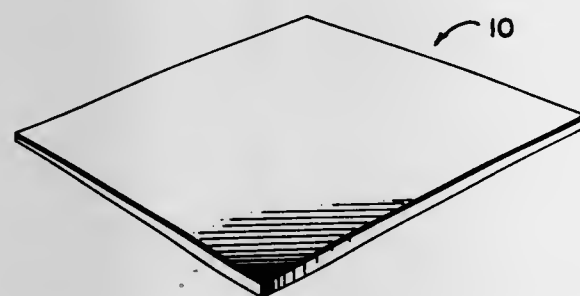


Fuel cells are made with cured nitrile rubber on the inner surface and cured polyurethane on the outer surface. A nylon barrier may be provided between the two. The polyurethane layer is preferably prepared by spraying a curing agent and polyurethane precursor through a nozzle which mixes the two.

3,616,190
LAMINATED HEAT-SEALABLE SHEET HAVING ALUMINUM ADHERED TO A VINYL-CHLORIDE-COATED REGENERATED CELLULOSE SHEET
 Fred B. Shaw, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
 Continuation of application Ser. No. 609,453, Jan. 16, 1967, now abandoned. This application Mar. 23, 1970, Ser. No. 20,447

Int. Cl. B32b 15/20, 27/08, 27/40
 U.S. Cl. 161—190

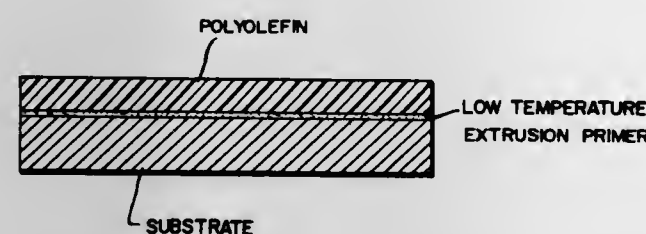
5 Claims



A laminated heat-sealable sheet is constructed of a plurality of plies of flexible films wherein the first ply is aluminum foil, the second ply is a polyolefin resin bonded to one face of the aluminum foil, the third ply is a heat-sealable thermoplastic resin bonded to the other face of the aluminum foil, and the fourth ply is polyvinylchloride-coated regenerated cellulose bonded to the polyolefin ply with a polyurethane resin primer.

3,616,191
LOW TEMPERATURE EXTRUSION PRIMER
 James J. Fuerholzer, Crystal Lake; Neal G. Reddeman, Wauconda, and Samuel Zweig, Skokie, all of Ill., assignors to Morton International, Inc.
 Filed Nov. 29, 1967, Ser. No. 686,427
 Int. Cl. B32b 27/08, 27/40
 U.S. Cl. 161—190

33 Claims



A method of obtaining improved adhesion of extruded olefin polymer coating materials to packaging material substrates, involving the use of a hydrolyzed copolymer of an olefin and ester of an unsaturated alcohol, e.g., an ethylene-vinyl acetate copolymer, or isocyanate reaction product thereof, as an adhesion improving primer or tie coat which permits extrusion of the coating material onto the primed surface at a lower temperature than ordinarily required, resulting in a better bond of coating material to substrate than ordinarily obtained at those lower temperatures.

3,616,192
DECORATIVE POLYVINYL FLUORIDE LAMINATIONS
 James R. Sinclair, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.
 Continuation-in-part of application Ser. No. 732,258, May 27, 1968, now abandoned, Continuation-in-part of application Ser. No. 484,809, Sept. 3, 1965, now abandoned. This application Feb. 4, 1970, Ser. No. 8,750
 Int. Cl. B32b 27/30; B44f 9/02; D06n 3/12
 U.S. Cl. 161—184

7 Claims

A printing ink formulation including a blend of a polyester resin and epoxy resin is disclosed for use on polyvinyl

fluoride films. The printed polyvinyl fluoride films may be used as the outer layer in laminate structures, where the inert properties of polyvinyl fluoride are desired. In such a laminate structure, the printed surface of the polyvinyl fluoride film is joined to a substrate such as a polyvinyl chloride layer by a laminating adhesive that is based on a polyester resin that is the same as or similar to the polyester resin component of the printing ink formulation.

3,616,193
THERMOSET POLYDIENE RESIN ADHESIVE BONDED LAMINATES AND METHODS OF MAKING SAME
 Hyman R. Lubowitz, Redondo Beach, and Eugene A. Burns, Palos Verdes Estate, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.
 Continuation-in-part of application Ser. No. 531,026, Mar. 2, 1966, now Patent No. 3,431,235. This application May 14, 1968, Ser. No. 728,885

Int. Cl. B32b 27/40; C08g 33/10, 30/00
 U.S. Cl. 161—190

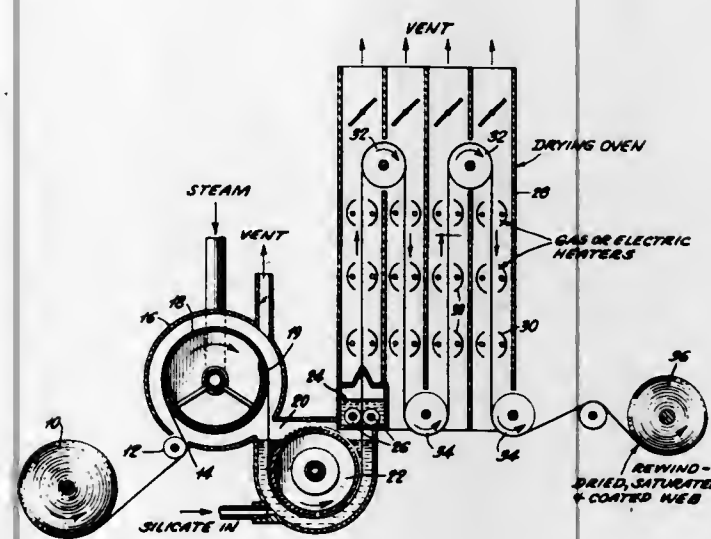
20 Claims

This invention relates to polydiene resin coatings, adhesives, and laminates, and the methods of producing the same. In particular a polydiene resin, such as dihydroxyl terminated 1,2-polybutadiene, is mixed with an organic chain extender, such as 2,4-toluene diisocyanate, in the presence of a peroxide free radical initiator, such as dicumyl peroxide, to form a liquid polymeric mixture. The liquid polymeric mixture is dissolved in a carrier solvent to facilitate application on a surface to be coated or bonded. After removal of the carrier solvent, the liquid polymeric mixture is exposed to ambient or slightly elevated temperatures whereby an elastomeric coating or bond is formed. At a subsequent period of time, the elastomeric material is exposed to elevated temperatures whereupon the elastomer is cured to a hard resinous coating or bond.

3,616,194
FIBROUS SILICATE PRODUCTS AND METHODS AND APPARATUS FOR THEIR PRODUCTION
 William T. Russell, North Manchester, Ind., assignor to Wall-Away Corporation, Wabash, Ind.
 Filed Dec. 4, 1968, Ser. No. 781,200
 Int. Cl. B32b 13/08

U.S. Cl. 161—210

8 Claims



New composited fibrous products comprising alkali metal silicates, made from a plurality of layers of a silicated fibrous substrate such as a strong, dense Kraft paper are disclosed. A wide variety of products in the form of panels, tubes, both round and multisided, containers, such as boxes and drawers for furniture, desks and the like, or formed by shaping and forming said layers in the manner of laminating; for example, by heat and pressure in a press, or a combination of press and mandrel. The stock material for the laminating operation contains the silicate in the voids of the paper continuously from surface to surface, as viewed in cross section. The

silicate content is at least one-fourth pound per pound of substrate. The silicated paper stock is produced by techniques which cause the silicate to penetrate the paper in a surface-to-surface manner, and, when laminated, the silicate unifies through all layers.

3,616,195
PRINTED CIRCUIT BOARD HAVING METAL LAYER BONDED TO HYDROCARBON BASE AND METHOD OF MAKING IT
 Harold A. Rendleman, Bellwood, and Henry Akberg, Northbrook, both of Ill., assignors to The Richardson Company, Melrose Park, Ill.
 Filed Dec. 26, 1968, Ser. No. 787,280
 Int. Cl. B32b 27/32, 25/16, 15/08

U.S. Cl. 161—215

10 Claims

Metal clad products useful for printed circuits and the like are produced with a hydrocarbon base through the use of a two-coat adhesive system wherein each coating contains a combination of a normally thermoplastic, polyvinyl polymer and a thermosetting resin and the coating next to the hydrocarbon base contains a free radical producing catalyst. Multifunctional monomer additives such as triallyl cyanurate have also been found useful. The resultant cured products are characterized by good adhesion and by resistance to hot solder at temperatures in the order of about 500° F.

3,616,196
SHEETS AND LAMINATES OF RESINOUS AND FIBROUS MATERIALS
 George C. Sun, Cherry Hill, N.J., and Theodore Shell, Swarthmore, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Filed Nov. 27, 1968, Ser. No. 779,602
 Int. Cl. B32b 17/10; C08g 20/32, 51/04

U.S. Cl. 161—227

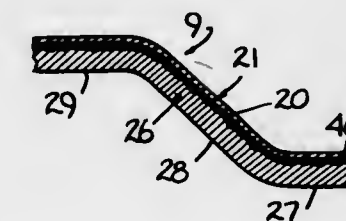
17 Claims

(A) Sheets of fibrous material impregnated with a polymeric precursor of a polyimide resin, that may be partially cured if desired, wherein such polymeric precursor has inert, thermally stable, colloidal particles dispersed therein and (B) unitary polyimide laminates prepared from a plurality of such sheets.

3,616,197
PLASTIC LINED RECEPTACLE OR THE LIKE
 Stephen W. Amberg, James, N.Y.; Ralph G. Amberg, Monticello, Ind., and Frank S. Landers, Huntington, N.Y., assignors to Owens-Illinois, Toledo, Ohio
 Filed Dec. 10, 1969, Ser. No. 880,486
 Int. Cl. B32b 27/10; B65d 5/56

U.S. Cl. 161—229

13 Claims



Molded pulp plate having continuous unseamed liner of polypropylene film bonded to its interior surfaces by pigmented polyamide ink, or a pigmented resin emulsion, which serves as adhesive and also provides all or part of a decorative design visible through the transparent film. Underside of polypropylene film may have further decorative printing of conventional ink, the adhesive being printed or coated thereover. Method includes clamping a sheet of polypropylene film, having the dried resin adhesive on its underside surface, against the smooth rim of the plate; heating the plate and film to a temperature which is above the softening point temperature of the resin constituent of the pigmented coating but below the softening point

3,616,198
PROCESS FOR PRODUCING LAMINATE
 Kenji Saito, Fujieda-shi, Japan, assignor to Sumitomo Bakelite Company Limited, Tokyo, Japan
 Filed Mar. 21, 1969, Ser. No. 809,203
 Claims priority, application Japan, Mar. 26, 1968, 43/19181
 Int. Cl. B32b 15/08

U.S. Cl. 161—216

11 Claims

In a process for producing a laminate by assembly of metal plate and thermosetting resin-impregnated sheet by heating under pressure, improvement in that the assembly contains a peroxide and a thermoplastic polymer film being in contact with the inner surface of the metal plate, to insure the firm adhesion of the laminate, and contains additionally another thermoplastic polymer film being in contact with the outer surface of the resin-impregnated sheet during the operation but removed after the operation, to yield a mat laminate having the same excellent properties.

3,616,199
REINFORCING PROCESS
 David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
 Filed Sept. 30, 1969, Ser. No. 862,520
 Int. Cl. B32b 27/06; C07c 143/56

U.S. Cl. 161—231

6 Claims

The addition of fibrous polyester reinforcing material to rubber stock can be improved by treating the fibrous material with a polysulfonylester having the formula $R-(SO_2N_x)_2$ where R is a polyvalent organic radical, such as an aliphatic, cycloaliphatic or aromatic radical and x is an integer greater than 1. Vulcanized rubber tires reinforced with treated polyester tire cord are disclosed.

3,616,200
THERMAL OXIDATIVE DEGRADATION RESISTANT STRUCTURE OF AN AROMATIC POLYMER AND CERTAIN METAL COMPOUNDS
 Herbert I. Reibach, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
 Continuation-in-part of application Ser. No. 624,696, Mar. 21, 1967, now abandoned. This application Jan. 19, 1970, Ser. No. 4,070
 Int. Cl. C08g 51/56, 51/60, 51/62

U.S. Cl. 161—225 R

22 Claims

A shaped structure (e.g., a fiber, molded object, or sheetlike material) of an aromatic, substantially linear, polyamide, polyimide, polyimideazole, polythiadiazole or polyoxadiazole, with the polymer being in contact with a trace amount of chloride ion, and the polymer also being in contact with specified compounds of manganese, zinc, aluminum or bismuth. Such a structure exhibits improved resistance to oxidative degradation when in contact with a copper or iron containing metal at elevated temperatures in air containing traces of water. The structure is particularly useful as insulation for electrical conductors, motors and generators.

3,616,201
EXTENDER FOR THERMOSETTING RESIN
 Frank S. Trocino, Eugene, Oreg., assignor to Cascade Fiber Co., Eugene, Oreg.
 Filed Oct. 17, 1969, Ser. No. 867,360
 Int. Cl. C08g 51/18; C08h 17/18
 U.S. Cl. 161—262

7 Claims

Douglas-fir bark is prepared for use as an extender for thermosetting resins by solvent-extracting wax to leave maximum content of 3 percent.

3,616,202

CULTURE OF ANAPLASMA MARGINALE
Donald Wayne Marble, Sparks, Nev., assignor to Research Corporation, New York, N.Y.
Continuation of application Ser. No. 840,047, July 8, 1969, now abandoned. This application June 15, 1970, Ser. No. 48,871

Int. Cl. C12k 1/06

U.S. Cl. 195—1.8

The organism *Anaplasma marginale* is cultured in rabbit bone marrow tissue culture established in buffered "Medium 199" containing sheep serum with erythrocyte stimulating factor, fetal calf serum and vitamin B-12.

4 Claims

3,616,203

VIRUS CULTURE AND METHOD
Albert Brown, Lincoln, Nebr., assignor to Norden Laboratories, Inc., Lincoln, Nebr.
Division of Ser. No. 647,943, June 22, 1967, abandoned, which is a Continuation-in-part of application Ser. No. 416,906, Dec. 8, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 377,098, June 22, 1964, now abandoned. Filed Dec. 11, 1969, Ser. No. 884,320

Int. Cl. C12k 9/00, 5/00

U.S. Cl. 195—1.8

Improvement in vaccine preparation whereby an established cell line is tested to determine its suitability for vaccine preparation, the cell line if found to be suitable is frozen to obtain a master cell seed stock, and when desired the master cell seed stock is thawed, tested again for its suitability for use in vaccine preparation, and finally used for that purpose.

5 Claims

3,616,204

METHOD FOR SOIL RESTORATION
Richard R. Linn, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed May 28, 1969, Ser. No. 828,780

Int. Cl. C12b 1/00

U.S. Cl. 195—2

Soil contaminated by hydrocarbon spillage is restored by first disturbing the soil, as by plowing or discing, followed by inoculating with a hydrocarbon-consuming micro-organism and maintaining an environment controlled as to nutrient and oxygen content.

8 Claims

3,616,205

SOLUBILIZATION OF INSOLUBLE COLLAGEN
Yasuto Ito, Tokyo, and Hisao Kojima, Ichikawa, both of Japan, assignors to Nihon Hikaku Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of application Ser. No. 403,357, Oct. 12, 1964, now abandoned, Continuation-in-part of application Ser. No. 561,730, June 30, 1966, now abandoned, Continuation-in-part of application Ser. No. 624,229, Mar. 20, 1967, now abandoned. This application Feb. 3, 1970, Ser. No. 8394

Int. Cl. C12b

U.S. Cl. 195—6

A method of solubilizing insoluble collagen which comprises treating said insoluble collagen at a temperature of 0°–37° C., at a pH of 1.5 to 3.0 with the collagen solubilizing proteolytic enzyme produced from specific micro-organisms having an optimum activity for solubilizing milk casein at a pH of 2.2 to 2.4.

5 Claims

3,616,206

METHOD FOR THE PRODUCTION OF INOSINE
Ikuro Nogami, Kyoto; Michio Katsumata, Kobe; Akira Imada, Nishinomiya; Makoto Kida, Fuse, and Masahiko Yoneda, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Sept. 2, 1966, Ser. No. 576,867

Claims priority, application Japan, Sept. 4, 1965, 40/54361

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

Method for the production of inosine which comprises inoculating an adenine and amino acid-double requiring mutant such as *Bacillus pumilus* Gottheil No. 3218 (ATCC No. 21005), onto a culture medium containing adenine source and amino acid source, incubating the culture medium until inosine is accumulated and recovering inosine from the culture medium.

5 Claims

3,616,207

METHOD FOR THE PRODUCTION OF 5'-INOSINIC ACID AND INOSINE
Masahiko Yoneda, Suita, and Akira Imada, Nishinomiya, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Dec. 27, 1966, Ser. No. 604,607

Claims priority, application Japan, Dec. 28, 1965, 40/81389

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

5'-inosinic acid and/or inosine are(is) produced by incubating adenine-, amino acid- or/and vitamin- double or triple requiring mutants derived from *Bacillus licheniformis*, in a culture medium containing an adenine source and an amino acid source and/or a vitamin source.

9 Claims

3,616,208

FERMENTATION PROCESS FOR 9-(β-D-ARABINOFURANOSYL)ADENINE
John David Howells, Grosse Pointe Woods, and Albert Ryder, Detroit, both of Mich., assignors to Park, Davis & Company, Detroit, Mich.
Continuation-in-part of application Ser. No. 606,044, Dec. 30, 1966, now abandoned. This application Sept. 29, 1967, Ser. No. 671,557

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

Process for the production of 9-(β-D-arabinofuranosyl)adenine by inoculating an aqueous nutrient medium, preferably containing sources of assimilable carbon and nitrogen and added inorganic salt and having a pH between about 6 and 8, with a 9-(β-D-arabinofuranosyl)adenine-producing strain of *Streptomyces antibioticus*, such as the strain corresponding to NRRL 3238, conducting a fermentation under aseptic aerobic conditions at a temperature between about 20° and 45° C. until a substantial quantity of 9-(β-D-arabinofuranosyl)adenine is formed, and isolating the desired product from the fermentation mixture. The 9-(β-D-arabinofuranosyl)adenine product of the process is useful as an antiviral agent that is active in vitro and in vivo against both herpes and vaccinia viruses.

5 Claims

3,616,209

SOLVENT EXTRACTION PROCESS
Bernard Maurice Laine; Jean Claude Hondermarck, and Robert Goux, all of Laver, Bouches du Rhone, France, assignors to The British Petroleum Company Limited, London, England
Filed Jan. 24, 1968, Ser. No. 700,017

Claims priority, application Great Britain, Jan. 31, 1967, 4580/67

Int. Cl. C12c 11/00

U.S. Cl. 195—28

Solvent extraction of a solid material which is contaminated with at least one hydrocarbon and water which comprises, in a first extraction stage consisting of one or more extraction steps, extracting a contaminated solid material with a mixture of an alcohol and a hydrocarbon with which it forms an azeotrope, the alcohol and azeotrope

6 Claims

3,616,213

PRODUCTION OF α-KETOGLUTARIC ACID BY FERMENTATION OF HYDROCARBONS
Ryuichiro Tsugawa, Tokyo; Takashi Nakase, Kanagawa-ken; Tadao Kobayshi, Kanagawa-ken; Koichi Yamashita, Kanagawa-ken, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Jan. 15, 1969, Ser. No. 791,502

Claims priority, application Japan, Jan. 24, 1968, 43/4104; Mar. 4, 1968, 43/13938

U.S. Cl. 195—28

α-ketoglutaric acid is obtained in good yields by aerobic culturing of certain strains of *Candida* and *Saccharomyces* on culture media containing hydrocarbons as principal carbon source. The yield is enhanced by the presence of trace amounts of vitamin B₁, Zn⁺⁺, Cu⁺⁺, and/or Fe⁺⁺.

5 Claims

3,616,210

PROCESS FOR PRODUCING L-GLUTAMIC ACID
Katsunobu Tanaka; Kazuo Kimura, and Masaki Yamamoto, all of Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Apr. 30, 1968, Ser. No. 725,518

Claims priority, application Japan, May 15, 1967, 42/30401

Int. Cl. C12b 1/00

U.S. Cl. 195—28

The present disclosure is directed to a process for producing amino acids such as L-glutamic acid which comprises culturing a gaseous hydrocarbon-assimilating micro-organism capable of producing said amino acid in an aqueous nutrient medium under aerobic conditions and in the presence of gaseous hydrocarbons as the main carbon source and a fermentation enhancer.

10 Claims

3,616,211

PROCESS FOR PRODUCING DEOXYRIBONUCLEIC ACID
Paul A. Pietsch, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 2, 1968, Ser. No. 725,980

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

An antibiotic characterized by the property that it bonds with deoxyribonucleic acid to form an adduct, and represented by phleomycin, is purified by combining the crude material with deoxyribonucleic acid, alone or as nucleohistone in vitro or especially in vivo, to form its specific complex, removing objectionable impurities that do not form such complexes, optionally liberating the antibiotic from the deoxyribonucleic acid complex as by enzymolysis, and separating it from the enzymolyzed fragments.

1 Claim

3,616,212

PROCESS FOR PRODUCTION OF INOSINE AND 5'-GUANYLIC ACID NUCLEOTIDES
Shigeo Abe, Tokyo; Akira Furuya, Machida-shi, and Ryo Okachi, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Filed Sept. 9, 1968, Ser. No. 758,591

Claims priority, application Japan, Sept. 27, 1967, 42/61679

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

A process for producing inosine and 5'-guanylic acid nucleotides by fermentation which comprises culturing a mutant strain having the ability to accumulate inosine and simultaneously to convert 5'-xanthylic acid into 5'-guanylic acid nucleotides under aerobic conditions in an aqueous nutrient medium containing 5'-xanthylic acid. Strains advantageously employed are *Brevibacterium ammoniagenes* ATCC 21264 and *Corynebacterium glutamicum* ATCC 21266.

15 Claims

3,616,216

PRODUCTION, RECOVERY AND APPLICATION OF ENZYMATICALLY ACTIVE MICRO-ORGANISMS
Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company
Division of Ser. No. 549,472, May 12, 1966, Pat. No. 3,510,401. Filed Nov. 6, 1969, Ser. No. 874,402

Int. Cl. C12d 13/00

U.S. Cl. 195—28

Enzymatically active micro-organisms adapted to the conversion of hydrocarbons by growth in relatively nonvolatile hydrocarbons are substantially freed of such nutrient hydrocarbon by extraction with a relatively volatile hydrocarbon solvent having from 4 to 7 carbon atoms per molecule and residual solvent hydrocarbon is removed by suitable vaporization means without impairing the activity of said micro-organisms.

2 Claims

3,616,217

PROCESS FOR PREPARING L-THREONINE

Kiyoshi Watanabe, 1-21 4-ban, Okihama, Takasago-cho, Takasago, Hyogo; Tutomu Tanaka, Katayama, Malko-cho, Tarumi-ku, Kobe, Hyogo; Tamotu Hirakawa, 574, Befu-cho, Kakogawa, Hyogo, and Hiroshi Motoki, 1648-8, Fujii, Akashi, Hyogo, all of Japan

Continuation-in-part of application Ser. No. 731,704, May 24, 1968, now abandoned. This application Mar. 18, 1970, Ser. No. 20,823

Claims priority, application Japan, Aug. 4, 1966; Aug. 31, 1966, 41/51266; 41/57005

Int. Cl. C12d 13/00

U.S. Cl. 195—29

11 Claims

A process for preparing L-threonine by cultivating an artificial mutant of *Escherichia coli* (ATCC-21248) which requires methionine and valine or leucine in an aqueous nutrient medium under submerged aerobic condition to accumulate appreciable quantities of L-threonine.

3,616,218

METHOD OF PRODUCING L-LYSINE

Isamu Shio, Tokyo; Konosuke Sano, Nakamori; Miyajima Shigeru, Ryuchii, and Noboru Katsuya, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of application Ser. No. 699,807, Jan. 23, 1968, now abandoned, Continuation of application Ser. No. 658,251, Aug. 3, 1967, now abandoned. This application May 4, 1970, Ser. No. 34,637

Int. Cl. C12b 1/00

U.S. Cl. 195—29

7 Claims

When strains of *Brevibacterium flavum*, whose growth in a culture medium is inhibited by addition of excess threonine or methionine, but which may require threonine for their growth, are cultured on an otherwise conventional medium including a proper amount of threonine, a large amount of L-lysine accumulates in the medium.

3,616,219

PROCESS FOR IMPROVED ENZYME CONVERTIBILITY OF STARCH

Henry C. Massey, Decatur, Ill., assignor to A.E. Staley Manufacturing Company, Decatur, Ill.

Division of Ser. No. 777,140, Nov. 19, 1968, abandoned Filed Mar. 9, 1970, Ser. No. 17,912

Int. Cl. C12d 13/00

U.S. Cl. 195—31

6 Claims

Process for hydrolyzing starch with alpha-amylase in which aqueous starch hydrolyzable by alpha-amylase, a water-insoluble calcium compound as an alpha-amylase thermostabilizing agent, and an alkali metal orthophosphate buffering agent are combined with an alpha-amylase preparation for a time sufficient to allow hydrolysis of the starch to occur.

3,616,220

METHOD FOR PREPARING LOW D. E. STARCH HYDROLYZATES

Robert E. Nisbet, and Ernest E. Allen, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Oct. 30, 1968, Ser. No. 772,042

Int. Cl. C12b 1/00

U.S. Cl. 195—31

5 Claims

Aqueous starch paste is acid converted to a hydrolyzate having a dextrose equivalent constant (D.E.) in the range of from about 8 to about 16 percent, then after removal of any insoluble fatty material present, the acid hydrolyzate is cooled for at least 1 hour at a temperature below about 60° F., e.g., in the range of from about 32° F. to about 50° F., and precipitated material formed then is separated from the chilled hydrolyzate liquor. The resultant hydrolyzates, as well as hydrolyzates formed by slight alpha-amylase conversion of the resultant liquor, form aqueous syrups having excellent

stability against haze formation. The lower D.E. hydrolyzates produced also are essentially nonsweet and nonhygroscopic.

3,616,221

ENZYMATIC METHOD FOR CONVERTING GLUCOSE IN GLUCOSE SYRUPS TO FRUCTOSE

Yoshiyuki Takasaki, and Osamu Tanabe, both of Chiba-shi, Japan, assignors to The Agency of Industrial Science and Technology, Tokyo, Japan

Continuation-in-part of application Ser. No. 498,980, Oct. 20, 1965, now abandoned. This application Jan. 2, 1969, Ser. No. 805,072

Int. Cl. C12d 1/00

U.S. Cl. 195—31

13 Claims

Glucose in a glucose syrup is transformed into fructose, in high yields, by reaction with glucose isomerizing enzyme derived from micro-organisms which are characterized as having the ability to assimilate xylan to produce a glucose isomerizing enzyme.

3,616,222

PROCESS FOR SACCHARIFICATION OF CELLULOSIC AND WOODY TISSUES BY FUNGI OR ENZYMES FROM FUNGI

Bruce L. Dasinger, Scotch Plains, N.J., assignor to Esso Research and Engineering Company

Filed May 8, 1969, Ser. No. 823,099

Int. Cl. C12d 13/00

U.S. Cl. 195—31

10 Claims

In the saccharification of cellulose, mixed cultures or enzymes derived therefrom, are used to increase the rate of converting cellulose to sugar. One culture attacks the cellulose molecule predominantly from the end yielding soluble sugars while other cultures predominantly cleave the cellulose molecules internally at random points yielding shorter fibers but not soluble sugars.

3,616,223

PENICILLIN INTERMEDIATE

Milton Harvey Weiner, 301 Orchard St., Fayetteville, N.Y.

Filed Oct. 31, 1967, Ser. No. 679,557

Int. Cl. C12d 9/06

U.S. Cl. 195—36 P

8 Claims

A more efficient process for the preparation of 6-aminopenicillanic acid has been devised which employs a penicillin amidase enzyme in the presence of a hydrazide compound. For example, *Streptomyces lavendulae* is employed to hydrolyze enzymatically penicillin V, said hydrolysis being conducted in the presence of a hydrazide such as benzhydrazide to produce superior yields of 6-aminopenicillanic acid from concentrations of penicillin in the range of 2 to 15 percent.

3,616,224

PRODUCTION OF AMINO ACIDS BY FERMENTATION

Isamu Shio, Kamakura; Shinichiro Otsuka, Yokohama; Shogo Kurasawa, Kawasaki, and Ryosuke Uchio, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed July 31, 1968, Ser. No. 748,970

Claims priority, application Japan, Aug. 5, 1967, 42/50233

Int. Cl. C12d 13/06

U.S. Cl. 195—49

2 Claims

Two species of bacteria, *Achromobacter methanophilus* and *Pseudomonas insueta*, produce various amino acids in culture media containing methanol as the principal carbon source.

3,616,225

PROCESS FOR PRODUCING UNSATURATED STEROIDS

Masao Isono, Nishinomiya; Takeshi Takahashi, Suita, Osaka; Yoshio Yamasaki, Takarazuka, and Takuchi Miki, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 21, 1968, Ser. No. 730,939

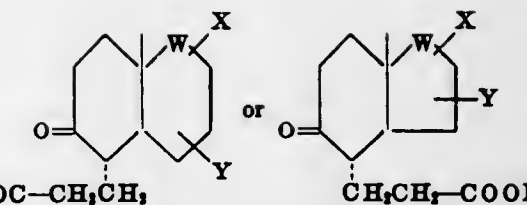
Claims priority, application Japan, May 22, 1967, 42/32755

Int. Cl. C07c 67/00

U.S. Cl. 195—51 R

8 Claims

Compounds having a 13 β -carbon-substituted-8,14-secogona-1,3,5(10),9(11)-tetraene-14,17-dione nucleus are reduced to the corresponding compound having a 13 β -carbon-substituted-17 α -hydroxy-8,14-secogona-1,3,5(10),9(11)-tetraene-14-one nucleus by the action of a yeast or a culture thereof. Yeasts of the genus *Saccharomyces* are advantageously used for this purpose.



wherein W is CH₃, O or NH and wherein X and Y may be the same or different and are H, OH, =O, OAc, lower alkyl, hydroxy- or oxo- substituted lower alkyl, and wherein X and Y may be interconnected.

The acids are made by dissolving 3-keto-steroids in an organic water-soluble solvent and fermenting it with an aerobic culture of *Nocardia SPEC* and recovering the product from the fermentation medium.

3,616,229

POLYMER-ENZYME PRODUCTS COMPRISING PLURALITY OF ENZYMES COVALENTLY BOUND TO POLYMER

Bernard S. Wildi, Kirkwood; Ernest G. Jaworski, Olivette, and Thomas L. Westman, St. Louis, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 27, 1968, Ser. No. 763,370

Int. Cl. C12k 1/00

U.S. Cl. 195—63

19 Claims

Polymer-enzyme products comprising a plurality of enzymes covalently bound to the polymer chain, the plurality of enzymes in any case including one or a plurality of proteases, preferably both a neutral protease and an alkaline protease, and optimally also a third enzyme, e.g., amylase. The products have improved stability and applicability over a wide range due to their increased range of enzymatic activity. They are either water-soluble or water-insoluble and in either case substantially odorless and colorless, long-acting and, in this covalently-bound polymeric state, not subject to the usual disadvantage of autogenous deterioration characteristic of simple enzyme mixtures.

3,616,230

METHOD FOR PRODUCTION OF L-ASPARAGINASE

Joseph Roberts, and Joseph M. Hill, both of Dallas, Tex., assignors to J.K. Wadley and Susie L. Research Institute and Blood Bank, Dallas, Tex.

Filed June 7, 1968, Ser. No. 735,196

Int. Cl. C12d 13/10

U.S. Cl. 195—66 A

11 Claims

A method of producing L-Asparaginase from a microbial organism, such as *Escherichia coli*, which encompasses the use of a nutrient medium for growth of the microbial organism which contains a substantial amount of free L-threonine or lactic acid and free amino acids, and in particular free L-glutamic acid and L-methionine. A preferred nutrient medium which contains the above constituents in a substantial amount is a diluted corn steep liquor which has preferably been adjusted to a pH of about 7, centrifuged or filtered and autoclaved before inoculation with the microbial organism.

3,616,231

PROCESS FOR THE PRODUCTION OF URICASE

Hans Ulrich Bergmeyer; Waldemar Thum, and Hans Mollering, all of Tutzing, Germany, assignors to Boehringer Mannheim GmbH

Filed Nov. 14, 1968, Ser. No. 775,946

Int. Cl. C07g 7/026

U.S. Cl. 195—66

15 Claims

Process for isolating uricase from animal tissue such as liver, kidney and spleen comprising extracting the water-insoluble fraction of such a tissue homogenate with an

3,616,228

 β -SUBSTITUTED PROPIONIC ACIDS AND METHOD OF MAKING THE SAME

Kurt Schubert, Hermann-Lons-Strasse 52; Karl-Heinz Adand Bohme, Georg-Schumann-Strasse 14, and CLare Horhold, Strasse des. 8 Mai 20, all of 69 Jena, Germany

Filed Mar. 12, 1969, Ser. No. 806,714

Int. Cl. C12d 1/02

U.S. Cl. 195—51

8 Claims

A β -substituted propionic acid of the general formula

alkaline salt solution, treating the extract containing the uricase with kieselguhr (diatomite), separating the kieselguhr having the uricase adsorbed thereon from the remaining solution, eluting the separated kieselguhr with an alkaline acetone solution, precipitating the uricase in the eluate with ammonium sulfate and purifying the recovered precipitate by washing the same at least once with water or water containing a minor amount of a salt.

3,616,232
PURIFICATION AND FRACTIONATION OF ENZYME MIXTURE FROM AQUEOUS SOLUTION
Richard G. Anderson, Ferguson, and Leonard Keay, Florissant, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 14, 1968, Ser. No. 752,458

Int. Cl. C07g 7/028

U.S. Cl. 195—66 R 16 Claims
Water-clear enzyme solution containing enzyme, e.g., protease and/or amylase, for example, a clarified beer from *B. subtilis* micro-organism production of enzymes or redissolved and clarified enzyme mixture, is treated with solvent to remove polysaccharides and undesirable colored materials. Amylase fraction when present can be separated from protease fraction and both fractions recovered with facility by employment of water-miscible solvent, in which enzymes are not soluble, solvent being used in particular proportion of volume to volume of starting enzyme-containing solution, depending on separation or fractionation desired, and preferably with slow addition of cold solvent to cold solution with vigorous agitation of solution during addition. Allows precipitation of amylase and/or precipitation of protease, or precipitation of both with fractionation thereof into amylase-rich and protease-rich fractions, and even fractionation of proteases, with polysaccharide fraction and colored material remaining in supernatant. High recoveries and purity are attained.

3,616,233
REMOVING ESTERASE FROM MICROBIAL RENNIN
Hans Schleich, Staten Island, N.Y., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Feb. 19, 1969, Ser. No. 800,696

Int. Cl. C07g 7/02

U.S. Cl. 195—66 13 Claims
Esterase is removed from microbial rennin by acidifying the rennin to a pH of about 2.0 to 3.5 and maintaining the rennin at a temperature of about 20° C. to 55° C. until the esterase is decomposed. Thereafter, the rennin is preferably neutralized to a pH of at least about 4 to inhibit its decomposition.

3,616,234
METHOD OF PREPARING PROTEASE FROM CANDIDA LIPOLYTICA
Kazuo Komagata, Tokyo; Takashi Nakase, Kanagawa-ken; Koji Mitsugi, Kanagawa-ken, and Shinji Okumura, Kanagawa-ken, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of application Ser. No. 554,996, June 3, 1966, now abandoned. This application Aug. 11, 1969, Ser. No. 849,137

Int. Cl. C12d 13/10

U.S. Cl. 195—66 R 7 Claims
Candida lipolytica produces a protease intracellularly and particularly in a culture medium on which the micro-organism is grown. The enzyme may be recovered from the medium by conventional methods or the cell free medium may be contacted with the protein to be hydrolyzed. Alternatively, the protein may be contacted with live cells of the micro-organism in an aqueous medium.

3,616,235
PROCESS FOR PRECIPITATING ENZYMES AND ENZYMATIC INACTIVE PROTEINS IN SOLUTION WITH SYNTHETIC TANNING MATERIALS
Dietmar Schoepfel, Berlin, and Johann Huber, Eichwalde, both of Germany, assignors to Forschungsinstitut für die Garungsindustrie, Enzymologie und technische Mikrobiologie, Berlin, Germany
Filed May 16, 1968, Ser. No. 729,514

Int. Cl. C07g 7/02

U.S. Cl. 195—68 2 Claims
A process for making dry preparations of enzymes or proteins with low-salt content is characterized by precipitating albumen-containing culture solutions or culture filtrates with anionic, cationic or amphoteric-tanning materials and in that the following extraction of inorganic salts and tanning materials takes place with water or mixtures of water and organic solvents, particularly with mono- and/or polyvalent alcohols and ketones, glycol ethers, dioxanes and tetrahydrofurans mixable with water.

3,616,236
PRODUCTION OF RHIZOBIUM STRAINS RESISTANT TO DRYING
Per Staffan Delin, Sodertalje, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden
Filed June 24, 1968, Ser. No. 739,217

Int. Cl. C12k 1/02

U.S. Cl. 195—79 9 Claims
The production of Rhizobium strains having good infecting and nitrogen-fixing characteristics by cultivating the strain, then subjecting it to drying whereby those strains which are sensitive to drying are destroyed and those strains which are resistant to drying survive. The surviving strains are then recultivated and subjected to at least one more drying treatment.

3,616,237
METHOD OF PREPARING THIOTRISEOFULVINS
Howard Newman, Monsey, N.Y.; Ping Shu, Pomona, N.Y., and William W. Andres, Lindenhurst, Ill., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 741,256, July 1, 1968, Pat. No. 3,432,714.
Filed June 8, 1970, Ser. No. 44,633

Int. Cl. C12d 9/00

U.S. Cl. 195—80 7 Claims
The compounds, (+)-1-thiotrioseofulvin and (+)-5'-hydroxy-1-thiotrioseofulvin, are prepared by cultivation of *Streptomyces cinereocrocatu* under controlled aerobic conditions with substrate dehydro-1-thiotrioseofulvin. The compounds have antifungal activity.

3,616,238
METHOD OF PREPARING (+)-5'-HYDROXYGRISOEFULVIN
William W. Andres, Lindenhurst, Ill., and Martin Paul Kunstmann, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 735,987, June 11, 1968, Pat. No. 3,557,151.
Filed June 29, 1970, Ser. No. 51,016

Int. Cl. C12d 9/00

U.S. Cl. 195—80 8 Claims
The compound (+)-5'-hydroxygriseofulvin is produced by fermentation from dehydrogriseofulvin or (+)-griseofulvin using the micro-organism *Streptomyces cinereocrocatu*. The compound (+)-5'-hydroxygriseofulvin is an antifungal agent.

3,616,239
7-CHLORO-6-DEMETHYL-TETRACYCLINE FERMENTATION
John Andrew Growich, Jr., New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of application Ser. No. 508,331, Nov. 17, 1965, now abandoned. This application Oct. 12, 1966, Ser. No. 594,958

Int. Cl. C12d 9/00

U.S. Cl. 195—80 2 Claims
This disclosure describes a process for the production of 7-chloro-6-demethyltetracycline by fermentative biosynthesis using strains of *Streptomyces aureofaciens* which impart a color to their whole harvest mash such that a positive value of ΔR is obtained when the values of the percent reflectance of a 1:200 aqueous dilution of the whole harvest mash at 460 m μ , 540 m μ , 560 m μ and 660 m μ are inserted in the following formula:

$$\Delta R = R_{540} + R_{560} - 1.1R_{460} - 0.9R_{660} - 2.0 -$$

3,616,240
7-CHLORO-6-DEMETHYL-TETRACYCLINE FERMENTATION
John Andrew Growich, Jr., New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of application Ser. No. 508,356, Nov. 17, 1965, now abandoned. This application Oct. 12, 1966, Ser. No. 601,250

Int. Cl. C12d 9/00

U.S. Cl. 195—80 2 Claims
This disclosure describes a process for the production of 7-chloro-6-demethyltetracycline to the exclusion of 6-demethyltetracycline by fermentative biosynthesis using strains of *Streptomyces aureofaciens* which are characterized by their ability to impart to a 1:200 aqueous dilution of the whole harvest mash a color characterized by a spectrophotometric reflectance curve such that when the percent reflectance is plotted linearly against the wavelength the resulting curve, between 460 m μ and 520 m μ , will either exhibit a maximum or have a point of inflection of zero slope.

3,616,241
PROCESS FOR THE PRODUCTION OF 7-CHLORO-5 α ,11 α -DEHYDROTETRACYCLINE
John Andrew Growich, Jr., New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 15, 1967, Ser. No. 616,167

Int. Cl. C12d 9/00

U.S. Cl. 195—80 3 Claims
This disclosure describes a process of producing 7-chloro-5 α ,11 α -dehydrotetracycline which comprises cultivating, under submerged aerobic conditions, strains of *Streptomyces aureofaciens* which are not riboflavin-deficient and are nonresponsive to Cosynthetic Factor-1, and which produce 7-chloro-5 α ,11 α -dehydrotetracycline to the exclusion of tetracycline and 7-chlorotetracycline.

3,616,242
HYDROLYSIS PROCESS FOR THE PREPARATION OF RUBIDOMYCIN
Andre Belloc, Hauts-de-Seine; Yvan Charpentier, Paris; Jean Lunel, Paris, and Jean Preud'Homme, Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Mar. 8, 1968, Ser. No. 711,495

Int. Cl. C12d 9/00

U.S. Cl. 195—80 9 Claims
The antibiotic rubidomycin, otherwise known as "13,057 R.P.," is obtained by subjecting the antibiotic 13,213 R.P. to acid hydrolysis at a temperature between 10° and 75° C. for a length of time from 48 hours to 30 minutes, the length of time varying inversely with the temperature.
Rubidomycin and 13,213 R.P. are both described in British Pat. No. 985,598.

3,616,243
PROCESS FOR THE PRODUCTION OF AN ANTIBIOTIC SUBSTANCE 2'-AMINO-2'-DEOXY-KANAMYCIN IN HIGHER YIELD
Shohei Kawaji, Tokyo; Toyooki Kawasaki, Tokyo; Masao Murase, Kawasaki-shi; Shunzo Fukatsu, Tokyo; Masahiro Abe, Kawasaki-shi; Yoshihisa Kozze, Tokyo; Tatsuo Ito, Yokohama-shi; Mamoru Suzuki, Yokohama-shi; Masahiro Ueda, Kawasaki-shi, and Hamao Umezawa, Tokyo, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan
Filed Aug. 9, 1968, Ser. No. 751,478

Int. Cl. C12d 9/00

U.S. Cl. 195—80 1 Claim
This invention relates to processes for the production of an antibiotic substance 2'-amino-2'-deoxy-kanamycin in higher yield. More particularly, this invention relates to the processes for the production of 2'-amino-2'-deoxy-kanamycin by fermentation using mutants of *Streptomyces kanamyceticus* identified as ATCC21259, ATCC21260, ATCC21161 and ATCC21268.

3,616,244
PRODUCTION OF LINCOMYCIN SULFOXIDE
Alexander D. Argoudelis, and Donald J. Mason, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Oct. 21, 1968, Ser. No. 769,395

Int. Cl. C12d 9/00

U.S. Cl. 195—80 6 Claims
A microbiological process for the oxygenation of lincomycins to obtain the corresponding lincomycin sulfoxides which are known active antibacterial agents.

3,616,245
IMPROVED FERMENTATION PROCESSES FOR PRODUCING (-)(CIS-1,2-EPOXYPROPYL)-PHOSPHONIC ACID
Edward O. Stapley, Metuchen; Marion Jackson, Cranford, and Jerome Birnbaum, Morganville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Jan. 30, 1969, Ser. No. 795,348

Int. Cl. C12d 9/00

U.S. Cl. 195—80 4 Claims
Increased yields of the antibiotic (-)(cis-1,2-epoxypropyl)-phosphonic acid are obtained by the addition of certain carboxylic acids to fermentation media. The antibiotic which is produced by growing newly found strains of *Streptomyces* on suitable fermentation media is active against both gram-positive and gram-negative bacteria.

3,616,246
USE OF ABSORPTIVE MATERIALS FOR THE PRODUCTION OF FUNGUS SPORES
Edward Cherry, Frederick, Md., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 24, 1964, Ser. No. 392,374

Int. Cl. C12b 1/00

U.S. Cl. 195—81 3 Claims
1. In a process for the production of fungus spores comprising: inoculating a medium with fungus spores, aerobically incubating the inoculated medium until a maximum amount of fungal mycelia are produced, the improvement comprising recovery of said mycelia from said medium, and placing of a layer of said mycelia upon a moistened absorptive surface, incubating at a temperature of about 25° to 30° C. and at a relative humidity of about 90 to 98 percent for a period of 1 to 4 days to achieve maximum sporulation, drying the spore containing substrate, and recovering said spores therefrom.

3,616,247

PRODUCTION OF GRISEOFULVIN

Harold George Hemming, Manchester; Malcolm Lehan, Sandbach; David Giles, deceased, late of Alderley Edge, and Anne Sylvia Giles, sole administrator, Newbury, all of England, assignors to Imperial Chemical Industries Limited, London, England
Filed Nov. 4, 1968, Ser. No. 773,981

Claims priority, application Great Britain, Dec. 13, 1967,

56,618/67

Int. Cl. C12d 9/00

U.S. Cl. 195—81

3 Claims

A process for the manufacture of griseofulvin, a known antifungal agent, by fermentation of *Khuskia oryzae* and related organisms.

3,616,248

PROCESS FOR THE SEPARATION OF YEAST FROM YEAST-OIL-WATER EMULSIONS

Ulrich Behrens, Leipzig; Manfred Ringpfeil, Holzhausen; Anton Gabert; Dieter Pohland; Karl Sattler, Leipzig; Manfred Rudel, Markkleeberg, Germany; Vladimir Munk, and Jiri Jiricka, Prague, Czechoslovakia, assignors to Deutsche Akademie der Wissenschaften zu Berlin, Berlin, Germany
Filed Jan. 4, 1968, Ser. No. 695,552

Int. Cl. C12c 1/124

U.S. Cl. 195—82

14 Claims

The yeasts in yeast-oil-water emulsions formed in the conversion of hydrocarbons to yeast are separated from the emulsion by adding one of the following two-component combinations of surface-active agents to the emulsion prior to the separation step:

1. polyphenolethyleneoxide-adduct (containing about 16 mols of ethyleneoxide per mol of polyphenol) and oleinmonoethanolamide
2. polyphenolethyleneoxide-adduct and distillation-residue of the fatty acid distillation C_{12} to C_{18}
3. polyphenolethyleneoxide-adduct and hydroxyethylated sulfated fatty alcohol having a chain length between C_{12} and C_{18}
4. alkylmonosulfonate (mean chain length of about C_{15}) and laurylamidoethylpyridiniumchloride
5. alkylmonosulfonate (mean chain length of about C_{15}) and the methosulfate of a quaternary fatty amine having a mean chain length of between C_{15} and C_{17} .

The surface-active agents are used in an amount up to 1.5%00, preferably below 1%00, relative to the total emulsion.

3,616,249

PROCESS FOR GROWING YEAST ON HYDROCARBONS

John J. Cavallo, Anaheim, and Paul Richard Hines, Yorba Linda, both of Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed June 26, 1968, Ser. No. 740,088

Int. Cl. C12c 1/100

U.S. Cl. 195—82

2 Claims

A process for improving the rate of growth and protein content of *Candida intermedia* grown on normal alkanes by providing a nutrient solution containing from about 8,000 to about 10,000 micrograms of zinc, as a soluble zinc salt, per liter of nutrient is disclosed.

3,616,250

PREFERENTIAL ENZYMATIC LYSIS OF VEGETATIVE CELLS IN PRESENCE OF SPORULATED BACTERIAL CELLS

George R. Hrubant, and Robert A. Rhodes, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Oct. 22, 1968, Ser. No. 769,701

Int. Cl. C12d 13/10

U.S. Cl. 195—96

1 Claim

A novel extracellular enzyme complex precipitated from cultures of *Bacillus NRRL B-3425* at critical concentrations selectively destroys the vegetative but not the sporulated cells of *Bacillus popilliae* or other spore-forming bacteria,

thus providing a means for isolating laboratory-grown *B. popilliae* spores required for studying the apparently limited infectivity of the spores produced in vitro as compared with spores from diseased Japanese beetle larvae.

3,616,251

TEST DEVICE

Gianni Linoli, Lecco, and Enzo Sergio Mannucci, Calolziocorte, both of Italy, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 8, 1968, Ser. No. 774,490

Int. Cl. G01n 3/114, 3/122

U.S. Cl. 195—99

8 Claims

A test device useful for the detection of a component of a fluid system comprises a water-resistant carrier, such as an organoplastic strip, containing, as an integral part thereof, a test system for the detection of such component. This test device is produced by incorporating the test system into at least a partially dissolved portion of the carrier material and then solidifying such carrier material with the test system included therein.

3,616,252

SEALED STERILE PACKAGE AND PROCESS FOR OPENING SAME

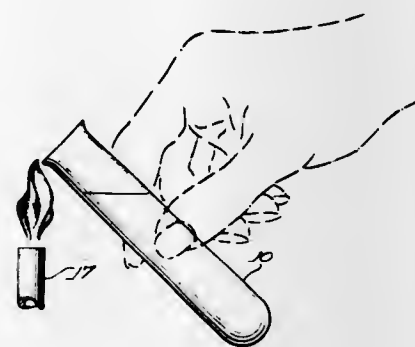
Sheldon H. Forel, Redondo Beach, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Aug. 30, 1968, Ser. No. 756,614

Int. Cl. C12b 3/00

U.S. Cl. 195—102

7 Claims



The contents of a container are therein aseptically sealed by a heat-wastable closure secured in a small container opening. Access to the contents is achieved by passing the sealed portion of the container through a flame, simultaneously to waste said closure for unsealing said container and to sterilize the container about said opening.

3,616,253

METHOD FOR DETERMINING BACTERIAL POPULATIONS

Anthony J. D'Eustachio, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1967, Ser. No. 635,109

Int. Cl. C12k 1/00

U.S. Cl. 195—103.5

9 Claims

A method for determining the population density of bacterial cells in an environment comprising, 1. separating substantially all nonbacterial cells from an aqueous sample of the environment, for example, by low force centrifugation, 2. separating substantially all bacterial cells from the sample, e.g., by filtration, 3. extracting adenosine triphosphate (hereinafter referred to as ATP) from the bacterial cells, 4. measuring the quantity of ATP present, such as, by reacting the ATP with luciferin and luciferase and measuring the light emitted, and 5. determining the number of bacterial cells in the sample, preferably, by dividing the quantity of ATP, in micrograms, by the average ATP/per cell which was found to be about 5×10^{10} micrograms.

3,616,254

SCREENING PROCEDURE FOR ENZYME DEFICIENCIES

Ernest Beutler, 1501 Highland Oaks, Arcadia, Calif.

Filed May 8, 1967, Ser. No. 641,733

Int. Cl. G01n 3/114

U.S. Cl. 195—103.5

12 Claims

This screening method detects enzyme deficiencies in red blood cells by use of a reaction mixture containing a pyridine nucleotide, the reduced form of which fluoresces upon activation by long wave ultraviolet light but not the oxidized form, thereby detecting the presence or absence of enzyme deficiencies.

3,616,255

METHOD AND DEHYDRATED MEDIUM PERMITTING EASY DETECTION OF BEER LACTIC ACID BACTERIA

Atsushi Nakagawa, Tokyo, Japan, assignor to Asahi Breweries Ltd., Tokyo, Japan

Filed Sept. 14, 1967, Ser. No. 667,673

Claims priority, application Japan, Sept. 21, 1966, 41/61956

Int. Cl. C12k 1/06

U.S. Cl. 195—103.5

6 Claims

A dehydrated medium for permitting easy detection of beer lactic acid bacteria, which medium is prepared by adding a small amount of acetates and mevalonic acid to a dehydrated nutritional medium whose principal components consist of nitrogen source, carbon source, inorganic salts, growth factors for beer lactic acid bacteria and a small amount of agar.

3,616,256

METHOD FOR THE DETERMINATION OF PSEUDOMONAS IN BIOLOGICAL MEDIA

Thomas E. Furla, Hartsdale, N.Y., assignor to Gelgy Chemical Corporation, Ardsley, N.Y.

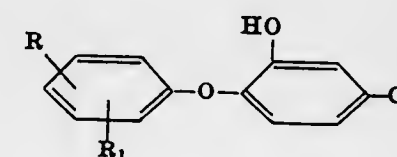
Filed Mar. 18, 1968, Ser. No. 714,089

Int. Cl. C12k 1/06

U.S. Cl. 195—103.5

8 Claims

The presence of *Pseudomonas* in biological media containing other micro-organisms is determined by adding to the media from 100 to about 800 parts per million of a compound of the formula:



wherein R is halogen and R₁ is hydrogen or chloro.

The medium is then maintained at 20° to 40° C. for an incubation period of 12 hours to 14 days. A particularly preferred compound useful in this method is 2,4,4'-trichloro-2'-hydroxydiphenyl ether.

3,616,257

REAGENT FOR ASSAYING THYROMIMETRIC COMPOUNDS

Clemens J. Ackerman, 1500 Spring Garden St., Philadelphia, Pa.

Filed May 15, 1968, Ser. No. 729,240

Int. Cl. G01n 3/114

U.S. Cl. 195—103.5

3 Claims

Thyromimetic compounds are assayed by determining the decrease in conversion of inosine-5'-monophosphate to xanthine-5'-phosphate by inosine-5'-monophosphate dehydrogenase. The rate of conversion is measured by absorption of NADH₂ at 340 mμ.

3,616,258

DIAGNOSTIC PRODUCT AND PROCESS FOR THE DETECTION OF NIACIN PRODUCTION BY MYCOBACTERIA

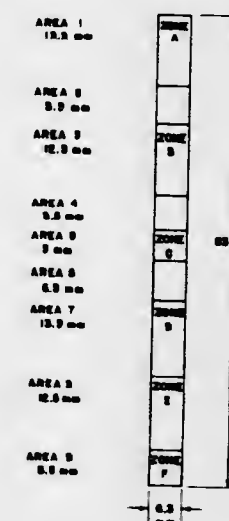
Donald P. Kronish, Rockaway, and William D. Young, Jr., Montclair, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 18, 1969, Ser. No. 834,424

Int. Cl. C12k 1/06

U.S. Cl. 195—103.5 R

11 Claims



A diagnostic product for the detection of niacin produced by "human" *Mycobacterium tuberculosis* is prepared by impregnating a plurality of individual but separated zones on a paper strip with a series of reagents which include (1) an alkali metal salt of p-aminobenzoic acid; (2) sodium or potassium thiocyanate; (3) a crystalline acid such as citric, oxalic or malonic; and (4) chloramine-T. The desired diagnostic test employing the impregnated paper strip is performed by bringing the strip into contact and in a sealed test tube with an extract of the culture to be tested. If niacin is present the reaction of the several reagents with the niacin leads to color formation as a positive test for the presence of niacin.

3,616,259

SCREENING PROCEDURE FOR ENZYME DEFICIENCIES

Ernest Beutler, 1501 Highland Oaks, Arcadia, Calif.

Division of Ser. No. 641,733, May 8, 1967.

Filed Oct. 6, 1969, Ser. No. 870,395

Int. Cl. G01n 3/114

U.S. Cl. 195—103.5

8 Claims

This screening method detects enzyme deficiencies in red blood cells by use of a reaction mixture containing a pyridine nucleotide, the reduced form of which fluoresces upon activation by longwave ultraviolet light but not the oxidized form, thereby detecting the presence or absence of enzyme deficiencies.

3,616,260

FERMENTATION PROCESS AND APPARATUS

Hans Muller, Erlenbach/Zurich, Switzerland, assignor to Process Engineering Company, S.A., Mannedorf/Zurich, Switzerland

Filed Feb. 20, 1969, Ser. No. 801,095

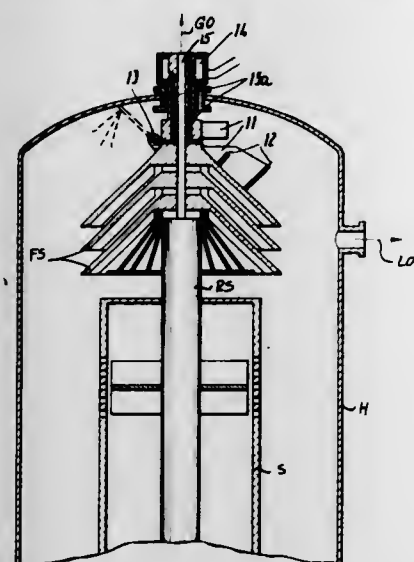
Int. Cl. C12b 1/18

U.S. Cl. 195—107

6 Claims

In a fermentation process substances are fermented in a container under simultaneous agitation with attendant formation of foam. The foam is separated into its liquid and gaseous phases and the gaseous phase is exhausted. A flowable medium is introduced into the container and into

the region wherein foam forms, in counterflow to the exhausting gaseous phase, to thereby prevent the develop-



ment of mycelium growths which could lead to interruption of the foam formation and separation.

3,616,261
CONTINUOUS MALTING APPARATUS
Gerhard Leue; Klaus Marquardt; Arndt Lippmann, and Burkhard Jaekel, all of Berlin, Germany, assignors to Forschungsinstitut für die Garungsindustrie Enzymologie und technische Mikrobiologie, Berlin, Germany
Filed May 22, 1968, Ser. No. 731,110
Int. Cl. C12b 1/02

U.S. Cl. 195—128

6 Claims

An apparatus for automatically operating and regulating a continuous malting process is characterized in that the goods to be malted are continuously guided through a continuously operating malting plant with a constant drop weight, the drop weight being regulated to a predetermined value by a volume-dosing device, the predetermined value being that of the completely filled container and preferably amounting to 1,200 kg./hour, whereupon in the wash section the actual temperatures of water introduced consecutively into a postwash, prewash and steeping vessel as well as the temperature of the lye in the lye wash are regulated to a preset temperature ranging between 8° and 35° C. and the concentration of the lye is regulated to a preset value of 0.1 to 1 percent, while in the soft-washing range, the measured temperatures of the moist goods are regulated to a preset temperature of about 14° C. and during germinating to a preset value of 18° to 20° C., while the water content in this section which determines the degree of softness of the goods is regulated to a preset value of 41 to 45 percent, whereupon in a curing section preferably divided into four zones the temperatures of dry air in the zones prior to their contact with the goods are set to 45°, 65°, 80° and 84° C., respectively, while the moisture contents in the last third of the zones are set to 20–22 percent, 10–12 percent, 6 percent and 4 percent.

3,616,262
APPARATUS AND METHOD FOR PROPAGATING VIRUSES IN THE EXTRA-EMBRYONIC FLUIDS OF EGGS

Michael G. Coady, Broomall, and Amherst Carleton Haliday Macartney, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of application Ser. No. 295,409, July 7, 1963, now abandoned. This application June 9, 1967, Ser. No. 645,062

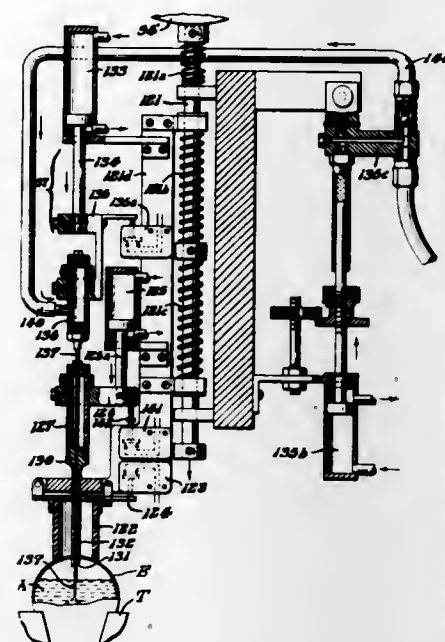
Int. Cl. C12b 1/00, 1/02; C12k 7/00

U.S. Cl. 195—12

20 Claims

There is disclosed an apparatus and a system for automating the handling of eggs in the various steps of virus production in eggs containing a living embryo. Manual handling of individual eggs is avoided by keeping the eggs in

trays, and eight eggs are automatically processed at one time in candling, sterilizing, hole punching, inoculating and sealing the eggs prior to incubation. After incubation the eggs are

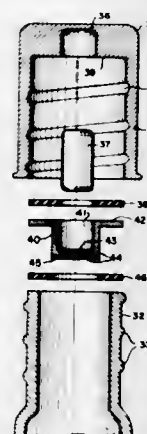


similarly handled and processed, eight at a time, in candling, chopping off the tops of the eggs, harvesting the extra-embryonic fluids from the eggs, and finally discarding the remainder of eggs.

3,616,263
GAS CAP FOR CULTURE TUBES
Ernest J. Anandam, Knoxville, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.
Filed June 16, 1969, Ser. No. 833,491
Int. Cl. C12b 1/00

U.S. Cl. 195—127

9 Claims



A cap for culture tubes for tubercle bacilli and other capnophilic micro-organisms and a modification thereof for anaerobic micro-organisms comprising a cylindrical screw cap within which is disposed a cup structure receiving a cylindrical, rupturable capsule containing CO₂ or compounds that create an anaerobic condition.

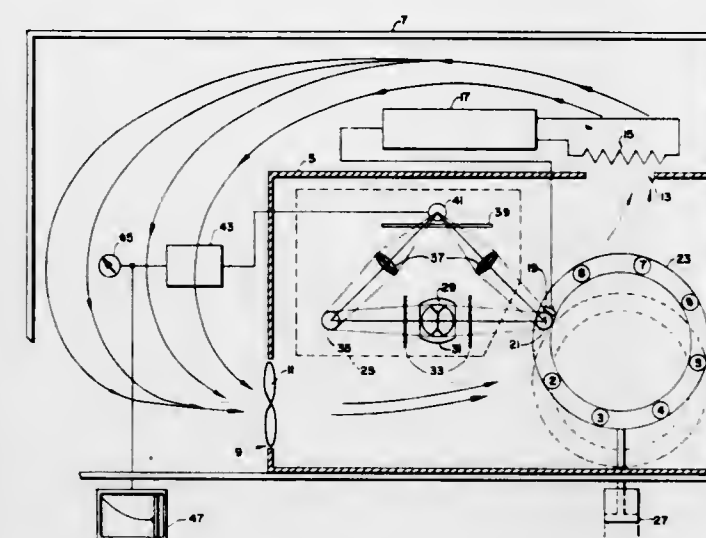
3,616,264
TEMPERATURE-CONTROLLED DISCRETE SAMPLE ANALYZER
Robert A. Ray, and James C. Sternberg, both of Fullerton, Calif., assignors to Beckman Instruments, Inc.
Filed June 30, 1969, Ser. No. 837,697
Int. Cl. C12k 1/10

U.S. Cl. 195—127

8 Claims

There is disclosed an apparatus for controlling the temperature of discrete sample containers in analytical instrumentation. A conveyor containing discrete samples to be analyzed is located in a subcompartment within a larger enclosure. A fan is mounted in a first opening in the subcompartment to move air from the large enclosure into

the subcompartment. A second opening in which a thermal energy transfer element is mounted allows the passage of the air over the thermal energy transfer element back into the

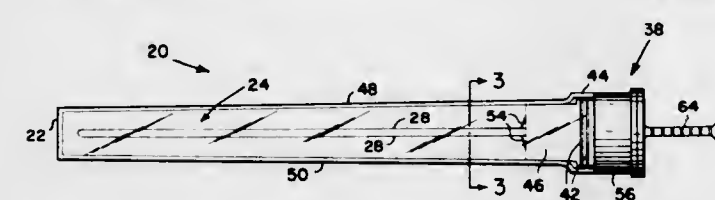


larger enclosure. A temperature sensor contacts a sample container being measured to provide a control signal which is applied to a proportionally controlled power supply connected to the thermal energy transfer element.

3,616,265
DEVICE FOR MAKING A CULTURE OF MICRO-ORGANISMS
Anthony J. Calabrese, Malvern, and Joseph F. Pagano, Paoli, both of Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.
Filed Aug. 7, 1969, Ser. No. 848,212
Int. Cl. C12b 1/02

U.S. Cl. 195—139

10 Claims



A device for making a culture of micro-organisms has an elongated member which advantageously supports a culture medium on each of two opposite flat faces. A container having an open end is provided for the elongated member. A brush mounted in the container contacts the elongated member intermediate its ends. The open end of the container has removable means to seal it. In a typical operation, the elongated member is removed from the container and the end thereof brought into contact with the area of the patient suspected of having micro-organisms. On returning the elongated member to the container it passes the brush which wipes along the member to brush the inoculum from the end along the culture medium. Advantageously, the container has a guide member to guide the elongated member and restrict its movement toward the interior surfaces of the container. Preferably the brush forms a part of the guide member and the elongated member has a plug adapted to form a seal with the guide member to permit the withdrawal of the elongated member from the container either independently of the guide member or together with the guide member.

3,616,266
HORIZONTAL RETORT WITH SOLID HEAT TRANSFER MEDIUM

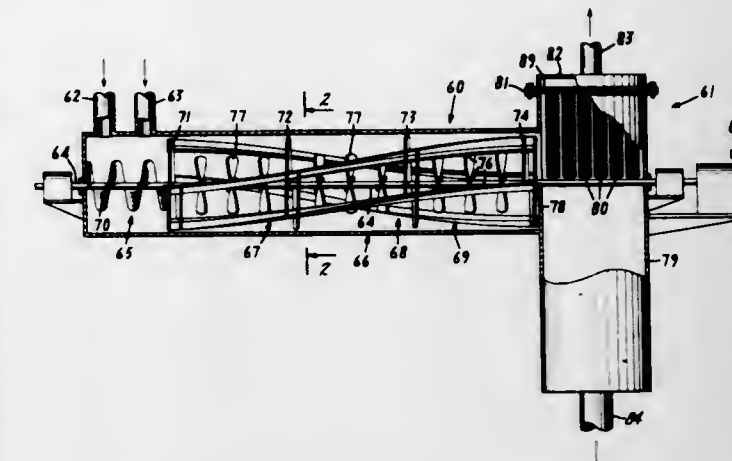
Robert N. Hall, Boulder; Richard H. Beaver, Lakewood, Colo.; Roy Glenn Vawter, Los Angeles, Calif., and Charles J. Mains, Golden, Colo., assignors to The Oil Shale Corporation, New York, N.Y.
Filed Apr. 29, 1969, Ser. No. 820,140
Int. Cl. C10b 1/06

U.S. Cl. 202—118

3 Claims

A pyrolyzer or retort having a conveying section and a mixing section which latter section is composed of a plurality

of pyrolysis chambers having means for conveying and of the air over the thermal energy transfer element back into the



concurrently retarding the flow of intermixed solid raw material and solid heat carriers.

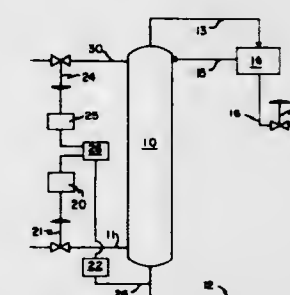
3,616,267
PROCESS CONTROL FOR EXTRACTIVE DISTILLATION OPERATION HAVING A CONSTANT TAKE-OFF VOLUME PRODUCT STREAM

George A. McNeill, Springfield, Mass., and Jerry D. Sacks, Houston, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 2, 1968, Ser. No. 764,395
Int. Cl. B01d 3/42

U.S. Cl. 203—3

3 Claims



A process for the continuous separation of a feed mixture in a separation zone having a plurality of product streams withdrawn from said separation zone, at least one of said product streams being withdrawn from an upper region of said separation zone and at least one of said product streams being withdrawn from a lower region of said separation zone, said process comprising passing said feed mixture to a column in said separation zone, setting at least one of said product streams of said column at a constant takeoff volume, measuring a property representative of the composition of one of said product streams and converting said measurement to a signal representative of said measurement and using said signal to manipulate the flow rate of said feed mixture in response to such measurement such that such measurement remains substantially constant at a predetermined value.

3,616,268
ACETIC ACID RECOVERY FROM AQUEOUS SOLUTION BY DISTILLATION AND CRYSTALLIZATION
Philip J. Philliou, Fort Lee, N.J., assignor to The Lummus Company, Bloomfield, N.J.

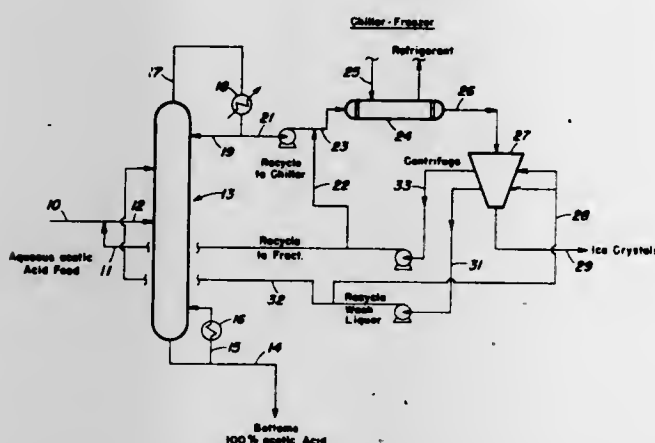
Filed Feb. 24, 1969, Ser. No. 801,400
Int. Cl. B01d 9/04; C07c 53/08

U.S. Cl. 203—16

5 Claims

A process for recovering acetic acid from dilute aqueous solutions thereof wherein the dilute acetic acid is introduced into a fractionator to produce an acetic acid bottoms and a dilute acetic acid overhead, containing between about 7 and about 10 weight percent acetic acid, the remainder being water. The overhead is then cooled to a temperature at which a portion of the water solidifies, thereby producing a slurry of ice crystals in a concentrated acetic acid mother

liquor, containing between about 11 and about 55 weight percent acetic acid, with the remainder being water. The ice is separated from the mother liquor and a major portion of



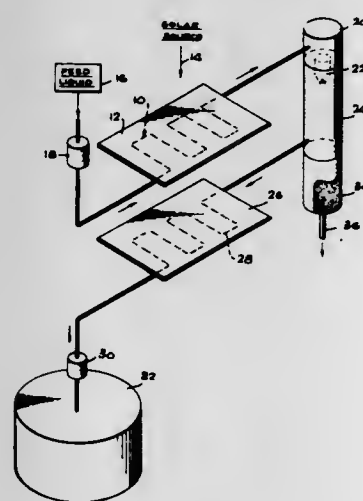
the mother liquor is recycled to the fractionator to effect recovery of acetic acid. The remaining portion of the mother liquor is combined with the overhead, prior to cooling, to regulate the slurry consistency.

3,616,269
METHOD FOR THE PURIFICATION OF MALONONITRILE BY THE ADDITION OF CYCLOPENTADIENE FOLLOWED BY DISTILLATION
David Aelony, and William J. McKillip, both of Minneapolis, Minn., assignors to Ashland Oil, Inc., Houston, Tex.
Filed July 10, 1969, Ser. No. 840,837
Int. Cl. C07c 121/22

U.S. Cl. 203—38 5 Claims
Malononitrile containing similarly boiling unsaturated dinitrile impurities is contacted with cyclopentadiene to result in the selective conversion of said impurities to substantially higher boiling derivatives thereof thereby permitting the ready recovery of a purified fraction of malononitrile by distillation.

3,616,270
PROCESS AND APPARATUS FOR FLASH DISTILLATION WITH PRESSURE AND FLOW OF LIQUID IN PREHEATER CONTROLLED
Joseph A. Ferrara, P.O. Box 398 6411 Elwood St., Joshua Tree, Calif.
Filed Dec. 20, 1968, Ser. No. 785,576
Int. Cl. B01d 3/00

U.S. Cl. 203—47 8 Claims



Water still system for utilizing solar energy and/or waste heat to distill water and chemicals. A pressure vessel having a given rate of thermal expansion is filled with a distillable feed liquid having a higher rate of thermal expansion. Application of heat, as by solar energy or waste heat, to the vessel causes the liquid to expand at a faster rate than the pressure vessel, thereby both pressurizing the liquid and elastically stretching

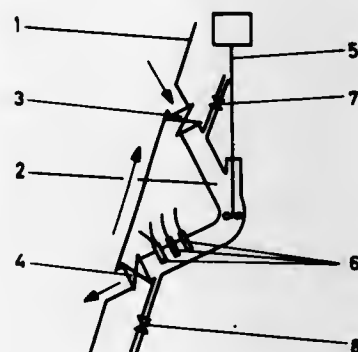
the pressure vessel walls. The pressure vessel is provided with a liquid output control valve which opens at a predetermined pressure for discharging a small portion of the pressurized liquid through a vapor-producing device whereby the heat energy previously absorbed is converted into the heat of vaporization of the discharged liquid. Any dissolved solids in the liquid feed crystallize during vaporization of the pressurized liquid, followed by separation of the vapor and solids in an expansion chamber from which the vapor is bled off for condensation and storage.

3,616,271
SEPARATION OF CHLOROFORM AND/OR ETHYL ACETATE FROM VINYL ACETATE BY EXTRACTIVE DISTILLATION
Harry B. Copelin, North Graylyn Crest, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 25, 1968, Ser. No. 770,480
Int. Cl. B01d 3/34

U.S. Cl. 203—52 8 Claims
An extractive distillation method of separating chloroform, and/or ethyl acetate from vinyl acetate, particularly when such materials are present as impurities in vinyl acetate. The method involves using a hydrocarbon, e.g., an acyclic aliphatic, an alkyl aromatic, or a cycloaliphatic hydrocarbon having a boiling point of at least 100° C., e.g., 100°–250° C., as the extraction solvent.

3,616,272
APPARATUS FOR MAKING CONTINUOUS MEASUREMENTS IN LIQUID MEDIA
Alfred Goerg, Bloney/Vaud, and Michel Chevalley, Bex/Vaud, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed Oct. 18, 1967, Ser. No. 676,299
Claims priority, application Switzerland, Oct. 21, 1966, 15319/66

U.S. Cl. 204—1 T 4 Claims
Int. Cl. G01n 27/46

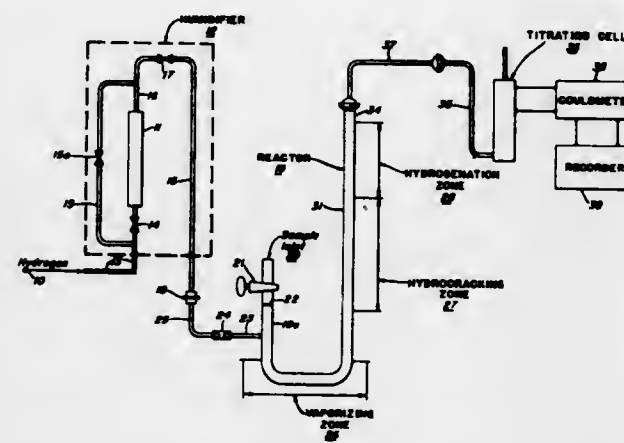


The invention relates to apparatus for making continuous measurements in liquid media slowly traveling upwardly, which tend to form deposits, in which apparatus a branch line contains at least one measuring sensor and a pump located before the measuring point in the flow direction and is connected with the apparatus through which the medium to be measured flows in a manner such that its induction end is attached at the point where the measurement is to be taken and its pressure end below this point and the measuring point located in between each point of the branch line being inclined to the horizontal.

3,616,273
NITROGEN DETERMINATION AND APPARATUS THEREFOR
Itsumi Jack Oita, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.
Filed Apr. 1, 1968, Ser. No. 717,889
Int. Cl. G01n 27/42

U.S. Cl. 204—1 T 20 Claims
A method and apparatus for quantitatively determining the nitrogen content of organic materials, especially those organic materials having boiling points in excess of about

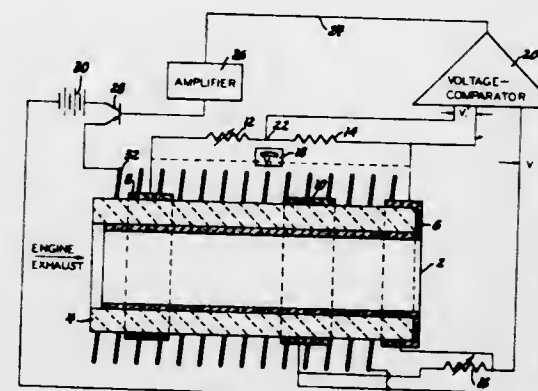
450° F. The method involves hydrocracking the organic thereby effecting a valence change in the metal and a material, hydrogenating the nitrogen to ammonia, and transfer to the aqueous solution, separating the immiscible



measuring the quantity of ammonia present, which may then be related to the original nitrogen composition.

3,616,274
METHOD AND APPARATUS FOR MONITORING EXHAUST GAS
David S. Eddy, Roseville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1969, Ser. No. 879,126
Int. Cl. G01n 27/46

U.S. Cl. 204—1 T 5 Claims

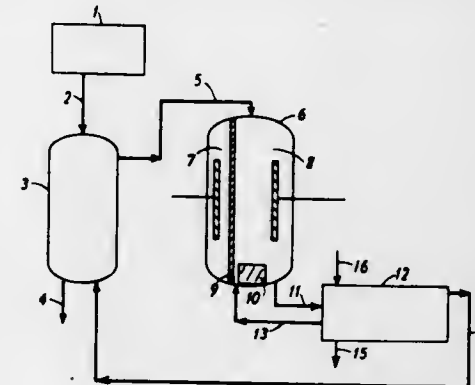


A solid electrolyte, electrochemical exhaust gas sensor which is self-correcting with respect to maintaining its operating temperature substantially constant. The sensor comprises two electrochemical cells sharing a common electrolyte but externally loaded differently to produce different terminal voltages. An electronically detected imbalance between the two voltages produces a thermal correction signal which activates appropriate heating or cooling means.

3,616,275
PROCESS FOR CONCENTRATING A METAL OF VARIABLE VALENCE IN AQUEOUS SOLUTION
Alfred Schneider, Morristown, and Arnold Leslie Ayers, Convent Station, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,713
Int. Cl. B01k 3/00

U.S. Cl. 204—1.5 7 Claims

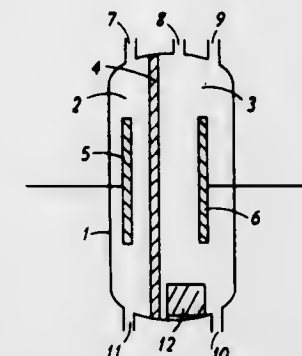
Method for concentrating a metal of variable valence in aqueous solution by extracting the metal with an immiscible organic solvent, separating the resulting immiscible solutions, forming a dispersion by agitating the organic solution with an immiscible aqueous solution which is a preferential solvent for the metal in a different valence state, passing an electric current through the dispersion in the cathode zone of an electrolytic cell (if a lower valence state is desired) or in the anode zone (if a higher valence state is desired), the cathode and anode zones being separated by a porous membrane,



solutions and recycling the aqueous solution for forming a dispersion with fresh organic solution.

3,616,276
PROCESS FOR CHANGING THE VALENCE OF A METAL OF VARIABLE VALENCE IN AN ORGANIC SOLUTION
Alfred Schneider, Morristown, and Arnold Leslie Ayers, Convent Station, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 14, 1969, Ser. No. 815,714
Int. Cl. B01k 3/00

U.S. Cl. 204—1.5 14 Claims



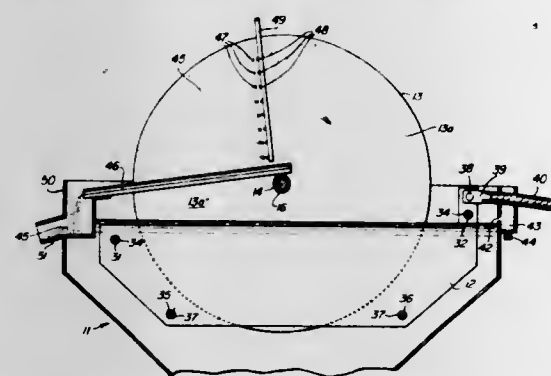
A process for changing the valence of a metal of variable valence in an organic solution whereby a dispersion is formed by agitating the organic solution with an immiscible aqueous solution and an electric current is passed through the dispersion in the cathode zone of an electrolytic cell (if a lower valence state is desired) or in the anode zone of the cell (if a higher valence state is desired), the cathode and anode zones of the cell being separated by a porous membrane, so that the valence state of the metal becomes higher or lower. When the distribution coefficient of the metal varies with a change in valence, the process also provides a means of effecting a transfer of the metal from the organic solution to the aqueous solution.

3,616,277
METHOD FOR THE ELECTRODEPOSITION OF COPPER POWDER
David L. Adamson, and William M. Tuddenham, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed July 26, 1968, Ser. No. 748,034
Int. Cl. C22d 5/00; B23p 1/00; B01k 3/00

U.S. Cl. 204—10 8 Claims

Metallic powder, e.g., copper powder, is deposited on a series of disc-shaped cathodes as they turn through an electrolytic solution of the metal. The cathodes, preferably of titanium, are partially immersed in a bath of electrolyte contained in an electrolytic cell tank. Insoluble anodes, preferably of platinized titanium, are disposed in the tank in interleaved arrangement with the cathodes. Powder is continuously deposited on the cathodes and continuously removed by doctor blades, preferably of plastic, mounted

adjacent the cathodes above the electrolyte level of the cell. In the production of copper powder, the cell operates at a much higher temperature, current density, and acid



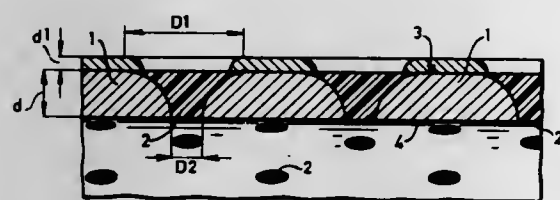
concentration—and with a much lower copper ion concentration in the electrolyte—than is typical for the electrodeposition of copper in electrolytic cells.

3,616,278 METHOD FOR MAKING A CYLINDRICAL FILM SCREEN

Lodewijk Jansen, St. Anthonis, Netherlands, assignor to Stork Amsterdam N.V., Amsterdam, Netherlands
Filed July 26, 1968, Ser. No. 748,054
Claims priority, application Netherlands, July 27, 1967, 6710441
Int. Cl. C23b 7/00, 7/02

U.S. Cl. 204—11

3 Claims



Starting with an apertured cylindrical matrix an electrically insulating material is applied over the matrix to close the matrix apertures. A layer of metal is then deposited electrically on the matrix to form a metal film screen. A layer of transparent plastic material is then applied onto the metal film screen and the film screen of metal and transparent plastic is then removed from the matrix. The starting matrix may be expanded by mandrel or the like prior to the closing of the matrix openings and to carrying out the other steps and the outer diameter of the matrix is then reduced prior to removing the film screen therefrom. The starting cylindrical matrix may also comprise a thin-walled apertured sleeve which is deformed into a kidney-shaped section to reduce its outer diameter prior to removing the film screen therefrom.

3,616,279 ELECTROLYTE METHOD AND COMPOSITION FOR COLORING TITANIUM AND ITS ALLOYS

Earl W. Kendall, Bonita, Calif., assignor to Rohr Corporation
Filed May 27, 1968, Ser. No. 732,032
Int. Cl. C23b 5/48, 1/00, 9/00

U.S. Cl. 204—14 N

19 Claims

Titanium and titanium alloys are colored by electrolytic action to provide a colored surface of the nature of an anodized film. The colors imparted are controlled by voltage input to the electrolyte so that a wide selection of colors, each corresponding to a specific voltage level, may be obtained and reproduced from one surface to another by use of the same selected voltage levels. The electrolyte is a two-part composition consisting of an organic and an inorganic constituent. The organic constituent is one of a group of amides of which dimethylformamide is preferred. The

inorganic constituent is a fluoride-bearing compound of which fluoboric acid is preferred.

3,616,280 NONAQUEOUS ELECTROPLATING SOLUTIONS AND PROCESSING

Vernon E. Arnold, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 24, 1969, Ser. No. 809,508
Int. Cl. C23b 5/00; B01k 1/00

U.S. Cl. 204—14 N

6 Claims

Nonaqueous electroplating solutions containing dimethyl sulfoxide and a plating metal salt, a process for electroplating using these solutions wherein the solution is heated to a temperature between about 160° and 200° F. and a modified process for selectively electroplating as a composite coating more than one material at separate plating rates.

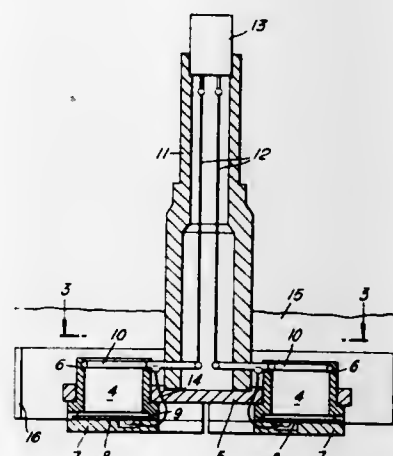
3,616,281 SELECTIVE PLATING OF REEDS IN BULK

Brian Ernest Head, Bexley, and Colin Stratford, Croydon, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,575

Claims priority, application Great Britain, Feb. 26, 1969, 10259/69
Int. Cl. C23b 5/48, 5/58, 5/68

U.S. Cl. 204—15

10 Claims



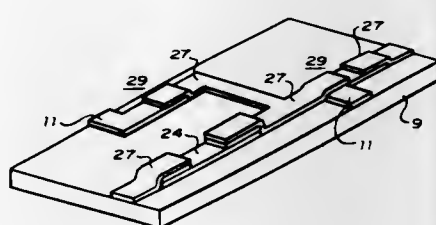
This concerns the bulk electroplating with gold of reed contact blades. The blades are located in insulating pots with their contact tips uppermost and extending beyond the rims of the pots. The rim and the base of the pots are metallized and, with the blades, form the cathode of the plating surface. During plating the major parts of the reeds are screened from the plating flow by the insulating sidewalls of the pots, gold being plated only on the exposed contact tips.

3,616,282 METHOD OF PRODUCING THIN-FILM CIRCUIT ELEMENTS

George E. Bodway, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Nov. 14, 1968, Ser. No. 775,828
Int. Cl. C23b 5/48, 5/52, 5/24

U.S. Cl. 204—15

14 Claims



Thin-film resistors and capacitors are formed and connected on a common substrate with high yield by forming

on the substrate a first tantalum electrode for each capacitor; by anodizing a selected portion of each first electrode; by forming on the substrate a tantalum nitride element for each resistor; by heattreating the structure; by reanodizing the selected portion of each first electrode; by forming on the reanodized portion of each first electrode a second electrode for each capacitor; and by forming an interconnection between at least one resistor and the first or second electrode of at least one capacitor.

3,616,283 METHOD OF MAKING ELECTRICAL CONTACT PINS

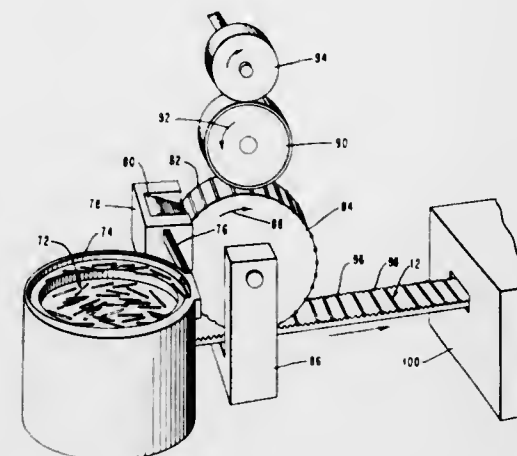
Robert A. Magee, Poughkeepsie, and Joseph S. Scioscia, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 697,379, Jan. 12, 1968, Pat. No. 3,525,066.
Filed Sept. 29, 1969, Ser. No. 870,912

1969, Ser. No. 870,912

Int. Cl. C23b 5/48, 5/56, 5/58

U.S. Cl. 204—15

3 Claims



Selectively gold-plated electrical contact pins are mounted in multiple layer printed circuit boards. The gold plating at regions to be soldered to the board is thinner than at contact regions to prevent excessive tin-gold union and resultant solder joint contamination. Also, a process of fabricating the pins including applying a resinous based substance thereon and forming a plating resistive mask at preselected regions, electroplating gold thereon, and thereafter removing the mask and replating.

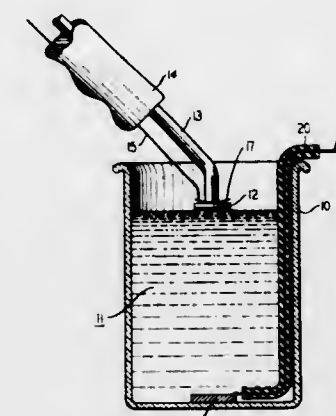
3,616,284 PROCESSING ARRAYS OF JUNCTION DEVICES

Max G. Bodmer, Short Hills; Merton H. Crowell, Morristown, and Norman C. Wittwer, Jr., Oldwick, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 21, 1968, Ser. No. 754,183

Int. Cl. C23b 5/48, 7/00

U.S. Cl. 204—16

5 Claims



The specification describes a method for processing junction or barrier layer arrays to eliminate leakage defects. The array is anodized under mild electrolytic conditions

which reverse bias the diodes. Since the array is reverse biased, anodization occurs selectively at the sites of current leakage and in proportion to the amount of leakage until the leakage is effectively eliminated. Properly formed elements of the array are essentially unaffected.

3,616,285 REPAIR OF CHROMIUM PLATED SURFACES

Joseph C. Norris, Mayfield Heights, Ohio, assignor to Silco Industries, Inc., Cleveland, Ohio
Filed Dec. 31, 1969, Ser. No. 889,676
Int. Cl. C23b 7/00, 1/00

U.S. Cl. 204—16

17 Claims

A process for repairing defective areas or spots in chromium plated surfaces in which the area is subjected to sequential steps, such as mechanical cleaning, electrocleaning, electroactivating, copper electroplating, nickel electroplating, electrocleaning and electroactivating the nickel deposit, and then chromium plating the nickel deposit. Prior to any metal deposition, the original chromium deposit is electrolytically removed from a band which borders the perimeter of the defective area. The copper electrodeposits (if used) and the nickel electrodeposit then cover the defective area and at least part of the bordering band but do not reach the contiguous originally deposited chrome-plate from which the copper and/or nickel is more likely to peel. The final chromium plating covers all of the defective area, bordering band, and contiguous originally deposited chrome-plate.

3,616,286 AUTOMATIC PROCESS AND APPARATUS FOR UNIFORM ELECTROPLATING WITHIN POROUS STRUCTURES

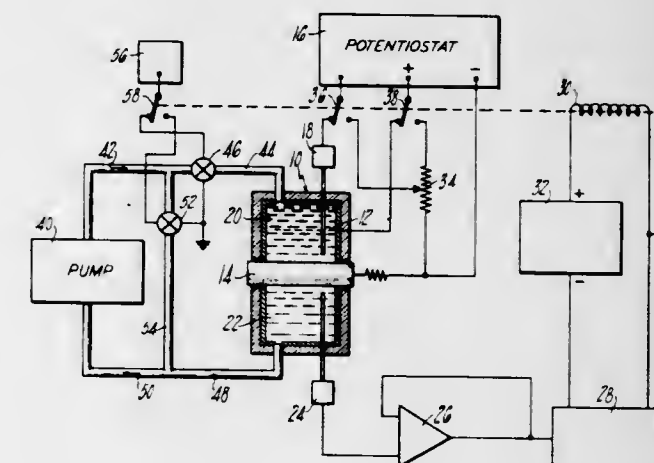
John A. Aylward, Vernon, Conn., and Lawrence J. Bregoli, Westfield, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 15, 1969, Ser. No. 862,151

Int. Cl. C23b 5/48; B01k 3/00

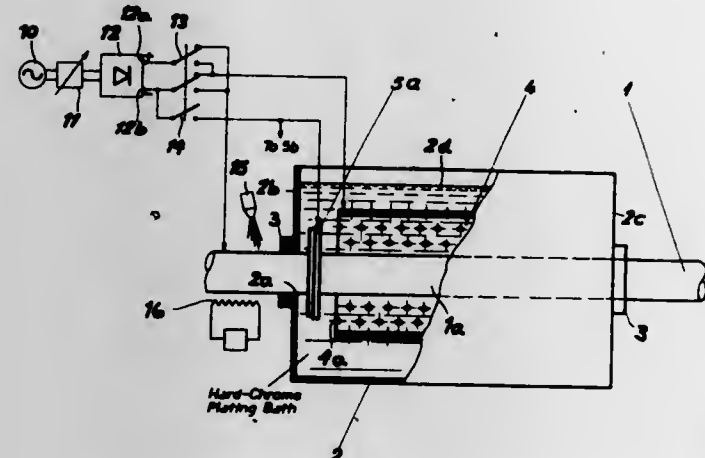
U.S. Cl. 204—24

9 Claims



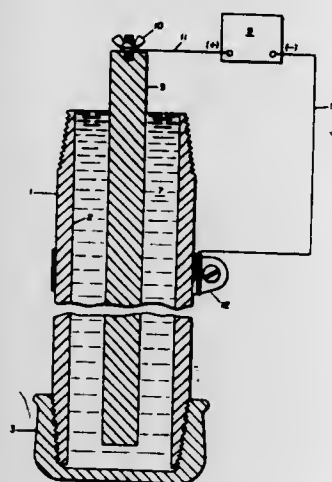
An automatic process for uniformly electroplating the internal surfaces of conducting porous structures. The method is particularly suitable for the electrodeposition of a catalytic material within a fuel cell electrode. A potential pulse travels through the porous structure upon the initial application of a plating potential to the structure causing local depletion of the ions in solution within the pores of the structure. Exhaustion of ions is sensed causing cessation of the applied potential while scheduling a flow of fresh plating solution through the electrode. Replenishment of ions triggers a new plating cycle.

3,616,287
METHOD FOR HARD-CHROME PLATING LARGE METALLIC SURFACES
 Antoaneta M. Draghicescu, and Aurel C. Radoi, both of Bucharest, Romania, assignors to Institutul de Cercetari Technologice Pentru Constructii de Masini
 Filed Apr. 7, 1969, Ser. No. 813,828
 Int. Cl. C23b 5/56, 5/58; B01k 3/00
 U.S. Cl. 204—25 6 Claims



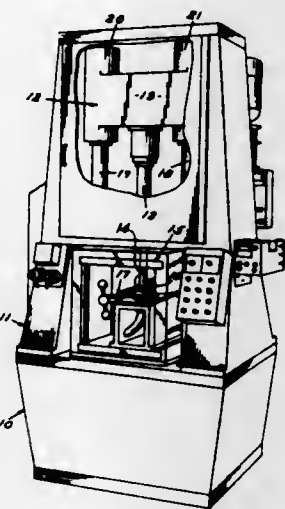
A method of hard-chromium plating elongated bodies of large surface area wherein the body is advanced in stages through the chromium plating bath relative to the anode, and chromium plating is carried out during the transverse in which the substrate is stationary. A pair of equipotential screens is provided in axially spaced relationship at each end of the plating zone, at least one of the screens being positioned upon the previously coated portion of the substrate at a location in which the prior plating has reached its maximum thickness.

3,616,288
CEMENT-LINED METAL PIPE WITH IMPROVED BOND BETWEEN PIPE AND LINING
 Earl S. Saavely, Jr., Arlington, Tex., assignor to Mobil Oil Corporation
 Filed June 26, 1969, Ser. No. 836,706
 Int. Cl. C23b 7/00, 5/56; C23f 17/00
 U.S. Cl. 204—26 9 Claims



This specification discloses an improved cement-lined pipe and a method of roughening the interior surface of metal pipe in preparation for receiving a cement lining. The interior surface is roughened by depositing metal in the form of protrusions from an electrolytic solution by passing direct current therethrough. Cement lining may be applied to the interior surface of the pipe having protrusions formed thereon to produce a cement-lined pipe having increased bond strength between the cement and the pipe.

3,616,289
ELECTROPLATE HONING METHOD
 Myron P. Ellis, Royal Oak, and Richard J. Gavasso, Detroit, both of Mich., assignors to Mikromatic Home Corporation, Detroit, Mich.
 Filed July 1, 1969, Ser. No. 838,113
 Int. Cl. C23b 5/56; B23p 1/00, 1/02
 U.S. Cl. 204—26 3 Claims



An electroplate honing technique that utilizes electrochemical honing to clean the metallic surface of a workpiece with current flow in one direction, then with the current flow reversed, utilizes an electroplate honing cycle to plate or deposit metal on the surface of the workpiece, then finally terminating the flow of current and utilizing a honing cycle to generate the surface finish desired by mechanical abrasion.

3,616,290
METHOD OF MAKING PLATED MEMORY FILM
 Emil Toledo, Natick, and Peter Semienko, Rosindale, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
 Continuation-in-part of application Ser. No. 646,555, Jan. 3, 1967, now abandoned. This application May 28, 1969, Ser. No. 828,723
 Int. Cl. C23b 5/32 7 Claims

Thin magnetic nickel-iron alloy memory films electroplated from an aqueous electrolyte including chloride, sulfate and ammonium sulfate as nickel source ion materials. Such an electrolyte is found to improve bath stability and reliability in continuous plating and also improve magnetic memory properties while alleviating such prior art electroplating difficulties as bath instability, decomposition, residue, difficulty of analysis, source material impurity and unreliability, source ion depletion and control over magnetic properties. The resultant plate has improved microstructure, with reduced stress and finer (controlled) grain structure and also has superior magnetic flux density and dispersion characteristics.

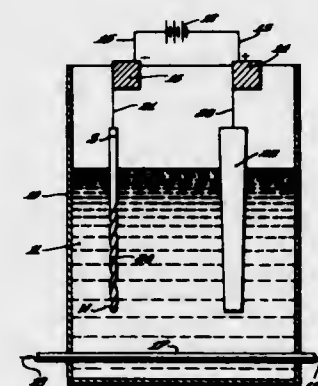
3,616,291
STANNOUS SOLUTIONS CONTAINING HYDROXY CARBOXYLIC ACID IONS, THEIR PREPARATION, AND THEIR USE IN PLATING TIN ON CONDUCTIVE SURFACES, PARTICULARLY ON ALUMINUM
 Harold P. Wilson, Sewickley, Pa., assignor to Vulcan Materials Company, Clark, N.J.
 Continuation-in-part of application Ser. No. 790,157, Jan. 9, 1969, now abandoned. This application Sept. 16, 1969, Ser. No. 858,544
 Int. Cl. C23b 5/14, 5/46, 5/50 19 Claims

Solutions of simple or complex salts of tin and gluconic acid or similar polyhydroxy carboxylic aliphatic acid, made neutral or nearly so by addition of a nonmetal base such as ammonium hydroxide, are useful in forming a dense, adherent tin plate on conductive surfaces. They are particularly useful in plating tin metal on aluminum or aluminum alloys.

3,616,292
ALUMATED STANNOUS SULFATE SOLUTIONS THEIR PREPARATION AND THEIR USE IN PLATING ON CONDUCTIVE SURFACES, PARTICULARLY ON ALUMINUM
 Harold P. Wilson, Sewickley, Pa., assignor to Vulcan Materials Company, Clark, N.J.
 Filed Mar. 6, 1969, Ser. No. 805,015
 Int. Cl. C23b 5/58, 5/14, 5/46 11 Claims

Solutions containing stannous sulfate and aluminum sulfate, as well as free sulfuric acid, and preferably a chelating agent, are useful in forming a dense, adherent tin plate on conductive surfaces. They are particularly useful in plating tin metal on aluminum or aluminum alloys. Conventional additives such as brightening and conditioning agents, e.g., polyalkylene glycols, may be included.

3,616,293
METHOD OF MAKING A METAL ARTICLE HAVING A CHROMIUM BONDED SURFACE
 Louis F. Ranieri, 4036 North Central Ave., Chicago, Ill.
 Continuation-in-part of application Ser. No. 638,676, Apr. 26, 1967, now abandoned. This application Mar. 7, 1968, Ser. No. 711,237
 Int. Cl. C23b 5/62 4 Claims



A method of electrodepositing chromium upon the surface of magnetizable metal article to effect a bonding therewith and a diffusion therethrough of chromium to increase the surface hardness, and particularly the scratch hardness thereof, and the metal article so produced. The method includes the steps of passing a current of sufficient strength and density through a chromium plating bath to effect a penetration of chromium into a magnetized metal article as the cathode. Magnetization of the article may be effected prior to the electrodeposition step so as to leave the metal article with residual magnetism when made the cathode in the electrodeposition bath. The composition of the electrolyte used preferably contains boric acid, in addition to chromic acid and a source of sulfate ions such as is customarily used in chromium electroplating baths.

3,616,294
SURFACE TREATMENT OF PLASTICS WITH MINERAL ACIDS CONTAINING HEXAVALENT CHROMIUM AND A PETROLEUM FRACTION OR NEOPENTYL GROUP CONTAINING ACIDS AND OLEFINS
 Habet M. Khelghatian, Springfield, Pa.; James E. Fitzpatrick, New Castle, Del., and James L. Jezl, Swarthmore, Pa., assignors to Standard Oil Company, Chicago, Ill.
 Filed May 3, 1967, Ser. No. 635,683
 Int. Cl. C23b 5/60; B44d 1/22 3 Claims

In the art of treating plastic surfaces to improve the adhesion of paints or metals thereto wherein the surface is treated with a strong mineral acid solution containing hexavalent chromium, the adhesion is improved by adding to the acid solution from 0.1 to 6 percent by volume of a petroleum fraction boiling between 80° C. and 240° C. which

is rich in branched chain aliphatic hydrocarbons and alicyclic hydrocarbons, olefins containing a neopentyl group, or carboxylic acids containing a neopentyl group.

3,616,295
LOW-TEMPERATURE TRANSFORMATION OF NONCONDUCTIVE SUBSTRATES TO CONDUCTIVE SUBSTRATES
 Sung K. Lee, Niagara, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
 Filed Dec. 28, 1967, Ser. No. 694,122
 Int. Cl. C23b 5/60 15 Claims

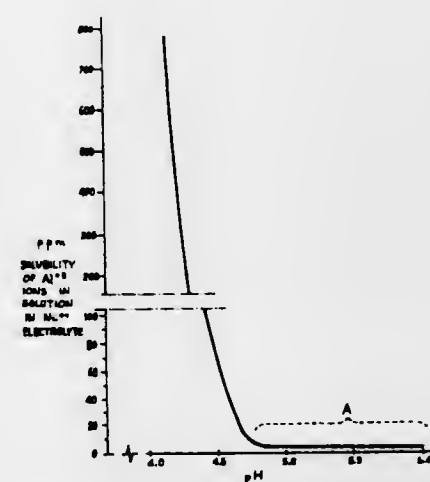
Substrates, particularly thermoplastic resins and polymers, are plated with metals by pretreatment of the substrate with phosphorus in an organic solvent to deposit phosphorus at the surface of the substrate followed by subjecting the thus treated substrate with a metal salt or complex thereof, in the presence of OH or Br₃H⁺ or AlR₃H⁺ or mixtures thereof, to form a metal-phosphorus compound, wherein each R is individually selected from the group consisting of alkyl, aryl and hydrogen. The treatment with the metal salt solution can be accomplished at room temperature. The resulting surface is conductive and can be readily electroplated by conventional techniques.

3,616,296
METHOD FOR METALLIZING PLASTICS
 Gunther Bernhardt, Hangeler, and Robert Buning, Troisdorf-Sieglar, both of Germany, assignors to Dynamit Nobel AG, Postfach, Germany
 Filed Dec. 31, 1969, Ser. No. 889,707
 Claims priority, application Germany, Feb. 2, 1969, P 19 05 097.6
 Int. Cl. B44d 1/092; C23c 3/02 9 Claims

Improved process for metallizing various plastic materials, including shaped vinyl chloride polymer and acrylonitrile-butadiene-styrene polymer articles, which includes using as the sensitizing solution in the known metallization process a solution which contains at least one tin IV salt dissolved therein in addition to the tin II and other conventional components. The sensitizing solution is itself disclosed and claimed.

3,616,297
METHOD OF PRODUCING COLORED COATINGS OF ALUMINUM
 William Ernest Cooke, and Paul John Sajben, both of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada
 Filed Sept. 23, 1968, Ser. No. 761,717
 Int. Cl. C23b 9/02 13 Claims

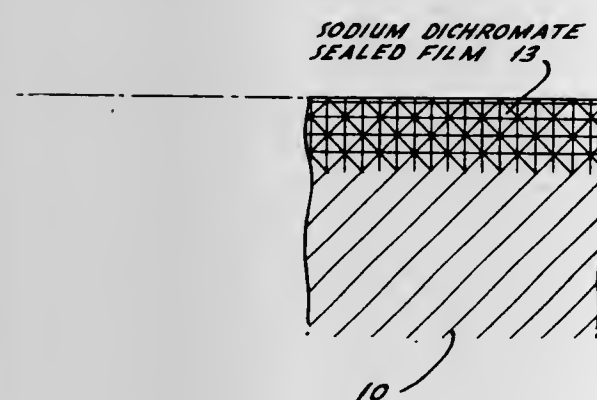
U.S. Cl. 204—35 N



In procedure for producing colored coatings on aluminum by first anodizing the aluminum surface and then treating such anodically coated surface with alternating current in an acidic bath containing Ni⁺⁺ or Co⁺⁺ ions to produce a

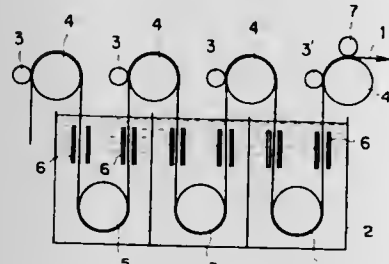
colored deposit in the coating, simplified control with effective coloring results is achieved by providing a content of combined aluminum in the acidic bath while maintaining the bath at a pH, notably about 5 to about 6, which restricts the dissolved Al ion concentration to a low value.

3,616,298
SEALING ANODIC FILMS
Wayne M. Fassell, Jr., Newport Beach, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed Nov. 22, 1968, Ser. No. 778,222
Int. Cl. C23f 17/00, 9/02
U.S. Cl. 204—35



Fabrication of corrosion resistant materials. Corrosion-resistance of anodized aluminum is promoted by sealing the anodized surface film in nickel acetate, followed by sodium dichromate, and keeping the temperature of these solutions—mainly that of the acetate—substantially below the boiling point and particularly at 160° to 180° F. The product is characterized by firm bonding of chromate ions to aluminum in the anodic film.

3,616,299
PROCESS FOR PRODUCING STEEL PRODUCTS HAVING A HYDRATED CHROMIUM OXIDE FILM EXCELLENT IN THE SURFACE APPEARANCE
Akira Hata, and Tamotu Hinami, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Mar. 24, 1969, Ser. No. 809,891
Claims priority, application Japan, Mar. 28, 1968, 43/19717
Int. Cl. C23b 11/00
U.S. Cl. 204—35 N



A process for obtaining a hydrated chromium oxide treated steel article having a beautiful surface appearance without any roll marks by pressing a steel product subjected to the chromic acid cathode electrolytic treatment, while a chromic acid film thus electrodeposited on the surface of the steel product is still wet, immediately after the electrolytic treatment by the help of a leveling roll as an auxiliary holddown roll having a surface hardness of 40° to 90° (A

scale) without need of frequently exchanging a holddown roll installed for preventing the formation of arc spots.

3,616,300
COMPOSITES INCLUDING ELECTROCONDUCTIVE REINFORCING MATERIAL FORMED BY ELECTRODEPOSITION AND METHOD OF FORMING THE COMPOSITES
Iqbal Ahmad, Elnora, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 13, 1969, Ser. No. 850,696
Int. Cl. C23b 5/48; B32b 5/00
U.S. Cl. 204—38 R

8 Claims

A method for forming composite material by electrodeposition in which a metal matrix is reinforced by electroconductive filaments. Prior to being fixed to a cathode for encapsulation by the matrix, the filaments are treated so that an electrononconducting film is formed on the surfaces thereof. This insulates the filaments from the electrodeposition process so that the matrix is formed around the filaments without interfering with the matrix buildup so as to encapsulate the filaments free of faulty voids.

3,616,301
PROCESS FOR THE ELECTROLYTIC FORMATION OF ALUMINUM COATINGS ON METALLIC SURFACES IN MOLTEN SALT BATH
Akira Miyata, Tokyo; Chikayoshi Tomita, Tokyo; Akio Suzuki, Tokyo; Hideyo Okubo, Kanagawa-ken, and Masahiko Nagakuni, Kanagawa-ken, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 507,034, Nov. 9, 1965, Pat. No. 3,480,521.
Filed Mar. 24, 1969, Ser. No. 828,050
Claims priority, application Japan, Nov. 13, 1964, Feb. 24, 1965, 39/63, 827, 40/10, 330, 40/10, 331.
Int. Cl. C23b 5/22, 5/50

U.S. Cl. 204—39

7 Claims

Metallic surfaces are electrolytically coated Aluminum aluminum in a molten salt bath containing aluminum chloride. Aluminum metal is used as an anode and a metallic surface as a cathode. Hydrogen ions are supplied to the bath from an external source during electrolysis. The metallic surface is electroplated with a metal having a higher hydrogen overvoltage than that for aluminum prior to plating aluminum thereon.

3,616,302
INSOLUBLE ANODE FOR ELECTROLYSIS AND A METHOD FOR ITS PRODUCTION
Kazuwa Ohsawa, Yokohama; Keiichi Shimizu, Tanashi, and Takashi Takasue, Tokyo, all of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan
Filed Feb. 23, 1968, Ser. No. 707,408
Claims priority, application Japan, Feb. 27, 1967, Nov. 6, 1967, 42/12,427 and 42/71,334
Int. Cl. C23b 5/46

U.S. Cl. 204—40

4 Claims

An insoluble anode suitable for use in electrolysis and a method for its production are provided. The anode comprises three components which are:

- a base substrate treated by sandblasting, said substrate being selected from the group consisting of titanium, zirconium and tantalum or alloys thereof;

- a thin metal layer formed on said substrate, said thin metal layer being selected from the group consisting of platinum, palladium and rhodium or alloys thereof; and

- an outermost layer of manganese dioxide electrodeplated on said thin metal layer in an aqueous solution of manganese sulfate containing about 10 to about 30 grams/liter of free sulfuric acid at a current density of about 0.015 to about 0.007 A./dm.².

The anode is produced by sandblasting a base substrate metal of titanium or its alloy to form minute indentations on the surface, electroplating on said base substrate metal a thin layer of platinum, and electrodepositing a layer of manganese

dioxide on said thin layer in an aqueous solution of manganese sulfate containing 10–30 g./l. of free sulfuric acid at a current density of 0.015–0.007 A./dm.².

3,616,303
ELECTROLYTIC TREATMENT OF NONFERROUS METALS
William A. Carter, Jr., Gary, Ind., assignor to Inland Steel Company, Chicago, Ill.
Continuation of application Ser. No. 685,314, Nov. 24, 1967, now abandoned. This application July 6, 1970, Ser. No. 56,139
Int. Cl. C23b 5/50, 11/00

U.S. Cl. 204—41

5 Claims

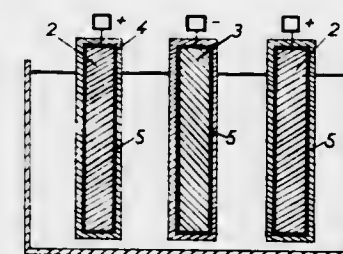
A two-step electrochemical treatment of a nonferrous metal article in which a first coating of electrolytic chromium plate is deposited on a nonferrous metal surface and a second or surface coating containing chromium both as an oxide of chromium and as metallic chromium is electrolytically codeposited over the chromium plate from a chromic acid solution containing an electroplating additive, preferably a halide ion. A duplex coating is formed which imparts very good corrosion resistance with small amounts of coating material and provides a paintable surface without a painting pretreatment.

3,616,304
METHOD FOR TREATING CHROMIUM-CONTAINING BATHS
Ram Dev Bedi, Oak Park, Mich., and Ronald Dow, Wilton, Conn., assignors to M & T Chemicals Inc., New York, N.Y.
Filed Jan. 26, 1966, Ser. No. 523,116
Int. Cl. C23b 5/06; B01k 1/00; C01g 37/00
U.S. Cl. 204—51

2 Claims

In accordance with certain of its aspects, this invention relates to a novel apparatus and to the process for treating a bath containing trivalent chromium to convert said trivalent chromium to hexavalent chromium which comprises maintaining in said bath an electrolyzing cathode of predetermined area, the surface of which is in intimate electrical contact with a material in a low hydrogen overvoltage state selected from the group consisting of etched iron compound, platinum, palladium, rhodium, iridium, and nickel; maintaining in said bath an electrolyzing anode having a surface area at least equal to the area of said cathode; and electrolyzing said bath between said electrolyzing cathode and said electrolyzing anode at an electrolyzing anode current density of at least 0.3 amperes per square decimeter whereby said trivalent chromium in said bath is converted to said hexavalent chromium.

3,616,305
PROCESS FOR DEPOSITING LEAD
Jean P. Arbez, Paris, France, assignor to Etablissements Eugene Arbez, Paris, France
Filed Sept. 27, 1967, Ser. No. 670,911
Claims priority, application France, Jan. 18, 1967, 91631
Int. Cl. C23b 5/16
U.S. Cl. 204—53



A method for the controlled electrodeposition of lead to a desired thickness on a cathode plate in an electrolytic bath including the placement of a cathode disposed in spaced apart, vertical, parallel relation between a pair of anode

plates in said bath, supporting said cathode and anodes with electrically conductive support frames around the entire peripheral edges thereof, and providing insulating material on the outer surfaces of said support frames exposed to said electrolytic bath to form an even, homogeneous electric field between the anodes and cathode for the deposit of lead coating on the cathode without edge effects.

3,616,306
TIN PLATING BATH AND METHOD
Joseph F. Conoby, Somers, and Kenneth P. Bellinger, Rockville, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.
Filed Nov. 19, 1969, Ser. No. 878,221
Int. Cl. C23b 5/14, 5/46

U.S. Cl. 204—54 R

32 Claims

An aqueous bath for electroplating tin upon various conductive substrates contains stannous ion, sulfate radical, an imidazoline derivative, a carbinamine compound, and a cyclic aldehyde or ketone brightener. The bath is highly acid and is operable to produce dense, smooth, bright, adherent deposits, particularly at relatively high current densities. These deposits exhibit excellent solderability as plated and after prolonged aging. In addition, the bath avoids step plating when holes are present in the workpiece, and it minimizes the tendency for pitting to occur in the deposit.

3,616,307
PROCESS AND COMPOSITION FOR ANODIZING A TIN-COATED ARTICLE
Richard G. Snyder, Bethlehem, Pa., assignor to Bethlehem Steel Corporation
Filed May 16, 1969, Ser. No. 825,229
Int. Cl. C23b 9/00

U.S. Cl. 204—56 R

14 Claims

In a method of forming an anodized coating on the surface of a tin-coated ferrous article, the article is subjected to anodic electrolysis in an aqueous electrolyte comprising a dialkali metal phosphate, an alkali metal carbonate and an alkali metal hypophosphite.

3,616,308
METHOD OF PRODUCING COLORED COATINGS ON ALUMINUM
William Ernest Cooke; Paul John Sajben, and Roy Cowieson Spooner, all of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed Nov. 6, 1968, Ser. No. 773,936

Claims priority, application Great Britain, Nov. 24, 1967, 53,699/67
Int. Cl. C23b 9/02

U.S. Cl. 204—58

13 Claims

In procedure for producing colored coatings on aluminum by first anodizing the aluminum surface and then treating such anodically coated surface with alternating current in an acidic bath containing metal ions selected from the group consisting of the following cations and anions: Cu⁺⁺, Ag⁺, Pb⁺⁺, and anions consisting of oxygen combined with one of the metals Se, Te and Mn, to produce a colored deposit in the coating, improved coloring results notably in avoiding or inhibiting occurrence of localized nonuniformity, especially with darker or more intense tones, are achieved by maintaining a content of aluminum ions in the bath.

3,616,309 METHOD OF PRODUCING COLORED COATINGS ON ALUMINUM

Tahel Asada, Kobe, Japan; William Ernest Cooke, Kingston, Ontario, Canada, and Paul John Sajben, Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada
Filed Nov. 6, 1968, Ser. No. 773,935
Claims priority, application Great Britain, Nov. 24, 1967, 53698/68

Int. Cl. C23b 9/02

U.S. Cl. 204—58

14 Claims

In procedure for producing colored coatings on aluminum by first anodizing the aluminum surface and then treating such anodically coated surface with alternating current in an acidic bath containing metal ions selected from the group consisting of the following cations and anions: Ni^{++} , Co^{++} , Cu^{++} , Ag^+ , Pb^{++} , and anions consisting of oxygen combined with one of the metals Se, Te and Mn, to produce a colored deposit in the coating, improved coloring results notably in avoiding or inhibiting occurrence of localized nonuniformity, especially with darker or more intense tones, are achieved by maintaining a content of magnesium ions in the bath.

3,616,310
ALUMINUM-ANODIZING PROCESS
Geoffrey Austin Dorsey, Jr., Spokane, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Mar. 10, 1969, Ser. No. 805,826
Int. Cl. C23b 9/02

U.S. Cl. 204—58

2 Claims

This invention generally relates to the anodic oxidation of aluminum articles in an aqueous sulfuric acid electrolyte. More particularly, this invention is directed to improving the corrosion resistance of the clear, colorless anodic oxide coatings formed in an aqueous sulfuric acid anodizing process by utilizing an aqueous electrolyte containing 7 to 12 percent sulfuric acid and 0.25 to 0.80 percent chromic acid.

3,616,311
INTEGRAL HARD COAT ANODIZING SYSTEM
Erik F. Barkman, and Harold J. Coates, both of Henrico, Va., assignors to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of application Ser. No. 649,095, June 17, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 403,352, Oct. 12, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 353,591, Mar. 20, 1964, now abandoned. This application June 16, 1969, Ser. No. 833,792
Int. Cl. C23f 9/02

U.S. Cl. 204—58

9 Claims

Hard, integrally colored oxide coatings are formed on aluminum and aluminum alloys by anodizing the surface to produce thereon an oxide coating while simultaneously producing a desired coloring effect. There is used as an electrolyte an inorganic acid, such as sulfuric acid, together with an additional acid which is either an aliphatic alpha-hydroxy monocarboxylic or an aliphatic dicarboxylic acid, or sulfamic acid, and a metal salt of either of the aforementioned organic acids, such as a ferric salt. The process employs ordinary temperatures, and a current density between about 12 and 60 amperes per square foot.

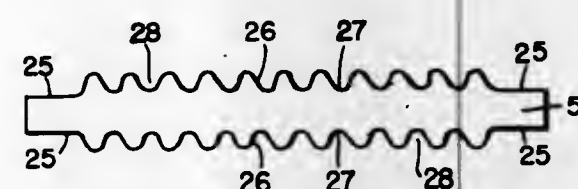
3,616,312
HYDRAZINE MANUFACTURE
Stuart G. McGriff, Alexandria, Va., and Wayne A. McRae, Lexington, Mass., assignors to Ionics, Incorporated, Watertown, Mass.
Division of Ser. No. 542,780, Apr. 15, 1966, Pat. No. 3,496,091.
Filed Sept. 16, 1969, Ser. No. 870,920
1969, Ser. No. 870,920
Int. Cl. B01k 3/00, 3/08, 3/10

U.S. Cl. 204—59

7 Claims

Hydrazine is produced in a two chamber electrolytic cell with anode and cathode chambers separated by an ion exchange membrane. When using an anion exchange membrane, ammonia and nonaqueous solvent are fed to the cathode compartment and hydrazine and solvent are

collected from the anode compartment. When using a cation exchange membrane ammonia and nonaqueous solvent are fed to the anode compartment while hydrazine is also



removed from the anode compartment. Similarly, alkyl hydrazines can be produced by feeding a lower alkyl amine instead of ammonia.

3,616,313
POLYMERS BY ELECTROLYSIS OF DIBASIC ACIDS
John M. Mercereau, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 9, 1969, Ser. No. 823,516
Int. Cl. C08f 1/22, 3/42; B01k 3/00

U.S. Cl. 204—59

3 Claims

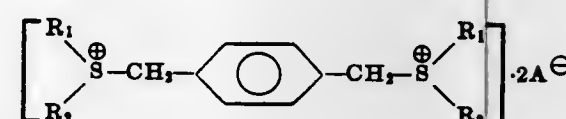
A process is provided for synthesizing long-chain alpha, omega-dicarboxy polymers by the electrolysis of dicarboxylic acids.

3,616,314
ELECTROLYTIC PROCESS FOR PREPARING [2.2]-PARACYCLOPHANE
William J. Settineri, and Ritchie A. Westling, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 24, 1969, Ser. No. 879,509
Int. Cl. B01k 3/00

U.S. Cl. 204—59

7 Claims

[2.2]-Paracyclophane is prepared by electrochemically reducing a sulfonium salt having the formula



wherein R_1 and R_2 are alkyl or hydroxy-substituted alkyl radicals of one to 10 carbon atoms and A is an electrolytically acceptable anion. The process is conducted at low current densities.

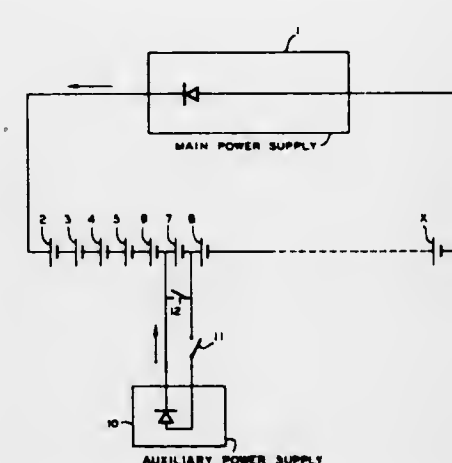
3,616,315
INDUCING AND/OR ELIMINATING POLARIZATION IN ONE CELL OF A SERIES OF CELLS IN OPERATION
William V. Childs, Austin, Tex., assignor to Phillips Petroleum Company
Filed Jan. 29, 1970, Ser. No. 6,836
Int. Cl. B01k 1/00; C22d 3/12

U.S. Cl. 204—60

3 Claims

A procedure for inducing anode effect or polarization by subjecting an anode in a cell, in a series of cells in operation, and being subjected to a main electrical current power supply source, capable of delivering current for said operation at higher than normal voltages across at least one cell in said series, to a higher than normal current density by supplying additional current to said cell from an auxiliary or secondary current or power supply connected to and across said cell in parallel and then discontinuing current supply from said auxiliary supply, thus eliminating the anode effect induced in said cell by thus subjecting the same to a higher than normal voltage. By starting each or less than all of the cells at a time in a series of cells, the anode effect will usually occur in a cell at a time or in less than all of the cells at a

time, thus lessening the strain of a number of cells polarizing simultaneously. When an increased cell voltage or voltage carries up to about 25 percent of the current of the latter, but in an opposing direction. The electric current of the

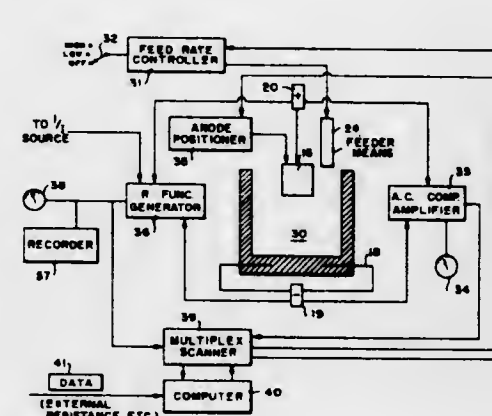


oscillations of increased frequency occur across a cell, it is about ready for depolarization and the recited procedure can be applied.

3,616,316
REDUCTION CELL CONTROL SYSTEM
John L. Dewey, Florence, Ala.; William E. Campbell, Portland, and Harry T. Shiver, Portland, Oreg., assignors to Reynolds Metals Company, Richmond, Va.
Continuation of application Ser. No. 400,059, Sept. 29, 1964, now abandoned. This application Jan. 19, 1968, Ser. No. 699,125
Int. Cl. C22d 3/12, 3/02

U.S. Cl. 204—67

3 Claims



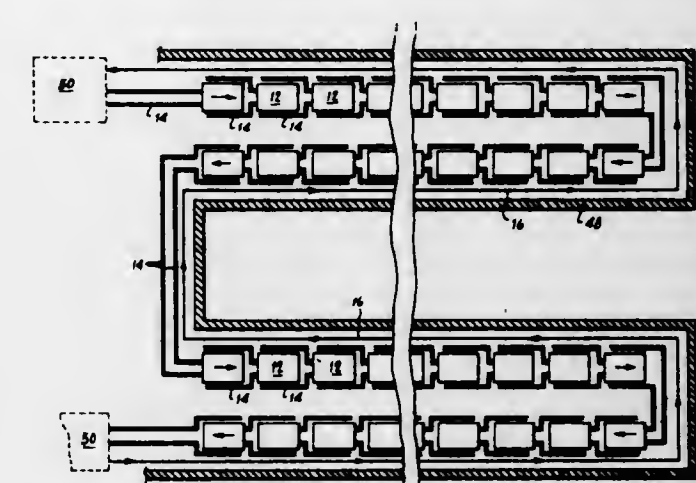
Method of operating an electrolytic cell for the production of aluminum including the detection of upset conditions and control of subsequent feeding in order to prevent overheating due to sludging.

3,616,317
ALUMINUM POT LINE AND METHOD OF OPERATING SAME
Harold David McLellan, and Walter Keith Armour, both of Kitimat, British Columbia, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada
Filed Sept. 29, 1969, Ser. No. 861,861
Int. Cl. C22d 3/12, 3/02

U.S. Cl. 204—67

17 Claims

In an aluminum pot line including plural electrolytic pots for production of aluminum metal arranged in end-to-end relationship in at least two rows and provided with electricity by plural parallel conductor bus bars arranged longitudinally of the pots, an independent bus bar at the rear of each row of pots for degaussing the magnetic field created by the electricity carried by the conductor bus bars of the opposite row of pots. The degaussing bus bar is located in substantially the same horizontal plane as the conductor bus bars and

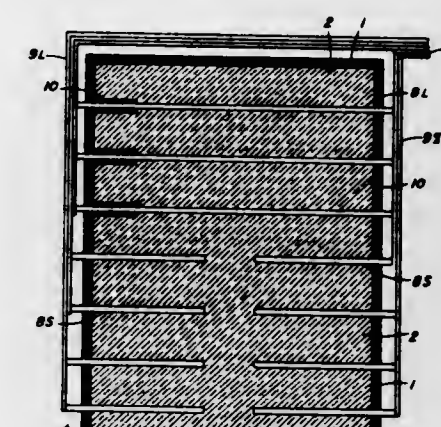


degaussing bus bar may be subsequently cycled into the conductor bus bars.

3,616,318
ALUMINUM REDUCTION CELL AND PROCESS
Arthur F. Johnson, 203 Creole Lane, North Gate Urban Farms, Franklin Lakes, N.J.
Filed Nov. 14, 1969, Ser. No. 877,018
Int. Cl. C22d 3/12, 3/02

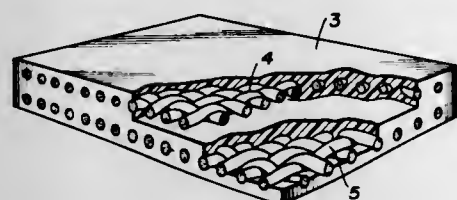
U.S. Cl. 204—67

9 Claims



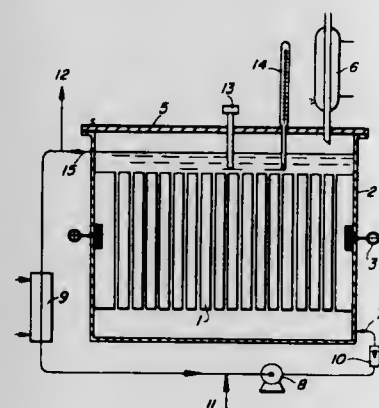
The electrolytic cell of the invention comprises a conventional steel potshell lined with carbonaceous potlining, in which are embedded steel collector bars inwardly projecting from the pot sides and outwardly projecting therethrough to make electrical connection with a horizontal cathode bus which at least partly encircles the potshell. However, something less than 30 percent of the collector bars are electrically insulated from the carbonaceous potlining over portions of their lengths which lay between the potshell sides through which they project and the area vertically under the anodes. The collector bars thus electrically insulated are those in areas where the vertical component of magnetic flux from the encircling cathode bus is the greatest. The process of the invention confines the current flow vertically from the downward-facing anode area to the collector bars in only those areas of the pot where vertical magnetic flux in the molten aluminum cathode layer is a maximum. This does not unduly increase resistance to flow of electrical current through the entire potlining surface area and into the collector bars. The collector bars are each preferably designed to draw substantially equal amounts of current.

3,616,319
ELECTROLYTIC HYDRODIMERIZATION OF OLEFINIC COMPOUNDS
 Robert Johnson, Pensacola, Fla., and Roy E. Jones, Atmore, Ala., assignors to Monsanto Company, St. Louis, Mo.
 Filed Feb. 9, 1968, Ser. No. 704,279
 Int. Cl. C07b 1/00; B01k 3/10
 U.S. Cl. 204-73



In the hydrodimerization of olefinic nitriles, esters and/or carboxamides by passage of electric current through an aqueous olefinic nitrile-, ester- and/or carboxamide-containing catholyte separated from an aqueous acidic anolyte by a solid cation-permeable membrane, the rate of membrane deterioration is unexpectedly low and undesirable leakage of anolyte and catholyte constituents through the membrane is consequently inhibited by using as the cation-permeable membrane an electrically conductive polymeric matrix reinforced by at least two substantially parallel sheets of woven glass fabric embedded within the matrix.

3,616,320
PRODUCTION OF ADIPONITRILE
 Fritz Beck, and Hans Leitner, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine) Germany
 Filed Mar. 17, 1969, Ser. No. 807,896
 Claims priority, application Germany, Oct. 24, 1968, P 18 04 809.4
 Int. Cl. C07b 29/06; B01k 3/00
 U.S. Cl. 204-73 A



Production of adiponitrile by direct electrochemical hydrodimerization of acrylonitrile in a medium which contains acrylonitrile, and electrolyte salt, water and, if desired, a solvent at a temperature of from 10° to 60° C. and a pH value of from 1 to 10 using liquid-impermeable electrodes. The medium is passed through the pairs of electrodes which are 0.05 to 2 mm. apart. Adiponitrile is an important intermediate for synthetic fiber manufacture.

3,616,321
PROCESS FOR THE PRODUCTION OF ADIPONITRILE
 Albert Verheyden, Saint-Denis-Westrem, and Jean Walravens, Watermael-Boltsfort, both of Belgium, assignors to UCB Societe Anonyme, Saint-Gelles-lez-Brussels, Belgium
 Filed June 4, 1969, Ser. No. 830,521
 Claims priority, application Great Britain, June 6, 1968, 27051/68
 Int. Cl. C07b 29/06; C07c 121/26
 U.S. Cl. 204-73

Process of hydrodimerization of acrylonitrile to adiponitrile by the direct electrolytic route, by passing a direct electrical current through an electrolytic cell having the anode and cathode in contact with the electrolytic

medium, which comprises using an initial electrolysis medium consisting essentially of (a) acrylonitrile, (b) water, (c) at least one alkali salt selected from the group consisting of the alkali salts of condensed polyphosphoric acids of the formula



in which n has a value of from 2 to 100, and the alkali salts of polymetaphosphoric acids of the formula



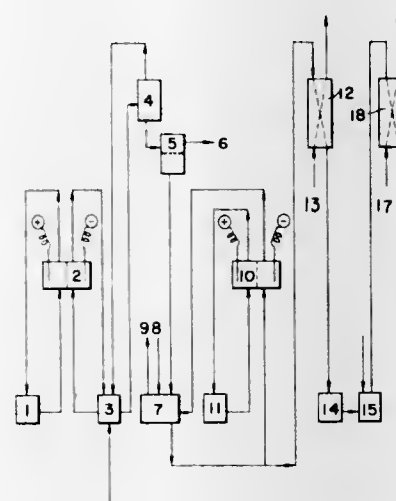
in which n has a value of from 2 to 100, (d) a surface-active substance, and (e) at least one acidic salt of an alkali metal and of a polyacid, the ratio by weight of (e) to (c) being comprised between 99.9/0.1 and 0/100.

3,616,322
PROCESS FOR PURIFYING A CATHOLYTE USED FOR ELECTROLYTIC HYDRODIMERIZATION OF ACRYLONITRILE

Maomi Seko, Tokyo; Akira Yomiyama, Nobeoka-shi, Miyazaki-ken; Shinsaku Ogawa, Nobeoka-shi, Miyazaki-ken; Ryozo Komori, Nobeoka-shi, Miyazaki-ken, and Muneyo Yoshida, Nobeoka-shi, Miyazaki-ken, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 20, 1969, Ser. No. 835,193
 Claims priority, application Japan, June 26, 1968, 43/43850
 Int. Cl. C07b 29/06
 U.S. Cl. 204-73 A

7 Claims



In a process for producing adiponitrile by electrolyzing a mixture containing acrylonitrile, a supporting electrolyte and water, the improvement characterized in that said electrolysis is carried out by removing acrylonitrile from a catholyte contaminated with metal ions, reacting the metal ions contained in the catholyte with carbon dioxide in an alkaline region of a pH value of not lower than 10 thereby precipitating the contaminant metal ions as carbonates thereof, removing thus precipitated carbonates therefrom and recycling the resulting purified solution of the supporting electrolyte as a catholyte.

3,616,323
ELECTROCHEMICAL CONVERSION OF PHENOL TO HYDROQUINONE

Frank H. Covitz, Lebanon, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,779
 Int. Cl. C01b 29/06; B01k 3/04; C07c 37/00
 U.S. Cl. 204-78

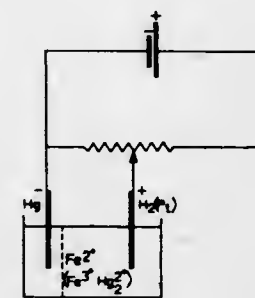
7 Claims

The electrical efficiency of the electrochemical conversion of phenol to hydroquinone using lead anodes has been enhanced by preanodizing the lead anodes in an aqueous sulfuric acid solution containing various inorganic salts of chromium, manganese, iron, vanadium, or nickel.

3,616,324
ELECTROCHEMICAL CONVERSION OF PHENOL TO HYDROQUINONE
 Frank H. Covitz, Lebanon, and Robert V. Carrubba, Cranford, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.
 Filed Feb. 19, 1970, Ser. No. 12,865
 Int. Cl. C01b 29/06; B01k 3/04; C07c 37/00
 U.S. Cl. 204-78

4 Claims

The electrochemical conversion of phenol to hydroquinone or benzoquinone has been improved by increasing the ratio of hydroquinone to p-benzoquinone formed and the chemical efficiency of the process. This is accomplished by scoring or roughening the electrodes so that the planar surfaces contain notches having a depth and a width of about 0.1 millimeters up to about one-fifth the distance between the electrodes.



3,616,325
PROCESS FOR PRODUCING POTASSIUM PEROXYDIPHOSPHATE
 Paul R. Muceniks, Trenton, N.J., assignor to FMC Corporation, New York, N.Y.
 Filed Dec. 6, 1967, Ser. No. 688,525
 Int. Cl. C01b 15/16

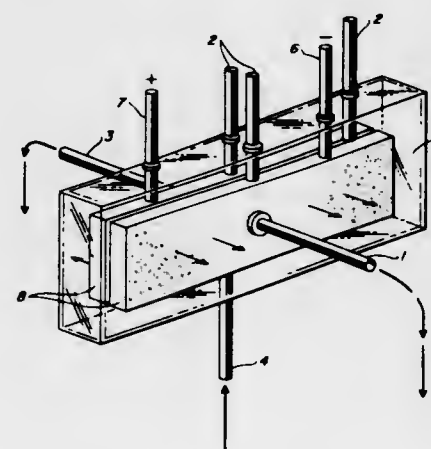
10 Claims

Potassium peroxydiphosphate is produced by electrolyzing an anolyte containing an aqueous mixture of potassium, phosphate and fluoride ions and catholyte containing an aqueous mixture of phosphate ions, said anolyte and catholyte being separated by diaphragm means; peroxydiphosphate values are produced in the anolyte at a pH of from about 9.7 to 14.5, and these values are prevented from substantial migration to the catholyte by said diaphragm.

3,616,326
SEPARATION OF RARE EARTHS BY ELECTROLYSIS WITH POROUS CARBON ELECTRODES
 Edward I. Onstott, Los Alamos, N. Mex.
 Filed Oct. 22, 1969, Ser. No. 868,440
 Int. Cl. C01b 17/96

2 Claims

U.S. Cl. 204-93



A method of separating europium from trivalent rare earth elements by passing an electrolyte containing a mixture of such elements between porous carbon electrodes at a cell potential of 2 to 2.5 volts. As the mixture of cations passes through the porous cathode, Eu(III) is selectively reduced to Eu(II) which can then be precipitated as EuSO₄.

3,616,327
PREPARING FERROUS SALT SOLUTIONS
 Embrecht Barendrecht, and John W. Geus, both of Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
 Filed Nov. 10, 1969, Ser. No. 875,072
 Claims priority, application Netherlands, Nov. 8, 1968, 6815906
 Int. Cl. C01g 49/10; B01k 1/00

4 Claims

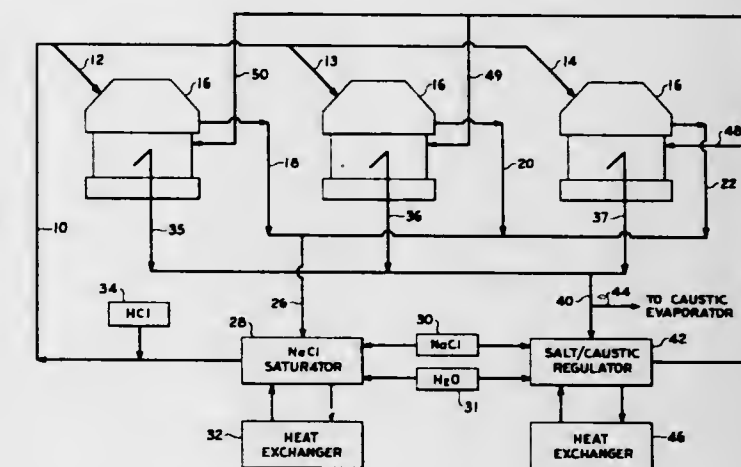
Ferrous salt solutions are produced by contacting an aqueous iron salt solution in a reaction vessel with two

electrodes, one of which consisting of a layer of mercury and the other of a hydrogen electrode, consisting of a noble-

metal conductor along and around which a stream of hydrogen is passed, the two electrodes being connected by means of an electric conductor.

3,616,328
CATHOLYTE RECIRCULATION IN DIAPHRAGM CHLOR-ALKALI CELLS
 John E. Currey, Lewiston, and Walter W. Ruthel, Niagara Falls, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
 Filed Sept. 23, 1968, Ser. No. 761,752
 Int. Cl. C01b 1/06, 1/28; B01k 3/00
 U.S. Cl. 204-98

6 Claims



The caustic concentration, and salt-caustic ratio of catholyte is regulated by addition of an alkali metal chloride and/or water to withdrawn cell liquor. The temperature of the cell liquor is regulated as desired and an amount of the idealized cell liquor is returned to the cathode compartment of the cell which is approximately one-third to ten times the volume of catholyte withdrawn in the absence of recirculated catholyte. The cell liquor treatment and recycle may be employed in conjunction with anolyte recycle or as an independent means for cell control. Catholyte recirculation increases the cell efficiency and/or produces a cell liquor with a higher caustic concentration than is obtained conventionally.

3,616,329
ANODE FOR BRINE ELECTROLYSIS
 Carl D. Keith, Summit; Alfred J. Haley, Jr., Florham Park, and Robert M. Kero, Cranford, all of N.J., assignors to Engelhard Minerals & Chemical Corporation, Newark, N.J.
 Filed Dec. 23, 1968, Ser. No. 786,407
 Int. Cl. C01d 1/08

6 Claims

An improved anode for the electrolysis of brine is comprised of a corrosion resistant valve metal substrate and a thin adherent exterior coating consisting essentially of ruthenium oxide and boron carbide.

3,616,330 PROCESS FOR ELECTROFORMING LOW OXYGEN COPPER

Jerrold R. Denchfield, Canoga Park, Calif., assignor to North American Rockwell Corporation
Continuation of application Ser. No. 650,578, July 3, 1967, now abandoned. This application Jan. 8, 1970, Ser. No. 3,568

Int. Cl. C22d 1/16

U.S. Cl. 204—106

10 Claims

A process for preparing low oxygen copper wherein an electrical current is passed through an aqueous electrolyte containing from 0.001 to 5.0 ounces of a pentose per gallon of aqueous electrolyte and copper having a lower oxygen content than the copper of the anode is deposited at the cathode at a current density of from 20 to 400 amperes per square foot.

**3,616,331
RECOVERY OF NICKEL AND COPPER FROM SULFIDES**
Charles Edward O'Neill, Oakville, Ontario; Alexander Illis, Mississauga, Ontario, and David Anthony Huggins, Mississauga, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.
Filed June 23, 1969, Ser. No. 835,797

Claims priority, application Canada, Aug. 3, 1968, 026,644
Int. Cl. C22d 1/10; C22b 23/06, 3/00

U.S. Cl. 204—108

22 Claims

The present invention is directed to the treatment of sulfide materials containing nickel and/or copper sulfide but substantially free of iron to recover the metal values as a sulfate solution and to liberate elemental sulfur wherein the metal sulfide is slurried in an aqueous sulfuric acid-iron sulfate leach solution and is then heated at a temperature range of about 80° C. to 150° C. under an oxygen partial pressure of at least about 2 atmospheres to dissolve the metal values and liberate elemental sulfur.

**3,616,332
PROCESS FOR RECOVERING SILVER FROM SCRAP
MATERIALS AND ELECTROLYTE COMPOSITION FOR
USE THEREIN**

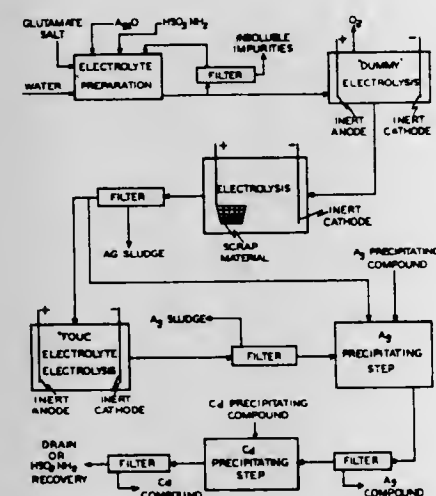
George A. Miller, South Attleboro, Mass., and Keith N. Johnson, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1969, Ser. No. 885,767

Int. Cl. C22d 1/12

U.S. Cl. 204—109

22 Claims



Substantially pure silver is economically and effectively recovered from scrap material, such as scrap material containing silver, silver oxide and other metals such as cadmium, copper, nickel and the like in elemental or combined form, by electrolysis of an aqueous electrolyte solution containing silver sulfamate, a glutamic acid

compound such as monosodium glutamate monohydrate and an excess of sulfamic acid. The scrap material itself serves as the anode and fine grained silver is deposited at a cathode of corrosion-resistant material without substantial codeposition of any other metals from the scrap. During electrolysis, silver and any other metals present in the anode scrap material are dissolved electrolytically and the metals in combined form are dissolved chemically in the electrolyte. Because of the high solubility of silver sulfamate in the electrolyte, high current densities on the order of 30 to 300 amperes per square foot may be employed. When substantial quantities of cadmium and metal ions other than silver buildup in the electrolyte, substantially all of the silver therein may be recovered by subjecting the electrolyte to further electrolysis using inert electrodes as the anode and cathode followed by precipitation of the remaining silver as silver chloride or other insoluble silver compound. Cadmium may then be recovered from the resulting electrolyte by precipitation as cadmium hydroxide or other insoluble cadmium compound.

**3,616,333
METHOD FOR PRODUCING HALOGENS**
John B. Farmakides, 702 6th St. S.W., Washington, D.C.
Continuation-in-part of application Ser. No. 500,236, Oct. 21, 1965, now abandoned. This application Aug. 14, 1969, Ser. No. 850,239

Int. Cl. C01b 7/00; B01j 1/10

U.S. Cl. 204—128

4 Claims

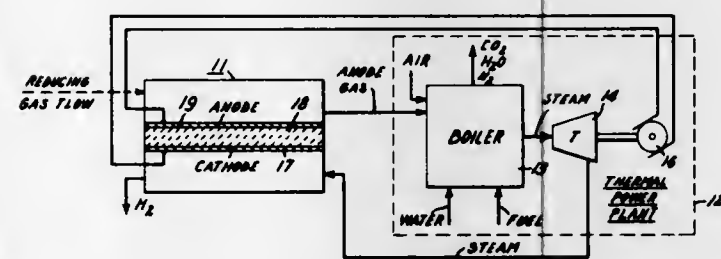
An improvement in the process of converting halide ions to the elemental halogen utilizing the assistance of high-intensity coherent electromagnetic radiation in the form of a laser beam. A solution of the halide ion in an electrochemical cell is electrolyzed and at the same time subjected to irradiation by means of a laser beam. The radiation is of such wavelength that the photons in the radiation are selectively absorbed by the ions in solution and energize them sufficiently to greatly enhance their conversion to the gaseous halogen.

**3,616,334
ELECTRICALLY AND CHEMICALLY COUPLED POWER
GENERATOR AND HYDROGEN GENERATOR**
Walter W. Aker, Schenectady; Dale H. Brown, Scotia; Henry S. Spacil, Schenectady, and Donald W. White, Burnt Hills, all of N.Y., assignors to General Electric Company
Filed July 5, 1968, Ser. No. 742,699

Int. Cl. C01b 13/04

U.S. Cl. 204—129

7 Claims



A solid oxygen-ion electrolyte cell electrically and chemically coupled with a thermal power generator is described wherein the generation of hydrogen is coulometric with respect to current received by the solid oxygen-ion electrolyte cell from the power generator. Hydrocarbon fuel is consumed in the thermal power generator to produce steam and generate electrical power. Both of these products are supplied to the solid oxygen-ion electrolyte cell wherein dissociation of the steam for the generation of hydrogen gas is carried on. A particular application of this invention described is the conversion of coal to ammonia.

3,616,335 ELECTROCHEMICAL METHOD OF GENERATING HYDROGEN

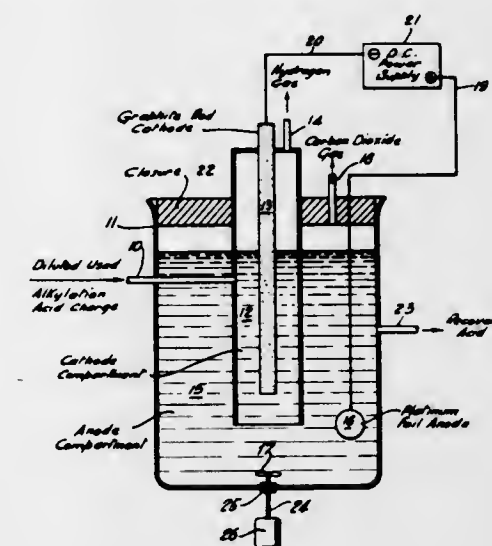
William N. Carson, Jr., Schenectady, and James L. Manganaro, New York, both of N.Y., assignors to General Electric Company
Division of Ser. No. 674,159, Oct. 10, 1967, abandoned.
Filed Aug. 21, 1969, Ser. No. 852,049

Int. Cl. C01b 1/03; H01m 29/04

U.S. Cl. 204—129

1 Claim

Method of producing hydrogen which involves a magnesium reactant and an aqueous electrolyte with a dewatering agent, and an electrical energy source in contact with the magnesium reactant and the cathode. The dewatering agent reduces substantially the volume of magnesium hydroxide precipitation within the cell during its operation by freeing water from the precipitate thereby increasing its density.



**3,616,336
METHOD OF CONDITIONING ANODES**
William V. Childs, and Forrest N. Ruehlen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed May 31, 1968, Ser. No. 733,486

Int. Cl. C23b 1/00; B01k 3/00, 1/00

U.S. Cl. 204—130

17 Claims

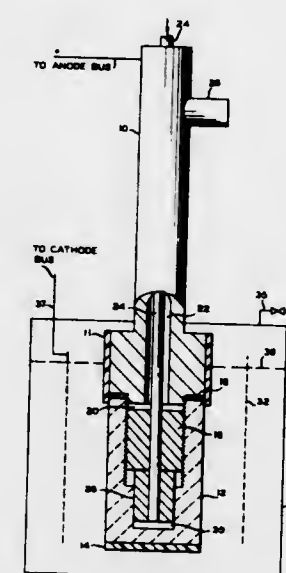
Process is particularly applicable to the recovery of used sulfuric acid alkylation catalyst.

**3,616,338
METHOD OF PRODUCING CRYSTALLINE MATERIALS**
T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Sam Naiditch, 3638 North Canon Blvd. Altadena, Calif.
Filed Sept. 3, 1968, Ser. No. 756,834

Int. Cl. C01d 7/34

U.S. Cl. 204—130

7 Claims



Anodes employed in electrolytic cells are conditioned for improved operation by subjecting said anode to an abnormally great current density for a period of time sufficient to deliberately induce anode effect, and then subjecting the anode to an abnormally great voltage for a period of time sufficient to eliminate said anode effect.

**3,616,337
ELECTROCHEMICAL RECOVERY OF SULFURIC ACID**
William B. Mather, Jr., Hopewell Junction, N.Y., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 22, 1968, Ser. No. 754,555

Int. Cl. B01k 3/00

U.S. Cl. 204—130

13 Claims

Electrochemical process for purification and concentration of used sulfuric acid containing hydrocarbon wherein water is added to bring the water content of the acid to between one and two times the stoichiometric amount of water in relation to the amount of carbon present, and electrochemically treating the diluted acid with a current

A method for the electrodeposition of metal crystals from a dense gaseous electrolyte. A salt of the material to be deposited is dissolved in a suitable solvent and the temperature of the solution raised to at least its critical temperature prior to electrolysis.

**3,616,339
PROCESS FOR PURIFYING AIR**
William Frank Marzluff, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation of application Ser. No. 582,238, Sept. 27, 1966, now abandoned. This application Oct. 17, 1969, Ser. No. 871,727

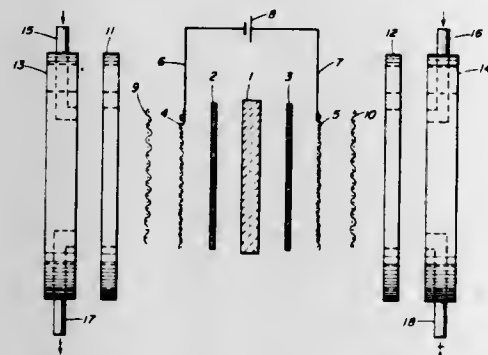
Int. Cl. B01d 57/00; B01k 1/00

U.S. Cl. 204—130

14 Claims

Oxidizable gas impurities in air are removed at the anode of a powered electrochemical cell which comprises an air

cathode, a matrix electrolyte and an anode having a surface of lead dioxide or other metal or metal oxide in direct



contact with the impinging impure air and in electrical contact with the electrolyte.

3,616,340

REFINING OF LIQUID COPPER

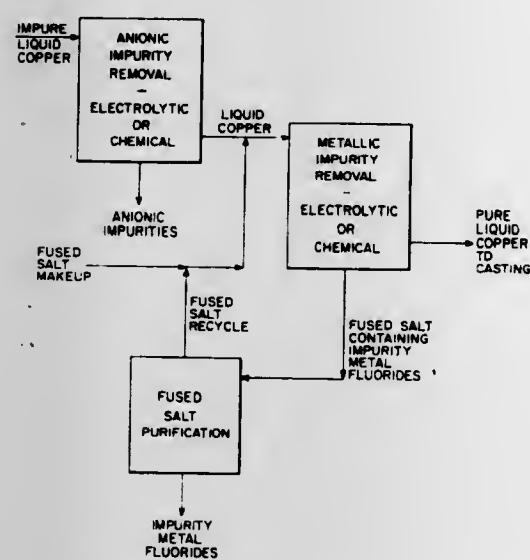
Philip E. Lapat, Sudbury, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed July 14, 1969, Ser. No. 841,629

Int. Cl. C22d 3/14; C01b

U.S. Cl. 204—140

22 Claims



A process for refining copper comprises removing anionic impurities by electrolytic or chemical reaction followed by removing the remaining impurities by contacting molten copper with a fluorine containing salt.

3,616,341

CHEMICAL AND ELECTROPOLISHING

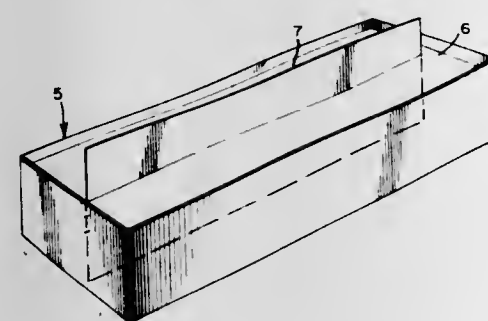
John F. Jumer, 16 West 131 Timber Trails Drive, Elmhurst, Ill.

Filed May 19, 1969, Ser. No. 825,729

Int. Cl. C23b 3/06, 5/68; C23g 1/36

U.S. Cl. 204—140.5

11 Claims



Large objects and the interiors of large vessels having areas to be polished which cannot be readily completely subjected

to polishing action at one time, may be polished by the improved method on a partial area basis without creating or leaving any noticeable line of demarcation that would indicate that all areas had not been simultaneously subjected to the polishing action.

3,616,342

PROCESS FOR THE REMOVAL OF METAL POWDER AND LOW METAL OXIDES FROM THE SURFACES OF BUNDLES OF WIRE WHICH HAVE BEEN ETCHED WITH SODIUM HYDRIDE

Arnold Lenz, Cologne-Stammheim, and Walter Rogler, Ranzel/Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Dec. 11, 1967, Ser. No. 690,717

Claims priority, application Germany, Dec. 10, 1966, D 51 750

Int. Cl. C10b 1/06

U.S. Cl. 204—141

7 Claims

Improvement in the known process for removing rust or scale from metal objects, especially wires, by immersion of the object in caustic soda, caustic potash, or a mixture thereof, followed by inducing an electric current to pass therethrough while maintaining the object in an alkaline medium which improvement involves using lye of at least 60 percent concentration as the alkaline bath and operating at up to about 25° C. over the solidification point of the alkaline bath.

3,616,343

ELECTROCHEMICAL MACHINING METHOD

Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Japan

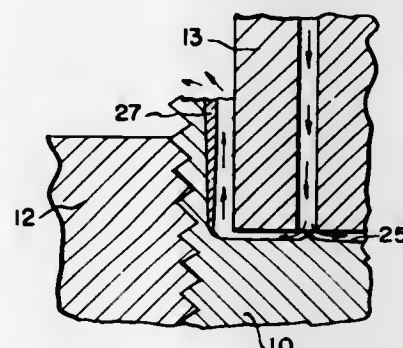
Filed July 28, 1965, Ser. No. 475,375

Claims priority, application Japan, Aug. 8, 1964, 39/45157 The portion of the term of the patent subsequent to Dec. 17, 1985, has been disclaimed.

Int. Cl. B23p 1/00

U.S. Cl. 204—143 M

13 Claims



1. A process for the electrochemical machining of an electrochemically machinable conductive metallic workpiece comprising the steps of:

- spacedly juxtaposing said workpiece with an electrochemical-machining electrode having a supporting shank portion and a machining face portion to form a machining gap;
- providing an aqueous-electrolyte coolant flow through said gap;
- passing an electrical current across said gap;
- providing relative movement between said electrode and said workpiece to machine electrolytically a cavity in said workpiece;
- shielding the walls of said cavity proximate said shank portion of said electrode by forming in situ in the course of the electrolytic machining of said cavity a sheath of an electrically insulating material to limit further electrolytic action by introducing a substance into said electrolyte coolant capable of forming said sheath; and
- preventing formation of said insulating sheath on said workpiece proximate said machining face portion of said electrode by providing periodic spark discharge between said electrode machining face portion and said workpiece.

3,616,344

ELECTROCHEMICAL MACHINING WITH FIRE-RETARDANT SODIUM CHLORATE COMPOSITIONS

John A. Peterson, Niagara Falls, and Theodore H. Dexter, Lewiston, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

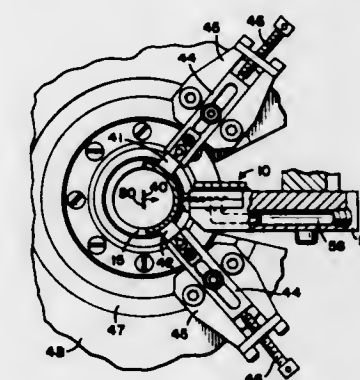
Filed Jan. 15, 1968, Ser. No. 697,595

Int. Cl. B23p 1/00

U.S. Cl. 204—143 M

6 Claims

The hexavalent chromium content of aqueous chlorate-containing electrolyte solution employed in electrochemical machining or grinding operations may be reduced through reduction to the trivalent chromium state from which it will precipitate as hydrous chromic oxide or by removal in the hexavalent state by precipitation as a barium, lead, zinc, cobalt or copper salt. The removal of trace hexavalent chromium values from a chlorate-containing electrochemical machining electrolytic solution reduces the fire hazard attending the use of chlorate-containing solutions which may accidentally wet an organic material such as an operator's clothing and subsequently dry to form an extremely combustible mixture. Likewise, the removal of trace hexavalent chromium values from an aqueous chlorate-containing solution reestablishes the flame-retardant activity of an additive such as sodium metasilicate or sodium hydroxide which activity is reduced in the presence of trace hexavalent chromium ions.



3,616,347 METHOD AND APPARATUS FOR ELECTROCHEMICALLY MACHINING ROTATING PARTS

William Andrew Haggerty, Cincinnati, Ohio, assignor to The Cincinnati Milling Machine Co., Cincinnati, Ohio

Filed Apr. 8, 1968, Ser. No. 719,452

Int. Cl. B23p 1/00, 1/02

U.S. Cl. 204—143

16 Claims

A method and apparatus for electrochemically machining workpieces, to form surfaces of revolution to precise shapes and dimensions, by rotating the workpiece on a pair of shoes engaging the surface being machined. An electrochemical machining tool is positioned between these shoes and adjusted to form a gap of a first predetermined distance into which electrolyte is forced at high velocity to complete an electrical path between the tool and the workpiece. A high-density flow of electrical current, typically 6,000 amperes per square inch, removes material anodically from the workpiece and, as the material is removed, the workpiece becomes smaller in diameter and thus moves toward the tool to decrease the gap distance. The current is maintained at the highest practical level by reducing the voltage as the gap distance decreases. By monitoring the voltage required to maintain the average current constant, the gap dimension can be measured remotely. Surface finishes of less than 5 microinches are obtainable using this process. The appearance of the surface of a workpiece electrochemically machined in this manner is improved in some cases by reducing the current density to between 1,500 and 3,000 amperes per square inch during at least the last revolution of the workpiece.

3,616,348

PROCESS FOR ISOLATING SEMICONDUCTOR ELEMENTS

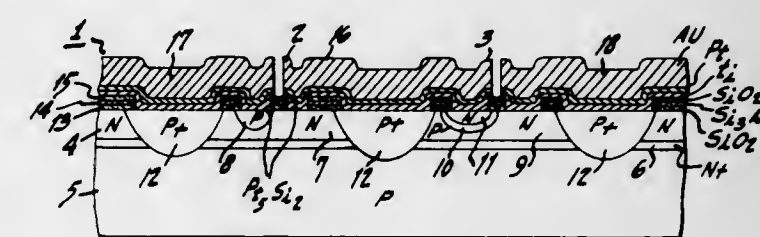
William J. Greig, Somerville, N.J., assignor to RCA Corporation

Filed June 10, 1968, Ser. No. 735,642

Int. Cl. B23p 1/00

U.S. Cl. 204—143 R

13 Claims



3,616,346

ION-CONTROL METHOD FOR ELECTROCHEMICAL MACHINING

Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Japan

Continuation-in-part of application Ser. No. 475,375, July 28, 1965. This application Mar. 19, 1968, Ser. No. 714,251

Claims Priority, application Japan, Mar. 20, 1967, Mar. 28, 1967, Mar. 30, 1967, Mar. 31, 1967, Apr. 18, 1967, 42/17281, 42/19730, 42/20470, 42/20633, and 42/24709

Int. Cl. B23p 1/00

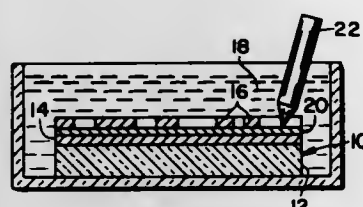
U.S. Cl. 204—143 M

12 Claims

Method of and apparatus for electrochemically machining a workpiece wherein the machining electrolyzing current passes in the form of steep-wavefront pulses on one polarity spaced by intervals and during these intervals, opposite-polarity pulses are applied across the tool electrode and the workpiece with a pulse width at most equal to the duration of the respective interval but preferably of a shorter duration and with an adjustable lag.

In the manufacture of beam lead integrated circuits or discrete devices, each operating semiconductor portion of one conductivity type is surrounded by substrate material of opposite conductivity type. The substrate material is removed by a preferential electrolytic etching process to provide isolation between each of the semiconductor-operating portions.

3,616,349
METHOD FOR ETCHING CHROMIUM OXIDE FILMS
 Raymond E. Szupillo, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
 Filed July 30, 1968, Ser. No. 748,676
 Int. Cl. B23p 1/00
 U.S. Cl. 204—143 13 Claims

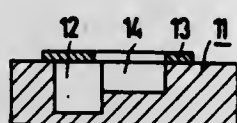


A method of etching using weaker acid etchant solutions than heretofore possible wherein interaction between the chloride ions in solution and the film is initiated by producing an electrical potential across a thin oxide layer on the film sufficient to allow the chloride ions to permeate therethrough. Because a weaker etchant can be used in the process, thinner and softer photoresistive protective coatings can also be used for obtaining decorative film patterns, microcircuit masks, and the like. Further, the rate at which etching proceeds can now be controlled over a wider range than heretofore possible, thus effecting the amount of undercutting of the acid-resistant mask by the etchant.

3,616,350
ELECTROCHEMICAL MACHINING ELECTROLYTE
 Jacob B. Darling, Carmel, Ind., and Mitchell A. LaBoda, Detroit, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 7, 1968, Ser. No. 750,772
 Int. Cl. B23p 1/00
 U.S. Cl. 204—143 3 Claims
 Hygroscopic additives for sodium and potassium chlorate and perchlorate electrochemical machining electrolytes. These additives have a fire-retardant effect on combustibles exposed to electrolyte splash. When used in conjunction with relative humidities of above about 35 percent, the additives prevent the electrolyte splash from drying sufficiently to support combustion. Specific materials which are compatible with the electrolyte are disclosed.

3,616,351
METHOD OF PRODUCING COMPLEX SHAPES, CUTOUTS, HOLES, CAVITIES, EXCAVATIONS AND THE LIKE IN A WORKPIECE
 Karl-Georg Gunther, Boxdorf; Gustav Stark, Nurnberg, and Klaus Otto, Nurnberg, all of Germany, assignors to Siemens-Schuckertwerk Aktiengesellschaft, Berlin, Germany
 Continuation of application Ser. No. 534,833, Mar. 16, 1966, now abandoned. This application Dec. 15, 1969, Ser. No. 882,360
 Int. Cl. B23p 1/00
 U.S. Cl. 204—143 M 3 Claims

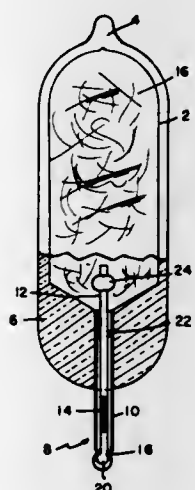


An electrochemical method of producing a complex shape in a workpiece by utilizing a shaping tool supplied with an electrolytic solution as the cathode and the workpiece as the anode. A first cathode of a first simple geometric configuration is positioned in operative proximity with the workpiece and is used to electrochemically form a first cavity of simple geometric configuration in the workpiece. A cover is then placed over the first cavity and a second cathode of a second simple geometric shape is then placed in operative proximity with cover and workpiece. The second cathode is

used to electrochemically form along a common axis an opening in the cover and a second cavity of simple geometric configuration in overlapping relation to the first cavity in the workpiece, whereupon, the cover is removed.

3,616,352
FULMINATING MATERIAL APPLICATION TECHNIQUE
 Stephen V. Brown, and William C. Fink, both of Williamsport, Pa., assignors to Sylvania Electric Products Inc.

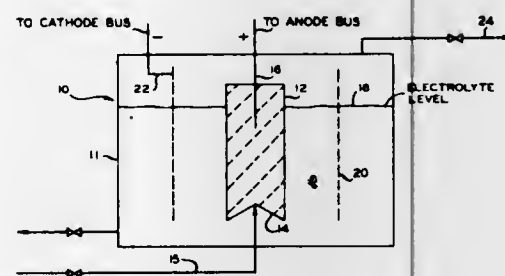
Filed Dec. 22, 1969, Ser. No. 886,999
 Int. Cl. B01k 1/00
 U.S. Cl. 204—146 7 Claims



A method of providing the primer anvil wire of a percussive-type photoflash lamp with a coating of a fulminating material in which the anvil wire is dipped into a body of fulminating material to a predetermined depth to provide a coating thereof on the anvil wire extending along its length a predetermined distance from one end thereof, the coating is dried and then the coating is electrochemically stripped from a segment of the wire extending from the coated end thereof to thereby provide an anvil wire having a coating of fulminating material disposed on a segment of predetermined length located intermediate the ends thereof.

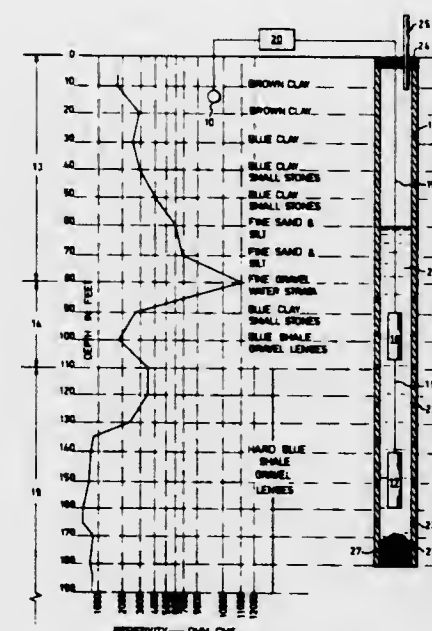
3,616,353
MAINTAINING ELECTROLYTIC CELL IN STANDBY CONDITION
 William V. Childs, and Forrest N. Ruehlen, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 3, 1969, Ser. No. 788,853
 Int. Cl. B01k 3/00
 U.S. Cl. 204—147 9 Claims



An electrolytic cell wherein a porous electrode is employed is maintained in a standby condition during periods when the cell is not in operation by maintaining a small but effective flow of electric current through said cell during said periods the cell is not in operation. Said small flow of electric current is sufficient to substantially reduce invasion of said porous electrode by the electrolyte contained in the cell.

3,616,354
METHOD FOR INSTALLING CATHODIC PROTECTION
 Gordon Ian Russell, 442 Indian Road, Burlington, Ontario, Canada
 Continuation-in-part of application Ser. No. 448,334, Apr. 15, 1965, abandoned.
 Filed Aug. 18, 1969, Ser. No. 850,741
 Int. Cl. C23f 13/00
 U.S. Cl. 204—147 12 Claims



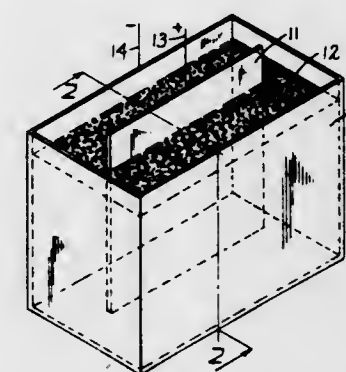
A method for providing cathodic protection for a metallic structure in contact with the ground, for example, a pipeline, comprises disposing a suitable anode at depth in a borehole so that the anode is disposed generally opposite a preselected ground zone or stratum of relatively low electrical resistivity. A liquid electrolyte which is operatively compatible with both the surrounding ground and with the anode is provided in the borehole and may comprise naturally occurring ground water which may optionally be modified, for example, by the addition of an ionizable salt.

3,616,355
METHOD OF GENERATING ENHANCED BIOCIDAL ACTIVITY IN THE ELECTROLYSIS OF CHLORINE CONTAINING SOLUTIONS AND THE RESULTING SOLUTIONS
 Ross M. Gwynn, and Tim Themy, both of Carmichael, Calif., assignors to KDI Chloro Guard Corporation
 Filed Aug. 5, 1968, Ser. No. 750,017
 Int. Cl. C01b 13/04

U.S. Cl. 204—149 13 Claims
 An aqueous medium or dilute brine containing about 10 p.p.m. to 21,000 p.p.m. of chloride ion, and essentially free of other halogen, is electrolyzed between spaced electrodes, with the exposed surface of at least the anode being a continuous surface of a platinum metal, at a minimum potential in the general range of about 10 volts for a 21,000 p.p.m. medium to 100 volts for a 10 p.p.m. medium, and current density below about 5 amps per square inch of electrode surface, with the effluent medium at a temperature in the range of about 55° to 95° F. and preferably about 60° to 75° F., and at a pH within the range 6 to 8.5 to thereby generate in said medium chlorine together with free radicals and other oxidizing species including ozone, said ozone being present in an amount to provide at least one part by weight of ozone to each 50 parts by weight of available chlorine in said effluent. Narrowing the pH range, adjusting the effluent temperature and increasing the voltage may increase the proportion of ozone. At a pH of 7 to 8, a temperature in excess of 60° F., and a potential about 25 percent above the minimum for a particular chloride ion concentration, the proportion of ozone to chlorine is generally in excess of one part ozone to 20 parts chlorine; and at a pH of 7.2-7.8, a temperature in excess of about 66° F. and a potential about 50 percent above said minimum this proportion may be as high as one part ozone to five or ten parts chlorine. Chloride

is suitably supplied as NaCl solution in varying concentrations in the fractional normality range, preferably about 0.003 N to 0.6 N corresponding with about 10 p.p.m. to 21,000 p.p.m. of chloride ion.

3,616,356
ELECTROLYSIS IN A PARTICULATE CARBON PACKING
 Clarence H. Roy, 97 Dorman Road, Oxford, Conn.
 Filed Sept. 18, 1967, Ser. No. 668,427
 Int. Cl. C02b 1/82; B01d 43/00
 U.S. Cl. 204—152 21 Claims



This invention relates to the electrolytic treatment of water containing dissolved salts by means of a cell in which the anode and the cathode are separated by a particulate carbon packing. The electrolytic process precipitates metallic impurities as metal oxides, hydroxides, sulfides, etc., which may be filtered from the cell effluent and liberates gases as such. Process and apparatus serve for the purification of water and recovery of impurities.

3,616,357
METHOD OF MODIFICATION OF THE COLOR OF GEMS
 John C. Haynes, 12 E. Park Place, Newark, Ohio
 Filed May 31, 1968, Ser. No. 733,274
 Int. Cl. B01j 1/10

U.S. Cl. 204—157.1 H 12 Claims
 An improved method of producing gems of changed color wherein the gems are placed in contact with a particulate radioactive material. Radioactive contamination of the gem is effectively removed by immersion in a liquid bath which dissolves the attachment of radioactive solids to the gems, and acid is a preferred liquid. Preferably the irradiated gems are first subjected to a mild abrasive action to remove most of the radioactive material. The irradiation, abrading, and dissolving steps are preferably all done in a single generally airtight enclosure.

3,616,358
PHOTOSYNTHESIS OF DIHYDROCARBONOXOXETANES
 Siegfried H. Schroeter, and Charles M. Orlando, both of Schenectady, N.Y., assignors to General Electric Company
 Filed May 29, 1968, Ser. No. 732,901
 Int. Cl. B01j 1/10

U.S. Cl. 204—158 2 Claims
 Dihydrocarbonoxoxetanes are produced by the reaction of an aldehyde or ketone with ketene acetals under the influence of ultraviolet light. The dihydrocarbonoxoxetanes produced in accordance with this invention are useful as solvents for chemical reactions and as monomers which can be polymerized to polyoxyalkylene compounds employing, for example, trialkylaluminum compounds with water in accordance with known processes. The polyoxyalkylene compounds are useful as coating materials, lubricants, as wire insulation, etc.

3,616,359

PROCESS FOR PREPARING NITROSO HALOCARBONS
John E. Paustian, Whippany, and Herman Burwasser, Vestal, both of N.Y., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Aug. 20, 1968, Ser. No. 753,863

Int. Cl. B01j 1/10

U.S. Cl. 204—158 R

2 Claims

A process has been provided for preparing perhalo nitroso alkanes from a halocarbon compound of the formula RCX_2H wherein X is fluorine, chlorine, or bromine and R is a halogen or a perhalo radical and wherein the halogens substituents are fluorine, chlorine, or bromine. The process is carried out by reacting the halocarbon with nitrosyl chloride in a vapor phase at a pressure of one atmosphere or less and at a temperature from 160°C. and lower while irradiating the reaction mixture with radiant energy at the characteristic wavelength displayed by nitrosyl chloride.

3,616,360

PROCESS FOR PREPARING 2-CHLOROMETHYL-1,3-POLYFLUORO-2-PROPANOLS

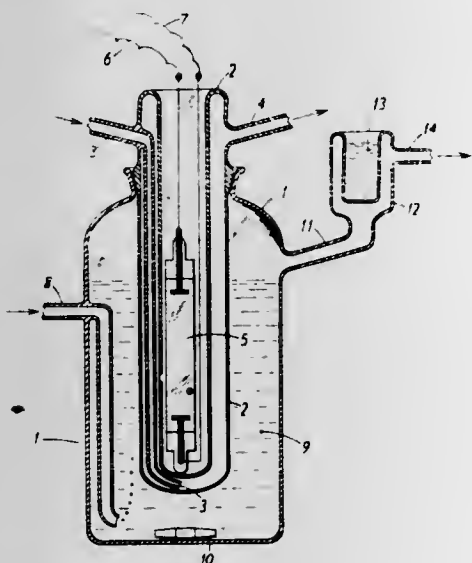
Robert E. A. Dear, and Everett E. Gilbert, both of Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 20, 1969, Ser. No. 826,127

Int. Cl. B01j 1/10

U.S. Cl. 204—158 HA

6 Claims



Preparation of 2-chloromethyl-1,3-polyfluoro-2-propanols by subjecting a mixture of a 2-methyl-1,3-polyfluoro-2-propanol, or a 2-(mono or dichloromethyl)-1,3-polyfluoro-2-propanol and chlorine to the action of a broadband of ultraviolet light in the wavelength range between about 2,000° A. and about 3,600° A. at a temperature between about 10° C. and about 200° C. The resulting compounds and their fluorinated derivatives are useful as fumigants against insects.

3,616,361

PHOTOCHEMICAL METHOD OF PREPARING CYCLOBUTANE CARBOXALDEHYDES

Jane M. Picone, Peekskill, and Rangaswamy Srinivasan, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 28, 1969, Ser. No. 845,560

Int. Cl. B01j 1/10

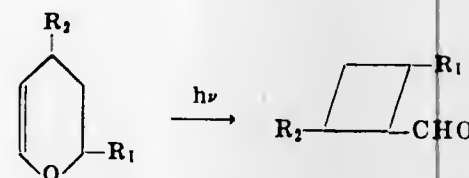
U.S. Cl. 204—158

9 Claims

Cyclobutane carboxaldehydes having the general formula:



where R_1 and R_2 can be H, CH_3 , OC_2H_5 and CHO, are prepared from a 3,4 dihydro-[2H]-pyran and its derivatives. A pyran derivative is exposed to actinic radiation for a time sufficient to cause the photoisomerization thereof into the corresponding cyclobutane carboxaldehydes. The reaction may be characterized as:



the cyclobutane carboxaldehydes thus produced can be utilized as high-energy fuels. They can also be used as monomeric starting materials for preparing rigid polymers of the type shown and described in the publication to W. W. Moyes, et al., Journal Polymer Science, 1, 29 (1963).

3,616,362

METHOD OF IMPROVING THE TACK OF ETHYLENE-PROPYLENE POLYMERS BY RADIATION

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation

Filed Apr. 2, 1968, Ser. No. 718,225 The portion of the term of the patent subsequent to June 14, 1983, has been disclaimed.

Int. Cl. B01j 1/00; C07f 9/02; C08f 29/2

U.S. Cl. 204—159.14

25 Claims

This invention relates to a method of improving the tack of ethylene-propylene polymers in a relatively short period of time by adding thereto a polymeric phenolic tackifier and exposing the resultant compositions to ionizing radiation or nonionizing radiation.

3,616,363

PHOTOLYTIC CROSS-LINKING OF OLEFINIC HYDROCARBON CONTAINING CARBOXYLIC ACID COPOLYMERS

Alwin S. Milian, Jr., Lancaster Village, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1968, Ser. No. 729,888

Int. Cl. B01j 1/00; C08d 1/00

U.S. Cl. 204—159.14

2 Claims

Cross-linking olefinic hydrocarbon containing carboxylic acid polymers by use of ultraviolet light of a wavelength of less than 2,900 Å. The carboxylic acid may be present as units in the olefinic polymer, or as free unpolymerized carboxylic acid, or as polymerized units blended with the olefinic polymer. The copolymer may be partially neutralized, but must contain at least 0.5 mole percent unneutralized acid.

3,616,364

PROCESS OF TREATING RADIATION-SENSITIVE POLYMERS

Gaetano F. D'Alelio, South Bend, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 581,688, Sept. 26, 1966.

This application Apr. 8, 1969, Ser. No. 814,430

Int. Cl. B01j 1/10; C08f 1/24

U.S. Cl. 204—159.14

10 Claims

The preparation of highly radiation-sensitive cross-linkable polymers whereby said polymers are treated by subjecting same to high-energy ionizing irradiation so as to produce three-dimensional cross-linked, insoluble, infusible polymers at relatively low doses of ionizing irradiation.

3,616,365

PROCESS OF MAKING PARTICULATE EXPANDED OLEFIN POLYMERS HAVING HIGH THERMAL STABILITY

Fritz Stastny, Ludwigshafen/Rhein; Rudolf Gaeth, Limburgerhof/Pfalz, and Hans-Georg Trieschmann, Hambach/Weinstrasse, all of Germany, assignors to Badische Anilin & Soda Fabrik Aktiengesellschaft, Ludwigshafen/Rheinland Pfalz, Germany

Continuation of application Ser. No. 640,509, May 23, 1967, now abandoned. This application Sept. 22, 1969, Ser. No. 860,107

Int. Cl. B01j 1/10; C08j 1/30

U.S. Cl. 204—159.14

5 Claims

Particulate expanded ethylene or propylene polymers having a particle diameter of 3 to 50 mm. and a bulk density of 5 to 200 grams/liter and a gel content of 10 to 85 percent by weight; and a method for the production of such expanded ethylene or propylene polymer particles in which the particles are treated with high energy radiation.

3,616,366

PHOTOCHEMICALLY HARDENABLE UNSATURATED POLYESTER COMPOSITIONS CONTAINING A NOVEL STABILIZER SYSTEM

Beppino Passalenti, Silvio Vargiu, and Ugo Nistri, all of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Dec. 29, 1969, Ser. No. 888,834

Claims priority, application Italy, Dec. 31, 1968, 25745 A/68

Int. Cl. C08d 1/00; C08f 1/00

U.S. Cl. 204—159.15

9 Claims

Stable, photochemically hardenable unsaturated polyester compositions containing an alkyl or aryl phosphite, a quaternary ammonium compound and an organic sulphonyl halide.

3,616,367

PHOTOPOLYMERIZABLE ACRYLIC COMPOSITIONS CONTAINING REARRANGEABLE ULTRAVIOLET STABILIZER PRECURSORS

David William Zunker, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 25, 1968, Ser. No. 778,827

Int. Cl. C08f 45/58; C08g 51/58

U.S. Cl. 204—159.16

8 Claims

A photopolymerizable composition containing monomeric and polymeric esters of an acid selected from the group consisting of acrylic acid and methacrylic acid, 50 to 1,000 parts per million of a photopolymerization initiator, 5 to 100 parts per million of polymerization inhibitor, and 0.001 percent to 5.0 percent of an ultraviolet stabilizer precursor which is a phenolic ester.

3,616,368

METHOD FOR THE RADIATION POLYMERIZATION OF POLYOXYMETHYLENE

Isao Ishigaki, Takasaki-shi; Akihiko Ito, Takasaki-shi, and Tadashi Iwai, Miura-Gun, all of Japan, assignors to Japan Atomic Energy Research Institute

Filed May 7, 1969, Ser. No. 822,721

Claims priority, application Japan, May 20, 1968, 43/33869

Int. Cl. C08f 3/40; C08d 1/00; C08f 1/16

U.S. Cl. 204—159.21

10 Claims

Polyoxymethylenes are obtained by first irradiating trioxane and/or tetraoxane with ionizing radiation, then contacting the irradiated trioxane and/or tetraoxane with nonirradiated trioxane and/or tetraoxane, and then maintaining the resulted mixture under the polymerizing condition to thereby effect polymerization of the whole system including the nonirradiated trioxane and/or tetraoxane by the action of active species formed in the irradiated trioxane and/or tetraoxane to give polyoxymethylenes readily with a minimum dosage required for such irradiation.

3,616,369

RADIATION-INDUCED IONIC POLYMERIZATION CONTROLLED BY THE PRESENCE OF LEWIS ACIDS OR LEWIS BASES

Thomas F. Williams, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 324,146, Nov. 15, 1963, now abandoned. This application Nov. 9, 1967, Ser. No. 687,410

Int. Cl. B01j 1/00; C08d 1/00; B01f 11/00

U.S. Cl. 204—159.22

2 Claims

This invention relates to a method for controlling the molecular weight of a polymer derived from an ethylenically unsaturated monomer which can be catalyzed to polymerize by a Lewis acid, which comprises mixing said monomer with a Lewis base soluble in said monomer, and then reacting the mixture with an amount of high-energy radiation at least sufficient to initiate and propagate polymerization of said monomer, said Lewis base being selected from the class which functions to determine the molecular weight of the polymer produced at a given radiation dosage and temperature, said monomer being selected from an ethylenically unsaturated monomer having electron-releasing groups attached directly or indirectly to the ethylenic linkage of said monomer which impart a Lewis base character to said monomer.

The invention is also applicable to controlling the molecular weight of a polymer derived from a monomer which can be catalyzed by a Lewis base. In that case, the molecular weight of the final polymer can be controlled by mixing the monomer with a Lewis acid and then irradiating the mixture at a given temperature and to a given radiation dosage.

3,616,370

CROSSLINKING OF UNSATURATED POLYESTERS WITH N-3-OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Thomas C. Jennings, Willowick, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of application Ser. No. 801,794, Feb. 24, 1969, now abandoned, Continuation-in-part of application Ser. No. 877,041, Nov. 14, 1969, now abandoned. This application Jan. 22, 1970, Ser. No. 5,105

Int. Cl. C08f 21/00; 21/02

U.S. Cl. 204—159.15

13 Claims

N-3-Oxohydrocarbon-substituted acrylamides, especially diacetone acrylamide, are used as cross-linking monomers for unsaturated polyesters, either alone or in combination with known cross-linking monomers such as styrene and diallyl phthalate. The curable compositions thus formed may be used in the preparation of nonblocking "prepregs" which, upon stacking and molding, form laminates with excellent properties. They are also suitable for forming physically or chemically thickened premixes. In the chemically thickened ones, which employ a metal salt or hydroxide as a reactive thickener, an acidic reagent (usually a polymerizable acid such as methacrylic acid) may be used to accelerate B-stage resin formation.

3,616,371

PROCESS FOR THE PRODUCTION OF HOMOPOLYMER OF VINYLIDENE FLUORIDE OR COPOLYMERS THEREOF IN THE PRESENCE OF A FLUORINE-CONTAINING HYDROCARBON SOLVENT

Hiroshi Ukihashi, Tokyo, and Masahiko Ichimura, Yokohama-shi, both of Japan, assignors to Asahi Glass Company, Ltd., Chiyoda-ku, Tokyo, Japan

Filed June 17, 1968, Ser. No. 737,336

Claims priority, application Japan, Aug. 5, 1967, 42/50212

Int. Cl. B01j 1/00; C08d 1/00

U.S. Cl. 204—159.22

17 Claims

Process for homopolymerizing vinylidene fluoride or copolymerizing it with at least one other polymerizable compound such as hexafluoropropylene, chlorotrifluoroethylene, vinyl chloride or the like, characterized by the fact that the polymerization reaction is carried out mainly in the liquid phase in a condensed system

containing the material to be polymerized and a fluorine-containing hydrocarbon solvent such as trichlorotrifluoroethanes, octafluorocyclobutane or the like, by the irradiation of ionizing radiation.

3,616,372 PHOTOCHEMICAL SYNTHESIS OF CIS- AND TRANS-OCIMENE

Paul J. Kropp, and William F. Erman, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 22, 1968, Ser. No. 715,163
Int. Cl. B01j 1/10

U.S. Cl. 204—162 R 3 Claims
A process for the preparation of cis- and trans-ocimene by ultraviolet irradiation of apinene in a photosensitizing medium to accomplish said ultraviolet transformation. The products of the process are useful as perfume components.

3,616,373 FREE RADICAL PRODUCTION OF 1,2 VINYL DISULPHIDES FROM ORGANIC DISULFIDES

El-Ahmadi I. Heiba, Mercer County, N.J., assignor to Mobil Oil Corporation

Filed June 7, 1968, Ser. No. 735,177
Int. Cl. B01j 1/10; C07c 149/00

U.S. Cl. 204—162 R 21 Claims
A process is described for preparing 1,2-vinyl disulfides by reacting an unsaturated compound selected from acetylenes and allenes with an organic disulfide in the presence of a free radical generator.

3,616,374 α -LIMONENE DIMERCAPTAN PROCESS

Roland Henry Goshorn, Fort Washington, and Paul Daniel Morton, Malvern, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sept. 24, 1969, Ser. No. 862,159
Int. Cl. B01j 1/10

U.S. Cl. 204—162 R 2 Claims
A continuous process for preparing d-limonene dimercaptan by exposing a continuously flowing liquid mixture of d-limonene and hydrogen sulfide to ultraviolet light at a temperature between about 0° C. and about 25° C., at a pressure between 175 to 250 p.s.i.g., said mixture of hydrogen sulfide and d-limonene being at a mole ratio of from between about 10:1 to about 25:1.

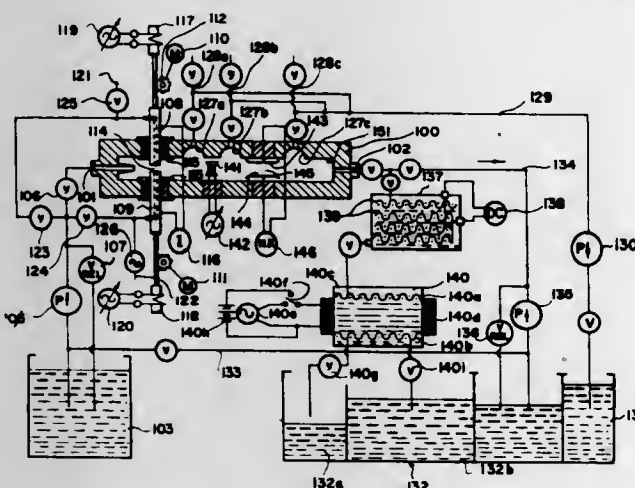
3,616,375 METHOD EMPLOYING WAVE ENERGY FOR THE EXTRACTION OF SULFUR FROM PETROLEUM AND THE LIKE

Kiyoshi Inoue, 100 Sakato Kawasaki, Kanagawa, Tokyo, Japan

Filed Feb. 3, 1967, Ser. No. 613,791

Claims priority, application Japan, Mar. 3, 1966, 41/12963
Int. Cl. B01j 1/10, 1/12

U.S. Cl. 204—162 R 14 Claims



A method of decreasing the sulfur content of crude oil and other petroleum products in which the sulfur is present in an

elemental state or in chemical combination with an organic substance (i.e., the crude oil), in which high-energy activation at relatively low temperatures ruptures carbon-sulfur bonds of the molecules and effectively forms hydrogen-sulfur bonds in the form of H₂S or carbon-sulfur bonds as CS₂, etc. so that gaseous sulfur-containing compounds are evolved from the liquid. The periodic high energy can be an impulsive spark discharge alone or accompanied by vibrational shock of sonic or ultrasonic frequency; laser activation with or without sonic waves of a frequency facilitating the rupture of the bonds to produce gaseous sulfur-containing compounds is also suitable. The apparatus includes an activation chamber through which the crude oil is pumped while being transported aboard a tanker or the like, means for recovering or discharging the gases, and one or more sulfur-removing devices such as a spark-discharge electrode assembly, cavitation generator, ultrasonic or sonic transducer, shock wave generator, high frequency electrode assembly, laser or microwave generator.

3,616,376 PREPARATION OF 1-HEPTANAMIDE USING HIGH-ENERGY IONIZING RADIATION

Nelson S. Marans, 12120 Kerwood Road, Silver Spring, Md., and Donald P. Gush, 1811 Kanawha St., Hyattsville, Md.

Continuation-in-part of application Ser. No. 535,013, Mar. 17, 1966, now abandoned. This application Sept. 13, 1968, Ser. No. 759,778
Int. Cl. B01j 1/10

U.S. Cl. 204—162 9 Claims

In abstract, this invention is directed to a process for preparing 1-heptanamide by irradiating a first liquid system with free radical-inducing radiation in the substantial absence of oxygen, the first liquid system being selected from the group consisting of: (i) a first composition consisting essentially of about 50–99.9 parts formamide, about 0–50 parts 1-heptanamide, and 1-hexene; and (ii) a second composition consisting essentially of about 50–99.8 parts formamide, about 0.1–5 parts acetone, about 0–45 parts 1-heptanamide, and 1-hexene, the mole ratio of 1-hexene:formamide in the first liquid solution being about 1:300–2,000, separating, and recovering the thus formed 1-heptanamide, all as recited hereinafter.

3,616,377 PROCESS FOR THE PREPARATION OF OXETANES AND DERIVATIVES THEREOF BY PHOTOCYCLO ADDITION

Donald R. Arnold, Lincolnale, N.Y., and Anthony A. Sousa, Raleigh, N.C., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 536,662, Mar. 23, 1966, Pat. No. 3,418,330, which is a continuation-in-part of application Ser. No. 324,183, Nov. 18, 1963, now abandoned. Filed June 25, 1969, Ser. No. 836,639
Int. Cl. B01j 1/10

U.S. Cl. 204—162 R 5 Claims

Oxetanes, such as the 3-oxatricyclo [4.2.1.0] nonanes, are prepared by the photocatalyzed reaction of a ketone with an olefinic compound. The reaction is carried out by bringing the ketone and the olefinic compound into admixture in a suitable reactor and irradiating the mixture with light energy.

3,616,378 HIGH-PRESSURE RADIOLYTIC OXIDATION OF CYCLOHEXANE

Forrest N. Case, Oak Ridge; David E. Smiley, Knoxville, and Donald L. Kau, Rockwood, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 9, 1969, Ser. No. 856,464

Int. Cl. B01j 1/10

U.S. Cl. 204—162 HE 1 Claim

This invention relates to a method for converting cyclohexane to cyclohexanone which comprises irradiating said cyclohexane with penetrative ionizing radiation at an oxygen pressure which results in a cyclohexanone-to-cyclohexanol product ratio greater than 1.

3,616,379 CHLOROBROMINATION OF BENZENE IN THE PRESENCE OF HIGH ENERGY RADIATION

David E. Harmer, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 11, 1968, Ser. No. 696,983
Int. Cl. B01j 1/10

U.S. Cl. 204—163 11 Claims
Chlorobromination of benzene to produce principally 1-chloro-2,3,4,5,6-pentabromocyclohexane is accomplished by a process comprising contacting chlorine, bromine and benzene in the presence of high energy radiation.

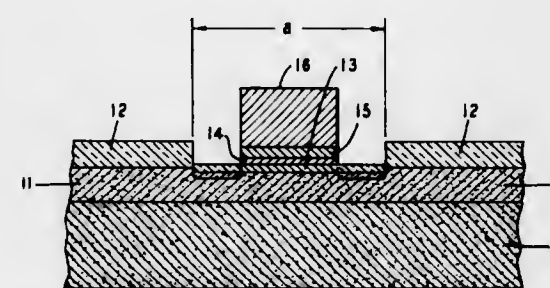
3,616,380 BARRIER LAYER DEVICES AND METHODS FOR THEIR MANUFACTURE

Martin P. Lepseiter, New Providence, and Joseph R. Ligenza, Califon, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1968, Ser. No. 778,099

Int. Cl. B01k 1/00

U.S. Cl. 204—164 3 Claims



The specification describes an improved barrier layer device which utilizes an oxide guard ring around the barrier layer. An insulating guard ring is shown to be superior to the PN junction guard ring of the prior art. Manufacturing methods for forming oxide guard rings are also discussed. These involve forming the oxide layer by exposure to an oxygen plasma.

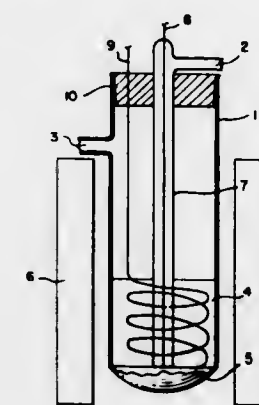
3,616,381 DEHYDROGENATION OF HYDROCARBONS IN AN ELECTRIC FIELD

Leonard D. Krenzke, Riverdale, and Glenn O. Michaels, South Holland, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,033

Int. Cl. C07b 29/06; B01k 1/00

U.S. Cl. 204—168 11 Claims



An improvement in a process for the catalytic dehydrogenation of dehydrogenatable hydrocarbon feedstocks to form compounds having a higher carbon to hydrogen ratio is disclosed. The process is carried out while subjecting the solid catalyst, which contains a group VIB metal oxide, to a high-voltage electrical field of at least about 1000 volts/cm.

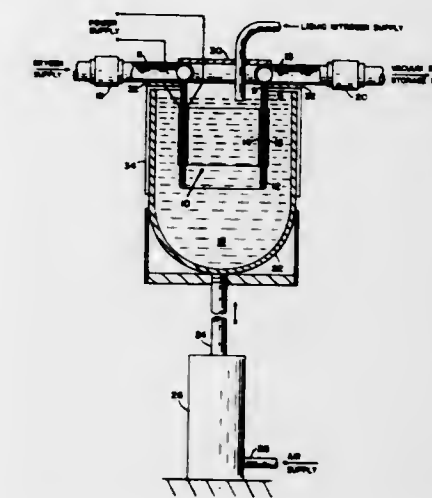
3,616,382 PROCESS FOR MAKING OZONE

Ervin R. Bartle, Jr., San Diego; Paul R. Erickson, El Cajon; Edgar A. Meckstroth, La Mesa, and Benjamin F. Myers, Jr., San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 659,569, Aug. 8, 1967, Pat. No. 3,511,780. Filed Nov. 4, 1969, Ser. No. 871,115

Int. Cl. C01b 13/10, 13/12

U.S. Cl. 204—176 3 Claims



A novel process and apparatus for synthesizing high-purity ozone (or for preparing test gas mixtures containing ozone). The process involves containing liquid nitrogen inside a vacuum dewar, supporting a dielectric ozonizer in the liquid nitrogen, evacuating the ozonizer to a low vacuum through a vacuum outlet, closing the vacuum outlet of the ozonizer, introducing high-purity oxygen into the ozonizer through an inlet, closing the inlet, applying a source of high-discharge alternating voltage across metal electrodes and oxygen therebetween, and removing the ozone thereby formed. The product is high-purity ozone. The apparatus comprises a two-walled annular ozonizer of Pyrex glass with electrodes secured onto the outer and inner surfaces.

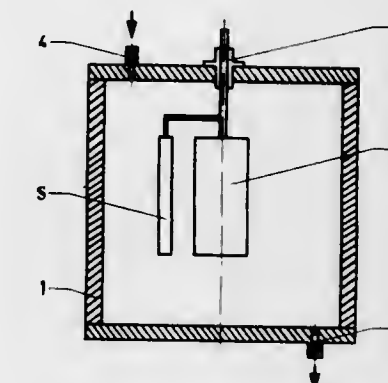
3,616,383 METHOD OF IONITRIDING OBJECTS MADE OF HIGH-ALLOYED, PARTICULARLY STAINLESS, IRON AND STEEL

Josef Klausler, Cologne, Germany, assignor to Elektrophysikalische Anstalt Bernhard Berghaus, Vaduz, Liechtenstein, Germany

Filed Oct. 25, 1968, Ser. No. 770,601

Int. Cl. C23b 1/100; B01k 1/00

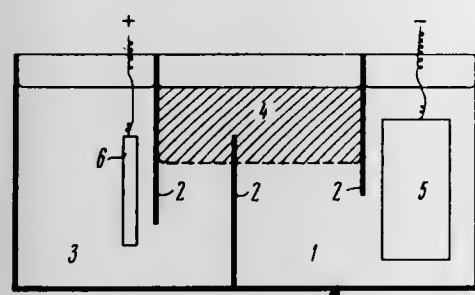
U.S. Cl. 204—177 1 Claim



Nitrogen hardening of workpieces of stainless and acid resistant chrome and chrome-nickel steels, in a glow discharge in a gas, is enhanced by enriching the gas atmosphere with iron. The enriching is done by atomizing iron from a separate electrode arranged in the glow discharge.

3,616,384
METHOD FOR THE PRODUCTION OF AMMONIUM PERRHENATE
 Yan Karlovich Litsis, ulitsa Lachplesha, 70a, kv. 14, and Bruno Andreevich Purin, ulitsa Vilisa Latsisa, 2a, kv. 11, both of Riga, U.S.S.R.
 Filed Nov. 3, 1969, Ser. No. 873,397
 Int. Cl. B01d 13/02
 U.S. Cl. 204—180 P

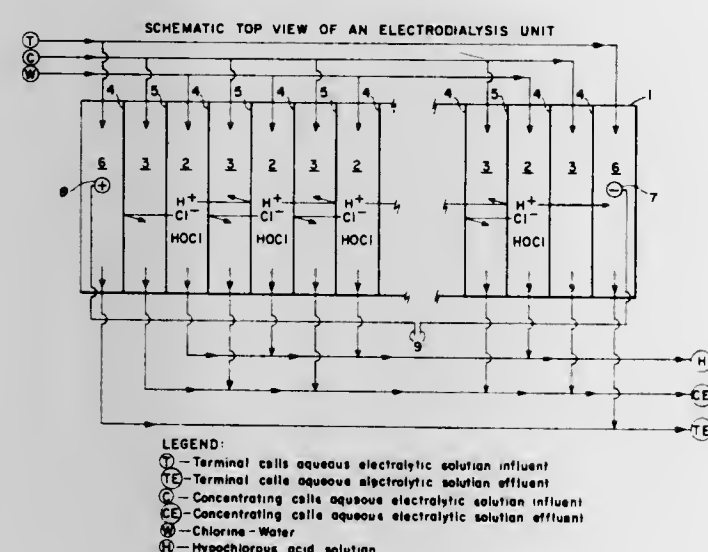
1 Claim



A method of manufacturing ammonium perrhenate which comprises carrying out the process of electroanalysis in a two-chamber electroanalysis apparatus furnished with a liquid diaphragm consisting of amyl, hexyl or heptyl alcohol, wherein the starting catholyte is a perrhenate ion-containing acidic solution and the starting anolyte consists of a 10-30 percent solution of ammonia, while the liquid diaphragm contains 0.05-0.1 percent by weight of 8-mercaptoquinoline.

3,616,385
CHLORINE- AND CHLORIDE-FREE HYPOCHLOROUS ACID BY ELECTRODIALYSIS
 Richard K. Kloss, Forest Park; Gene W. Claybaugh, Green Township, Hamilton County, and David D. Whyte, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
 Filed July 23, 1969, Ser. No. 844,113
 Int. Cl. B01d 13/02
 U.S. Cl. 204—180 P

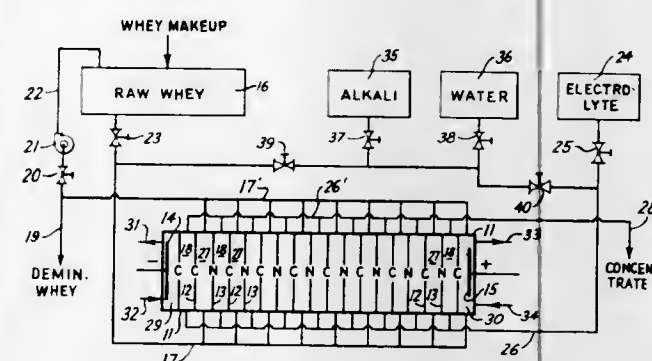
10 Claims



An essentially chlorine- and chloride-free aqueous solution of hypochlorous acid is prepared from chlorine water by an electroanalysis process which employs ion-selective, semipermeable membranes; a chlorine water pH of from about 2.75 to about 7.5 is preferred to achieve maximum efficiency of the process.

3,616,386
ELECTRODIALYTIC DEMINERALIZATION OF WHEY USING NEUTRAL MEMBRANES
 John R. Scheder, Horkon, Wis., assignor to Purity Electrochemical Company, Mayville, Wis.
 Filed Aug. 8, 1969, Ser. No. 848,643
 Int. Cl. B01d 13/02
 U.S. Cl. 204—180 P

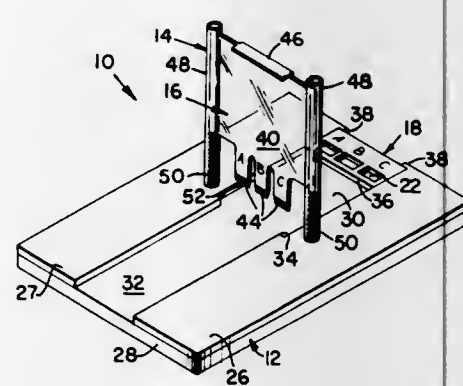
4 Claims



In the demineralization of whey by electroanalysis in a cell comprising cation membranes and neutral membranes a production period during which whey passes through the cell alternates with a sterilizing and membrane-regenerating period during which alkali is conducted through the cell. Neutral membranes are used which have a carbon-carbon backbone to which nonhydrolyzable branches with hydrophilic side groups are grafted.

3,616,387
METHOD AND APPARATUS FOR THE TRANSFER OF FLUID SAMPLES
 Christopher J. Siebert, Berkeley, and Douglas W. Hull, Richmond, both of Calif., assignors to Bio-Rad Laboratories, Richmond, Calif.
 Filed Nov. 13, 1969, Ser. No. 876,456
 Int. Cl. B01k 5/00
 U.S. Cl. 204—180 G

19 Claims



A fluid sample is transferred to a gellike substance by first suspending the sample in slits of an applicator that retain the sample by capillary action. The slits extend transversely through the applicator and intersect a wedge shaped end of the applicator. The insertion of the applicator in the gel forms an incision therein and the wedge shaped end opens the incision so that the gel contacts the sample in the slit. Forces acting on the suspended sample cause the transfer of at least a portion thereof to the gel. Upon withdrawal of the applicator the same portion is retained in the gel. Apparatus for performing the above described steps comprising a bridge applicator and means for holding a fluid sample and the gel is also disclosed.

3,616,388
PROCESS FOR THE PRODUCTION OF ELECTRICAL INSULATION
 Walter Meier, Baden, and Franz Knapp, Zurich, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
 Filed Sept. 28, 1967, Ser. No. 671,211
 Claims priority, application Switzerland, Dec. 20, 1966, 18182/66
 Int. Cl. B01k 5/02; C23b 13/00
 U.S. Cl. 204—181

3 Claims

A method of coating an electrical conductor with an insulating material comprising the steps of dispersing a finely ground micronitic mineral powder such as magnesium-aluminum silicate or potassium-aluminum silicate in a solution of a binder agent the concentration of which is adjusted so that each particle of the powder will be ultimately coated with only a thin skin of the binder agent, drying the dispersion so as to evaporate the solvent and establish a meallike powder in which the individual binder coated particles do not adhere to each other, and then applying the dried binder-coated particles to the electrical conductor. An after-heat treatment of the coated electrical conductor is utilized to cement the particles together and in the case of a hardenable binder, such as an epoxy resin, to harden it.

Drying of the dispersion can be effected by the spray drying technique in which all of the solvent is evaporated prior to particle impingement, or by using a rotating drum.

Application of the dried binder-coated particles can be effected by an electrophoresis bath technique, or by the suspension method, or by electrostatic spraying.

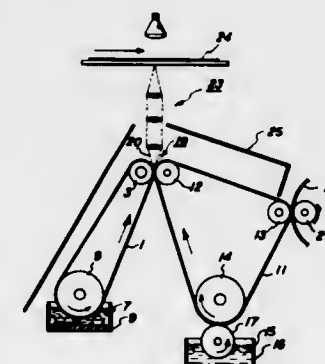
3,616,389
PROCESS FOR PRODUCING ELECTROPHORETICALLY INSULATED CONDUCTORS AND COILS
 Yoichiro Onishi, and Takashi Suetake, both of Amagasaki-shi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
 Filed June 28, 1968, Ser. No. 740,857
 Claims priority, application Japan, June 28, 1967, 42/41346
 Int. Cl. B01k 5/00; C23b 13/00
 U.S. Cl. 204—181

6 Claims

A method for manufacturing an insulated conductor comprising the steps of:
 a. electrophoretically precipitating an insulating coating onto the surface of a conductor,
 b. heating said coating until said coating is in a semisolidified state,
 c. forming said conductor into a desired configuration, and
 d. subsequently solidifying said coating by further heating.

3,616,390
AN ELECTROPHORETIC IMAGING METHOD CHARACTERIZED BY EXPOSURE OF ELECTRICALLY PHOTOSENSITIVE PARTICLES AT A LIQUID NIP
 John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Sept. 17, 1968, Ser. No. 760,311
 Int. Cl. G03g 13/22
 U.S. Cl. 204—181

6 Claims

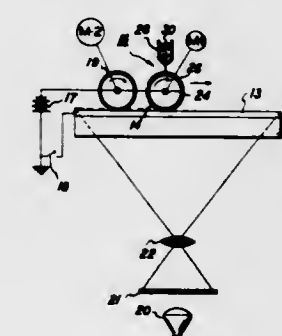


A photoelectrophoretic imaging system and apparatus are described wherein electrically photosensitive particles dispersed in a carrier liquid are subjected to an electric field

and exposed to imagewise light causing selective particle migration in image configuration. The imagewise exposure is directed at a liquid nip of the particle-liquid suspension. The exposure is not directed through either nip forming surface.

3,616,391
ELECTROPHORETIC IMAGING PROCESS INCLUDING APPLICATION OF DYNAMIC STRESS ON THE PARTICLE SUSPENSION
 Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Oct. 3, 1968, Ser. No. 764,720
 Int. Cl. G03g 13/22; B01k 5/00
 U.S. Cl. 204—181

3 Claims



Method and apparatus for improving image density, contrast and quality and photographic speed in a photoelectrophoretic imaging system utilizing a particulate suspension for forming the image. The method and apparatus stresses an electrophoretic suspension of particles in a carrier on an electrode by applying forces across the image suspension during imaging through sliding motion between the electrodes.

3,616,392
METHOD FOR COATING CONDUCTIVE ARTICLES
 Eugene E. Haney, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
 Filed Dec. 4, 1968, Ser. No. 781,049
 Int. Cl. B01k 5/00; C23b 13/00
 U.S. Cl. 204—181

6 Claims

Electrical deposition of organic film from an aqueous solution simultaneously on a plurality of conductive articles in a conductive container wherein the articles are thoroughly cleaned, a conversion coating is applied to the articles, the conversion coating is dried at an elevated temperature, the articles are immersed in the aqueous solution while in the conductive container, current is passed through the container and solution to irreversibly deposit the organic coating on the articles, and the articles having the coating are baked.

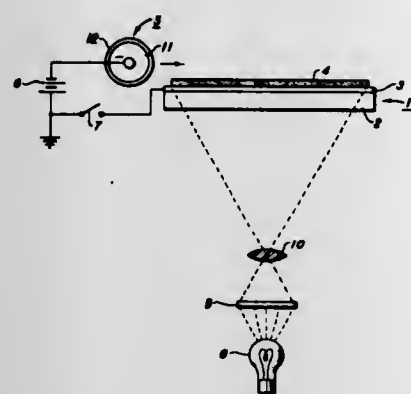
The apparatus includes means within a tank holding the aqueous solution for receiving a plurality of articles to be coated, and for shifting the position of the articles relative to each other at predetermined time intervals.

3,616,393
PHOTOELECTROPHORETIC IMAGING PROCESS EMPLOYING A PIGMENT HAVING THE FORMULA R₂N₃
 Bernard Grushkin, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
 Filed Jan. 2, 1969, Ser. No. 789,104
 Int. Cl. B01k 5/00
 U.S. Cl. 204—181

4 Claims

Methods of employing a compound having the formula

$R_2N_2S_3$ wherein R is selected from the group consisting of a substituted or unsubstituted fluorenyl, anthryl,



dibenzocycloheptenyl or indenyl group in electrophoretic imaging processes are disclosed.

3,616,394

ELECTROPHORETIC REPAIR COATING OF ENAMEL COATED SUBSTRATES

Edward E. Koepke, Riverside, and James M. Throne, Country Club Hills, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 3, 1969, Ser. No. 804,017

Int. Cl. C23b 13/00; B01k 5/02

U.S. Cl. 204—181

8 Claims

In a process for electrophoretic repair coating of articles coated with base coat enamels, the shaped article having a hardened enamel coating applied thereto is heated or baked at a temperature between about 300° and about 450° F. before contact of the enamel coated article with the electrophoretic coating bath.

3,616,395

PHOTOELECTROPHORETIC IMAGING WITH CORONA FIELD APPLICATION

Leonard M. Carreira, Penfield, and Vsevolod Tulagin, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

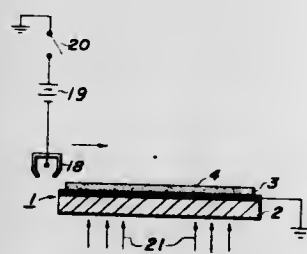
Continuation-in-part of application Ser. No. 561,587, June 29, 1966, now Patent No. 3,477,934, dated Nov. 11, 1969.

This application June 9, 1969, Ser. No. 831,684

Int. Cl. G03g 13/22; B01k 5/00; C23b 13/00

U.S. Cl. 204—181

4 Claims



A photoelectrophoretic imaging system and apparatus are described wherein electrically photosensitive particles dispersed in a carrier liquid are subjected to an electric field and exposed to imagewise light causing selective particle migration in image configuration. An electrostatic charge formed on the surface of the imaging suspension provides the electric field.

3,616,396

ELECTROPHORETIC COATING PROCESS

Ralph G. Swanson, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 457,551, May 21, 1965, now abandoned. This application July 18, 1969, Ser. No. 860,131

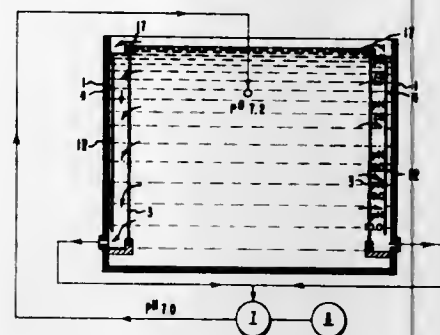
Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

4 Claims

An improved process for the electrophoretic deposition of a coating on a metal article in which the bath contains an

electrically charged film-forming material and a porous partition which separates the article being coated (e.g., the anode) from electrode (e.g., the cathode) and in which a portion of the bath which is deficient in film-forming material



is removed and replenished with film-forming material and recycled into the bath in the proximity of the article being coated. An apparatus having the required novel features necessary for the improved electrophoretic process is also disclosed.

3,616,397

PROCESS FOR THE ELECTRODEPOSITION OF METALLIC PAINT FILMS

James E. Lohr, Drexel Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 7, 1969, Ser. No. 864,551

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

9 Claims

A process for electrocoating a film-forming polymeric composition containing metallic flake particles on the anode of an electrocoating cell is the subject of this invention; the bath utilized in the electrocoating cell comprises a uniformly dispersed film-forming organic polymer which has pendent acid groups and has an acid number of 0.5–300 and is neutralized with a water-soluble compound which is either a metal hydroxide, a water-soluble amine, a water-soluble polyamine, or a water-soluble hydroxy amine, and the bath contains pigment particles of metallic flake which are coated with a thin layer of a cross-linked polymer and have a diameter to thickness ratio of about 40:1 to 1,000:1 and the bath has a pigment to binder ratio of about 1:100 to about 10:100; methods for making the aqueous dispersions for use in the electrocoating bath are also disclosed.

3,616,398

A PHOTOELECTROPHORETIC IMAGING COMPOSITION CONTAINING B-CAROTENE

Raymond L. Jelfo, Sodus Point, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of application Ser. No. 624,005, May 29, 1967, now abandoned. This application Dec. 24, 1969, Ser. No. 887,878

Int. Cl. G03g 13/22, 5/06

U.S. Cl. 96—88

3 Claims

There is disclosed a photoelectrophoretic imaging system wherein the imaging suspension utilized contains a photomigratory pigment dispersed in an insulating carrier liquid. The imaging suspension contains a vitamin precursor, beta carotene, in conjunction with the other components of the vehicle. The suspension is interpositioned between at least two electrodes and subjected to a potential difference while substantially simultaneously being selectively exposed to a reproducible image by a source of electromagnetic radiation. As a result of the suspension of the present invention it is now possible by regulating the polarities of the electrodes in the system to produce both negative and positive images from a single sense input.

3,616,399

SINGLE-HEATER WELL FLUID SEPARATION METHOD

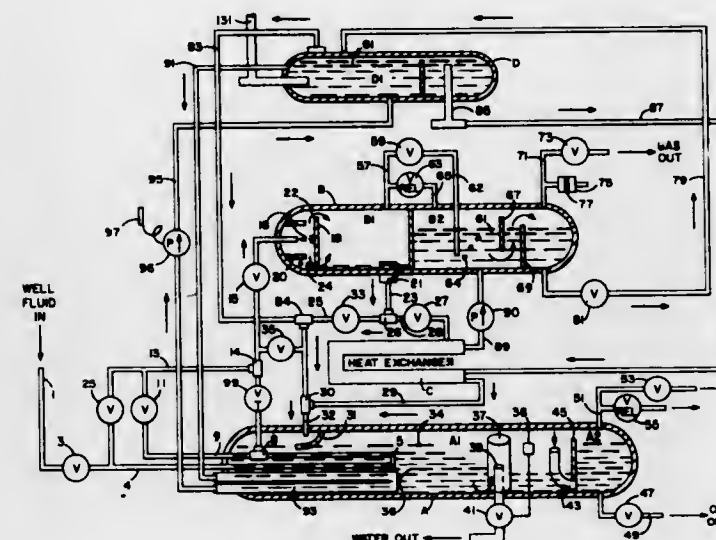
James B. Smith, P.O. Box 484, Aztec, N. Mex.

Filed May 7, 1969, Ser. No. 822,633

Int. Cl. C10g 33/04

U.S. Cl. 208—188

8 Claims



A method of separating well fluid under pressure into oil, gas, and water, utilizing a single heater to provide the heat necessary to heat the well fluid in the high-pressure side of the system for separating gas therefrom, heat a water absorbent liquid used to absorb water vapor from the separated gas, and heat the degasified liquid in the low-pressure side of the system for separation into oil and water.

3,616,400

METHOD OF MAKING THIN FILM CAPACITOR

Kiyotaka Wasa, and Shigeru Hayakawa, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 809,801, Mar. 24, 1969.

Filed Jan. 7, 1970, Ser. No. 6,009

Claims priorities, application Japan, Mar. 25, 1968, Sept. 13, 1968, Sept. 13, 1968, Sept. 13, 1968, 43/19851, 43/66390, 43/66391, 43/66389

Int. Cl. C23c 15/00

U.S. Cl. 204—192

4 Claims

A method of making a thin film capacitor. A base electrode is formed in the form of a thin titanium metal film on a substrate. A tin dielectric layer is formed on the titanium metal film by sputtering from a composite cathode. The cathode consists essentially of lead and titanium, and the atmosphere in the sputtering atmosphere is oxidizing atmosphere, so that the thin dielectric layer consists essentially of lead oxide and titanium oxide.

3,616,401

SPUTTERED MULTILAYER OHMIC MOLYBDEUM CONTACTS FOR SEMICONDUCTOR DEVICES

James A. Cunningham, Richardson, and Coy D. Orr, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas 31, Tex.

Filed June 30, 1966, Ser. No. 561,845

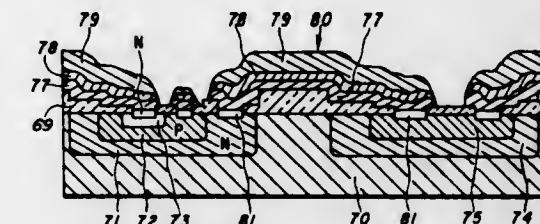
Int. Cl. C23c 15/00

U.S. Cl. 204—192

6 Claims

Disclosed are methods for depositing multilayer ohmic contacts upon a substrate of semiconductor material disposed within a low pressure chamber; such including for example the particular features of upward sputtering of the various metal films including deposition of a thin layer of molybdenum directly on initially formed integral areas of platinum silicide, followed by simultaneous sputtering of platinum with gold utilizing a sputtering cathode composed of platinum and gold, with the addition of hydrogen into an inert sputtering atmosphere to eliminate undesirable formation of oxides. This invention provides improved

adhesion of the sputtered metal films to the semiconductor surface and the silicon oxide, and provides the formation of



the metal film which is substantially free of pin holes and which has substantially uniform resistivity.

3,616,402

SPUTTERING METHOD AND APPARATUS

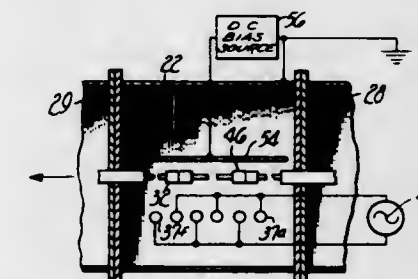
Henry Y. Kumagai, Pennington, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 31, 1968, Ser. No. 733,594

Int. Cl. C23c 15/00

U.S. Cl. 204—192

17 Claims



Substrate heating by plasma electron bombardment during the sputtering of a thin film in a deposition chamber is considerably reduced by utilizing, as the sputtering target, an AC-excited array of parallel tubes formed from the film material. An oscillating electric field of large amplitude is established between adjacent ones of the tubes to entrap free electrons of the chamber gas and to thereby prevent the electrons from reaching the substrate. An auxiliary conductive member mounted adjacent and parallel to the array is biased with a DC voltage of selectable polarity for increasing the deposition rate of the sputtered material without altering the chamber pressure.

3,616,403

PREVENTION OF INVERSION OF P-TYPE SEMICONDUCTOR MATERIAL DURING RF SPUTTERING OF QUARTZ

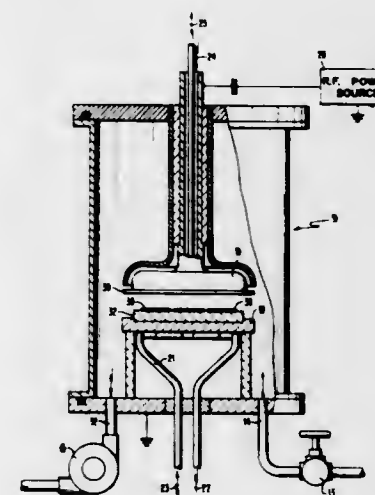
Robert H. Collins, Wappingers Falls, and Joseph S. Logan, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1968, Ser. No. 770,477

Int. Cl. C23c 15/00

U.S. Cl. 204—192

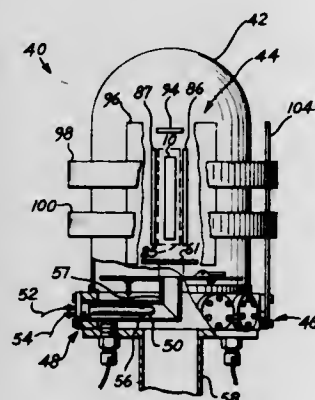
6 Claims



Method for preventing inversion of semiconductor surfaces during RF sputtering of dielectrics by maintaining a low flat

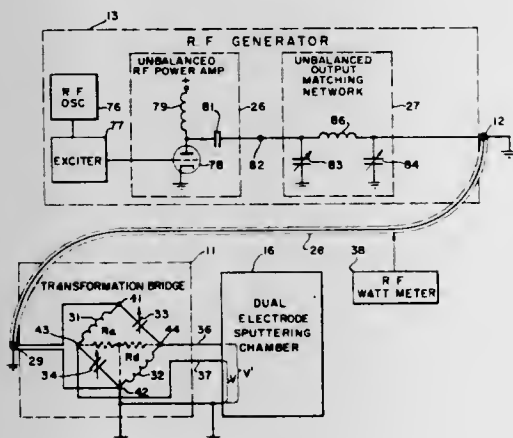
band charge level at the semiconductor interface. The flat band charge level is controlled by rigidly maintaining various parameters of the sputtering system such as target purity, and RF power density, in conjunction with the presence of a thin layer of phosphosilicate glass on the semiconductor which is supported on a dielectric material in floating mode.

3,616,404
COMPUTER INFORMATION STORAGE DEVICE AND METHOD FOR MAKING THE SAME
Lawrence A. Gregory, St. Paul, Minn., assignor to Precision Magnetics, Inc.
Filed Sept. 24, 1969, Ser. No. 860,725
Int. Cl. C23c 15/00
U.S. Cl. 204—192



The apparatus aspect of the disclosure describes a computer information storage device comprising a wire, a magnetic material substantially surrounding the wire, and a coating located between the wire and the magnetic material for providing a smooth surface on which the magnetic material may be deposited. The coating also provides a barrier that prevents diffusion of the wire into the magnetic material.

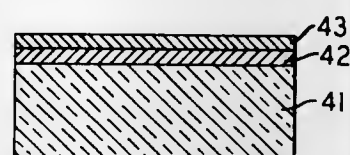
3,616,405
CONTINUOUS SPUTTERING SYSTEM
Harvey James Beaudry, Fremont, Calif., assignor to International Plasma Corporation
Filed Oct. 3, 1969, Ser. No. 863,601
Int. Cl. C23c 15/00
U.S. Cl. 204—192



In a system for depositing thin films of material on a workpiece by a technique known as radiofrequency sputtering, an electrical transformation bridge comprised of inductive and capacitive components is electrically interfaced between an unbalanced output of a radiofrequency generator and the excitation electrodes of a sputtering chamber for converting the generator output signal into opposing phase radiofrequency voltage components employed in preferred continuous sputtering systems and for precisely matching the impedance output of

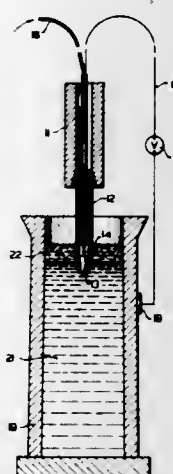
the generator with the impedance of the excitation electrodes while the latter are under the influence of a plasma of charged deposition particles.

3,616,406
PREPARATION OF GLUE LAYER FOR BONDING GOLD TO A SUBSTRATE
Paul A. Truner, Murray Hill, N.J., assignor to Bell Telephone Laboratories Inc., Murray Hill, N.J.
Filed Nov. 3, 1969, Ser. No. 873,446
Int. Cl. C23c 15/00
U.S. Cl. 204—192



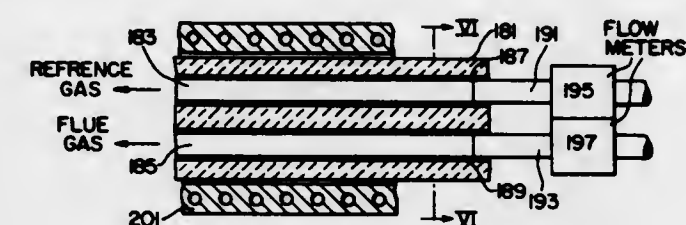
A technique for preparing a glue layer destined for use in bonding gold to a substrate involves depositing a gold-transition metal alloy upon a substrate member by cathodic sputtering techniques.

3,616,407
ARRANGEMENT FOR DETERMINING THE PRESENCE OF AN ACTIVE ELEMENT IN A BODY OF MOLTEN METAL
Hans-Jurgen Engell, Stuttgart, and Eberhard Schulte, Dortmund-Hombruch, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany
Filed Oct. 14, 1966, Ser. No. 588,244
Claims priority, application Germany, Oct. 14, 1965, P 15 98 540.7, June 25, 1966, P 15 98 559.8
Int. Cl. G01n 27/46
U.S. Cl. 204—195



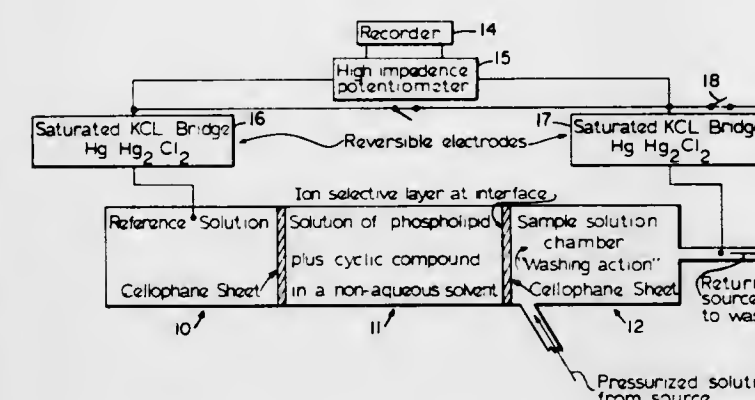
An apparatus for monitoring the oxygen content of liquid metals. A tubular shield surrounds a standard reference electrode and has an open end in which there is sealingly arranged a solid electrolyte member which is electrically connected with the reference electrode and which projects in part from the open end. Measuring means is connected with the reference electrode as well as with the mass of molten metal whose oxygen content is to be monitored. Immersion of the projecting portion of the solid electrolyte member in the mass of molten metal results in establishing of a voltage differential between the reference electrode and the mass of molten metal which voltage differential serves as an indication of the proportion of oxygen in the molten metal.

3,616,408
OXYGEN SENSOR
Willaim M. Hickam, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 514,871, Dec. 20, 1965, Pat. No. 3,404,836.
Filed May 29, 1968, Ser. No. 732,950
Int. Cl. G01n 27/46
U.S. Cl. 204—195



An oxygen solid-electrolyte cell is provided having a pair of longitudinal holes. The interior of each of the holes is coated with a porous platinum coating which provides the electrodes of the cell. Each of the holes is adapted to be connected to a separate source of gas to permit flow of different gases over the electrodes within the holes.

3,616,409
ELECTRODE SYSTEM FOR MEASURING ION ACTIVITIES IN STREAM OR SAMPLE
Daniel C. Tosteson, Durham, N.C., assignor to Duke University, Inc., Durham, N.C.
Filed June 7, 1968, Ser. No. 735,286
Int. Cl. G01n 27/30, 27/40
U.S. Cl. 204—195

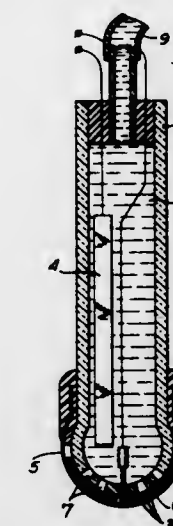


Continuous measurement of the activity of a particular chemical species of ion in a continuously flowing aqueous solution is obtained in a closed electrode system in which the flow is directed past a sensing electrode, the sensing electrode being convertible to measuring similar activity in static solutions. The selective element embodies a mechanically stable layer which contains an ion selective macrocyclic compound and which layer is established by a surface active agent between the aqueous solution and a nonaqueous phase, the agent and compound being dissolved in a solvent to form the nonaqueous phase.

3,616,410
PARTIAL GAS PRESSURE TRANSDUCER
Leonid Davidovich Shtoffer, Vysheslavtsev Pereulok, 9, kv. 6, and Viktor Fedorovich Bashutkin, Stantsia Perlovskaya, 3 Yaroslavsky pereulok, 4, both of, Moscow, U.S.S.R.
Filed Sept. 23, 1968, Ser. No. 761,594
Int. Cl. G01n 27/46
U.S. Cl. 204—195

A partial gas pressure transducer comprises a polarographic cell having a body containing electrolyte solution connected to a conduit leading to a header which is at atmospheric pressure and temperature. An indicator electrode is mounted on a perforated rigid partition secured to the body such that the indicator electrode is external of the body. The partition provides communication between the

indicator electrode and the electrolyte solution in the body. The partition may be integral with the body. A gas-permeable diaphragm externally covers the indicator



electrode and is secured to the body to clamp the indicator electrode between the partition and diaphragm. An auxiliary electrode is mounted within the cell in contact with the electrolyte solution.

3,616,411
PARTIAL PRESSURE SENSOR
Fred P. Rudek, Norristown, and Michael D. Rutkowski, Phoenixville, both of Pa., assignors to General Electric Company
Filed Sept. 16, 1968, Ser. No. 762,299
Int. Cl. G01n 27/46
U.S. Cl. 204—195

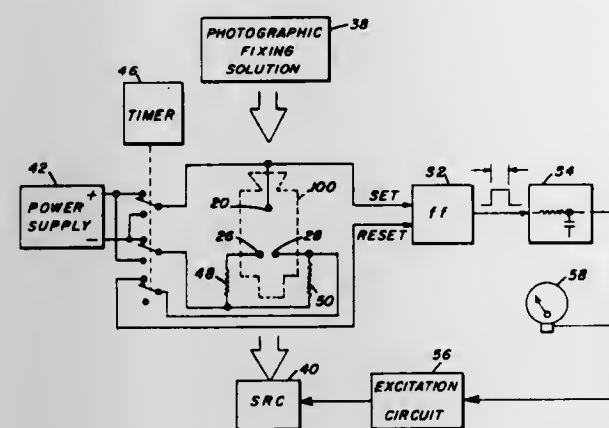


In a redox cell type of partial pressure sensor, in which an entrant gas, metered by passage through a diffusion barrier, is ionized by contact with an adsorbing catalyst in the presence of an electrolyte, the stability of calibration with time, and the speed of response to changes in partial pressure, are both improved by providing the catalyst as a minimally thick layer deposited upon a nonabsorbing metal, the combination being maintained at the face of the diffusion barrier.

3,616,412
METAL RECOVERY UNIT
Oliver W. Gnage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 25, 1968, Ser. No. 762,386
Int. Cl. B01k 3/00, 3/02
U.S. Cl. 204—195

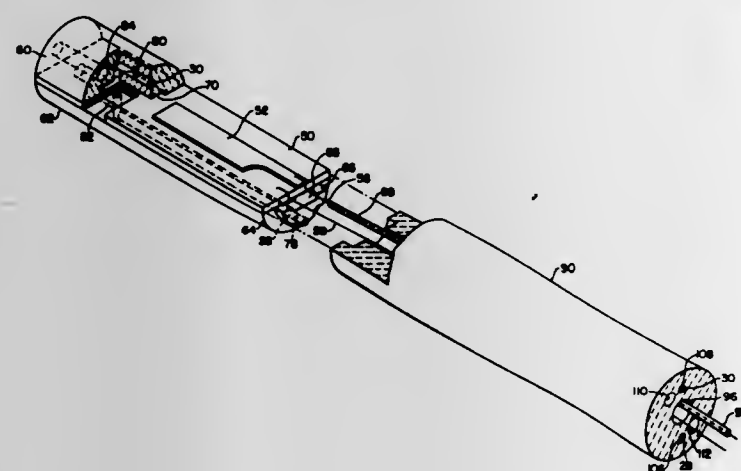
A coulometric device which may be used to determine the concentration of silver in solutions used in photography is disclosed. The device may be made an in-line part of a system for the recovery of such silver. The device is of simple rugged construction and utilizes for silver-determining purposes three electrically conductive probes which are housed within a chamber, such chamber having inlet and outlet orifices. One probe is situated near the inlet orifice; the other two probes are near each other, and near the outlet

orifice. The first probe, and the second and third probes, are periodically reverse excited. Silver periodically builds up on the second and third probes, causing the resistance



therebetween to lower periodically. The duration necessary to lower such resistance to a certain threshold level is proportional to silver concentration.

3,616,413
SOLID ELECTROLYTE OXYGEN SENSOR
Philip Reichner, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 8, 1968, Ser. No. 765,834
Int. Cl. G01n 27/46
U.S. Cl. 204-195

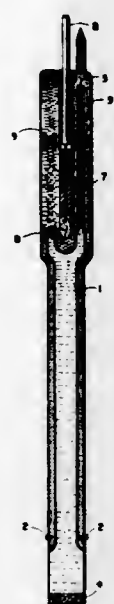


The invention relates to a solid electrolyte oxygen sensor comprising a solid electrolyte operating at an elevated temperature which measures the difference in concentration of oxygen on either side of the solid electrolyte layer in contact with two electrodes to generate an open circuit voltage. The sensor is enclosed within a sealed container. The cell is a symmetrical structure consisting of a platelike electrolyte with electrodes positioned on a portion of the surfaces and with two cell halves of a suitable material covering the solid electrolyte member and guiding the gas flow over the electrodes to permit two similar flow paths to join at the edge of the electrolyte plate.

3,616,414
REFERENCE ELECTRODE
Jan Van Houwelingen, Amersfoort, Netherlands, assignor to Electrofact N.V., Amersfoort, Netherlands
Filed Dec. 16, 1968, Ser. No. 783,999
Claims priority, application Netherlands, Dec. 18, 1967, 6717256
Int. Cl. G01n 27/46

A reference electrode for measuring ion potentials is composed of a tubular member forming a housing with another tubular member located within the housing and dividing it into a pair of chambers in communication with one another, each containing a different fluid. One of the

chambers contains an electrolyte and has exit apertures to leak the electrolyte into the fluid being measured. By the



syphon principle the fluid being measured enters the other chamber while the electrolyte leaks from the one chamber.

3,616,415
AXIAL CORROSION RATE PROBE
Frederick D. Watson, and Weldon D. Mayse, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Filed June 25, 1969, Ser. No. 836,542
Int. Cl. G01n 27/46
U.S. Cl. 204-195



An axial corrosion rate probe having tubular metal electrodes, cylindrical insulator spools, a round-nosed end cap and a tubular metal base interfitted into a nested arrangement. An insulator spool separates the electrodes from one another and from the base with the spools telescoped into the electrodes and the base. A central cylindrical passageway extends through the base, insulators and spools. Electrical conductors extend from the electrodes through the central passageway into the base. A nonconductive elastomer fills all voids in the central passageway, and forms the end cap. The elastomer extends from the central passageway through openings in the spools to encircle each of the spools with an exposed cylindrical surface which extends longitudinally between adjacent electrodes. The base, electrodes, elastomer-surrounded spools and end cap preferably have a uniform diameter exposed cylindrical surface. The elastomer integrally connects elements of the probe into a unitary elongated structure.

3,616,416
OXYGEN DETECTOR FOR ANALYSIS OF OXYGEN IN GASEOUS STREAMS INCLUDING AN INTERNAL HUMIDIFIER
Amos Linenberg, Rehovot, Israel, and Herman S. Preiser, Ellicott City, Md., assignors to Hydronautics, Inc., Laurel, Md.
Filed July 2, 1969, Ser. No. 839,803
Int. Cl. B01k 3/00
U.S. Cl. 204-195

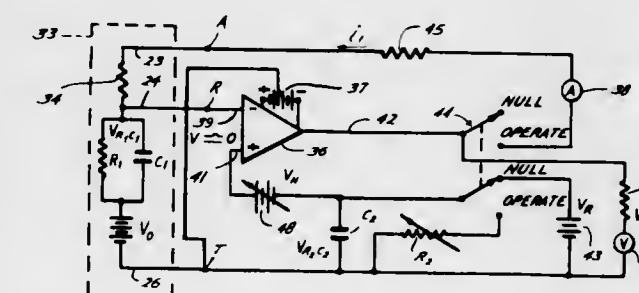
24 Claims



A galvanic oxygen detector comprising a metallic tubular housing having gas inlet and outlet means; a tubular and consumable anode concentrically mounted in intimate electrical contact with the inner surface of the housing; a tubular, porous and nonconductive electrolyte retentive matrix concentrically mounted in intimate contact with the inner surface of the anode; and a tubular and porous cathode concentrically mounted in intimate contact with the inner surface of the electrolyte matrix, the cathode defining a central chamber for confining the flow of gas that passes through the housing over the inner surface of the cathode. An external electrical circuit is connected between the cathode and the housing for measuring the current generated by the reduction of oxygen in the gas sample.

3,616,417
CORROSION RATE METER
Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Filed Aug. 13, 1969, Ser. No. 849,734
Int. Cl. G01n 27/46
U.S. Cl. 204-195

12 Claims



A corrosion rate meter with metallic electrodes contactable by a corrodent, including a test specimen electrode, a reference electrode and a third or auxiliary electrode. A current loop circuit connects the test specimen and third electrodes to a first input and common output of a differential amplifier and a direct current supply means. Polarizing current in the current loop circuit passes through the third electrode and the test specimen electrode to produce an exponential voltage change at the test specimen electrode with a time constant of resistance and capacitance about this electrode. A voltage loop circuit connects the test

specimen electrode and the reference electrode between the first and second inputs of the differential amplifier. A signal generating source in the voltage loop circuit produces a voltage signal changing exponentially from a first value to a second value with the resistance-capacitance time constant characteristic of the polarizing voltage change at the test specimen electrode. The voltage signal and polarizing voltage change combine as an input signal across the first and second inputs of the differential amplifier to produce the polarizing current flow in the current loop circuit at a substantially constant value until a predetermined polarizing voltage is generated at the test specimen electrode. Means provide a readout of the constant value of current flow through the test specimen electrode and the third electrode while the voltage signal is changing exponentially. The value of current flow can be correlated to the corrosion rate of the test specimen electrode.

3,616,418
ANODE ASSEMBLY FOR CATHODIC PROTECTION SYSTEMS
Edward P. Anderson, Livingston, N.J.; Paul B. Byrne, Warren, N.J., and Risque L. Benedict, Upland, Calif., assignors to Engelhard Minerals & Chemicals Corporation
Filed Dec. 4, 1969, Ser. No. 882,127
Int. Cl. C23f 13/00
U.S. Cl. 204-196

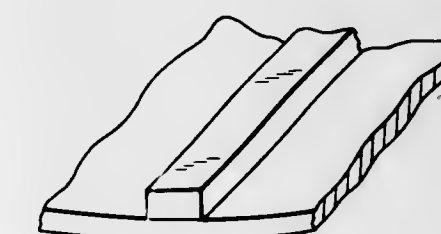
4 Claims



An anode assembly for cathodic protection systems, especially for the cathodic protection of submerged spaced supporting legs of offshore platforms, comprising an elongated carrier cable adapted for spanning the spaced submerged legs of the platform and carrying an elongated anode along the length of the cable intermediate the ends thereof, the anode being spaced from the connecting ends of the cable to provide for substantially uniform current distribution to the platform legs.

3,616,419
ARRANGEMENT FOR CATHODIC CORROSION PROTECTION
Luigi Bagnulo, Via Volta 18, Milan, Italy
Filed Mar. 15, 1968, Ser. No. 713,551
Claims priority, application Italy, Mar. 15, 1967, 792945
Int. Cl. C23f 13/00
U.S. Cl. 204-197

11 Claims



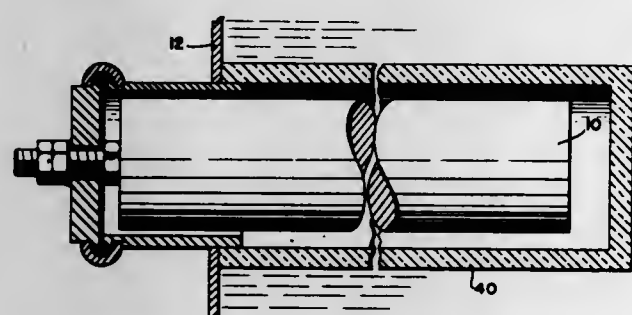
A metallic element which is to be cathodically protected against corrosion has secured to one of its surfaces a strip-shaped anode extending along at least one generatrix and being in substantially continuous electrically conductive contact with such surface so that current will flow between the strip, which constitutes an anode, and the element, which constitutes a cathode, at substantially identical density all along the strip.

3,616,420
ALUMINIUM BASE ALLOYS AND ANODES
 Trevor Broughton, Beaconsfield, England, assignor to The British Aluminium Company Limited, London, England
 Filed Nov. 25, 1968, Ser. No. 778,752
 Int. Cl. C23f 13/00

U.S. Cl. 204—197 16 Claims
 Aluminum base alloys which are suitable for use in the cast state as galvanic anodes, the alloys comprising 1–15% zinc, 0.005–0.1% indium and 0.4–10% magnesium, the balance being aluminum of at least 99.8 percent purity with inconsequential impurities. The alloy may optionally include some tin, for example in the range of 0.1–0.5 percent, some gallium in the range of from 0.005 to 0.017 percent and a grain refiner such as titanium and zirconium.

3,616,421
SACRIFICIAL ANODE CONSTRUCTION
 William D. Mackintosh, Tulsa, Okla., assignor to Atlantic Richfield Company, New York, N.Y.
 Filed Mar. 17, 1969, Ser. No. 807,500
 Int. Cl. C23f 13/00

U.S. Cl. 204—197 11 Claims

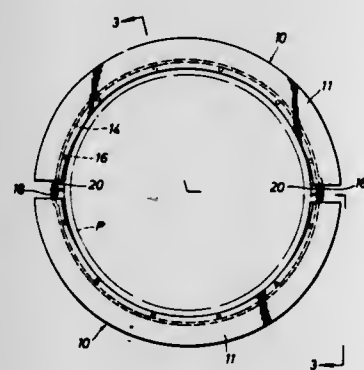


A sacrificial anode construction in which the anode is supported in a loose-fitting porous container within the vessel to be protected. The container is constructed to substantially cease liquid flow around the anode when desired so that the anode can be replaced without the loss of an appreciable amount of liquid within the vessel.

3,616,422
GALVANIC ANODE
 Gordon L. Doremus, and Jack G. Davis, both of Houston, Tex., assignors to Cathodic Protection Service, Houston, Tex.

Filed Apr. 21, 1969, Ser. No. 817,916
 Int. Cl. C23f 13/00

U.S. Cl. 204—197

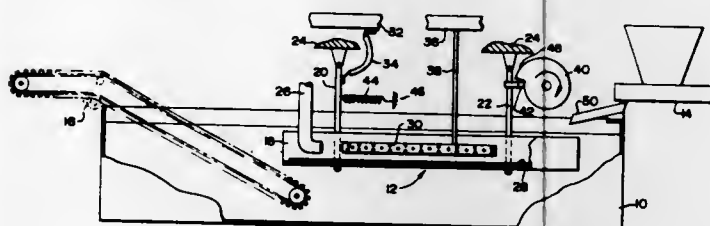


A galvanic anode adapted particularly for the cathodic protection of relatively large diameter pipelines submerged in water bodies. The anode consists of a pair of semicylindrical segments constructed of a suitable galvanic metal and having completely embedded within the galvanic metal steel core or armature sections, adapted to be connected together to join the anode sections into a "bracelet" about the pipe.

3,616,423
CONTINUOUS PLATING SYSTEM
 Elbert R. Faust, Woodbury, Conn., assignor to M & F Chemicals Inc., New York, N.Y.
 Filed Feb. 3, 1969, Ser. No. 796,033
 Int. Cl. B65g 49/02

U.S. Cl. 204—198

7 Claims

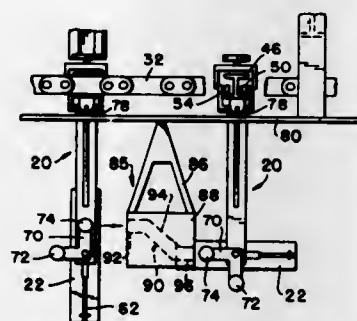


A system for the continuous plating, cleaning or rinsing of articles wherein all surfaces of the articles are uniformly and entirely exposed to the fluid through which they are conveyed. A trough suspended within a fluid bath is operative to cyclically move forward and upward and abruptly return to its initial position thereby to cause articles in the trough to inertially fall to positions successively forward of the trough and in new positions with respect to the trough and other articles.

3,616,424
PLATING MACHINE AND METHOD OF PLATING
 James Barton, Grosse Pointe Woods, Mich., assignor to Ionic International, Inc., Warren, Mich.
 Filed Jan. 23, 1969, Ser. No. 793,338
 Int. Cl. C23b 5/68; B65g 49/00

U.S. Cl. 204—202

5 Claims



A plating machine is provided for electroplating work. The machine includes a series of treating stations which comprise electroplating tanks and nonelectroplating tanks. The work has a long horizontal dimension and a short horizontal dimension. Means are provided for orienting the work during the process so that the long horizontal dimension will be at substantially right angles to the direction of travel when the work is treated in a nonelectroplating tank. When the work is treated in an electroplating tank, it is oriented so that the long dimension is substantially parallel to the direction of travel.

3,616,425
APPARATUS FOR CONTINUOUS FORMING OF ANODES FOR CAPACITORS

Gerhart P. Klein, Manchester, and Milton Kallianides, Brockton, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
 Continuation of application Ser. No. 670,723, Sept. 26, 1967, now abandoned. This application Dec. 10, 1969, Ser. No. 880,487

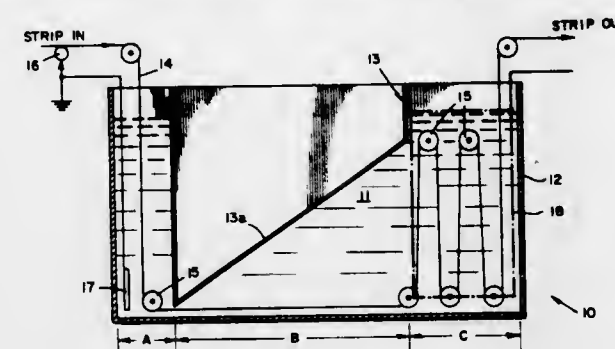
Int. Cl. C23b 5/68

U.S. Cl. 204—206

5 Claims

A tank for an electrolyte is functionally divided into three

sections for the continuous generation of anodic oxide on an

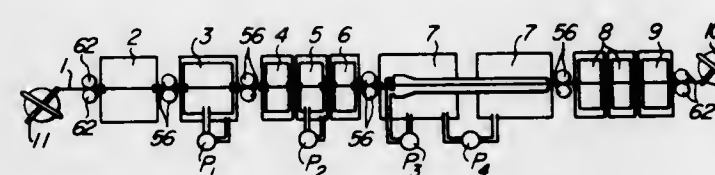


endless moving strip passing through the tank.

3,616,426
CONTINUOUS PLATING APPARATUS
 Kaname Nakao, Neyagawa-shi, and Takashi Suzuki, Takatsuki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
 Filed June 2, 1969, Ser. No. 829,265
 Claims priority, application Japan, June 4, 1968, 43/38927
 Int. Cl. C23b 5/68

U.S. Cl. 204—207

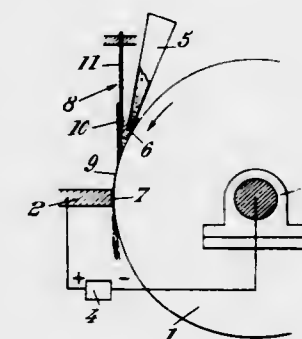
3 Claims



An apparatus for continuously plating a sheet of a metal such as steel comprising means for feeding a sheet to be plated, pretreatment baths, a plating bath, aftertreatment baths and a winder for taking up the plated sheet all arranged successively in a row, said baths having therein aligned slits for allowing the sheet to be passed linearly therethrough in a manner that the sheet is held vertical, said plating bath having therein means for causing plating liquid to flow in parallel relation with the sheet whereby a plating of good quality may be rapidly attained without any fold and wrinkle produced in the sheet.

3,616,427
APPARATUS FOR THE ELECTROLYTIC TREATMENT OF METALLIC PIECES
 Paul Marie Gaston Linden, Franconville, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France
 Filed Sept. 18, 1968, Ser. No. 760,475
 Claims priority, application France, Sept. 26, 1967, 122333
 Int. Cl. C23b 5/68; B23p 1/00, 1/02
 U.S. Cl. 204—212

6 Claims

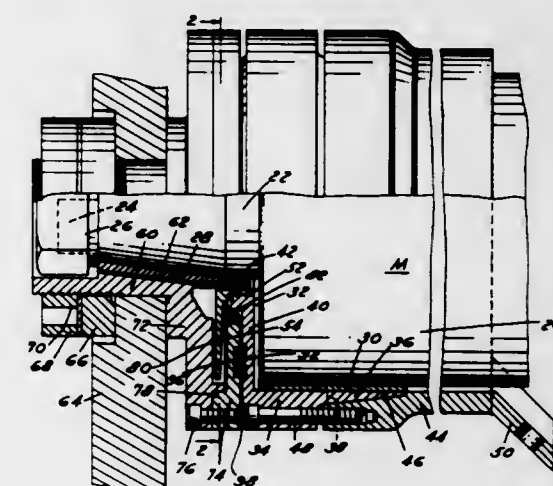


The apparatus comprises a movable electrode disposed near to the work piece to be treated, a current generator whose two terminals are respectively connected to the electrode and to the work piece, and supply means for depositing an electrolyte between the workpiece and the

electrode. Deflection means are provided for giving the layer of electrolyte the character of a thin film. These deflection means can be in the form of a blade, flexible or rigid, urged elastically against the electrode, or in the form of a gaseous jet tangent to or striking the electrode at a point between the supply means and the workpiece.

3,616,428
POWER SPINDLE FOR ELECTROCHEMICAL GRINDING
 David L. Bogue, Pompano Beach, Fla., assignor to KMS Industries, Inc., Ann Arbor, Mich.
 Filed Sept. 5, 1969, Ser. No. 855,561
 Int. Cl. C23b 5/70; B23p 1/10
 U.S. Cl. 204—212

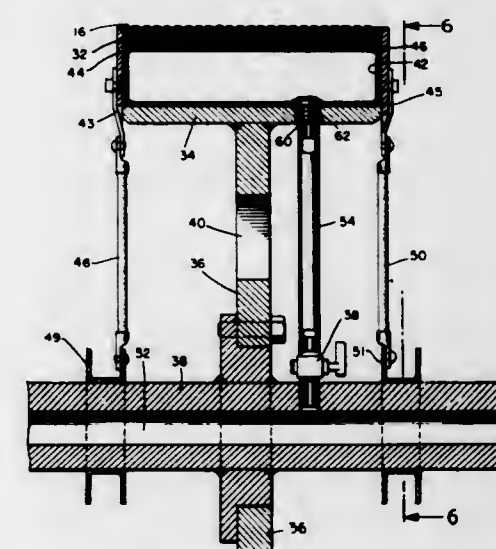
6 Claims



A power spindle for electrochemical grinding machine utilizing a grinding wheel, there being an electrical connection to the moving wheel accomplished through a body of mercury. An annular recess formed in a drive housing on the rotating spindle confines the body of mercury and an annular plate, insulated from the spindle and forming a drive motor, is mounted in a manner to be supported by the motor and fastened to project into the annular recess to create an electrical connection between a secondary housing surrounding the motor and the drive housing which rotates with the spindle.

3,616,429
APPARATUS FOR MAKING PERFORATED METAL FOIL
 John J. MacKinney, Narberth, Pa., assignor to The Budd Company, Philadelphia, Pa.
 Filed May 14, 1969, Ser. No. 824,551
 Int. Cl. B23p 1/12
 U.S. Cl. 204—216

8 Claims



Apparatus for making perforated metal foil includes a conductive cylindrical member having openings therein and

adapted to receive electrodeposited metal to form the foil. A pliable insulated element is disposed within the cylindrical member. Means are provided for pressing the insulated element against the interior of the cylindrical member causing portions of the insulated element to protrude through the openings. Metal may then be deposited on the cylindrical member but not on the portions of the insulated element extending through the openings.

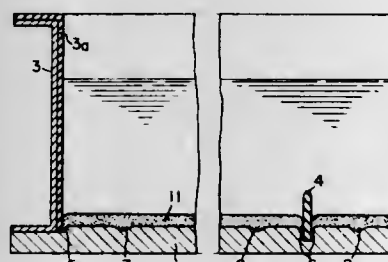
3,616,430
ELECTROLYTIC CELLS FOR PREPARING ALKALIS BY THE MERCURY PROCESS

Teruo Imai, Iwaki-shi, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-To, Japan

Filed Jan. 15, 1969, Ser. No. 791,400
Claims priority, application Japan, Jan. 19, 1968, 43/2672
Int. Cl. C22d 1/04

U.S. Cl. 204-219

4 Claims



In an electrolytic cell designed for use in the mercury process and provided with longitudinal side grooves closely adjacent the surface of sidewalls, auxiliary grooves are provided on the surface of the bottom plate in parallel with the sidewalls at positions 1 to 10 cm. spaced apart therefrom to minimize lateral movement of mercury.

3,616,431
BIPOLAR MERCURY CATHODE CELL WITH MERCURY SPLITTER

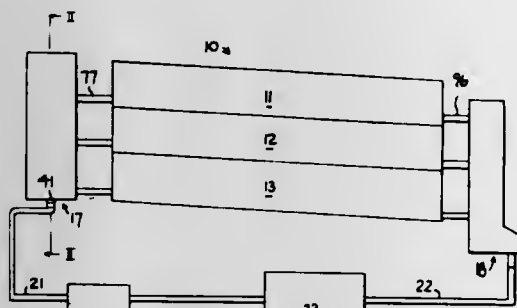
Carl W. Raetzsch; John F. Van Hoozer, and Hugh Cunningham, all of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 10, 1969, Ser. No. 865,467

Int. Cl. C22d 1/04; B01k 3/00

U.S. Cl. 204-219

7 Claims



A mercury splitter for breaking an electrical current in a mercury cell circuit having a plurality of vertically stacked monopolar or bipolar cell units. The mercury splitter has a compact arrangement of individual splitter units. Each splitter unit includes an upper tray and a lower tray. The upper tray divides the mercury into fine streams which free fall, dividing into drops. The lower tray collects the mercury, forming a stream that is electrically separate from the mercury in the upper tray.

3,616,432
CATHODE LEVEL ADJUSTMENT MEANS

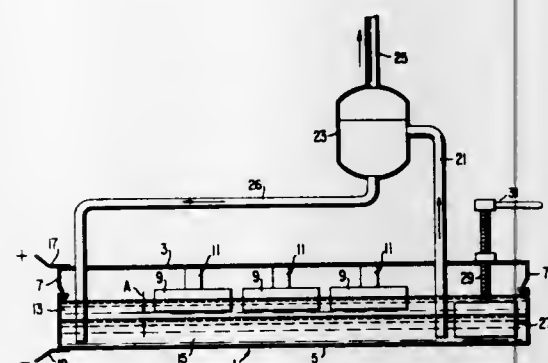
George G. Day, Madeira Beach, Fla., assignor to F. Barry Haskett, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,070

Int. Cl. B01k 3/00; C22d 3/06

U.S. Cl. 204-220

6 Claims



In an electrolytic cell employing a flowing molten metal cathode, a means to adjust the level between the anodes and molten metal cathode is provided comprising a refractory block capable of being raised and lowered within the cathode metal so as to displace the same and adjust the level of the molten metal. Such a means is most suitable for making minor adjustments in a level of the cathode metal.

For greater adjustments a compartment or chamber is provided for storing a quantity of cathode metal, the compartment or chamber communicating directly with the cathode metal in the electrolytic cell. A pressure of inert gas is maintained above the metal in this compartment or chamber to be varied at will to cause cathode metal to flow to or from the cell to maintain the desired level.

3,616,433
ELECTROCHEMICAL MACHINING APPARATUS HAVING ELECTROLYTE PRESSURE RESPONSIVE LOAD COMPENSATING MEANS

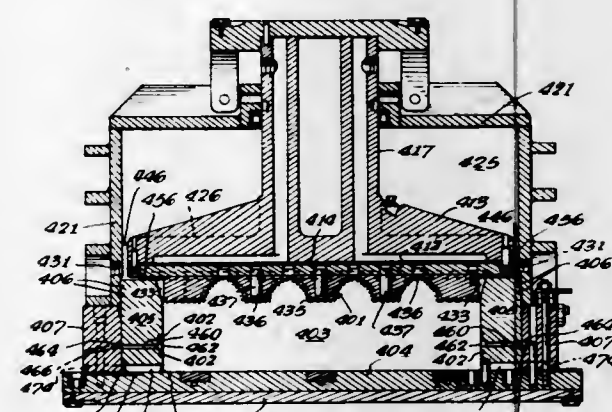
Lynn A. Williams, Winnetka, Ill., assignor to Anocut Engineering Company

Continuation-in-part of application Ser. No. 680,811, Nov. 6, 1967, now abandoned, and a continuation-in-part of 762,077, Sept. 24, 1968. This application Aug. 11, 1969, Ser. No. 848,962

Int. Cl. B23p 1/02, 1/12

U.S. Cl. 204-224

19 Claims



This application discloses an electrochemical machining or electrolytic demetallizing apparatus adapted to drive a shaping cathode toward and into a conductive metal workpiece, with a gap that is maintained between the cathode and workpiece being filled by pressurized, rapidly flowing electrolyte through which electric current flows between the cathode and workpiece. The apparatus contains drive means for producing relative movement of the cathode and workpiece at a constant rate along a path that determines the shaping of the workpiece. Also, a hydraulic load compensating means urges the cathode forward into the

workpiece to at least partially counteract the tendency of the electrolyte pressure to produce relative retracting movement between the cathode and the workpiece. The load compensating means is directly responsive to a change of electrolyte pressure between cathode and workpiece, so that the load-compensating force is relieved upon a sudden decrease in the electrolyte pressure such as may be occasioned when the electrode breaks through the workpiece upon completion of the shaping step. The load compensating means may be separate from the cathode mounting means, or it may include a sealed pressure chamber that encloses the cathode, the cathode-mounting means, and the workpiece, with an insulating spacer in sealing contact with both the chamber wall and the workpiece. In the latter case, passages are provided for draining off electrolyte that may leak through the seal between the insulating spacer and the workpiece.

Electrolytic recovery of silver may occur during, and after, the workday. The electrolyzing current is (preferably) set in proportion to a quiescent silver content of the developing solution; and the duration for applying the current is regulated in accordance with the integral of the difference between the rates of input and recovery silver. Other applications of the disclosed invention are possible.

3,616,436
OXYGEN STREAM DISPENSER

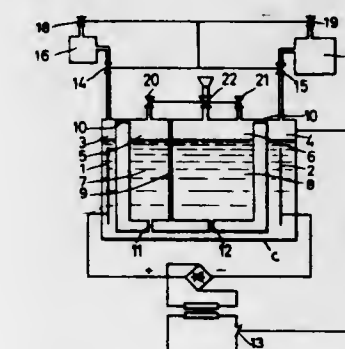
Georg Haas, Wilhelmstrasse 24, 7737 Bad Durrheim, Germany

Filed June 11, 1968, Ser. No. 736,051

Claims priority, application Germany, June 13, 1967, Jan. 30, 1968, Feb. 2, 1968, P 15 66 611.2, P 16 16 196.9, P 16 16 197.0
Int. Cl. C01b 13/06

U.S. Cl. 204-229

7 Claims



A unitary device for providing oxygen, from water, for breathing as a small stream or a breathing mixture when desired. The oxygen is provided in measured amounts by the opening and closing of valves in the inlet and exit lines of a storage chamber fed by an oxygen-producing electrolytic cell. Electrolysis by the cell is controlled according to the pressure of gas within the cell.

3,616,434
APPARATUS WITH POWER SOURCE FOR PLATING

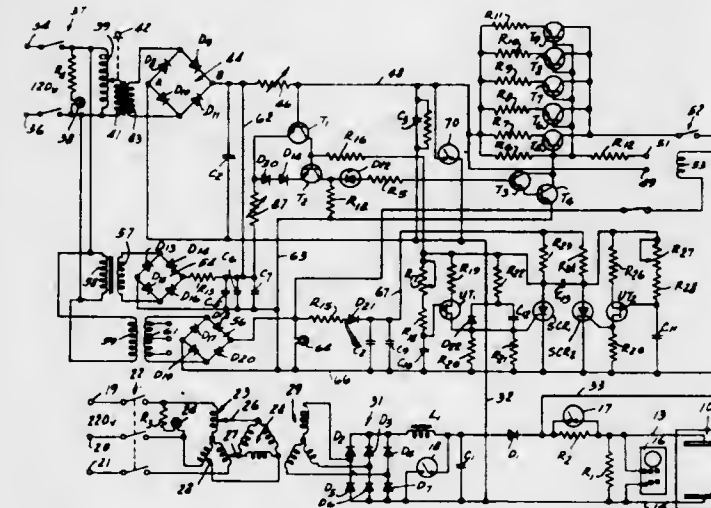
Johann Karl Hausner, Chicago, Ill., assignor to Nova-Chrome, Inc., Chicago, Ill.

Filed Apr. 18, 1968, Ser. No. 722,435

Int. Cl. B01k 3/00

U.S. Cl. 204-228

5 Claims



Apparatus and method for plating with a pulsating direct current variable in frequency so as to obtain desirable plating characteristics. The amplitude as well as the frequency of the plating current may be adjusted to obtain superior plating results.

3,616,437
PLATING APPARATUS WITH RECOVERY OF PLATING CHEMICALS FROM RINSE WATERS

Aisaburo Yagishita, 5-2, Shimo-cho, 4-chome, Chigusa-ku, Nagoya, Japan

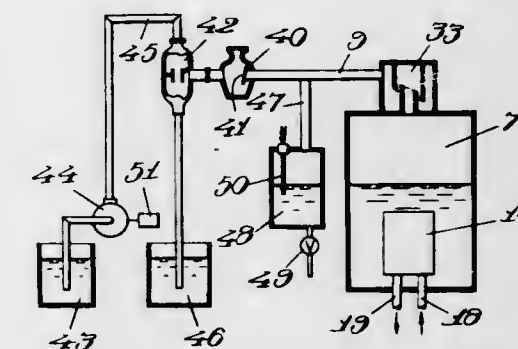
Division of Ser. No. 587,607, Oct. 18, 1966, Pat. No. 3,542,651.

Filed Aug. 24, 1970, Ser. No. 66,398

Int. Cl. B01k 3/00

U.S. Cl. 204-232

4 Claims



In a unit for reclaiming plating wastes containing chromic acid and the like, the rinse liquid from the first of a plurality of wash tubs into which plated articles are dipped successively to rinse off the plating solution, is sucked into a tower where it is heated by steam partially to vaporize and concentrate it to plating strength. The vapor generated in the tower is passed through a check valve to an ejector, where it is introduced transversely into a jet of cooling water to be condensed and conveyed with the stream of cooling water to a reservoir. The cooling-water jet develops a vacuum in the tower; and a trap is interposed between the tower and ejector to trap any cooling water which a faulty check valve might otherwise allow to back up into the tower.

3,616,435
INTEGRATION-CONTROLLED APPARATUS

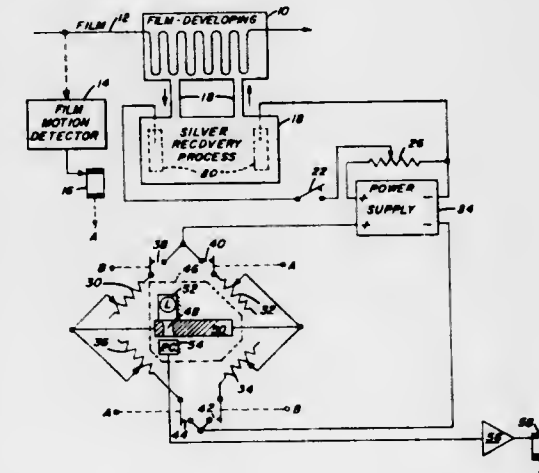
Brian Favell, North Finchley; Richard G. Hall, Knebworth, and Brian Harris, Stevenage, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1969, Ser. No. 804,808

Int. Cl. B01k 3/00; C22d 1/12

U.S. Cl. 204-228

7 Claims



Photographic developing solutions dissolve silver during film processing. Processing occurs during a normal workday.

3,616,438

PRODUCTION OF ALUMINUM AND ALUMINUM ALLOYS FROM ALUMINUM CHLORIDE

Ernest Foley, East Burwood, Victoria, Australia, and George Lang Herwig, Valentine, Wales, assignors to Conzinc Riotinto of Australia Limited and Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia

Division of Ser. No. 517,769, Dec. 30, 1965, Pat. No. 3,464,900.

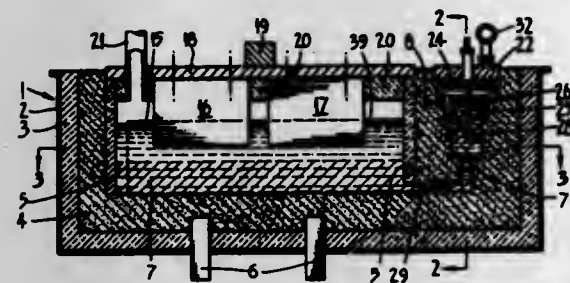
Filed Nov. 29, 1968, Ser. No. 779,672

1968, Ser. No. 779,672

Int. Cl. B01k 3/00; C22d 3/02

U.S. Cl. 204—237

6 Claims



Apparatus is provided for the electrolytic production of aluminum which includes an electrolysis compartment and a reactor compartment communicating therewith to which Alchlor vapor is introduced and means for recycling molten metal from the reactor compartment back to the electrolysis compartment.

3,616,439

CONTINUOUS PROCESS FOR THE ELECTROLYTIC PRODUCTION OF ALUMINUM AND APPARATUS THEREFOR

Frank E. Love, Henderson, Nev., assignor to National Lead Company, New York, N.Y.

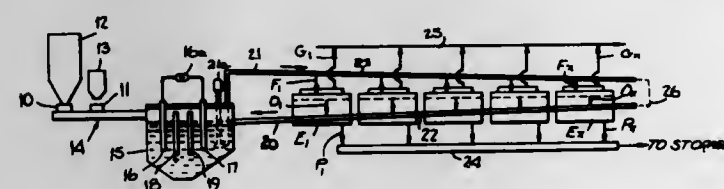
Division of Ser. No. 652,579, July 11, 1967, Pat. No. 3,501,387.

Filed Sept. 12, 1969, Ser. No. 870,908

Int. Cl. C22d 3/02, 3/12

U.S. Cl. 204—244

3 Claims



Method and apparatus for producing aluminum metal by forming in a charging cell a feed solution of alumina in a molten solvent bath, introducing the feed solution to electrolysis cells and recirculating electrolyzed solution from the cells to the charging cell therein to be replenished by and become part of the feed solution.

3,616,440

DEVICE FOR SERVICING ALUMINA REDUCTION CELLS

Helge O. Forberg, The Dalles; Lloyd H. McKay, The Dalles, and Leland B. Gonderson, Hood River, all of Oreg., assignors to Harvey Aluminum (Incorporated), Torrance, Calif.

Filed Apr. 23, 1968, Ser. No. 725,261

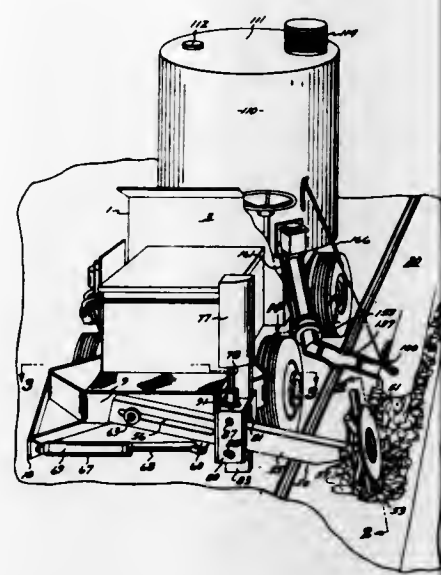
Int. Cl. C23d 3/02

U.S. Cl. 204—245

4 Claims

A vehicle suitable for use in servicing alumina reduction cells, said vehicle having mounted thereon a power operated crust-breaking device and an alumina storage and handling system, the crust-breaking device comprising a head mounted on an extensible arm which is vertically and horizontally actuatable by hydraulic means, sufficient downward force being exerted by the hydraulic means to

cause penetration of the head through the electrolyte crust, the alumina content of the cell being replenished by



introduction of alumina into the cell from an alumina storage bin on the vehicle.

3,616,441

ELECTROLYTIC CELL ANODES

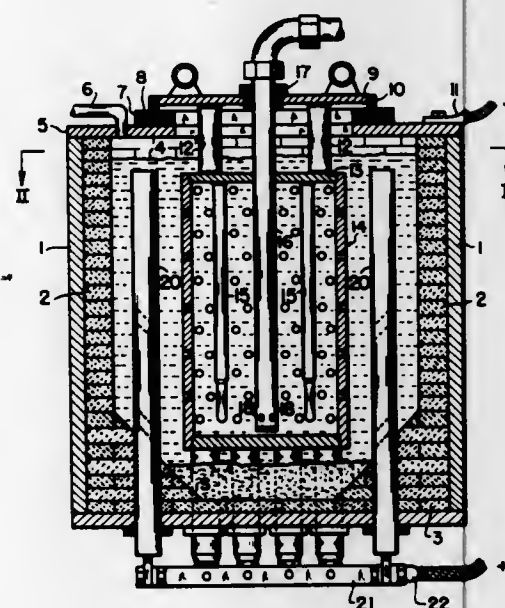
John C. Priscu, and Eldon R. Poulsen, both of Las Vegas, Nev., assignors to Titanium Metals Corporation of America, West Caldwell, N.J.

Filed Jan. 24, 1969, Ser. No. 793,680

Int. Cl. C22d 3/02, 3/00

U.S. Cl. 204—247

5 Claims



An improved anode for use in electrolytic cells for the production of titanium and zirconium, said anode having a plurality of angular passages extending from one face to the diametrically opposite face.

3,616,442

ELECTROCHEMICAL CELL HAVING GAS DIFFUSION ELECTRODE

Wayne S. Cheng, and Peter R. Johnston, both of Neenah, Wis., assignors to Kimberbery-Clark Corporation, Neenah, Wis.

Filed Dec. 11, 1969, Ser. No. 884,281

Int. Cl. B01k 3/00; C01b 15/00

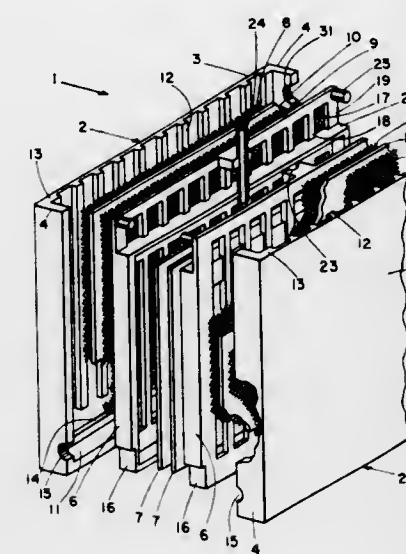
U.S. Cl. 204—257

8 Claims

An electrochemical device particularly including an electrolytic cell adapted for peroxide production. The device has a unitized insert electrode structure for mounting in an

outer electrolyte retaining casing. The unitized insert electrode structure is adapted to provide a dual cell arrangement including planar cathodes each of which has a separate cooperating anode and semipermeable diaphragm.

chlorides having a cathode which includes a pervious plate with a surface that is sloped with respect to the vertical. Electrolysis takes place in the area between the anode end and the pervious plate. Gaseous products produced adjacent the



The flow path of electrolyte in each cell is into an anode chamber, through the semipermeable diaphragm to the cathode chamber over the cathode surface and out of the cell.

3,616,443

ABSORPTION OF GASEOUS CELL PRODUCT IN CELL LIQUOR APPARATUS

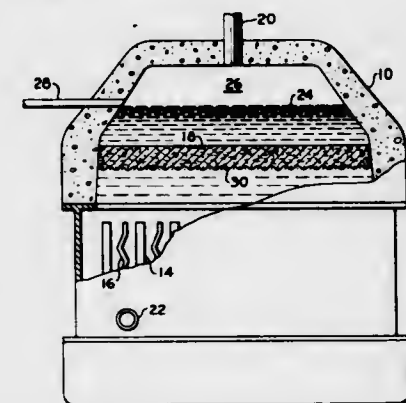
Edward H. Cook, Jr., and Morris P. Grotheer, both of Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 28, 1968, Ser. No. 755,845

Int. Cl. B01k 3/00; C01b 11/26

U.S. Cl. 204—278

3 Claims



The efficiency of electrolytic cells in which a gaseous cell product reacts with a component of the cell liquor or a reagent added to the electrolytic cell, may be substantially improved by the insertion of gas-dispersing means above the electrodes of the electrolytic cell and below the surface of the cell liquors. The dispersing means serves to mechanically diffuse the gaseous cell product into the cell liquor containing the reactant to provide intimate mixing and increased contact of reactants. The gas-dispersing means may be any inert conventional absorption packing or distillation column packing such as, Berl saddles, Raschig rings, bubble trays, glass beads, and the like.

3,616,444

ELECTROLYTIC CELL

Carl W. Raetzsch, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

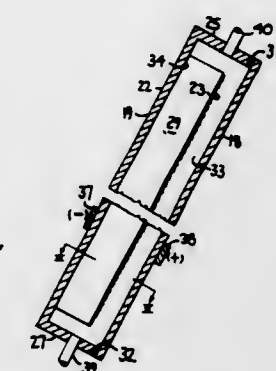
Filed Jan. 30, 1969, Ser. No. 795,276

Int. Cl. B01k 1/00

U.S. Cl. 204—278

15 Claims

Disclosed is an electrolytic cell for the continuous production of alkali metal chlorates from alkali metal



pervious plate are passed immediately through the openings in the pervious plate and out of the electrolyzing area, thereby preventing gas blinding of the electrodes and producing circulation and back mixing of the solution within the cell.

3,616,445

TITANIUM OR TANTALUM BASE ELECTRODES WITH APPLIED TITANIUM OR TANTALUM OXIDE FACE ACTIVATED WITH NOBLE METALS OR NOBLE METAL OXIDES

Giuseppe Bianchi, Milan, Italy; Vittorio DeNora, Nassau, Bahamas; Patrizio Gallone, and Antonio Nidola, Milan, Italy, assignors to Electronor Corporation, Chiaso, Switzerland

Filed Dec. 14, 1967, Ser. No. 690,407

Int. Cl. C01d 1/08

U.S. Cl. 204—290 F

10 Claims

Describes a titanium or tantalum base electrode having a protective and electrocatalytic layer applied to the faces exposed to the electrolyte, said protective and electrocatalytic layer consisting of mixtures of solid solutions of valve metal oxides and platinum group and noble metals as such or in the form of oxides and/or oxyhalides.

3,616,446

METHOD OF COATING AN ELECTRODE

Bernard J. DeWitt, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 28, 1969, Ser. No. 811,615

Int. Cl. B01k 3/06

U.S. Cl. 204—290 F

6 Claims

The novel anode may be used in the electrolysis of an aqueous solution such as of alkali metal chloride. The anode includes a base member having a conductive coating or surface comprising an oxy-compound of a platinum group metal such as ruthenium and an alkaline earth metal, typically calcium, or a rare earth metal such as lanthanum.

3,616,447

APPARATUS FOR SUSPENDING A BODY IN A CORROSIVE SOLUTION

John W. Hayford, and William M. Tucker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,508

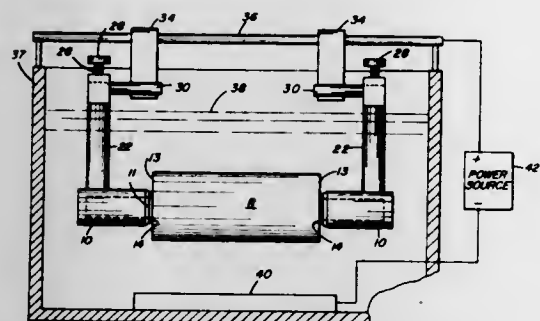
Int. Cl. C23b 5/70

U.S. Cl. 204—297

1 Claim

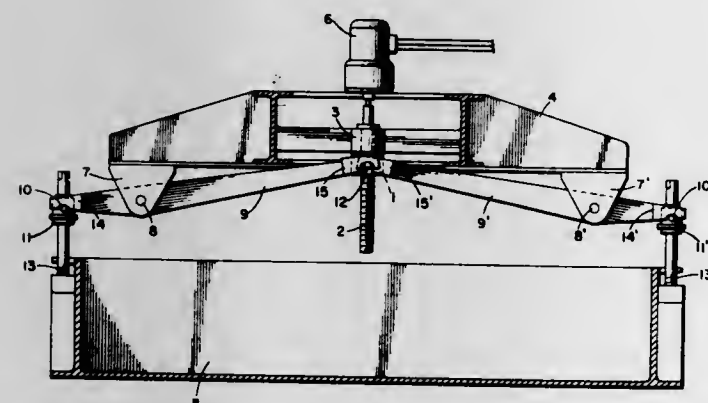
A fixture for suspending a body having shafts in a corrosive

solution wherein the fixture protects the shafts from contact comprises a large rectangular plate having a rectangular aperture therein and a plurality of slots extending from the



by the corrosive solution while providing a path for the flow of electricity to the body.

3,616,448
SETTING DEVICE FOR ADJUSTING BY MEANS OF LEVERS THE INFRAELECTRODE DISTANCES IN AN AMALGAM CELL HAVING A MERCURY CATHODE AND GRAPHITE ANODES
Giuseppe Rossi, Mantova; Renato Fava, Mantova; Giordano Cimarosti, Roverbella, and Sandro Vergari, Mantova, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Mar. 18, 1969, Ser. No. 808,215
Claims priority, application Italy, Feb. 21, 1968, 14226 A/68
Int. Cl. C23b 5/70
U.S. Cl. 204-297 6 Claims



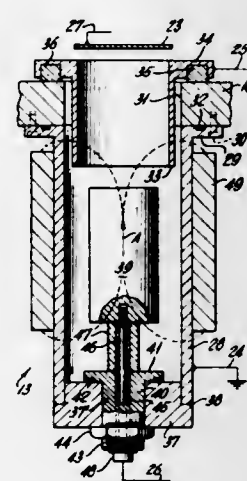
This application relates to a device for adjusting the infraelectrode distances in an electrolytic amalgam cell having a mercury cathode and graphite anodes and consisting of a cell tank with electrically insulated side supports for supporting an anode-carrying frame, the device consisting of a threaded bushing threadedly coupled to an adjusting shaft drivable in a conventional manner, said adjusting shaft turning idly within at least one other supporting bushing rigidly connected to the anode-carrying frame, and being axially constrained with respect to the supporting bushing, said frame being provided with two lateral rests each one having a hinge restraining at an intermediate point a lever constrained at its two ends, by hinges permitting rotations and limited horizontal displacements, to said supports arranged on the sides of the cell tank, and to said threaded bushing. Preferably there are at least two such devices.

3,616,449
SPUTTERING ANODE
Oscar Pellegrin, Rochester, N.Y., assignor to The Bendix Corporation
Filed Mar. 30, 1970, Ser. No. 23,552
Int. Cl. C23c 15/00
U.S. Cl. 204-298 4 Claims

An anode particularly adapted to a sputtering system for processing large quantities of substrates. The anode

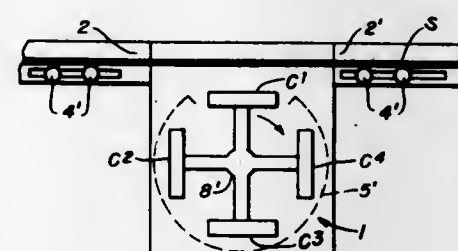
aperture to compensate for thermal expansion and prevent buckling.

3,616,450
SPUTTERING APPARATUS
Peter J. Clark, 30 Erland Road, Stony Brook, N.Y.
Filed Nov. 7, 1968, Ser. No. 774,126
Int. Cl. C23c 15/00
U.S. Cl. 204-298 13 Claims



Sputtering apparatus of the glow discharge type operable at relatively low gas pressures and utilizing a combination of magnetic and electric fields and at least one cathode disposed within the magnetic field and constituting a source of atoms which are emitted through a path defined by the cathode for deposition of thin films on a suitable supporting surface.

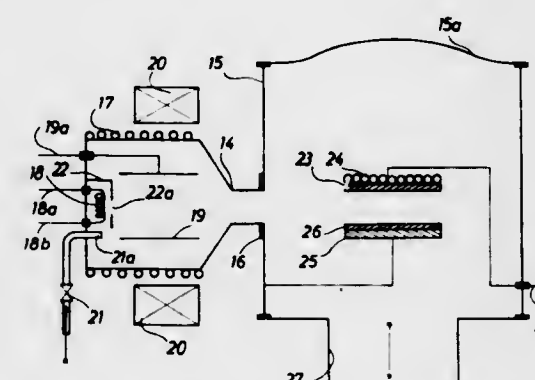
3,616,451
MULTIPLE-LAYER COATING
Pierre Gallez, Sorinnes-Les-Dinant, Belgium, assignor to Glaverbel, Watermael-Boitsfort, Belgium
Filed Sept. 27, 1967, Ser. No. 670,853
Claims priority, application Luxembourg, Oct. 5, 1966, 52,106
Int. Cl. C23c 15/00
U.S. Cl. 204-298 18 Claims



A method and apparatus for coating at least part of a surface of an article in vacuo, in a deposition chamber in which the vacuum is maintained during and between coating operations, the surface to be coated being maintained in a coating position during each coating operation and different coating materials being provided by different sources

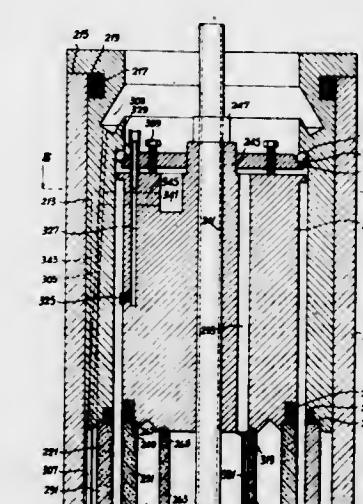
disposed on a carrier in the chamber, the carrier being displaceable for moving each source in succession into an operative position where emission of material from the source will produce a coating layer on the surface at the coating position.

3,616,452
PRODUCTION OF DEPOSITS BY CATHODE SPUTTERING
Jean Jacques Bessot, Arpajon, and Jean Claude Burlurut, Versailles, both of France, assignors to Societe Anonymie, Societe Alsacienne de Construction Atomiques de Telecommunications et d'Electronique Alcatel, Paris, France
Filed June 21, 1968, Ser. No. 739,029
Claims priority, application France, June 22, 1967, 111,571
Int. Cl. C23c 15/00
U.S. Cl. 204-298 3 Claims



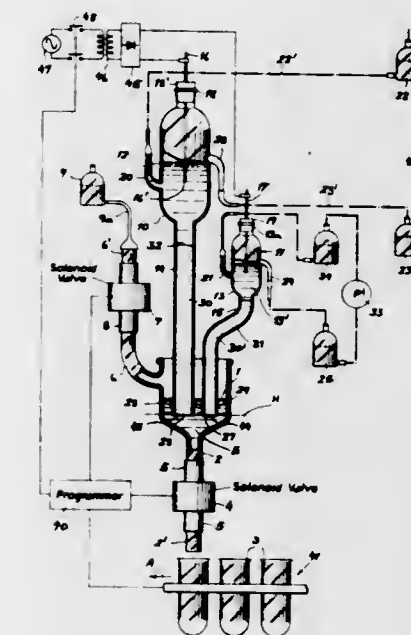
The invention eliminates the drawbacks of the prior methods for cathode-sputtering deposition by providing basically the use of a substantially neutral plasma adapted to be carried in the form of a stable parallel beam to a substantial distance from the source without resorting to intricate electrode arrangements.

3,616,453
SEPARATION APPARATUS
John St. Leger Philpot, Oxford, England, assignor to National Research Development Corporation, London, England
Filed Mar. 20, 1967, Ser. No. 624,327
Claims priority, application Great Britain, Mar. 23, 1966, 12,875/66
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204-299 26 Claims



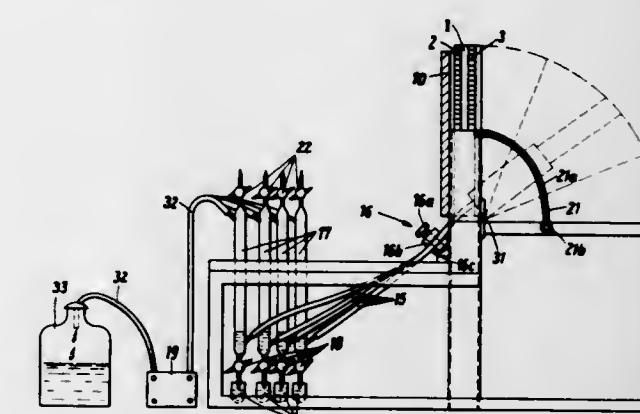
The invention relates to separation apparatus, which utilizes an annular chamber extending between outer and inner walls of which at least the outer wall is continuously rotated to provide across the annular chamber a stabilizing field inhibiting mixing between laminae of fluid flowing along the annular chamber.

3,616,454
METHOD OF AND APPARATUS FOR ELECTROPHORETIC SEPARATION IN A GEL COLUMN
Milton Levy, Long Island City, and Isaac Schenkeln, New York, both of N.Y., assignors to New York University, New York, N.Y.
Filed Mar. 13, 1969, Ser. No. 806,931
Int. Cl. B01k 5/00
U.S. Cl. 204-299 6 Claims



Method of and apparatus for the preparative gel electrophoresis of a specimen wherein the specimen is placed at the upper end of a polyacrylamide gel column of an electrophoresis gel whose lower end terminates at a receptacle containing an elution solution, an electrical potential of a magnitude sufficient to effect migration of components of the specimen to the lower end of said column is applied thereacross, and the solution is periodically drained from the receptacle and fresh elution buffer in corresponding quantities is introduced while the electrophoresis current is cut off. The column is supported on a layer of open-pore high-wet-strength paper.

3,616,455
ELECTROPHORETIC SEPARATION APPARATUS
Philipp Adolf Von Munchhausen, Grolmanstr. 44-45, 1 Berlin, 12, Germany
Filed Mar. 13, 1969, Ser. No. 808,046
Claims priority, application Germany, May 10, 1968, P 17 67 432.7
Int. Cl. B01k 1/00
U.S. Cl. 204-299 12 Claims



An electrophoretic separation apparatus for the support-free continuous separation of molecular fractions in a buffer solution has a thin flat electrophoresis chamber defined between water-cooled plates through which the mixture of fractions and buffer solution is passed and wherein the

solution is subjected to a unidirectional field transverse to the direction of mass flow to separate the fractions. Subsequently the separated fractions are sedimented out of their respective portions of buffer solution in collecting vessels ahead of the outlets for the solution. Downstream of the collecting vessels is mechanical or hydrostatic pump or flow-control means which makes the fluid flow through the apparatus.

3,616,456

DEVICE FOR ISOELECTRIC SEPARATION OF AMPHOLYTES

Erkki Valmet, Solna, Sweden, assignor to LKB-Produkter AB, Marichall, Sweden

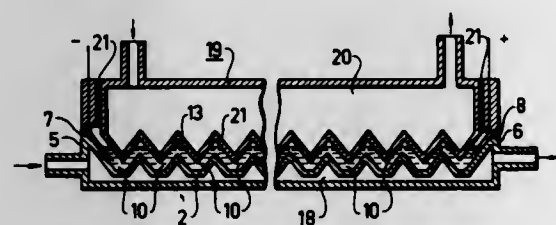
Filed May 9, 1969, Ser. No. 823,374

Claims priority, application Sweden, May 10, 1968, 6382/68

Int. Cl. B01k 5/00

U.S. Cl. 204-299

17 Claims



A trough-shaped receptacle with two electrodes inserted therein; the bottom of the receptacle being shaped with projections that divide the receptacle into a plurality of compartments with each compartment having a cooling means in contact with the projection therein.

3,616,457

APPARATUS FOR CARRYING OUT GEL ELECTROLYSIS

Wilhelm Einar Stellan Hjerten; Nils Ivar Leonard Sture Jerstedt, and Arne Wilhelm Kaurin Tiselius, all of Uppsala, Sweden, assignors to LKB-Produkter AB, Marichall, Sweden

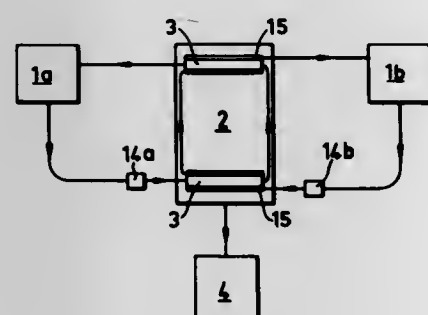
Filed Sept. 19, 1969, Ser. No. 859,406

Claims priority, application Sweden, Sept. 19, 1968, 12,620/68

Int. Cl. B01k 5/00

U.S. Cl. 204-299

5 Claims



An apparatus for preparative gel electrophoresis comprising a parallelepipedal separation chamber in which cooling surfaces are provided close to one another along two opposite sides of the parallelepiped, these surfaces being shaped so that the gel is mechanically prevented from sliding and so that good cooling is obtained when the gel is cast into the separation chamber and thereafter hardened. This apparatus also comprises normal facilities as elution chamber below the separation chamber and electrodes at both the top and bottom of the separation chamber.

3,616,458 APPARATUS FOR ACTIVATING INTERNAL SURFACES OF PLASTIC HOLLOW ARTICLES

Yosimaro Moriya, 15-23, 4-chome, Omori Kita, Ota-ku, Tokyo-to, Japan

Division of Ser. No. 596,598, Nov. 23, 1966, abandoned.

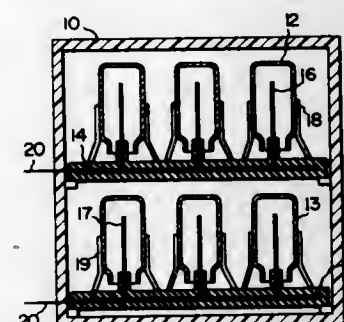
Filed Dec. 31, 1969, Ser. No. 889,724

No. 889,724

Int. Cl. B01k 1/00; H01t 19/04

U.S. Cl. 204-312

3 Claims



An apparatus for activating the inner surface of a hollow article of plastic by glow discharge in an evacuated vessel. A bare discharge electrode is inserted into the hollow article without contacting the side and bottom portions of the inner surface and glow discharge is established between the bare discharge electrode and a counterelectrode by energizing them from a source of supply having a drooping voltage-current characteristic.

3,616,459

PAINT APPLYING AND DRYING SYSTEM

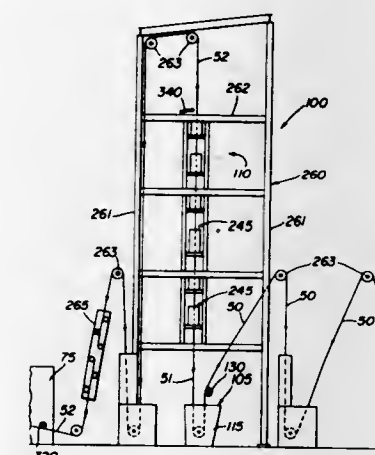
Richard S. Patton, Flossmoor; Naaman H. Keyser, Hinsdale; Vernon L. Langdon, Tinley Park; Victor D. Beaucaire, Homewood, and Louis A. Marlin, Crestwood, all of Ill., assignors to Interlake Steel Corporation, Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,215

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204-300

26 Claims



A system for continuously applying paint to a continuously moving metal strap and thereafter continuously drying the paint on the metal strap. The system disclosed herein includes a paint pot wherein the paint is electrophoretically applied as a uniform coating to the metal strap passing through the paint pot, and a drying station disposed above the paint pot includes a number of induction coils through which the painted metal straps pass and have induced therein eddy currents which heat the metal strap to dry the paint thereon. Means are provided automatically to maintain the level of the paint and the concentration of solids in the paint contained in the paint pot, and means are provided automatically to vary the output from the induction coils in response to the speed and temperature of the metal strap to maintain constant the temperature of the metal strap exiting from the drying station.

3,616,460

ELECTRIC COALESCER

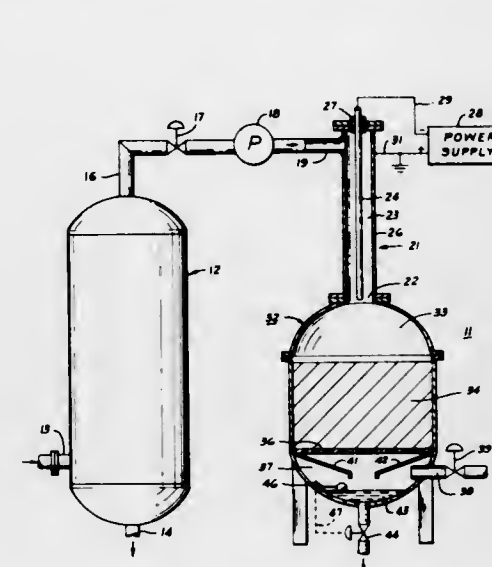
Frederick D. Watson, and Weldon D. Mayse, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 9, 1970, Ser. No. 27,019

Int. Cl. B03c 5/02

U.S. Cl. 204-302

9 Claims



An electric coalescer for removing aqueous liquid droplets dispersed in a hydrocarbon distillate by passage serially through a pretreatment cell having a unidirectional electric field with a gradient in the range from about 20 to about 60 kilovolts per inch between spaced apart electrodes and a container mounting a water-wetted porous material. The porous material, preferably stainless steel wool, provides a residence time to the hydrocarbon distillate of at least about 4 minutes. The electric field gradient is adjusted relative to the mass of porous material so that the liquid droplets coalesce in the porous material to a predetermined degree from the hydrocarbon distillate. A loose mixture of the coalesced liquid droplet phase in the continuous hydrocarbon distillate phase passes from the porous material. A phase separator resolves the loose mixture into a stream of dry hydrocarbon distillate and a second stream comprising the coalesced liquid droplets.

3,616,461

APPARATUS FOR EXCITING A GAS BY MEANS OF AN ELECTRODELESS DISCHARGE

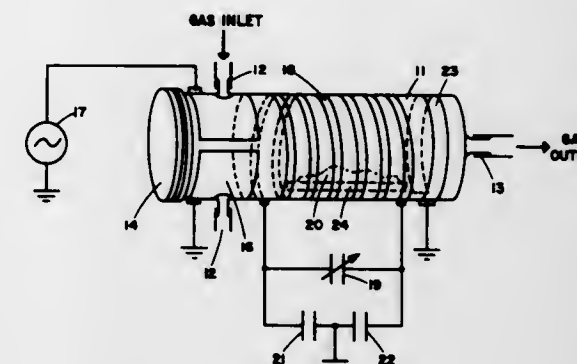
Georges H. Gorin, Waltham, Mass., assignor to LFE Corporation, Waltham, Mass.

Filed Dec. 5, 1969, Ser. No. 882,522

Int. Cl. B01k 1/00

U.S. Cl. 204-312

4 Claims



The apparatus of the present invention is adapted to produce an efficient reaction between a gas and a nongaseous substance at relatively low ambient temperatures. The gas flows through a chamber containing the nongaseous substance and is subjected to an RF field.

A passive resonant circuit is linked by the field through the medium of the gas. Exciting the gas in this way, produces a marked increase in the reaction rate.

ERRATUM

For Class 208-188 see:
Patent No. 3,616,399

3,616,462

ALLYL GLYCIDYL ETHERS

Arthur E. Gurgolo, and Robert W. McCada, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 3, 1964, Ser. No. 394,301

Int. Cl. C07d 1/18; C08g 23/06

U.S. Cl. 260-348

11 Claims

Vulcanizable, rubbery copolymers of propylene oxide are made by the copolymerization of propylene oxide with a glycidyl ether containing an allylic terminal group. At least one oxyalkylene or thioalkylene group intervenes between the glycidyl group and the allylic group of the comonomer.

DESIGNS

OCTOBER 26, 1971

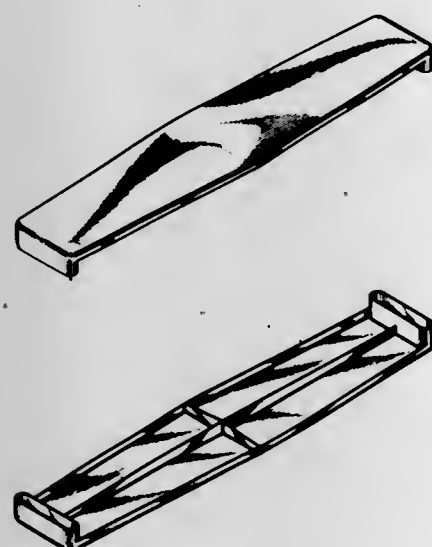
222,423
COMBINED BRUSH AND HAIR LIFT
Anthony Battaglia, 455 NW. 202nd Terrace,
Miami, Fla. 33169
Filed Aug. 3, 1970, Ser. No. 24,273
Term of patent 14 years
Int. Cl. D4—02

U.S. Cl. D4—21



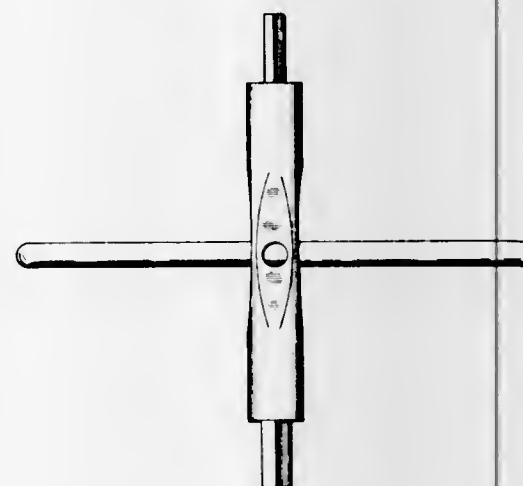
222,424
HAND SUPPORT FOR PAINTING
Henry J. Perron, 100 SW. 58 Ave.,
Miami, Fla. 33144
Filed May 13, 1970, Ser. No. 22,959
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—14



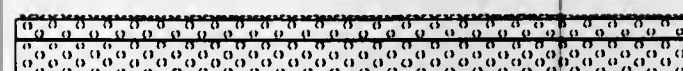
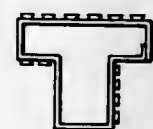
222,425
WRENCH
Franz Palfi, 122 West St., Battle Creek, Mich. 49017
Filed Nov. 9, 1970, Ser. No. 25,899
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—29



222,426
T-SHAPED HOLLOW FILE
James A. Coon, 929 Drever St., West Sacramento, Calif. 95691, and Elwin Theobald, 4631 Solano Way, Fair Oaks, Calif. 95628
Filed Mar. 13, 1970, Ser. No. 21,900
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—90



1672

OCTOBER 26, 1971

U. S. PATENT OFFICE

1673

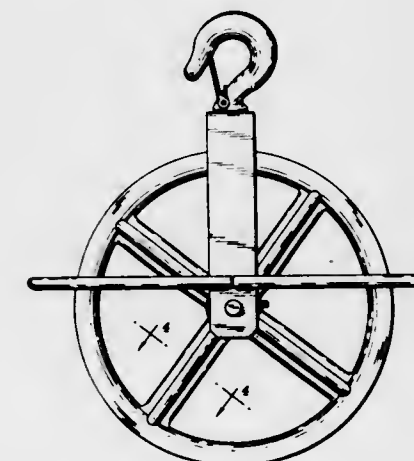
222,427
DOOR HANDLE OR SIMILAR ARTICLE
William G. Deuring, Jr., Pittsfield, Mass.,
assignor to General Electric Company
Filed Jan. 19, 1970, Ser. No. 20,962
Term of patent 14 years
Int. Cl. D8—07

U.S. Cl. D8—161



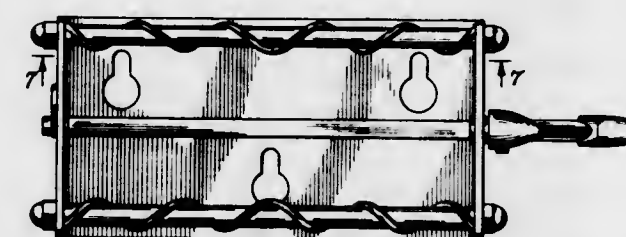
222,428
HOISTING WHEEL
Roy H. Stein, 3920 Zephyr St.,
Wheat Ridge, Colo. 80033
Filed June 29, 1970, Ser. No. 23,749
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—216



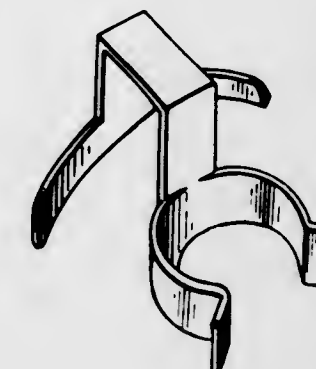
222,429
BANDAGE ROLLER
George W. Nolte, P.O. Box 45, Mullen Road,
Whitehouse, N.J. 08888
Filed July 23, 1970, Ser. No. 24,076
Term of patent 14 years
Int. Cl. D8—05

U.S. Cl. D8—222



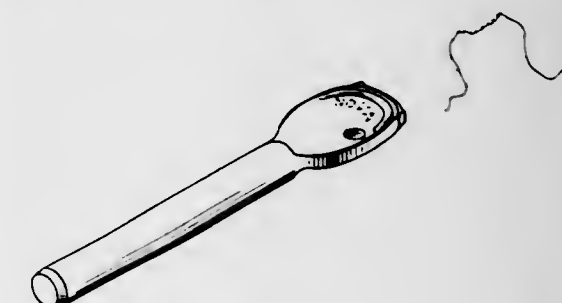
222,430
LAMP SOCKET HOLDER
Alexander Jarvis Miller, 135 Kane Ave.,
St. James, Manitoba 12, Manitoba, Canada
Filed Apr. 27, 1970, Ser. No. 22,647
Claims priority, application Canada Feb. 5, 1970
Term of patent 14 years
Int. Cl. D8—08

U.S. Cl. D8—259



222,431
PIN FOR JACK STAND OR THE LIKE
Sid Lance, 15901 S. Vermont,
Gardena, Calif. 90247
Filed July 6, 1970, Ser. No. 23,827
Term of patent 14 years
Int. Cl. D8—06

U.S. Cl. D8—265



222,432
WEDGE ANCHOR
Bruce L. Kaufman, Michigan City, Ind., assignor to
Phillips Drill Company, Inc., Indianapolis, Ind.
Filed July 20, 1970, Ser. No. 24,029
Term of patent 14 years
Int. Cl. D8—10

U.S. Cl. D8—272



**222,433
BOTTLE**

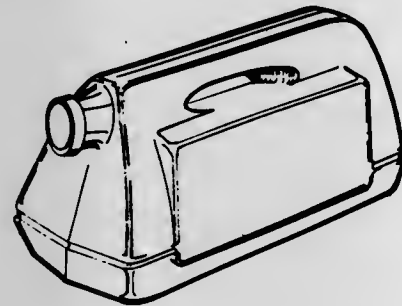
Robert J. Donoghue, 900 Windsor, Ave.,
Windsor, Conn. 06095
Filed Sept. 14, 1970, Ser. No. 24,965
Term of patent 14 years
Int. Cl. D9—01

U.S. Cl. D9—115

**222,434**

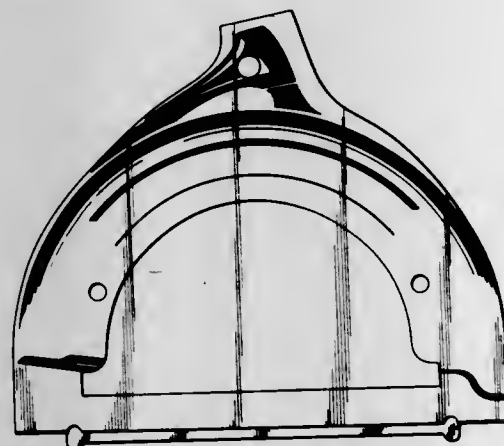
CONTAINER FOR LIQUIDS
Henry Finkel, Westmount, Quebec, Canada, assignor to
Quality Oil Corporation, Montreal, Quebec, Canada
Filed Feb. 26, 1970, Ser. No. 21,643
Term of patent 14 years
Int. Cl. D9—02

U.S. Cl. D9—175

**222,435**

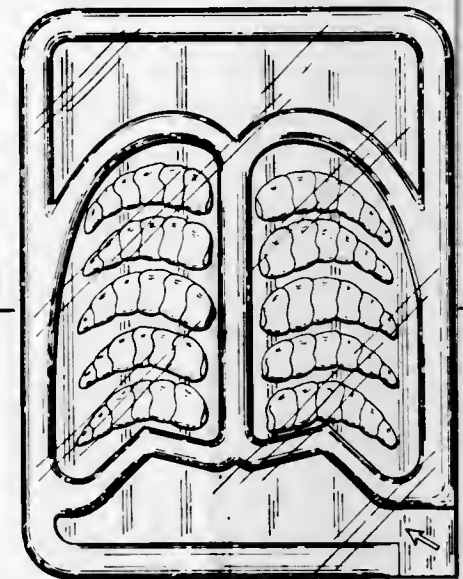
**DISPLAY PACKAGE FOR CIRCULAR CUTTING
BLADES OR THE LIKE**
Lasher F. Arthur, Haddam, Conn., assignor to Robert T.
Reynolds, doing business as Robert T. Reynolds Asso-
ciates, Newington, Conn.
Filed Aug. 20, 1970, Ser. No. 24,594
Term of patent 14 years
Int. Cl. D9—99

U.S. Cl. D9—191

**222,436**

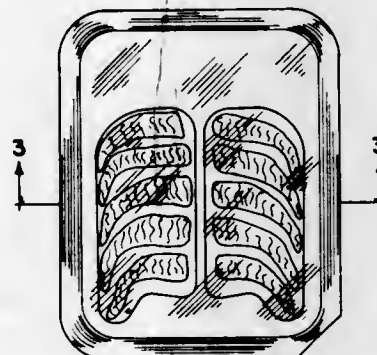
FROZEN SHRIMP PACKAGE
William P. Kremkau, Greenville, Paul Joonase, Taylors,
and Richard R. Perdue, Greenville, S.C., assignors to
W. R. Grace & Co., Duncan, S.C.
Filed July 20, 1970, Ser. No. 24,015
Term of patent 14 years
Int. Cl. D9—99

U.S. Cl. D9—192

**222,437**

PACKAGE OF SHRIMP
William P. Kremkau, Paul Joonase, and Richard R. Per-
due, Greenville, S.C., assignors to W. R. Grace & Co.,
Duncan, S. C.
Filed Dec. 19, 1969, Ser. No. 20,573
Term of patent 14 years
Int. Cl. D9—99

U.S. Cl. D9—193

**222,438**

DISPLAY CARTON OR SIMILAR ARTICLE
Gar Litton, New York, N.Y., assignor to
Helena Rubinstein, Inc., New York, N.Y.
Filed Feb. 20, 1970, Ser. No. 21,553
Term of patent 14 years
Int. Cl. D9—04

U.S. Cl. D9—224

**222,439**

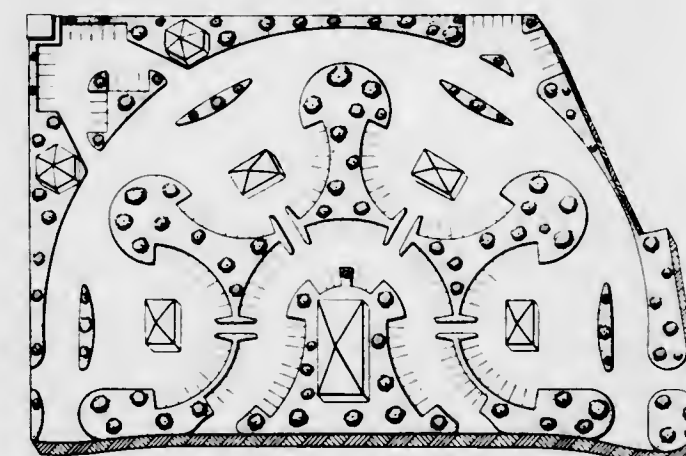
POURING ATTACHMENT FOR A PAINT CAN
Frank Itano, 203 Clinton St., Yuba City, Calif. 95991
Filed Apr. 9, 1970, Ser. No. 22,343
Term of patent 14 years
Int. Cl. D9—07

U.S. Cl. D9—290

**222,440**

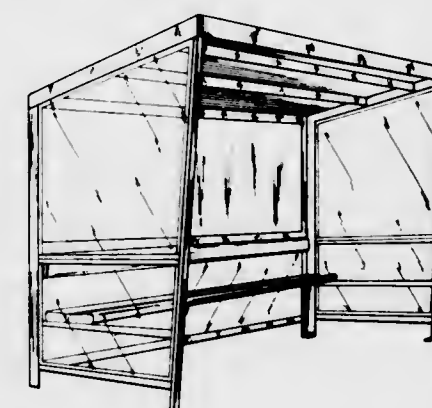
FREEWAY COMMERCIAL CENTER
Louis Koth Glasbrenner, 440 Arroyo Terrace,
Pasadena, Calif. 91100
Filed Dec. 29, 1969, Ser. No. 20,684
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1

**222,441**

BUS SHELTER
Richard L. Sklar, 88 Fairfield Lane,
Roslyn Heights, N.Y. 11577
Filed May 15, 1970, Ser. No. 22,996
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1

**222,442
BUILDING**

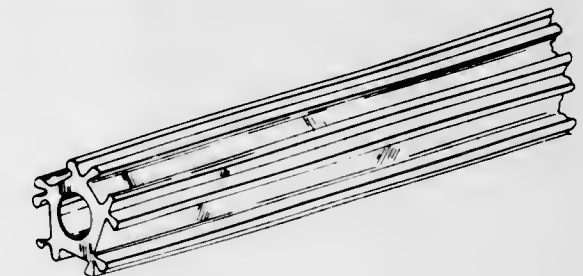
Max D. Chapman, 219 Garden Mall, Exchange Park,
Dallas, Tex. 75235
Filed Aug. 24, 1970, Ser. No. 24,647
Term of patent 14 years
Int. Cl. D25—03

U.S. Cl. D13—1

**222,443**

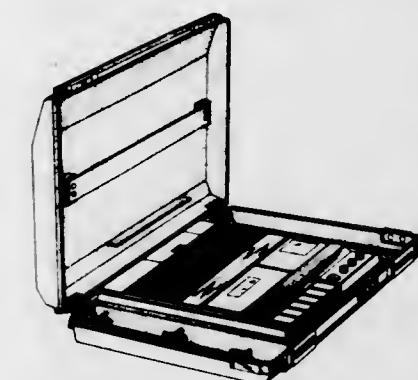
EXTRUDED TUBE, OR SIMILAR ARTICLE
Leonard W. Szymanski, Niles, Ill., assignor to Lift Parts
Mfg. Inc., Elk Grove Township, Ill.
Filed May 14, 1970, Ser. No. 22,981
Term of patent 14 years
Int. Cl. D25—01

U.S. Cl. D13—6

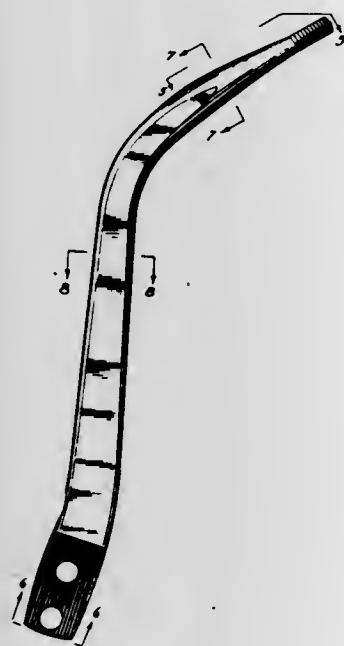
**222,444**

TAPE RECORDER
Tamao Ikuta, Fujisawa-shi, and Shozo Moriya, Kawasaki-
ken, Japan, assignors to Canon Kabushiki Kaisha,
Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 24,878
Term of patent 14 years
Int. Cl. D14—01

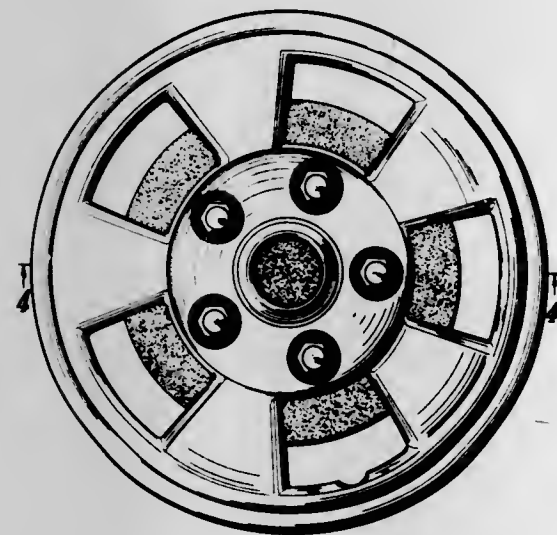
U.S. Cl. D26—14



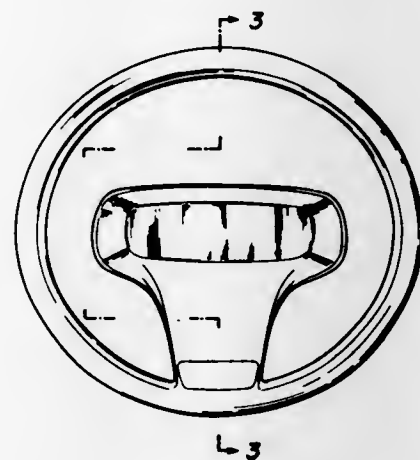
222,445
GEAR SHIFT STICK
 George H. Hurst, Jr., Jenkintown, and James F. Hobbins, Philadelphia, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.
 Filed Jan. 20, 1970, Ser. No. 21,005
 Term of patent 7 years
 Int. Cl. D12—16
 U.S. Cl. D14—6



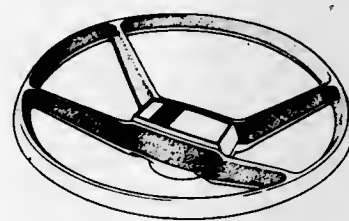
222,446
WHEEL COVER OR SIMILAR ARTICLE
 Herbert Buerger, Walton, N.Y. 13856
 Filed July 22, 1970, Ser. No. 24,064
 Term of patent 7 years
 Int. Cl. D12—16
 U.S. Cl. D14—30



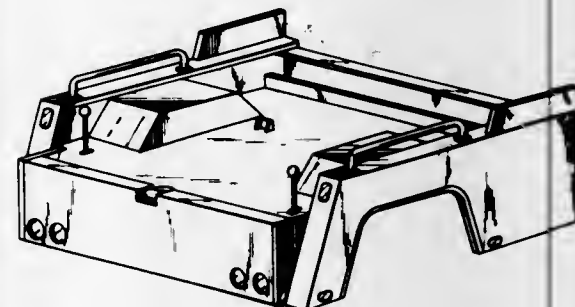
222,447
STEERING WHEEL
 Henri Fabien, Bagnaux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
 Filed Aug. 14, 1970, Ser. No. 24,487
 Claims priority, application France Feb. 23, 1970
 Term of patent 14 years
 Int. Cl. D12—16
 U.S. Cl. D14—30



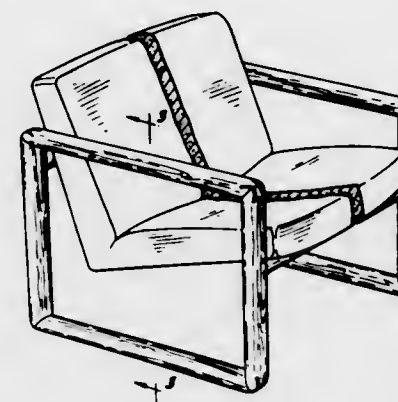
222,448
STEERING WHEEL
 Thomas L. Faul, Skaneateles, N.Y. and John Smith, Wilfordale, Ontario, and Hugo Magi, Etobicoke, Ontario, Canada, assignors to Aqua-Marine Mfg. Limited, Toronto, Ontario, Canada
 Filed Sept. 22, 1970, Ser. No. 25,147
 Term of patent 14 years
 Int. Cl. D12—16
 U.S. Cl. D14—30



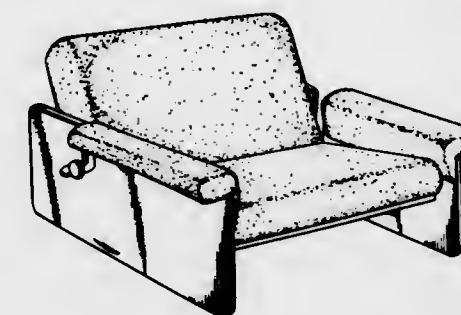
222,449
WRECKER BODY
 Edward F. Wegener and Thure H. Wegener, both of South River Road, Cranbury, N.J. 08516
 Filed Nov. 10, 1970, Ser. No. 25,917
 Term of patent 14 years
 Int. Cl. D12—09
 U.S. Cl. D14—3



222,450
CHAIR OR SIMILAR ARTICLE
 John B. Brook, Toronto, Ontario, Canada, assignor to J. & J. Brook Limited, Toronto, Ontario, Canada
 Filed Sept. 2, 1969, Ser. No. 18,930
 Term of patent 14 years
 Int. Cl. D6—02
 U.S. Cl. D15—1



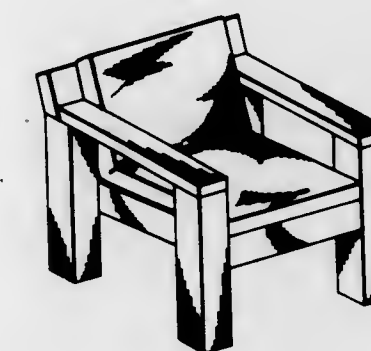
222,451
FURNITURE SEAT
 Thomas Larry Lamb, Toronto, Ontario, Canada, assignor to Thomas Lamb & Associates Limited, Toronto, Ontario, Canada
 Filed Apr. 13, 1970, Ser. No. 22,402
 Claims priority, application Canada Oct. 17, 1969
 Term of patent 14 years
 Int. Cl. D6—02
 U.S. Cl. D15—1



222,452
CHAIR
 Jose Bonet Bertran, 1 Paseo Carlos, 164 Barcelona, Spain
 Filed Apr. 17, 1970, Ser. No. 22,497
 Claims priority, application Spain Oct. 21, 1969
 Term of patent 7 years
 Int. Cl. D14—02
 U.S. Cl. D15—1



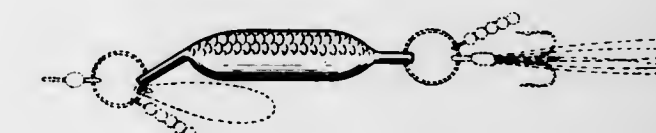
222,453
ARMCHAIR
 John W. Ziss, and Frank R. Ziss, both of 6413 E. Sprague Road, Independence, Ohio 44131
 Filed June 4, 1970, Ser. No. 23,311
 Term of patent 14 years
 Int. Cl. D6—02
 U.S. Cl. D15—1



222,454
ELECTRODE CLAMP
 Jack Beeber, 35 Seacoast Terrace, Brooklyn, N.Y. 11235
 Filed July 17, 1970, Ser. No. 23,989
 Term of patent 14 years
 Int. Cl. D24—02
 U.S. Cl. D16—1

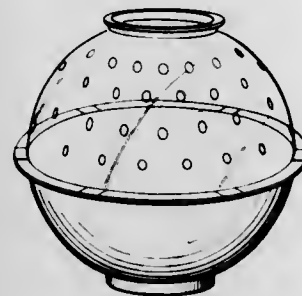


222,455
FISH LURE
 Jack H. Masters, 1053 Riverside Drive, Battle Creek, Mich. 49815
 Filed Feb. 2, 1970, Ser. No. 21,193
 Term of patent 14 years
 Int. Cl. D22—05
 U.S. Cl. D22—27



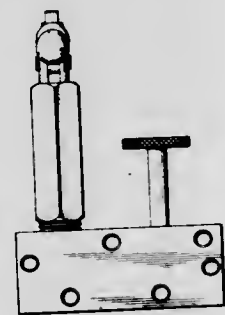
222,456
TRANSPARENT FISH ATTRACTOR
 Robert G. Fay, 5634 Cielo Ave., Goleta, Calif. 93017
 Filed June 15, 1970, Ser. No. 23,499
 Term of patent 14 years
 Int. Cl. D22—07

U.S. Cl. D22—30



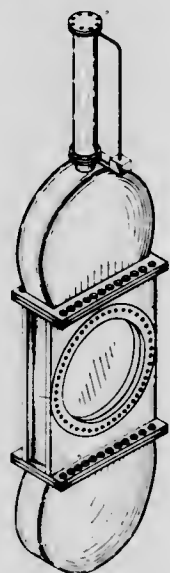
222,457
PUMP
 Watt B. Bair, 11255 Camarillo St.,
 North Hollywood, Calif. 91602
 Filed Feb. 9, 1970, Ser. No. 21,341
 Term of patent 14 years
 Int. Cl. D23—01

U.S. Cl. D23—14



222,458
GATE VALVE
 Marvin G. Combes, Castro Valley, Calif., assignor to
 Grove Valve and Regulator Company, Oakland, Calif.
 Filed May 23, 1969, Ser. No. 17,299
 Term of patent 14 years
 Int. Cl. D23—01

U.S. Cl. D23—19



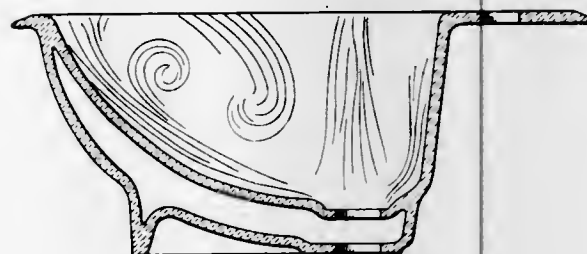
222,459
YARD HYDRANT HEAD
 Noel M. Anderson, P.O. Box 392,
 Storm Lake, Iowa 50588
 Filed July 15, 1970, Ser. No. 23,962
 Term of patent 14 years
 Int. Cl. D23—01

U.S. Cl. D23—32



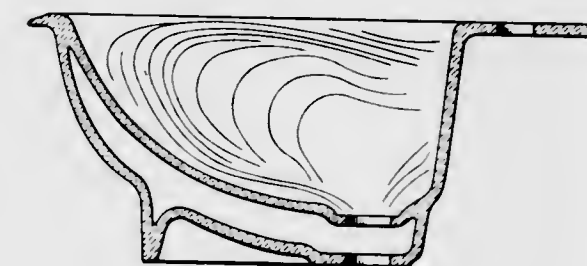
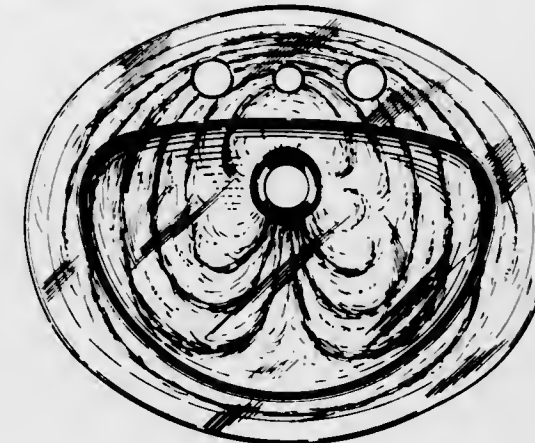
222,460
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to
 American Standard Inc., New York, N.Y.
 Filed Jan. 8, 1970, Ser. No. 20,836
 Term of patent 14 years
 Int. Cl. D23—02

U.S. Cl. D23—58



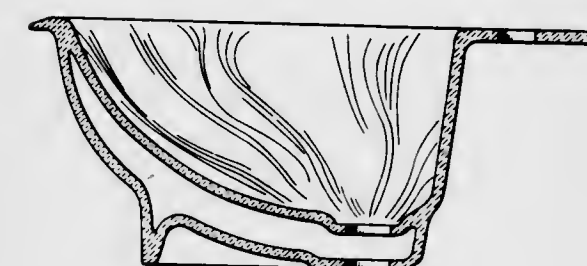
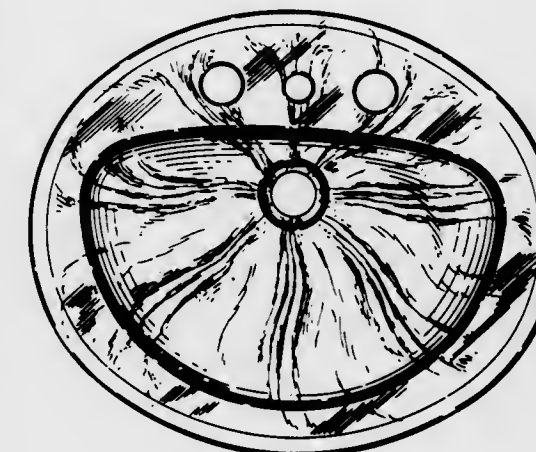
222,461
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to
 American Standard Inc., New York, N.Y.
 Filed Jan. 8, 1970, Ser. No. 20,840
 Term of patent 14 years
 Int. Cl. D23—02

U.S. Cl. D23—58



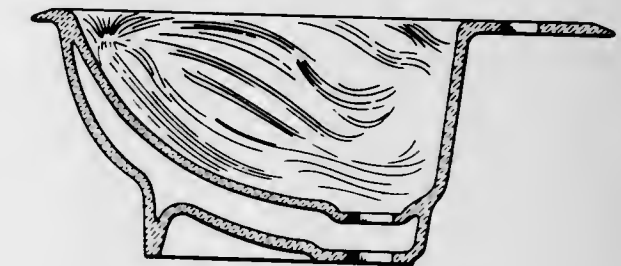
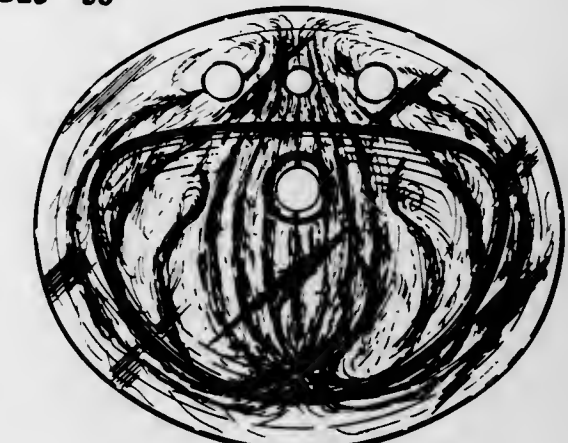
222,462
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to
 American Standard Inc., New York, N.Y.
 Filed Jan. 8, 1970, Ser. No. 20,837
 Term of patent 14 years
 Int. Cl. D23—02

U.S. Cl. D23—58



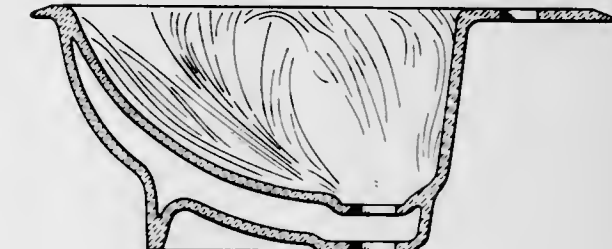
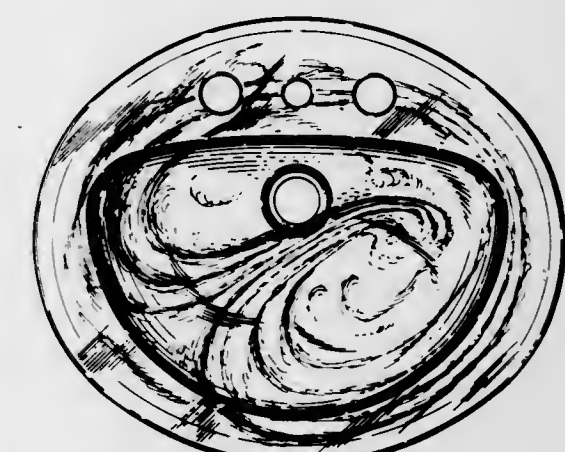
222,463
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to
 American Standard Inc., New York, N.Y.
 Filed Jan. 8, 1970, Ser. No. 20,838
 Term of patent 14 years
 Int. Cl. D23—02

U.S. Cl. D23—58

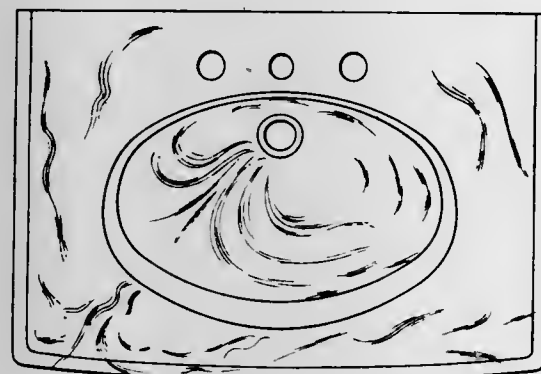


222,464
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to
 American Standard Inc., New York, N.Y.
 Filed Jan. 8, 1970, Ser. No. 20,839
 Term of patent 14 years
 Int. Cl. D23—02

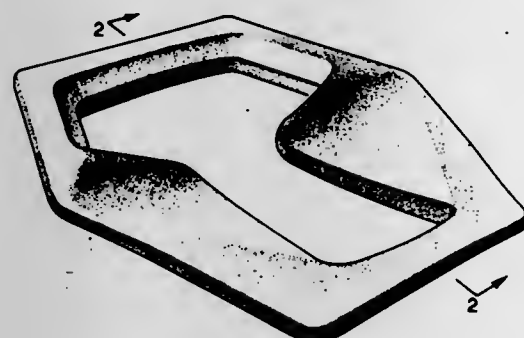
U.S. Cl. D23—58



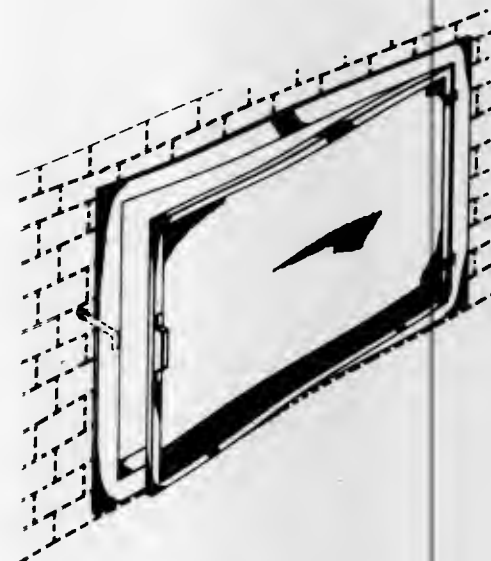
222,465
LAVATORY OR SIMILAR ARTICLE
 Warren Gregory Anderson, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
 Filed Jan. 26, 1970, Ser. No. 21,082
 Term of patent 14 years
 Int. Cl. D23—02
 U.S. Cl. D23—58



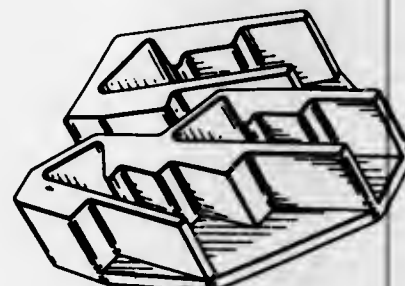
222,466
TOILET SEAT
 Hugo Magi, Etobicoke, Ontario, Canada, assignor to Aqua-Marine Mfg., Limited, Toronto, Ontario, Canada
 Filed Apr. 8, 1970, Ser. No. 22,312
 Term of patent 3½ years
 Int. Cl. D23—02
 U.S. Cl. D23—71



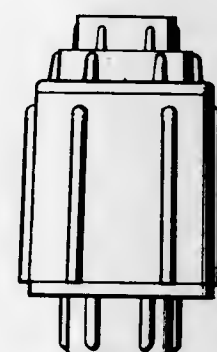
222,467
COMBINED FIREPLACE SCREEN AND FRAME THEREFOR
 Paul H. Casper, Phoenix, Ariz.
 (P.O. Box 239, Springerville, Ariz. 85938)
 Filed June 10, 1970, Ser. No. 23,416
 Term of patent 14 years
 Int. Cl. D23—03
 U.S. Cl. D23—99



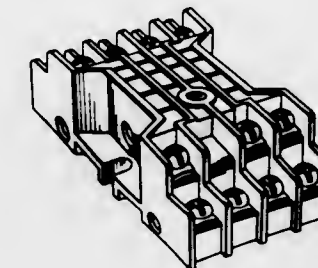
222,468
CIRCUIT CLUSTER BLOCK
 Michael John Reynolds, Tring, England, assignor to AMP Incorporated, Harrisburg, Pa.
 Filed Apr. 13, 1970, Ser. No. 22,387
 Claims priority, application Great Britain Nov. 6, 1969
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—1



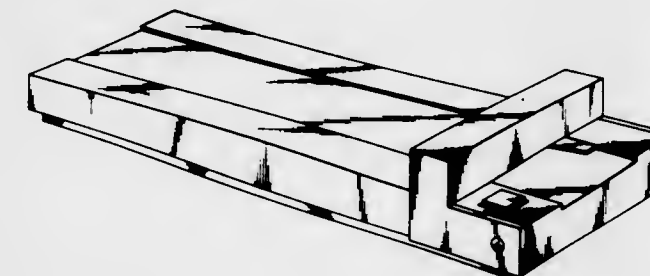
222,469
CONDUIT UNION SEAL-OFF FITTING
 Merle A. Plummer, North Hollywood, Calif., assignor to Myers Electric Products, Inc., Los Angeles, Calif.
 Filed May 21, 1970, Ser. No. 23,074
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—1



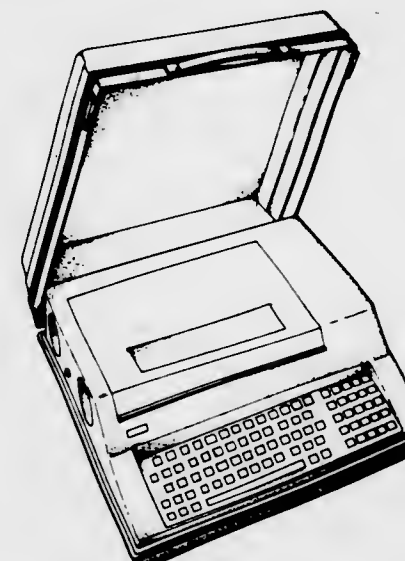
222,470
SOCKET FOR RELAY
 Teizo Fujita and Masao Kikuchi, Osaka, Japan, assignors to Izumi Denki Company Limited, Osaka, Japan
 Filed July 21, 1970, Ser. No. 24,245
 Claims priority, application Japan Feb. 2, 1970
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—1



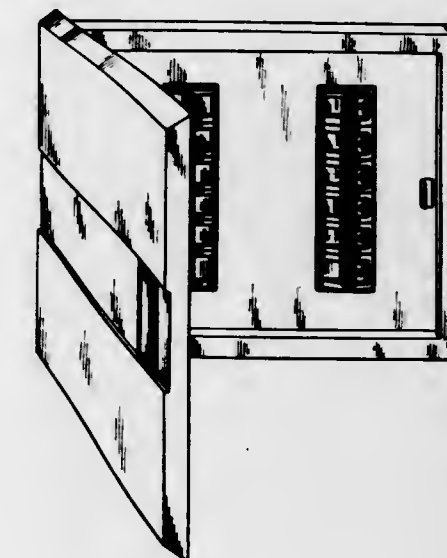
222,471
CARD READER OR SIMILAR ARTICLE
 Michael S. Shebanow and John F. Graham, Sudbury, Helmut Henneberg, Jamaica Plain, and Albert J. Michaud, Jr., Marlboro, Mass., assignors to Honeywell Inc., Minneapolis, Minn.
 Filed June 16, 1970, Ser. No. 23,509
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. 26—5



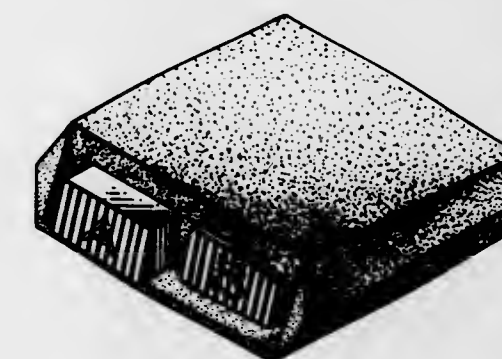
222,472
PORTABLE DATA COMMUNICATION TERMINAL
 Allen G. Jacobson, Ramsey, N.J., assignor to Computer Transceiver Systems, Inc., Paramus, N.J.
 Filed Sept. 4, 1970, Ser. No. 24,833
 Term of patent 14 years
 Int. Cl. D14—02
 U.S. Cl. D26—5



222,473
ELECTRIC CONTROL PANEL BOARD
 Giuseppe Zecca, Via Monte Tabor 16, Varese, Italy
 Filed June 16, 1970, Ser. No. 23,521
 Claims priority, application Italy Jan. 10, 1970
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—13



222,474
COAXIAL SWITCH
 John R. Thompson, North Hollywood, Calif., assignor to Electronic Industrial Engineering, Inc., North Hollywood, Calif.
 Filed Aug. 26, 1970, Ser. No. 24,703
 Term of patent 14 years
 Int. Cl. D13—03
 U.S. Cl. D26—13



222,475

MAGNETIC TAPE-TO-TAPE CONVERTER

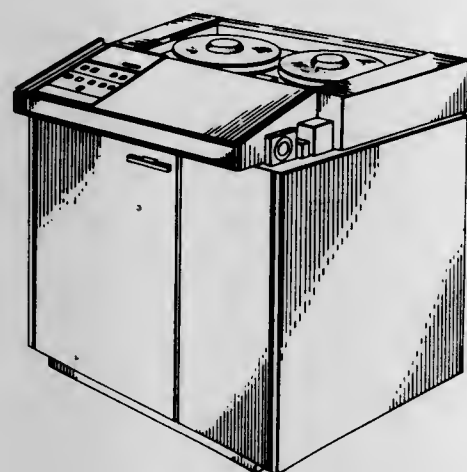
George H. Blesch, Cleve M. Hart, Ben Lomond and Morton D. Lenske, Cupertino, and James C. Jimerson, San Jose, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 13, 1970, Ser. No. 22,956

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—14



222,477

SPEAKER HOUSING

Hideo Wada, Chigasaki, Sukeyoshi Nashinoki, Yokohama, and Itsuo Kato and Tsutomu Murakami, Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

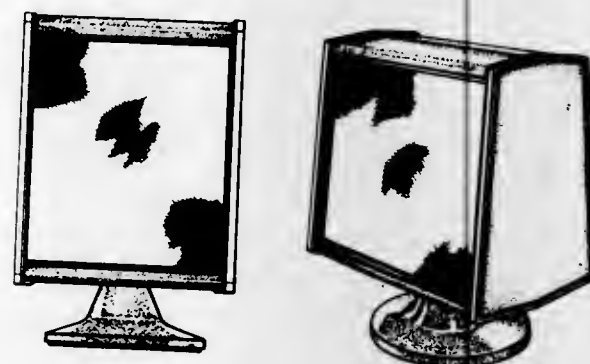
Filed Sept. 14, 1970, Ser. No. 24,961

Claims priority, application Japan Mar. 13, 1970

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—14



222,478

PORTABLE TAPE RECORDER

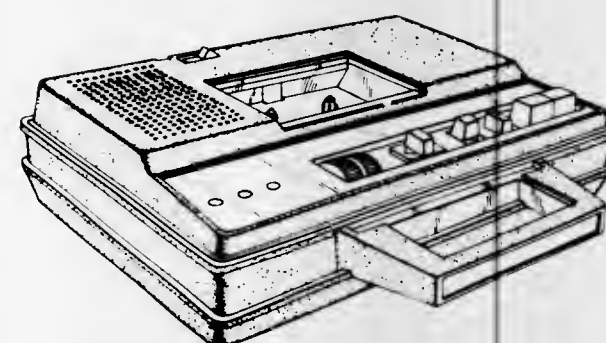
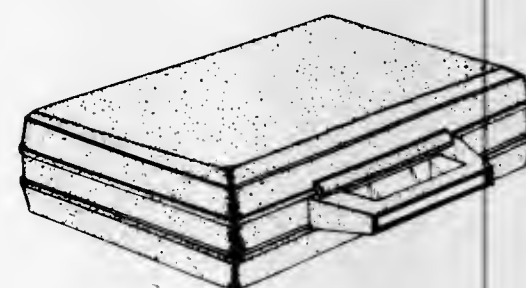
Raymond A. Massaccesi, Lombard, Ill., and Sheldon Lee Pastor, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 22, 1970, Ser. No. 23,613

Term of patent 14 years

Int. Cl. D14—01; D3—01

U.S. Cl. D26—14



222,476

SPEAKER ENCLOSURE FOR A MAGNETIC TAPE PLAYER OR SIMILAR ARTICLE

Yoshihiko Ohyama and Yoshikuni Ohira, Tokyo, Japan, assignors to Hitachi Ltd., Tokyo, Japan

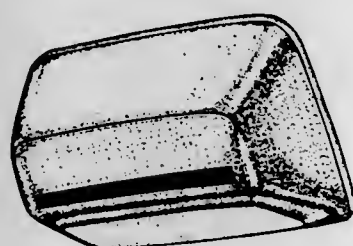
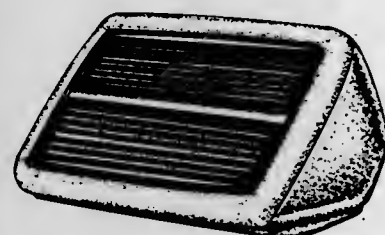
Filed May 18, 1970, Ser. No. 23,045

Claims priority, application Japan Nov. 17, 1969

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—14



222,479

COMBINED STYLUS UNIT AND STYLUS**GUARD THEREFOR**

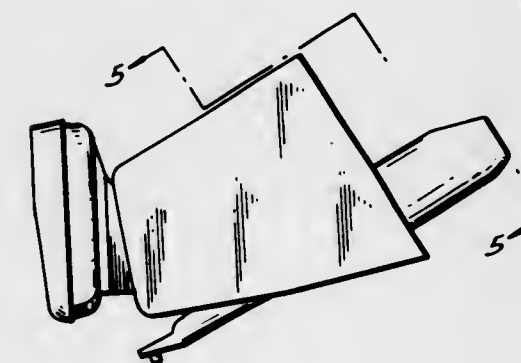
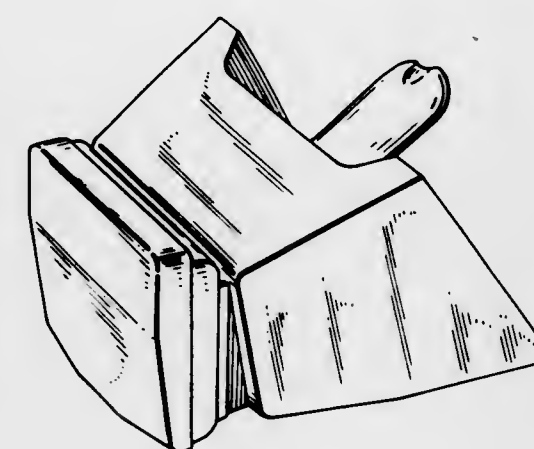
Donald G. Litcher, Commack, N.Y., assignor to Empire Scientific Corporation, Garden City, N.Y.

Filed June 18, 1970, Ser. No. 24,101

Term of patent 14 years

Int. Cl. D14—99

U.S. Cl. D26—14



222,480

INSTRUMENT TRANSFORMER

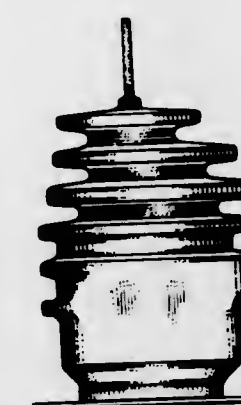
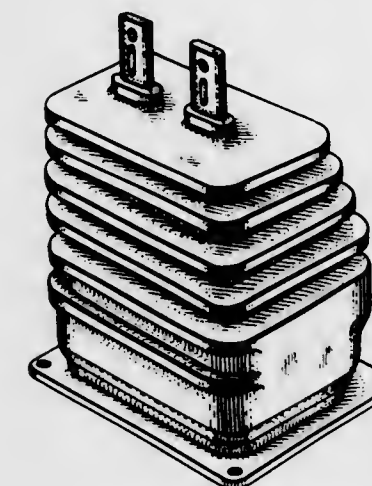
Robert S. Canney, Berwick, Maine, assignor to General Electric Company

Filed Nov. 25, 1970, Ser. No. 26,151

Term of patent 14 years

Int. Cl. D13—02

U.S. Cl. 26—15



222,481

COMBINED BIRD WATERING FOUNTAIN AND HUMMING BIRD FEEDER

Robert Rakowski, 3411 Rosalie Ave., Baltimore, Md. 21234

Filed Dec. 10, 1970, Ser. No. 26,394

Term of patent 14 years

Int. Cl. D30—03

U.S. Cl. D30—14



222,482

TIE RACK

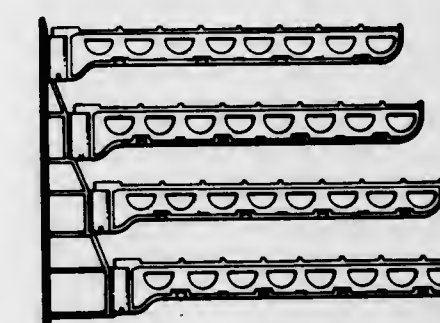
Goodwin Salkoff, Coral Gables, Fla., assignor to Cosas, Inc., Miami, Fla.

Filed Aug. 3, 1970, Ser. No. 24,274

Term of patent 14 years

Int. Cl. D6—99

U.S. Cl. D33—8



222,483

BRACKET FOR HOLDING FISHING RODS

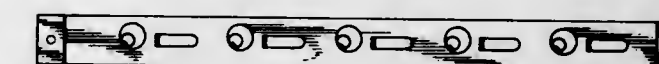
Richard L. Plath, 2038 15th St. NW., Rochester, Minn. 55901

Filed Mar. 6, 1970, Ser. No. 21,760

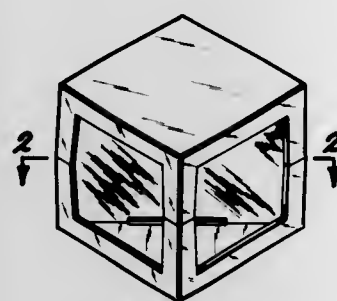
Term of patent 3½ years

Int. Cl. D6—01

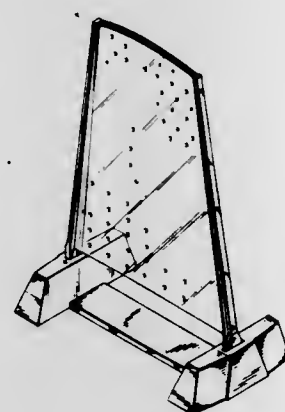
U.S. Cl. 33—17



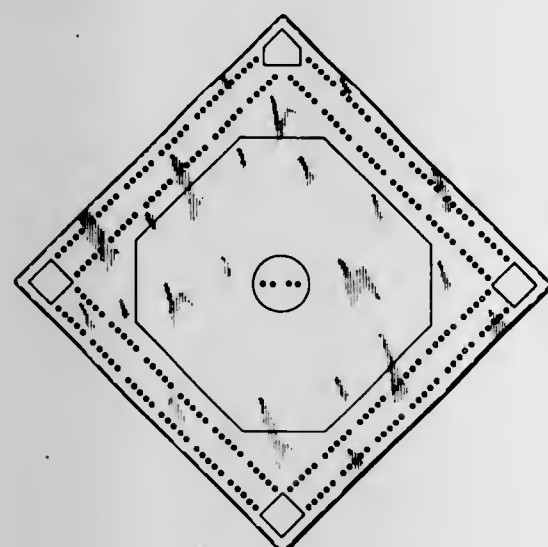
222,484
GAME PIECE OR THE LIKE
 Aaron G. Cohen, Los Angeles, Calif., and David T. Okada and Dermot F. Sims, Piscataway, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
 Filed May 4, 1970, Ser. No. 22,786
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-5



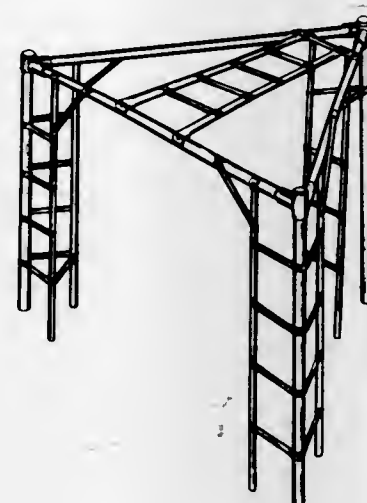
222,485
GAME BOARD
 Perry J. Grant, Pacific Palisades, Calif., assignor to Reuben Klammer, doing business as Reuben Klammer Associates, Beverly Hills, Calif.
 Filed May 8, 1970, Ser. No. 22,890
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-5



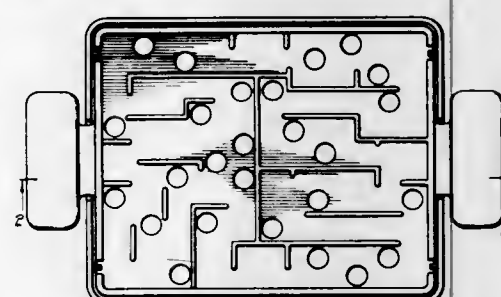
222,486
CRIBBAGE BOARD
 Spencer M. Wagnild, 3661 34th Ave. S., Minneapolis, Minn. 55406
 Filed May 25, 1970, Ser. No. 23,124
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-5



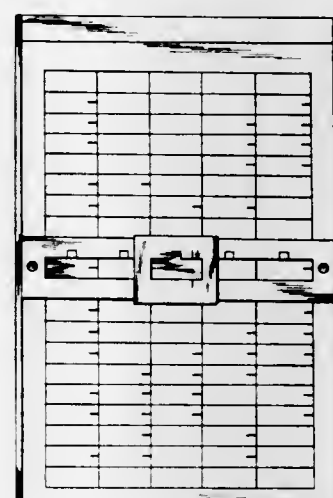
222,487
PLAYGROUND CLIMBER
 Erwin N. Korte, Carbondale, Ill., assignor to Turco Manufacturing Company, Du Quoin, Ill.
 Filed June 4, 1970, Ser. No. 23,322
 Term of patent 14 years
 Int. Cl. D21-02
 U.S. Cl. D34-5



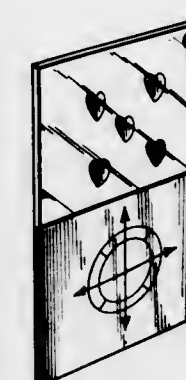
222,488
TILTABLE GAME BOARD
 Manfred Rocholl, Dieter Konrad Gutbrod, and Leslie Warnett, Ilkley, England, assignors to Middleton Export Limited, Ilkley, England
 Filed Sept. 29, 1970, Ser. No. 23,253
 Claims priority, application Great Britain July 16, 1970
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-5



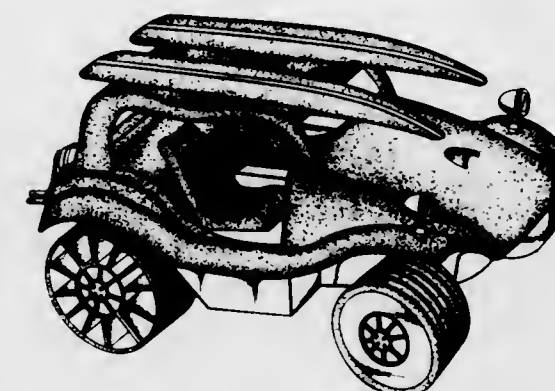
222,489
GAME BOARD
 Eugene H. Primoff, 15 Whitefield Terrace, New Rochelle, N.Y. 10801
 Filed Nov. 25, 1970, Ser. No. 26,155
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-5



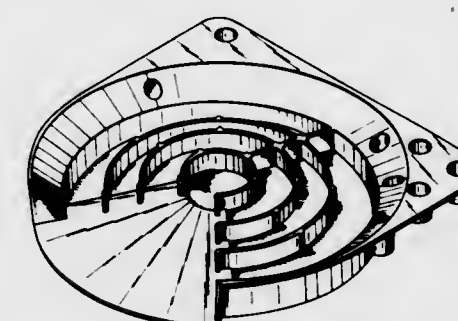
222,490
PLAYING CARD
 St. Barth Alaska, 3811 S. Scoville Ave., Berwyn, Ill. 60402
 Filed May 1, 1970, Ser. No. 22,777
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-13



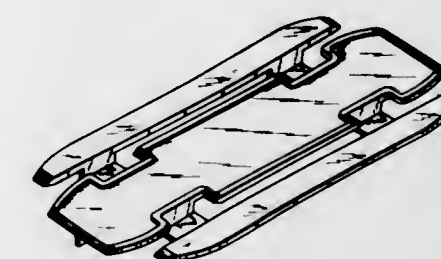
222,491
TOY AMPHIBIOUS VEHICLE
 Arthur R. Gorfain, Fair Lawn, N.J., assignor to Cragstan Industries, Inc., New York, N.Y.
 Filed Apr. 15, 1970, Ser. No. 22,441
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



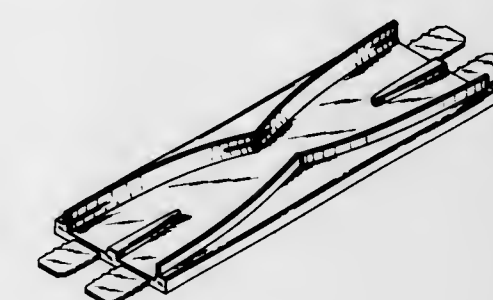
222,492
GAME ACCESSORY FOR USE WITH SPINNING TOYS
 Anthony D. Miller, Torrance, and John T. Benson, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
 Filed July 23, 1970, Ser. No. 24,080
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



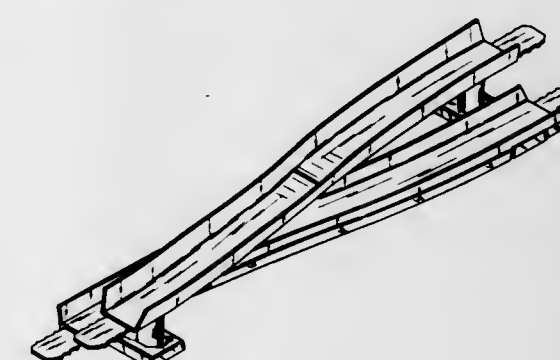
222,493
TOY TRACK SECTION CONNECTOR
 Raymond J. Douglas, Lomita, and William A. Staats, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
 Filed Aug. 20, 1970, Ser. No. 24,598
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



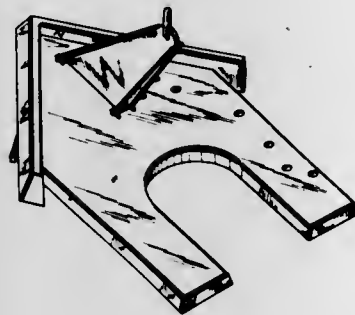
222,494
CROSSOVER TRACK SECTION
 Janos Beny, Manhattan Beach, and Toshio Yamasaki, Gardena, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
 Filed Aug. 25, 1970, Ser. No. 24,688
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



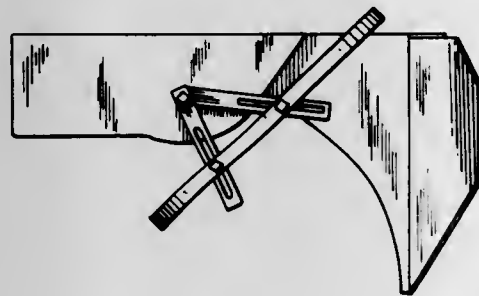
222,495
CROSSOVER TRACK SECTION
 Homer S. Davis, Los Angeles, and Emerson W. Brigham, Jr., Hermosa Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
 Filed Aug. 25, 1970, Ser. No. 24,687
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



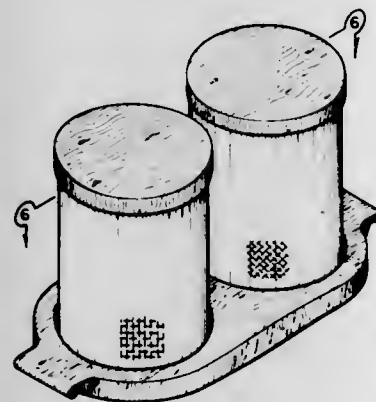
222,496
DISPLAY STAND FOR A TOY
 Joseph G. Sojka, Melrose Park, Ill., assignor to
 Mattel, Inc., Hawthorne, Calif.
 Filed Sept. 24, 1970, Ser. No. 25,561
 Term of patent 14 years
 Int. Cl. D21-01
 U.S. Cl. D34-15



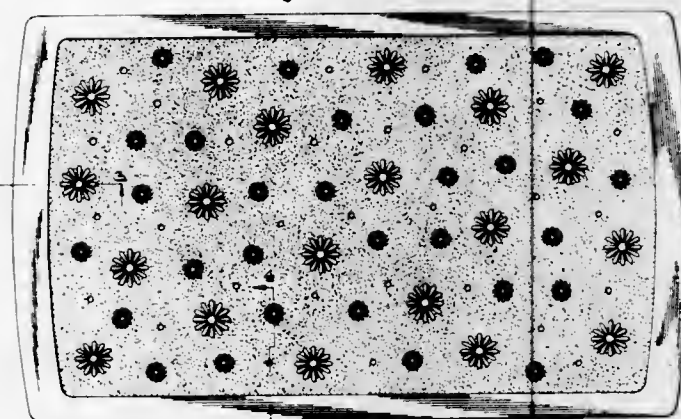
222,497
DISTRIBUTOR SPOUT FOR GRAIN AND SILAGE
 Melvin E. Dreier, Dumont, Iowa 50625
 Filed Feb. 9, 1970, Ser. No. 21,344
 Term of patent 14 years
 Int. Cl. D15-03
 U.S. Cl. D40-1



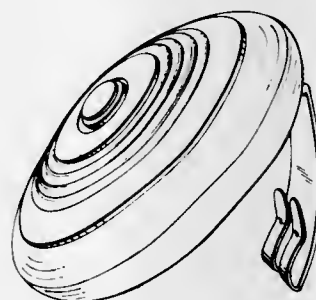
222,498
**COMBINED BREAD CANISTERS AND
 SUPPORTING TRAY THEREFOR**
 Henrietta M. Gould, Davis County, Utah
 (1308 S. 200 W., Apt. 3, Bountiful Utah 84010)
 Filed June 10, 1970, Ser. No. 23,425
 Term of patent 7 years
 Int. Cl. D7-06
 U.S. Cl. D44-6



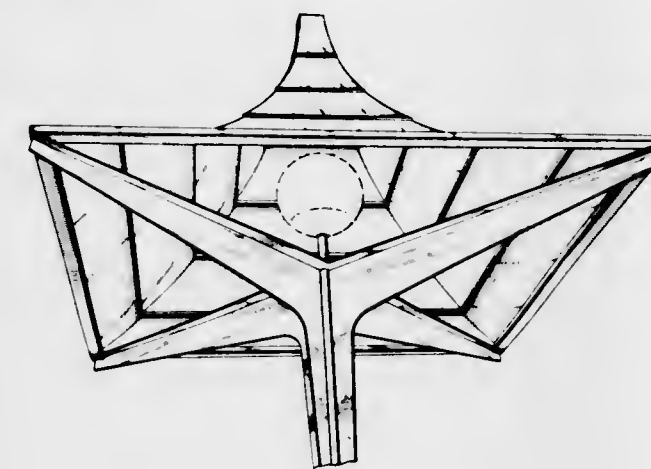
222,499
BATH MAT
 Charles A. Wells, Coshocton, Ohio, assignor to Pretty
 Products, Inc., Coshocton, Ohio
 Filed Sept. 4, 1970, Ser. No. 24,032
 Term of patent 14 years
 Int. Cl. D6-11; D7-99
 U.S. Cl. D44-31



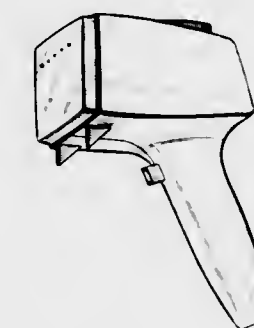
222,500
FLASHLIGHT
 Hans Gugelot, deceased, late of Ulm, Germany, by Marie-
 Helen Gugelot, heir, and Franz Preisinger, Oberelchlin-
 gen, Germany, assignors to Braun Aktiengesellschaft,
 Frankfurt am Main, Germany
 Filed June 3, 1969, Ser. No. 17,563
 Claims priority, application Germany Dec. 9, 1968
 Term of patent 14 years
 The portion of the term of the patent subsequent to
 Mar. 31, 1984, has been disclaimed
 Int. Cl. D26-02
 U.S. Cl. D48-24



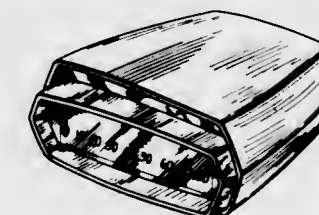
222,501
**CANOPY FOR EXTERIOR LIGHTING
 FIXTURES OR THE LIKE**
 John O. Simonds, 17 Penhurst Road 15202; Philip D.
 Simonds, Brightwood Trail 15237; and Geoff Rausch,
 101 Thompson Drive 15229, all of Pittsburgh, Pa.
 Filed Sept. 15, 1969, Ser. No. 19,322
 Term of patent 14 years
 Int. Cl. D26-03
 U.S. Cl. D48-31



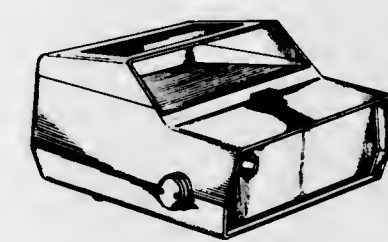
222,502
**STEAM GENERATING APPLIANCE FOR REMOV-
 ING WRINKLES FROM CLOTH ARTICLES**
 Alfred W. Madl, Glendale, Wis., and John M. Kupiec,
 Brooklyn, N.Y., assignors to John Oster Manufacturing
 Co., Milwaukee, Wis.
 Filed May 6, 1970, Ser. No. 22,831
 Term of patent 14 years
 Int. Cl. D15-05; D23-99
 U.S. Cl. D49-13



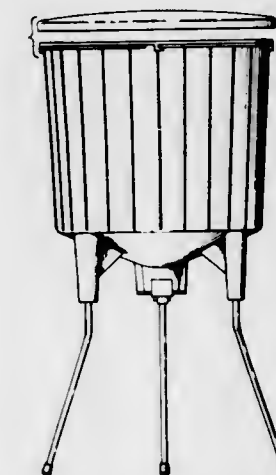
222,503
TACHOMETER
 George E. Smith, Kansas City, Mo., assignor to Midland
 International Corporation, Kansas City, Mo.
 Filed July 13, 1970, Ser. No. 23,920
 Term of patent 14 years
 Int. Cl. D10-10
 U.S. Cl. D52-6



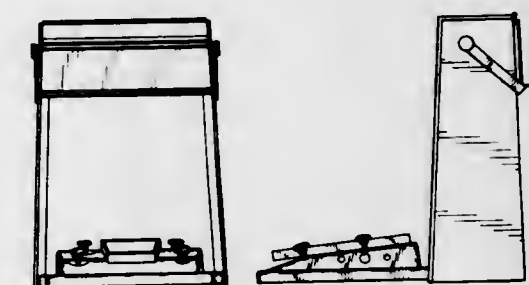
222,504
**ELECTRONIC THERMOMETER READ-OUT
 HOUSING**
 Stephens N. Sato, San Diego, Calif., assignor to Ivac
 Corporation, San Diego, Calif.
 Filed Aug. 6, 1970, Ser. No. 24,337
 Term of patent 14 years
 Int. Cl. D10-04
 U.S. Cl. D52-7



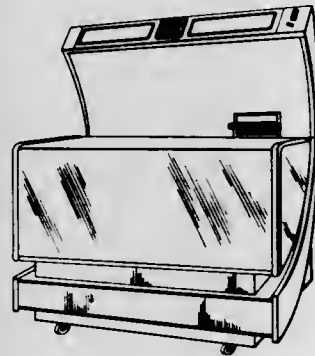
222,505
**RACK FOR COLLECTING AND
 DISPENSING LIQUID**
 William G. Carr, Brooklyn, N.Y., assignor to
 Stamco, Inc., Levittown, N.Y.
 Filed June 29, 1970, Ser. No. 23,751
 Term of patent 14 years
 Int. Cl. D15-08
 U.S. Cl. D55-1



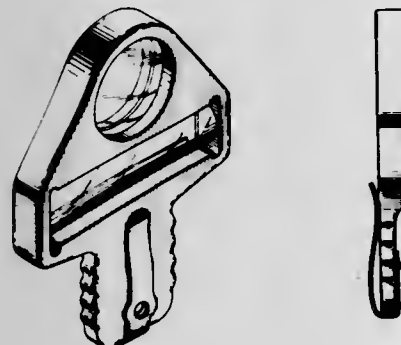
222,506
**HOUSING FOR AN ELECTRONIC MUSICAL TONE
 SYNTHESIZER OR SIMILAR ARTICLE**
 Coles A. Doty, Glenview, Ill., assignor to Ludwig
 Industries, Chicago, Ill.
 Filed Sept. 18, 1970, Ser. No. 25,066
 Term of patent 14 years
 Int. Cl. D17-99
 U.S. Cl. D56-1



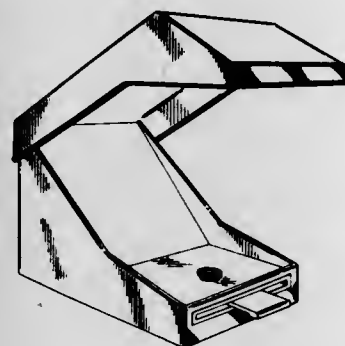
222,507
PHONOGRAPH CABINET
 Robert A. O'Neil, Glen Ellyn, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.
 Filed Aug. 12, 1970, Ser. No. 24,456
 Term of patent 14 years
 Int. Cl. D14—01
 U.S. Cl. D56—4



222,508
MULTI-PURPOSE POCKET MAGNIFIER
 Jacob Krebs, 2445 Fairmount Ave., Philadelphia, Pa. 19130
 Filed Nov. 23, 1970, Ser. No. 26,123
 Term of patent 3½ years
 Int. Cl. D16—08
 U.S. Cl. D57—1



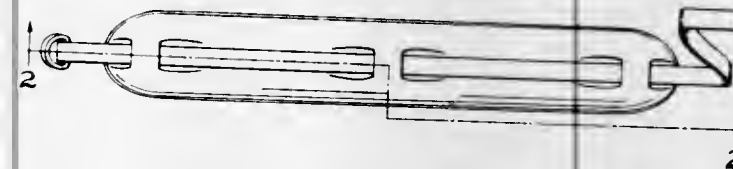
222,509
REAR PROJECTION VIEWER
 William A. Andres, Hopkins, Larry F. Becker, Brooklyn Park, and Larry D. Quanrud, Golden Valley, Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.
 Filed Nov. 25, 1970, Ser. No. 26,168
 Term of patent 14 years
 Int. Cl. D16—02
 U.S. Cl. D61—1



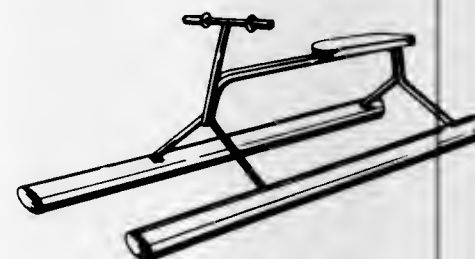
222,510
BOAT HULL WITH GLIDING POOP
 Cosimo Centaro, Via Monterosa 35, Turin, Italy
 Filed May 20, 1970, Ser. No. 23,070
 Term of patent 14 years
 Int. Cl. D12—06
 U.S. Cl. D71—1



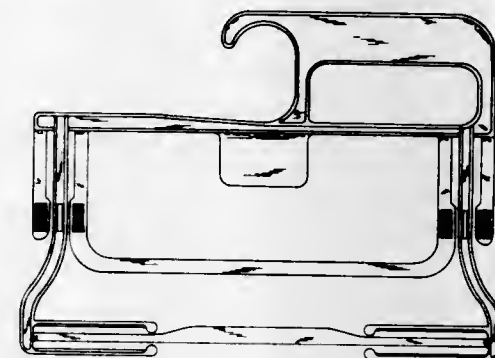
222,511
LIFE BELT
 Fred J. Ventre, 120 N. Cliff St., Ansonia, Conn. 06401, and Stephen Hill, 691 Wheelers Farm Road, Orange, Conn. 06477
 Filed Apr. 20, 1970, Ser. No. 22,522
 Term of patent 14 years
 Int. Cl. D29—02
 U.S. Cl. D71—1



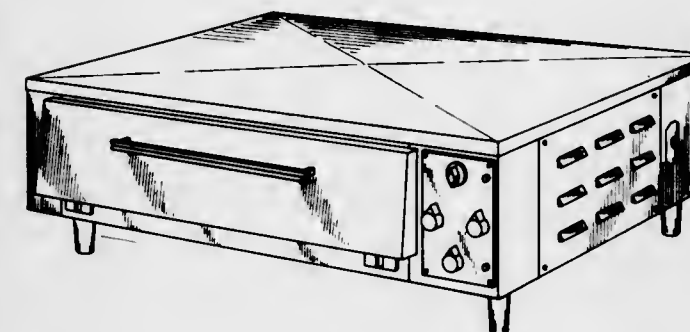
222,512
WATER SCOOTER
 Clarence R. Lennox, 7032 82nd St., Edmonton, Alberta, Canada
 Filed July 14, 1970, Ser. No. 23,947
 Term of patent 14 years
 Int. Cl. D21—02
 U.S. Cl. D71—1



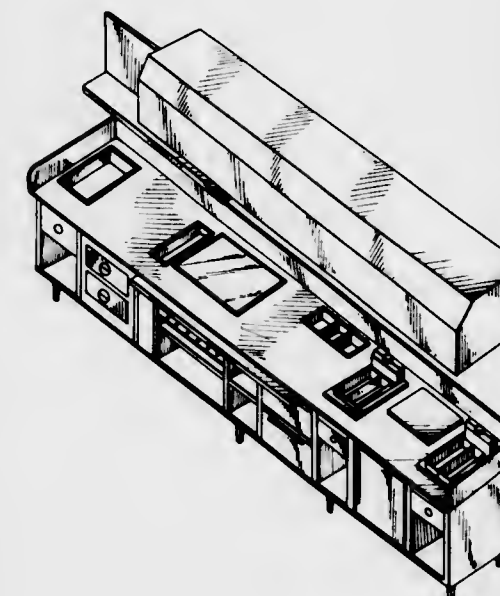
222,513
TROUSERS HANGER
 Robert L. Hart, Manhasset Hills, and Marc Zuckerman and Albert Tangredi, Bayside, N.Y., assignors to W. R. Grace & Co., Duncan, S.C.
 Filed Aug. 3, 1970, Ser. No. 24,277
 Term of patent 14 years
 Int. Cl. D6—08
 U.S. Cl. D80—8



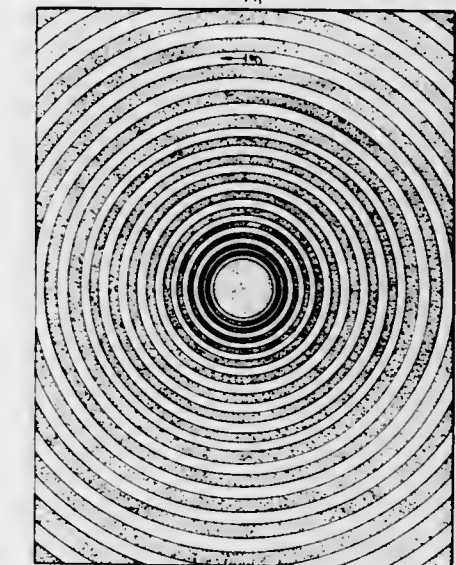
222,514
ELECTRIC OVEN
 Stanley V. Joeckel, Wayne, N.J., assignor to Irex Corporation, Riverdale, N.J.
 Filed Sept. 2, 1970, Ser. No. 24,818
 Term of patent 14 years
 Int. Cl. D7—02
 U.S. Cl. D81—4



222,515
FOOD PREPARATION COUNTER
 George R. Goetz, Bloomington, Minn., assignor to American Dairy Queen Corporation
 Filed Mar. 3, 1970, Ser. No. 21,712
 Term of patent 14 years
 Int. Cl. D7—02
 U.S. Cl. D81—10



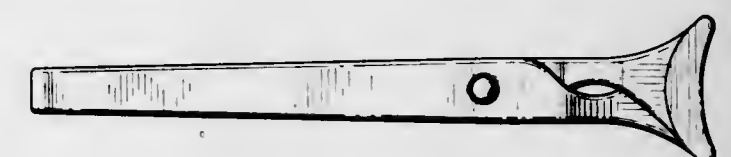
222,516
STERILIZATION INDICATOR
 Arthur W. Kelson, New York, N.Y., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.
 Filed Aug. 31, 1970, Ser. No. 24,768
 Term of patent 14 years
 Int. Cl. D24—99
 U.S. Cl. D83—1



222,517
CIGARETTE CASE
 Georg Reitzel, Gelnhausen, Germany, assignor to Drescher & Kiefer, Gelnhausen, Germany, and Randolph-Rand Corporation, New York, N.Y., fractional part interest to each
 Filed Nov. 4, 1969, Ser. No. 19,926
 Term of patent 14 years
 Int. Cl. D27—06
 U.S. Cl. D85—2

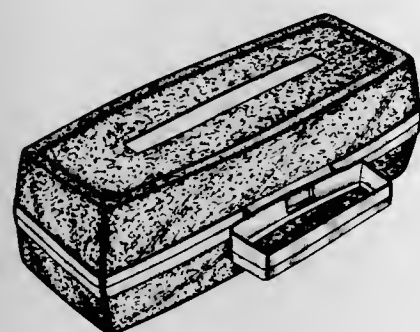


222,518
FALSE EYELASH APPLICATOR
 David C. Brittain, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
 Filed June 29, 1970, Ser. No. 23,728
 Term of patent 14 years
 Int. Cl. D28—03
 U.S. Cl. D86—10



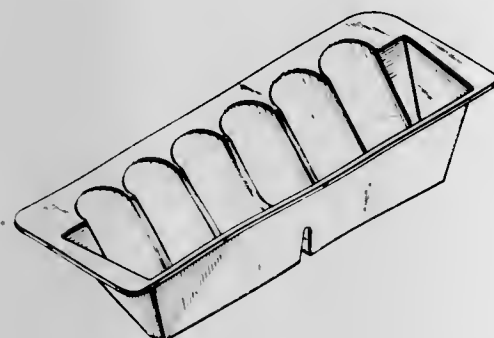
222,519
CARRYING CASE FOR ELECTRIC
HAIR CURLERS
 Kiyoshi Kudo, Nagoya, Japan, assignor to
 Sunbeam Corporation, Chicago, Ill.
 Filed June 30, 1970, Ser. No. 23,772
 Term of patent 14 years
 Int. Cl. D3—99

U.S. Cl. D86—10



222,520
LIPSTICK HOLDER
 Merwin A. Caine, R.F.D. 1, Box 218,
 Jackson, N.J. 08527
 Filed Aug. 3, 1970, Ser. No. 24,618
 Term of patent 14 years
 Int. Cl. D3—99

U.S. Cl. D86—10



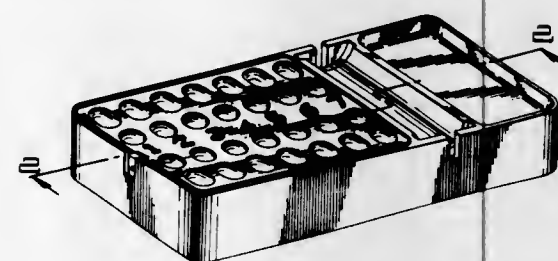
222,521
VACUUM BOTTLE
 Craig A. Johnson, 205 Overby Drive,
 Antioch, Tenn. 37013
 Filed Sept. 24, 1970, Ser. No. 25,576
 Term of patent 14 years
 Int. Cl. D7—99

U.S. Cl. D44—1



222,522
LOCKSMITH'S TRAY FOR HOLDING LOCK PARTS
 William E. Zipt, Franklin County, Ohio, assignor to
 Zipf Lock Company, Columbus, Ohio
 Filed Sept. 30, 1970, Ser. No. 25,273
 Term of patent 14 years
 Int. Cl. D3—99

U.S. Cl. D87—1



LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF OCTOBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- AB Tetra Pak: See—
 Tuma, Alex; and Hansson, Jan Ingvar, 3,615,823.
- Abbott, John R.; and Coffey, William F., to Eastman Kodak Company.
 Silver halide emulsions containing 3-cyclicamino- 5-pyrazolone
 color couplers. 3,615,506, Cl. 96-56.5
- Abbott Laboratories: See—
 Croveti, Aldo J.; Kenney, Donald S.; and Hasbrouck, Richard B.,
 3,615,745.
- Abe, Masahiro: See—
 Kawaji, Shohei; Kawasaki, Toyooki; Murase, Masao; Fukatsu,
 Shunzo; Abe, Masahiro; Koaze, Yoshihisa; Ito, Tatsuo; Suzuki,
 Mamoru; Ueda, Masahiro; and Umezawa, Hamao, 3,616,243.
- Abe, Shigeo; Furuya, Akira; and Okachi, Ryo, to Kyowa Hakko Kogyo
 Co., Ltd. Process for production of inosine and 5'-guanylic acid
 nucleotides. 3,616,212, Cl. 195-28.
- Abele, Werner: See—
 Klein, Dieter; Heimann, Gerhard; Abele, Werner; and Oosterloo,
 Gerd. Joh., 3,615,509.
- Abile-gal, Emile Jean Maurice. Individual filter for preserving and
 preparing beverages. 3,615,708, Cl. 99-171.
- Abrams, Paul S.; and Peterson, Rudolph G., to Carco, Inc. Marking
 device with pressurized fluid flow. 3,614,940, Cl. 118-3.
- Ackerman, Clemens J. Reagent for assaying thyromimetic compounds.
 3,616,257, Cl. 195-103.5
- Adair, Favian M. Igniter. 3,615,287, Cl. 44-36.
- Adamovske strojirny, narodni podnik: See—
 Jurny, Josef, 3,614,927.
- Adamson, David L.; and Tuddenham, William M., to Kennecott
 Copper Corporation. Method for the electrodeposition of copper
 powder. 3,616,277, Cl. 204-10.
- Addis, Kenneth J., to Deering Milliken Research Corporation. Vibrato-
 ry method for securing a continuous thread on a support surface.
 3,616,001, Cl. 156-177.
- Addressograph-Multigraph Corporation: See—
 Freundlich, Jackson S., 3,616,121.
- Hessel, William J., 3,615,411.
- Hessel, William J., 3,615,412.
- Adin, Nancy Gershman: See—
 Bruck, Peter; and Adin, Nancy Gershman, 3,615,430.
- Adler, Franklin P. Hydraulic sway stabilizer. 3,614,931, Cl. 105-199.
- Aebi, Peter: See—
 Widmer, Hans; and Aebi, Peter, 3,614,865.
- Aelony, David; and McKillip, William J., to Ashland Oil, Inc. Method
 for the purification of malononitrile by the addition of cyclopent-
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- Aerojet-General Corporation: See—
 Knop, Louis H.; and Mykkanen, John P., 3,614,827.
- La Botz, Richard J., 3,615,054.
- Agfa-Gevaert Aktiengesellschaft: See—
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- Gotze, Johannes; Riester, Oskar; Philippaerts, Herman Adelbert;
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- Huckstadt, Harald; Himmelmann, Wolfgang; Saleck, Wilhelm;
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- Huckstadt, Harald; Saleck, Wilhelm; Randolph, August; Moll,
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- Huckstadt, Harald; Himmelmann, Wolfgang; Saleck, Wilhelm;
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- Moisar, Erik, 3,615,518.
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- Agnellino, Anthony Dale. Hydro therapeutic bathtub. 3,614,952, Cl.
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- Agnew, Kenneth Malcolm, to National Research Development Cor-
 poration. Safety sides for beds. 3,614,795, Cl. 5-331.
- Agusta, Benjamin; and Sahni, Ravinder J., to International Business
 Machines Corporation. Process of producing an array of integrated
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- Agway, Inc.: See—
 Smith, Stanley B., 3,615,650.
- Ahmad, Iqbal, to United States of America, Army. Composites includ-
 ing electroconductive reinforcing material formed by electrodeposi-
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- Air Reduction Company, Incorporated: See—
 Greene, William J., 3,615,881.
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- Ajinomoto Co., Inc.: See—
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- Aker, Walter W.; Brown, Dale H.; Spacil, Henry S.; and White, Dohald
 W., to General Electric Company. Electrically and chemically cou-
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- Aki, Osami: See—
 Nishio, Fumihiko; Kawano, Hideo; Sugiyama, Mitsunori; Sakai,
 Takeo; and Aki, Osami, 3,615,527.
- Aktiebolaget Astra: See—
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- Aktiebolaget Electrolux: See—
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- Aktiebolaget Ljungmans Verkstad: See—
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- Aktiebolaget Tudor: See—
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- Aktiebolaget Vargons Mek. Verkstad: See—
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- Aktiengesellschaft Brown, Boveri & Cie.: See—
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- Albert, Bertrand Jacques: See—
 Lenoble, Jean Paul; Albert, Bertrand Jacques; Bochart, Francois
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- Albert, Robert E., to Du Pont de Nemours, E. I., and Company.
 Process for the preparation of mullite bonded refractory materials.
 3,615,778, Cl. 106-65.
- Albutt, Kenneth John: See—
 Garber, Sidney; and Albutt, Kenneth John, 3,615,925.
- Alcan Research and Development Limited: See—
 Asada, Tahei; Cooke, William Ernest; and Sajben, Paul John,
 3,616,309.
- Cooke, William Ernest; and Sajben, Paul John, 3,616,297.
- Cooke, William Ernest; Sajben, Paul John; and Spooner, Roy Co-
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- McLellan, Harold David; and Armour, Walter Keith, 3,616,317.
- Alcon Laboratories, Incorporated: See—
 Schollmaier, Edgar H.; Dewar, Norman R.; and Hecht, Gerald,
 3,614,959.
- Alden, Don Edward, to Swift & Company. Process for the production
 of flavored protein foods. 3,615,656, Cl. 99-17.
- Aldridge, Clyde L., to Esso Research and Engineering Company.
 Water gas shift process for producing hydrogen using cesium com-
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- Alkaline Batteries Limited: See—
 Atkins, John Stuart, 3,616,174.
- Allegheny Ludlum Steel Corporation: See—
 Coffman, Donald L., 3,615,898.
- Kindlimann, Lynn E.; and Greene, Alexander B., 3,615,904.
- McCunn, Thomas H., 3,615,365.
- Ramachandran, Sundaresan, 3,615,354.
- Allen, Ernest E.: See—
 Nisbet, Robert E.; and Allen, Ernest E., 3,616,220.

- Allen, Paul M., to Armco Steel Corporation. Stainless steel. 3,615,366, Cl. 751.25.
- Alley, William L.: See—
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- Allied Chemical Corporation: See—
Dear, Robert E. A.; and Gilbert, Everett E., 3,616,360.
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- Allis-Chalmers Manufacturing Company: See—
Spengler, Harold H., 3,615,844.
- Alpha, Smith M., to Silver Lining Inc., meane. Centrifugal classifying system. 3,615,008, Cl. 209-139.
- Alsberg, Henry: See—
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- Alton Box Board Company: See—
Reisman, Abraham J., 3,616,163.
- Aluminum Company of America: See—
Rolles, Rolf, 3,615,341.
- Alyea, Jerrold M., to Olin Mathieson Chemical Corporation. Inhibiting grain growth in metal composites. 3,615,922, Cl. 148-127.
- Amano, Hiroyuki; Nishio, Fumihiko; Tsuji, Nobuo; and Shirasu, Kozuo, to Fuji Shashin Film Kabushiki Kaisha, (now Fuji Photo, Film Co., Ltd. Photographic light sensitive elements containing ultra-violet materials. 3,615,547, Cl. 96-84.
- Amano, Hiroyuki; Tsuji, Nobuo; Shirasu, Kazuo; and Tutiya, Yoshinori, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material containing a polymeric brightening agent. 3,615,544, Cl. 96-82.
- AMBA Industries, Incorporated: See—
Hussey, Russell B.; and Kimberley, John A., 3,615,043.
Weiss, Paul C., 3,615,056.
- Amberg, Ralph G.: See—
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- Skalbeck, David A.: *See—*
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- Skinner, Geoffrey Frederick, to Foster Wheeler Corporation. Method of collecting and treating exhaust gases containing carbon monoxide. 3,615,355, Cl. 75-60.
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- Sluss, James A., Jr.; and Cregeen, Derek, to Sprague Electric Company. Method of stabilizing MOS devices. 3,615,873, Cl. 148-1.5.
- Smalheiser, Lawrence A., to Stauffer Chemical Company. Process for preparing quick drying, plasticized sulfur road compositions. 3,615,748, Cl. 106-19.
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- Smith, Albert L., to Stauffer Chemical Company. Process for preparing fire retardant composition. 3,615,742, Cl. 106-15.
- Smith, Allen H., to General Motors Corporation. Radiant energy photovoltaic device. 3,615,855, Cl. 136-89.
- Smith, Donald A.; Perry, Ernest J.; and Hollister, Kenneth R., to Eastman Kodak Company. Peptizers for silver halide emulsions useful in photography. 3,615,624, Cl. 96-114.
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- Smith, Horace L., Jr., to Smitherm Industries, Inc. Method for processing particulate solids. 3,615,668, Cl. 99-68.
- Smith, J. Harold, to Johnson & Johnson. Embossed nonwoven wiping and cleaning material materials. 3,616,157, Cl. 161-124.
- Smith, James B. Single heater well fluid separation method. 3,616,399, Cl. 208-188.
- Smith, James G., to Eastman Kodak Company. Presensitized planographic printing plate. 3,615,443, Cl. 96-33.
- Smith, James G.; and Beavers, Dorothy J., to Eastman Kodak Company. Photographic element, product, composition and process. 3,615,535, Cl. 96-76.
- Smith Kline & French Laboratories: *See—*
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- Smith, Michael J.: *See—*
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- Smith, Stanley B., to Agway, Inc. Feed ration and feeding procedure for the elimination of pesticide residues in poultry. 3,615,650, Cl. 99-4.
- Smith, Stanley W.; Thierry, Edward J.; and Giner, Jose D., to Leeson Corporation, mesne. Electrochemical cell. 3,615,841, Cl. 136-86.
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- Smitherm Industries, Inc.: *See—*
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- Snyder, Richard G., to Bethlehem Steel Corporation. Process and composition for anodizing a tin-coated article. 3,616,307, Cl. 204-56.
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- Wildi, Bernard S.; Jaworski, Ernest G.; and Westman, Thomas L., to Monsanto Company. Polymer-enzyme products comprising plurality of enzymes covalently bound to polymer. 3,616,229, Cl. 195-63.
- Wilhelm, Gary, to Stoeger Arms Corporation. Removable unitary action for a firearm. 3,614,908, Cl. 89-132.
- Wilhelm, Hans; Floss, Josef Georg; and Henkler, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Photosensitive compositions for production of relief-bearing plates, sheets or films. 3,615,629, Cl. 96-115.
- Wilke, Milton E.; and Strauss, Howard J., to Clevite Corporation. Method of sealing magnesium cells. 3,615,866, Cl. 136-175.
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- Willems, Jozef Frans; and Heugebaert, Frans Clement, to Gevaert-Agfa N.V. Photographic light-sensitive silver halide material. 3,615,616, Cl. 96-109.
- Willems, Jozef Frans; Thiers, Robrecht Julius; and Tavernier, Bernard Hippolyte, to Gevaert-Agfa N.V. Light-sensitive material. 3,615,620, Cl. 96-110.
- Willems, Jozef Frans; and Van Veelen, George Frans, to Gevaert-Agfa N.V. Derivative of 6-amino-1,2,2,4-tetrahydroquinoline as superadditive in developing composition. 3,615,525, Cl. 96-66.3.
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- Williams, Thomas F., to United States of America, Atomic Energy Commission. Radiation-induced ionic polymerization controlled by the presence of Lewis acids or Lewis bases. 3,616,369, Cl. 204-159.22
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- Wilson, Howard Ivan, to Du Pont de Nemours, E. I., and Company. Photosensitive elements containing inorganic halide image intensifiers. 3,615,567, Cl. 96-90.
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- Wong, Hans K., to Itek Corporation. Photographic copy medium comprising a semiconductor layer with a photopolymerizable layer thereover. 3,615,446, Cl. 96-33.
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Mittman, Emanuel. Apparatus and process for producing an embossed plastic laminate. Re. 27,201, 10-26-71, Cl. 156-209.
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CLASSIFICATION OF PATENTS

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4 : 3.615.210	30-139 : 3.614.833	260 : 3.615.336	3.615.385	3.615.455	84 : 3.615.545
3.615.211	33-147 : 3.614.834	272 : 3.615.337	3.615.386	3.615.456	3.615.546
3.615.212	174 : 3.615.143	291 : 3.615.338	3.615.387	3.615.457	3.615.547
3.615.213	35- 34 : 3.614.835	30 : 3.615.317	3.615.388	3.615.458	3.615.548
3.615.214	36- 2.5 : 3.614.836	66- 42 : 3.614.877	3.615.389	3.615.459	85 : 3.615.549
3.615.215	37- 57 : 3.614.837	78 : 3.614.878	3.615.390	3.615.460	3.615.550
3.615.217	40- 2.2 : 3.614.839	3.615.145	3.615.391	3.615.461	3.615.551
223 : 3.615.218	126 : 3.614.840	3.615.145	3.615.392	3.615.462	3.615.552
224 : 3.615.220	43-124 : 3.614.841	3.615.145	3.615.393	3.615.463	86 : 3.615.553
226 : 3.615.219	44- 1 : 3.615.284	3.615.145	3.615.394	3.615.464	87 : 3.615.554
3.615.221	7 : 3.615.285	3.615.145	3.615.395	3.615.465	3.615.555
3.615.222	5 : 3.615.289	3.615.145	3.615.396	3.615.466	3.615.556
3.615.223			3.615.397	3.615.467	3.615.557
			3.615.398	3.615.468	3.615.558
			3.615.399	3.615.469	3.615.559
			3.615.400	3.615.470	3.615.560
			3.615.401	3.615.471	3.615.561
			3.615.402	3.615.472	88 : 3.615.558
			3.615.403	3.615.473	3.615.559
			3.615.404		3.615.560
			3.615.405		3.615.561
			3.615.406		3.615.562
			3.615.407		
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			3.615.441		
			3.615.442		
			3.615.443		
			3.615.444		
			3.615.445		

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1 : 3.614.899	6 : 3.615.283	6 : 3.616.282	9 : 3.616.286	13 : 3.616.087	17 : 3.615.699
3.615.153	3.615.290	3.616.298	3.616.306	3.615.195	3.615.745
3.616.316	3.615.300	3.616.330	3.616.313	3.616.091	3.615.750
4 : 3.615.004	3.615.321	3.616.355	3.616.339	17 : Re.27.200	3.615.786
3.615.231	3.615.326	3.616.382	3.616.356	Re.27.207	3.615.796
3.615.261	3.615.384	3.616.387	3.616.423	3.614.809	3.615.802
3.615.264	3.615.430	3.616.405	3.615.221	3.614.828	3.615.828
3.616.043	3.615.473	3.616.418	3.615.266	3.614.900	3.615.866
3.616.059	3.615.523	8 : 3.614.830	3.615.271	3.614.973	3.615.868
5 : Re.27.205	3.615.559	3.614.867	3.615.454	3.614.979	3.615.922
3.615.100	3.615.563	3.614.916	3.615.481	3.614.989	3.615.973
3.615.183	3.615.590	3.614.968	3.615.681	3.614.998	3.616.034
6 : Re.27.203	3.615.627	3.614.970	3.615.731	3.615.030	3.616.047
3.614.794	3.615.645	3.615.059	3.615.734	3.615.032	3.616.055
3.614.799	3.615.653	3.615.084	3.615.778	3.615.036	3.616.077
3.614.802	3.615.664	3.615.170	3.615.807	3.615.038	3.616.082
3.614.824	3.615.680	3.615.716	3.615.840	3.615.039	3.616.098
3.614.825	3.615.702	3.615.767	3.615.962	3.615.048	3.616.106
3.614.827	3.615.730	3.616.266	3.616.168	3.615.049	3.616.156
3.614.836	3.615.791	9 : 3.614.788	3.616.175	3.615.051	3.616.159
3.614.872	3.615.803	3.614.862	3.616.199	3.615.056	3.616.176
3.614.912	3.615.872	3.614.884	3.616.253	3.615.067	3.616.190
3.614.915	3.615.883	3.614.908	3.616.271	3.615.109	3.616.191
3.614.924	3.615.886	3.614.914	3.616.363	3.615.113	3.616.195
3.614.947	3.615.928	3.615.023	11 : 3.614.898	3.615.164	3.616.219
3.614.992	3.615.934	3.615.050	3.615.021	3.615.171	3.616.220
3.614.993	3.615.956	3.615.052	3.615.241	3.615.219	3.616.250
3.615.019	3.615.964	3.615.175	3.615.853	3.615.223	3.616.273
3.615.027	3.615.980	3.615.244	3.616.185	3.615.224	3.616.293
3.615.041	3.616.009	3.615.277	3.616.333	3.615.233	3.616.381
3.615.054	3.616.016	3.615.282	3.616.338	3.615.269	3.616.394
3.615.070	3.616.053	3.615.301	12 : 3.615.003	3.615.350	3.616.433
3.615.089	3.616.057	3.615.309	3.615.009	3.615.372	3.616.434
3.615.093	3.616.078	3.615.361	3.615.013	3.615.408	3.616.459
3.615.101	3.616.088	3.615.652	3.615.017	3.615.411	18 : 3.614.931
3.615.121	3.616.107	3.615.661	3.615.110	3.615.412	3.614.980
3.615.123	3.616.108	3.615.662	3.615.114	3.615.442	3.614.982
3.615.131	3.616.111	3.615.682	3.615.160	3.615.459	3.615.075
3.615.136	3.616.115	3.615.698	3.615.198	3.615.460	3.615.105
3.615.138	3.616.139	3.615.736	3.615.199	3.615.461	3.615.228
3.615.144	3.616.141	3.615.768	3.615.239	3.615.462	3.615.232
3.615.149	3.616.189	3.615.839	3.615.246	3.615.585	3.615.305
3.615.156	3.616.193	3.615.841	3.615.906	3.615.592	3.615.646
3.615.192	3.616.249	3.615.849	3.616.110	3.615.655	3.615.647
3.615.193	3.616.252	3.615.862	3.616.319	3.615.656	3.615.672
3.615.202	3.616.254	3.615.888	3.616.428	3.615.658	3.615.700
3.615.206	3.616.259	3.615.889	3.616.432	3.615.688	3.615.729
3.615.238	3.616.264	3.615.894	13 : 3.615.811	3.615.689	3.615.788
3.615.249	3.616.270	3.615.921	3.616.005	3.615.690	3.615.855
3.615.250	3.616.279	3.616.040	3.616.054	3.615.695	3.615.884

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18 : 3.615.891	25 : 3.615.576	29 : 3.614.857	34 : 3.616.276	36 : 3.615.511	37 : 3.615.470
3.615.926	3.615.577	3.615.099	3.616.284	3.615.513	3.615.746
3.615.965	3.615.596	3.615.204	3.616.318	3.615.515	3.615.826
3.616.056	3.615.710	3.615.673	3.616.323	3.615.517	3.615.970
3.616.125	3.615.712	3.615.692	3.616.324	3.615.519	3.615.981
3.616.194	3.615.713	3.615.793	3.616.325	3.615.521	3.615.997
3.616.303	3.615.732	3.615.988	3.616.329	3.615.524	3.616.145
3.616.341	3.615.733	3.616.029	3.616.348	3.615.533	3.616.192
3.616.350	3.615.735	3.616.229	3.616.359	3.615.535	3.616.283
3.616.364	3.615.771	3.616.232	3.616.360	3.615.536	3.616.409
19 : 3.615.031	3.615.833	31 : 3.614.819	3.616.362	3.615.541	39 : Re.27.204
3.615.594	3.615.838	3.616.203	3.616.363	3.615.545	3.614.845
3.616.118	3.615.850	3.616.380	3.616.373	3.615.558	3.614.848
20 : 3.614.928	3.615.923	3.615.173	3.616.402	3.615.568	3.614.870
3.614.949	3.615.929	3.616.441	3.616.406	3.615.572	3.614.871
3.615.386	3.615.939	3.616.015	3.616.434	3.615.573	3.614.930
3.615.591	3.616.079	3.616.873	3.616.441	3.615.579	3.614.936
21 : 3.614.844	3.616.152	3.616.885	3.616.441	3.615.580	3.615.010
3.615.217	3.616.157	3.616.889	3.616.441	3.615.580	3.615.014
3.615.267	3.616.163	3.616.892	3.616.441	3.615.580	3.615.028
3.615.799	3.616.170	3.616.893	3.616.441	3.615.580	3.615.108
3.615.813	3.616.180	3.616.894	3.616.441	3.615.580	3.615.117
3.616.084	3.616.267	3.616.895	3.616.441	3.615.580	3.615.119
22 : 3.614.840	3.616.274	3.616.952	3.616.441	3.615.580	3.615.165
3.614.984	3.616.290	3.616.955	3.616.441	3.615.580	3.615.194
3.615.008	3.616.312	3.616.955	3.616.441	3.615.580	3.615.208
3.615.073	3.616.332	3.616.006	3.616.441	3.615.580	3.615.248
3.615.216	3.616.340	3.616.016	3.616.441	3.615.580	3.615.317
3.615.340	3.616.343	3.616.034	3.616.441	3.615.580	3.615.318
3.615.343	3.616.425	3.616.037	3.616.441	3.615.580	3.615.319
3.615.352	3.616.461	3.616.047	3.616.441	3.615.580	3.615.322
3.615.359	3.616.480	3.616.076	3.616.441	3.615.580	3.615.327
3.615.360	3.616.482	3.616.092	3.616.441	3.615.580	3.615.328
3.615.657	3.616.490	3.616.106	3.616.441	3.615.580	3.615.337
3.616.130	3.616.492	3.616.161	3.616.441	3.615.580	3.615.338
23 : 3.615.404	3.616.493	3.616.166	3.616.441	3.615.580	3.615.338
3.615.477	3.616.497	3.616.168	3.616.441	3.615.580	3.615.366
3.615.564	3.616.498	3.616.185	3.616.441	3.615.580	3.615.374
24 : 3.614.833	3.616.499	3.616.196	3.616.441	3.615.580	3.615.376
3.614.925	3.615.001	3.615.207	3.616.441	3.615.580	3.615.377
3.614.954	3.615.065	3.615.213	3.616.441	3.615.580	3.615.378
3.614.955	3.615.069	3.615.220	3.616.441	3.615.580	3.615.469
3.615.190	3.615.071	3.615.274	3.616.441	3.615.580	3.615.482
3.615.257	3.615.086	3.615.285	3.616.441	3.615.580	3.615.553
3.615.289	3.615.115	3.615.290	3.616.441	3.615.580	3.615.667
3.615.348	3.615.181	3.615.292	3.616.441	3.615.580	3.615.669
3.615.367	3.615.252	3.615.345	3.616.441	3.615.580	3.615.741
3.615.456	3.615.255	3.615.375	3.616.441	3.615.580	3.615.742
3.615.593	3.615.272	3.615.407	3.616.441	3.615.580	3.615.749
3.615.595	3.615.293	3.615.419	3.616.441	3.615.580	3.615.752
3.615.718	3.615.295	3.615.435	3.616.441	3.615.580	3.615.759
3.615.722	3.615.441	3.615.450	3.616.441	3.615.580	3.615.772
3.615.869	3.615.671	3.615.480	3.616.441	3.615.580	3.615.815
3.615.938	3.615.677	3.615.532	3.616.441	3.615.580	3.615.819
3.615.949	3.615.693	3.615.548	3.616.441	3.615.580	3.615.829
3.616.041	3.615.714	3.615.557	3.616.441	3.615.580	3.615.830
3.616.044	3.615.724	3.615.561	3.616.441	3.615.580	3.615.859
3.616.073	3.615.754	3.615.596	3.616.441	3.615.580	3.615.880
3.616.116	3.615.763	3.615.601	3.616.441	3.615.580	3.615.901
3.616.246	3.615.809	3.615.612	3.616.441	3.615.580	3.615.903
3.616.376	3.615.812	3.615.612	3.616.441	3.615.580	3.615.918
25 : 3.614.839	3.615.816	3.615.665	3.616.441	3.615.580	3.615.953
3.614.863	3.615.820	3.615.678	3.616.441	3.615.580	3.615.954
3.614.887	3.615.824	3.615.679	3.616.441	3.615.580	3.615.958
3.614.919	3.615.825	3.615.694	3.616.441	3.615.580	3.615.971
3.614.991	3.615.827	3.615.706	3.616.441	3.615.580	3.615.979
3.615.024	3.615.835	3.615.743	3.616.441	3.615.580	3.615.990
3.615.043	3.615.897	3.615.747	3.616.441	3.615.580	3.616.008
3.615.061	3.615.972	3.615.760	3.616.441	3.615.580	3.616.010
3.615.082	3.615.984	3.615.776	3.616.441	3.615.580	3.616.021
3.615.116	3.615.986	3.615.780	3.616.441	3.615.580	3.616.035
3.615.127	3.616.042	3.615.792	3.616.441	3.615.580	3.616.051
3.615.151	3.616.101	3.615.805	3.616.441	3.615.580	3.616.075
3.615.210	3.616.142	3.615.806	3.616.441	3.615.580	3.616.

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41 : 3,615.707	42 : 3,615.342	42 : 3,616.025	47 : 3,615.268	48 : 3,616.417	53 : 3,616.310
3,616.058	3,615.353	3,616.066	3,615.314	3,616.422	54 : 3,614.838
3,616.065	3,615.354	3,616.068	3,615.381	3,616.431	3,615.163
3,616.090	3,615.365	3,616.095	3,616.263	3,616.439	3,615.382
3,616.117	3,615.457	3,616.122	3,616.369	3,616.444	3,616.367
3,616.120	3,615.468	3,616.166	3,616.378	3,616.460	55 : 3,614.821
3,616.127	3,615.474	3,616.177	48 : 3,614.951	3,616.462	3,614.962
3,616.173	3,615.562	3,616.238	3,614.959	49 : 3,615.174	3,614.966
3,616.201	3,615.567	3,616.262	3,614.985	3,615.259	3,615.078
3,616.440	3,615.571	3,616.265	3,614.986	3,615.260	3,615.094
42 : 3,614.798	3,615.584	3,616.291	3,614.988	3,615.329	3,615.158
3,614.810	3,615.623	3,616.292	3,615.029	3,616.076	3,615.280
3,614.811	3,615.649	3,616.294	3,615.046	3,616.277	3,615.538
3,614.881	3,615.728	3,616.307	3,615.146	50 : 3,615.463	3,615.583
3,614.923	3,615.740	3,616.352	3,615.154	3,615.464	3,615.663
3,614.963	3,615.774	3,616.374	3,615.159	3,615.466	3,615.844
3,614.964	3,615.775	3,616.397	3,615.211	51 : 3,614.818	3,615.848
3,614.967	3,615.777	3,616.408	3,615.214	3,615.135	3,615.860
3,614.978	3,615.790	3,616.411	3,615.229	3,615.279	3,615.867
3,615.005	3,615.817	3,616.413	3,615.242	3,615.297	3,615.976
3,615.053	3,615.832	3,616.429	3,615.263	3,615.347	3,616.000
3,615.072	3,615.846	43 : 3,614.922	3,615.287	3,615.479	3,616.002
3,615.080	3,615.857	3,616.178	3,615.651	3,615.668	3,616.007
3,615.083	3,615.887	44 : 3,614.797	3,615.675	3,615.969	3,616.011
3,615.085	3,615.890	3,615.927	3,615.781	3,616.140	3,616.020
3,615.148	3,615.898	45 : 3,614.906	3,615.782	3,616.160	3,616.032
3,615.197	3,615.902	3,615.234	3,615.845	3,616.200	3,616.036
3,615.226	3,615.904	3,615.311	3,615.878	3,616.257	3,616.037
3,615.251	3,615.907	3,615.785	3,615.929	3,616.311	3,616.062
3,615.258	3,615.913	3,616.001	3,615.959	53 : 3,614.969	3,616.094
3,615.276	3,615.917	3,616.039	3,615.995	3,615.063	3,616.128
3,615.284	3,615.919	3,616.093	3,616.061	3,615.096	3,616.129
3,615.291	3,615.920	3,616.136	3,616.080	3,615.247	3,616.133
3,615.298	3,615.935	46 : 3,616.186	3,616.230	3,615.701	3,616.134
3,615.310	3,615.952	47 : 3,615.088	3,616.288	3,615.726	3,616.149
3,615.315	3,615.982	3,615.176	3,616.315	3,615.975	3,616.153
3,615.320	3,616.017	3,615.209	3,616.401	3,616.014	3,616.386
3,615.341	3,616.022	3,615.243	3,616.415	3,616.028	3,616.442

Design Patents

4 : 222.467	6 : 222.493	17 : 222.490	23 : 222.480	34 : 222.449	36 : 222.516
6 : 222.426	222.494	222.496	24 : 222.481	222.472	39 : 222.453
222.431	222.495	222.506	25 : 222.427	222.491	222.499
222.439	222.504	222.507	222.471	222.514	222.522
222.440	8 : 222.428	18 : 222.432	26 : 222.425	222.520	42 : 222.445
222.456	9 : 222.433	19 : 222.459	222.455	36 : 222.438	222.501
222.457	222.435	222.497	27 : 222.483	222.441	222.508
222.458	222.511	21 : 222.460	222.486	222.446	45 : 222.436
222.469	12 : 222.423	222.461	222.509	222.454	222.437
222.474	222.424	222.462	222.515	222.479	47 : 222.518
222.475	222.482	222.463	222.521	222.489	48 : 222.442
222.484	17 : 222.443	222.464	29 : 222.503	222.505	49 : 222.498
222.485	222.478	222.465	34 : 222.429	222.513	55 : 222.502
222.492	222.487				

